LONGHORN ARMY AMMUNITION PLANT KARNACK, TEXAS

ADMINISTRATIVE RECORD

Volume 8

2020

Bate Stamp Numbers
00962508 – 00964346

Prepared for

Department of the Army
Longhorn Army Ammunition Plant

1976–2020

LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS
ADMINISTRATIVE RECORD – CHRONOLOGICAL INDEX

VOLUME 8

2020

A. Title: Report – Final Fifth Annual Remedial Action Operation Report, LHAAP-50, Former Sump Water Tank, Longhorn Army Ammunition Plant, Karnack, Texas, June 2020
Author(s): Department of the Army
Recipient: U.S. Environmental Protection Agency and Texas Commission on Environmental Quality
Date: June 4, 2020
Bate Stamp: 00962508 – 00962777

B. Title: (cont'd) Report – Appendix D to Final Fifth Annual Remedial Action Operation Report, LHAAP-50, Former Sump Water Tank, Longhorn Army Ammunition Plant, Karnack, Texas, June 2020
Author(s): Department of the Army
Recipient: U.S. Environmental Protection Agency and Texas Commission on Environmental Quality
Date: June 4, 2020
Bate Stamp: 00962778 – 00964346

DEPARTMENT OF THE ARMY
LONGHORN ARMY AMMUNITION PLANT
POST OFFICE BOX 220
RATCLIFF, AR 72951

June 4, 2020

DAIN-ODB-LO

Mr. William Rhotenberry
U.S. Environmental Protection Agency
1201 Elm Street, Suite 500
Dallas, TX 75270-2002

Re: Final Fifth Annual Remedial Action Operation Report, LHAAP-50, Former Sump Water Tank, Longhorn Army Ammunition Plant, Karnack, Texas, June 2020

Dear Mr. Rhotenberry,

An electronic copy of the above referenced document has been added to the project portal's "Documents" folder at the following address for your records: (https://docs.cbifederalservices.com/sites/501032/regulators/Shared%20Documents/Forms/AllItems.aspx). The well inspection forms have been replaced per TCEQ's comment. An electronic copy of this letter and download instructions for the electronic file have been sent via email.

Due to stay home requirements, hard copies and compact disc (CD) copies of the document cannot be prepared at this time. As soon as the restrictions are lifted, a copy of the transmittal letter and one CD of the above referenced document will be transmitted to you.

The document was prepared by Bhate Environmental Associates, Inc., (Bhate) team, on behalf of the Army as part of Bhate's Performance Based Remediation contract for the facility. I ask that Kim Nemmers, Bhate's Project Manager, be copied on any communications related to the project.

The point of contact for this action is the undersigned. I may be contacted at 479-635-0110, or by email at rose.m.zeiler.civ@mail.mil.

Sincerely,

Rose M. Zeiler, Ph.D.
Longhorn AAP Site Manager

Copies furnished:
A. Palmie, TCEQ, Austin, TX (electronic copy via project portal)
P. Bruckwicki, Caddo Lake NWR, TX (1 hard copy and 1 CD)
R. Smith USACE, Tulsa District, OK (electronic copy via project portal)

A. Williams, USACE, Tulsa District, OK (electronic copy via project portal)
A. Maly USAEC, San Antonio, TX (electronic copy via project portal)
K. Nemmers, Bhate, Lakewood, CO (electronic copy via project portal)
P. Srivastav, APTIM, Houston, TX (electronic copy via project portal)

DEPARTMENT OF THE ARMY
LONGHORN ARMY AMMUNITION PLANT
POST OFFICE BOX 220
RATCLIFF, AR 72951

June 4, 2020

DAIN-ODB-LO

Ms. April Palmie
Texas Commission on Environmental Quality
Superfund Section, MC-136
12100 Park 35 Circle, Bldg D
Austin, TX 78753

Re: Final Fifth Annual Remedial Action Operation Report, LHAAP-50, Former Sump Water Tank, Longhorn Army Ammunition Plant, Karnack, Texas, June 2020

Dear Ms. Palmie,

An electronic copy of the above referenced document has been added to the project portal's "Documents" folder at the following address for your records: (https://docs.cbifederalservices.com/sites/501032/regulators/Shared%20Documents/Forms/AllItems.aspx). The well inspection forms were replaced per your comment on the draft document. An electronic copy of this letter and download instructions for the electronic file have been sent via email.

The document was prepared by Bhate Environmental Associates, Inc., (Bhate) team, on behalf of the Army as part of Bhate's Performance Based Remediation contract for the facility. I ask that Kim Nemmers, Bhate's Project Manager, be copied on any communications related to the project.

The point of contact for this action is the undersigned. I may be contacted at 479-635-0110, or by email at rose.m.zeiler.civ@mail.mil.

Sincerely,

Rose M. Zeiler, Ph.D.
Longhorn AAP Site Manager

Copies furnished (electronic copy via project portal):
W. Rhotenberry, USEPA Region 6, Dallas, TX
P. Bruckwicki, Caddo Lake NWR, TX
R. Smith, USACE, Tulsa District, OK
A. Williams, USACE, Tulsa District, OK
A. Maly, USAEC, San Antonio, TX

K. Nemmers, Bhate, Lakewood, CO
P. Srivastav, APTIM, Houston, TX

Final

Fifth Annual Remedial Action Operation Report, LHAAP-50 Former Sump Water Tank

Longhorn Army Ammunition Plant
Karnack, Texas

Prepared for

U.S. Army Corps of Engineers, Tulsa District
Contracting Division
2488 East 81st Street
Tulsa, Oklahoma 74137-4290

Prepared by

bhate

1608 13th Avenue South, Suite 300
Birmingham, Alabama 35205
1-800-806-4001 • www.bhate.com

Prepared by

APTIM

Aptim Federal Services, LLC
2500 CityWest, Suite 1700
Houston, Texas 77042

Contract No. W9128F-13-D-0012
Task Order No. W9128BV17F0150
Project No. 501032
Rev 0
June 2020

Table of Contents

List of Tables ..... **ii**
List of Figures ..... **ii**
List of Appendices ..... **ii**
Acronyms and Abbreviations ..... **iii**

1.0 Introduction **1-1**
1.1 Remedial Action Objectives 1-1
1.2 Performance Objectives 1-2
1.3 Site Description 1-3
1.4 Conceptual Site Model 1-4
2.0 Site Activities at LHAAP-50 ..... **2-1**
2.1 Annual LUC Compliance Inspection, Monitoring, and Repair 2-1
2.1.1 Annual LUC Compliance Inspection 2-1
2.1.2 Well Field Operation and Maintenance 2-1
2.2 Groundwater Monitoring 2-2
2.2.1 Groundwater Elevations and Flow Direction 2-2
2.2.2 Groundwater Analytical Results 2-2
2.2.3 Groundwater Monitoring Optimization 2-4
2.3 Surface Water Sampling 2-5
2.4 Well Abandonment 2-5
3.0 Natural Attenuation Evaluation **3-1**
3.1 First Line of Evidence: Change in COC Concentrations over Time and with Distance 3-1
3.1.1 Plume Stability 3-5
3.2 Second Line of Evidence: Geochemical Indicators 3-7
3.3 Third Line of Evidence: Microbial Analysis and Predictive Modeling 3-10
3.3.1 Microbial Analysis 3-10
3.3.2 Predictive Modeling 3-10
4.0 Summary and Conclusions **4-1**
4.1 Summary 4-1
4.2 Conclusion 4-2
5.0 References **5-1**

Contract No. W9128F-13-D-0012, Task Order No. W9128BV17F0150 • Final • Rev 0 • June 2020

Contract No. W9128F-13-D-0012, Task Order No. W9128BV17F0150 • Final • Rev 0 • June 2020

List of Tables

Table 1-1 Wells and Analytes, LHAAP-50
Table 2-1 Groundwater Elevation Data, LHAAP-50
Table 2-2a Fifth Annual RA-O Analytical Results for Upper Shallow Zone Wells, LHAAP-50
Table 2-2b Fifth Annual RA-O Analytical Results for Lower Shallow Zone Wells, LHAAP-50
Table 2-2c Fifth Annual RA-O Analytical Results for Fully Penetrating Shallow Zone Wells, LHAAP-50
Table 2-2d Fifth Annual RA-O Analytical Results for Intermediate Zone Wells, LHAAP-50
Table 2-3 Historical COC Concentrations, LHAAP-50
Table 2-4 Year 6 RA-O Monitoring Network, LHAAP-50
Table 2-5 Groundwater Elevation vs. Bottom of Drainage Channel Elevation, LHAAP-50
Table 3-1 Mann-Kendall Trend Summary, LHAAP-50

List of Figures

Figure 1-1 LHAAP Site Area Map
Figure 1-2 LHAAP Site Vicinity Map
Figure 1-3 Land Use Control Boundary
Figure 2-1 Potentiometric Surface Map for the Shallow Zone, November–December 2018
Figure 2-2 Potentiometric Surface Map for the Shallow Zone, May 2019
Figure 2-3 COC Concentrations in Shallow Zone, November–December 2018
Figure 2-4 COC Concentrations in Shallow Zone, May 2019
Figure 2-5 Year 6 RA-O Monitoring Program
Figure 3-1 COC Concentrations Trend

List of Appendices

Appendix A Annual Land Use Control Compliance Certification and Documentation
Appendix B Photographic Log and Well Inspection Forms
Appendix C Groundwater Sampling Forms
Appendix D Laboratory Analytical Data Package
Appendix E Mann-Kendall Trend Test Results
Appendix F Regression Analysis

Acronyms and Abbreviations

µg/L	micrograms per liter
§	Section
1,1-DCE	1,1-dichloroethene
1,2-DCA	1,2-dichloroethane
AECOM	AECOM Technical Services, Inc.
APTIM	Aptim Federal Services, LLC
AST	aboveground storage tank
bgs	below ground surface
Bhate	Bhate Environmental, Inc.
cis-1,2-DCE	cis-1,2-dichloroethene
COCs	contaminants of concern
DHC	Dehalococcoides ethenogenes
DO	dissolved oxygen
EPA	see USEPA
ESD	Explanation of Significant Differences
ft amsl	feet above mean sea level
ft/ft	feet per foot
ISB	in-situ bioremediation
Jacobs	Jacobs Engineering Group, Inc.
LHAAP	Longhorn Army Ammunition Plant
LUC	land use control
MCL	maximum contaminant level
MEGA	Multiple Environmental Government Acquisition
mg/L	milligrams per liter
MNA	monitored natural attenuation
MMM	Monthly Manager's Meeting
mV	millivolts
No.	number
ORP	oxidation-reduction potential
PCE	tetrachloroethene
PCL	protective concentration level
PVC	polyvinyl chloride
RACR	Remedial Action Completion Report
RA-O	remedial action operation
RAOs	remedial action objectives

Contract No. W9128F-13-D-0012, Task Order No. W9128BV17F0150 • Final • Rev 0 • June 2020

Acronyms and Abbreviations *(continued)*

RAWP	Remedial Action Work Plan
RD	Remedial Design
ROD	Record of Decision
Shaw	Shaw Environmental & Infrastructure, Inc.
TAC	Texas Administrative Code
TCE	trichloroethene
TCEQ	Texas Commission on Environmental Quality
TOC	total organic carbon
USACE	U.S. Army Corps of Engineers
USEPA	U.S. Environmental Protection Agency
UU/UE	unrestricted use and unlimited exposure
VC	vinyl chloride
VOC	volatile organic compound

Contract No. W9128F-13-D-0012, Task Order No. W9128BV17F0150 • Final • Rev 0 • June 2020

Contract No. W9128F-13-D-0012, Task Order No. W9128BV17F0150 • Final • Rev 0 • June 2020

1.0 INTRODUCTION

The U.S. Army Corps of Engineers (USACE), Tulsa District, contracted Bhate Environmental, Inc. (Bhate) under the Omaha Multiple Environmental Government Acquisition (MEGA) National Small Business Multiple Award Task Order Contract, Environmental Remediation Services with Military Munitions Response Program, Task Order Number (No.) W9128BV17F0150, to conduct environmental restoration at multiple sites at the former Longhorn Army Ammunition Plant (LHAAP). The Bhate Team is comprised of Bhate and Aptim Federal Services, LLC (APTIM). A Final *Record of Decision* (ROD) was executed for LHAAP-50 in September 2010 (USACE 2010). Groundwater monitoring at LHAAP-50 is ongoing as described in the *Final Remedial Action Completion Report* (RACR) (AECOM 2016a) and amended by subsequent annual remedial action operation (RA-O) reports. This RA-O report represents the fifth year of RA-O implementation and summarizes the results of sampling activities and site inspections completed from June 2018 to May 2019. This report encompasses and provides analysis for November 2018 and May 2019 monitored natural attenuation (MNA) data.

LHAAP is located in east-central Texas in the northeastern corner of Harrison County between State Highway 43 in Karnack, Texas, and the western shore of Caddo Lake (see **Figure 1-1** and **Figure 1-2**). The nearest cities are Marshall, Texas, approximately 14 miles to the southwest, and Shreveport, Louisiana, approximately 40 miles to the east. Caddo Lake is a large freshwater lake that bounds the former LHAAP installation to the north and east. The eastern fence is 3.5 miles from the Texas-Louisiana state border. LHAAP-50 is slated for transfer from the Army to the U.S. Fish and Wildlife Service for incorporation into the Caddo Lake National Wildlife Refuge in the future.

The Draft Final Third Annual Remedial Action Operation Report concluded that MNA was ineffective and implementation of a contingency remedy would be appropriate (Bhate 2018a). A Final Explanation of Significant Differences (ESD) was submitted in July 2019 for changes to the ROD to implement the contingency remedy consisting of in-situ bioremediation (ISB) (USACE 2019a). U.S. Environmental Protection Agency (USEPA) signed the ESD, and Texas Commission on Environmental Quality (TCEQ) concurred with their approval in September 2019. The Remedial Design (RD)/Remedial Action Work Plan (RAWP) for the contingency remedy was submitted in December 2019 and approved by USEPA in December 2019 and TCEQ in January 2020 (USACE 2019b).

1.1 Remedial Action Objectives

The remedial action objectives (RAOs) for LHAAP-50, consistent with the reasonably anticipated future use as a national wildlife refuge, are:

- Protection of human health by preventing human exposure to the contaminated groundwater
- Protection of human health and environment by preventing contaminated groundwater from migrating into nearby surface water
- Protection of human health by preventing further potential degradation of groundwater and surface water from contaminated soil
- Return of groundwater to its potential beneficial uses as drinking water, wherever practicable

1.2 Performance Objectives

The remedy selected for LHAAP-50 includes soil removal, land use controls (LUCs), and MNA. The performance objectives at LHAAP-50 consist of three components: excavation and off-site disposal of perchlorate-contaminated soil, physical inspections, and groundwater/ surface water monitoring. The need for additional plume delineation after the implementation of the remedial action (AECOM 2016a) delayed establishment of the LUC boundary. As a component of the LUC implementation, the civil survey of the LUC boundary was conducted in May 2015 and recorded in the Harrison County Courthouse in June 2015. Physical inspections are conducted annually to confirm compliance with the LUC objective of preventing human exposure to groundwater contamination at levels that pose an unacceptable risk to a future maintenance worker, and ensuring that there is no withdrawal or use of groundwater from the site for anything other than environmental monitoring and testing until the cleanup levels are attained. Groundwater monitoring has been in-progress at the site since October 2013.

According to the *Final Remedial Design* (Shaw 2011), groundwater monitoring is being performed to demonstrate that natural attenuation is an effective remedy that will attain the RAOs over time and that the groundwater plume will not migrate and discharge to nearby surface water bodies at levels that may present an unacceptable risk to human health and the environment. Groundwater monitoring is being performed in accordance with the *Final Remedial Action Work Plan* (AECOM 2013), as amended by subsequent RA-O Report recommendations, to:

- Detect changes in environmental conditions that may reduce the efficacy of natural attenuation processes
- Identify potentially toxic and/or mobile transformation products
- Verify that the plume is not expanding and poses no unacceptable risk to downgradient receptors

Contract No. W9128F-13-D-0012, Task Order No. W9128BV17F0150 • Final • Rev 0 • June 2020

- Detect new releases of contaminants to the environment that could impact effectiveness of the MNA remedy
- Verify attainment of the RAOs

Groundwater monitoring completed as part of the Fifth Annual RA-O consisted of two semiannual groundwater gauging events of 27 wells in the shallow zone and one well in the intermediate zone. Eighteen of the 28 wells were sampled as specified in the RAWP (AECOM 2013) and the approved monitoring network from the Fourth Annual RA-O Report (Bhate 2018b). The monitoring well network is shown on **Figure 1-3**. The monitoring wells sampled in 2018/2019 are listed in **Table 1-1**. Additionally, the installation of a new monitoring well (50WW29) was discussed during the Monthly Manager's Meeting (MMM) on April 25, 2019. The monitoring well was proposed for installation to evaluate how far the plumes extend downgradient of 50WW12. The TCEQ and USEPA agreed with the proposed location of the well, as documented in the MMM meeting minutes (Bhate 2019). Details of the well installation and sampling results for 50WW29 are included in the Draft Final RD/RAWP, Contingency Remedy (USACE 2019b).

This report summarizes the LUC compliance inspection, monitoring well inspection, maintenance, and repair, results of groundwater sampling and an evaluation of MNA. Surface water sampling was not conducted during Year 5 RA-O as discussed in **Section 2.3**.

1.3 Site Description

LHAAP-50 (former sump water tank) is in the north-central portion of LHAAP and covers an area of approximately 1 acre (**Figure 1-2**). The site is an open area of grass and brush that is bounded by South Crocket Avenue to the northeast, a drainage ditch to the west, a railroad spur to the south, and Goose Prairie Creek to the north. Runoff from the northeastern portion of the site is generally toward the northeast. Runoff is collected by a drainage ditch to the northeast that runs parallel to South Crockett Avenue and eventually joins Goose Prairie Creek. Runoff from the southwestern portion of the site is collected to the west by a drainage ditch that carries the runoff north into Goose Prairie Creek. Goose Prairie Creek eventually empties into Caddo Lake.

When operational, LHAAP-50 contained a 47,000-gallon capacity aboveground storage tank (AST) which received industrial wastewater from various industrial waste production sumps throughout LHAAP between 1955 and 1988. After the solids were filtered, the storage tank contents were discharged into Goose Prairie Creek upstream of the Goose Prairie Creek bridge on South Crockett Avenue, south of 51st Street (see **Figure 1-3**). The flow in the creek was sufficient to dilute the water to safe levels (Jacobs 2002). If natural flow in the creek was

considered insufficient, clean water was reportedly pumped into the creek to dilute the contents. The AST is no longer present.

The LUC area associated with the groundwater use restriction at LHAAP-50 extends beyond the northern, southern, eastern, and western historical site boundaries and encompasses a total of approximately 77.19 acres (see **Figure 1-3**). The nearest significant surface water body to LHAAP-50 is Goose Prairie Creek, located approximately 80 feet north of the site, which eventually flows into Caddo Lake. LHAAP-50 has no known areas of archaeological or historical importance.

1.4 Conceptual Site Model

The nature and extent of contamination at LHAAP-50 was evaluated during field investigations conducted between 1992 and 2010. Releases associated with AST operation are the most likely source of contaminants released into the environment. Since the AST has been removed, there is no longer a potential release mechanism for leaks or spills. Perchlorate and volatile organic compounds (VOCs) were released via overland spills, and discharges to the soil and adjacent surface water.

The contaminants of concern (COCs) at LHAAP-50 include dissolved phase perchlorate and VOCs including tetrachloroethene (PCE), trichloroethene (TCE), 1,1-dichloroethene (1,1-DCE), 1,2-dichloroethane (1,2-DCA), cis-1,2-dichloroethene (cis-1,2-DCE), and vinyl chloride (VC) in groundwater, and perchlorate in soil. There are no COCs in other environmental media at the site. The presence of these COCs in the soil and groundwater represents the primary driver for remedial action, as there are no ecological risks at the site. The soil cleanup levels are the Texas Risk Reduction Rules Standard No. 2 industrial medium-specific concentrations. The groundwater cleanup levels are the USEPA maximum contaminant levels (MCLs). For perchlorate, the cleanup level is the Texas Risk Reduction Program groundwater residential protective concentration level (PCL).

The area of perchlorate contamination in soil was small and the concentrations of perchlorate did not pose an unacceptable risk to human health (hypothetical future maintenance worker) or ecological receptors. The perchlorate in soil is no longer present after removal and off-site disposal of approximately 183 cubic yards of perchlorate-contaminated soil in September 2013 as described in the Final RACR (AECOM 2016a). An area of groundwater contamination is observed in the shallow groundwater (upper and lower zones) which poses an unacceptable carcinogenic risk and non-carcinogenic hazard to a future maintenance worker under an industrial exposure scenario. There is no groundwater contamination in the intermediate groundwater zone. The potential exposure pathways are via use of groundwater as drinking water and migration of impacted groundwater into surface water. Shallow groundwater is not used as drinking water at the refuge, and this potential exposure pathway is eliminated from

Contract No. W9128F-13-D-0012, Task Order No. W9128BV17F0150 • Final • Rev 0 • June 2020

Contract No. W9128F-13-D-0012, Task Order No. W9128BV17F0150 • Final • Rev 0 • June 2020

any hypothetical receptor because LUCs are in place that prohibits the use of groundwater other than for environmental monitoring and testing. The nearest significant surface water body to LHAAP-50 is Goose Prairie Creek, approximately 80 feet to the north of the site.

In previous documents, the site hydrogeology was represented as consisting of a shallow zone (approximately 0 to 30 feet below ground surface [bgs]) and an intermediate zone (approximately 35 to 60 feet bgs). Drilling activities, performed during implementation of the remedial action (AECOM 2016a), revealed only a shallow unconfined aquifer extending from ground surface to approximately 60 feet bgs across the site. While intermittent clay layers are present, no true aquiclude exists to prevent vertical communication between ground surface and approximately 60 feet bgs.

The intermediate groundwater zone was identified at 100 feet bgs, underlying a dry unit of clay with some interbedded sands. The clay unit is first encountered across the site at approximately 60 feet bgs.

Because the shallow zone is approximately 60 feet in thickness, the potential for differences in nature and extent of contaminant impacts between upper and lower portions of the shallow zone was recognized. To evaluate this concept, 27 new wells were installed in configurations to separately monitor the upper portion of the shallow zone (18 wells) and the lower portion of the shallow zone (six wells). Additionally, three fully penetrating wells (50WW17, 50WW19, and 50WW20) were installed with screened intervals across the entire saturated shallow zone. Monitoring well locations are shown on **Figure 1-3**.

Beginning with the First Annual RA-O Report and in all future reports, the zone formerly referred to as the shallow zone is referred to as the ‘upper shallow’ zone (0 to 30 feet bgs), the zone formerly referred to as the intermediate zone is referred to as the ‘lower shallow’ zone (30 to 60 feet bgs). The zone formerly referred to as the deep zone is referred to as the intermediate zone (>100 feet bgs).

Based on the groundwater gauging data conducted in November–December 2018, groundwater in the shallow water-bearing zone ranges from approximately 18.51 feet bgs at 50WW06, to 26.65 feet bgs at 50WW07, flowing to the north within most of the site boundary, but to the northeast and east across most of the plume area at a hydraulic gradient of approximately 0.0067 feet per foot (ft/ft). Based on the groundwater gauging data conducted in May 2019, groundwater in the shallow water-bearing zone ranges from approximately 13.48 feet bgs at 50WW28, to 22.12 feet bgs at 50WW07, flowing primarily northeast and east within most of the plume area and trending northward on the eastern portion of the LUC boundary area at a hydraulic gradient of approximately 0.00425 ft/ft.

The intermediate water-bearing zone (intermediate zone) underlies the shallow zone at approximately 100 feet bgs. The depth to groundwater within the intermediate water-bearing zone in May 2019 was 20.69 feet bgs, indicating confined conditions are present in the intermediate zone.

The MNA remedy was deemed ineffective in the Third Annual RA-O Report (Bhate 2018a). The Final ESD was submitted in July 2019 for changes to the ROD to implement the contingency remedy consisting of ISB (USACE 2019a). USEPA signed the ESD, and TCEQ concurred with their approval in September 2019. A new well (50WW29) was recommended for installation in the April MMM meeting to evaluate how far the plumes extend downgradient of 50WW12 (Bhate 2019). Monitoring well 50WW29 was installed and sampled in August 2019. Details of the well installation, sampling results, and proposed ISB injections were included in the RD/RAWP for the contingency remedy. Perchlorate was not detected, and TCE was detected at a concentration below the MCL (USACE 2019b). The contingency remedy consisting of ISB will be implemented in March 2020. The first quarterly sampling event for the contingency remedy will be conducted in June 2020 and the first four quarters of sampling data will be summarized in the Seventh Annual RA-O Report to be produced after the March 2021 quarterly sampling.

Contract No. W9128F-13-D-0012, Task Order No. W9128BV17F0150 • Final • Rev 0 • June 2020

2.0 SITE ACTIVITIES AT LHAAP-50

2.1 Annual LUC Compliance Inspection, Monitoring, and Repair

2.1.1 Annual LUC Compliance Inspection

The objectives of the LUCs at LHAAP-50 are to prevent human exposure to groundwater contamination presenting an unacceptable risk to human health and ensure that there is no withdrawal or use of groundwater beneath the site for anything other than environmental monitoring and testing until the cleanup levels are attained. A restriction against use of groundwater will remain in effect until the levels of COCs in groundwater and soil allow unrestricted use and unlimited exposure (UU/UE). Notices of the groundwater use restrictions accompany all property transfer documents and were recorded at the Harrison County Courthouse in June 2015 in accordance with the Texas Administrative Code (TAC) Title 30, Section (§) 335.566.

The LUCs address the area of the LHAAP-50 site that contains shallow zone groundwater VOC and perchlorate contamination.

A metes and bounds survey of the 77.19-acre LUC boundary has been completed and has been recorded in the Harrison County Courthouse in accordance with TAC Title 30, §335.566. Additionally, the survey plat, legal boundary, and description of the groundwater restriction, in conjunction with a locator map, were provided to the Texas Department of Licensing and Regulation in June 2015.

A LUC compliance inspection was conducted on August 14, 2019, during the Fifth RA-O reporting period. No change in land use has occurred. The Annual LUC Compliance Certification Documentation Form for the Fifth Annual RA-O period is included in **Appendix A**. No compliance issues or concerns were noted during the annual inspection.

2.1.2 Well Field Operation and Maintenance

Inspections of the conditions/integrity of monitoring wells are conducted during each sampling event. **Appendix B** includes a photo log and well inspection forms, which document the condition of the wells during the inspection. Maintenance or repairs are performed as needed, based on observed conditions. For the fifth annual reporting period, no damage to well bollards, pads, or protective well casings and only minimal encroachment of weeds or brush on the well pads was observed. Mowing the area to control brush and weeds is conducted on a routine basis and as needed to allow access to the wells, typically before sampling events. Mowing was conducted at LHAAP-50 on November 21, 2018, and May 1, 2019.

2.2 Groundwater Monitoring

The semiannual groundwater monitoring network approved in the Fourth RA-O Report (Bhate 2018b) includes 18 wells for groundwater sampling (**Table 1-1**) and 28 wells for groundwater gauging (**Table 2-1**). During the fifth annual RA-O, semiannual groundwater gauging and sampling was completed in November–December 2018 and May 2019. The monitoring well locations are shown on **Figure 1-3**.

Before collecting groundwater samples, the wells were gauged using a water level probe and the depth to water was recorded to the nearest 0.01 foot from the top of casing. Water samples were collected using the low-flow sampling technique as described in the groundwater sampling procedures found in the *Final Installation-Wide Work Plan* (Bhate 2018c). The objective of using this method was to collect representative samples of the groundwater in the formation adjacent to the well screen, eliminating the mixing of stagnant water above and below the well screen. After water quality parameters stabilized and were within acceptable ranges per the Work Plan, samples were collected at the same low flow rate.

Groundwater sampling forms are presented in **Appendix C**. Chain of custody forms, laboratory reports and data validation reports are presented in **Appendix D**.

2.2.1 Groundwater Elevations and Flow Direction

Groundwater elevation data for November–December 2018 and May 2019 are shown in **Table 2-1**. **Figure 2-1** and **Figure 2-2** depict the shallow groundwater potentiometric surface in November–December 2018 and May 2019, respectively. Shallow groundwater at LHAAP-50 in November–December 2018 was interpreted to flow to the north within most of the site boundary but to the northeast and east across most of the plume area (**Figure 2-1**). Shallow groundwater at LHAAP-50 in May 2019 was interpreted to flow to the east or east southeast with a northerly component only at the far eastern area within the LUC boundary (**Figure 2-2**). Groundwater elevations increased across the site between November–December 2018 and May 2019, with increases ranging between 0.92 feet and 3.20 feet, with an average increase of 2.24 feet. Two wells (50WW03 and 50WW04) were dry in May 2019 and had very little water during the November–December 2018 monitoring event.

On **Figures 2-1** and **2-2**, monitoring wells screened in the upper shallow zone or fully penetrating the saturated zone were used in the development of the potentiometric contours, while wells that are screened in the lower shallow zone (50WW06, 50WW09, 50WW14, 50WW25, 50WW26, and 50WW27) were not used.

2.2.2 Groundwater Analytical Results

Analytical results for both of the semiannual sampling events are presented by zone (upper shallow, lower shallow, fully penetrating, or intermediate) in **Tables 2-2a** to **2-2d**. The upper

Contract No. W9128F-13-D-0012, Task Order No. W9128BV17F0150 • Final • Rev 0 • June 2020

shallow, lower shallow, and fully penetrating well results from November–December 2018 and May 2019 are shown on **Figures 2-3** and **2-4**. Samples were analyzed for VOCs and perchlorate during the fifth annual RA-O monitoring period. The COCs (perchlorate, PCE, TCE, cis-1,2-DCE, trans-1,2-DCE, VC, 1,1-DCE, 1,2-DCA, and MNA parameters (alkalinity, total organic carbon [TOC], phosphorus, sulfide, iron, manganese, anions, and dissolved gases) are included in **Tables 2-2a** to **2-2d**. The historical COC concentrations are shown in **Table 2-3**. All wells were sampled with the following exceptions:

- Wells 50WW03, 50WW04, 50WW07, 50WW19, 50WW20, 50WW25, 50WW26, and 50WW28 were eliminated from the monitoring program based on the recommendations in the Second Annual RA-O Report approved in December 2016 (AECOM 2016b)
- Well 50WW02 was dry during the third year sampling events and eliminated from the monitoring network based on recommendations in the Third Annual RA-O Report (Bhate 2018a)

Perchlorate, TCE, 1,2-DCA, and cis-1,2-DCE were detected above their respective cleanup levels in the Fifth Annual RA-O sampling. During the November–December 2018 sampling event, perchlorate, TCE, and 1,2-DCA were detected above their respective MCLs/PCLs at multiple wells, while cis-1,2-DCE was detected above the MCL in one well. In the shallow zone, perchlorate was detected at concentration above the PCL at upper shallow wells 50WW08, 50WW11, 50WW12, and 50WW13; and lower shallow well 50WW06. TCE was detected at concentrations above the MCL at upper shallow wells 50WW05, 50WW08, 50WW11, 50WW12, 50WW13, and 50WW15; and lower shallow wells 50WW06, 50WW09, and 50WW14. Cis-1,2-DCE was detected above the MCL at 50WW13, and 1,2-DCA was detected above the MCL at 50WW11 and 50WW13. None of the COCs were detected above the MCL/PCL in fully penetrating shallow well 50WW17, or intermediate well 50WW10 during the November–December 2018 sampling event.

During the May 2019 sampling event, perchlorate and TCE were detected above their respective cleanup levels at multiple wells. Perchlorate was detected at concentrations above the PCL at 50WW08, 50WW11, 50WW12, and 50WW13. TCE was detected at concentrations above the MCL at upper shallow wells 50WW05, 50WW08, 50WW11, 50WW12, and 50WW13; and lower shallow wells 50WW09 and 50WW14. Cis-1,2-DCE and 1,2-DCA were detected below their MCLs during the May 2019 sampling event. None of the COCs were detected above the MCL/PCL in fully penetrating shallow well 50WW17, or intermediate well 50WW10 during the May 2019 sampling event.

Laboratory analytical results are included in **Appendix D** and are discussed further in **Section 3.0**. Historical groundwater analytical results are presented in **Table 2-3**.

2.2.3 Groundwater Monitoring Optimization

In response to the Regulatory comments received on the Third Annual RA-O Report, a new well (50WW29) was installed in August 2019 to evaluate how far the plumes extend downgradient of 50WW12. The well was installed as a 2-inch diameter schedule 40 polyvinyl chloride (PVC) well with 15 feet of 0.010" slot screen using a hollow stem auger drilling rig. The screened intervals were selected based on the conditions observed during drilling and to match the depth of the interval screened at 50WW12 where recent analytical data exceedances were observed. Monitoring well 50WW29 was installed at a depth of 35 feet bgs with a screened interval from 20 to 35 feet bgs. Boring log and analytical results for the newly installed well were included in the Draft Final Contingency Remedy RD/RAWP (USACE 2019b). The well was developed in accordance with the Final Installation Wide Work Plan (Bhate 2018c). Monitoring well 50WW29 was sampled in August 2019 and the COC concentrations were below the MCL/PCL. Monitoring well 50WW29 will be added to the RA-O monitoring network for Year 6 as a downgradient monitoring well and sampled for COCs only (USACE 2019b).

Monitoring wells 50WW10, 50WW17, 50WW21, 50WW24, and 50WW27 were removed from the RA-O monitoring network for Year 6 as approved in the Contingency Remedy RD/RAWP (USACE 2019b). The rationale for removing the wells from the network is discussed in the bullets below. An updated RA-O monitoring network was included in the LHAAP-50 Contingency Remedy RD/RAWP that was approved by TCEQ and USEPA in January 2020. The planned monitoring program for Year 6 is presented in **Table 2-4** and shown on **Figure 2-5**.

- Monitoring Wells 50WW08 and 50WW16 are upper shallow wells upgradient/crossgradient of the plume and outside the proposed treatment area; therefore, MNA parameter analysis is discontinued and COC monitoring will continue at these two wells.
- Monitoring well 50WW10 is an intermediate well and COC concentrations have been below the MCL/PCL since 2013; therefore, 50WW10 is eliminated from the Year 6 RA-O network.
- Monitoring well 50WW17 is a downgradient well screened in the upper and lower shallow zones; COC concentrations at this well have been below the MCL/PCL since 2013 and is eliminated from the Year 6 RA-O network.

- Monitoring well 50WW21 is a crossgradient well in the upper shallow zone and COC concentrations have been below the MCL/PCL since 2013; 50WW21 is eliminated from the RA-O network.
- Monitoring well 50WW24 is a crossgradient well in the upper shallow zone. Perchlorate was above the PCL in June 2014 and May 2016 at 110 and 36.8 micrograms per liter (µg/L), respectively. COC concentrations have been below the MCL/PCL since November 2016. Therefore, 50WW24 is eliminated from Year 6 RA-O network.
- Monitoring well 50WW27 is a crossgradient well in the lower shallow zone; COC concentrations at this well have been below the MCL/PCL since 2013; therefore, 50WW27 is eliminated from Year 6 RA-O network.

2.3 Surface Water Sampling

No samples were collected from surface water location 50SW06 during Year 5 RA-O. The purpose of sampling at this location is to evaluate the potential groundwater to surface water pathway. Samples were to be collected during the groundwater sampling events if there was water in the creek and if the groundwater elevation at the nearest well, 50WW16, was above the bottom of the creek elevation. The water level in 50WW16 was 175.93 feet above mean sea level (ft amsl) in November 2018 and 178.61 ft amsl in May 2019. The bottom of the creek elevation is 182.90 ft amsl; thus, the groundwater elevation was below the bottom of the creek and it was determined that there was no contribution to surface water from groundwater. Therefore, no sample was collected at 50SW06 (**Table 2-5**). Evaluation of relative groundwater and surface water elevations and sampling of 50SW06, when groundwater contribution to surface water may be occurring, will continue in the Year 6 RA-O.

GPW-1 and GPW-1A were discontinued from surface water sampling because the perchlorate levels in the creek had been consistently below the PCL. The recommendation to discontinue sampling these locations was included in the Third Annual RA-O Report (Bhate 2018a) and approved by TCEQ and USEPA in July 2018.

2.4 Well Abandonment

Abandonment of monitoring wells 50WW03 and 50WW19 was approved based on the recommendations of the Second Annual RA-O Report and the Third Annual RA-O Report (AECOM 2016b and Bhate 2018a). No wells are recommended for abandonment in this report.

Contract No. W9128F-13-D-0012, Task Order No. W9128BV17F0150 • Final • Rev 0 • June 2020

This page intentionally left blank.

Contract No. W9128F-13-D-0012, Task Order No. W9128BV17F0150 • Final • Rev 0 • June 2020

3.0 NATURAL ATTENUATION EVALUATION

The following sections present the results of the natural attenuation evaluation in accordance with the three lines of evidence discussed in the RAWP (AECOM 2013) for LHAAP-50 groundwater COCs. The discussion below pertains only to the shallow aquifer where COCs are detected above cleanup levels.

3.1 First Line of Evidence: Change in COC Concentrations over Time and with Distance

Natural attenuation is the combination of multiple mechanisms, including biodegradation, volatilization, dilution, advection, and absorption that reduce contaminant concentrations. The decrease of COC concentrations over time in the absence of any other treatment is evidence of natural attenuation, though the observed decrease or increase in COC concentrations may also be influenced by other factors such as short-term fluctuations in groundwater elevations. The change in groundwater COC concentrations over time for selected wells at LHAAP-50 is shown on **Figures 3-1a** to **3-1i**.

Eighteen monitoring wells had samples collected and analyzed for VOCs and perchlorate as indicated in **Table 1-1**. The Final RACR (AECOM 2016a) identified these wells to monitor effectiveness of natural attenuation at LHAAP-50 because of their placement relative to VOC and perchlorate plumes. Of the 18 wells sampled in November–December 2018 and May 2019, nine wells had COCs above cleanup levels (50WW05, 50WW06, 50WW08, 50WW09, 50WW11, 50WW12, 50WW13, 50WW14, and 50WW15). The other wells in the monitoring program did not contain COC concentrations above the cleanup levels in the fifth annual RA-O sampling events.

The presence of TCE daughter compounds, cis-1,2-DCE and VC, indicates that reductive dechlorination is occurring within the shallow zone plume.

Mann-Kendall statistical trend analysis was completed for nine impacted monitoring wells with COC concentrations above the cleanup levels in the November–December 2018 and May 2019 events (50WW05, 50WW06, 50WW08, 50WW09, 50WW11, 50WW12, 50WW13, 50WW14, and 50WW15). The dataset used for the analysis included the 2013 baseline samples and all subsequent RA-O monitoring events. The trend analysis results are presented in **Appendix E** in graphical format with statistical results presented below the Mann-Kendall analysis. The dates are presented on the x-axis of each graph in **Appendix E**, and the concentrations of COCs are presented on the y-axis in µg/L.

The Mann-Kendall Test is a nonparametric statistical test to assess trends and is especially suited for evaluation of concentration-time series data to establish if trends are present (Gilbert 1987). This is a general test to determine whether concentrations tend to increase or decrease with time. The GSI Mann-Kendall Toolkit was used to conduct the analysis. Half of the detection limit was used for non-detect results, where applicable. Field duplicate data were not used, only the original sample. The Mann-Kendall Test was conducted for each of wells that showed an exceedance in concentration above the PCL/MCL during the Year 5 RA-O. A summary table of the Mann-Kendall results is presented in **Table 3-1**.

Well 50WW05

TCE was the only COC detected above the cleanup levels in this well in November 2018 and May 2019. The TCE concentrations have decreased from the baseline concentration of 280 µg/L in 2013 to 150 µg/L in December 2018 and decreased further to 110 µg/L in May 2019. The presence of PCE/TCE daughter products such as cis-1,2-DCE indicates that reductive dechlorination is taking place.

The Mann-Kendall trend analysis for 50WW05 was conducted for TCE. The results indicate a statistically significant decreasing trend for TCE at a 99.9% confidence factor. The TCE concentration trend is shown on **Figure 3-1a**. There does not seem to be a correlation between groundwater elevations and concentrations.

Well 50WW06

Perchlorate and TCE were the only COCs detected above cleanup levels in this well in November 2018. These COCs were below cleanup levels in this well in May 2019. In the past, perchlorate and TCE concentrations have shown a fluctuating trend with increasing concentrations compared to baseline concentrations. However, since November 2017, both perchlorate and TCE concentrations have decreased significantly compared to baseline concentrations while groundwater levels have increased.

The Mann-Kendall trend analysis for 50WW06 was conducted for perchlorate and TCE. The results indicate a stable trend for both TCE and perchlorate with confidence factors below 90%. TCE and perchlorate concentration trends are shown on **Figure 3-1b**. There is a distinct inverse correlation between groundwater elevations and TCE and PCE concentrations from 2013 to late 2016. The correlation is less consistent through 2017 and 2018, but the May 2019 high in groundwater elevation corresponds to low TCE and PCE concentrations.

Well 50WW08

Perchlorate and TCE were the only COCs detected above the cleanup levels in this well in November 2018 and May 2019. In the past, TCE concentrations have fluctuated above baseline concentrations while perchlorate concentrations have shown a decrease compared to baseline

concentrations. TCE concentrations increased from 130 µg/L in May 2018 to 210 µg/L in May 2019. Perchlorate concentrations decreased from 140 µg/L in May 2018 to 51 µg/L in November 2018 and then increased to 230 µg/L in May 2019. The presence of PCE/TCE daughter products such as cis-1,2-DCE indicates that reductive dechlorination is taking place.

The Mann-Kendall trend analysis for 50WW08 was conducted for perchlorate and TCE. The results indicate a statistically significant decreasing trend for TCE at a 99.5% confidence factor while there was no significant trend observed for perchlorate. Although there is not a significant decreasing trend in perchlorate concentrations, the concentrations have reduced since baseline from 6,404 µg/L to 230 µg/L in May 2019, but the May 2019 concentration is the highest concentration detected since the baseline. TCE and perchlorate concentration trends are shown on **Figure 3-1c**. Since early 2014, generally, the increase and decrease of perchlorate concentrations seem to be synchronized with changes in groundwater elevations as shown on **Figure 3-1c**.

Well 50WW09

TCE was the only COC detected above the cleanup levels in December 2018 and May 2019. Even though TCE concentrations are lower than the highest concentrations observed in this well (August 2015), the concentrations are higher than the baseline concentrations detected in 2013. TCE concentrations increased from 0.26 J µg/L in the baseline sampling event in November 2013 to 235 µg/L in August 2015 and decreased to below the MCL in November 2017 (4.9 µg/L) and increased to above the MCL at 120 µg/L in December 2018, before decreasing to 16 µg/L in May 2019.

The Mann-Kendall trend analysis was conducted for TCE. The results do not indicate a statistically significant trend. The TCE concentration trend is shown on **Figure 3-1d**. Generally, the increase and decrease in TCE concentrations seems to be correlated to the increase and decrease in groundwater elevations as shown on **Figure 3-1d**, except for the most recent samples in December 2018 and May 2019, which show an inverse correlation.

Well 50WW11

Perchlorate, TCE, and 1,2-DCA were detected above their respective cleanup levels in November 2018 while TCE and perchlorate were the only constituents above the MCLs in May 2019. Perchlorate concentrations decreased from 20,000 µg/L in November 2017 to 1,000 µg/L in May 2018 and then increased to 2,900 µg/L in November 2018 and reduced to 450 µg/L in May 2019. Similar to perchlorate, TCE concentrations have fluctuated with a decrease from 4,700 µg/L in November 2017 to 280 µg/L in May 2018 and then an increase to 700 µg/L in November 2018 and reduced to 95 µg/L in May 2019. The presence of PCE/TCE daughter products such as cis-1,2-DCE indicates that reductive dechlorination is taking place. Based on the perchlorate and TCE concentrations over the course of the 5 years of RA-O

monitoring, it appears that the fluctuation in concentrations over time is seasonal. 1,2-DCA was also detected above the MCL in November 2018. 1,2-DCA also seems to fluctuate seasonally as the concentrations are below the MCL in the spring sampling events, including in May 2019.

The Mann-Kendall trend analysis for 50WW11 was conducted for perchlorate, TCE, cis-1,2-DCE, 1,1-DCE, and 1,2-DCA. The results indicate no statistically significant trend in concentrations for cis-1,2-DCE, and 1,1-DCE while a stable trend was observed for TCE, perchlorate, and 1,2-DCA with confidence factors below 90%. The contaminant concentration trends are shown on **Figure 3-1e**. The increase and decrease in concentrations are inversely correlated to groundwater elevations.

Well 50WW12

Perchlorate and TCE were the only COCs detected in this well above their cleanup levels in November 2018 and May 2019. The concentrations of perchlorate decreased from 91,000 µg/L in May 2018 to 47,000 µg/L in November 2018 and increased to 65,000 µg/L in May 2019. Similarly, TCE concentrations also decreased from 79 µg/L in May 2018 to 41 µg/L in November 2018 and increased to 170 µg/L in May 2019.

The Mann-Kendall trend analysis for 50WW12 was conducted for perchlorate and TCE. The results indicate a statistically significant increasing trend for TCE concentrations at a 99.9% confidence factor while an increasing trend was observed for perchlorate with a >90% confidence factor. These results indicate migration of COCs in the plume is likely occurring towards this well. TCE and perchlorate concentration trends are shown on **Figure 3-1f**. The increase and decrease in concentrations appear to be directly correlated to the change in groundwater elevations.

Well 50WW13

Perchlorate, TCE, cis-1,2-DCE, and 1,2-DCA were detected above their cleanup levels in November 2018 while only perchlorate and TCE were above the MCL/PCL in May 2019.

Large fluctuations have been observed with each of the COCs since the baseline sampling event in October 2013. Perchlorate concentrations have fluctuated from 640 µg/L in May 2018 to 1,100 µg/L in November 2018 and reduced to 160 µg/L in May 2019. TCE concentrations have fluctuated from 620 µg/L in May 2018 to 2,700 µg/L in November 2018 and reduced to 250 µg/L in May 2019. Similar fluctuations have been observed with cis-1,2-DCE, and 1,2-DCA as shown on **Figure 3-1g**.

The Mann-Kendall trend analysis for 50WW13 was conducted for perchlorate, TCE, cis-1,2-DCE, and 1,2-DCA. The results indicate no statistically significant trend in

concentrations for perchlorate, TCE, and 1,2-DCA while a stable trend was observed for cis-1,2-DCE with a confidence factor <90%. The increases and decreases in concentrations appear to be inversely correlated to the groundwater elevations as shown on **Figure 3-1g**.

Well 50WW14

TCE was the only COC detected in this well above the cleanup levels in November 2018 and May 2019. TCE levels have fluctuated in the last year of sampling. TCE concentrations decreased from 33 µg/L in May 2018 to 12 µg/L in November 2018 and increased to 27 µg/L in May 2019. Even though there was an increase in November 2018, the concentrations show an overall decreasing trend since 2013 when the TCE concentration at 50WW14 was 93.8 µg/L.

The Mann-Kendall trend analysis for 50WW14 was conducted for TCE. The results indicate no statistically significant trend in TCE concentrations. The TCE concentration trend is shown on **Figure 3-1h**. The increase and decrease in contaminant concentrations appeared to be inversely correlated to ground elevation changes until late 2016, after which is appears to be directly related to groundwater elevation fluctuations.

Well 50WW15

TCE was the only COC detected in this well above the cleanup level in November 2018. TCE levels have fluctuated in the last year of sampling, increasing from 3.5 µg/L in May 2018 to 9.1 µg/L in November 2018 and then decreasing to 2.3 µg/L in May 2019.

The Mann-Kendall trend analysis in 50WW15 was conducted for TCE. The results indicate a statistically significant decreasing trend at a 100% confidence. The TCE concentration trend is shown on **Figure 3-1i**. There appears to be an inverse correlation between contaminant concentrations and groundwater elevations.

3.1.1 Plume Stability

COC plume maps completed for each sampling event in the shallow zone are presented on **Figures 2-3** and **2-4**. TCE and perchlorate are the most widespread COCs in the shallow groundwater. Cis-1,2-DCE and 1,2-DCA plumes are contained within the TCE plume footprint. The shapes of both the TCE and perchlorate plumes are oblong; elongated along the northeasterly-east groundwater flow path. The groundwater contaminants follow the pattern of groundwater flow to the northeast and east beneath the site. The TCE and perchlorate plumes extend from the tip of the eastern portion of LHAAP-50 encompassing several monitoring wells (50WW08/50WW09, 50WW13/50WW14, 50WW11, 50WW06) and end just past well 50WW12. The November–December 2018 TCE and perchlorate plume footprints occupy an area similar in shape and size to previous years' plumes, with the TCE plume occupying a slightly larger area that encompasses wells 50WW05 and 50WW15 on the northside. In

May 2019, the area shared by the two plume footprints is slightly reduced, with the TCE plume extending more towards the north and the perchlorate plume extending towards the south. This is due to the decrease in TCE concentration in the upper shallow well 50WW15, and perchlorate concentration in the lower shallow well 50WW06, to below the MCL/PCL in May 2019; the decrease in concentrations is likely related to rise in the groundwater levels during that event. Lower shallow well 50WW06 had perchlorate and TCE below cleanup levels for the first time in May 2019. This is a significant reduction from historical results at 50WW06, even though the reduction may partly be due to a rise in groundwater level. The COC data for the fifth annual RA-O monitoring period (2018/2019) suggest that the plumes are showing overall stable conditions and are not expanding.

Even though the overall plume is relatively stable, the Mann-Kendall indicates a significant increasing trend for TCE concentrations at the downgradient well, 50WW12 and suggests migration is taking place away from the source area within LHAAP-50. The 2013 baseline plume for TCE did not extend to 50WW12 (AECOM 2016c). At three wells, 50WW05, 50WW08, and 50WW15, significant decreasing TCE trends were observed indicating that natural attenuation is occurring in portions of the plume. At wells 50WW06 and 50WW11, TCE showed a stable trend, while no trend was observed at wells 50WW09, 50WW13, and 50WW14. The highest TCE concentrations continue to be at 50WW13 in the central portion of the plume. The concentrations at 50WW13 continue to fluctuate; the highest concentrations observed in November 2017 at 13,000 µg/L have decreased to 250 µg/L in May 2019.

At this time, the consistently non-detect values at wells outside of the plume, the significantly decreasing TCE concentrations at three wells (50WW05, 50WW08, and 50WW15), and the stability of the data at wells 50WW06 and 50WW11 within the plume, suggest that the TCE plume is relatively stable, although there is some migration downgradient towards 50WW12 since the baseline event. The sample collected from newly installed well 50WW29 did not contain detectable TCE, indicating that the plume does not extend very far beyond 50WW12 (USACE 2019b).

The stability of the perchlorate plume was also evaluated using the wells outside of the plume and those inside the plume with concentrations above the PCL. The plume boundary was stable. A significantly decreasing trend in perchlorate was not observed at any of the wells. At 50WW11 and 50WW06 located in the middle of the plume, a stable trend was observed for perchlorate. Downgradient of 50WW11, at 50WW12, an increasing trend was observed for perchlorate. However, the sample collected from newly installed well 50WW29 did not contain detectable perchlorate, indicating that the plume does not extend beyond 50WW12 (USACE 2019b). At 50WW08 and 50WW13, located within the plume, no statistical trend was observed for perchlorate. At this time, the constantly non-detect values at wells outside of

the plume, suggest that the perchlorate plume is relatively stable, although there is some migration towards 50WW12.

Overall, in 2018/2019 both TCE and perchlorate plumes were stable and did not expand, although both plumes have expanded since 2013 baseline as demonstrated by the increasing TCE and perchlorate concentrations at 50WW12. COC concentrations at the newly installed well 50WW29 were non-detect in 2019, indicating the plumes are bound by 50WW29 and have not expanded very far beyond 50WW12 (USACE 2019b).

3.2 Second Line of Evidence: Geochemical Indicators

Table 1-1 identifies the wells that were chosen to be evaluated for MNA performance parameters. Some geochemical indicators are collected in the field and are recorded for all sampling events for all wells. The field parameters for LHAAP-50 wells include dissolved oxygen (DO), oxidation-reduction potential (ORP), pH, conductivity, turbidity, and temperature.

Dissolved Oxygen

DO is the most thermodynamically favored electron acceptor used by microbes for biodegradation of organic carbon, whether natural or anthropogenic (USEPA 1998). Anaerobic bacteria generally cannot function at DO concentrations greater than about 0.5 milligrams per liter (mg/L) and hence, biotic reductive dechlorination is not expected to occur. DO levels during the fifth annual RA-O monitoring are presented in **Table 2-2a** to **Table 2-2d** and varied between 0.02 mg/L and 4.1 mg/L. The impacted wells with COCs above the cleanup levels are 50WW05, 50WW06, 50WW08, 50WW09, 50WW11, 50WW12, 50WW13, 50WW14, and 50WW15. Except for lower shallow zone wells 50WW06 and 50WW09, low DO concentrations were observed in the impacted wells in the November–December 2018 and May 2019 sampling events. The DO for the impacted wells ranged from 0.02 mg/L to 4.1 mg/L in November–December 2018, while DO concentrations ranged from 0.06 mg/L to 2.24 mg/L in May 2019. Based on the DO readings, the conditions are conducive to reductive dechlorination at several wells. However, at two lower shallow zone wells (50WW06 and 50WW09), the conditions are aerobic and conducive to oxidation of contaminants.

Oxidation-Reduction Potential

The ORP levels indicate how oxidative or reductive the groundwater is in the aquifer matrix and provide real-time data if conditions are conducive for anaerobic biodegradation. ORP values less than 50 millivolts (mV) are indicative that anaerobic conditions are present and are favorable for the biological reductive dechlorination of chlorinated ethenes and ethanes. In the November–December 2018 sampling event, ORP was above 50 mV at all the impacted wells except 50WW14 which had an ORP of -2 mV. In the May 2019 sampling event, ORP was

above 50 mV at all the impacted wells. The ORP values in the impacted wells indicate that the oxidative conditions are present that are not favorable for reductive dechlorination.

Nitrate

After DO has been depleted in the microbiological treatment zone, nitrate may be used as an electron acceptor for anaerobic biodegradation of chlorinated ethenes via denitrification. Nitrate levels above 1 mg/L may compete with the reductive pathway (USEPA 1998). Nitrate levels in LHAAP-50 groundwater ranged from below the laboratory reporting limits to 4.16 mg/L during the fifth annual RA-O monitoring period. Nitrate was detected at concentrations above 1 mg/L at four wells 50WW08, 50WW11, 50WW13, and 50WW23. Nitrite concentrations were all below the laboratory reporting limits in LHAAP-50 groundwater (**Tables 2-2** to **2-2d**). Therefore, the presence of elevated nitrate levels (greater than 1 mg/L) and corresponding non-detected nitrite indicate that nitrate-reducing processes may be a competitive inhibitor to anerobic biodegradation of chlorinated ethenes and their daughter products at the site.

Sulfate

After DO and nitrate have been depleted in the microbiological treatment zone, sulfate may be used as an electron acceptor for anaerobic biodegradation. This process is termed "sulfate reduction" and results in the production of sulfide. Concentrations of sulfate greater than 20 mg/L may cause competitive exclusion of dechlorination. However, in many plumes with high concentrations of sulfate, reductive dechlorination still occurs (USEPA 1998). **Table 2-2a** to **Table 2-2d** indicate that the sulfate concentrations were above 20 mg/L in all impacted wells except for two wells; 50WW06 (November 2018 and May 2019) and 50WW12 (November 2018). Sulfate concentrations at the site ranged from below the laboratory reporting limits to 756 mg/L, which is typical of this formation. In November–December 2018, sulfide concentrations ranged from below the laboratory reporting limits to 14.4 mg/L. Relatively high concentrations of sulfate and corresponding low sulfide concentrations indicate that the conditions in the aquifer are generally not conducive for reductive dechlorination.

Methane

Methanogenesis occurs in highly reducing conditions and generally occurs after oxygen, nitrate, and sulfate have been depleted. Methane levels above 500 µg/L are considered to indicate methanogenic conditions (USEPA 1998). Methane was measured in select wells for MNA evaluation and range from non-detect levels to 19 µg/L. Methane concentrations do not indicate highly reducing conditions.

Contract No. W9128F-13-D-0012, Task Order No. W9128BV17F0150 • Final • Rev 0 • June 2020

Total Organic Carbon

Regardless of the electron acceptor being used, organic carbon is a required source of reduced hydrogen and energy needed to sustain microbial degradation of contaminants. TOC is utilized as a carbon and energy source to support the reductive dechlorination of the chlorinated COCs. TOC concentrations greater than 20 mg/L are considered adequate to support microbial activity (USEPA 1998). TOC concentrations were measured during this monitoring period in select wells and were found to be below 20 mg/L. The TOC levels indicate the concentrations are not sufficient to support reductive dechlorination.

Alkalinity

Alkalinity levels in the groundwater monitoring wells ranged between 88.6 and 435 mg/L and there is no significant difference in alkalinity levels in wells within and outside of the plume indicating there is no pattern of changes that would suggest the presence of increased microbial activity.

pH

The pH of groundwater has an effect on the presence and activity of microbial populations in groundwater. Microbes capable of degrading chlorinated aliphatic hydrocarbons and petroleum hydrocarbon compounds generally prefer pH values varying from six to eight standard units (USEPA 1998). The shallow zone groundwater pH within the plume was between 5.04 and 7.21 standard units. The highest pH value of 9.87 was reported in December 2018 in 50WW10, an intermediate well. The pH values decreased to a value of 5.98 in the May 2019 sampling event in this same well. Similar pH fluctuations were observed within this intermediate well during the previous fourth RA-O monitoring period. In the May 2019 sampling event, nine of the 18 wells showed pH in the optimal range of 6 to 8, indicating conditions conducive to microbial activity, while the remaining wells with pH below or above 8, showed conditions that may inhibit microbial activity.

Ethane and Ethene

Ethane and ethene, the two end products of the reductive dechlorination pathways for chlorinated ethanes and ethenes, were below the laboratory reporting limits during the fifth annual RA-O monitoring period. These results indicate that complete degradation of chlorinated ethenes is not occurring to any significance degree.

Geochemical Indicator and MNA Parameter Summary

The qualitative assessment of geochemical indicators in the shallow groundwater zone at LHAAP-50 indicates that current geochemical conditions are not supportive of biological reductive dechlorination.

3.3 Third Line of Evidence: Microbial Analysis and Predictive Modeling

3.3.1 Microbial Analysis

Dechlorinating bacteria (Dehalococcoides ethenogenes [DHC] and associated functional genes) were not analyzed from 1st through 4th year RA-O sampling events, and the Fourth Annual RA-O Report did not include recommendation for DHC analysis for the fifth year RA-O events. However, samples collected in November–December 2018 were analyzed for DHC, and concentrations were detected in six of the nine groundwater samples at LHAAP-50. The detected concentrations range from 0.4 to 4.5 cell equivalent per milliliter and indicate that a microbe potentially capable of dehalorespiration exists in site groundwater but are not sufficient to promote significant contaminant degradation. The ISB remedy approved in the Contingency Remedy RD/RAWP (USACE 2019b) includes the bioaugmentation culture SDC-9™ in the mix of amendments to be injected. Samples will be analyzed for DHC as part of the performance monitoring for the first four quarters following ISB injections. The need for further analysis of DHC will be determined based on results from the first year of performance monitoring following the injections.

3.3.2 Predictive Modeling

Of the analyzed parameters and wells using Mann-Kendall trend analysis, only one parameter (TCE) showed a significant decrease in concentration over time in three wells (50WW05, 50WW08, and 50WW15). The first order rate constant was determined using the regression curve (**Appendix F**). The first order rate constants and the time to achieve the MCL of 5 µg/L are included in **Appendix F**. For 50WW05, the first order rate constant was estimated at 0.0003 per day and the time to achieve the MCL of 5 µg/L from the May 2019 concentration of 110 µg/L is estimated to be at least 28.2 years. For 50WW08, the first order rate constant is 0.0007 per day and the time to achieve MCL of 5 µg/L from the May 2019 concentration of 210 µg/L is estimated to be at least 14.6 years. At 50WW15, TCE was above the MCL of 5 µg/L in November 2018 and decreased to below MCL in May 2019.

While these calculations provide an estimated time to achieve MCL, given the lithologic variability and groundwater elevation fluctuation, the time necessary to achieve MCL may vary by an order of magnitude or more. Additionally, the degradation of COCs in other wells is not occurring to such an extent to allow a determination of time to achieve the MCL (i.e., predictive modeling by assuming some degree of degradation and degradation half-lives is not meaningful for this plume). These determinations assume the rate of concentration decrease will continue at the same rate as calculated from recent data. However, the rate of reduction could diminish over time as the residual concentration decrease and the timeframes to achieve the MCL might be longer than estimated.

Contract No. W9128F-13-D-0012, Task Order No. W9128BV17F0150 • Final • Rev 0 • June 2020

4.0 SUMMARY AND CONCLUSIONS

4.1 Summary

The VOC, perchlorate, and geochemical data were collected over the course of the Year 5 RA-O monitoring period at LHAAP-50 to evaluate effectiveness of MNA as a site remedy. A tiered approach assessing the three lines of evidence was used to evaluate the occurrence of natural attenuation in site groundwater.

TCE and perchlorate are the most widespread COCs in shallow groundwater. No COCs were detected above the cleanup levels in intermediate groundwater. An assessment of the first line of evidence shows that both TCE and perchlorate plumes were relatively stable during fifth year RA-O monitoring, but both the TCE and perchlorate plumes have migrated beyond the 2013 baseline plume boundaries. The plumes are bound by downgradient well 50WW29 where the COCs were non-detect (USACE 2019b).

In the upgradient portion of the plume, TCE concentrations at 50WW05, 50WW08, and 50WW15 show a significant decreasing trend. During each sampling event of the five years of RA-O sampling, the highest concentrations of TCE have been observed at 50WW13 near the center of the plume. In 2018/2019, the highest TCE concentration of 2,700 µg/L was observed at 50WW13. In the downgradient portion of the plume at well 50WW12, TCE concentrations show a significant increasing trend with TCE at 170 µg/L in May 2019, above the baseline concentration of 0.25 µg/L in October 2013.

The perchlorate plume in 2018/2019 has not expanded and appeared to be similar in size to the prior year. Perchlorate shows an increasing trend at 50WW12. In 2018/2019, the highest perchlorate concentration was detected at downgradient well 50WW12 at 65,000 µg/L. Monitoring well 50WW29, installed to more tightly delineate the plume in the downgradient direction, did not contain detectable COC concentrations (USACE 2019b). This indicates that the plume is bound and has not expanded very far beyond 50WW12.

A review of the data in individual wells over the course of the monitoring period shows recent correlations between groundwater elevations and COC concentrations in 50WW08, 50WW09, 50WW11, 50WW12, 50WW13, 50WW14, and 50WW15 and no definite correlations exists between groundwater elevations and COC concentrations at 50WW05 and 50WW06.

The qualitative assessment of geochemical indicators in the shallow groundwater zone at LHAAP-50 indicates current geochemical conditions are not conducive for biological reductive dechlorination. Based on the data collected thus far, MNA associated with

Contract No. W9128F-13-D-0012, Task Order No. W9128BV17F0150 • Final • Rev 0 • June 2020

biodegradation appears to be very limited in the shallow groundwater at LHAAP-50, and the groundwater conditions are not supportive of reductive dechlorination.

Surface water samples to evaluate the performance of soil removal action (soil to surface water pathway) were not collected during the fifth annual RA-O monitoring period based on the recommendations in the Third Annual RA-O Report which was approved in July 2018 (Bhate 2018a). Sampling of 50SW06 to evaluate potential groundwater to surface water pathway was not conducted because the groundwater elevation was below the bottom of the creek for both Year 5 events and it was determined that there was no contribution from groundwater to surface water.

Newly installed well, 50WW29, will be included in the monitoring network for the sixth annual RA-O sampling event. Additionally, monitoring wells 50WW10, 50WW17, 50WW21, 50WW24, and 50WW27 will be removed from the RA-O monitoring network for Year 6 as approved in the RD/RAWP for contingency remedy (USACE 2019b).

No change in land or groundwater use has occurred at the site, and the use of the site is still consistent with that mandated by the ROD. A LUC compliance inspection was conducted in 2019.

4.2 Conclusion

Based on the review of the data from the fifth annual of RA-O monitoring, MNA is not effective based on the 1st and 2nd Lines of Evidence as follows:

- **1st Line of Evidence: Change in COC Concentrations.** Concentrations of COCs have fluctuated with significantly decreasing and increasing trends. The presence of the TCE daughter product indicates that limited biological degradation is occurring; however, the minimal VC and no ethene, suggest that complete degradation is not occurring. The TCE plume migration has reached downgradient well 50WW12; from its 2013 baseline concentration of below the detection limit to 170 µg/L in May 2019.
- **2nd Line of Evidence: Geochemical Indicators.** Based on the evaluation of the 2018/2019 data, the shallow groundwater does not have geochemical parameters to support biological reductive dechlorination.

Based on similar findings from the Third Annual RA-O Report, implementation of a contingency remedy was recommended and approved (Bhate 2018a). The contingency remedy was recommended to enhance MNA by creating conditions in the shallow groundwater conducive for reductive dechlorination. An ESD (USACE 2019a) to the LHAAP-50 ROD was prepared to document the significant change from the ROD selected remedy of MNA to

implement the contingency remedy and proposed implementation of ISB to enhance MNA. The U.S. Army signed the ESD on 6 August 2019, and the USEPA signed the ESD on 29 August 2019. TCEQ concurred with the ESD on 23 July 2019. The Draft Final RD/RAWP for the contingency remedy was approved by USEPA and TCEQ in January 2020. The contingency ISB injections are planned for March 2020 and details of the injections will be included in the RACR.

Contract No. W9128F-13-D-0012, Task Order No. W9128BV17F0150 • Final • Rev 0 • June 2020

Contract No. W9128F-13-D-0012, Task Order No. W9128BV17F0150 • Final • Rev 0 • June 2020

This page intentionally left blank.

Contract No. W9128F-13-D-0012, Task Order No. W9128BV17F0150 • Final • Rev 0 • June 2020

5.0 REFERENCES

AECOM Technical Services, Inc. (AECOM). 2013. *Final Remedial Action Work Plan, LHAAP-50, Former Sump Water Tank, Longhorn Army Ammunition Plant, Karnack, Texas*. June.

AECOM. 2016a. *Final Remedial Action Completion Report, LHAAP-50, Former Sump Water Tank, Longhorn Army Ammunition Plant, Karnack, Texas*. June.

AECOM. 2016b. *Final 2nd Annual Remedial Action Operation Report, LHAAP-50, Former Sump Water Tank, Longhorn Army Ammunition Plant, Karnack, Texas*. December.

AECOM. 2016c. *Draft Final 1st Annual Remedial Action Operation Report, LHAAP-50, Former Sump Water Tank, Longhorn Army Ammunition Plant, Karnack, Texas*. November.

Bhate Environmental, Inc. (Bhate). 2018a. *Draft Final Third Annual Remedial Action Operation Report, LHAAP-50 Former Sump Water Tank, Longhorn Army Ammunition Plant, Karnack, Texas.* July.

Bhate. 2018b. *Draft Final Fourth Annual Remedial Action Operation Report, LHAAP-50 Former Sump Water Tank, Longhorn Army Ammunition Plant, Karnack, Texas*. December.

Bhate. 2018c. *Final Installation-Wide Work Plan, Longhorn Army Ammunition Plant, Karnack, Texas*. May.

Bhate. 2019. *Final Minutes, April 2019 Monthly Managers' Meeting, Longhorn Army Ammunition Plant, Karnack, Texas*. May 17.

Gilbert, R. O. 1987. *Statistical Methods for Environmental Pollution Monitoring. Van Nostrand Reinhold, New York, NY. ISBN 0-442-23050-8.*

Jacobs Engineering Group, Inc. (Jacobs). 2002. *Final Remedial Investigation Report for the Group 4 Sites, Sites 35A, 35B, 35C, 46, 47, 48, 50, and 60, and Goose Prairie Creek, Longhorn Army Ammunition Plant, Karnack, Texas*. January.

Shaw Environmental & Infrastructure, Inc. (Shaw). 2011. *Final Remedial Design, LHAAP-50, Former Sump Water Tank, Group 4, Longhorn Army Ammunition Plant, Karnack, Texas*. September.

U.S. Army Corps of Engineers (USACE). 2010. *Record of Decision, LHAAP-50, Former Sump Water Tank, Group 4, Longhorn Army Ammunition Plant, Karnack, Texas*. September.

USACE. 2019a. *Final Explanation of Significant Differences, Record of Decision for Contingency Remedy at LHAAP-50, Former Sump Water Tank, Longhorn Army Ammunition Plant, Karnack, Texas*. July.

USACE. 2019b. *Draft Final Remedial Design/Remedial Action Work Plan, Contingency Remedy LHAAP-50 Former Sump Water Tank, Longhorn Army Ammunition Plant*. December.

U.S. Environmental Protection Agency (USEPA). 1998. *Technical Protocol for Evaluating Natural Attenuation of Chlorinated Solvents in Groundwater*. EPA/600/R-98/128. September.

Contract No. W9128F-13-D-0012, Task Order No. W9128BV17F0150 • Final • Rev 0 • June 2020

Tables

Table 1-1
Wells and Analytes, LHAAP-50

Monitoring Well ID [a]	VOCs	Perchlorate	Field Parameters [b]	MNA Parameters [c]
Upper Shallow				
50WW05	X	X	X	
50WW08	X	X	X	X
50WW11	X	X	X	X
50WW12	X	X	X	X
50WW13	X	X	X	X
50WW15	X	X	X	
50WW16	X	X	X	X
50WW18	X	X	X	
50WW21	X	X	X	
50WW22	X	X	X	X
50WW23	X	X	X	X
50WW24	X	X	X	
Lower Shallow				
50WW06	X	X	X	X
50WW09	X	X	X	
50WW14	X	X	X	X
50WW27	X	X	X	
Fully Penetrating Shallow				
50WW17	X	X	X	
Intermediate				
50WW10	X	X	X	

Notes:

50WW01, 50WW02 50WW03, 50WW04, 50WW07, 50WW19, 50WW20, 50WW25, 50WW26, and 50WW28 were eliminated from the monitoring network based on recommendations in the 2nd Annual RA-O, Third Annual RA-O, and Fourth Annual RA-O Report and therefore not sampled in 2018/2019.

[a] The number of monitoring wells included in the network and the sampling frequency may be adjusted based on results of the initial data collection activities.

[b] Field parameters to be monitored for all wells: pH, temperature, conductivity, turbidity, oxidation-reduction potential (ORP), dissolved oxygen (DO), and ferric iron.

[c] MNA parameters include alkalinity, sulfate, sulfide, chloride, TOC, dissolved iron and manganese, total phosphorus, carbon dioxide, dissolved gases (methane, ethane, ethene) and total iron.

ID - identification

MNA - monitored natural attenuation

RA-O - remedial action operation

TOC - total organic carbon

VOCs - volatile organic compounds

X - well will be analyzed for that parameter

Table 2-1
Groundwater Elevation Data, LHAAP-50

Well ID	Aquifer	Sampling Date	Top of Casing Elevation	Ground Surface Elevation	Depth to Water (ft bgs)	Depth to Water (ft btoc)	Screen Interval (ft from TOC)		Screen Interval (ft msl)		Groundwater Elevation (ft msl)
							Top	Bottom	Top	Bottom	
50WW01	Upper Shallow	12/3/2018	198.5	195.29	18.58	21.79	13.21	23.21	185.29	175.29	176.71
		5/17/2019	198.5	195.29	15.49	18.70	13.21	23.21	185.29	175.29	179.80
50WW02	Upper Shallow	12/3/2018	200.74	197.4	19.03	22.37	12.34	22.24	188.40	178.50	178.37
		5/16/2019	200.74	197.4	18.11	21.45	12.34	22.24	188.40	178.50	179.29
50WW03	Upper Shallow	12/3/2018	202.94	199.88	19.98	23.04	13.06	23.06	189.88	179.88	179.90
		5/16/2019	202.94	199.88	DRY	DRY	13.06	23.06	189.88	179.88	DRY
50WW04	Upper Shallow	12/3/2018	204.51	201.64	20.33	23.20	12.87	22.87	191.64	181.64	181.31
		5/16/2019	204.51	201.64	DRY	DRY	12.87	22.87	191.64	181.64	DRY
50WW05	Upper Shallow	12/3/2018	197.6758	195.34	19.18	21.52	17.24	27.24	180.44	170.44	176.16
		5/7/2019	197.6758	195.34	16.64	18.98	17.24	27.24	180.44	170.44	178.70
50WW06	Lower Shallow	11/28/2018	195.3462	192.99	16.15	18.51	47.75	57.75	147.60	137.60	176.84
		5/6/2019	195.3462	192.99	14.11	16.47	47.75	57.75	147.60	137.60	178.88
50WW07	Upper Shallow	12/3/2018	202.55	199.88	23.98	26.65	21.67	31.67	180.88	170.88	175.90
		5/17/2019	202.55	199.88	22.12	24.79	21.67	31.67	180.88	170.88	177.76
50WW08	Upper Shallow	11/28/2018	199.67	197.16	20.75	23.26	17.11	31.71	182.56	167.96	176.41
		5/7/2019	199.67	197.16	18.49	21.00	17.11	31.71	182.56	167.96	178.67
50WW09	Lower Shallow	12/3/2018	199.41	197.06	20.75	23.10	46.75	61.25	152.66	138.16	176.31
		5/7/2019	199.41	197.06	18.35	20.70	46.75	61.25	152.66	138.16	178.71
50WW10	Intermediate	12/3/2018	199.25	196.72	21.27	23.80	101.43	110.93	97.82	88.32	175.45
		5/7/2018	199.25	196.72	20.69	23.22	101.43	110.93	97.82	88.32	176.03
50WW11	Upper Shallow	11/28/2018	197.07	194.72	19.5	21.85	22.55	37.05	174.52	160.02	175.22
		5/6/2019	197.07	194.72	16.3	18.65	22.55	37.05	174.52	160.02	178.42
50WW12	Upper Shallow	11/28/2018	195.66	193.26	17.31	19.71	22.50	37.00	173.16	158.66	175.95
		5/16/2019	195.66	193.26	15	17.40	22.50	37.00	173.16	158.66	178.26
50WW13	Upper Shallow	11/29/2018	197.45	195.01	18.71	21.15	22.44	36.94	175.01	160.51	176.30
		5/6/2019	197.45	195.01	16.5	18.94	22.44	36.94	175.01	160.51	178.51
50WW14	Lower Shallow	11/29/2018	197.52	195.14	19	21.38	45.78	60.28	151.74	137.24	176.14
		5/6/2019	197.52	195.14	16.67	19.05	45.78	60.28	151.74	137.24	178.47
50WW15	Upper Shallow	11/30/2018	196.3	193.95	17.53	19.88	22.25	36.75	174.05	159.55	176.42
		5/17/2019	196.3	193.95	14.8	17.15	22.25	36.75	174.05	159.55	179.15
50WW16	Upper Shallow	11/28/2018	196.66	194.1	18.17	20.73	22.66	37.16	174.00	159.50	175.93
		5/6/2019	196.66	194.1	15.49	18.05	22.66	37.16	174.00	159.50	178.61

Table 2-1
Groundwater Elevation Data, LHAAP-50

Well ID	Aquifer	Sampling Date	Top of Casing Elevation	Ground Surface Elevation	Depth to Water (ft bgs)	Depth to Water (ft btoc)	Screen Interval (ft from TOC)		Screen Interval (ft msl)		Groundwater Elevation (ft msl)
							Top	Bottom	Top	Bottom	
50WW17	Fully Penetrating Shallow	11/30/2018	195.13	192.73	17.21	19.61	22.30	66.80	172.83	128.33	175.52
		5/16/2019	195.13	192.73	15.23	17.63	22.30	66.80	172.83	128.33	177.50
50WW18	Upper Shallow	11/30/2018	194.84	192.57	17.11	19.38	22.37	36.87	172.47	157.97	175.46
		5/16/2019	194.84	192.57	15.08	17.35	22.37	36.87	172.47	157.97	177.49
50WW19	Fully Penetrating Shallow	12/3/2018	195.96	193.71	18.24	20.49	21.35	65.85	174.61	130.11	175.47
		5/17/2019	195.96	193.71	15.91	18.16	21.35	65.85	174.61	130.11	177.80
50WW20	Fully Penetrating Shallow	12/3/2018	202.54	200.3	23.95	26.19	20.54	55.04	182.00	147.50	176.35
		5/16/2019	202.54	200.3	22.01	24.25	20.54	55.04	182.00	147.50	178.29
50WW21	Upper Shallow	11/30/2018	200.14	197.68	21.44	23.90	22.36	36.86	177.78	163.28	176.24
		5/16/2019	200.14	197.68	19.54	22.00	22.36	36.86	177.78	163.28	178.14
50WW22	Upper Shallow	12/3/2018	202.1	199.93	23.8	25.97	21.97	36.57	180.13	165.53	176.13
		5/6/2019	202.1	199.93	21.53	23.70	21.97	36.57	180.13	165.53	178.40
50WW23	Upper Shallow	12/3/2018	200.75	198.33	22.35	24.77	22.42	36.92	178.33	163.83	175.98
		5/7/2019	200.75	198.33	20.38	22.80	22.42	36.92	178.33	163.83	177.95
50WW24	Upper Shallow	11/30/2018	201.63	199.37	23.2	25.46	22.66	37.16	178.97	164.47	176.17
		5/7/2019	201.63	199.37	21.55	23.81	22.66	37.16	178.97	164.47	177.82
50WW25	Lower Shallow	12/3/2018	196	193.48	17.46	19.98	47.52	57.52	148.48	138.48	176.02
		5/17/2019	196	193.48	14.45	16.97	47.52	57.52	148.48	138.48	179.03
50WW26	Lower Shallow	12/3/2018	200.07	197.68	21.61	24.00	47.49	61.99	152.58	138.08	176.07
		5/16/2019	200.07	197.68	19.32	21.71	47.49	61.99	152.58	138.08	178.36
50WW27	Lower Shallow	12/3/2018	196.22	193.84	17.62	20.00	45.28	59.78	150.94	136.44	176.22
		5/17/2019	196.22	193.84	14.8	17.18	45.28	59.78	150.94	136.44	179.04
50WW28	Upper Shallow	12/3/2018	194.71	192.04	16.38	19.05	16.57	26.57	178.14	168.14	175.66
		5/17/2019	194.71	192.04	13.48	16.15	16.57	26.57	178.14	168.14	178.56

Notes:

ft - feet

bgs - below ground surface

btoc - below top of casing

ID - identification

msl - mean sea level

NA - not analyzed

TOC - top of casing

Table 2-2a
Fifth Annual RA-O Analytical Results for Upper Shallow Zone Wells, LHAAP-50

Well Completion Zone			UPPER SHALLOW																									
Location Code			50WW05				50WW08				50WW11						50WW12						50WW13				50WW15	
Sample ID			50WW05-181203		50WW05-190507		50WW08-181128		50WW08-190507		50WW11-181128		50WW11-181128-FD		50WW11-190506		50WW12-181128		50WW12-190516		50WW12-190516-FD		50WW13-181129		50WW13-190506		50WW15-181130	50WW15-190523
Sample Date			12/3/2018		5/7/2019		11/28/2018		5/7/2019		11/28/2018		11/28/2018		5/6/2019		11/28/2018		5/16/2019		5/16/2019		11/29/2018		5/6/2019		11/30/2018	5/23/2019
Sample Purpose			REG		REG		REG		REG		REG		FD		REG		REG		REG		FD		REG		REG		REG	REG
Parameter	Units	MCL/PCL*	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual
DHC																												
Dehalococcoides	CEQ/mL	NV					1.4				0.4	J					0.5	U					2.9					
WATER QUALITY PARAMETERS																												
Alkalinity	mg/L	NV					435				312		313				239						357					
Conductivity	µmhos/cm	NV	1.55		1.46		2.45		2.39		1.92				1.77		4.41		4.08				105.7		2.21		1.93	2.03
Dissolved oxygen	mg/L	NV	0.05		0.07		0.04		0.06		0.02				0.06		0.02		0.08				0.3		0.09		0.07	0.08
Fenthion	mg/L	NV							0						0.52				0						0.36			
Oxidation-reduction potential	mV	NV	203		162		273		129		269				236		295		199				54.7		131		237	245
pH	pH_units	NV	5.62		6.30		5.74		6.20		5.73				5.94		5.38		5.88				6.84		6.06		5.84	6.30
Temperature	°C	NV	17.66		22.55		18.44		21.10		17.25				19.65		17.71		20.53				19.48		20.83		18.97	21.19
Turbidity	NTU	NV	6.5		0		6.4		0		20.6				83.8		56.2		0				-12.2		73.4		78.4	33.2
GASES																												
Carbon dioxide	µg/L	NV					510,000		490,000		410,000		430,000		570,000	U	600,000		490,000		580,000		110,000		360,000	U		
Ethane	µg/L	NV					< 0.47	U	< 0.47	U	< 0.47	U	< 0.47	U	< 0.47	U	< 0.47	U	< 0.47	U	< 0.47	U	< 0.47	U	< 0.47	U		
Ethylene	µg/L	NV					< 0.55	U	< 0.55	U	< 0.55	U	< 0.55	U	< 0.55	U	< 0.55	U	< 0.55	U	< 0.55	U	< 0.55	U	< 0.55	U		
Methane	µg/L	NV					2.4		1.2	J	16		13		7	U	< 1	U	1.4		1.2	J	5.6		4.5	U		
GEN CHEMISTRY																												
Chloride	mg/L	NV					372		354		260		263		269		1,030		936		973		343		379			
Nitrate	mg/L	NV					0.239		1.37		0.148	J	0.269		1.21	J	0.327		< 0.5	U	< 0.5	U	0.074	J	1.27	J		
Nitrite	mg/L	NV					< 0.1	U			< 0.2	U	< 0.1	U			< 0.2	U					< 0.1	U				
Nitrogen	mg/L	NV																										
Phosphorus	mg/L	NV					0.104				0.128		0.104				0.142						0.126					
Sulfate	mg/L	NV					303		301		258		< 0.5	U	280		< 1	U	498		470		304		332			
Sulfide	mg/L	NV					< 1	U			3.08		< 1	U			< 1	U					2.36					
Total organic carbon	mg/L	NV					2.39	J	2.1		2.18		2.25		1.8		2.97		1.77		1.71		1.58		1.93			
METALS																												
Iron	µg/L	NV					45.2	J			609		568				2,300						168	J				
Manganese	µg/L	NV					84.4				85		80.7				64.5						89.6					
PERCHLORATE																												
Perchlorate	µg/L	17	< 4	U	< 4	U	51		230		2,900		3,200		450		47,000		65,000		76,000		1,100		160		< 4	U	< 4	U
VOLATILES																												
1,1-Dichloroethene	µg/L	7	1.2		1.2		0.62	J	< 0.5	U	5.5		5.5		< 0.5	U	0.83	J	2.2		2.2		5.4		0.57	J	< 0.5	U	< 0.5	U
1,2-Dichloroethane	µg/L	5	1.2		0.94	J	1.5		2.1		5.6		5.4		0.75	J	0.56	J	1.5		1.5		12		1.3		< 0.5	U	< 0.5	U
cis-1,2-Dichloroethene	µg/L	70	18		28		20		20		18		17		3.1		< 0.5	U	< 0.5	U	< 0.5	U	100		12		5.9		2.9	
Tetrachloroethene	µg/L	5	0.86	J	< 0.5	U	1.1		0.75	J	1.7		1.7		< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	4.6		< 0.5	U	2		0.87	J
trans-1,2-Dichloroethene	µg/L	100	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	0.41	J	0.45	J	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	0.93	J	< 0.5	U	< 0.5	U	< 0.5	U
Trichloroethene	µg/L	5	150		110		240	J	210		700	J	710	J	95		41	J	170		170		2,700		250		9.1		2.3	
Vinyl chloride	µg/L	2	< 0.5	U	< 0.5	U	0.66	J	< 0.5	U	0.99	J	1		< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	1.4		< 0.5	U	1.5		< 0.5	U

Table 2-2a
Fifth Annual RA-O Analytical Results for Upper Shallow Zone Wells, LHAAP-50

Well Completion Zone			UPPER SHALLOW																						
Location Code			50WW16				50WW18				50WW21				50WW22				50WW23				50WW24		
Sample ID			50WW16-181128		50WW16-190506		50WW18-181130		50WW18-190516		50WW21-181130		50WW21-190516		50WW22-181203		50WW22-190506		50WW23-181203		50WW23-190507		50WW24-181130		50WW24-190507	
Sample Date			11/28/2018		5/6/2019		11/30/2018		5/16/2019		11/30/2018		5/16/2019		12/3/2018		5/6/2019		12/3/2018		5/7/2019		11/30/2018		5/7/2019	
Sample Purpose			REG		REG		REG		REG		REG		REG		REG		REG		REG		REG		REG		REG	
Parameter	Units	MCL/PCL*	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual
DHC																										
Dehalococcoides	CEQ/mL	NV	4.5												0.5	U			0.5	U						
WATER QUALITY PARAMETERS																										
Alkalinity	mg/L	NV	118												417				273							
Conductivity	µmhos/cm	NV	0.296		0.288		3.37		3.21		7.48		6.03		4.81		3.71		6.41		4.12		1.89		1.76	
Dissolved oxygen	mg/L	NV	0.27		0.1		0.05		2.08		0.69		0.48		0.03		0.99		0.78		0.08		0.1		0.09	
Fenthion	mg/L	NV			0.47												0.1				0					
Oxidation-reduction potential	mV	NV	252		195		281		260		252		156		314		121		316		167		236		164	
pH	pH_units	NV	5.73		5.56		5.72		6.21		6.24		6.22		5.66		7.21		5.60		5.84		5.76		5.90	
Temperature	°C	NV	16.05		21.44		17.86		19.16		18.82		20.96		15.69		23.35		14.72		20.74		18.32		21.53	
Turbidity	NTU	NV	57.7		92.4		106		7.5		32.7		11.1		22.6		12.5		19.6		3.1		27.7		0	
GASES																										
Carbon dioxide	µg/L	NV	250,000		440,000	U									260,000		70,000	U	240,000		460,000					
Ethane	µg/L	NV	< 0.47	U	< 0.47	U									< 0.47	U	< 0.47	U	< 0.47	U	< 0.47	U				
Ethylene	µg/L	NV	< 0.55	U	< 0.55	U									< 0.55	U	< 0.55	U	< 0.55	U	< 0.55	U				
Methane	µg/L	NV	15		3.1	U									< 1	U	< 1	U	< 1	U	< 1	U				
GEN CHEMISTRY																										
Chloride	mg/L	NV	6.58		< 0.5	U									1,030		795		2,020		1,060					
Nitrate	mg/L	NV	< 0.5	U	< 0.1	U											< 1	U			4.16	J				
Nitrite	mg/L	NV	< 0.1	U																						
Nitrogen	mg/L	NV													0.41	J			0.393	J						
Phosphorus	mg/L	NV	0.91												0.075				0.112							
Sulfate	mg/L	NV	33.6		19.2										756		609		119		150					
Sulfide	mg/L	NV	1.08												< 1	U			< 1	U						
Total organic carbon	mg/L	NV	1.79		1.98										2.74		1.1		1.97		0.98					
METALS																										
Iron	µg/L	NV	800												405				660							
Manganese	µg/L	NV	38.5												26.4				22.4							
PERCHLORATE																										
Perchlorate	µg/L	17	< 4	U	< 4	U	< 4	U	< 4	U	< 4	U	< 4	U	< 4	U	< 4	U	< 4	U	< 4	U	< 4	U	< 4	U
VOLATILES																										
1,1-Dichloroethene	µg/L	7	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U
1,2-Dichloroethane	µg/L	5	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U
cis-1,2-Dichloroethene	µg/L	70	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	UJ	< 0.5	U	< 0.5	U
Tetrachloroethene	µg/L	5	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U
trans-1,2-Dichloroethene	µg/L	100	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U
Trichloroethene	µg/L	5	1.9	J	0.61	J	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U
Vinyl chloride	µg/L	2	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U

Table 2-2a
Fifth Annual RA-O Analytical Results for Upper Shallow Zone Wells, LHAAP-50

Notes:

Shaded bold values indicate analyte detected above MCL/PCL.

°C - degrees Celsius

* Cleanup goal is MCL except for perchlorate. For perchlorate, Texas Risk Reduction Program groundwater residential PCL is used.

µg/L - micrograms per Liter

J - estimated value; analyte concentration was less than the limit of quantification

U - Not detected. The analyte was analyzed for, but not detected above the associated limit of detection

CEQ/mL - chromosomal equivalents/milliliter

FD - Field duplicate

ID - identification

MCL - maximum contaminant level

µmhos/cm - micromhos per centimeter

mg/L - milligrams per Liter

mS/cm - microsiemens per centimeter

mV - millivolts

NA - not analyzed

NTU - nephelometric turbidity unit

NV - No value; the parameter is not a chemical of concern and is monitored for evaluation of MNA

PCL - Texas residential groundwater protective concentration level

Qual - qualifier

REG - regular sample

Table 2-2b
Fifth Annual RA-O Analytical Results for Lower Shallow Zone Wells, LHAAP-50

Well Completion Zone			LOWER SHALLOW																			
Location Code			50WW06				50WW09						50WW14				50WW27					
Sample ID			50WW06-181129		50WW06-190506		50WW09-181203		50WW09-190507		50WW09-190507-FD		50WW14-181129		50WW14-190506		50WW27-181203		50WW27-181203-FD		50WW27-190523	
Sample Date			11/29/2018		5/6/2019		12/3/2018		5/7/2019		5/7/2019		11/29/2018		5/6/2019		12/3/2018		12/3/2018		5/23/2019	
Sample Purpose			REG		REG		REG		REG		FD		REG		REG		REG		FD		REG	
Parameter	Units	MCL/PCL*	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual
DHC																						
Dehalococcoides	CEQ/mL	NV	0.3	J									3.1									
WATER QUALITY PARAMETER																						
Conductivity	µmhos/cm	NV	9.377		0.080		1.01		0.396				108.7		2.19		1.62				1.70	
Dissolved oxygen	mg/L	NV	4.1		2.24		1.52		1.88				0.55		0.06		0.08				0.06	
Fenthion	mg/L	NV			0.01										0.34							
Oxidation-reduction potential	mV	NV	161.1		294		243		150				-2		52		114				169	
pH	pH_units	NV	5.76		5.04		5.93		5.38				6.24		6.48		6.18				6.06	
Temperature	°C	NV	19.05		19.16		16.44		21.30				19.73		20.29		16.51				22.22	
Turbidity	NTU	NV	4.1		0		65.9		617				1.1		82.4		96.7				125	
GASES																						
Carbon dioxide	µg/L	NV	84,000		150,000	U							78,000		210,000	U						
Ethane	µg/L	NV	< 0.47	U	< 0.47	U							< 0.47	U	< 0.47	U						
Ethylene	µg/L	NV	< 0.55	U	< 0.55	U							< 0.55	U	< 0.55	U						
Methane	µg/L	NV	19		0.56	J							1.1	J	3.8	U						
GEN CHEMISTRY																						
Alkalinity	mg/L	NV	88.6										265									
Chloride	mg/L	NV	4.64		1.36								369		354							
Nitrate	mg/L	NV	0.127		0.432	J							< 0.5	U	< 0.5	UJ						
Nitrite	mg/L	NV	< 0.1	U									< 0.1	U								
Nitrogen	mg/L	NV																				
Phosphorus	mg/L	NV	0.02	J									0.064									
Sulfate	mg/L	NV	9.65		8.74								341		383							
Sulfide	mg/L	NV	14.4										2.16									
Total organic carbon	mg/L	NV	1.19		1.74								1.46		1.13							
METALS																						
Iron	µg/L	NV	< 100	U									8,700									
Manganese	µg/L	NV	23.8										472									
PERCHLORATE																						
Perchlorate	µg/L	17	24		4.3		< 4	U	7.2		7.8		1.9	J	< 4	U	< 4	U	< 4	U	< 4	U
VOLATILES																						
1,1-Dichloroethene	µg/L	7	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U
1,2-Dichloroethane	µg/L	5	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U
cis-1,2-Dichloroethene	µg/L	70	< 0.5	U	< 0.5	U	7.3		2.2		2.1		3.2		1.9		< 0.5	U	< 0.5	U	0.74	J
Tetrachloroethene	µg/L	5	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U
Trichloroethene	µg/L	5	14		1.4		120		16		16		12		27		< 0.5	U	< 0.5	U	< 0.5	U
Vinyl chloride	µg/L	2	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	0.66	J	0.66	J	< 0.5	U

Table 2-2b
Fifth Annual RA-O Analytical Results for Lower Shallow Zone Wells, LHAAP-50

Notes:

Shaded bold values indicate analyte detected above MCL/PCL.

°C - degrees Celsius

* Cleanup goal is MCL except for perchlorate. For perchlorate, Texas Risk Reduction Program groundwater residential PCL is used.

µg/L - micrograms per liter

J - estimated value; analyte concentration was less than the limit of quantification

CEQ/mL - chromosomal equivalents CEQ/mL

FD - Field duplicate

ID - identification

MCL - maximum contaminant level

µmhos/cm - micromhos per centimeter

mg/L - milligrams per Liter

mS/cm - microsiemens per centimeter

mV - millivolts

NA - not analyzed

NTU - nephelometric turbidity unit

NV - No value; the parameter is not a chemical of concern and is monitored for evaluation of MNA

PCL - Texas residential groundwater protective concentration level

Qual - qualifier

REG - regular sample

U - Not detected. The analyte was analyzed for, but not detected above the associated limit of detection

Table 2-2c
Fifth Annual RA-O Analytical Results for Fully Penetrating Shallow Zone Wells, LHAAP-50

		Well Completion Zone	Fully Penetrating Shallow			
		Location Code	50WW17			
		Sample ID	50WW17-181130		50WW17-190516	
		Sample Date	11/30/2018		5/16/2019	
		Sample Purpose	REG		REG	
Parameter	Units	MCL/PCL*	Result	Qual	Result	Qual
WATER QUALITY PARAMETERS						
Conductivity	µmhos/cm	NV	2.48		2.19	
Dissolved oxygen	mg/L	NV	0.06		0.07	
Oxidation-reduction potential	mV	NV	209		140	
pH	pH_units	NV	5.10		5.51	
Temperature	°C	NV	18.53		20.48	
Turbidity	NTU	NV	540		717	
METALS						
Iron	µg/L	NV				
Manganese	µg/L	NV				
PERCHLORATE						
Perchlorate	µg/L	17	< 4	U	< 4	U
VOLATILES						
1,1-Dichloroethene	µg/L	7	< 0.5	U	< 0.5	U
1,2-Dichloroethane	µg/L	5	< 0.5	U	< 0.5	U
cis-1,2-Dichloroethene	µg/L	70	< 0.5	U	< 0.5	U
Tetrachloroethene	µg/L	5	< 0.5	U	< 0.5	U
trans-1,2-Dichloroethene	µg/L	100	< 0.5	U	< 0.5	U
Trichloroethene	µg/L	5	< 0.5	U	< 0.5	U
Vinyl chloride	µg/L	2	< 0.5	U	< 0.5	U

Notes:

°C - degrees Celsius

* Cleanup goal is MCL except for perchlorate. For perchlorate, Texas Risk Reduction Program groundwater residential PCL is used.

µg/L - micrograms per liter

U - Not detected. The analyte was analyzed for, but not detected above the associated limit of detection

ID - identification

MCL - maximum contaminant level

µmhos/cm - micromhos per centimeter

mg/L - milligrams per Liter

mV - millivolts

NTU - nephelometric turbidity unit

NV - No value; the parameter is not a chemical of concern and is monitored for evaluation of MNA

PCL - Texas residential groundwater protective concentration level

Qual - qualifier

REG - regular sample

Table 2-2d
Fifth Annual RA-O Analytical Results for Intermediate Zone Wells, LHAAP-50

		Well Completion Zone	INTERMEDIATE			
		Location Code	50WW10			
		Sample ID	50WW10-181203		50WW10-190507	
		Sample Date	12/3/2018		5/7/2019	
		Sample Purpose	REG		REG	
Parameter	Units	MCL/PCL [a]	Result	Qual	Result	Qual
WATER QUALITY PARAMETER						
Conductivity	µmhos/cm	NV	1.31		1.27	
Dissolved oxygen	mg/L	NV	0.46		0.59	
Oxidation-reduction potential	mV	NV	2		34	
pH	pH units	NV	9.87		5.98	
Temperature	°C	NV	15.65		20.44	
Turbidity	NTU	NV	37.1		0	
PERCHLORATE						
Perchlorate	µg/L	17	< 4	U	< 4	U
VOLATILES						
1,1-Dichloroethene	µg/L	7	< 0.5	U	< 0.5	U
1,2-Dichloroethane	µg/L	5	< 0.5	U	< 0.5	U
cis-1,2-Dichloroethene	µg/L	70	< 0.5	U	< 0.5	U
Tetrachloroethene	µg/L	5	< 0.5	U	< 0.5	U
Trichloroethene	µg/L	5	< 0.5	U	< 0.5	U
Vinyl chloride	µg/L	2	< 0.5	U	< 0.5	U

Notes:

[a] Cleanup goal is MCL except for perchlorate. For perchlorate, Texas Risk Reduction Program groundwater residential PCL is used.

°C - degrees Celsius

µg/L - micrograms per liter

µmhos/cm - micromhos per centimeter

U - Not detected. The analyte was analyzed for, but not detected above the associated limit of detection

ID - identification

MCL - maximum contaminant level

mg/L - milligrams per liter

mV - millivolts

NTU - nephelometric turbidity unit

NV - No value; the parameter is not a chemical of concern and is monitored for evaluation of MNA

PCL - Texas residential groundwater protective concentration level

Qual - qualifier

REG - regular sample

Table 2-3
Historical COC Concentrations, LHAAP-50

Sample ID Sample Date	Units	MCL/ PCL *	47WW38-100901 9/1/2010	47WW38-100901- FD 9/1/2010	47WW38-110613 11/6/2013	47WW38-111214 11/12/2014	47WW38-021815 2/18/2015	47WW38-052715 5/27/2015	47WW38-111315 11/13/2015	50SW06-021715 2/17/2015	50SW06-052215 5/22/2015	50SW06-111315 11/13/2015	50WW01-031314 3/13/2014	50WW01-052715 5/27/2015	50WW01-082015 8/20/2015
Well Completion Zone			Lower Shallow							Surface Water			Upper Shallow		
Perchlorate	µg/L	17	4110	4520	1160 J	860	1500	18	579 J	0.684	0.218 J	1.44 J	<0.2 U	<0.2 U	<0.2 U
1,1-Dichloroethene	µg/L	7	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U
1,2-Dichloroethane	µg/L	5	<1 U	<1 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
cis-1,2-Dichloroethene	µg/L	70	<1 U	<1 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	0.372 J	0.41 J
Tetrachloroethene	µg/L	5	<1 U	<1 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
Trichloroethene	µg/L	5	0.565 J	0.605 J	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	0.685 J	0.543 J
Vinyl Chloride	µg/L	2	<1 U	<1 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U

Notes:

Blue Highlighting indicates analyte detected above MCL/PCL.

* Cleanup goal is MCL except for perchlorate. For perchlorate, Texas Risk Reduction Program groundwater residential PCL is used.

[a] Only limited data validation possible; Not used in plume delineation.

µg/L - micrograms per liter

J - estimated value; analyte concentration was less than the limit of quantification

COC - contaminants of concern

MCL - maximum contaminant level

NA - not analyzed

PCL - Texas residential groundwater protective concentration level

U - Not detected. The analyte was analyzed for, but not detected above the limit of detection

Table 2-3
Historical COC Concentrations, LHAAP-50

Sample ID Sample Date	Units	MCL/ PCL *	50WW01-051216 5/12/2016	50WW02-980930 9/30/1998	50WW02-981022 10/22/1998	50WW02-000524 5/24/2000	50WW02-001003 10/3/2000	50WW02-010209 2/9/2001	50WW02-020311 3/11/2002	50WW02-020921 9/21/2002	50WW02-040830 8/30/2004	50WW02-050511 5/11/2005	50WW02-FEB2007 2/23/2007	50WW02-040309 4/3/2009	50WW03-980930 9/30/1998
Well Completion Zone			Upper Shallow												
Perchlorate	µg/L	17	0.2 U	NA	18000	4190	9950	10000	6840	7600	2500	1630	532	110	NA
1,1-Dichloroethene	µg/L	7	1 U	50	NA	<350 U	<200 U	NA	NA	NA	20	4.81	6.5	<50 U	<1 U
1,2-Dichloroethane	µg/L	5	0.5 U	98	NA	<350 U	79	NA	NA	NA	58	20.2	18.8	18 J	<1 U
cis-1,2-Dichloroethene	µg/L	70	0.67 J	2100	NA	3100	4060	NA	NA	NA	1800 J	954	855	978	<1 U
Tetrachloroethene	µg/L	5	0.5 U	35	NA	<350 U	<200 U	NA	NA	NA	28	6.87	9.3	<50 U	<1 U
Trichloroethene	µg/L	5	0.81 J	2900	NA	18000	16100	NA	NA	NA	9200 J	4840	5420	8050	0.57
Vinyl Chloride	µg/L	2	0.5 U	100	NA	<350 U	<200 U	NA	NA	NA	36	8.56	15.2	<50 U	<1 U

Notes:

Blue Highlighting indicates analyte detected above MCL/PCL.

* Cleanup goal is MCL except for perchlorate. For perchlorate, Texas Risk Redu groundwater residential PCL is used.

[a] Only limited data validation possible; Not used in plume delineation.

µg/L - micrograms per liter

J - estimated value; analyte concentration was less than the limit of quantification

COC - contaminants of concern

MCL - maximum contaminant level

NA - not analyzed

PCL - Texas residential groundwater protective concentration level

U - Not detected. The analyte was analyzed for, but not detected above the limi

Table 2-3
Historical COC Concentrations, LHAAP-50

Sample ID Sample Date	Units	MCL/ PCL *	50WW03-000522 5/22/2000	50WW03-001002 10/2/2000	50WW03-010209 2/9/2001	50WW03-020312 3/12/2002	50WW03-020921 9/21/2002	50WW03-040830 8/30/2004	50WW03-050511 5/11/2005	50WW03-FEB2007 2/24/2007	50WW04-980930 9/30/1998	50WW04-981022 10/22/1998	50WW04-000522 5/22/2000	50WW04-001002 10/2/2000	50WW04-020312 3/12/2002
Well Completion Zone			Upper Shallow												
Perchlorate	µg/L	17	810	<8 U	<1.4 U	<4 U	<4 U	<1 U	<4 U	<10 U	NA	<1 U	<1 U	<16 U	<4 U
1,1-Dichloroethene	µg/L	7	NA	NA	NA	NA	NA	<5 U	<1 U	<2 U	<1 U	NA	NA	NA	NA
1,2-Dichloroethane	µg/L	5	NA	NA	NA	NA	NA	<5 U	<1 U	<2 U	<1 U	NA	NA	NA	NA
cis-1,2-Dichloroethene	µg/L	70	NA	NA	NA	NA	NA	<5 U	<1 U	<2 U	0.64	NA	NA	NA	NA
Tetrachloroethene	µg/L	5	NA	NA	NA	NA	NA	<5 U	<1 U	<2 U	<1 U	NA	NA	NA	NA
Trichloroethene	µg/L	5	NA	NA	NA	NA	NA	8	<1 U	<2 U	9.4	NA	NA	NA	NA
Vinyl Chloride	µg/L	2	NA	NA	NA	NA	NA	<5 U	<1 U	<2 U	<1 U	NA	NA	NA	NA

Notes:

Blue Highlighting indicates analyte detected above MCL/PCL.

* Cleanup goal is MCL except for perchlorate. For perchlorate, Texas Risk Redu
groundwater residential PCL is used.

[a] Only limited data validation possible; Not used in plume delineation.

µg/L - micrograms per liter

J - estimated value; analyte concentration was less than the limit of quantification

COC - contaminants of concern

MCL - maximum contaminant level

NA - not analyzed

PCL - Texas residential groundwater protective concentration level

U - Not detected. The analyte was analyzed for, but not detected above the limi

Table 2-3
Historical COC Concentrations, LHAAP-50

Sample ID Sample Date	Units	MCL/ PCL *	50WW04-020921 9/21/2002	50WW04-040831 8/31/2004	50WW04-050510 5/10/2005	50WW05-020921 9/21/2002	50WW05-050511 5/11/2005	50WW05-FEB2007 2/23/2007	50WW05-040409 4/4/2009	50WW05-100805 8/5/2010	50WW05-110613 11/6/2013	50WW05-031714 3/17/2014	50WW05-062014 6/20/2014	50WW05-111114 11/11/2014	50WW05-021315 2/13/2015
Well Completion Zone			Upper Shallow												
Perchlorate	µg/L	17	<4 U	<1 U	<5 U	5850	719	27.8	<4 U	0.189 J	0.397 J	<0.2 U	20.5	<0.2 U	<0.2 U
1,1-Dichloroethene	µg/L	7	NA	<5 U	<1 U	NA	21.6	12.9	4.61 J	5.73	2.57	2.12	2.67	2.68	1.76 J
1,2-Dichloroethane	µg/L	5	NA	<5 U	<1 U	NA	24.1	13.5	7.39	7.91	2.81	2.54	2.82	2.97	1.58
cis-1,2-Dichloroethene	µg/L	70	NA	<5 U	<1 U	NA	66.3	48.2	29	30.1	12.4	10.5	12.6	15.7	11.7
Tetrachloroethene	µg/L	5	NA	<5 U	<1 U	NA	6.76	5.1	1.61 J	2.64 J	1.54	1.01	1.48	1.6	0.963 J
Trichloroethene	µg/L	5	NA	2 J	<1 U	NA	3130	1460	601	788	280	204	270	329	193
Vinyl Chloride	µg/L	2	NA	<5 U	<1 U	NA	3.69	2.5	<5 U	1.48 J	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U

Notes:

Blue Highlighting indicates analyte detected above MCL/PCL.

* Cleanup goal is MCL except for perchlorate. For perchlorate, Texas Risk Redu
groundwater residential PCL is used.

[a] Only limited data validation possible; Not used in plume delineation.

µg/L - micrograms per liter

J - estimated value; analyte concentration was less than the limit of quantification

COC - contaminants of concern

MCL - maximum contaminant level

NA - not analyzed

PCL - Texas residential groundwater protective concentration level

U - Not detected. The analyte was analyzed for, but not detected above the limi

Table 2-3
Historical COC Concentrations, LHAAP-50

Sample ID Sample Date	Units	MCL/ PCL *	50WW05FD- 021315 2/13/2015	50WW05-052615 5/26/2015	50WW05-081915 8/19/2015	50WW05FD- 081915 8/19/2015	50WW05-111315 11/13/2015	50WW05-051116 5/11/2016	50WW05-110316 11/03/2016	50WW05-111017 11/10/2017	50WW05-111017-FD 11/10/2017	50WW05-180515 5/15/2018	50WW06-052015 5/20/2015	50WW06-081815 8/18/2015	50WW06-111215 11/12/2015
Well Completion Zone			Upper Shallow										Lower Shallow		
Perchlorate	µg/L	17	<0.2 U	<0.2 U	1.69	1.64	0.7 J	1.67 J	0.2 U	4 U	4 U	2 U	3,000	2,050	5,860
1,1-Dichloroethene	µg/L	7	1.91 J	1.77 J	2.02	2.08	1.42 J	1.33	1.78 J	1.5	1.4	1.9	<1 U	<1 U	<1 U
1,2-Dichloroethane	µg/L	5	1.62	1.9	1.6	1.66	1.93	27.2	1.56	1.3	1.3	1.5	<0.5 U	<0.5 U	0.25 J
cis-1,2-Dichloroethene	µg/L	70	12.6	9.81	29.1	28.1	17.2	0.565 J	66.7	16 J	13 J	44	0.637 J	0.874 J	1.04
Tetrachloroethene	µg/L	5	0.888 J	0.86 J	0.787 J	0.651 J	0.848 J	0.5 U	0.637 J	0.91 J	0.83 J	0.5 U	<0.5 U	<0.5 U	<0.5 U
Trichloroethene	µg/L	5	196	197	200	200	210	129	184	180	160	170	49.1	34.7	59.4
Vinyl Chloride	µg/L	2	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	0.5 U	0.5 U	1 U	1 U	0.5 U	<0.5 U	<0.5 U	<0.5 U

Notes:

Blue Highlighting indicates analyte detected above MCL/PCL.

* Cleanup goal is MCL except for perchlorate. For perchlorate, Texas Risk Redu
groundwater residential PCL is used.

[a] Only limited data validation possible; Not used in plume delineation.

µg/L - micrograms per liter

J - estimated value; analyte concentration was less than the limit of quantification

COC - contaminants of concern

MCL - maximum contaminant level

NA - not analyzed

PCL - Texas residential groundwater protective concentration level

U - Not detected. The analyte was analyzed for, but not detected above the limi

Table 2-3
Historical COC Concentrations, LHAAP-50

Sample ID Sample Date	Units	MCL/ PCL *	50WW06-051016 5/10/2016	50WW06-110116 11/1/2016	50WW06-111317 11/13/2017	50WW06-180508 5/8/2018	50WW07-021908 2/19/2008	50WW07-040409 4/4/2009	50WW07-100807 8/7/2010	50WW07-110513 11/5/2013	50WW07-032514 3/25/2014	50WW07-062014 6/20/2014	50WW07-110714 11/7/2014	50WW07-021315 2/13/2015	50WW07-052615 5/26/2015
Well Completion Zone			Lower Shallow				Upper Shallow								
Perchlorate	µg/L	17	2,140	5,240	950	220	NA	<4 U	0.262	<0.2 U	<0.2 U	<0.2 U	<0.2 U	<0.2 U	<0.2 U
1,1-Dichloroethene	µg/L	7	1 U	1 U	1 U	0.5 U	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U
1,2-Dichloroethane	µg/L	5	0.5 U	0.5 U	1 U	0.5 U	<1 U	<1 U	<1 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
cis-1,2-Dichloroethene	µg/L	70	0.388 J	2.37	1.9	0.5 U	<1 U	<1 U	<1 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
Tetrachloroethene	µg/L	5	0.5 U	0.5 U	1 U	0.5 U	<1 U	<1 U	<1 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
Trichloroethene	µg/L	5	29.5	54.2	13	14	<1 U	<1 U	<1 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	0.42 J
Vinyl Chloride	µg/L	2	0.5 U	0.5 U	1 U	0.5 U	<1 U	<1 U	<1 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U

Notes:

Blue Highlighting indicates analyte detected above MCL/PCL.

* Cleanup goal is MCL except for perchlorate. For perchlorate, Texas Risk Redu
groundwater residential PCL is used.

[a] Only limited data validation possible; Not used in plume delineation.

µg/L - micrograms per liter

J - estimated value; analyte concentration was less than the limit of quantification

COC - contaminants of concern

MCL - maximum contaminant level

NA - not analyzed

PCL - Texas residential groundwater protective concentration level

U - Not detected. The analyte was analyzed for, but not detected above the limi

Table 2-3
Historical COC Concentrations, LHAAP-50

Sample ID Sample Date	Units	MCL/ PCL *	50WW07-082115 8/21/2015	50WW07-110915 11/9/2015	50WW07-051116 5/11/16	50WW08-103013 [a] 10/30/2013	50WW08-031114 3/11/2014	50WW08-062414 6/24/2014	50WW08-110614 11/6/2014	50WW08-021715 2/17/2015	50WW08-052115 5/21/2015	50WW08-081715 8/17/2015	50WW08-111615 11/16/2015	50WW08-050316 5/3/2016	50WW08-110216 11/2/2016
Well Completion Zone			Upper Shallow												
Perchlorate	µg/L	17	<0.2 U	<1 U	1.08	6,404	91.5	132	56.3	99	200	157	32.4 J	146	126
1,1-Dichloroethene	µg/L	7	<1 U	<1 U	1 U	<5 U	1.71 J	<5 U	<2.5 U	<2.5 U	<2.5 U	<2.5 U	<1 U	0.812 J	2.5 U
1,2-Dichloroethane	µg/L	5	<0.5 U	<0.5 U	0.5 U	<5 U	5.73	4.36 J	2.12 J	3.59	3.6	2.63	1.26	3.23	2.41 J
cis-1,2-Dichloroethene	µg/L	70	<0.5 U	<0.5 U	0.5 U	30.6	103	86	48.5	70.5	62.1	45.4	17.7	48.1	38
Tetrachloroethene	µg/L	5	<0.5 U	<0.5 U	0.5 U	<5 U	2.15	2.03 J	1.9 J	2.55	2 J	1.2 J	1.21	1.66	1.11 J
Trichloroethene	µg/L	5	<0.5 U	<0.5 U	0.5 U	247	845	814	685	852	712	375	288	383	379
Vinyl Chloride	µg/L	2	<0.5 U	<0.5 U	0.5 U	<2 U	0.517 J	<2.5 U	<1.25 U	<1.25 U	<1.25 U	<1.25 U	<0.5 U	0.374 J	1.25 U

Notes:

Blue Highlighting indicates analyte detected above MCL/PCL.

* Cleanup goal is MCL except for perchlorate. For perchlorate, Texas Risk Redu groundwater residential PCL is used.

[a] Only limited data validation possible; Not used in plume delineation.

µg/L - micrograms per liter

J - estimated value; analyte concentration was less than the limit of quantification

COC - contaminants of concern

MCL - maximum contaminant level

NA - not analyzed

PCL - Texas residential groundwater protective concentration level

U - Not detected. The analyte was analyzed for, but not detected above the limi

Table 2-3
Historical COC Concentrations, LHAAP-50

Sample ID Sample Date	Units	MCL/ PCL *	50WW08-111317 11/13/2017	50WW08-111317-FD 11/13/2017	50WW08-180508 5/8/2018	50WW09-110113 11/1/2013	50WW09-031414 3/14/2014	50WW09-061914 6/19/2014	50WW09-111214 11/12/2014	50WW09-021315 2/13/2015	50WW09-052315 5/23/2015	50WW09-082115 8/21/2015	50WW09FD- 082115 8/21/2015	50WW09-111115 11/11/2015	50WW09FD- 111115 11/11/2015
Well Completion Zone			Upper Shallow			Lower Shallow									
Perchlorate	µg/L	17	27	25	140	<0.2 U	<0.2 U	<0.2 U	0.593	<0.2 U	0.196 J	<0.2 U	<0.2 U	<1 U	<1 U
1,1-Dichloroethene	µg/L	7	1 U	1 U	0.5 U	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U
1,2-Dichloroethane	µg/L	5	0.98 J	1.2 J	1.6	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	1.11	1.66	1.83	1.09	1.05
cis-1,2-Dichloroethene	µg/L	70	19	23	15	<0.5 U	0.579 J	1.16	0.36 J	1.04	19.7	29.4	29.5	16.3	16
Tetrachloroethene	µg/L	5	1	1.1	0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	0.353 J	0.423 J	0.536 J	0.34 J	0.404 J	0.393 J
Trichloroethene	µg/L	5	180 J	240 J	130	0.26 J	20.2	36.3	19.8	57 J	202	235	228	173	170
Vinyl Chloride	µg/L	2	1 U	1 U	0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U

Notes:

Blue Highlighting indicates analyte detected above MCL/PCL.

* Cleanup goal is MCL except for perchlorate. For perchlorate, Texas Risk Redu groundwater residential PCL is used.

[a] Only limited data validation possible; Not used in plume delineation.

µg/L - micrograms per liter

J - estimated value; analyte concentration was less than the limit of quantification

COC - contaminants of concern

MCL - maximum contaminant level

NA - not analyzed

PCL - Texas residential groundwater protective concentration level

U - Not detected. The analyte was analyzed for, but not detected above the limi

Table 2-3
Historical COC Concentrations, LHAAP-50

Sample ID Sample Date	Units	MCL/ PCL *	50WW09-051216 5/12/2016	50WW09-110316 11/3/2016	50WW09-111017 11/10/2017	50WW09-180515 5/15/2018	50WW09-180515FD 5/15/2018	50WW10-110513 11/5/2013	50WW10FD-110513 11/5/2013	50WW10-031414 3/14/2014	50WW10-061914 6/19/2014	50WW10FD-061914 6/19/2014	50WW10-111214 11/12/2014	50WW10-021315 2/13/2015	50WW10-052315 5/23/2015
Well Completion Zone			Lower Shallow					Intermediate							
Perchlorate	µg/L	17	0.2 U	0.2 U	4 U	2.7 J	2.8 J	0.906	0.924	0.272 J	0.499	1.46	<0.2 U	<0.2 U	<0.2 U
1,1-Dichloroethene	µg/L	7	1 U	1 U	1 U	0.5 U	0.5 U	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U
1,2-Dichloroethane	µg/L	5	0.688 J	0.519 J	1 U	0.5 U	0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
cis-1,2-Dichloroethene	µg/L	70	15.1	10.8	1 U	2.4	2.2	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
Tetrachloroethene	µg/L	5	0.452 J	0.344 J	1 U	0.5 U	0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
Trichloroethene	µg/L	5	154	126	4.9	83	74	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	0.549 J
Vinyl Chloride	µg/L	2	0.5 U	0.5 U	1 U	0.5 U	0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U

Notes:

Blue Highlighting indicates analyte detected above MCL/PCL.

* Cleanup goal is MCL except for perchlorate. For perchlorate, Texas Risk Redu groundwater residential PCL is used.

[a] Only limited data validation possible; Not used in plume delineation.

µg/L - micrograms per liter

J - estimated value; analyte concentration was less than the limit of quantification

COC - contaminants of concern

MCL - maximum contaminant level

NA - not analyzed

PCL - Texas residential groundwater protective concentration level

U - Not detected. The analyte was analyzed for, but not detected above the limi

Table 2-3
Historical COC Concentrations, LHAAP-50

Sample ID Sample Date	Units	MCL/ PCL *	50WW10-082115 8/21/2015	50WW10-111115 11/11/2015	50WW10-051216 5/12/2016	50WW10-110316 11/03/2016	50WW10-111017 11/10/2017	50WW10-180515 5/15/2018	50WW11-102813 10/28/2013	50WW11-031314 3/13/2014	50WW11-062514 6/25/2014	50WW11-110514 11/5/2014	50WW11-021715 2/17/2015	50WW11-052015 5/20/2015	50WW11-081815 8/18/2015
Well Completion Zone			Intermediate						Upper Shallow						
Perchlorate	µg/L	17	<0.2 U	<0.2 U	0.2 U	0.2 U	4 U	2 U	21,700	2,570	8,910	22,300	2,690	1,140	17,600
1,1-Dichloroethene	µg/L	7	<1 U	<1 U	1 U	1 U	1 U	0.5 U	17.4	1.88 J	7.35	27.9	2.47 J	1.03 J	13.1
1,2-Dichloroethane	µg/L	5	<0.5 U	<0.5 U	0.5 U	0.5 U	1 U	0.5 U	15.2	2.28 J	6.01	24.3	2.42	1.2	16.7
cis-1,2-Dichloroethene	µg/L	70	<0.5 U	<0.5 U	0.5 U	0.5 U	1 U	0.5 U	43.9	4.46	12.6	70.8	6.86	2.4	36.3
Tetrachloroethene	µg/L	5	<0.5 U	<0.5 U	0.5 U	0.5 U	1 U	0.5 U	2.76	<1.25 U	0.678 J	5.03	0.951 J	0.275 J	2.48
Trichloroethene	µg/L	5	0.494 J	0.766 J	0.5 U	0.5 U	1 U	0.5 U	2,750	362	831	3,550	512	230	1,550
Vinyl Chloride	µg/L	2	<0.5 U	<0.5 U	0.5 U	0.5 U	1 U	0.5 U	1.95	<1.25 U	0.516 J	3.53 J	<1 U	<0.5 U	1.29

Notes:

Blue Highlighting indicates analyte detected above MCL/PCL.

* Cleanup goal is MCL except for perchlorate. For perchlorate, Texas Risk Redu groundwater residential PCL is used.

[a] Only limited data validation possible; Not used in plume delineation.

µg/L - micrograms per liter

J - estimated value; analyte concentration was less than the limit of quantification

COC - contaminants of concern

MCL - maximum contaminant level

NA - not analyzed

PCL - Texas residential groundwater protective concentration level

U - Not detected. The analyte was analyzed for, but not detected above the limit

Table 2-3
Historical COC Concentrations, LHAAP-50

Sample ID Sample Date	Units	MCL/ PCL *	50WW11-111215 11/12/2015	50WW11-051016 5/10/2016	50WW11-110116 11/01/2016	50WW11-111317 11/13/2017	50WW11-180509 5/9/2018	50WW12-102313 10/23/2013	50WW12-031114 3/11/2014	50WW12-062614 6/26/2014	50WW12-110414 11/4/2014	50WW12-021815 2/18/2015	50WW12-052015 5/20/2015	50WW12-081815 8/18/2015	50WW12-111215 11/12/2015
Well Completion Zone			Upper Shallow					Upper Shallow							
Perchlorate	µg/L	17	22,800	1,300	13,400	20,000	1,000	23,600	35,700	35,500	14,300	30,600	59,200	17,300	37,900
1,1-Dichloroethene	µg/L	7	17.5 J	1.5 J	21.4	33	1.7	<1 U	<1 U	<1 U	<1 U	<1 U	0.878 J	<1 U	<1 U
1,2-Dichloroethane	µg/L	5	22.9	1.84	26.1	30	2	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	0.389 J	<0.5 U	<0.5 U
cis-1,2-Dichloroethene	µg/L	70	54.1	5.35	67.4	78	11	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
Tetrachloroethene	µg/L	5	<10 U	0.417 J	4.91	10 U	0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
Trichloroethene	µg/L	5	2,670	254	2,880	4,700	280	<0.5 U	0.257 J	0.411 J	<0.5 U	<0.5 U	33.9	5.59	17.6
Vinyl Chloride	µg/L	2	<10 U	0.5 U	1.9	10 U	0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U

Notes:

Blue Highlighting indicates analyte detected above MCL/PCL.

* Cleanup goal is MCL except for perchlorate. For perchlorate, Texas Risk Redu groundwater residential PCL is used.

[a] Only limited data validation possible; Not used in plume delineation.

µg/L - micrograms per liter

J - estimated value; analyte concentration was less than the limit of quantification

COC - contaminants of concern

MCL - maximum contaminant level

NA - not analyzed

PCL - Texas residential groundwater protective concentration level

U - Not detected. The analyte was analyzed for, but not detected above the limi

Table 2-3
Historical COC Concentrations, LHAAP-50

Sample ID Sample Date	Units	MCL/ PCL *	50WW12-051016 5/10/2016	50WW12-110116 11/1/2016	50WW12-111417 11/14/2017	50WW12-180508 5/8/2018	50WW12-180508FD 5/8/2018	50WW13-103013 (1) 10/30/2013	50WW13-031214 3/12/2014	50WW13-062514 6/25/2014	50WW13-110514 11/5/2014	50WW13-021715 2/17/2015	50WW13-052015 5/20/2015	50WW13-081915 8/19/2015	50WW13-111215 11/12/2015
Well Completion Zone			Upper Shallow					Upper Shallow							
Perchlorate	µg/L	17	87,800	25,300	21,000	91,000	89,000	14.7	510	3,110	11,700	648	126	9,300	11,400
1,1-Dichloroethene	µg/L	7	7.35	1.57 J	0.81 J	1.3	1.1	16.6	2.54	4.95 J	20.6	<5 U	0.978 J	13.5	<50 U
1,2-Dichloroethane	µg/L	5	3.93	0.952 J	0.55 J	0.95 J	1	42	4.45	10.6	42.4	4.99 J	1.78	31.5	43.4 J
cis-1,2-Dichloroethene	µg/L	70	0.78 J	0.5 U	1 U	0.5 U	0.5 U	205	25	56.3	239	32.1	10.7	184	231
Tetrachloroethene	µg/L	5	0.5 U	0.5 U	1 U	0.5 U	0.5 U	7.2	1.06	1.39 J	7.05 J	1.89 J	0.554 J	6.19	<25 U
Trichloroethene	µg/L	5	417	109	41	79	74	3,000	823	1,840	9,150	1,080	433	5,700	7,710 J
Vinyl Chloride	µg/L	2	0.5 U	0.5 U	1 U	0.5 U	0.5 U	<2 U	<0.5 U	<2.5 U	3.36 J	<2.5 U	<0.5 U	2.31 J	<25 U

Notes:

Blue Highlighting indicates analyte detected above MCL/PCL.

* Cleanup goal is MCL except for perchlorate. For perchlorate, Texas Risk Redu groundwater residential PCL is used.

[a] Only limited data validation possible; Not used in plume delineation.

µg/L - micrograms per liter

J - estimated value; analyte concentration was less than the limit of quantification

COC - contaminants of concern

MCL - maximum contaminant level

NA - not analyzed

PCL - Texas residential groundwater protective concentration level

U - Not detected. The analyte was analyzed for, but not detected above the limi

Table 2-3
Historical COC Concentrations, LHAAP-50

Sample ID Sample Date	Units	MCL/ PCL *	50WW13B-051316 5/13/2016	50WW13T-051316 5/13/2016	50WW13-110116 11/1/2016	50WW13-111317 11/13/2017	50WW13-180509 5/9/2018	50WW14-102813 10/28/2013	50WW14-031214 3/12/2014	50WW14-062514 6/25/2014	50WW14-110514 11/5/2014	50WW14-021715 2/17/2015	50WW14-052015 5/20/2015	50WW14-081915 8/19/2015	50WW14-111215 11/12/2015
Well Completion Zone			Upper Shallow					Lower Shallow							
Perchlorate	µg/L	17	256	493	8,650	13,000	640	5.45	0.256 J	0.121 J	5.37	0.381 J	2.06	2.19	7.5
1,1-Dichloroethene	µg/L	7	0.74 J	1.23 J	50 U	50 U	1.4	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U
1,2-Dichloroethane	µg/L	5	2.24	4.31	36.7 J	83	5.6	1.16	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
cis-1,2-Dichloroethene	µg/L	70	15.8	25	228	410	32	6.52	1.33	0.826 J	2.39	13.5	5.66	7.56	14.2
Tetrachloroethene	µg/L	5	0.555 J	0.846 J	25 U	50 U	1.6	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
Trichloroethene	µg/L	5	322	529	6,050	13,000	620	93.8	37.4	21.9	26.7	9.14	6.05	12	5.78
Vinyl Chloride	µg/L	2	0.5 U	0.259 J	25 U	50 U	0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U

Notes:

Blue Highlighting indicates analyte detected above MCL/PCL.

* Cleanup goal is MCL except for perchlorate. For perchlorate, Texas Risk Redu groundwater residential PCL is used.

[a] Only limited data validation possible; Not used in plume delineation.

µg/L - micrograms per liter

J - estimated value; analyte concentration was less than the limit of quantification

COC - contaminants of concern

MCL - maximum contaminant level

NA - not analyzed

PCL - Texas residential groundwater protective concentration level

U - Not detected. The analyte was analyzed for, but not detected above the limi

Table 2-3
Historical COC Concentrations, LHAAP-50

Sample ID Sample Date	Units	MCL/ PCL *	50WW14-050316 5/3/2016	50WW14-110116 11/01/2016	50WW14-111317 11/13/2017	50WW14-180509 5/9/2018	50WW15-102513 10/25/2013	50WW15-031714 3/17/2014	50WW15-061914 6/19/2014	50WW15-110714 11/7/2014	50WW15-021215 2/12/2015	50WW15FD-021215 2/12/2015	50WW15-052315 5/23/2015	50WW15-082015 8/20/2015	50WW15FD- 082015 8/20/2015
Well Completion Zone			Lower Shallow				Upper Shallow					Upper Shallow			
Perchlorate	µg/L	17	0.47	0.2 U	4 U	2 U	<0.2 U	<0.2 U	<0.2 U	<0.2 U	0.942 J	1.34 J	<0.2 U	0.237 J	0.155 J
1,1-Dichloroethene	µg/L	7	1 U	1 U	1 U	0.5 U	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U
1,2-Dichloroethane	µg/L	5	0.5 U	0.5 U	1 U	1.2	<0.5 U	<0.5 U	<0.5 U	<0.5 U	0.258 J	<0.5 U	<0.5 U	<0.5 U	<0.5 U
cis-1,2-Dichloroethene	µg/L	70	1.41	2.76	2.7	3.9	11.9	13.8	12.9	14.3	14.3	14.2	10.8	10.1	10.4
Tetrachloroethene	µg/L	5	0.5 U	0.5 U	1 U	0.5 U	3.25	3.33	3.05	3.34	3.31	3.24	2.96	1.92	2.01
Trichloroethene	µg/L	5	1.75	10.9	8.2	33	17.3	23.5	18.9	35.4	48.3	46.9	13	15.2	15.1
Vinyl Chloride	µg/L	2	0.5 U	0.5 U	1 U	0.5 U	3.24	3.09	2.76	2.69	2.2	2.27	1.91	1.25	1.38

Notes:

Blue Highlighting indicates analyte detected above MCL/PCL.

* Cleanup goal is MCL except for perchlorate. For perchlorate, Texas Risk Redu
groundwater residential PCL is used.

[a] Only limited data validation possible; Not used in plume delineation.

µg/L - micrograms per liter

J - estimated value; analyte concentration was less than the limit of quantification

COC - contaminants of concern

MCL - maximum contaminant level

NA - not analyzed

PCL - Texas residential groundwater protective concentration level

U - Not detected. The analyte was analyzed for, but not detected above the limi

Table 2-3
Historical COC Concentrations, LHAAP-50

Sample ID Sample Date	Units	MCL/ PCL *	50WW15-111115 11/11/2015	50WW15FD-111115 11/11/2015	50WW15-051116 5/12/2016	50WW15-110216 11/02/2016	50WW15-111017 11/10/2017	50WW15-180507 5/7/2018	50WW16-102513 10/25/2013	50WW16-032514 3/25/2014	50WW16-062614 6/26/2014	50WW16FD-062614 6/26/2014	50WW16-111214 11/12/2014	50WW16-021315 2/13/2015	50WW16-052215 5/22/2015
Well Completion Zone			Upper Shallow												
Perchlorate	µg/L	17	<1 U	<1 U	0.2 U	0.2 U	4 U	2 U	0.284 J	<0.2 U	0.725	0.682	<0.2 U	<0.2 U	<0.2 U
1,1-Dichloroethene	µg/L	7	<1 U	<1 U	1 U	1 U	1 U	0.5 U	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U
1,2-Dichloroethane	µg/L	5	<0.5 U	<0.5 U	0.5 U	0.5 U	1 U	0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
cis-1,2-Dichloroethene	µg/L	70	7.16	6.89	6.31	6.63	4.2	3.1	0.656 J	0.548 J	0.471 J	0.456 J	<0.5 U	<0.5 U	<0.5 U
Tetrachloroethene	µg/L	5	1.83	1.76	1.86	1.89	1.3	1.5	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
Trichloroethene	µg/L	5	8.2	8.05	5.32	9.52	3.6	3.5	18.1	11.4	12	11.6	1.05	0.391 J	<0.5 U
Vinyl Chloride	µg/L	2	0.966 J	0.923 J	0.5 U	1.18	0.85 J	0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U

Notes:

Blue Highlighting indicates analyte detected above MCL/PCL.

* Cleanup goal is MCL except for perchlorate. For perchlorate, Texas Risk Redu groundwater residential PCL is used.

[a] Only limited data validation possible; Not used in plume delineation.

µg/L - micrograms per liter

J - estimated value; analyte concentration was less than the limit of quantification

COC - contaminants of concern

MCL - maximum contaminant level

NA - not analyzed

PCL - Texas residential groundwater protective concentration level

U - Not detected. The analyte was analyzed for, but not detected above the limit

Table 2-3
Historical COC Concentrations, LHAAP-50

Sample ID Sample Date	Units	MCL/ PCL *	50WW16-082015 8/20/2015	50WW16-111315 11/13/2015	50WW16-051116 5/11/2016	50WW16-110216 11/2/2016	50WW16-111417 11/14/2017	50WW16-180509 5/9/2018	50WW17-102513 10/25/2013	50WW17-032514 3/25/2014	50WW17-062014 6/20/2014	50WW17-111114 11/11/2014	50WW17-021315 2/13/2015	50WW17-052215 5/22/2015	50WW17-081915 8/19/2015
Well Completion Zone			Upper Shallow						Fully Penetrating Shallow						
Perchlorate	µg/L	17	<0.2 U	<0.2 U	0.101 J	0.846	4 U	2 U	0.51	<0.2 U	1.76	<0.2 U	<0.2 U	<0.2 U	0.193 J
1,1-Dichloroethene	µg/L	7	<1 U	<1 U	1 U	1 U	1 U	0.5 U	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U
1,2-Dichloroethane	µg/L	5	<0.5 U	<0.5 U	0.5 U	0.5 U	1 U	0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
cis-1,2-Dichloroethene	µg/L	70	<0.5 U	<0.5 U	0.5 U	0.5 U	1 U	0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
Tetrachloroethene	µg/L	5	<0.5 U	<0.5 U	0.5 U	0.5 U	1 U	0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
Trichloroethene	µg/L	5	1.5	0.986 J	0.287 J	2.72	1.7 U	0.5 U	<0.5 U	<0.5 U	0.516 J	<0.5 U	<0.5 U	<0.5 U	<0.5 U
Vinyl Chloride	µg/L	2	<0.5 U	<0.5 U	0.5 U	0.5 U	1 U	0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U

Notes:

Blue Highlighting indicates analyte detected above MCL/PCL.

* Cleanup goal is MCL except for perchlorate. For perchlorate, Texas Risk Redu
groundwater residential PCL is used.

[a] Only limited data validation possible; Not used in plume delineation.

µg/L - micrograms per liter

J - estimated value; analyte concentration was less than the limit of quantification

COC - contaminants of concern

MCL - maximum contaminant level

NA - not analyzed

PCL - Texas residential groundwater protective concentration level

U - Not detected. The analyte was analyzed for, but not detected above the limi

Table 2-3
Historical COC Concentrations, LHAAP-50

Sample ID Sample Date	Units	MCL/ PCL *	50WW17-110915 11/9/2015	50WW17B-051316 5/13/16	50WW17M-051316 5/13/16	50WW17T-051316 5/13/16	50WW17-110416 11/4/2016	50WW17-111017 11/10/2017	50WW17-180515 5/15/2018	50WW18-102313 10/23/2013	50WW18-032614 3/26/2014	50WW18-062414 6/24/2014	50WW18-110414 11/4/2014	50WW18-021815 2/18/2015	50WW18-052815 5/28/2015
Well Completion Zone			Fully Penetrating Shallow							Upper Shallow					
Perchlorate	µg/L	17	<0.4 U	0.2 U	0.119 J	0.149 J	0.2 U	4 U	2 U	<0.2 U	<0.2 U	0.172 J	<0.2 U	0.258 J	<0.2 U
1,1-Dichloroethene	µg/L	7	<1 U	1 U	1 U	1 U	1 U	1 U	0.5 U	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U
1,2-Dichloroethane	µg/L	5	<0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	1 U	0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
cis-1,2-Dichloroethene	µg/L	70	<0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	1 U	0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
Tetrachloroethene	µg/L	5	<0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	1 U	0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
Trichloroethene	µg/L	5	<0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	1 U	0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
Vinyl Chloride	µg/L	2	<0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	1 U	0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U

Notes:

Blue Highlighting indicates analyte detected above MCL/PCL.

* Cleanup goal is MCL except for perchlorate. For perchlorate, Texas Risk Redu groundwater residential PCL is used.

[a] Only limited data validation possible; Not used in plume delineation.

µg/L - micrograms per liter

J - estimated value; analyte concentration was less than the limit of quantification

COC - contaminants of concern

MCL - maximum contaminant level

NA - not analyzed

PCL - Texas residential groundwater protective concentration level

U - Not detected. The analyte was analyzed for, but not detected above the limi

Table 2-3
Historical COC Concentrations, LHAAP-50

Sample ID Sample Date	Units	MCL/ PCL *	50WW18-081715 8/17/2015	50WW18-111615 11/16/2015	50WW18-050316 5/3/2016	50WW18-110316 11/03/2016	50WW18-111017 11/10/2017	50WW18-180507 5/7/2018	50WW19-011414 1/14/2014	50WW19-032514 3/25/2014	50WW19-062014 6/20/2014	50WW19-111114 11/11/2014	50WW19-021315 2/13/2015	50WW19-052215 5/22/2015	50WW19FD- 052215 5/22/2015
Well Completion Zone			Upper Shallow						Fully Penetrating Shallow						
Perchlorate	µg/L	17	0.144 J	<1 U	0.2 U	0.2 U	4 U	2 U	<0.2 U	<0.2 U	0.48	<0.2 U	<0.2 U	0.305 J	0.198 J
1,1-Dichloroethene	µg/L	7	<1 U	<1 U	1 U	1 U	1 U	0.5 U	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U
1,2-Dichloroethane	µg/L	5	<0.5 U	<0.5 U	0.5 U	0.5 U	1 U	0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
cis-1,2-Dichloroethene	µg/L	70	<0.5 U	<0.5 U	0.5 U	0.5 U	1 U	0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
Tetrachloroethene	µg/L	5	<0.5 U	<0.5 U	0.5 U	0.5 U	1 UJ	0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
Trichloroethene	µg/L	5	<0.5 U	<0.5 U	0.5 U	0.5 U	1 U	0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
Vinyl Chloride	µg/L	2	<0.5 U	<0.5 U	0.5 U	0.5 U	1 U	0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U

Notes:

Blue Highlighting indicates analyte detected above MCL/PCL.

* Cleanup goal is MCL except for perchlorate. For perchlorate, Texas Risk Redu groundwater residential PCL is used.

[a] Only limited data validation possible; Not used in plume delineation.

µg/L - micrograms per liter

J - estimated value; analyte concentration was less than the limit of quantification

COC - contaminants of concern

MCL - maximum contaminant level

NA - not analyzed

PCL - Texas residential groundwater protective concentration level

U - Not detected. The analyte was analyzed for, but not detected above the limi

Table 2-3
Historical COC Concentrations, LHAAP-50

Sample ID Sample Date	Units	MCL/ PCL *	50WW19-082115 8/21/2015	50WW19-110915 11/9/2015	50WW19B-051316 5/3/2016	50WW19M-051316 5/13/2016	50WW19T-051316 5/13/2016	50WW19-110416 11/04/2016	50WW20-110713 11/7/2013	50WW20-031314 3/13/2014	50WW20FD-031314 3/13/2014	50WW20-061914 6/19/2014	50WW20-111114 11/11/2014	50WW20FD-111114 11/11/2014	50WW20-021215 2/12/2015
Well Completion Zone			Fully Penetrating Shallow												
Perchlorate	µg/L	17	<0.2 U	<0.2 U	0.2 U	0.2 U	0.338 J	0.2 U	<0.2 U	0.697	0.673	<0.2 U	<0.2 U	<0.2 U	0.168 J
1,1-Dichloroethene	µg/L	7	<1 U	<1 U	1 U	1 U	1 U	1 U	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U
1,2-Dichloroethane	µg/L	5	<0.5 U	<0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
cis-1,2-Dichloroethene	µg/L	70	<0.5 U	<0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
Tetrachloroethene	µg/L	5	<0.5 U	<0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
Trichloroethene	µg/L	5	<0.5 U	<0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
Vinyl Chloride	µg/L	2	<0.5 U	<0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U

Notes:

Blue Highlighting indicates analyte detected above MCL/PCL.

* Cleanup goal is MCL except for perchlorate. For perchlorate, Texas Risk Redu
groundwater residential PCL is used.

[a] Only limited data validation possible; Not used in plume delineation.

µg/L - micrograms per liter

J - estimated value; analyte concentration was less than the limit of quantification

COC - contaminants of concern

MCL - maximum contaminant level

NA - not analyzed

PCL - Texas residential groundwater protective concentration level

U - Not detected. The analyte was analyzed for, but not detected above the limit

Table 2-3
Historical COC Concentrations, LHAAP-50

Sample ID Sample Date	Units	MCL/ PCL *	50WW20-052615 5/26/2015	50WW20-082115 8/21/2015	50WW20-111015 11/10/2015	50WW20-51116 5/11/2016	50WW21-102513 10/25/2013	50WW21FD- 102513 10/25/2013	50WW21-032514 3/25/2014	50WW21-062014 6/20/2014	50WW21FD- 062014 6/20/2014	50WW21-111314 11/13/2014	50WW21FD-111314 11/13/2014	50WW21-021215 2/12/2015	50WW21-052315 5/23/2015
Well Completion Zone			Fully Penetrating Shallow				Upper Shallow								
Perchlorate	µg/L	17	<0.2 U	<0.2 U	<0.2 U	0.2 U	0.731	0.818	0.606	0.964	0.934	0.779	0.779	0.878	0.502
1,1-Dichloroethene	µg/L	7	<1 U	<1 U	<1 U	1 U	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U
1,2-Dichloroethane	µg/L	5	<0.5 U	<0.5 U	<0.5 U	0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
cis-1,2-Dichloroethene	µg/L	70	<0.5 U	<0.5 U	<0.5 U	0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
Tetrachloroethene	µg/L	5	<0.5 U	<0.5 U	<0.5 U	0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
Trichloroethene	µg/L	5	<0.5 U	<0.5 U	<0.5 U	0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	0.447 J
Vinyl Chloride	µg/L	2	<0.5 U	<0.5 U	<0.5 U	0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U

Notes:

Blue Highlighting indicates analyte detected above MCL/PCL.

* Cleanup goal is MCL except for perchlorate. For perchlorate, Texas Risk Redu groundwater residential PCL is used.

[a] Only limited data validation possible; Not used in plume delineation.

µg/L - micrograms per liter

J - estimated value; analyte concentration was less than the limit of quantification

COC - contaminants of concern

MCL - maximum contaminant level

NA - not analyzed

PCL - Texas residential groundwater protective concentration level

U - Not detected. The analyte was analyzed for, but not detected above the limi

Table 2-3
Historical COC Concentrations, LHAAP-50

Sample ID Sample Date	Units	MCL/ PCL *	50WW21FD-052315 5/23/2015	50WW21-082015 8/20/2015	50WW21-111015 11/10/2015	50WW21-051216 5/12/2016	50WW21-110316 11/03/2016	50WW21-111017 11/10/2017	50WW21-180507 5/7/2018	50WW22-102313 10/23/2013	50WW22-031214 3/12/2014	50WW22-062414 6/24/2014	50WW22-110614 11/6/2014	50WW22-021715 2/17/2015	50WW22-052115 5/21/2015
Well Completion Zone			Upper Shallow												
Perchlorate	µg/L	17	0.516	0.67	1.21 J	0.398 J	0.418	4 U	2 U	6.97	1.54	2.29	1.06	1.51	2.92
1,1-Dichloroethene	µg/L	7	<1 U	<1 U	<1 U	1 U	1 U	1 U	0.5 U	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U
1,2-Dichloroethane	µg/L	5	<0.5 U	<0.5 U	<0.5 U	0.5 U	0.5 U	1 U	0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
cis-1,2-Dichloroethene	µg/L	70	<0.5 U	<0.5 U	<0.5 U	0.5 U	0.5 U	1 U	0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
Tetrachloroethene	µg/L	5	<0.5 U	<0.5 U	<0.5 U	0.5 U	0.5 U	1 U	0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
Trichloroethene	µg/L	5	<0.5 U	<0.5 U	<0.5 U	0.5 U	0.5 U	1 U	0.5 U	<0.5 U	<0.5 U	<0.5 U	0.339 J	<0.5 U	<0.5 U
Vinyl Chloride	µg/L	2	<0.5 U	<0.5 U	<0.5 U	0.5 U	0.5 U	1 U	0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U

Notes:

Blue Highlighting indicates analyte detected above MCL/PCL.

* Cleanup goal is MCL except for perchlorate. For perchlorate, Texas Risk Redu groundwater residential PCL is used.

[a] Only limited data validation possible; Not used in plume delineation.

µg/L - micrograms per liter

J - estimated value; analyte concentration was less than the limit of quantification

COC - contaminants of concern

MCL - maximum contaminant level

NA - not analyzed

PCL - Texas residential groundwater protective concentration level

U - Not detected. The analyte was analyzed for, but not detected above the limit

Table 2-3
Historical COC Concentrations, LHAAP-50

Sample ID Sample Date	Units	MCL/ PCL *	50WW22-081815 8/18/2015	50WW22-111615 11/16/2015	50WW22-051016 5/10/2016	50WW22-110216 11/2/2016	50WW22-111317 11/13/2017	50WW22-180509 5/9/2018	50WW23-102913 10/29/2013	50WW23-031314 3/13/2014	50WW23-062614 6/26/2014	50WW23-110414 11/4/2014	50WW23-021815 2/18/2015	50WW23-052015 5/20/2015	50WW23-081715 8/17/2015
Well Completion Zone			Upper Shallow						Upper Shallow						
Perchlorate	µg/L	17	3.62	0.642 J	1.46	1.02	4 U	1.1 J	0.336 J	0.227 J	0.182 J	<0.2 U	<0.2 U	23.3	0.527
1,1-Dichloroethene	µg/L	7	<1 U	<1 U	1 U	1 U	1 U	0.5 U	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U
1,2-Dichloroethane	µg/L	5	<0.5 U	<0.5 U	0.5 U	0.5 U	1 U	0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
cis-1,2-Dichloroethene	µg/L	70	<0.5 U	<0.5 U	0.5 U	0.5 U	1 U	0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
Tetrachloroethene	µg/L	5	<0.5 U	<0.5 U	0.5 U	0.5 U	1 U	0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
Trichloroethene	µg/L	5	<0.5 U	0.454 J	0.5 U	0.5 U	1 U	0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
Vinyl Chloride	µg/L	2	<0.5 U	<0.5 U	0.5 U	0.5 U	1 U	0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U

Notes:

Blue Highlighting indicates analyte detected above MCL/PCL.

* Cleanup goal is MCL except for perchlorate. For perchlorate, Texas Risk Redu
groundwater residential PCL is used.

[a] Only limited data validation possible; Not used in plume delineation.

µg/L - micrograms per liter

J - estimated value; analyte concentration was less than the limit of quantification

COC - contaminants of concern

MCL - maximum contaminant level

NA - not analyzed

PCL - Texas residential groundwater protective concentration level

U - Not detected. The analyte was analyzed for, but not detected above the limi

Table 2-3
Historical COC Concentrations, LHAAP-50

Sample ID Sample Date	Units	MCL/ PCL *	50WW23-111615 11/16/2015	50WW23-051016 5/10/2016	50WW23-110116 11/01/2016	50WW23-111417 11/14/2017	50WW23-180515 5/15/2018	50WW24-102913 10/29/2013	50WW24-032614 3/26/2014	50WW24-062614 6/26/2014	50WW24-110414 11/4/2014	50WW24-021815 2/18/2015	50WW24-052815 5/28/2015	50WW24-081715 8/17/2015	50WW24-111615 11/16/2015
Well Completion Zone			Upper Shallow												
Perchlorate	µg/L	17	<1 U	2.15	4.76	4 U	2 U	0.479	<0.2 U	110	<0.2 U	<0.2 U	<0.2 U	<0.2 U	<1 U
1,1-Dichloroethene	µg/L	7	<1 U	1 U	1 U	1 U	0.5 U	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U
1,2-Dichloroethane	µg/L	5	<0.5 U	0.5 U	0.5 U	1 U	0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
cis-1,2-Dichloroethene	µg/L	70	<0.5 U	0.5 U	0.5 U	1 U	0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
Tetrachloroethene	µg/L	5	<0.5 U	0.5 U	0.5 U	1 U	0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
Trichloroethene	µg/L	5	<0.5 U	0.5 U	0.5 U	1 U	0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	0.268 J	<0.5 U	<0.5 U
Vinyl Chloride	µg/L	2	<0.5 U	0.5 U	0.5 U	1 U	0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U

Notes:

Blue Highlighting indicates analyte detected above MCL/PCL.

* Cleanup goal is MCL except for perchlorate. For perchlorate, Texas Risk Redu
groundwater residential PCL is used.

[a] Only limited data validation possible; Not used in plume delineation.

µg/L - micrograms per liter

J - estimated value; analyte concentration was less than the limit of quantification

COC - contaminants of concern

MCL - maximum contaminant level

NA - not analyzed

PCL - Texas residential groundwater protective concentration level

U - Not detected. The analyte was analyzed for, but not detected above the limi

Table 2-3
Historical COC Concentrations, LHAAP-50

Sample ID Sample Date	Units	MCL/ PCL *	50WW24-051016 5/10/2016	50WW24-110316 11/3/2016	50WW24-111017 11/10/2017	50WW24-180507 5/7/2018	50WW26-110613 11/6/2013	50WW26FD-110613 11/6/2013	50WW26-032614 3/26/2014	50WW26FD-032614 3/26/2014	50WW26-062014 6/20/2014	50WW26-111314 11/13/2014	50WW26-021315 2/13/2015	50WW26-052315 5/23/2015	50WW26-082015 8/20/2015
Well Completion Zone			Upper Shallow				Lower Shallow								
Perchlorate	µg/L	17	36.8	0.2 U	4 U	2 U	<0.2 U	<0.2 U	<0.2 U	<0.2 U	<0.2 U	<0.2 U	<0.2 U	<0.2 U	<0.2 U
1,1-Dichloroethene	µg/L	7	1 U	1 U	1 U	0.5 U	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U
1,2-Dichloroethane	µg/L	5	0.5 U	0.5 U	1 U	0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
cis-1,2-Dichloroethene	µg/L	70	0.5 U	0.5 U	1 U	0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
Tetrachloroethene	µg/L	5	0.5 U	0.5 U	1 U	0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
Trichloroethene	µg/L	5	0.5 U	0.5 U	1 U	0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
Vinyl Chloride	µg/L	2	0.5 U	0.5 U	1 U	0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U

Notes:

Blue Highlighting indicates analyte detected above MCL/PCL.

* Cleanup goal is MCL except for perchlorate. For perchlorate, Texas Risk Redu
groundwater residential PCL is used.

[a] Only limited data validation possible; Not used in plume delineation.

µg/L - micrograms per liter

J - estimated value; analyte concentration was less than the limit of quantification

COC - contaminants of concern

MCL - maximum contaminant level

NA - not analyzed

PCL - Texas residential groundwater protective concentration level

U - Not detected. The analyte was analyzed for, but not detected above the limi

Table 2-3
Historical COC Concentrations, LHAAP-50

Sample ID Sample Date	Units	MCL/ PCL *	50WW26-111015 11/10/2015	50WW26FD- 111015 11/10/2015	50WW26-050316 5/3/2016	50WW26-110216 11/2/2016	50WW27-110613 11/6/2013	50WW27-031714 3/17/2014	50WW27FD- 031714 3/17/2014	50WW27-061914 6/19/2014	50WW27-110714 11/7/2014	50WW27FD- 110714 11/7/2014	50WW27-021215 2/12/2015	50WW27-052315 5/23/2015	50WW27-082015 8/20/2015
Well Completion Zone			Lower Shallow												
Perchlorate	µg/L	17	<1 U	<1 U	0.2 U	0.2 U	<0.2 U	<0.2 U	<0.2 U	<0.2 U	<0.2 U	<0.2 U	<0.2 U	<0.2 U	<0.2 U
1,1-Dichloroethene	µg/L	7	<1 U	<1 U	1 U	1 U	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U
1,2-Dichloroethane	µg/L	5	<0.5 U	<0.5 U	0.5 U	0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
cis-1,2-Dichloroethene	µg/L	70	<0.5 U	<0.5 U	0.5 U	0.515 J	<0.5 U	0.611 J	0.518 J	0.871 J	0.529 J	0.493 J	0.691 J	0.709 J	0.33 J
Tetrachloroethene	µg/L	5	<0.5 U	<0.5 U	0.5 U	0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
Trichloroethene	µg/L	5	<0.5 U	<0.5 U	0.5 U	0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
Vinyl Chloride	µg/L	2	<0.5 U	<0.5 U	0.5 U	0.5 U	<0.5 U	<0.5 U	<0.5 U	0.251 J	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U

Notes:

Blue Highlighting indicates analyte detected above MCL/PCL.

* Cleanup goal is MCL except for perchlorate. For perchlorate, Texas Risk Redu groundwater residential PCL is used.

[a] Only limited data validation possible; Not used in plume delineation.

µg/L - micrograms per liter

J - estimated value; analyte concentration was less than the limit of quantification

COC - contaminants of concern

MCL - maximum contaminant level

NA - not analyzed

PCL - Texas residential groundwater protective concentration level

U - Not detected. The analyte was analyzed for, but not detected above the limi

Table 2-3
Historical COC Concentrations, LHAAP-50

Sample ID Sample Date	Units	MCL/ PCL *	50WW27-111115 11/11/2015	50WW27-051216 5/12/2016	50WW27-110216 11/2/2016	50WW27-111017 11/10/2017	50WW27-180507 5/7/2018	50WW28-070914 7/9/2014	50WW28-111214 11/12/2014	50WW28-021715 2/17/2015	50WW28FD- 021715 2/17/2015	50WW28-052615 5/26/2015	50WW28FD- 052615 5/26/2015	50WW28-082015 8/20/2015	50WW28-051116 5/11/2016
Well Completion Zone			Lower Shallow					Upper Shallow							
Perchlorate	µg/L	17	<1 U	0.2 U	0.124 J	4 U	2 U	2.57	2.01 J	1.44	1.44	1.04	1.05	0.688	1.12
1,1-Dichloroethene	µg/L	7	<1 U	1 U	1 U	1 U	0.5 U	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U	1 U
1,2-Dichloroethane	µg/L	5	<0.5 U	0.5 U	0.5 U	1 U	0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	0.5 U
cis-1,2-Dichloroethene	µg/L	70	0.581 J	0.515 J	0.498 J	1 U	0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	0.5 U
Tetrachloroethene	µg/L	5	<0.5 U	0.5 U	0.5 U	1 U	0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	0.5 U
Trichloroethene	µg/L	5	<0.5 U	0.5 U	0.5 U	1 U	0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	0.5 U
Vinyl Chloride	µg/L	2	<0.5 U	0.5 U	0.5 U	1 U	0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	0.5 U

Notes:

Blue Highlighting indicates analyte detected above MCL/PCL.

* Cleanup goal is MCL except for perchlorate. For perchlorate, Texas Risk Redu groundwater residential PCL is used.

[a] Only limited data validation possible; Not used in plume delineation.

µg/L - micrograms per liter

J - estimated value; analyte concentration was less than the limit of quantification

COC - contaminants of concern

MCL - maximum contaminant level

NA - not analyzed

PCL - Texas residential groundwater protective concentration level

U - Not detected. The analyte was analyzed for, but not detected above the limi

Table 2-3
Historical COC Concentrations, LHAAP-50

Sample ID Sample Date	Units	MCL/ PCL *	50WW28-111315 11/13/2015	GPW1-021715 2/17/2015	GPW1-050815 5/8/2015	GPW1-052215 5/22/2015	GPW1-111315 11/13/2015	GPW1- 2/11/2016	GPW1- 5/13/2016	GPW1-081016 8/1/2016	GPW1-111316 11/13/2016	GPW1A-021715 2/17/2015	GPW1A-050815 5/8/2015	GPW1A-021116 2/11/2016	GPW1A-050116 5/1/2016	GPW1A-081016 8/1/16	GPW1A-110116 11/1/2016
Well Completion Zone			Upper Shallow	Surface Water													
Perchlorate	µg/L	17	1.64	0.737	0.156 J	0.213 J	0.139 J	0.447	6.59	0.162 J	0.301 J	38.2	16	NA	NA	0.137 J	NA
1,1-Dichloroethene	µg/L	7	<1 U	<1 U	<1 U	<1 U	<1 U	NA	NA	NA	NA	<1 U	<1 U	NA	NA	NA	NA
1,2-Dichloroethane	µg/L	5	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	NA	NA	NA	NA	<0.5 U	<0.5 U	NA	NA	NA	NA
cis-1,2-Dichloroethene	µg/L	70	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	NA	NA	NA	NA	<0.5 U	<0.5 U	NA	NA	NA	NA
Tetrachloroethene	µg/L	5	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	NA	NA	NA	NA	<0.5 U	<0.5 U	NA	NA	NA	NA
Trichloroethene	µg/L	5	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	NA	NA	NA	NA	<0.5 U	<0.5 U	NA	NA	NA	NA
Vinyl Chloride	µg/L	2	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	NA	NA	NA	NA	<0.5 U	<0.5 U	NA	NA	NA	NA

Notes:

Blue Highlighting indicates analyte detected above MCL/PCL.

* Cleanup goal is MCL except for perchlorate. For perchlorate, Texas Risk Redu groundwater residential PCL is used.

[a] Only limited data validation possible; Not used in plume delineation.

µg/L - micrograms per liter

J - estimated value; analyte concentration was less than the limit of quantification

COC - contaminants of concern

MCL - maximum contaminant level

NA - not analyzed

PCL - Texas residential groundwater protective concentration level

U - Not detected. The analyte was analyzed for, but not detected above the limi

Table 2-3
Historical COC Concentrations, LHAAP-50

Sample ID Sample Date	Units	MCL/ PCL *	LHSMW54-941209 12/9/1994	LHSMW54-960212 2/12/1996	LHSMW54-960821 8/21/1996	LHSMW54-980520 5/20/1998	LHSMW54-000521 5/21/2000	LHSMW54-020309 3/9/2002	LHSMW54-020921 9/21/2002	LHSMW54-100806 8/6/2010	LHSMW54-101707 10/17/2007	LHSMW54-110713 11/7/2013	LHSMW54-021815 2/18/2015	LHSMW54-052715 5/27/2015	LHSMW54-111315 11/13/2015
Well Completion Zone			Upper Shallow												
Perchlorate	µg/L	17	NA	NA	NA	NA	<1 U	<4 U	<4 U	<0.2 U	<1 U	<0.2 U	0.271 J	<0.2 U	<1 UJ
1,1-Dichloroethene	µg/L	7	<5 U	NA	<0.2 U	<1 U	NA	NA	NA	<2.5 U	<1 U	<1 U	<1 U	<1 U	<1 U
1,2-Dichloroethane	µg/L	5	<5 U	NA	<0.31 U	<1 U	NA	NA	NA	<2.5 U	<1 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
cis-1,2-Dichloroethene	µg/L	70	NA	NA	<0.2 U	0.7	NA	NA	NA	0.657 J	1.59	0.392 J	0.316 J	0.261 J	0.323 J
Tetrachloroethene	µg/L	5	<5 U	NA	<0.25 U	<1 U	NA	NA	NA	<2.5 U	<1 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
Trichloroethene	µg/L	5	12	11	15.7	210	NA	NA	NA	369	601	112	93.8	95.9	88.3
Vinyl Chloride	µg/L	2	NA	NA	<0.24 U	<1 U	NA	NA	NA	<2.5 U	<1 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U

Notes:

Blue Highlighting indicates analyte detected above MCL/PCL.

* Cleanup goal is MCL except for perchlorate. For perchlorate, Texas Risk Redu
groundwater residential PCL is used.

[a] Only limited data validation possible; Not used in plume delineation.

µg/L - micrograms per liter

J - estimated value; analyte concentration was less than the limit of quantification

COC - contaminants of concern

MCL - maximum contaminant level

NA - not analyzed

PCL - Texas residential groundwater protective concentration level

U - Not detected. The analyte was analyzed for, but not detected above the limi

Table 2-4
Year 6 RA-O Monitoring Network, LHAAP-50

Well ID	VOCs	Perchlorate	Field Parameters	TOC	Anions (chloride, nitrate, sulfate)	Dissolved Gases (ethene, ethane, methane)	Carbon dioxide	Ferrous Iron (only field)
Groundwater Sample Locations								
50WW08	X	X	X					
50WW11	X	X	X	X	X	X	X	X
50WW12	X	X	X	X	X	X	X	X
50WW13	X	X	X	X	X	X	X	X
50WW15	X	X	X					
50WW16	X	X	X					
50WW18	X	X	X					
50WW22	X	X	X					
50WW23	X	X	X					
50WW05	X	X	X					
50WW06	X	X	X	X	X	X	X	X
50WW09	X	X	X					
50WW14	X	X	X	X	X	X	X	X
50WW29	X	X	X					

Notes:

Field Parameters: DO, ORP, pH, specific conductivity, temperature

DO - dissolved oxygen

ID - identification

ORP - oxidation reduction potential

RA-O - remedial action operation

TOC - total organic carbon

VOCs - volatile organic compounds

Table 2-5
Groundwater Elevation vs. Bottom of Drainage Channel Elevation, LHAAP-50

Surface Water Sample Location	Bottom of Drainage Channel (ft amsl)	Nearest Well	Groundwater Elevation during Surface Water Sampling (ft amsl)	Groundwater Elevation Measurement Date
50SW06	182.902	50WW16	175.93	11/28/2018
			178.61	5/6/2019

Notes:

ft amsl - feet above mean sea level

Table 3-1
Mann-Kendall Trend Summary, LHAAP-50

Monitoring Well	Perchlorate	TCE	cis-1,2-DCE	1,1-DCE	1,2-DCA
50WW05	–	**Significant decrease**	–	–	–
50WW06	Stable	Stable	–	–	–
50WW08	No trend	**Significant decrease**	–	–	–
50WW09	–	No trend	–	–	–
50WW11	Stable	Stable	No trend	No trend	Stable
50WW12	Increasing	**Significant increase**	–	–	–
50WW13	No trend	No trend	Stable	–	No trend
50WW14	–	No trend	–	–	–
50WW15	–	**Significant decrease**	–	–	–

Notes:

Bolded cells indicate a statistically significant trend with >95% confidence.

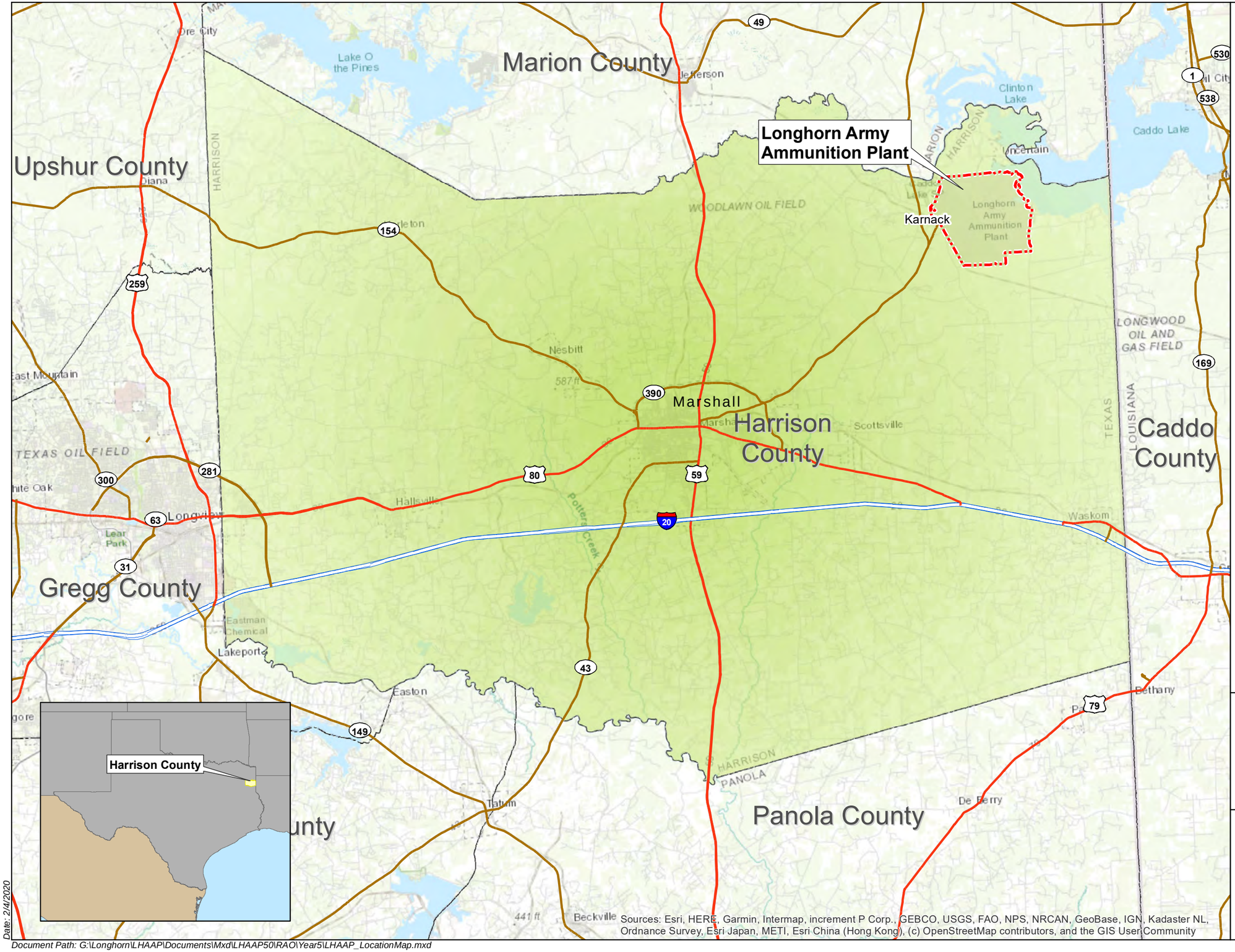
"Significant" refers to the statistical confidence in the trend.

DCA - dichloroethane

DCE - dichloroethene

TCE - trichloroethene

Figures



Date: 2/4/2020

Document Path: G:\Longhorn\LHAAP\Documents\Mxd\LHAAP50\RAO\Year5\LHAAP_LocationMap.mxd

Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

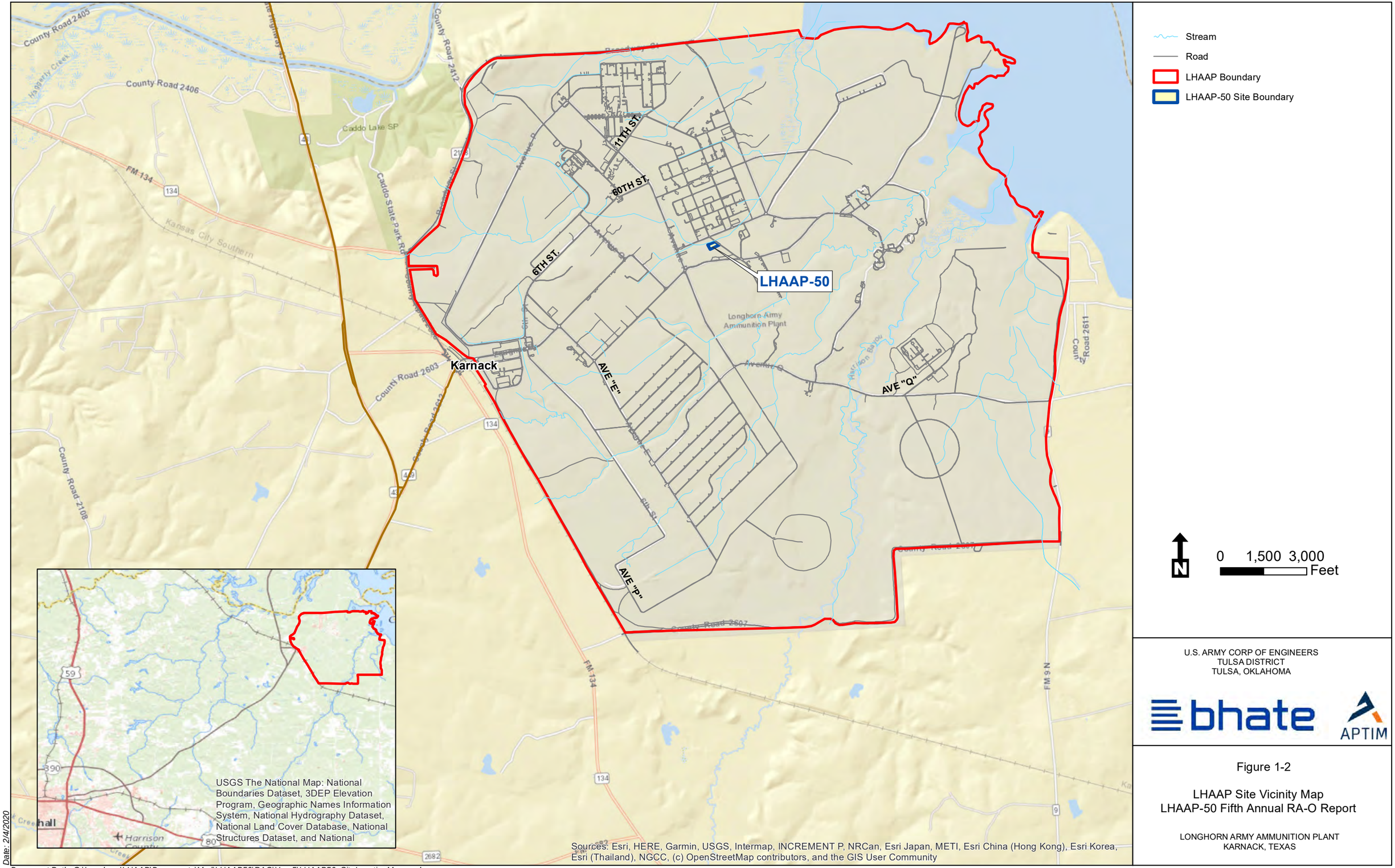
U.S. ARMY CORP OF ENGINEERS
TULSA DISTRICT
TULSA, OKLAHOMA

bhate APTIM

Figure 1-1

LHAAP Site Area Map
LHAAP-50 Fifth Annual RA-O Report

LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS



U.S. ARMY CORP OF ENGINEERS
TULSA DISTRICT
TULSA, OKLAHOMA

bhate APTIM

Figure 1-2

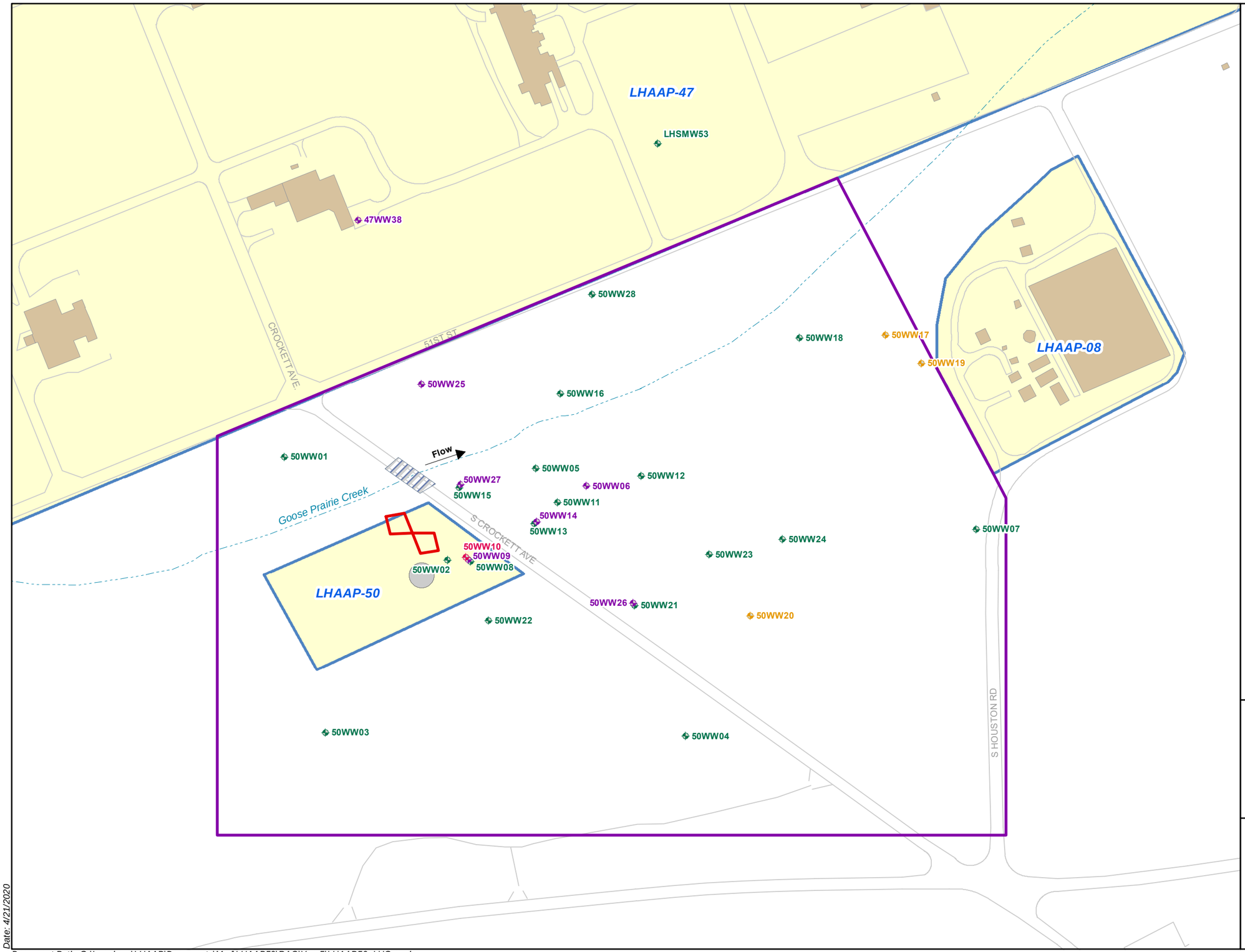
LHAAP Site Vicinity Map
LHAAP-50 Fifth Annual RA-O Report

LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

Date: 2/4/2020

Document Path: G:\Longhorn\LHAAP\Documents\Mxd\LHAAP50\RAO\Year5\LHAAP50_SiteLocationMap.mxd

00962590



U.S. ARMY CORP OF ENGINEERS
TULSA DISTRICT
TULSA, OKLAHOMA

bhate APTIM

Figure 1-3

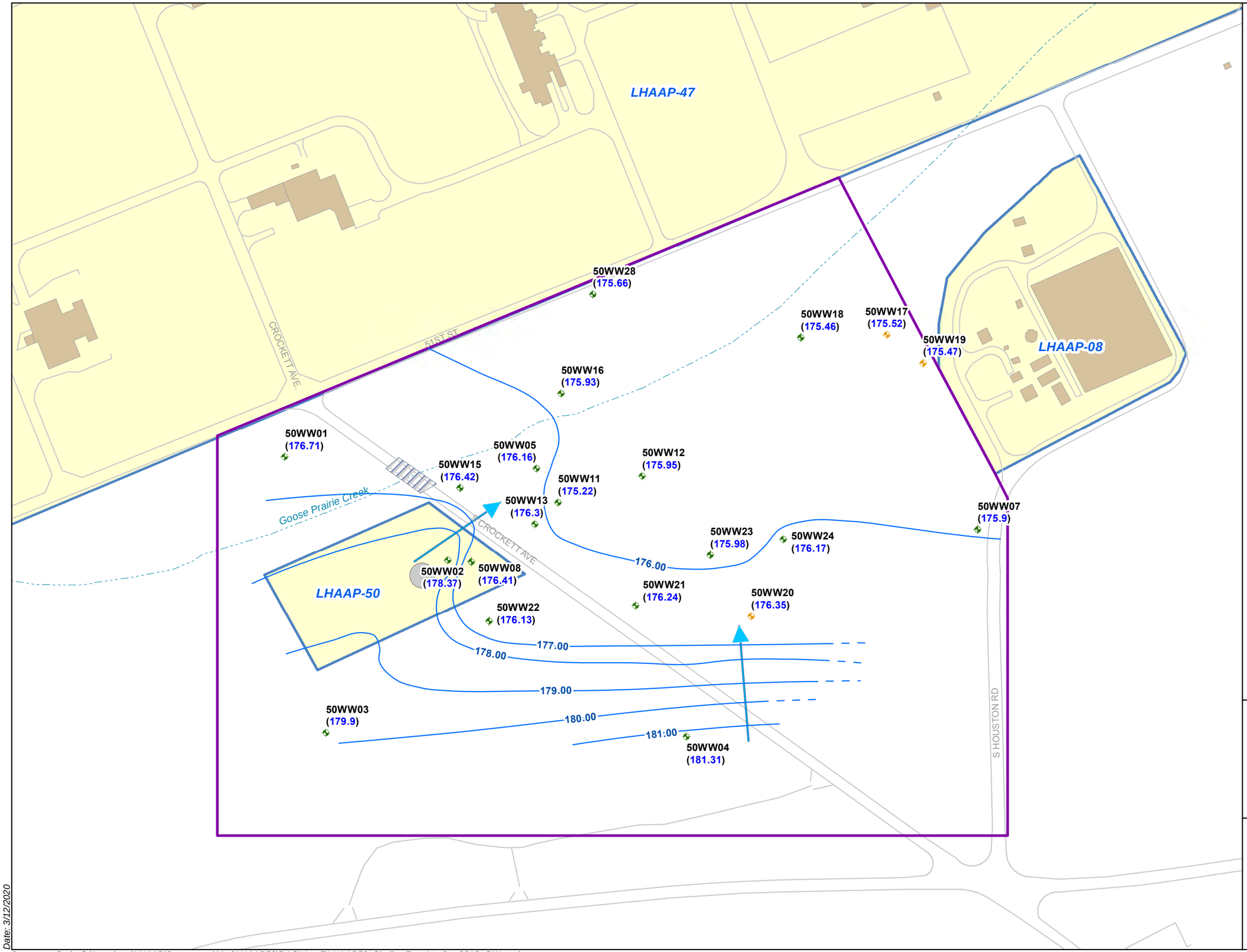
Land Use Control Boundary
LHAAP-50 Fifth Annual RA-O Report

LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

Date: 4/21/2020

Document Path: G:\Longhorn\LHAAP\Documents\Mxd\LHAAP50\RAO\Year5\LHAAP50_LUC.mxd

00962591



- Upper Shallow Monitoring Well
- Fully Penetrating Shallow Monitoring Well
- Groundwater Contour
- Inferred Groundwater Contour
- Groundwater Flow Direction
- Land Use Control Boundary
- Bridges
- Former Storage Tank Location
- Goose Prairie Creek
- Roads
- Buildings
- Site Boundaries

Note:
1. Groundwater levels (176.71) are in feet above mean sea level (ft amsl).

N

0 75 150 Feet

U.S. ARMY CORP OF ENGINEERS
TULSA DISTRICT
TULSA, OKLAHOMA

bhate APTIM

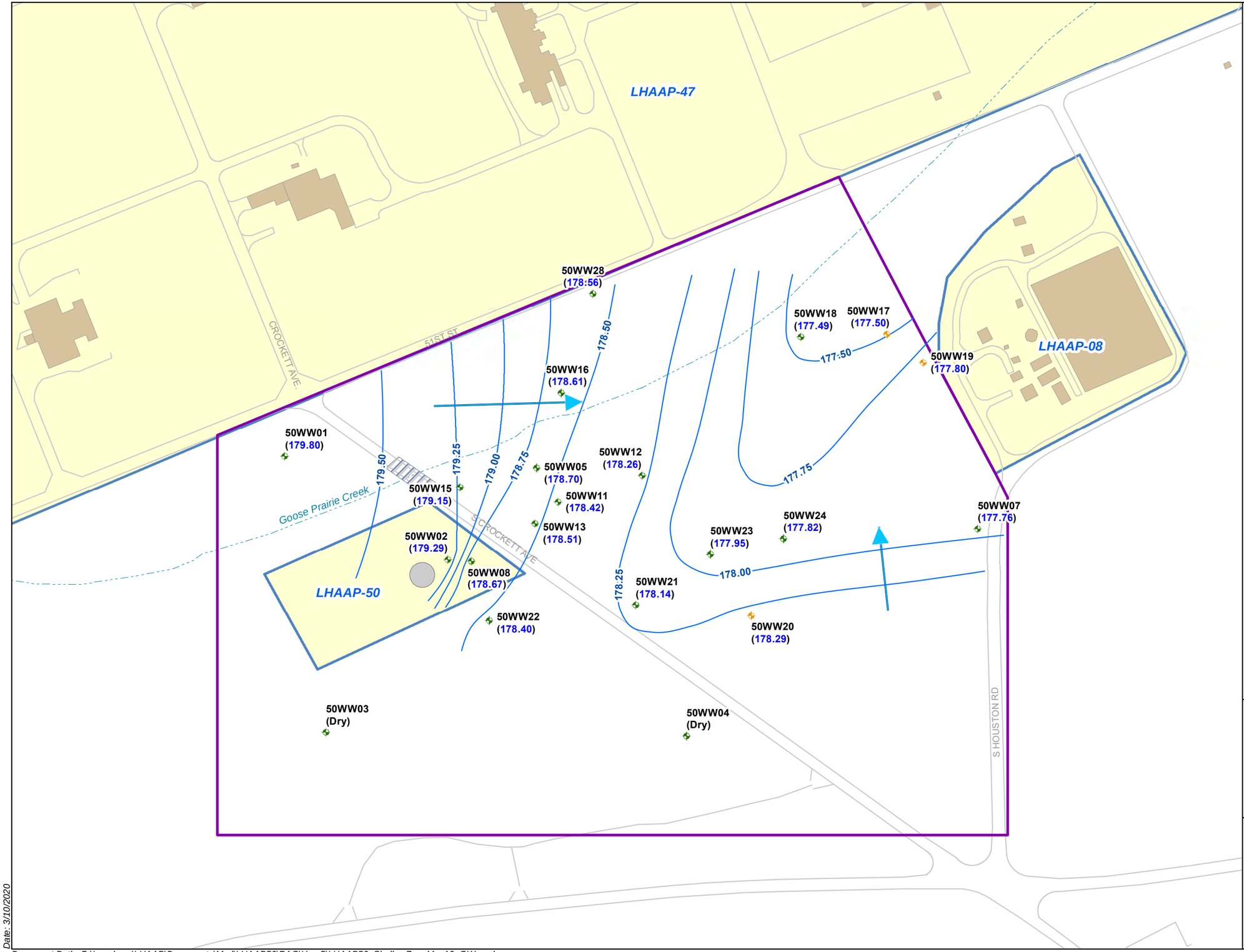
Figure 2-1

Potentiometric Surface Map for the Shallow Zone, November-December 2018
LHAAP-50 Fifth Annual RA-O Report

LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

Date: 3/12/2020

Document Path: G:\Longhorn\LHAAP\Documents\Mxd\LHAAP50\RAO\Year5\LHAAP50_ShallowZoneNovDec2018_GW.mxd



- Upper Shallow Monitoring Well
- Fully Penetrating Shallow Monitoring Well
- Groundwater Contour
- Groundwater Flow Direction
- Land Use Control Boundary
- Bridges
- Former Storage Tank Location
- Goose Prairie Creek
- Roads
- Buildings
- Site Boundaries

Note:
1. Groundwater levels (179.8) are in feet above mean sea level (ft amsl).

N

0 75 150 Feet

U.S. ARMY CORP OF ENGINEERS
TULSA DISTRICT
TULSA, OKLAHOMA

bhate APTIM

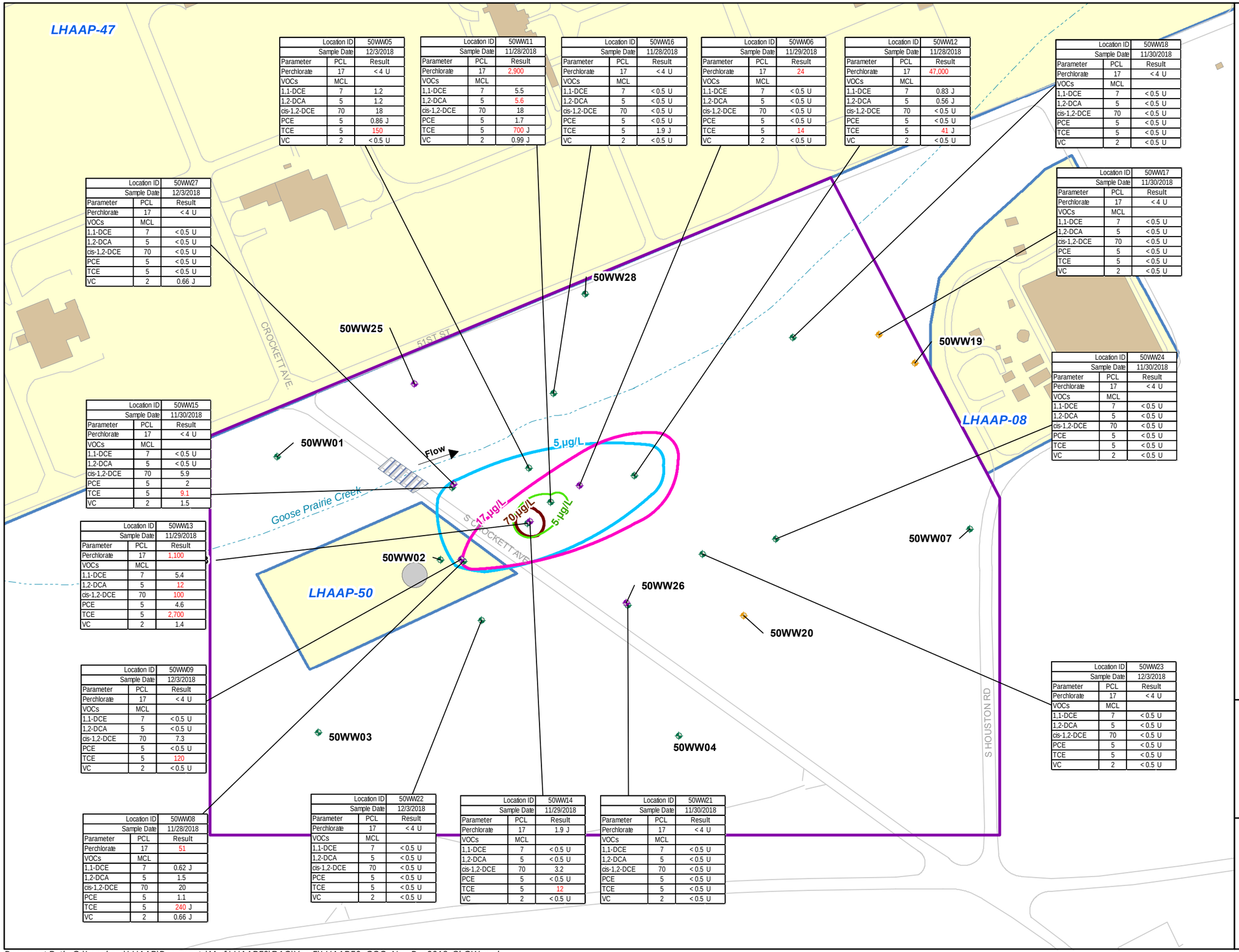
Figure 2-2

Potentiometric Surface Map for the Shallow Zone, May 2019
LHAAP-50 Fifth Annual RA-O Report

LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

Date: 3/10/2020

Document Path: G:\Longhorn\LHAAP\Documents\Mxd\LHAAP50\RAO\Year5\LHAAP50_ShallowZoneMay19_GW.mxd



Location ID	50WW05
Sample Date	12/3/2018
Parameter	PCL / Result
Perchlorate	17 / < 4 U
VOCs	MCL
1,1-DCE	7 / 1.2
1,2-DCA	5 / 1.2
cis-1,2-DCE	70 / 18
PCE	5 / 0.86 J
TCE	5 / 150
VC	2 / < 0.5 U

Location ID	50WW11
Sample Date	11/28/2018
Parameter	PCL / Result
Perchlorate	17 / 2,900
VOCs	MCL
1,1-DCE	7 / 5.5
1,2-DCA	5 / 5.6
cis-1,2-DCE	70 / 18
PCE	5 / 1.7
TCE	5 / 700 J
VC	2 / 0.99 J

Location ID	50WW16
Sample Date	11/28/2018
Parameter	PCL / Result
Perchlorate	17 / < 4 U
VOCs	MCL
1,1-DCE	7 / < 0.5 U
1,2-DCA	5 / < 0.5 U
cis-1,2-DCE	70 / < 0.5 U
PCE	5 / < 0.5 U
TCE	5 / 1.9 J
VC	2 / < 0.5 U

Location ID	50WW06
Sample Date	11/29/2018
Parameter	PCL / Result
Perchlorate	17 / 24
VOCs	MCL
1,1-DCE	7 / < 0.5 U
1,2-DCA	5 / < 0.5 U
cis-1,2-DCE	70 / < 0.5 U
PCE	5 / < 0.5 U
TCE	5 / 14
VC	2 / < 0.5 U

Location ID	50WW12
Sample Date	11/28/2018
Parameter	PCL / Result
Perchlorate	17 / 47,000
VOCs	MCL
1,1-DCE	7 / 0.83 J
1,2-DCA	5 / 0.56 J
cis-1,2-DCE	70 / < 0.5 U
PCE	5 / < 0.5 U
TCE	5 / 41 J
VC	2 / < 0.5 U

Location ID	50WW18
Sample Date	11/30/2018
Parameter	PCL / Result
Perchlorate	17 / < 4 U
VOCs	MCL
1,1-DCE	7 / < 0.5 U
1,2-DCA	5 / < 0.5 U
cis-1,2-DCE	70 / < 0.5 U
PCE	5 / < 0.5 U
TCE	5 / < 0.5 U
VC	2 / < 0.5 U

Location ID	50WW27
Sample Date	12/3/2018
Parameter	PCL / Result
Perchlorate	17 / < 4 U
VOCs	MCL
1,1-DCE	7 / < 0.5 U
1,2-DCA	5 / < 0.5 U
cis-1,2-DCE	70 / < 0.5 U
PCE	5 / < 0.5 U
TCE	5 / < 0.5 U
VC	2 / 0.66 J

Location ID	50WW17
Sample Date	11/30/2018
Parameter	PCL / Result
Perchlorate	17 / < 4 U
VOCs	MCL
1,1-DCE	7 / < 0.5 U
1,2-DCA	5 / < 0.5 U
cis-1,2-DCE	70 / < 0.5 U
PCE	5 / < 0.5 U
TCE	5 / < 0.5 U
VC	2 / < 0.5 U

Location ID	50WW24
Sample Date	11/30/2018
Parameter	PCL / Result
Perchlorate	17 / < 4 U
VOCs	MCL
1,1-DCE	7 / < 0.5 U
1,2-DCA	5 / < 0.5 U
cis-1,2-DCE	70 / < 0.5 U
PCE	5 / < 0.5 U
TCE	5 / < 0.5 U
VC	2 / < 0.5 U

Location ID	50WW15
Sample Date	11/30/2018
Parameter	PCL / Result
Perchlorate	17 / < 4 U
VOCs	MCL
1,1-DCE	7 / < 0.5 U
1,2-DCA	5 / < 0.5 U
cis-1,2-DCE	70 / 5.9
PCE	5 / 2
TCE	5 / 9.1
VC	2 / 1.5

Location ID	50WW13
Sample Date	11/29/2018
Parameter	PCL / Result
Perchlorate	17 / 1,100
VOCs	MCL
1,1-DCE	7 / 5.4
1,2-DCA	5 / 12
cis-1,2-DCE	70 / 100
PCE	5 / 4.6
TCE	5 / 2,700
VC	2 / 1.4

Location ID	50WW09
Sample Date	12/3/2018
Parameter	PCL / Result
Perchlorate	17 / < 4 U
VOCs	MCL
1,1-DCE	7 / < 0.5 U
1,2-DCA	5 / < 0.5 U
cis-1,2-DCE	70 / 7.3
PCE	5 / < 0.5 U
TCE	5 / 120
VC	2 / < 0.5 U

Location ID	50WW23
Sample Date	12/3/2018
Parameter	PCL / Result
Perchlorate	17 / < 4 U
VOCs	MCL
1,1-DCE	7 / < 0.5 U
1,2-DCA	5 / < 0.5 U
cis-1,2-DCE	70 / < 0.5 U
PCE	5 / < 0.5 U
TCE	5 / < 0.5 U
VC	2 / < 0.5 U

Location ID	50WW08
Sample Date	11/28/2018
Parameter	PCL / Result
Perchlorate	17 / 51
VOCs	MCL
1,1-DCE	7 / 0.62 J
1,2-DCA	5 / 1.5
cis-1,2-DCE	70 / 20
PCE	5 / 1.1
TCE	5 / 240 J
VC	2 / 0.66 J

Location ID	50WW22
Sample Date	12/3/2018
Parameter	PCL / Result
Perchlorate	17 / < 4 U
VOCs	MCL
1,1-DCE	7 / < 0.5 U
1,2-DCA	5 / < 0.5 U
cis-1,2-DCE	70 / < 0.5 U
PCE	5 / < 0.5 U
TCE	5 / < 0.5 U
VC	2 / < 0.5 U

Location ID	50WW14
Sample Date	11/29/2018
Parameter	PCL / Result
Perchlorate	17 / 1.9 J
VOCs	MCL
1,1-DCE	7 / < 0.5 U
1,2-DCA	5 / < 0.5 U
cis-1,2-DCE	70 / 3.2
PCE	5 / < 0.5 U
TCE	5 / 12
VC	2 / < 0.5 U

Location ID	50WW21
Sample Date	11/30/2018
Parameter	PCL / Result
Perchlorate	17 / < 4 U
VOCs	MCL
1,1-DCE	7 / < 0.5 U
1,2-DCA	5 / < 0.5 U
cis-1,2-DCE	70 / < 0.5 U
PCE	5 / < 0.5 U
TCE	5 / < 0.5 U
VC	2 / < 0.5 U

- Lower Shallow Monitoring Well
- Upper Shallow Monitoring Well
- Fully Penetrating Shallow Monitoring Well
- cis-1,2-DCE Contour
- 1,2-DCA Contour
- Perchlorate Contour
- TCE Contour
- Goose Prairie Creek
- Roads
- Land Use Control Boundary
- Bridges
- Former Storage Tank Location
- Buildings
- Site Boundaries

Notes:
1. All concentrations are shown in micrograms per liter (µg/L).
2. 1,1-DCE = 1,1-dichlorothene
   1,2-DCA = 1,2-dichlorethane
   cis-1,2-DCE = cis-1,2-dichloroethene
   PCE = tetrachloroethene
   TCE = trichloroethene
   VC = vinyl chloride
   MCL = maximum concentration level
   PCL = protective concentration level
   U = Not detected. The analyte was analyzed for, but not detected above the associated limit of detection.
   J = estimated value; analyte concentration was less than the limit of quantification
   COC = contaminant of concern
   < = The analyte concentration was less than the limit of detection shown.
3. Results in red are above the MCL or PCL

N

0 75 150 Feet

U.S. ARMY CORP OF ENGINEERS
TULSA DISTRICT
TULSA, OKLAHOMA

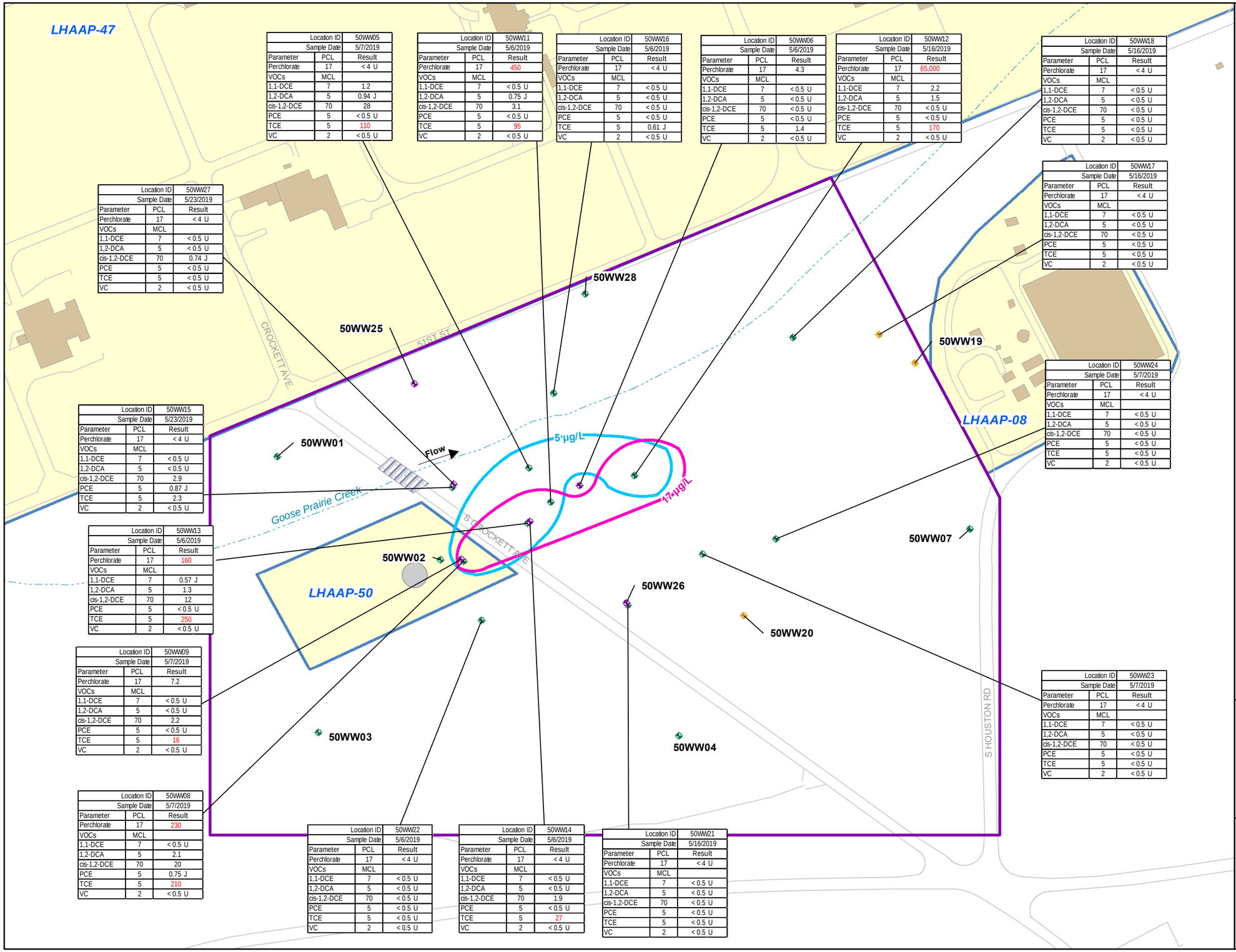
bhate APTIM

Figure 2-3

COC Concentrations in Shallow Zone, November-December 2018
LHAAP-50 Fifth Annual RA-O Report

LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

Document Path: G:\Longhorn\LHAAP\Documents\Mxd\LHAAP50\RAO\Year5\LHAAP50_COC_Nov-Dec2018_ShGW.mxd



Location ID	50WW05
Sample Date	5/7/2019
Parameter	PCL / Result
Perchlorate	17 / < 4 U
VOCs	MCL
1,1-DCE	7 / 1.2
1,2-DCA	5 / 0.94 J
cis-1,2-DCE	70 / 28
PCE	5 / < 0.5 U
TCE	5 / 110
VC	2 / < 0.5 U

Location ID	50WW11
Sample Date	5/6/2019
Parameter	PCL / Result
Perchlorate	17 / 450
VOCs	MCL
1,1-DCE	7 / < 0.5 U
1,2-DCA	5 / 0.75 J
cis-1,2-DCE	70 / 3.1
PCE	5 / < 0.5 U
TCE	5 / 95
VC	2 / < 0.5 U

Location ID	50WW16
Sample Date	5/6/2019
Parameter	PCL / Result
Perchlorate	17 / < 4 U
VOCs	MCL
1,1-DCE	7 / < 0.5 U
1,2-DCA	5 / < 0.5 U
cis-1,2-DCE	70 / < 0.5 U
PCE	5 / < 0.5 U
TCE	5 / 0.61 J
VC	2 / < 0.5 U

Location ID	50WW06
Sample Date	5/6/2019
Parameter	PCL / Result
Perchlorate	17 / 4.3
VOCs	MCL
1,1-DCE	7 / < 0.5 U
1,2-DCA	5 / < 0.5 U
cis-1,2-DCE	70 / < 0.5 U
PCE	5 / < 0.5 U
TCE	5 / 1.4
VC	2 / < 0.5 U

Location ID	50WW12
Sample Date	5/16/2019
Parameter	PCL / Result
Perchlorate	17 / 65,000
VOCs	MCL
1,1-DCE	7 / 2.2
1,2-DCA	5 / 1.5
cis-1,2-DCE	70 / < 0.5 U
PCE	5 / < 0.5 U
TCE	5 / 170
VC	2 / < 0.5 U

Location ID	50WW18
Sample Date	5/16/2019
Parameter	PCL / Result
Perchlorate	17 / < 4 U
VOCs	MCL
1,1-DCE	7 / < 0.5 U
1,2-DCA	5 / < 0.5 U
cis-1,2-DCE	70 / < 0.5 U
PCE	5 / < 0.5 U
TCE	5 / < 0.5 U
VC	2 / < 0.5 U

Location ID	50WW27
Sample Date	5/23/2019
Parameter	PCL / Result
Perchlorate	17 / < 4 U
VOCs	MCL
1,1-DCE	7 / < 0.5 U
1,2-DCA	5 / < 0.5 U
cis-1,2-DCE	70 / 0.74 J
PCE	5 / < 0.5 U
TCE	5 / < 0.5 U
VC	2 / < 0.5 U

Location ID	50WW17
Sample Date	5/16/2019
Parameter	PCL / Result
Perchlorate	17 / < 4 U
VOCs	MCL
1,1-DCE	7 / < 0.5 U
1,2-DCA	5 / < 0.5 U
cis-1,2-DCE	70 / < 0.5 U
PCE	5 / < 0.5 U
TCE	5 / < 0.5 U
VC	2 / < 0.5 U

Location ID	50WW15
Sample Date	5/23/2019
Parameter	PCL / Result
Perchlorate	17 / < 4 U
VOCs	MCL
1,1-DCE	7 / < 0.5 U
1,2-DCA	5 / < 0.5 U
cis-1,2-DCE	70 / 2.9
PCE	5 / 0.87 J
TCE	5 / 2.3
VC	2 / < 0.5 U

Location ID	50WW24
Sample Date	5/7/2019
Parameter	PCL / Result
Perchlorate	17 / < 4 U
VOCs	MCL
1,1-DCE	7 / < 0.5 U
1,2-DCA	5 / < 0.5 U
cis-1,2-DCE	70 / < 0.5 U
PCE	5 / < 0.5 U
TCE	5 / < 0.5 U
VC	2 / < 0.5 U

Location ID	50WW13
Sample Date	5/6/2019
Parameter	PCL / Result
Perchlorate	17 / 160
VOCs	MCL
1,1-DCE	7 / 0.57 J
1,2-DCA	5 / 1.3
cis-1,2-DCE	70 / 12
PCE	5 / < 0.5 U
TCE	5 / 250
VC	2 / < 0.5 U

Location ID	50WW09
Sample Date	5/7/2019
Parameter	PCL / Result
Perchlorate	17 / 7.2
VOCs	MCL
1,1-DCE	7 / < 0.5 U
1,2-DCA	5 / < 0.5 U
cis-1,2-DCE	70 / 2.2
PCE	5 / < 0.5 U
TCE	5 / 16
VC	2 / < 0.5 U

Location ID	50WW23
Sample Date	5/7/2019
Parameter	PCL / Result
Perchlorate	17 / < 4 U
VOCs	MCL
1,1-DCE	7 / < 0.5 U
1,2-DCA	5 / < 0.5 U
cis-1,2-DCE	70 / < 0.5 U
PCE	5 / < 0.5 U
TCE	5 / < 0.5 U
VC	2 / < 0.5 U

Location ID	50WW08
Sample Date	5/7/2019
Parameter	PCL / Result
Perchlorate	17 / 230
VOCs	MCL
1,1-DCE	7 / < 0.5 U
1,2-DCA	5 / 2.1
cis-1,2-DCE	70 / 20
PCE	5 / 0.75 J
TCE	5 / 210
VC	2 / < 0.5 U

Location ID	50WW22
Sample Date	5/6/2019
Parameter	PCL / Result
Perchlorate	17 / < 4 U
VOCs	MCL
1,1-DCE	7 / < 0.5 U
1,2-DCA	5 / < 0.5 U
cis-1,2-DCE	70 / < 0.5 U
PCE	5 / < 0.5 U
TCE	5 / < 0.5 U
VC	2 / < 0.5 U

Location ID	50WW14
Sample Date	5/6/2019
Parameter	PCL / Result
Perchlorate	17 / < 4 U
VOCs	MCL
1,1-DCE	7 / < 0.5 U
1,2-DCA	5 / < 0.5 U
cis-1,2-DCE	70 / 1.9
PCE	5 / < 0.5 U
TCE	5 / 27
VC	2 / < 0.5 U

Location ID	50WW21
Sample Date	5/16/2019
Parameter	PCL / Result
Perchlorate	17 / < 4 U
VOCs	MCL
1,1-DCE	7 / < 0.5 U
1,2-DCA	5 / < 0.5 U
cis-1,2-DCE	70 / < 0.5 U
PCE	5 / < 0.5 U
TCE	5 / < 0.5 U
VC	2 / < 0.5 U

- Lower Shallow Monitoring Well
- Upper Shallow Monitoring Well
- Fully Penetrating Shallow Monitoring Well
- Perchlorate Contour
- TCE Contour
- Goose Prairie Creek
- Roads
- Land Use Control Boundary
- Bridges
- Former Storage Tank Location
- Buildings
- Site Boundaries

Notes:
1. All concentrations are shown in micrograms per liter (µg/L).
2. 1,1-DCE = 1,1-dichlorothene
   1,2-DCA = 1,2-dichlorethane
   cis-1,2-DCE = cis-1,2-dichloroethene
   PCE = tetrachloroethene
   TCE = trichloroethene
   VC = vinyl chloride
   MCL = maximum concentration level
   PCL = protective concentration level
   U = Not detected. The analyte was analyzed for, but not detected above the associated limit of detection.
   J = estimated value; analyte concentration was less than the limit of quantification
   COC = contaminant of concern
   < = The analyte concentration was less than the limit of detection shown.
3. Results in red are above the MCL or PCL

N

0 75 150 Feet

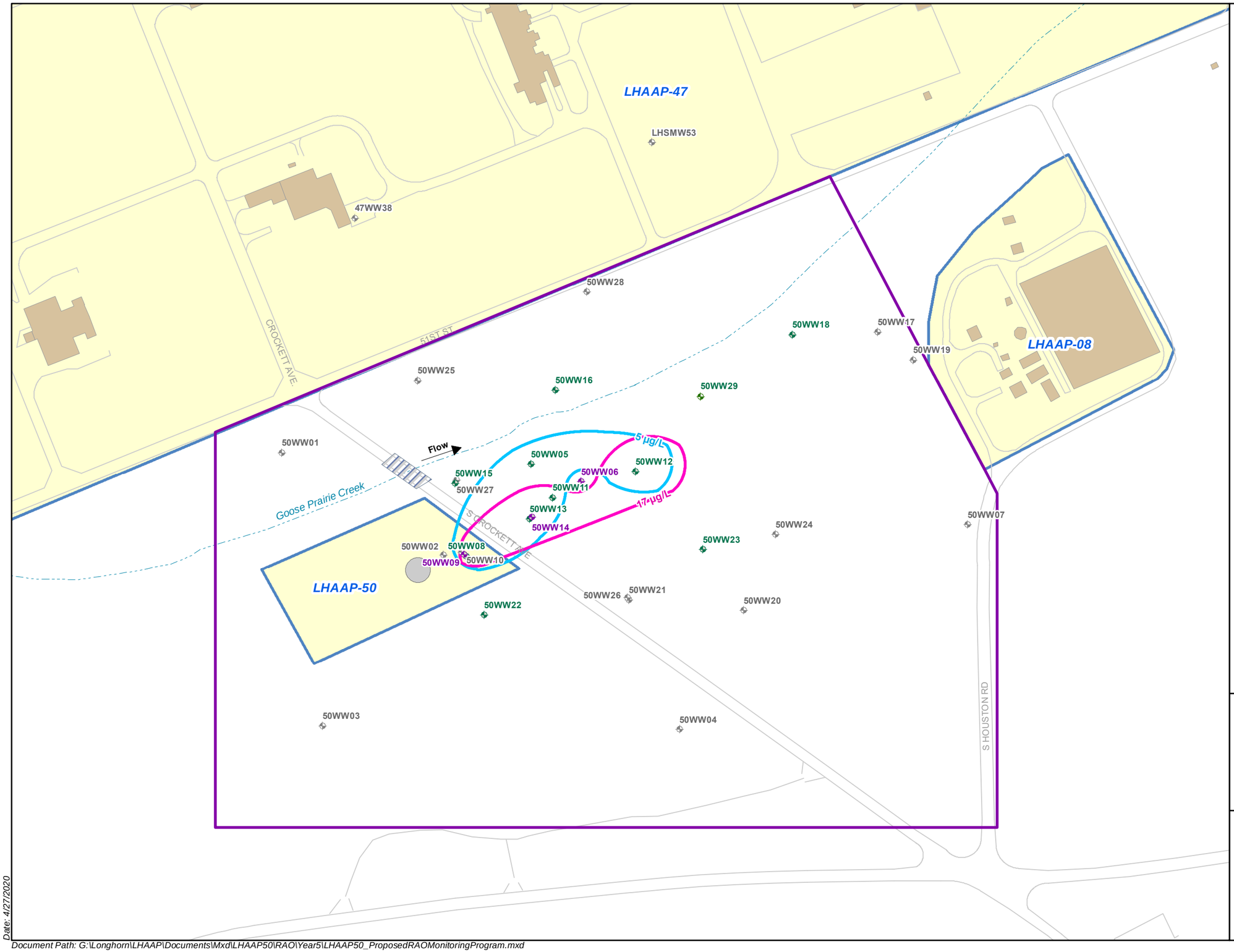
U.S. ARMY CORP OF ENGINEERS
TULSA DISTRICT
TULSA, OKLAHOMA

bhate APTIM

Figure 2-4

COC Concentrations in Shallow Zone, May 2019
LHAAP-50 Fifth Annual RA-O Report

LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS



- Lower Shallow Monitoring Well
- Upper Shallow Monitoring Well
- Fully Penetrating Shallow Monitoring Well
- Intermediate Monitoring Well
- Not proposed for sampling
- Perchlorate Contour
- TCE Contour
- Goose Prairie Creek
- Roads
- Land Use Control Boundary
- Bridges
- Former Storage Tank Location
- Buildings
- Site Boundaries

Notes:
1. TCE = trichloroethene
   µg/L = microgram per liter

N

0 75 150
Feet

U.S. ARMY CORP OF ENGINEERS
TULSA DISTRICT
TULSA, OKLAHOMA

bhate APTIM

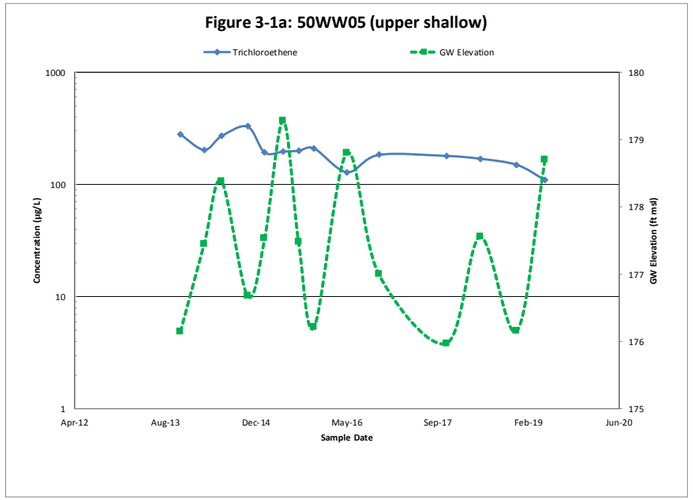
Figure 2-5

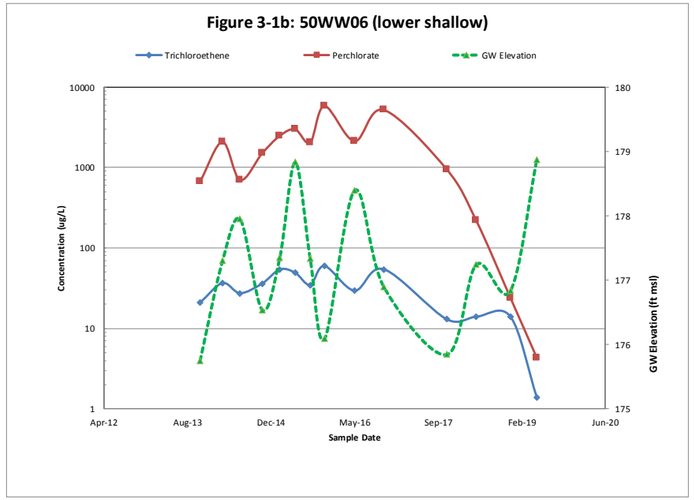
Year 6 RA-O Monitoring Program
LHAAP-50 Fifth Annual RA-O Report

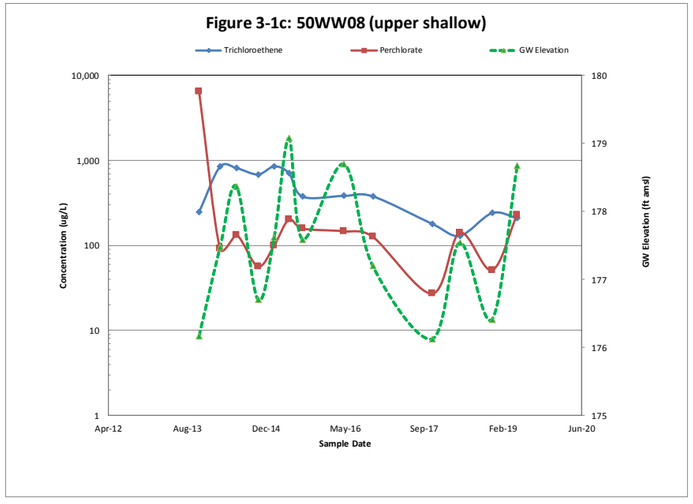
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

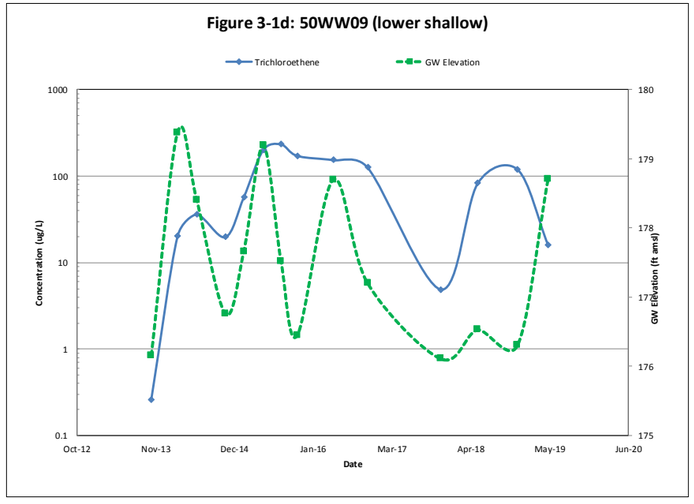
Date: 4/27/2020

Document Path: G:\Longhorn\LHAAP\Documents\Mxd\LHAAP50\RAO\Year5\LHAAP50_ProposedRAOMonitoringProgram.mxd









Cleanup Levels:
Perchlorate = 17 µg/L
1,1-Dichlorothene = 7 µg/L
1,2-Dichlorethane = 5 µg/L
cis-1,2-Dichloroethene = 70 µg/L
Tetrachloroethene = 5 µg/L
Trichloroethene = 5 µg/L

U.S. ARMY CORP OF ENGINEERS
TULSA DISTRICT
TULSA, OKLAHOMA

bhate APTIM

Figure 3-1 (Page 1 of 2)

COC Concentrations Trend
LHAAP-50 Fifth Annual RA-O Report

LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

Date: 3/9/2020

Document Path: G:\Longhorn\LHAAP\Documents\Mxd\LHAAP50\RAO\Year5\LHAAP50_COC_Concentrations.mxd

Figure 3-1e: 50WW11 (upper shallow)

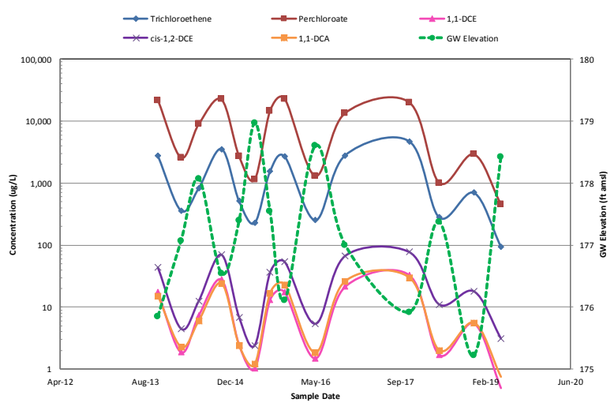


Figure 3-1f: 50WW12 (upper shallow)

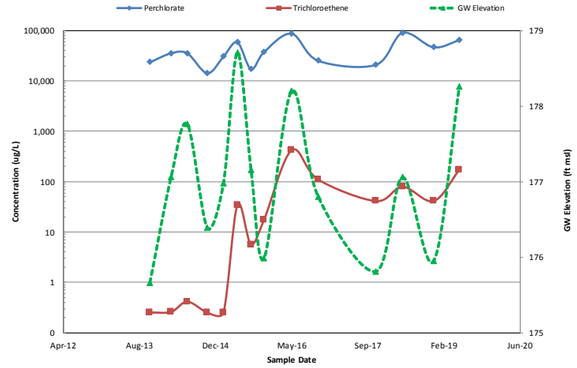


Figure 3-1g: 50WW13 (upper shallow)

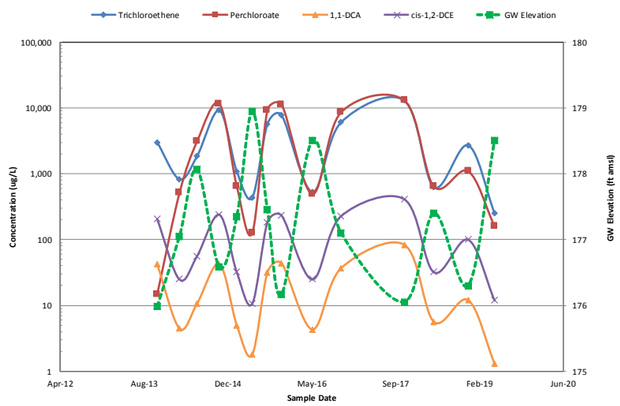


Figure 3-1h: 50WW14 (lower shallow)

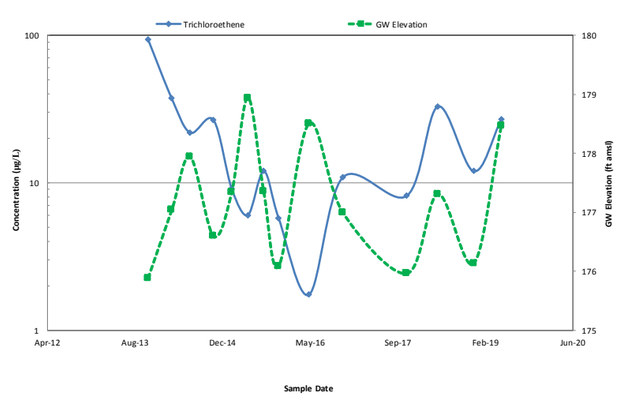
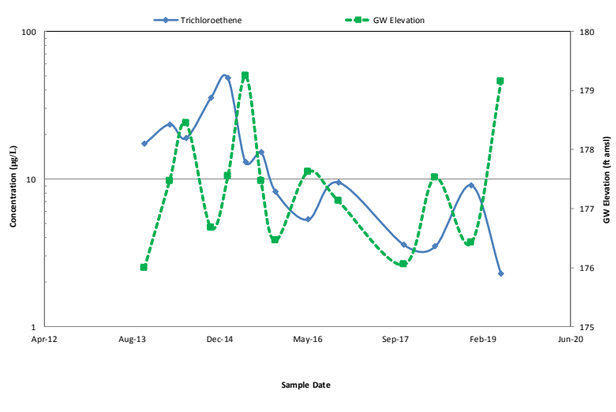


Figure 3-1i: 50WW15 (lower shallow)



Cleanup Levels:
Perchlorate = 17 µg/L
1,1-Dichlorothene = 7 µg/L
1,2-Dichlorethane = 5 µg/L
cis-1,2-Dichloroethene = 70 µg/L
Tetrachloroethene = 5 µg/L
Trichloroethene = 5 µg/L

U.S. ARMY CORP OF ENGINEERS
TULSA DISTRICT
TULSA, OKLAHOMA

bhate APTIM

Figure 3-1 (page 2 of 2)

COC Concentrations Trend
LHAAP-50 Fifth Annual RA-O Report

LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

Date: 3/9/2020

Document Path: G:\Longhorn\LHAAP\Documents\Mxd\LHAAP50\RAO\Year5\LHAAP50_COC_Concentrations_2.mxd

Appendix A

Annual Land Use Control Compliance Certification and Documentation

Sample Annual Land Use Control Compliance Certification Documentation

In accordance with the Remedial Design dated September 2011 for LHAAP-50 a certification of site was conducted by APTim [indicate transferee] on 8/14/19.

A summary of land use control mechanisms is as follows:

- Groundwater restriction - restriction of the use of groundwater to environmental monitoring and testing until cleanup levels are met. The restriction against residential use of groundwater will remain in effect until the levels of the COCs in groundwater allow unrestricted use and unlimited exposure (UUUE). [Indicate whether groundwater restrictions are still required at LHAAP-50]

A summary of compliance with land use and restriction covenants is as follows:

- No use of groundwater, installation of new groundwater wells, or tampering with existing wells at LHAAP-50.

I, the undersigned, do document that the certification was performed as indicated above, and that the above information is true and correct to the best of my knowledge, information, and belief.

Date: August 14, 2019

Name/Title: Scott Beesinger / Senior Field Tech

Signature: Scott Beesinger

Annual compliance certification forms shall be completed no later than March 1 of each year for the previous calendar year.

Appendix B

Photographic Log and Well Inspection Forms

PHOTO LOG

Photo No.	Date	Task and Description
1	5-23-19	Well Inspection, 50WW01
2	5-23-19	Well Inspection, 50WW02
3	5-23-19	Well Inspection, 50WW03
4	5-23-19	Well Inspection, 50WW04
5	5-23-19	Well Inspection, 50WW05
6	5-23-19	Well Inspection, 50WW06
7	5-23-19	Well Inspection, 50WW07
8	5-23-19	Well Inspection, 50WW08
9	5-23-19	Well Inspection, 50WW09
10	5-23-19	Well Inspection, 50WW10
11	5-23-19	Well Inspection, 50WW11
12	5-23-19	Well Inspection, 50WW12
13	5-23-19	Well Inspection, 50WW13
14	5-23-19	Well Inspection, 50WW14
15	5-23-19	Well Inspection, 50WW15
16	5-23-19	Well Inspection, 50WW16
17	5-23-19	Well Inspection, 50WW17
18	5-23-19	Well Inspection, 50WW18
19	5-23-19	Well Inspection, 50WW19
20	5-23-19	Well Inspection, 50WW20
21	5-23-19	Well Inspection, 50WW21
22	5-23-19	Well Inspection, 50WW22
23	5-23-19	Well Inspection, 50WW23
24	5-23-19	Well Inspection, 50WW24
25	5-23-19	Well Inspection, 50WW25
26	5-23-19	Well Inspection, 50WW26
27	5-23-19	Well Inspection, 50WW27
28	5-23-19	Well Inspection, 50WW28



PHOTO 1: Well Inspection, 50WW01
DATE: May 23, 2019



PHOTO 2: Well Inspection, 50WW02
DATE: May 23, 2019



PHOTO 3: Well Inspection, 50WW03
DATE: May 23, 2019



PHOTO 4: Well Inspection, 50WW04
DATE: May 23, 2019



PHOTO 5: Well Inspection, 50WW05
DATE: May 23, 2019



PHOTO 6: Well Inspection, 50WW06
DATE: May 23, 2019



PHOTO 7: Well Inspection, 50WW07
DATE: May 23, 2019



PHOTO 8: Well Inspection, 50WW08
DATE: May 23, 2019



PHOTO 9: Well Inspection, 50WW09
DATE: May 23, 2019



PHOTO 10: Well Inspection, 50WW10
DATE: May 23, 2019



PHOTO 11: Well Inspection, 50WW11
DATE: May 23, 2019



PHOTO 12: Well Inspection, 50WW12
DATE: May 23, 2019



PHOTO 13: Well Inspection, 50WW13
DATE: May 23, 2019



PHOTO 14: Well Inspection, 50WW14
DATE: May 23, 2019



PHOTO 15: Well Inspection, 50WW15
DATE: May 23, 2019



PHOTO 16: Well Inspection, 50WW16
DATE: May 23, 2019



PHOTO 17: Well Inspection, 50WW17
DATE: May 23, 2019



PHOTO 18: Well Inspection, 50WW18
DATE: May 23, 2019



PHOTO 19: Well Inspection, 50WW19
DATE: May 23, 2019



PHOTO 20: Well Inspection, 50WW20
DATE: May 23, 2019



PHOTO 21: Well Inspection, 50WW21
DATE: May 23, 2019



PHOTO 22: Well Inspection, 50WW22
DATE: May 23, 2019



PHOTO 23: Well Inspection, 50WW23
DATE: May 23, 2019



PHOTO 24: Well Inspection, 50WW24
DATE: May 23, 2019



PHOTO 25: Well Inspection, 50WW25
DATE: May 23, 2019



PHOTO 26: Well Inspection, 50WW26
DATE: May 23, 2019



PHOTO 27: Well Inspection, 50WW27
DATE: May 23, 2019



PHOTO 28: Well Inspection, 50WW28
DATE: May 23, 2019

00962616

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: 501032
Client: Army
Site Name: 50

Well ID: 50 MW11
Inspection Date: 11/28/18
Well Completion Depth/ Measured Depth: 37.85
Inspector: Scott Beesinger

ABOVE GROUND

Well Accessible?					☒ Yes ☐ No
Protective casing?					☑ Yes ☐ No
Material	Steel				
Condition:	☒ Good	☐ Broken	☐ Cracked	☐ Need Paint	
Lid Condition:	☒ Good	☐ Broken	☐ Cracked		
Hinge Condition:	☑ Good	☐ Less than 50% rusted	☐ More than 50% rusted		

☐ **FLUSH MOUNTED** NA

Well cover present?				☐ Yes ☐ No
Condition:	☐ Good	☐ Broken	☐ Cracked	
Condition of Sump:	☐ Clean	☐ Dry	☐ Standing Water	

CONCRETE PAD:

Sloped away from casing?	☒ Yes ☐ No
Pad Area Cleared of Vegetation?	☑ Yes ☐ No

Check any of the following features that apply:
☐ Many Cracks ☐ Gap Around Casing ☐ Few Cracks ☐ Ponded Water ☐ No Pad Present

WELL CONDITION:

Inner Diameter (inches) 2"
Condition: ☑ Good ☐ Broken ☐ Cracked ☐ Other (describe)

Cap present?	☒ Yes ☐ No
Well lock present?	☒ Yes ☐ No
Lock functioning properly?	☑ Yes ☐ No
Are bollards present and stable?	☒ Yes ☐ No
Well ID visible?	☒ Yes ☐ No

WELL INTEGRITY:

Bailer present?	☐ Yes ☒ No
Visual obstruction?	☐ Yes ☒ No
Is well open to completed depth? (complete when gauging)	☒ Yes ☐ No
Is silt present in well? (complete when gauging)	☐ Yes ☒ No
Is silt greater than 10% of well screen length? (complete when gauging)	☐ Yes ☑ No

COMMENTS:

00962617

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: 501032
Client: ARmy
Site Name: Site 50
Well ID: 50WW16
Inspection Date: 11/28/18
Well Completion Depth/ Measured Depth: 38.10
Inspector: Scott Baesinger

☒ ABOVE GROUND

Well Accessible? ☒ Yes ☐ No
Protective casing? ☒ Yes ☐ No
Material: Steel
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Need Paint
Lid Condition: ☒ Good ☐ Broken ☐ Cracked
Hinge Condition: ☒ Good ☐ Less than 50% rusted ☐ More than 50% rusted

☐ FLUSH MOUNTED NA

Well cover present? ☐ Yes ☐ No
Condition: ☐ Good ☐ Broken ☐ Cracked
Condition of Sump: ☐ Clean ☐ Dry ☐ Standing Water

CONCRETE PAD:

Sloped away from casing? ☒ Yes ☐ No
Pad Area Cleared of Vegetation? ☒ Yes ☐ No
Check any of the following features that apply:
☐ Many Cracks ☐ Gap Around Casing ☐ Few Cracks ☐ Ponded Water ☐ No Pad Present

WELL CONDITION:

Inner Diameter (inches): 2"
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Other (describe)
Cap present? ☒ Yes ☐ No
Well lock present? ☒ Yes ☐ No
Lock functioning properly? ☒ Yes ☐ No
Are bollards present and stable? ☒ Yes ☐ No
Well ID visible? ☒ Yes ☐ No

WELL INTEGRITY:

Bailer present? ☐ Yes ☒ No
Visual obstruction? ☐ Yes ☒ No
Is well open to completed depth? (complete when gauging) ☒ Yes ☐ No
Is silt present in well? (complete when gauging) ☐ Yes ☒ No
Is silt greater than 10% of well screen length? (complete when gauging) ☐ Yes ☒ No

COMMENTS:

00962618

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: 501032
Client: Army
Site Name: 50

Well ID: 50 WWR
Inspection Date: 11/28/18
Well Completion Depth/ Measured Depth: 37.93
Inspector: Scott Beesinger

☒ ABOVE GROUND

Well Accessible? ☒ Yes ☐ No
Protective casing? ☒ Yes ☐ No
Material: Steel
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Need Paint
Lid Condition: ☒ Good ☐ Broken ☒ Cracked
Hinge Condition: ☒ Good ☐ Less than 50% rusted ☐ More than 50% rusted

☐ FLUSH MOUNTED NA

Well cover present? ☐ Yes ☐ No
Condition: ☐ Good ☐ Broken ☐ Cracked
Condition of Sump: ☐ Clean ☐ Dry ☐ Standing Water

CONCRETE PAD:

Sloped away from casing? ☒ Yes ☐ No
Pad Area Cleared of Vegetation? ☒ Yes ☐ No
Check any of the following features that apply:
☐ Many Cracks ☐ Gap Around Casing ☐ Few Cracks ☐ Ponded Water ☐ No Pad Present

WELL CONDITION:

Inner Diameter (inches): 2"
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Other (describe)
Cap present? ☒ Yes ☐ No
Well lock present? ☒ Yes ☐ No
Lock functioning properly? ☒ Yes ☐ No
Are bollards present and stable? ☒ Yes ☐ No
Well ID visible? ☒ Yes ☐ No

WELL INTEGRITY:

Bailer present? ☐ Yes ☒ No
Visual obstruction? ☐ Yes ☒ No
Is well open to completed depth? (complete when gauging) ☒ Yes ☐ No
Is silt present in well? (complete when gauging) ☐ Yes ☒ No
Is silt greater than 10% of well screen length? (complete when gauging) ☐ Yes ☒ No

COMMENTS:

00962619

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: 501032
Client: Army
Site Name: 50
Well ID: 50MW08
Inspection Date: 11/28/18
Well Completion Depth/ Measured Depth: 32.80
Inspector: Scott Beesinger

☒ ABOVE GROUND
Well Accessible? ☒ Yes ☐ No
Protective casing? ☒ Yes ☐ No
Material: Steel
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Need Paint
Lid Condition: ☒ Good ☐ Broken ☐ Cracked
Hinge Condition: ☒ Good ☐ Less than 50% rusted ☐ More than 50% rusted

☐ FLUSH MOUNTED NA
Well cover present? ☐ Yes ☐ No
Condition: ☐ Good ☐ Broken ☐ Cracked
Condition of Sump: ☐ Clean ☐ Dry ☐ Standing Water

CONCRETE PAD:
Sloped away from casing? ☒ Yes ☐ No
Pad Area Cleared of Vegetation? ☒ Yes ☐ No
Check any of the following features that apply:
☐ Many Cracks ☐ Gap Around Casing ☐ Few Cracks ☐ Ponded Water ☐ No Pad Present

WELL CONDITION:
Inner Diameter (inches): 2"
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Other (describe)
Cap present? ☒ Yes ☐ No
Well lock present? ☒ Yes ☐ No
Lock functioning properly? ☒ Yes ☐ No
Are bollards present and stable? ☒ Yes ☐ No
Well ID visible? ☒ Yes ☐ No

WELL INTEGRITY:
Bailer present? ☐ Yes ☒ No
Visual obstruction? ☐ Yes ☒ No
Is well open to completed depth? (complete when gauging) ☒ Yes ☐ No
Is silt present in well? (complete when gauging) ☐ Yes ☒ No
Is silt greater than 10% of well screen length? (complete when gauging) ☐ Yes ☒ No

COMMENTS:

00962620

WELL INSPECTION FORM

Job Name: Long Horn AAP
Job No.: 501032
Client:
Site Name:
Well ID: SOWU14
Inspection Date: 11/29/18
Well Completion Depth/ Measured Depth:
Inspector: Wesley Garcia

☑ ABOVE GROUND

Well Accessible? ☑ Yes ☐ No
Protective casing? ☑ Yes ☐ No
Material: Metal
Condition: ☑ Good ☐ Broken ☐ Cracked ☐ Need Paint
Lid Condition: ☑ Good ☐ Broken ☐ Cracked
Hinge Condition: ☑ Good ☐ Less than 50% rusted ☐ More than 50% rusted

☐ FLUSH MOUNTED

Well cover present? ☐ Yes ☐ No
Condition: ☐ Good ☐ Broken ☐ Cracked
Condition of Sump: ☐ Clean ☐ Dry ☐ Standing Water

CONCRETE PAD:

Sloped away from casing? ☑ Yes ☐ No
Pad Area Cleared of Vegetation? ☑ Yes ☐ No
Check any of the following features that apply:
☐ Many Cracks ☐ Gap Around Casing ☐ Few Cracks ☐ Ponded Water ☐ No Pad Present

WELL CONDITION:

Inner Diameter (inches): 2in PVC
Condition: ☑ Good ☐ Broken ☐ Cracked ☐ Other (describe)
Cap present? ☑ Yes ☐ No
Well lock present? ☑ Yes ☐ No
Lock functioning properly? ☑ Yes ☐ No
Are bollards present and stable? ☑ Yes ☐ No
Well ID visible? ☑ Yes ☐ No

WELL INTEGRITY:

Bailer present? ☐ Yes ☑ No
Visual obstruction? ☐ Yes ☑ No
Is well open to completed depth? (complete when gauging) ☑ Yes ☐ No
Is silt present in well? (complete when gauging) ☐ Yes ☑ No
Is silt greater than 10% of well screen length? (complete when gauging) ☐ Yes ☑ No

COMMENTS:

00962621

WELL INSPECTION FORM

Job Name: Longhorn AAP
Job No.: 501032
Client:
Site Name:

Well ID: 501W06
Inspection Date: 11/29/18
Well Completion Depth/ Measured Depth:
Inspector: Wesley Garner

☑ ABOVE GROUND

Well Accessible? ☑ Yes ☐ No
Protective casing? ☑ Yes ☐ No
Material: metal
Condition: ☑ Good ☐ Broken ☐ Cracked ☐ Need Paint
Lid Condition: ☑ Good ☐ Broken ☐ Cracked
Hinge Condition: ☑ Good ☐ Less than 50% rusted ☐ More than 50% rusted

☐ FLUSH MOUNTED

Well cover present? ☐ Yes ☐ No
Condition: ☐ Good ☐ Broken ☐ Cracked
Condition of Sump: ☐ Clean ☐ Dry ☐ Standing Water

CONCRETE PAD:

Sloped away from casing? ☑ Yes ☐ No
Pad Area Cleared of Vegetation? ☑ Yes ☐ No
Check any of the following features that apply:
☐ Many Cracks ☐ Gap Around Casing ☐ Few Cracks ☐ Ponded Water ☐ No Pad Present

WELL CONDITION:

Inner Diameter (inches): 4.5 PVC
Condition: ☑ Good ☐ Broken ☐ Cracked ☐ Other (describe)
Cap present? ☑ Yes ☐ No
Well lock present? ☑ Yes ☐ No
Lock functioning properly? ☑ Yes ☐ No
Are bollards present and stable? ☑ Yes ☐ No
Well ID visible? ☑ Yes ☐ No

WELL INTEGRITY:

Bailer present? ☐ Yes ☑ No
Visual obstruction? ☐ Yes ☐ No
Is well open to completed depth? (complete when gauging) ☑ Yes ☐ No
Is silt present in well? (complete when gauging) ☐ Yes ☑ No
Is silt greater than 10% of well screen length? (complete when gauging) ☐ Yes ☑ No

COMMENTS:

00962622

WELL INSPECTION FORM

Job Name: Longhorn AAP
Job No.: 501032
Client:
Site Name:
Well ID: 50UW13
Inspection Date: 11/29/18
Well Completion Depth/ Measured Depth:
Inspector: Wesley Garris

☑ **ABOVE GROUND**
Well Accessible? ☑ Yes ☐ No
Protective casing? ☑ Yes ☐ No
Material: Metal
Condition: ☑ Good ☐ Broken ☐ Cracked ☐ Need Paint
Lid Condition: ☑ Good ☐ Broken ☐ Cracked
Hinge Condition: ☑ Good ☐ Less than 50% rusted ☐ More than 50% rusted

☐ **FLUSH MOUNTED**
Well cover present? ☐ Yes ☐ No
Condition: ☐ Good ☐ Broken ☐ Cracked
Condition of Sump: ☐ Clean ☐ Dry ☐ Standing Water

CONCRETE PAD:
Sloped away from casing? ☑ Yes ☐ No
Pad Area Cleared of Vegetation? ☑ Yes ☐ No
Check any of the following features that apply:
☐ Many Cracks ☐ Gap Around Casing ☐ Few Cracks ☐ Ponded Water ☐ No Pad Present

WELL CONDITION:
Inner Diameter (inches): 2.4
Condition: ☑ Good ☐ Broken ☐ Cracked ☐ Other (describe)
Cap present? ☑ Yes ☐ No
Well lock present? ☑ Yes ☐ No
Lock functioning properly? ☑ Yes ☐ No
Are bollards present and stable? ☐ Yes ☐ No
Well ID visible? ☑ Yes ☐ No

WELL INTEGRITY:
Bailer present? ☐ Yes ☑ No
Visual obstruction? ☐ Yes ☑ No
Is well open to completed depth? (complete when gauging) ☑ Yes ☐ No
Is silt present in well? (complete when gauging) ☐ Yes ☑ No
Is silt greater than 10% of well screen length? (complete when gauging) ☐ Yes ☑ No

COMMENTS:

00962623

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: 501032
Client: ARMY
Site Name: 50

Well ID: 50MW15
Inspection Date: 11/30/18
Well Completion Depth/ Measured Depth: 37.92
Inspector: Scott Buesinger

☒ ABOVE GROUND

Well Accessible? ☒ Yes ☐ No
Protective casing? ☒ Yes ☐ No
Material: Steel
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Need Paint
Lid Condition: ☒ Good ☐ Broken ☒ Cracked
Hinge Condition: ☒ Good ☐ Less than 50% rusted ☐ More than 50% rusted

☐ FLUSH MOUNTED NA

Well cover present? ☐ Yes ☐ No
Condition: ☐ Good ☐ Broken ☐ Cracked
Condition of Sump: ☐ Clean ☐ Dry ☐ Standing Water

CONCRETE PAD:

Sloped away from casing? ☒ Yes ☐ No
Pad Area Cleared of Vegetation? ☒ Yes ☐ No
Check any of the following features that apply:
☐ Many Cracks ☐ Gap Around Casing ☐ Few Cracks ☐ Ponded Water ☐ No Pad Present

WELL CONDITION:

Inner Diameter (inches): 2"
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Other (describe)
Cap present? ☒ Yes ☐ No
Well lock present? ☒ Yes ☐ No
Lock functioning properly? ☒ Yes ☐ No
Are bollards present and stable? ☒ Yes ☐ No
Well ID visible? ☒ Yes ☐ No

WELL INTEGRITY:

Bailer present? ☐ Yes ☒ No
Visual obstruction? ☐ Yes ☒ No
Is well open to completed depth? (complete when gauging) ☒ Yes ☐ No
Is silt present in well? (complete when gauging) ☐ Yes ☒ No
Is silt greater than 10% of well screen length? (complete when gauging) ☐ Yes ☒ No

COMMENTS:

00962624

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: 501032
Client: Army
Site Name: 50
Well ID: 50MW21
Inspection Date: 11/30/18
Well Completion Depth/ Measured Depth: 37.67
Inspector: Scott Bessinger

☒ ABOVE GROUND

Well Accessible? ☒ Yes ☐ No
Protective casing? ☒ Yes ☐ No
Material: Steel
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Need Paint
Lid Condition: ☒ Good ☐ Broken ☒ Cracked
Hinge Condition: ☒ Good ☐ Less than 50% rusted ☐ More than 50% rusted

☐ FLUSH MOUNTED NA

Well cover present? ☐ Yes ☐ No
Condition: ☐ Good ☐ Broken ☐ Cracked
Condition of Sump: ☐ Clean ☐ Dry ☐ Standing Water

CONCRETE PAD:

Sloped away from casing? ☒ Yes ☐ No
Pad Area Cleared of Vegetation? ☒ Yes ☐ No
Check any of the following features that apply:
☐ Many Cracks ☐ Gap Around Casing ☐ Few Cracks ☐ Ponded Water ☐ No Pad Present

WELL CONDITION:

Inner Diameter (inches): 2"
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Other (describe)
Cap present? ☒ Yes ☐ No
Well lock present? ☒ Yes ☐ No
Lock functioning properly? ☒ Yes ☐ No
Are bollards present and stable? ☒ Yes ☐ No
Well ID visible? ☒ Yes ☐ No

WELL INTEGRITY:

Bailer present? ☐ Yes ☒ No
Visual obstruction? ☐ Yes ☒ No
Is well open to completed depth? (complete when gauging) ☒ Yes ☐ No
Is silt present in well? (complete when gauging) ☐ Yes ☒ No
Is silt greater than 10% of well screen length? (complete when gauging) ☐ Yes ☒ No

COMMENTS:

00962625

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: 501032
Client: Army
Site Name: 50
Well ID: 50MW24
Inspection Date: 11/30/18
Well Completion Depth/ Measured Depth: 38.05
Inspector: Scott Beesinger

☑ ABOVE GROUND

Well Accessible? ☑ Yes ☐ No
Protective casing? ☑ Yes ☐ No
Material: Steel
Condition: ☑ Good ☐ Broken ☐ Cracked ☐ Need Paint
Lid Condition: ☑ Good ☐ Broken ☐ Cracked
Hinge Condition: ☑ Good ☐ Less than 50% rusted ☐ More than 50% rusted

☐ FLUSH MOUNTED NA

Well cover present? ☐ Yes ☐ No
Condition: ☐ Good ☐ Broken ☐ Cracked
Condition of Sump: ☐ Clean ☐ Dry ☐ Standing Water

CONCRETE PAD:

Sloped away from casing? ☒ Yes ☐ No
Pad Area Cleared of Vegetation? ☑ Yes ☐ No
Check any of the following features that apply:
☐ Many Cracks ☐ Gap Around Casing ☐ Few Cracks ☐ Ponded Water ☐ No Pad Present

WELL CONDITION:

Inner Diameter (inches): 2"
Condition: ☑ Good ☐ Broken ☐ Cracked ☐ Other (describe)
Cap present? ☒ Yes ☐ No
Well lock present? ☑ Yes ☐ No
Lock functioning properly? ☒ Yes ☐ No
Are bollards present and stable? ☒ Yes ☐ No
Well ID visible? ☑ Yes ☐ No

WELL INTEGRITY:

Bailer present? ☐ Yes ☒ No
Visual obstruction? ☐ Yes ☒ No
Is well open to completed depth? (complete when gauging) ☑ Yes ☐ No
Is silt present in well? (complete when gauging) ☐ Yes ☒ No
Is silt greater than 10% of well screen length? (complete when gauging) ☐ Yes ☒ No

COMMENTS:

00962626

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: 501032
Client: Army
Site Name: 50
Well ID: 50 MW 17
Inspection Date: 11/30/18
Well Completion Depth/ Measured Depth: 67.00
Inspector: Scott Beesinger

☒ ABOVE GROUND

Well Accessible? ☒ Yes ☐ No
Protective casing? ☒ Yes ☐ No
Material: Steel
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Need Paint
Lid Condition: ☒ Good ☐ Broken ☒ Cracked
Hinge Condition: ☒ Good ☐ Less than 50% rusted ☐ More than 50% rusted

☐ FLUSH MOUNTED NA

Well cover present? ☐ Yes ☐ No
Condition: ☐ Good ☐ Broken ☐ Cracked
Condition of Sump: ☐ Clean ☐ Dry ☐ Standing Water

CONCRETE PAD:

Sloped away from casing? ☒ Yes ☐ No
Pad Area Cleared of Vegetation? ☒ Yes ☐ No
Check any of the following features that apply:
☐ Many Cracks ☐ Gap Around Casing ☐ Few Cracks ☐ Ponded Water ☐ No Pad Present

WELL CONDITION:

Inner Diameter (inches): 2"
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Other (describe)
Cap present? ☒ Yes ☐ No
Well lock present? ☒ Yes ☐ No
Lock functioning properly? ☒ Yes ☐ No
Are bollards present and stable? ☒ Yes ☐ No
Well ID visible? ☒ Yes ☐ No

WELL INTEGRITY:

Bailer present? ☐ Yes ☒ No
Visual obstruction? ☐ Yes ☒ No
Is well open to completed depth? (complete when gauging) ☒ Yes ☐ No
Is silt present in well? (complete when gauging) ☐ Yes ☒ No
Is silt greater than 10% of well screen length? (complete when gauging) ☐ Yes ☒ No

COMMENTS:

00962627

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: 501032
Client: Army
Site Name: 50
Well ID: 50 MW18
Inspection Date: 11/30/18
Well Completion Depth/ Measured Depth: 37.65
Inspector: Scott Beesinger

ABOVE GROUND
Well Accessible? ☒ Yes ☐ No
Protective casing? ☒ Yes ☐ No
Material: Steel
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Need Paint
Lid Condition: ☒ Good ☐ Broken ☐ Cracked
Hinge Condition: ☒ Good ☐ Less than 50% rusted ☐ More than 50% rusted

☐ FLUSH MOUNTED NA
Well cover present? ☐ Yes ☐ No
Condition: ☐ Good ☐ Broken ☐ Cracked
Condition of Sump: ☐ Clean ☐ Dry ☐ Standing Water

CONCRETE PAD:
Sloped away from casing? ☒ Yes ☐ No
Pad Area Cleared of Vegetation? ☒ Yes ☐ No
Check any of the following features that apply:
☐ Many Cracks ☐ Gap Around Casing ☐ Few Cracks ☐ Ponded Water ☐ No Pad Present

WELL CONDITION:
Inner Diameter (inches) 2"
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Other (describe)
Cap present? ☒ Yes ☐ No
Well lock present? ☒ Yes ☐ No
Lock functioning properly? ☒ Yes ☐ No
Are bollards present and stable? ☒ Yes ☐ No
Well ID visible? ☒ Yes ☐ No

WELL INTEGRITY:
Bailer present? ☐ Yes ☒ No
Visual obstruction? ☐ Yes ☒ No
Is well open to completed depth? (complete when gauging) ☒ Yes ☐ No
Is silt present in well? (complete when gauging) ☐ Yes ☒ No
Is silt greater than 10% of well screen length? (complete when gauging) ☐ Yes ☒ No

COMMENTS:

00962628

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: 501032
Client: Army
Site Name: 50

Well ID: 50 MW 10
Inspection Date: 12/3/18
Well Completion Depth/ Measured Depth: 111.54
Inspector: Scott Bressinger

☒ ABOVE GROUND

Well Accessible? ☒ Yes ☐ No
Protective casing? ☒ Yes ☐ No
Material: Steel
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Need Paint
Lid Condition: ☒ Good ☐ Broken ☒ Cracked
Hinge Condition: ☒ Good ☐ Less than 50% rusted ☐ More than 50% rusted

☐ FLUSH MOUNTED NA

Well cover present? ☐ Yes ☐ No
Condition: ☐ Good ☐ Broken ☐ Cracked
Condition of Sump: ☐ Clean ☐ Dry ☐ Standing Water

CONCRETE PAD:

Sloped away from casing? ☒ Yes ☐ No
Pad Area Cleared of Vegetation? ☒ Yes ☐ No
Check any of the following features that apply:
☐ Many Cracks ☐ Gap Around Casing ☐ Few Cracks ☐ Ponded Water ☐ No Pad Present

WELL CONDITION:

Inner Diameter (inches): 2"
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Other (describe)
Cap present? ☒ Yes ☐ No
Well lock present? ☒ Yes ☐ No
Lock functioning properly? ☒ Yes ☐ No
Are bollards present and stable? ☒ Yes ☐ No
Well ID visible? ☒ Yes ☐ No

WELL INTEGRITY:

Bailer present? ☐ Yes ☒ No
Visual obstruction? ☐ Yes ☒ No
Is well open to completed depth? (complete when gauging) ☒ Yes ☐ No
Is silt present in well? (complete when gauging) ☐ Yes ☒ No
Is silt greater than 10% of well screen length? (complete when gauging) ☐ Yes ☒ No

COMMENTS:

00962629

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: 501032
Client: Army
Site Name: 50
Well ID: 50MW09
Inspection Date: 12/3/18
Well Completion Depth/ Measured Depth: 62.50
Inspector: Scott Beesinger

☒ ABOVE GROUND

Well Accessible? ☒ Yes ☐ No
Protective casing? ☒ Yes ☐ No
Material: Steel
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Need Paint
Lid Condition: ☒ Good ☐ Broken ☒ Cracked
Hinge Condition: ☒ Good ☐ Less than 50% rusted ☐ More than 50% rusted

☐ FLUSH MOUNTED NA

Well cover present? ☐ Yes ☐ No
Condition: ☐ Good ☐ Broken ☐ Cracked
Condition of Sump: ☐ Clean ☐ Dry ☐ Standing Water

CONCRETE PAD:

Sloped away from casing? ☒ Yes ☐ No
Pad Area Cleared of Vegetation? ☒ Yes ☐ No
Check any of the following features that apply:
☐ Many Cracks ☐ Gap Around Casing ☐ Few Cracks ☐ Ponded Water ☐ No Pad Present

WELL CONDITION:

Inner Diameter (inches): 2"
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Other (describe)
Cap present? ☒ Yes ☐ No
Well lock present? ☒ Yes ☐ No
Lock functioning properly? ☒ Yes ☐ No
Are bollards present and stable? ☒ Yes ☐ No
Well ID visible? ☒ Yes ☐ No

WELL INTEGRITY:

Bailer present? ☐ Yes ☒ No
Visual obstruction? ☐ Yes ☒ No
Is well open to completed depth? (complete when gauging) ☒ Yes ☐ No
Is silt present in well? (complete when gauging) ☐ Yes ☒ No
Is silt greater than 10% of well screen length? (complete when gauging) ☐ Yes ☒ No

COMMENTS:

00962630

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: 501032
Client: Army
Site Name: 50

Well ID: 50WW27
Inspection Date: 12/3/18
Well Completion Depth/ Measured Depth: 59.95
Inspector: Scott Beesinger

ABOVE GROUND

Well Accessible? ☒ Yes ☐ No
Protective casing? ☒ Yes ☐ No
Material: Steel
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Need Paint
Lid Condition: ☒ Good ☐ Broken ☒ Cracked
Hinge Condition: ☒ Good ☐ Less than 50% rusted ☐ More than 50% rusted

☐ FLUSH MOUNTED NA

Well cover present? ☐ Yes ☐ No
Condition: ☐ Good ☐ Broken ☐ Cracked
Condition of Sump: ☐ Clean ☐ Dry ☐ Standing Water

CONCRETE PAD:

Sloped away from casing? ☒ Yes ☐ No
Pad Area Cleared of Vegetation? ☒ Yes ☐ No
Check any of the following features that apply:
☐ Many Cracks ☐ Gap Around Casing ☐ Few Cracks ☐ Ponded Water ☐ No Pad Present

WELL CONDITION:

Inner Diameter (inches): 2"
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Other (describe)
Cap present? ☒ Yes ☐ No
Well lock present? ☒ Yes ☐ No
Lock functioning properly? ☒ Yes ☐ No
Are bollards present and stable? ☒ Yes ☐ No
Well ID visible? ☒ Yes ☐ No

WELL INTEGRITY:

Bailer present? ☐ Yes ☒ No
Visual obstruction? ☐ Yes ☒ No
Is well open to completed depth? (complete when gauging) ☒ Yes ☐ No
Is silt present in well? (complete when gauging) ☐ Yes ☒ No
Is silt greater than 10% of well screen length? (complete when gauging) ☐ Yes ☒ No

COMMENTS:

00962631

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: 501032
Client: Army
Site Name: 50

Well ID: 50WW05
Inspection Date: 12/3/18
Well Completion Depth/ Measured Depth: 25.50
Inspector: Scott Beesinger

☒ ABOVE GROUND

Well Accessible? ☒ Yes ☐ No
Protective casing? ☒ Yes ☐ No
Material: Steel
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Need Paint
Lid Condition: ☒ Good ☐ Broken ☐ Cracked
Hinge Condition: ☒ Good ☐ Less than 50% rusted ☐ More than 50% rusted

☐ FLUSH MOUNTED

Well cover present? NA ☐ Yes ☐ No
Condition: ☐ Good ☐ Broken ☐ Cracked
Condition of Sump: ☐ Clean ☐ Dry ☐ Standing Water

CONCRETE PAD:

Sloped away from casing? ☒ Yes ☐ No
Pad Area Cleared of Vegetation? ☒ Yes ☐ No
Check any of the following features that apply:
☐ Many Cracks ☐ Gap Around Casing ☐ Few Cracks ☐ Ponded Water ☐ No Pad Present

WELL CONDITION:

Inner Diameter (inches): 4"
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Other (describe)
Cap present? ☒ Yes ☐ No
Well lock present? ☒ Yes ☐ No
Lock functioning properly? ☒ Yes ☐ No
Are bollards present and stable? ☒ Yes ☐ No
Well ID visible? ☒ Yes ☐ No

WELL INTEGRITY:

Bailer present? ☐ Yes ☒ No
Visual obstruction? ☐ Yes ☒ No
Is well open to completed depth? (complete when gauging) ☒ Yes ☐ No
Is silt present in well? (complete when gauging) ☐ Yes ☒ No
Is silt greater than 10% of well screen length? (complete when gauging) ☐ Yes ☒ No

COMMENTS:

00962632

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: 501032
Client: Army
Site Name: 50
Well ID: 50MW22
Inspection Date: 12/3/18
Well Completion Depth/ Measured Depth: 37.90
Inspector: Scott Beesinger

ABOVE GROUND
Well Accessible? ☒ Yes ☐ No
Protective casing? ☒ Yes ☐ No
Material: Steel
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Need Paint
Lid Condition: ☒ Good ☐ Broken ☐ Cracked
Hinge Condition: ☒ Good ☐ Less than 50% rusted ☐ More than 50% rusted

☐ FLUSH MOUNTED NA
Well cover present? ☐ Yes ☐ No
Condition: ☐ Good ☐ Broken ☐ Cracked
Condition of Sump: ☐ Clean ☐ Dry ☐ Standing Water

CONCRETE PAD:
Sloped away from casing? ☒ Yes ☐ No
Pad Area Cleared of Vegetation? ☒ Yes ☐ No
Check any of the following features that apply:
☐ Many Cracks ☐ Gap Around Casing ☐ Few Cracks ☐ Ponded Water ☐ No Pad Present

WELL CONDITION:
Inner Diameter (inches): 2"
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Other (describe)
Cap present? ☒ Yes ☐ No
Well lock present? ☒ Yes ☐ No
Lock functioning properly? ☒ Yes ☐ No
Are bollards present and stable? ☒ Yes ☐ No
Well ID visible? ☒ Yes ☐ No

WELL INTEGRITY:
Bailer present? ☐ Yes ☒ No
Visual obstruction? ☐ Yes ☒ No
Is well open to completed depth? (complete when gauging) ☒ Yes ☐ No
Is silt present in well? (complete when gauging) ☐ Yes ☒ No
Is silt greater than 10% of well screen length? (complete when gauging) ☐ Yes ☒ No

COMMENTS:

00962633

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: 501032
Client: Army
Site Name: 50
Well ID: 50WW23
Inspection Date: 12/3/18
Well Completion Depth/ Measured Depth: 37.92
Inspector: Scott Beesinger

☒ ABOVE GROUND

Well Accessible? ☒ Yes ☐ No
Protective casing? ☒ Yes ☐ No
Material: Steel
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Need Paint
Lid Condition: ☒ Good ☐ Broken ☐ Cracked
Hinge Condition: ☒ Good ☐ Less than 50% rusted ☐ More than 50% rusted

☐ FLUSH MOUNTED NA

Well cover present? ☐ Yes ☐ No
Condition: ☐ Good ☐ Broken ☐ Cracked
Condition of Sump: ☐ Clean ☐ Dry ☐ Standing Water

CONCRETE PAD:

Sloped away from casing? ☒ Yes ☐ No
Pad Area Cleared of Vegetation? ☒ Yes ☐ No
Check any of the following features that apply:
☐ Many Cracks ☐ Gap Around Casing ☐ Few Cracks ☐ Ponded Water ☐ No Pad Present

WELL CONDITION:

Inner Diameter (inches): 2"
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Other (describe)
Cap present? ☒ Yes ☐ No
Well lock present? ☒ Yes ☐ No
Lock functioning properly? ☒ Yes ☐ No
Are bollards present and stable? ☒ Yes ☐ No
Well ID visible? ☒ Yes ☐ No

WELL INTEGRITY:

Bailer present? ☐ Yes ☒ No
Visual obstruction? ☐ Yes ☒ No
Is well open to completed depth? (complete when gauging) ☒ Yes ☐ No
Is silt present in well? (complete when gauging) ☐ Yes ☒ No
Is silt greater than 10% of well screen length? (complete when gauging) ☐ Yes ☒ No

COMMENTS:

00962634

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: 501032
Client: Army
Site Name: 50

Well ID: 47WW38
Inspection Date: 12/3/18
Well Completion Depth/ Measured Depth: 60.15
Inspector: Scott Beesinger

☒ ABOVE GROUND

Well Accessible? ☒ Yes ☐ No
Protective casing? ☒ Yes ☐ No
Material: Steel
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Need Paint
Lid Condition: ☒ Good ☐ Broken ☐ Cracked
Hinge Condition: ☒ Good ☐ Less than 50% rusted ☐ More than 50% rusted

☐ FLUSH MOUNTED NA

Well cover present? ☐ Yes ☐ No
Condition: ☐ Good ☐ Broken ☐ Cracked
Condition of Sump: ☐ Clean ☐ Dry ☐ Standing Water

CONCRETE PAD:

Sloped away from casing? ☒ Yes ☐ No
Pad Area Cleared of Vegetation? ☒ Yes ☐ No
Check any of the following features that apply:
☐ Many Cracks ☐ Gap Around Casing ☐ Few Cracks ☐ Ponded Water ☐ No Pad Present

WELL CONDITION:

Inner Diameter (inches) 2"
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Other (describe)
Cap present? ☒ Yes ☐ No
Well lock present? ☒ Yes ☐ No
Lock functioning properly? ☒ Yes ☐ No
Are bollards present and stable? ☒ Yes ☐ No
Well ID visible? ☒ Yes ☐ No

WELL INTEGRITY:

Bailer present? ☐ Yes ☒ No
Visual obstruction? ☐ Yes ☒ No
Is well open to completed depth? (complete when gauging) ☒ Yes ☐ No
Is silt present in well? (complete when gauging) ☐ Yes ☒ No
Is silt greater than 10% of well screen length? (complete when gauging) ☐ Yes ☒ No

COMMENTS:

00962635

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: 501032
Client: ARMY
Site Name: 50
Well ID: 50MW01
Inspection Date: 12/3/18
Well Completion Depth/ Measured Depth: 23.32
Inspector: Scott Beesinger

☒ ABOVE GROUND
Well Accessible? ☒ Yes ☐ No
Protective casing? ☒ Yes ☐ No
Material: Steel
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Need Paint
Lid Condition: ☒ Good ☐ Broken ☐ Cracked
Hinge Condition: ☒ Good ☐ Less than 50% rusted ☐ More than 50% rusted

☐ FLUSH MOUNTED NA
Well cover present? ☐ Yes ☐ No
Condition: ☐ Good ☐ Broken ☐ Cracked
Condition of Sump: ☐ Clean ☐ Dry ☐ Standing Water

CONCRETE PAD:
Sloped away from casing? ☒ Yes ☐ No
Pad Area Cleared of Vegetation? ☒ Yes ☐ No
Check any of the following features that apply:
☐ Many Cracks ☐ Gap Around Casing ☐ Few Cracks ☐ Ponded Water ☐ No Pad Present

WELL CONDITION:
Inner Diameter (inches): 4"
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Other (describe)
Cap present? ☒ Yes ☐ No
Well lock present? ☒ Yes ☐ No
Lock functioning properly? ☒ Yes ☐ No
Are bollards present and stable? ☒ Yes ☐ No
Well ID visible? ☒ Yes ☐ No

WELL INTEGRITY:
Bailer present? ☐ Yes ☒ No
Visual obstruction? ☐ Yes ☒ No
Is well open to completed depth? (complete when gauging) ☒ Yes ☐ No
Is silt present in well? (complete when gauging) ☐ Yes ☒ No
Is silt greater than 10% of well screen length? (complete when gauging) ☐ Yes ☒ No

COMMENTS:

00962636

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: 501032
Client: ARMY
Site Name: 50
Well ID: 50MW02
Inspection Date: 12/3/18
Well Completion Depth/ Measured Depth: 22.37
Inspector: Scott Beesinger

☒ ABOVE GROUND

Well Accessible? ☒ Yes ☐ No
Protective casing? ☒ Yes ☐ No
Material: Steel
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Need Paint
Lid Condition: ☒ Good ☐ Broken ☒ Cracked
Hinge Condition: ☒ Good ☐ Less than 50% rusted ☐ More than 50% rusted

☐ FLUSH MOUNTED NA

Well cover present? ☐ Yes ☐ No
Condition: ☐ Good ☐ Broken ☐ Cracked
Condition of Sump: ☐ Clean ☐ Dry ☐ Standing Water

CONCRETE PAD:

Sloped away from casing? ☒ Yes ☐ No
Pad Area Cleared of Vegetation? ☒ Yes ☐ No
Check any of the following features that apply:
☐ Many Cracks ☐ Gap Around Casing ☐ Few Cracks ☐ Ponded Water ☐ No Pad Present

WELL CONDITION:

Inner Diameter (inches): 4/11
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Other (describe)
Cap present? ☒ Yes ☐ No
Well lock present? ☒ Yes ☐ No
Lock functioning properly? ☒ Yes ☐ No
Are bollards present and stable? ☒ Yes ☐ No
Well ID visible? ☒ Yes ☐ No

WELL INTEGRITY:

Bailer present? ☐ Yes ☒ No
Visual obstruction? ☐ Yes ☒ No
Is well open to completed depth? (complete when gauging) ☒ Yes ☐ No
Is silt present in well? (complete when gauging) ☐ Yes ☒ No
Is silt greater than 10% of well screen length? (complete when gauging) ☐ Yes ☒ No

COMMENTS:

00962637

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: 501032
Client: Army
Site Name: 50

Well ID: 50WW03
Inspection Date: 12/3/18
Well Completion Depth/ Measured Depth: 23.10
Inspector: Scott Bressinger

☒ ABOVE GROUND

Well Accessible? ☒ Yes ☐ No
Protective casing? ☒ Yes ☐ No
Material: Steel
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Need Paint
Lid Condition: ☒ Good ☐ Broken ☒ Cracked
Hinge Condition: ☒ Good ☐ Less than 50% rusted ☐ More than 50% rusted

☐ FLUSH MOUNTED NA

Well cover present? ☐ Yes ☐ No
Condition: ☐ Good ☐ Broken ☐ Cracked
Condition of Sump: ☐ Clean ☐ Dry ☐ Standing Water

CONCRETE PAD:

Sloped away from casing? ☒ Yes ☐ No
Pad Area Cleared of Vegetation? ☒ Yes ☐ No
Check any of the following features that apply:
☐ Many Cracks ☐ Gap Around Casing ☐ Few Cracks ☐ Ponded Water ☐ No Pad Present

WELL CONDITION:

Inner Diameter (inches): 4"
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Other (describe)
Cap present? ☒ Yes ☐ No
Well lock present? ☒ Yes ☐ No
Lock functioning properly? ☒ Yes ☐ No
Are bollards present and stable? ☒ Yes ☐ No
Well ID visible? ☒ Yes ☐ No

WELL INTEGRITY:

Bailer present? ☐ Yes ☒ No
Visual obstruction? ☐ Yes ☒ No
Is well open to completed depth? (complete when gauging) ☒ Yes ☐ No
Is silt present in well? (complete when gauging) ☐ Yes ☒ No
Is silt greater than 10% of well screen length? (complete when gauging) ☐ Yes ☒ No

COMMENTS:

00962638

WELL INSPECTION FORM

Job Name: LHTAP
Job No.: 501032
Client: Army
Site Name: 50
Well ID: 50MW04
Inspection Date: 12/3/18
Well Completion Depth/ Measured Depth: 23.20
Inspector: Scott Beesinger

☒ ABOVE GROUND

Well Accessible? ☒ Yes ☐ No
Protective casing? ☒ Yes ☐ No
Material: Steel
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Need Paint
Lid Condition: ☒ Good ☐ Broken ☒ Cracked
Hinge Condition: ☒ Good ☐ Less than 50% rusted ☐ More than 50% rusted

☐ FLUSH MOUNTED NA

Well cover present? ☐ Yes ☐ No
Condition: ☐ Good ☐ Broken ☐ Cracked
Condition of Sump: ☐ Clean ☐ Dry ☐ Standing Water

CONCRETE PAD:

Sloped away from casing? ☒ Yes ☐ No
Pad Area Cleared of Vegetation? ☒ Yes ☐ No
Check any of the following features that apply:
☐ Many Cracks ☐ Gap Around Casing ☐ Few Cracks ☐ Ponded Water ☐ No Pad Present

WELL CONDITION:

Inner Diameter (inches): 4"
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Other (describe)
Cap present? ☒ Yes ☐ No
Well lock present? ☒ Yes ☐ No
Lock functioning properly? ☒ Yes ☐ No
Are bollards present and stable? ☒ Yes ☐ No
Well ID visible? ☒ Yes ☐ No

WELL INTEGRITY:

Bailer present? ☐ Yes ☒ No
Visual obstruction? ☐ Yes ☒ No
Is well open to completed depth? (complete when gauging) ☒ Yes ☐ No
Is silt present in well? (complete when gauging) ☐ Yes ☒ No
Is silt greater than 10% of well screen length? (complete when gauging) ☐ Yes ☒ No

COMMENTS:

00962639

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: 501032
Client: Army
Site Name: 50
Well ID: 50WW07
Inspection Date: 12/3/18
Well Completion Depth/ Measured Depth: 32.05
Inspector: Scott Beesinger

☒ ABOVE GROUND

Well Accessible? ☒ Yes ☐ No
Protective casing? ☒ Yes ☐ No
Material: Steel
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Need Paint
Lid Condition: ☒ Good ☐ Broken ☒ Cracked
Hinge Condition: ☒ Good ☐ Less than 50% rusted ☐ More than 50% rusted

☐ FLUSH MOUNTED NA

Well cover present? ☐ Yes ☐ No
Condition: ☐ Good ☐ Broken ☐ Cracked
Condition of Sump: ☐ Clean ☐ Dry ☐ Standing Water

CONCRETE PAD:

Sloped away from casing? ☒ Yes ☐ No
Pad Area Cleared of Vegetation? ☒ Yes ☐ No
Check any of the following features that apply:
☐ Many Cracks ☐ Gap Around Casing ☐ Few Cracks ☐ Ponded Water ☐ No Pad Present

WELL CONDITION:

Inner Diameter (inches): 4"
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Other (describe)
Cap present? ☒ Yes ☐ No
Well lock present? ☒ Yes ☐ No
Lock functioning properly? ☒ Yes ☐ No
Are bollards present and stable? ☒ Yes ☐ No
Well ID visible? ☒ Yes ☐ No

WELL INTEGRITY:

Bailer present? ☐ Yes ☒ No
Visual obstruction? ☐ Yes ☒ No
Is well open to completed depth? (complete when gauging) ☒ Yes ☐ No
Is silt present in well? (complete when gauging) ☐ Yes ☒ No
Is silt greater than 10% of well screen length? (complete when gauging) ☐ Yes ☒ No

COMMENTS:

00962640

WELL INSPECTION FORM

Job Name: LTAAP
Job No.: 501032
Client: ARMY
Site Name: 50
Well ID: 50MW19
Inspection Date: 12/3/18
Well Completion Depth/ Measured Depth: 65.35
Inspector: Scott Bassinger

☒ ABOVE GROUND

Well Accessible?					☒ Yes ☐ No
Protective casing?					☒ Yes ☐ No
Material: Steel					
Condition:	☒ Good	☐ Broken	☐ Cracked	☐ Need Paint	
Lid Condition:	☒ Good	☐ Broken	☒ Cracked		
Hinge Condition:	☒ Good	☐ Less than 50% rusted	☐ More than 50% rusted		

☐ FLUSH MOUNTED NA

Well cover present?				☐ Yes ☐ No
Condition:	☐ Good	☐ Broken	☐ Cracked	
Condition of Sump:	☐ Clean	☐ Dry	☐ Standing Water	

CONCRETE PAD:

Sloped away from casing?	☒ Yes ☐ No
Pad Area Cleared of Vegetation?	☒ Yes ☐ No

Check any of the following features that apply:
☐ Many Cracks ☐ Gap Around Casing ☐ Few Cracks ☐ Ponded Water ☐ No Pad Present

WELL CONDITION:

Inner Diameter (inches): 2"
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Other (describe)

Cap present?	☒ Yes ☐ No
Well lock present?	☒ Yes ☐ No
Lock functioning properly?	☒ Yes ☐ No
Are bollards present and stable?	☒ Yes ☐ No
Well ID visible?	☒ Yes ☐ No

WELL INTEGRITY:

Bailer present?	☐ Yes ☒ No
Visual obstruction?	☐ Yes ☒ No
Is well open to completed depth? (complete when gauging)	☒ Yes ☐ No
Is silt present in well? (complete when gauging)	☐ Yes ☒ No
Is silt greater than 10% of well screen length? (complete when gauging)	☐ Yes ☒ No

COMMENTS:

00962641

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: 501032
Client: Army
Site Name: 50
Well ID: 50WW20
Inspection Date: 12/3/18
Well Completion Depth/ Measured Depth: 55.85
Inspector: Scott Bassinger

☒ ABOVE GROUND

Well Accessible?					☒ Yes ☐ No
Protective casing?					☒ Yes ☐ No
Material	Steel				
Condition:	☒ Good	☐ Broken	☐ Cracked	☐ Need Paint	
Lid Condition:	☒ Good	☐ Broken	☒ Cracked		
Hinge Condition:	☒ Good	☐ Less than 50% rusted	☐ More than 50% rusted		

☐ FLUSH MOUNTED NA

Well cover present?				☐ Yes ☐ No
Condition:	☐ Good	☐ Broken	☐ Cracked	
Condition of Sump:	☐ Clean	☐ Dry	☐ Standing Water	

CONCRETE PAD:

Sloped away from casing?					☒ Yes ☐ No
Pad Area Cleared of Vegetation?					☒ Yes ☐ No
Check any of the following features that apply:					
☐ Many Cracks	☐ Gap Around Casing	☐ Few Cracks	☐ Ponded Water	☐ No Pad Present	

WELL CONDITION:

Inner Diameter (inches)	2"				
Condition:	☒ Good	☐ Broken	☐ Cracked	☐ Other (describe)	
Cap present?					☒ Yes ☐ No
Well lock present?					☒ Yes ☐ No
Lock functioning properly?					☒ Yes ☐ No
Are bollards present and stable?					☒ Yes ☐ No
Well ID visible?					☒ Yes ☐ No

WELL INTEGRITY:

Bailer present?	☐ Yes ☒ No
Visual obstruction?	☐ Yes ☒ No
Is well open to completed depth? (complete when gauging)	☒ Yes ☐ No
Is silt present in well? (complete when gauging)	☐ Yes ☒ No
Is silt greater than 10% of well screen length? (complete when gauging)	☐ Yes ☒ No

COMMENTS:

00962642

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: 501032
Client: Army
Site Name: 50
Well ID: 50MW25
Inspection Date: 12/3/18
Well Completion Depth/ Measured Depth: 57.95
Inspector: Scott Beesinger

☒ ABOVE GROUND

Well Accessible? ☒ Yes ☐ No
Protective casing? ☒ Yes ☐ No
Material: Steel
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Need Paint
Lid Condition: ☒ Good ☐ Broken ☐ Cracked
Hinge Condition: ☒ Good ☐ Less than 50% rusted ☐ More than 50% rusted

☐ FLUSH MOUNTED NA

Well cover present? ☐ Yes ☐ No
Condition: ☐ Good ☐ Broken ☐ Cracked
Condition of Sump: ☐ Clean ☐ Dry ☐ Standing Water

CONCRETE PAD:

Sloped away from casing? ☒ Yes ☐ No
Pad Area Cleared of Vegetation? ☒ Yes ☐ No
Check any of the following features that apply:
☐ Many Cracks ☐ Gap Around Casing ☐ Few Cracks ☐ Ponded Water ☐ No Pad Present

WELL CONDITION:

Inner Diameter (inches): 2"
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Other (describe)
Cap present? ☒ Yes ☐ No
Well lock present? ☒ Yes ☐ No
Lock functioning properly? ☒ Yes ☐ No
Are bollards present and stable? ☒ Yes ☐ No
Well ID visible? ☒ Yes ☐ No

WELL INTEGRITY:

Bailer present? ☐ Yes ☒ No
Visual obstruction? ☐ Yes ☒ No
Is well open to completed depth? (complete when gauging) ☒ Yes ☐ No
Is silt present in well? (complete when gauging) ☐ Yes ☒ No
Is silt greater than 10% of well screen length? (complete when gauging) ☐ Yes ☒ No

COMMENTS:

00962643

WELL INSPECTION FORM

Job Name: LTTAP
Job No.: 501032
Client: ARMY
Site Name: 50
Well ID: 50WW26
Inspection Date: 12/3/18
Well Completion Depth/ Measured Depth: 62.89
Inspector: Scott Baessinger

☒ ABOVE GROUND

Well Accessible?					☒ Yes ☐ No
Protective casing?					☒ Yes ☐ No
Material: Steel					
Condition:	☒ Good	☐ Broken	☐ Cracked	☐ Need Paint	
Lid Condition:	☒ Good	☐ Broken	☒ Cracked		
Hinge Condition:	☒ Good	☐ Less than 50% rusted	☐ More than 50% rusted		

☐ FLUSH MOUNTED NA

Well cover present?				☐ Yes ☐ No
Condition:	☐ Good	☐ Broken	☐ Cracked	
Condition of Sump:	☐ Clean	☐ Dry	☐ Standing Water	

CONCRETE PAD:

Sloped away from casing?					☒ Yes ☐ No
Pad Area Cleared of Vegetation?					☒ Yes ☐ No
Check any of the following features that apply:					
☐ Many Cracks	☐ Gap Around Casing	☐ Few Cracks	☐ Ponded Water	☐ No Pad Present	

WELL CONDITION:

Inner Diameter (inches): 2"					
Condition:	☒ Good	☐ Broken	☐ Cracked	☐ Other (describe)	
Cap present?					☒ Yes ☐ No
Well lock present?					☒ Yes ☐ No
Lock functioning properly?					☒ Yes ☐ No
Are bollards present and stable?					☒ Yes ☐ No
Well ID visible?					☒ Yes ☐ No

WELL INTEGRITY:

Bailer present?	☐ Yes ☒ No
Visual obstruction?	☐ Yes ☒ No
Is well open to completed depth? (complete when gauging)	☒ Yes ☐ No
Is silt present in well? (complete when gauging)	☐ Yes ☒ No
Is silt greater than 10% of well screen length? (complete when gauging)	☐ Yes ☒ No

COMMENTS:

00962644

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: 501032
Client: Army
Site Name: 50
Well ID: 50WW28
Inspection Date: 12/3/18
Well Completion Depth/ Measured Depth: 27.20
Inspector: Scott Beesinger

☒ ABOVE GROUND

Well Accessible? ☒ Yes ☐ No
Protective casing? ☒ Yes ☐ No
Material: Steel
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Need Paint
Lid Condition: ☒ Good ☐ Broken ☒ Cracked
Hinge Condition: ☒ Good ☐ Less than 50% rusted ☐ More than 50% rusted

☐ FLUSH MOUNTED NA

Well cover present? ☐ Yes ☐ No
Condition: ☐ Good ☐ Broken ☐ Cracked
Condition of Sump: ☐ Clean ☐ Dry ☐ Standing Water

CONCRETE PAD:

Sloped away from casing? ☒ Yes ☐ No
Pad Area Cleared of Vegetation? ☒ Yes ☐ No
Check any of the following features that apply:
☐ Many Cracks ☐ Gap Around Casing ☐ Few Cracks ☐ Ponded Water ☐ No Pad Present

WELL CONDITION:

Inner Diameter (inches): 4 11
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Other (describe)
Cap present? ☒ Yes ☐ No
Well lock present? ☒ Yes ☐ No
Lock functioning properly? ☒ Yes ☐ No
Are bollards present and stable? ☒ Yes ☐ No
Well ID visible? ☒ Yes ☐ No

WELL INTEGRITY:

Bailer present? ☐ Yes ☒ No
Visual obstruction? ☐ Yes ☒ No
Is well open to completed depth? (complete when gauging) ☒ Yes ☐ No
Is silt present in well? (complete when gauging) ☐ Yes ☒ No
Is silt greater than 10% of well screen length? (complete when gauging) ☐ Yes ☒ No

COMMENTS:

00962645

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: 501032
Client: ARNG
Site Name: 50
Well ID: 50MW06
Inspection Date: 5/6/19
Well Completion Depth/ Measured Depth: 58.18
Inspector: Scott Beesinger

☒ ABOVE GROUND

Well Accessible? ☒ Yes ☐ No
Protective casing? ☒ Yes ☐ No
Material: METAL
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Need Paint
Lid Condition: ☒ Good ☐ Broken ☒ Cracked
Hinge Condition: ☒ Good ☐ Less than 50% rusted ☐ More than 50% rusted

☐ FLUSH MOUNTED NA

Well cover present? ☐ Yes ☐ No
Condition: ☐ Good ☐ Broken ☐ Cracked
Condition of Sump: ☐ Clean ☐ Dry ☐ Standing Water

CONCRETE PAD:

Sloped away from casing? ☒ Yes ☐ No
Pad Area Cleared of Vegetation? ☒ Yes ☐ No
Check any of the following features that apply:
☐ Many Cracks ☐ Gap Around Casing ☐ Few Cracks ☐ Ponded Water ☐ No Pad Present

WELL CONDITION:

Inner Diameter (inches) 4"
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Other (describe)
Cap present? ☒ Yes ☐ No
Well lock present? ☒ Yes ☐ No
Lock functioning properly? ☒ Yes ☐ No
Are bollards present and stable? ☒ Yes ☐ No
Well ID visible? ☒ Yes ☐ No

WELL INTEGRITY:

Bailer present? ☐ Yes ☒ No
Visual obstruction? ☐ Yes ☒ No
Is well open to completed depth? (complete when gauging) ☒ Yes ☐ No
Is silt present in well? (complete when gauging) ☐ Yes ☒ No
Is silt greater than 10% of well screen length? (complete when gauging) ☐ Yes ☒ No

COMMENTS:

00962646

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: 501032
Client: Army
Site Name: 50
Well ID: 50WW11
Inspection Date: 5/6/19
Well Completion Depth/ Measured Depth: 37.81
Inspector: Scott Beesinger

ABOVE GROUND
Well Accessible? ☒ Yes ☐ No
Protective casing? ☒ Yes ☐ No
Material: METAL
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Need Paint
Lid Condition: ☒ Good ☐ Broken ☒ Cracked
Hinge Condition: ☒ Good ☐ Less than 50% rusted ☐ More than 50% rusted

☐ FLUSH MOUNTED NA
Well cover present? ☐ Yes ☐ No
Condition: ☐ Good ☐ Broken ☐ Cracked
Condition of Sump: ☐ Clean ☐ Dry ☐ Standing Water

CONCRETE PAD:
Sloped away from casing? ☒ Yes ☐ No
Pad Area Cleared of Vegetation? ☒ Yes ☐ No
Check any of the following features that apply:
☐ Many Cracks ☐ Gap Around Casing ☐ Few Cracks ☐ Ponded Water ☐ No Pad Present

WELL CONDITION:
Inner Diameter (inches): 2"
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Other (describe)
Cap present? ☒ Yes ☐ No
Well lock present? ☒ Yes ☐ No
Lock functioning properly? ☒ Yes ☐ No
Are bollards present and stable? ☒ Yes ☐ No
Well ID visible? ☒ Yes ☐ No

WELL INTEGRITY:
Bailer present? ☐ Yes ☒ No
Visual obstruction? ☐ Yes ☒ No
Is well open to completed depth? (complete when gauging) ☒ Yes ☐ No
Is silt present in well? (complete when gauging) ☒ Yes ☐ No
Is silt greater than 10% of well screen length? (complete when gauging) ☐ Yes ☒ No

COMMENTS:

00962647

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: 501032
Client: ARMY
Site Name: 50
Well ID: 50MW14
Inspection Date: 5/6/19
Well Completion Depth/ Measured Depth: 60.73
Inspector: Scott BEESINGER

ABOVE GROUND

Well Accessible? ☒ Yes ☐ No
Protective casing? ☒ Yes ☐ No
Material: METAL
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Need Paint
Lid Condition: ☒ Good ☐ Broken ☒ Cracked
Hinge Condition: ☒ Good ☐ Less than 50% rusted ☐ More than 50% rusted

☐ FLUSH MOUNTED NA

Well cover present? ☐ Yes ☐ No
Condition: ☐ Good ☐ Broken ☐ Cracked
Condition of Sump: ☐ Clean ☐ Dry ☐ Standing Water

CONCRETE PAD:

Sloped away from casing? ☒ Yes ☐ No
Pad Area Cleared of Vegetation? ☒ Yes ☐ No
Check any of the following features that apply:
☐ Many Cracks ☐ Gap Around Casing ☐ Few Cracks ☐ Ponded Water ☐ No Pad Present

WELL CONDITION:

Inner Diameter (inches) 2"
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Other (describe)
Cap present? ☒ Yes ☐ No
Well lock present? ☒ Yes ☐ No
Lock functioning properly? ☒ Yes ☐ No
Are bollards present and stable? ☒ Yes ☐ No
Well ID visible? ☒ Yes ☐ No

WELL INTEGRITY:

Bailer present? ☐ Yes ☒ No
Visual obstruction? ☐ Yes ☒ No
Is well open to completed depth? (complete when gauging) ☒ Yes ☐ No
Is silt present in well? (complete when gauging) ☐ Yes ☒ No
Is silt greater than 10% of well screen length? (complete when gauging) ☐ Yes ☒ No

COMMENTS:

00962648

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: 501032
Client: ARMY
Site Name: 50
Well ID: 50MW13
Inspection Date: 5/6/19
Well Completion Depth/ Measured Depth: 37.70
Inspector: Scott Beesinger

ABOVE GROUND
Well Accessible? ☒ Yes ☐ No
Protective casing? ☒ Yes ☐ No
Material: METAL
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Need Paint
Lid Condition: ☒ Good ☐ Broken ☐ Cracked
Hinge Condition: ☒ Good ☐ Less than 50% rusted ☐ More than 50% rusted

☐ FLUSH MOUNTED NA
Well cover present? ☐ Yes ☐ No
Condition: ☐ Good ☐ Broken ☐ Cracked
Condition of Sump: ☐ Clean ☐ Dry ☐ Standing Water

CONCRETE PAD:
Sloped away from casing? ☒ Yes ☐ No
Pad Area Cleared of Vegetation? ☒ Yes ☐ No
Check any of the following features that apply:
☐ Many Cracks ☐ Gap Around Casing ☐ Few Cracks ☐ Ponded Water ☐ No Pad Present

WELL CONDITION:
Inner Diameter (inches): 2 11
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Other (describe)
Cap present? ☒ Yes ☐ No
Well lock present? ☒ Yes ☐ No
Lock functioning properly? ☒ Yes ☐ No
Are bollards present and stable? ☒ Yes ☐ No
Well ID visible? ☒ Yes ☐ No

WELL INTEGRITY:
Bailer present? ☐ Yes ☒ No
Visual obstruction? ☐ Yes ☒ No
Is well open to completed depth? (complete when gauging) ☒ Yes ☐ No
Is silt present in well? (complete when gauging) ☐ Yes ☒ No
Is silt greater than 10% of well screen length? (complete when gauging) ☐ Yes ☒ No

COMMENTS:

00962649

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: 501032
Client: Army
Site Name: 50
Well ID: 50WW22
Inspection Date: 5/6/19
Well Completion Depth/ Measured Depth: 37.88
Inspector: Scott Bressinger

ABOVE GROUND
Well Accessible? ☒ Yes ☐ No
Protective casing? ☒ Yes ☐ No
Material: METAL
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Need Paint
Lid Condition: ☒ Good ☐ Broken ☒ Cracked
Hinge Condition: ☒ Good ☐ Less than 50% rusted ☐ More than 50% rusted

☐ FLUSH MOUNTED NA
Well cover present? ☐ Yes ☐ No
Condition: ☐ Good ☐ Broken ☐ Cracked
Condition of Sump: ☐ Clean ☐ Dry ☐ Standing Water

CONCRETE PAD:
Sloped away from casing? ☒ Yes ☐ No
Pad Area Cleared of Vegetation? ☒ Yes ☐ No
Check any of the following features that apply:
☐ Many Cracks ☐ Gap Around Casing ☐ Few Cracks ☐ Ponded Water ☐ No Pad Present

WELL CONDITION:
Inner Diameter (inches): 2"
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Other (describe)
Cap present? ☒ Yes ☐ No
Well lock present? ☒ Yes ☐ No
Lock functioning properly? ☒ Yes ☐ No
Are bollards present and stable? ☒ Yes ☐ No
Well ID visible? ☒ Yes ☐ No

WELL INTEGRITY:
Bailer present? ☐ Yes ☒ No
Visual obstruction? ☐ Yes ☒ No
Is well open to completed depth? (complete when gauging) ☒ Yes ☐ No
Is silt present in well? (complete when gauging) ☒ Yes ☐ No
Is silt greater than 10% of well screen length? (complete when gauging) ☐ Yes ☒ No

COMMENTS:

00962650

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: 501032
Client: Army
Site Name: 50
Well ID: 50WW16
Inspection Date: 5/6/19
Well Completion Depth/ Measured Depth: 38.06
Inspector: Scott Bressner

ABOVE GROUND
Well Accessible? ☒ Yes ☐ No
Protective casing? ☒ Yes ☐ No
Material: METAL
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Need Paint
Lid Condition: ☒ Good ☐ Broken ☐ Cracked
Hinge Condition: ☒ Good ☐ Less than 50% rusted ☐ More than 50% rusted

☐ FLUSH MOUNTED NA
Well cover present? ☐ Yes ☐ No
Condition: ☐ Good ☐ Broken ☐ Cracked
Condition of Sump: ☐ Clean ☐ Dry ☐ Standing Water

CONCRETE PAD:
Sloped away from casing? ☒ Yes ☐ No
Pad Area Cleared of Vegetation? ☒ Yes ☐ No
Check any of the following features that apply:
☐ Many Cracks ☐ Gap Around Casing ☐ Few Cracks ☐ Ponded Water ☐ No Pad Present

WELL CONDITION:
Inner Diameter (inches): 2"
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Other (describe)
Cap present? ☒ Yes ☐ No
Well lock present? ☒ Yes ☐ No
Lock functioning properly? ☒ Yes ☐ No
Are bollards present and stable? ☒ Yes ☐ No
Well ID visible? ☒ Yes ☐ No

WELL INTEGRITY:
Bailer present? ☐ Yes ☒ No
Visual obstruction? ☐ Yes ☒ No
Is well open to completed depth? (complete when gauging) ☒ Yes ☐ No
Is silt present in well? (complete when gauging) ☒ Yes ☐ No
Is silt greater than 10% of well screen length? (complete when gauging) ☐ Yes ☒ No

COMMENTS:

00962651

WELL INSPECTION FORM

Job Name: UTAAP
Job No.: 501032
Client: ARMY
Site Name: 50

Well ID: 50MW10
Inspection Date: 5/7/19
Well Completion Depth/ Measured Depth: 111.06
Inspector: Scott Beesinger

ABOVE GROUND

Well Accessible? ☒ Yes ☐ No
Protective casing? ☒ Yes ☐ No
Material: METAL
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Need Paint
Lid Condition: ☒ Good ☐ Broken ☒ Cracked
Hinge Condition: ☒ Good ☐ Less than 50% rusted ☐ More than 50% rusted

☐ FLUSH MOUNTED NA

Well cover present? ☐ Yes ☐ No
Condition: ☐ Good ☐ Broken ☐ Cracked
Condition of Sump: ☐ Clean ☐ Dry ☐ Standing Water

CONCRETE PAD:

Sloped away from casing? ☒ Yes ☐ No
Pad Area Cleared of Vegetation? ☒ Yes ☐ No
Check any of the following features that apply:
☐ Many Cracks ☐ Gap Around Casing ☐ Few Cracks ☐ Ponded Water ☐ No Pad Present

WELL CONDITION:

Inner Diameter (inches): 2"
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Other (describe)
Cap present? ☒ Yes ☐ No
Well lock present? ☒ Yes ☐ No
Lock functioning properly? ☒ Yes ☐ No
Are bollards present and stable? ☒ Yes ☐ No
Well ID visible? ☒ Yes ☐ No

WELL INTEGRITY:

Bailer present? ☐ Yes ☒ No
Visual obstruction? ☐ Yes ☒ No
Is well open to completed depth? (complete when gauging) ☒ Yes ☐ No
Is silt present in well? (complete when gauging) ☐ Yes ☒ No
Is silt greater than 10% of well screen length? (complete when gauging) ☐ Yes ☒ No

COMMENTS:

00962652

WELL INSPECTION FORM

Job Name: LTMMP
Job No.: 501032
Client: Army
Site Name: 50

Well ID: 50WW09
Inspection Date: 5/7/19
Well Completion Depth/ Measured Depth: 62.18
Inspector: Scott Beesinger

☒ ABOVE GROUND

Well Accessible? ☒ Yes ☐ No
Protective casing? ☒ Yes ☐ No
Material: METAL
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Need Paint
Lid Condition: ☒ Good ☐ Broken ☒ Cracked
Hinge Condition: ☒ Good ☐ Less than 50% rusted ☐ More than 50% rusted

☐ FLUSH MOUNTED NA

Well cover present? ☐ Yes ☐ No
Condition: ☐ Good ☐ Broken ☐ Cracked
Condition of Sump: ☐ Clean ☐ Dry ☐ Standing Water

CONCRETE PAD:

Sloped away from casing? ☒ Yes ☐ No
Pad Area Cleared of Vegetation? ☒ Yes ☐ No
Check any of the following features that apply:
☐ Many Cracks ☐ Gap Around Casing ☐ Few Cracks ☐ Ponded Water ☐ No Pad Present

WELL CONDITION:

Inner Diameter (inches): 2(1
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Other (describe)
Cap present? ☒ Yes ☐ No
Well lock present? ☒ Yes ☐ No
Lock functioning properly? ☒ Yes ☐ No
Are bollards present and stable? ☒ Yes ☐ No
Well ID visible? ☒ Yes ☐ No

WELL INTEGRITY:

Bailer present? ☐ Yes ☒ No
Visual obstruction? ☐ Yes ☒ No
Is well open to completed depth? (complete when gauging) ☒ Yes ☐ No
Is silt present in well? (complete when gauging) ☒ Yes ☐ No
Is silt greater than 10% of well screen length? (complete when gauging) ☐ Yes ☒ No

COMMENTS:

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: 501032
Client: Army
Site Name: 50
Well ID: 50WW08
Inspection Date: 5/7/19
Well Completion Depth/ Measured Depth: 32.78
Inspector: Scott Beggs, NCAR

☒ ABOVE GROUND

Well Accessible? ☒ Yes ☐ No
Protective casing? ☒ Yes ☐ No
Material: METAL
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Need Paint
Lid Condition: ☒ Good ☐ Broken ☒ Cracked
Hinge Condition: ☒ Good ☐ Less than 50% rusted ☐ More than 50% rusted

☐ FLUSH MOUNTED

Well cover present? NA ☐ Yes ☐ No
Condition: ☐ Good ☐ Broken ☐ Cracked
Condition of Sump: ☐ Clean ☐ Dry ☐ Standing Water

CONCRETE PAD:

Sloped away from casing? ☒ Yes ☐ No
Pad Area Cleared of Vegetation? ☒ Yes ☐ No
Check any of the following features that apply:
☐ Many Cracks ☐ Gap Around Casing ☐ Few Cracks ☐ Ponded Water ☐ No Pad Present

WELL CONDITION:

Inner Diameter (inches): 2"
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Other (describe)
Cap present? ☒ Yes ☐ No
Well lock present? ☒ Yes ☐ No
Lock functioning properly? ☒ Yes ☐ No
Are bollards present and stable? ☒ Yes ☐ No
Well ID visible? ☒ Yes ☐ No

WELL INTEGRITY:

Bailer present? ☐ Yes ☒ No
Visual obstruction? ☐ Yes ☒ No
Is well open to completed depth? (complete when gauging) ☒ Yes ☐ No
Is silt present in well? (complete when gauging) ☐ Yes ☒ No
Is silt greater than 10% of well screen length? (complete when gauging) ☐ Yes ☒ No

COMMENTS:

00962654

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: 501032
Client: ARMY
Site Name: B50

Well ID: 50MW23
Inspection Date: 5/7/19
Well Completion Depth/ Measured Depth: 37.88
Inspector: Scott Beesinger

☒ ABOVE GROUND

Well Accessible? ☒ Yes ☐ No
Protective casing? ☒ Yes ☐ No
Material: METAL
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Need Paint
Lid Condition: ☒ Good ☐ Broken ☒ Cracked
Hinge Condition: ☒ Good ☐ Less than 50% rusted ☐ More than 50% rusted

☐ FLUSH MOUNTED NA

Well cover present? ☐ Yes ☐ No
Condition: ☐ Good ☐ Broken ☐ Cracked
Condition of Sump: ☐ Clean ☐ Dry ☐ Standing Water

CONCRETE PAD:

Sloped away from casing? ☒ Yes ☐ No
Pad Area Cleared of Vegetation? ☒ Yes ☐ No
Check any of the following features that apply:
☐ Many Cracks ☐ Gap Around Casing ☐ Few Cracks ☐ Ponded Water ☐ No Pad Present

WELL CONDITION:

Inner Diameter (inches): 2"
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Other (describe)
Cap present? ☒ Yes ☐ No
Well lock present? ☒ Yes ☐ No
Lock functioning properly? ☒ Yes ☐ No
Are bollards present and stable? ☒ Yes ☐ No
Well ID visible? ☒ Yes ☐ No

WELL INTEGRITY:

Bailer present? ☐ Yes ☒ No
Visual obstruction? ☐ Yes ☒ No
Is well open to completed depth? (complete when gauging) ☒ Yes ☐ No
Is silt present in well? (complete when gauging) ☐ Yes ☒ No
Is silt greater than 10% of well screen length? (complete when gauging) ☐ Yes ☒ No

COMMENTS:

00962655

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: 501032
Client: Army
Site Name: 50
Well ID: 50MW24
Inspection Date: 5/7/19
Well Completion Depth/ Measured Depth: 38.06
Inspector: Scott Beesinger

☒ ABOVE GROUND

Well Accessible? ☒ Yes ☐ No
Protective casing? ☒ Yes ☐ No
Material: METAL
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Need Paint
Lid Condition: ☒ Good ☐ Broken ☒ Cracked
Hinge Condition: ☒ Good ☐ Less than 50% rusted ☐ More than 50% rusted

☐ FLUSH MOUNTED NA

Well cover present? ☐ Yes ☐ No
Condition: ☐ Good ☐ Broken ☐ Cracked
Condition of Sump: ☐ Clean ☐ Dry ☐ Standing Water

CONCRETE PAD:

Sloped away from casing? ☒ Yes ☐ No
Pad Area Cleared of Vegetation? ☒ Yes ☐ No
Check any of the following features that apply:
☐ Many Cracks ☐ Gap Around Casing ☐ Few Cracks ☐ Ponded Water ☐ No Pad Present

WELL CONDITION:

Inner Diameter (inches): 2"
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Other (describe)
Cap present? ☒ Yes ☐ No
Well lock present? ☒ Yes ☐ No
Lock functioning properly? ☒ Yes ☐ No
Are bollards present and stable? ☒ Yes ☐ No
Well ID visible? ☒ Yes ☐ No

WELL INTEGRITY:

Bailer present? ☐ Yes ☒ No
Visual obstruction? ☐ Yes ☒ No
Is well open to completed depth? (complete when gauging) ☒ Yes ☐ No
Is silt present in well? (complete when gauging) ☐ Yes ☒ No
Is silt greater than 10% of well screen length? (complete when gauging) ☐ Yes ☒ No

COMMENTS:

00962656

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: 501032
Client: Army
Site Name: 50

Well ID: 50 MW05
Inspection Date: 5/7/19
Well Completion Depth/ Measured Depth: 25.35
Inspector: Scott Baesinger

☒ ABOVE GROUND

Well Accessible? ☒ Yes ☐ No
Protective casing? ☒ Yes ☐ No
Material: METAL
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Need Paint
Lid Condition: ☒ Good ☐ Broken ☐ Cracked
Hinge Condition: ☒ Good ☐ Less than 50% rusted ☐ More than 50% rusted

☐ FLUSH MOUNTED NA

Well cover present? ☐ Yes ☐ No
Condition: ☐ Good ☐ Broken ☐ Cracked
Condition of Sump: ☐ Clean ☐ Dry ☐ Standing Water

CONCRETE PAD:

Sloped away from casing? ☒ Yes ☐ No
Pad Area Cleared of Vegetation? ☒ Yes ☐ No
Check any of the following features that apply:
☐ Many Cracks ☐ Gap Around Casing ☐ Few Cracks ☐ Ponded Water ☐ No Pad Present

WELL CONDITION:

Inner Diameter (inches): 4"
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Other (describe)
Cap present? ☒ Yes ☐ No
Well lock present? ☒ Yes ☐ No
Lock functioning properly? ☒ Yes ☐ No
Are bollards present and stable? ☒ Yes ☐ No
Well ID visible? ☒ Yes ☐ No

WELL INTEGRITY:

Bailer present? ☐ Yes ☒ No
Visual obstruction? ☐ Yes ☒ No
Is well open to completed depth? (complete when gauging) ☒ Yes ☐ No
Is silt present in well? (complete when gauging) ☐ Yes ☒ No
Is silt greater than 10% of well screen length? (complete when gauging) ☐ Yes ☒ No

COMMENTS:

00962657

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: 501032
Client: Army
Site Name: 50
Well ID: 50WW20
Inspection Date: 5/16/19
Well Completion Depth/ Measured Depth: 55.83
Inspector: Scott Baesinger

☒ ABOVE GROUND

Well Accessible?				☒ Yes	☐ No
Protective casing?				☒ Yes	☐ No
Material	METAL				
Condition:	☒ Good	☐ Broken	☐ Cracked	☐ Need Paint	
Lid Condition:	☒ Good	☐ Broken	☒ Cracked		
Hinge Condition:	☒ Good	☐ Less than 50% rusted	☐ More than 50% rusted		

☐ FLUSH MOUNTED

Well cover present?	NA			☐ Yes	☐ No
Condition:	☐ Good	☐ Broken	☐ Cracked		
Condition of Sump:	☐ Clean	☐ Dry	☐ Standing Water		

CONCRETE PAD:

Sloped away from casing?				☒ Yes	☐ No
Pad Area Cleared of Vegetation?				☒ Yes	☐ No
Check any of the following features that apply:					
☐ Many Cracks	☐ Gap Around Casing	☐ Few Cracks	☐ Ponded Water	☐ No Pad Present	

WELL CONDITION:

Inner Diameter (inches)	2"				
Condition:	☒ Good	☐ Broken	☐ Cracked	☐ Other (describe)	
Cap present?				☒ Yes	☐ No
Well lock present?				☒ Yes	☐ No
Lock functioning properly?				☒ Yes	☐ No
Are bollards present and stable?				☒ Yes	☐ No
Well ID visible?				☒ Yes	☐ No

WELL INTEGRITY:

Bailer present?	☐ Yes	☒ No
Visual obstruction?	☐ Yes	☒ No
Is well open to completed depth? (complete when gauging)	☒ Yes	☐ No
Is silt present in well? (complete when gauging)	☐ Yes	☒ No
Is silt greater than 10% of well screen length? (complete when gauging)	☐ Yes	☒ No

COMMENTS:

00962658

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: 50/032
Client: Army
Site Name: 50

Well ID: 50WW04
Inspection Date: 5/16/19
Well Completion Depth/ Measured Depth: 23.21
Inspector: Scott Beesinger

☒ ABOVE GROUND

Well Accessible? ☒ Yes ☐ No
Protective casing? ☒ Yes ☐ No
Material: METAL
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Need Paint
Lid Condition: ☒ Good ☐ Broken ☒ Cracked
Hinge Condition: ☒ Good ☐ Less than 50% rusted ☐ More than 50% rusted

☐ FLUSH MOUNTED NA

Well cover present? ☐ Yes ☐ No
Condition: ☐ Good ☐ Broken ☐ Cracked
Condition of Sump: ☐ Clean ☐ Dry ☐ Standing Water

CONCRETE PAD:

Sloped away from casing? ☒ Yes ☐ No
Pad Area Cleared of Vegetation? ☒ Yes ☐ No
Check any of the following features that apply:
☐ Many Cracks ☐ Gap Around Casing ☐ Few Cracks ☐ Ponded Water ☐ No Pad Present

WELL CONDITION:

Inner Diameter (inches): 4"
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Other (describe)
Cap present? ☒ Yes ☐ No
Well lock present? ☒ Yes ☐ No
Lock functioning properly? ☒ Yes ☐ No
Are bollards present and stable? ☒ Yes ☐ No
Well ID visible? ☒ Yes ☐ No

WELL INTEGRITY:

Bailer present? ☐ Yes ☒ No
Visual obstruction? ☐ Yes ☒ No
Is well open to completed depth? (complete when gauging) ☒ Yes ☐ No
Is silt present in well? (complete when gauging) ☐ Yes ☒ No
Is silt greater than 10% of well screen length? (complete when gauging) ☐ Yes ☒ No

COMMENTS:

00962659

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: 501032
Client: ARMY
Site Name: 50

Well ID: 50MW02
Inspection Date: 5/16/19
Well Completion Depth/ Measured Depth: 22.21
Inspector: Scott Baesinger

☒ ABOVE GROUND

Well Accessible? ☒ Yes ☐ No
Protective casing? ☒ Yes ☐ No
Material: METAL
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Need Paint
Lid Condition: ☒ Good ☐ Broken ☒ Cracked
Hinge Condition: ☒ Good ☐ Less than 50% rusted ☐ More than 50% rusted

☐ FLUSH MOUNTED

Well cover present? NA ☐ Yes ☐ No
Condition: ☐ Good ☐ Broken ☐ Cracked
Condition of Sump: ☐ Clean ☐ Dry ☐ Standing Water

CONCRETE PAD:

Sloped away from casing? ☒ Yes ☐ No
Pad Area Cleared of Vegetation? ☒ Yes ☐ No
Check any of the following features that apply:
☐ Many Cracks ☐ Gap Around Casing ☐ Few Cracks ☐ Ponded Water ☐ No Pad Present

WELL CONDITION:

Inner Diameter (inches): 4(1
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Other (describe)
Cap present? ☒ Yes ☐ No
Well lock present? ☒ Yes ☐ No
Lock functioning properly? ☒ Yes ☐ No
Are bollards present and stable? ☒ Yes ☐ No
Well ID visible? ☒ Yes ☐ No

WELL INTEGRITY:

Bailer present? ☐ Yes ☒ No
Visual obstruction? ☐ Yes ☒ No
Is well open to completed depth? (complete when gauging) ☒ Yes ☐ No
Is silt present in well? (complete when gauging) ☐ Yes ☒ No
Is silt greater than 10% of well screen length? (complete when gauging) ☐ Yes ☒ No

COMMENTS:

00962660

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: 501032
Client: Army
Site Name: 50
Well ID: 50MW12
Inspection Date: 5/16/19
Well Completion Depth/ Measured Depth: 37.83
Inspector: Scott Beesinger

☒ ABOVE GROUND

Well Accessible? ☒ Yes ☐ No
Protective casing? ☒ Yes ☐ No
Material: METAL
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Need Paint
Lid Condition: ☒ Good ☐ Broken ☒ Cracked
Hinge Condition: ☒ Good ☐ Less than 50% rusted ☐ More than 50% rusted

☐ FLUSH MOUNTED NA

Well cover present? ☐ Yes ☐ No
Condition: ☐ Good ☐ Broken ☐ Cracked
Condition of Sump: ☐ Clean ☐ Dry ☐ Standing Water

CONCRETE PAD:

Sloped away from casing? ☒ Yes ☐ No
Pad Area Cleared of Vegetation? ☒ Yes ☐ No
Check any of the following features that apply:
☐ Many Cracks ☐ Gap Around Casing ☐ Few Cracks ☐ Ponded Water ☐ No Pad Present

WELL CONDITION:

Inner Diameter (inches) 2"
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Other (describe)
Cap present? ☒ Yes ☐ No
Well lock present? ☒ Yes ☐ No
Lock functioning properly? ☒ Yes ☐ No
Are bollards present and stable? ☒ Yes ☐ No
Well ID visible? ☒ Yes ☐ No

WELL INTEGRITY:

Bailer present? ☐ Yes ☒ No
Visual obstruction? ☐ Yes ☒ No
Is well open to completed depth? (complete when gauging) ☒ Yes ☐ No
Is silt present in well? (complete when gauging) ☐ Yes ☒ No
Is silt greater than 10% of well screen length? (complete when gauging) ☐ Yes ☒ No

COMMENTS:

00962661

WELL INSPECTION FORM

Job Name: LTAAP
Job No.: 50/032
Client: ARmy
Site Name: 50

Well ID: 50WW26
Inspection Date: 5/16/19
Well Completion Depth/ Measured Depth: 62.80
Inspector: Scott BEESINGER

☒ ABOVE GROUND

Well Accessible? ☒ Yes ☐ No
Protective casing? ☒ Yes ☐ No
Material: METAL
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Need Paint
Lid Condition: ☒ Good ☐ Broken ☒ Cracked
Hinge Condition: ☒ Good ☐ Less than 50% rusted ☐ More than 50% rusted

☐ FLUSH MOUNTED NA

Well cover present? ☐ Yes ☐ No
Condition: ☐ Good ☐ Broken ☐ Cracked
Condition of Sump: ☐ Clean ☐ Dry ☐ Standing Water

CONCRETE PAD:

Sloped away from casing? ☒ Yes ☐ No
Pad Area Cleared of Vegetation? ☒ Yes ☐ No
Check any of the following features that apply:
☐ Many Cracks ☐ Gap Around Casing ☐ Few Cracks ☐ Ponded Water ☐ No Pad Present

WELL CONDITION:

Inner Diameter (inches) 2"
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Other (describe)
Cap present? ☒ Yes ☐ No
Well lock present? ☒ Yes ☐ No
Lock functioning properly? ☒ Yes ☐ No
Are bollards present and stable? ☒ Yes ☐ No
Well ID visible? ☒ Yes ☐ No

WELL INTEGRITY:

Bailer present? ☐ Yes ☒ No
Visual obstruction? ☐ Yes ☒ No
Is well open to completed depth? (complete when gauging) ☒ Yes ☐ No
Is silt present in well? (complete when gauging) ☐ Yes ☒ No
Is silt greater than 10% of well screen length? (complete when gauging) ☐ Yes ☒ No

COMMENTS:

00962662

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: 501032
Client: Army
Site Name: 50

Well ID: 50WW21
Inspection Date: 5/16/19
Well Completion Depth/ Measured Depth: 37.68
Inspector: Scott Beesinger

☒ ABOVE GROUND

Well Accessible?					☒ Yes ☐ No
Protective casing?					☒ Yes ☐ No
Material	METAL				
Condition:	☒ Good	☐ Broken	☐ Cracked	☐ Need Paint	
Lid Condition:	☒ Good	☐ Broken	☒ Cracked		
Hinge Condition:	☒ Good	☐ Less than 50% rusted	☐ More than 50% rusted		

☐ FLUSH MOUNTED NA

Well cover present?				☐ Yes ☐ No
Condition:	☐ Good	☐ Broken	☐ Cracked	
Condition of Sump:	☐ Clean	☐ Dry	☐ Standing Water	

CONCRETE PAD:

Sloped away from casing?					☒ Yes ☐ No
Pad Area Cleared of Vegetation?					☒ Yes ☐ No
Check any of the following features that apply:					
☐ Many Cracks	☐ Gap Around Casing	☐ Few Cracks	☐ Ponded Water	☐ No Pad Present	

WELL CONDITION:

Inner Diameter (inches)	2"				
Condition:	☒ Good	☐ Broken	☐ Cracked	☐ Other (describe)	
Cap present?					☒ Yes ☐ No
Well lock present?					☒ Yes ☐ No
Lock functioning properly?					☒ Yes ☐ No
Are bollards present and stable?					☒ Yes ☐ No
Well ID visible?					☒ Yes ☐ No

WELL INTEGRITY:

Bailer present?	☐ Yes ☒ No
Visual obstruction?	☐ Yes ☒ No
Is well open to completed depth? (complete when gauging)	☒ Yes ☐ No
Is silt present in well? (complete when gauging)	☐ Yes ☒ No
Is silt greater than 10% of well screen length? (complete when gauging)	☐ Yes ☒ No

COMMENTS:

00962663

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: 501032
Client: Army
Site Name: 50

Well ID: 50WW17
Inspection Date: 5/16/19
Well Completion Depth/ Measured Depth: 66.90
Inspector: Scott Beesinger

☒ ABOVE GROUND

Well Accessible? ☒ Yes ☐ No
Protective casing? ☒ Yes ☐ No
Material: METAL
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Need Paint
Lid Condition: ☒ Good ☐ Broken ☒ Cracked
Hinge Condition: ☒ Good ☐ Less than 50% rusted ☐ More than 50% rusted

☐ FLUSH MOUNTED NA

Well cover present? ☐ Yes ☐ No
Condition: ☐ Good ☐ Broken ☐ Cracked
Condition of Sump: ☐ Clean ☐ Dry ☐ Standing Water

CONCRETE PAD:

Sloped away from casing? ☒ Yes ☐ No
Pad Area Cleared of Vegetation? ☒ Yes ☐ No
Check any of the following features that apply:
☐ Many Cracks ☐ Gap Around Casing ☐ Few Cracks ☐ Ponded Water ☐ No Pad Present

WELL CONDITION:

Inner Diameter (inches): 2"
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Other (describe)
Cap present? ☒ Yes ☐ No
Well lock present? ☒ Yes ☐ No
Lock functioning properly? ☒ Yes ☐ No
Are bollards present and stable? ☒ Yes ☐ No
Well ID visible? ☒ Yes ☐ No

WELL INTEGRITY:

Bailer present? ☐ Yes ☒ No
Visual obstruction? ☐ Yes ☒ No
Is well open to completed depth? (complete when gauging) ☒ Yes ☐ No
Is silt present in well? (complete when gauging) ☐ Yes ☒ No
Is silt greater than 10% of well screen length? (complete when gauging) ☐ Yes ☒ No

COMMENTS:

00962664

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: 501032
Client: Army
Site Name: 50
Well ID: 50MW18
Inspection Date: 5/16/19
Well Completion Depth/ Measured Depth: 37.66
Inspector: Scott Bassinger

☒ ABOVE GROUND

Well Accessible? ☒ Yes ☐ No
Protective casing? ☒ Yes ☐ No
Material: METAL
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Need Paint
Lid Condition: ☒ Good ☐ Broken ☒ Cracked
Hinge Condition: ☒ Good ☐ Less than 50% rusted ☐ More than 50% rusted

☐ FLUSH MOUNTED NA

Well cover present? ☐ Yes ☐ No
Condition: ☐ Good ☐ Broken ☐ Cracked
Condition of Sump: ☐ Clean ☐ Dry ☐ Standing Water

CONCRETE PAD:

Sloped away from casing? ☒ Yes ☐ No
Pad Area Cleared of Vegetation? ☒ Yes ☐ No
Check any of the following features that apply:
☐ Many Cracks ☐ Gap Around Casing ☐ Few Cracks ☐ Ponded Water ☐ No Pad Present

WELL CONDITION:

Inner Diameter (inches): 2"
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Other (describe)
Cap present? ☒ Yes ☐ No
Well lock present? ☒ Yes ☐ No
Lock functioning properly? ☒ Yes ☐ No
Are bollards present and stable? ☒ Yes ☐ No
Well ID visible? ☒ Yes ☐ No

WELL INTEGRITY:

Bailer present? ☐ Yes ☒ No
Visual obstruction? ☐ Yes ☒ No
Is well open to completed depth? (complete when gauging) ☒ Yes ☐ No
Is silt present in well? (complete when gauging) ☐ Yes ☒ No
Is silt greater than 10% of well screen length? (complete when gauging) ☐ Yes ☒ No

COMMENTS:

00962665

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: 501032
Client: ARMY
Site Name: 50
Well ID: 50WW27
Inspection Date: 5/17/19
Well Completion Depth/ Measured Depth: 59.98
Inspector: SCOTT BASSINGER

☒ ABOVE GROUND

Well Accessible? ☒ Yes ☐ No
Protective casing? ☒ Yes ☐ No
Material: METAL
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Need Paint
Lid Condition: ☒ Good ☐ Broken ☒ Cracked
Hinge Condition: ☒ Good ☐ Less than 50% rusted ☐ More than 50% rusted

☐ FLUSH MOUNTED NA

Well cover present? ☐ Yes ☐ No
Condition: ☐ Good ☐ Broken ☐ Cracked
Condition of Sump: ☐ Clean ☐ Dry ☐ Standing Water

CONCRETE PAD:

Sloped away from casing? ☒ Yes ☐ No
Pad Area Cleared of Vegetation? ☒ Yes ☐ No
Check any of the following features that apply:
☐ Many Cracks ☐ Gap Around Casing ☐ Few Cracks ☐ Ponded Water ☐ No Pad Present

WELL CONDITION:

Inner Diameter (inches): 2"
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Other (describe)
Cap present? ☒ Yes ☐ No
Well lock present? ☒ Yes ☐ No
Lock functioning properly? ☒ Yes ☐ No
Are bollards present and stable? ☒ Yes ☐ No
Well ID visible? ☒ Yes ☐ No

WELL INTEGRITY:

Bailer present? ☐ Yes ☒ No
Visual obstruction? ☐ Yes ☒ No
Is well open to completed depth? (complete when gauging) ☒ Yes ☐ No
Is silt present in well? (complete when gauging) ☐ Yes ☒ No
Is silt greater than 10% of well screen length? (complete when gauging) ☐ Yes ☒ No

COMMENTS:

00962666

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: 501032
Client: Army
Site Name: 50
Well ID: 50WW15
Inspection Date: 5/17/19
Well Completion Depth/ Measured Depth: 37.93
Inspector: Scott Beesinger

☒ ABOVE GROUND

Well Accessible? ☒ Yes ☐ No
Protective casing? ☒ Yes ☐ No
Material: METAL
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Need Paint
Lid Condition: ☒ Good ☐ Broken ☐ Cracked
Hinge Condition: ☒ Good ☐ Less than 50% rusted ☐ More than 50% rusted

☐ FLUSH MOUNTED NA

Well cover present? ☐ Yes ☐ No
Condition: ☐ Good ☐ Broken ☐ Cracked
Condition of Sump: ☐ Clean ☐ Dry ☐ Standing Water

CONCRETE PAD:

Sloped away from casing? ☒ Yes ☐ No
Pad Area Cleared of Vegetation? ☒ Yes ☐ No
Check any of the following features that apply:
☐ Many Cracks ☐ Gap Around Casing ☐ Few Cracks ☐ Ponded Water ☐ No Pad Present

WELL CONDITION:

Inner Diameter (inches) ≥11
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Other (describe)
Cap present? ☒ Yes ☐ No
Well lock present? ☒ Yes ☐ No
Lock functioning properly? ☒ Yes ☐ No
Are bollards present and stable? ☒ Yes ☐ No
Well ID visible? ☒ Yes ☐ No

WELL INTEGRITY:

Bailer present? ☐ Yes ☒ No
Visual obstruction? ☐ Yes ☒ No
Is well open to completed depth? (complete when gauging) ☒ Yes ☐ No
Is silt present in well? (complete when gauging) ☐ Yes ☒ No
Is silt greater than 10% of well screen length? (complete when gauging) ☐ Yes ☒ No

COMMENTS:

00962667

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: 501032
Client: Army
Site Name: 50
Well ID: 50WW01
Inspection Date: 5/17/19
Well Completion Depth/ Measured Depth: 23.30
Inspector: Scott Baesinger

☒ ABOVE GROUND

Well Accessible? ☒ Yes ☐ No
Protective casing? ☒ Yes ☐ No
Material: METAL
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Need Paint
Lid Condition: ☒ Good ☐ Broken ☒ Cracked
Hinge Condition: ☒ Good ☐ Less than 50% rusted ☐ More than 50% rusted

☐ FLUSH MOUNTED

Well cover present? NA ☐ Yes ☐ No
Condition: ☐ Good ☐ Broken ☐ Cracked
Condition of Sump: ☐ Clean ☐ Dry ☐ Standing Water

CONCRETE PAD:

Sloped away from casing? ☒ Yes ☐ No
Pad Area Cleared of Vegetation? ☒ Yes ☐ No
Check any of the following features that apply:
☐ Many Cracks ☐ Gap Around Casing ☐ Few Cracks ☐ Ponded Water ☐ No Pad Present

WELL CONDITION:

Inner Diameter (inches): 4"
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Other (describe)
Cap present? ☒ Yes ☐ No
Well lock present? ☒ Yes ☐ No
Lock functioning properly? ☒ Yes ☐ No
Are bollards present and stable? ☒ Yes ☐ No
Well ID visible? ☒ Yes ☐ No

WELL INTEGRITY:

Bailer present? ☐ Yes ☒ No
Visual obstruction? ☐ Yes ☒ No
Is well open to completed depth? (complete when gauging) ☒ Yes ☐ No
Is silt present in well? (complete when gauging) ☐ Yes ☒ No
Is silt greater than 10% of well screen length? (complete when gauging) ☐ Yes ☒ No

COMMENTS:

00962668

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: 501032
Client: Army
Site Name: 50

Well ID: 50MW25
Inspection Date: 5/17/19
Well Completion Depth/ Measured Depth: 57.98
Inspector: Scott Beesinger

ABOVE GROUND
Well Accessible? ☒ Yes ☐ No
Protective casing? ☒ Yes ☐ No
Material: METAL
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Need Paint
Lid Condition: ☒ Good ☐ Broken ☒ Cracked
Hinge Condition: ☒ Good ☐ Less than 50% rusted ☐ More than 50% rusted

☐ FLUSH MOUNTED NA
Well cover present? ☐ Yes ☐ No
Condition: ☐ Good ☐ Broken ☐ Cracked
Condition of Sump: ☐ Clean ☐ Dry ☐ Standing Water

CONCRETE PAD:
Sloped away from casing? ☒ Yes ☐ No
Pad Area Cleared of Vegetation? ☒ Yes ☐ No
Check any of the following features that apply:
☐ Many Cracks ☐ Gap Around Casing ☐ Few Cracks ☐ Ponded Water ☐ No Pad Present

WELL CONDITION:
Inner Diameter (inches): 2"
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Other (describe)
Cap present? ☒ Yes ☐ No
Well lock present? ☒ Yes ☐ No
Lock functioning properly? ☒ Yes ☐ No
Are bollards present and stable? ☒ Yes ☐ No
Well ID visible? ☒ Yes ☐ No

WELL INTEGRITY:
Bailer present? ☐ Yes ☒ No
Visual obstruction? ☐ Yes ☒ No
Is well open to completed depth? (complete when gauging) ☒ Yes ☐ No
Is silt present in well? (complete when gauging) ☐ Yes ☒ No
Is silt greater than 10% of well screen length? (complete when gauging) ☐ Yes ☒ No

COMMENTS:

00962669

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: 501032
Client: ARMY
Site Name: 50
Well ID: 50WW28
Inspection Date: 5/17/19
Well Completion Depth/ Measured Depth: 27.13
Inspector: Scott Beesinger

ABOVE GROUND

Well Accessible? ☒ Yes ☐ No
Protective casing? ☒ Yes ☐ No
Material: METAL
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Need Paint
Lid Condition: ☒ Good ☐ Broken ☒ Cracked
Hinge Condition: ☒ Good ☐ Less than 50% rusted ☐ More than 50% rusted

☐ FLUSH MOUNTED NA

Well cover present? ☐ Yes ☐ No
Condition: ☐ Good ☐ Broken ☐ Cracked
Condition of Sump: ☐ Clean ☐ Dry ☐ Standing Water

CONCRETE PAD:

Sloped away from casing? ☒ Yes ☐ No
Pad Area Cleared of Vegetation? ☒ Yes ☐ No
Check any of the following features that apply:
☐ Many Cracks ☐ Gap Around Casing ☐ Few Cracks ☐ Ponded Water ☐ No Pad Present

WELL CONDITION:

Inner Diameter (inches): 4"
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Other (describe)
Cap present? ☒ Yes ☐ No
Well lock present? ☒ Yes ☐ No
Lock functioning properly? ☒ Yes ☐ No
Are bollards present and stable? ☒ Yes ☐ No
Well ID visible? ☒ Yes ☐ No

WELL INTEGRITY:

Bailer present? ☐ Yes ☒ No
Visual obstruction? ☐ Yes ☒ No
Is well open to completed depth? (complete when gauging) ☒ Yes ☐ No
Is silt present in well? (complete when gauging) ☐ Yes ☒ No
Is silt greater than 10% of well screen length? (complete when gauging) ☐ Yes ☒ No

COMMENTS:

00962670

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: 501032
Client: ARMY
Site Name: 50

Well ID: 50MW19
Inspection Date: 5/17/19
Well Completion Depth/ Measured Depth: 64.88
Inspector: Scott Beasinger

☒ ABOVE GROUND

Well Accessible? ☒ Yes ☐ No
Protective casing? ☒ Yes ☐ No
Material: METAL
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Need Paint
Lid Condition: ☒ Good ☐ Broken ☒ Cracked
Hinge Condition: ☒ Good ☐ Less than 50% rusted ☐ More than 50% rusted

☐ FLUSH MOUNTED NA

Well cover present? ☐ Yes ☐ No
Condition: ☐ Good ☐ Broken ☐ Cracked
Condition of Sump: ☐ Clean ☐ Dry ☐ Standing Water

CONCRETE PAD:

Sloped away from casing? ☒ Yes ☐ No
Pad Area Cleared of Vegetation? ☒ Yes ☐ No
Check any of the following features that apply:
☐ Many Cracks ☐ Gap Around Casing ☐ Few Cracks ☐ Ponded Water ☐ No Pad Present

WELL CONDITION:

Inner Diameter (inches): 2"
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Other (describe)
Cap present? ☒ Yes ☐ No
Well lock present? ☒ Yes ☐ No
Lock functioning properly? ☒ Yes ☐ No
Are bollards present and stable? ☒ Yes ☐ No
Well ID visible? ☒ Yes ☐ No

WELL INTEGRITY:

Bailer present? ☐ Yes ☒ No
Visual obstruction? ☐ Yes ☒ No
Is well open to completed depth? (complete when gauging) ☒ Yes ☐ No
Is silt present in well? (complete when gauging) ☒ Yes ☐ No
Is silt greater than 10% of well screen length? (complete when gauging) ☐ Yes ☒ No

COMMENTS:

00962671

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: 501032
Client: ARMY
Site Name: SD

Well ID: SDWW07
Inspection Date: 5/17/19
Well Completion Depth/ Measured Depth: 31.86
Inspector: Scott Beesinger

☒ ABOVE GROUND

Well Accessible? ☒ Yes ☐ No
Protective casing? ☒ Yes ☐ No
Material: METAL
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Need Paint
Lid Condition: ☒ Good ☐ Broken ☒ Cracked
Hinge Condition: ☒ Good ☐ Less than 50% rusted ☐ More than 50% rusted

☐ FLUSH MOUNTED NA

Well cover present? ☐ Yes ☐ No
Condition: ☐ Good ☐ Broken ☐ Cracked
Condition of Sump: ☐ Clean ☐ Dry ☐ Standing Water

CONCRETE PAD:

Sloped away from casing? ☒ Yes ☐ No
Pad Area Cleared of Vegetation? ☒ Yes ☐ No
Check any of the following features that apply:
☐ Many Cracks ☐ Gap Around Casing ☐ Few Cracks ☐ Ponded Water ☐ No Pad Present

WELL CONDITION:

Inner Diameter (inches): 4"
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Other (describe)
Cap present? ☒ Yes ☐ No
Well lock present? ☒ Yes ☐ No
Lock functioning properly? ☒ Yes ☐ No
Are bollards present and stable? ☒ Yes ☐ No
Well ID visible? ☒ Yes ☐ No

WELL INTEGRITY:

Bailer present? ☐ Yes ☒ No
Visual obstruction? ☐ Yes ☒ No
Is well open to completed depth? (complete when gauging) ☒ Yes ☐ No
Is silt present in well? (complete when gauging) ☐ Yes ☒ No
Is silt greater than 10% of well screen length? (complete when gauging) ☐ Yes ☒ No

COMMENTS:

Appendix C

Groundwater Sampling Forms

Note: The sample collection logs (SCLs) for the November/December 2018 and May 2019 sampling event have been revised to delete the sample interval values at the top right of the first page of each two-page SCL. The "Sample Interval" recorded on those forms represents the range of depth-to-water values measured during the purging of the well. The actual pump inlet depth is recorded on the first page of the SCL. The "Sample Interval" recorded on each SCL has been crossed out to prevent any confusion.

Depth to water, LHAAP-50

Well I.D	Aquifer	Gauging Date	Top of Casing Elevation	Depth to Water	Measured Well Depth	Screen Interval Top	Screen Interval Bottom	Screen Interval Top	Screen Interval Bottom	Notes	Groundwater Elevation (ft msl)
47WW38		12/3/18		22.58	60.15					Gauge only	
50WW01	Upper Shallow	12/3/18	198.5	21.79	23.32	13.21	23.21	185.29	175.29	Gauge only	176.71
50WW02	Upper Shallow	12/3/18	200.74	22.37	22.37	12.34	22.24	188.4	178.5	Gauge only	178.37
50WW03	Upper Shallow	12/3/18	202.94	23.04	23.10	13.06	23.06	189.88	179.88	Gauge only	179.90
50WW04	Upper Shallow	12/3/18	204.51	23.20	23.20	12.87	22.87	191.64	181.64	Gauge only	181.31
50WW05	Upper Shallow	12/3/18	197.6758	21.52	25.50	17.24	27.24	180.44	170.44		176.14
50WW06	Lower Shallow	11/28/18	195.3462	18.51	58.40	47.75	57.75	147.60	137.60		176.84
50WW07	Upper Shallow	12/3/18	202.55	26.65	32.05	21.67	31.67	180.88	170.88	Gauge only	175.90
50WW08	Upper Shallow	11/28/18	199.67	23.26	32.80	17.11	31.71	182.56	167.96		176.41
50WW09	Lower Shallow	12/3/18	199.41	23.10	62.50	46.75	61.25	152.66	138.16		176.31
50WW10	Intermediate	12/3/18	199.25	23.80	111.54	101.43	110.93	97.82	88.32		175.45
50WW11	Upper Shallow	11/28/18	197.07	21.85	37.85	22.55	37.05	174.52	160.02		175.22
50WW12	Upper Shallow	11/28/18	195.66	19.71	37.93	22.5	37	173.16	158.66		175.95
50WW13	Upper Shallow	11/29/18	197.45	21.15	37.64	22.44	36.94	175.01	160.51		176.30
50WW14	Lower Shallow	11/29/18	197.52	21.38	58.50	45.78	60.28	151.74	137.24		176.14
50WW15	Upper Shallow	11/30/18	196.3	19.88	37.92	22.25	36.75	174.05	159.55		176.42
50WW16	Upper Shallow	11/28/18	196.66	20.73	38.10	22.66	37.16	174	159.5		178.93
50WW17	Fully Screened Shallow	11/30/18	195.13	19.61	67.00	22.3	66.8	172.83	128.33		175.52
50WW18	Upper Shallow	11/30/18	194.84	19.38	37.65	22.37	36.87	172.47	157.97		175.46
50WW19	Fully Screened Shallow	12/3/18	195.96	20.49	65.35	21.35	65.85	174.61	130.11	Gauge only	175.47
50WW20	Fully Screened Shallow	12/3/18	202.54	26.19	55.85	20.54	55.04	182	147.5	Gauge only	176.35
50WW21	Upper Shallow	11/30/18	200.14	23.90	37.67	22.36	36.86	177.78	163.28		176.24
50WW22	Upper Shallow	12/3/18	202.1	25.97	37.90	21.97	36.57	180.13	165.53		176.13
50WW23	Upper Shallow	12/3/18	200.75	24.77	37.92	22.42	36.92	178.33	163.83		175.98
50WW24	Upper Shallow	11/30/18	201.63	25.46	38.05	22.66	37.16	178.97	164.47		176.17
50WW25	Lower Shallow	12/3/18	196	19.98	57.95	NA	NA	NA	NA	Gauge only	176.02
50WW26	Lower Shallow	12/3/18	200.07	24.00	62.89	47.49	61.99	152.58	138.08	Gauge only	176.07
50WW27	Lower Shallow	12/3/18	196.22	20.00	59.95	45.28	59.78	150.94	136.44		176.22
50WW28	Upper Shallow	12/3/18	194.71	19.05	27.20	16.57	26.57	178.14	168.14	Gauge only	175.66

Sample Collection Log

APTIM

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **50WW16**

Sampler(s): Scott Beesinger

FIELD CONDITIONS CLEAR / COLD

SAMPLING INFORMATION

Edited by SS - Feb 26 2020

Sample No: 50WW16-181128

DATE/TIME: 11/28/18 / 0756

Sample Interval: [redacted]

Sampling Method:

Sample Purpose: REG

Sample Matrix: GW

Appearance of Sample

Assoc. QC Samples

Decontamination Procedures

Chain of Custody	Lab	COC Notes	Analyses	Container	Preserv
	ALSHT		Anions in Water by E300, Alkalinity in Water by E310.1	1 x 250 mL HDPE	Cool 4C
			Carbon Dioxide in Water by RSK175	3 x 40 mL Glass	Cool 4C
			DHC in Wate by CENSUS-qPCR	1 x 1 L HDPE	Cool 4C
			Dissolved Fe and Mn in Water by 6020A	1 x 60 mL HDPE	HN03<pH2
			Dissolved Gases in Water by RSK175	3 x 40 mL Glass	Cool 4C
			Iron, total, in Water by 6020A	1 x 60 mL HDPE	HN03<pH2
			Perchlorate in Water by 6850	1 x 125 mL HDPE	Cool 4C
			Phosphorous in Water by E365.2	1 x 250 mL HDPE	H2SO4
			Sulfide in Water by E376.1	1 x 500 mL HDPE	NaOH>pH12; 2N Zinc Ac
			TOC in Water by E415.1	2 x 40 mL Amber	H2SO4
			VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Casing ID (in.): 2

Depth to Water - Initial (DTWi) (ft) 20.73

Depth to Well Bottom (ft) [redacted] 38.10

Screen Interval (ft): 22.66 - 37.16

Purging Method/Equipment: Low flow / BLADDER Pump

Purge Start Date/Time: 11/28/18 0810

Purge End Date/Time: 11/28/18 0845

Discharge Tube Length: NA

PID Reading: NA

Discharge Tube Diameter: 1/4"

Immersible Layer: Y / N

[redacted] 0940 2ND check of DepTH TO BOTTOM - 38.10

Sample Collection Log

APTIM

Approximate depth of pump inlet*(ft): 29.90 [redacted]

Pump Start Time: 0810

Location ID: 50WW16				Sample No: 50WW16-181128						
Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
11/28/18	0815	100	.5	20.80	0.336	15.43	7.05	93.2	233	0.78
	0820	100	1.0	20.85	0.287	15.69	6.52	71.5	219	0.49
	0825	100	1.5	20.88	0.289	15.89	6.07	64.3	240	0.35
	0830	100	2.0	20.90	0.295	15.95	5.75	59.0	250	0.28
	0835	100	2.5	20.91	0.296	15.98	5.74	58.6	251	0.28
	0840	100	3.0	20.92	0.296	16.03	5.73	58.1	252	0.27
	0845	100	3.5	20.92	0.296	[redacted]	5.73	57.7	252	0.27

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Location ID: **50SW06**

Project No: **501032**

Sampler(s): Scott Beesinger

FIELD CONDITIONS Clear/Cool

SAMPLING INFORMATION

Sample No: 50SW06-1811

DATE/TIME: 11/28/18 / 0945

Sample Interval: ___ - ___

Sampling Method:

Sample Purpose: REG

Sample Matrix: GW

Appearance of Sample	Assoc. QC Samples	Decontamination Procedures

Chain of Custody	Lab	COC Notes	Analyses	Container	Preserv
	ALSHT		Perchlorate in Water by 6850	1 x 125 mL HDPE	Cool 4C
			VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Casing ID (in.): NA

Depth to Water - Initial (DTWi) (ft) 20.73

Depth to Well Bottom (ft) 50WW16 NA

Screen Interval (ft): NA

Purging Method/Equipment: NA

Purge Start Date/Time: NA

Purge End Date/Time: NA

Discharge Tube Length: NA

PID Reading: NA

Discharge Tube Diameter: NA

Immersible Layer: Y / N

Approximate depth of pump inlet*(ft): Screen Interval Not Defined

Pump Start Time: NA

50WW16 Elevation is Below creek channel

APTIM

Sample Collection Log

Location ID: 50SW06		Sample No: 50SW06-1811___								
Date of Reading	**Time of Reading**	**Purge Rate**	**Total Purge**	**DTW**	**Cond.**	**Temp.**	**pH**	**Turbidity**	**ORP**	**DO**
		(ml/min)	**(L)**	**(ft)**	**(mS/cm)**	**(°C)**		**(NTU)**	**(mV)**	**(mg/L)**
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
		NO Sample Collected								

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

Sample Collection Log

APTIM

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **50WW12**

Sampler(s): Scott Beesinger

FIELD CONDITIONS CLEAR / COOL

SAMPLING INFORMATION

Edited by SS - Feb 26 2020

Sample No: 50WW12-181128

DATE/TIME: 11/28/18 / 1140

Sample Interval: ~~[illegible]~~

Sampling Method:

Sample Purpose: REG

Sample Matrix: GW

Appearance of Sample

Assoc. QC Samples

Decontamination Procedures

Chain of Custody	Lab	COC Notes	Analyses	Container	Preserv
	ALSHT		Anions in Water by E300, Alkalinity in Water by E310.1	1 x 250 mL HDPE	Cool 4C
			Carbon Dioxide in Water by RSK175	3 x 40 mL Glass	Cool 4C
			DHC in Wate by CENSUS-qPCR	1 x 1 L HDPE	Cool 4C
			Dissolved Fe and Mn in Water by 6020A	1 x 60 mL HDPE	HN03<pH2
			Dissolved Gases in Water by RSK175	3 x 40 mL Glass	Cool 4C
			Iron, total, in Water by 6020A	1 x 60 mL HDPE	HN03<pH2
			Perchlorate in Water by 6850	1 x 125 mL HDPE	Cool 4C
			Phosphorous in Water by E365.2	1 x 250 mL HDPE	H2SO4
			Sulfide in Water by E376.1	1 x 500 mL HDPE	NaOH>pH12; 2N Zinc Ac
			TOC in Water by E415.1	2 x 40 mL Amber	H2SO4
			VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Casing ID (in.): 2

Depth to Water - Initial (DTWi) (ft) 19.71

Depth to Well Bottom (ft) 37.93

Screen Interval (ft): 22.50 - 37.00

Purging Method/Equipment: Low flow / BLADDER Pump

Purge Start Date/Time: 11/28/18 1150

Purge End Date/Time: 11/28/18

Discharge Tube Length: NA

PID Reading: NA

Discharge Tube Diameter: 1/4"

Immersible Layer: Y / (N)

1230 - 2ND check DepTH to BoTTom - 37.93

Sample Collection Log

APTIM

Approximate depth of pump inlet*(ft): [redacted] 29.75 Pump Start Time: 1150

Location ID: 50WW12 Sample No: 50WW12-181128										
Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
11/28/18	1155	100	:5	19.79	4.39	17.47	5.57	74.5	294	0.49
	1200	100	1.0	19.85	4.41	17.74	5.47	63.2	295	0.12
	1205	100	1.5	19.88	4.41	17.73	5.40	57.9	295	0.03
	1210	100	2.0	19.91	4.41	17.72	5.39	57.3	295	0.03
	1215	100	2.5	19.93	4.41	17.71	5.38	56.8	295	0.02
	1220	100	3.0	19.95	4.41	17.71	5.38	56.2	295	0.02

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

Sample Collection Log

APTIM

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **50WW08**

Sampler(s): Scott Bressinger

FIELD CONDITIONS

SAMPLING INFORMATION

Edited by SS - Feb 26 2020

Sample No: 50WW08-181128

DATE/TIME: 11/28/18 / 1245

Sample Interval ~~23.26 - 32.80~~

Sampling Method:

Sample Purpose: REG

Sample Matrix: GW

Appearance of Sample

Assoc. QC Samples

Decontamination Procedures

Chain of Custody	Lab	COC Notes	Analyses	Container	Preserv
	ALSHT		Anions in Water by E300, Alkalinity in Water by E310.1	1 x 250 mL HDPE	Cool 4C
			Carbon Dioxide in Water by RSK175	3 x 40 mL Glass	Cool 4C
			DHC in Wate by CENSUS-qPCR	1 x 1 L HDPE	Cool 4C
			Dissolved Fe and Mn in Water by 6020A	1 x 60 mL HDPE	HN03<pH2
			Dissolved Gases in Water by RSK175	3 x 40 mL Glass	Cool 4C
			Iron, total, in Water by 6020A	1 x 60 mL HDPE	HN03<pH2
			Perchlorate in Water by 6850	1 x 125 mL HDPE	Cool 4C
			Phosphorous in Water by E365.2	1 x 250 mL HDPE	H2SO4
			Sulfide in Water by E376.1	1 x 500 mL HDPE	NaOH>pH12; 2N Zinc Ac
			TOC in Water by E415.1	2 x 40 mL Amber	H2SO4
			VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Casing ID (in.): 2

Depth to Water - Initial (DTWi) (ft) 23.26

Depth to Well Bottom (ft) ~~29.75~~ 32.80

Screen Interval (ft): 17.11 - 31.71

Purging Method/Equipment: Low flow / BLADDER Pump

Purge Start Date/Time: 11/28/18 1255

Purge End Date/Time: 11/28/18 1325

Discharge Tube Length: NA

PID Reading: NA

Discharge Tube Diameter: 1/4"

Immersible Layer: Y / N

1340 - END check Depth to Bottom - 32.80

Sample Collection Log

APTIM

Approximate depth of pump inlet*(ft): 24.41 Pump Start Time: 1255

Location ID: 50WW08		Sample No: 50WW08-181128								
Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
11/28/18	1300	100	.5	23.32	2.42	18.14	5.89	33.3	267	0.53
	1305	100	1.0	23.37	2.43	18.37	5.75	14.1	271	0.23
	1310	100	1.5	23.41	2.44	18.39	5.75	9.3	272	0.05
	1315	100	2.0	23.43	2.45	18.41	5.75	8.0	272	0.04
	1320	100	2.5	23.45	2.45	18.43	5.74	7.5	273	0.04
	1325	100	3.0	23.46	2.45	18.44	5.74	6.4	273	0.04

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

Sample Collection Log

APTIM

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **50WW11**

Sampler(s): Scott Beesinger

FIELD CONDITIONS Clear / Cool

SAMPLING INFORMATION

Edited by SS - Feb 26 2020

Sample No: 50WW11-181128

DATE/TIME: 11/28/18 0948

Sample Interval: ~~21.85 - 37.85~~

Sampling Method:

Sample Purpose: REG

Sample Matrix: GW

Appearance of Sample

Assoc. QC Samples

Decontamination Procedures

Chain of Custody	Lab	COC Notes	Analyses	Container	Preserv
	ALSHT		Anions in Water by E300, Alkalinity in Water by E310.1	1 x 250 mL HDPE	Cool 4C
			Carbon Dioxide in Water by RSK175	3 x 40 mL Glass	Cool 4C
			DHC in Wate by CENSUS-qPCR	1 x 1 L HDPE	Cool 4C
			Dissolved Fe and Mn in Water by 6020A	1 x 60 mL HDPE	HN03<pH2
			Dissolved Gases in Water by RSK175	3 x 40 mL Glass	Cool 4C
			Iron, total, in Water by 6020A	1 x 60 mL HDPE	HN03<pH2
			Perchlorate in Water by 6850	1 x 125 mL HDPE	Cool 4C
			Phosphorous in Water by E365.2	1 x 250 mL HDPE	H2SO4
			Sulfide in Water by E376.1	1 x 500 mL HDPE	NaOH>pH12; 2N Zinc Ac
			TOC in Water by E415.1	2 x 40 mL Amber	H2SO4
			VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Casing ID (in.): 2

Depth to Water - Initial (DTWi) (ft) 21.85

Depth to Well Bottom (ft) ~~37.85~~ 37.85

Screen Interval (ft): 22.55-37.05

Purging Method/Equipment: Lowflow/BLADDER Pump

Purge Start Date/Time: 11/28/18 1030

Purge End Date/Time: 11/28/18 1105

Discharge Tube Length: NA

PID Reading: NA

Discharge Tube Diameter: 1/4"

Immersible Layer: Y / (N)

1125 - 2ND check of Depth to Bottom - 37.85

Sample Collection Log

APTIM

Approximate depth of pump inlet*(ft): [redacted] 29.80 Pump Start Time: 1030

Location ID: 50WW11					Sample No: 50WW11-181128					
Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
11/28/18	1035	100	.5	21.93	1.89 [redacted]	16.13	6.00	45.3	295	0.81
	1040	100	1.0	21.98	1.91	16.91	5.76	31.8	289	0.48
	1045	100	1.5	22.01	1.92	17.15	5.77	25.6	285	0.22
	1050	100	2.0	22.03	1.92	17.18	5.74	21.8	272	0.03
	1055	100	2.5	22.04	1.92	17.20	5.73	21.3	271	0.03
	1100	100	3.0	22.05	1.92	17.23	5.73	21.0	270	0.03
	1105	100	3.5	22.06	1.92	17.25	5.73	20.6	269	0.02

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Location ID: **50WW11**

Project No: **501032**

Sampler(s): Scott Beesinger

FIELD CONDITIONS CLEAR / COOL

SAMPLING INFORMATION

Edited by SS - Feb 26 2020

Sample No: 50WW11-181128-FD

DATE/TIME: 11/28/18 / 0948

Sample Interval: ~~24.5 - 39.06~~

Sampling Method:

Sample Purpose: FD

Sample Matrix: GW

Appearance of Sample	Assoc. QC Samples	Decontamination Procedures

Chain of Custody	Lab	COC Notes	Analyses	Container	Preserv
	ALSHT		Anions in Water by E300, Alkalinity in Water by E310.1	1 x 250 mL HDPE	Cool 4C
			Carbon Dioxide in Water by RSK175	3 x 40 mL Glass	Cool 4C
			DHC in Wate by CENSUS-qPCR	1 x 1 L HDPE	Cool 4C
			Dissolved Fe and Mn in Water by 6020A	1 x 60 mL HDPE	HN03<pH2
			Dissolved Gases in Water by RSK175	3 x 40 mL Glass	Cool 4C
			Iron, total, in Water by 6020A	1 x 60 mL HDPE	HN03<pH2
			Perchlorate in Water by 6850	1 x 125 mL HDPE	Cool 4C
			Phosphorous in Water by E365.2	1 x 250 mL HDPE	H2SO4
			Sulfide in Water by E376.1	1 x 500 mL HDPE	NaOH>pH12; 2N Zinc Ac
			TOC in Water by E415.1	2 x 40 mL Amber	H2SO4
			VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Casing ID (in.): 2

Depth to Water - Initial (DTWi) (ft) 21.85

Depth to Well Bottom (ft) ~~38.8~~ 37.85

Screen Interval (ft): 22.55 - 37.05

Purging Method/Equipment: Low flow/Bladder Pump

Purge Start Date/Time: 11/28/18 1030

Purge End Date/Time: 11/28/18 1105

Discharge Tube Length: NA

PID Reading: NA

Discharge Tube Diameter: 1/4"

Immersible Layer: Y / (N)

APTIM

Sample Collection Log

Approximate depth of pump inlet*(ft): [redacted] 29.80 Pump Start Time: 1030

Location ID: 50WW11				Sample No: 50WW11-181128-FD						
Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
11/28/18	1035	100	.5	21.93	1.89	16.13	6.00	45.3	295	0.81
	1040	100	1.0	21.98	1.91	16.91	5.76	31.8	289	0.48
	1045	100	1.5	22.01	1.92	17.15	5.77	25.6	285	0.22
	1050	100	2.0	22.03	1.92	17.18	5.74	21.8	272	0.03
	1055	100	2.5	22.04	1.92	17.20	5.73	21.3	271	0.03
	1100	100	3.0	22.05	1.92	17.23	5.73	21.0	270	0.02
	1105	100	3.5	22.06	1.92	17.25	5.73	20.6	269	0.02

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

Sample Collection Log

APTIM

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **50WW13**

Sampler(s): Wesley Garcia

FIELD CONDITIONS Clear

SAMPLING INFORMATION

Sample No: 50WW13-181129 **DATE/TIME:** 11/29/18 1115 **Sample Interval:** ___ - ___

Sampling Method: **Sample Purpose:** REG **Sample Matrix:** GW

Appearance of Sample Clear

Assoc. QC Samples

Decontamination Procedures

Chain of Custody	Lab	COC Notes	Analyses	Container	Preserv
50WW13-181129	ALSHT		Anions in Water by E300, Alkalinity in Water by E310.1	1 x 250 mL HDPE	Cool 4C
			Carbon Dioxide in Water by RSK175	3 x 40 mL Glass	Cool 4C
			DHC in Wate by CENSUS-qPCR	1 x 1 L HDPE	Cool 4C
			Dissolved Fe and Mn in Water by 6020A	1 x 60 mL HDPE	HN03<pH2
			Dissolved Gases in Water by RSK175	3 x 40 mL Glass	Cool 4C
			Iron, total, in Water by 6020A	1 x 60 mL HDPE	HN03<pH2
			Perchlorate in Water by 6850	1 x 125 mL HDPE	Cool 4C
			Phosphorous in Water by E365.2	1 x 250 mL HDPE	H2SO4
			Sulfide in Water by E376.1	1 x 500 mL HDPE	NaOH>pH12; 2N Zinc Ac
			TOC in Water by E415.1	2 x 40 mL Amber	H2SO4
			VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Casing ID (in.): 2

Depth to Water - Initial (DTWi) (ft) 26.15

Depth to Well Bottom (ft) ~~37.61~~

Screen Interval (ft): 22.44 - 36.94 SS

Edited by SS - Feb 26 2020

Purging Method/Equipment: Peristaltic pump / YSI

Purge Start Date/Time: 11/29/18 1020

Purge End Date/Time: 11/29/18 1058

Discharge Tube Length: NA

PID Reading: NA

Discharge Tube Diameter: NA

Immersible Layer: Y / N

APTIM

Sample Collection Log

Approximate depth of pump inlet*(ft): 27.25 Pump Start Time: 1020

Location ID: 50WW13 Sample No: 50WW13-181129										
Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
11/29/18		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
	1029	250		21.33	103.1	19.51	6.45	182.7	141.6	1.39
	1032			21.34	103.9	19.53	6.48	107.6	123.7	1.17
	1035			21.35	104.4	19.52	6.62	54.4	111.6	0.96
	1038			21.36	105.3	19.52	6.64	29.9	107.8	0.42
	1041			21.36	105.7	19.50	6.66	22.2	92.4	0.34
	1045			21.37	105.9	19.49	6.68	26.8	85.7	0.29
	1048			21.37	106.2	19.48	6.67	26.2	81.8	0.27
	1051			21.38	106.1	19.48	6.74	5.8	76.3	0.29
	1054			21.38	105.4	19.48	6.79	-6.1	61.8	0.30
	1057			21.39	105.7	19.48	6.84	-12.2	54.7	.30

Logged by: Wesley Garcia Date: 11/29/18

QC'd by: _____ Date: _____

Well Depth after = 37.60'

Sample Collection Log

APTIM

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **50WW14**

Sampler(s): Vesley Garcia

FIELD CONDITIONS Clear

SAMPLING INFORMATION

Sample No: 50WW14-1811___

DATE/TIME: 11/29/18 / 1238

Sample Interval: ___ - ___

Sampling Method:

Sample Purpose: REG

Sample Matrix: GW

Appearance of Sample

Assoc. QC Samples

Decontamination Procedures

Chain of Custody	Lab	COC Notes	Analyses	Container	Preserv
50WW14-181129	ALSHT		Anions in Water by E300, Alkalinity in Water by E310.1	1 x 250 mL HDPE	Cool 4C
			Carbon Dioxide in Water by RSK175	3 x 40 mL Glass	Cool 4C
			DHC in Wate by CENSUS-qPCR	1 x 1 L HDPE	Cool 4C
			Dissolved Fe and Mn in Water by 6020A	1 x 60 mL HDPE	HN03<pH2
			Dissolved Gases in Water by RSK175	3 x 40 mL Glass	Cool 4C
			Iron, total, in Water by 6020A	1 x 60 mL HDPE	HN03<pH2
			Perchlorate in Water by 6850	1 x 125 mL HDPE	Cool 4C
			Phosphorous in Water by E365.2	1 x 250 mL HDPE	H2SO4
			Sulfide in Water by E376.1	1 x 500 mL HDPE	NaOH>pH12; 2N Zinc Ac
			TOC in Water by E415.1	2 x 40 mL Amber	H2SO4
			VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Casing ID (in.): 2

Depth to Water - Initial (DTWi) (ft) 21.34

Depth to Well Bottom (ft) ~~59.5~~ ✓

Screen Interval (ft): 45.78 - 60.28

Edited by SS - Feb 26 2020

Purging Method/Equipment: peristaltic/ YSI

Purge Start Date/Time: 11/29/18 @ 1238

Purge End Date/Time: 11/29/18 @ 1320

Discharge Tube Length: NA

Discharge Tube Diameter: NA

PID Reading: NA

Immersible Layer: Y / N

Sample Collection Log

APTIM

Approximate depth of pump inlet*(ft): 50.65 Pump Start Time: 12:34

Location ID: 50WW14				Sample No: 50WW14-1811 29						
Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
11/29/18		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
	1245	250		21.31	109.6	19.99	6.49	-12.2	-14	0.00
	1248			21.31	106.2	19.94	6.43	-8.6	[redacted] 3.4	0.35
	1251			21.31	105.7	19.86	6.47	13.2	6.1	0.44
	1254			21.31	103.1	19.81	6.45	-4.3	2.7	0.57
	1257			21.32	102.6	19.77	6.30	7.7	4.3	0.61
	1300			21.32	104.2	19.75	6.26	5.3	3.2	0.64
	1303			21.32	105.7	19.74	6.41	24.1	-4.0	0.60
	1306			21.32	106.3	19.72	6.68	6.3	-2.6	0.54
	1309			21.32	107.2	19.72	6.77	34.4	-9.7	0.62
	1312			21.32	108.7	19.73	6.24	1.1	-2.0	0.55

Logged by: Wesley Garcia Date: 11/29/18

QC'd by: _____ Date: _____

~~Well Depth after - 58.5~~

Well Depth - 60.73
Edited by SS Feb 26 2020

Sample Collection Log

APTIM

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **50WW06**

Sampler(s): [illegible]

FIELD CONDITIONS Clear

SAMPLING INFORMATION

Sample No: 50WW06-1811 **DATE/TIME:** 11/29/18 / 1450 **Sample Interval:** ___ - ___

Sampling Method: **Sample Purpose:** REG **Sample Matrix:** GW

Appearance of Sample	Assoc. QC Samples	Decontamination Procedures
Clear		

Chain of Custody	Lab	COC Notes	Analyses	Container	Preserv
	ALSHT		Anions in Water by E300, Alkalinity in Water by E310.1	1 x 250 mL HDPE	Cool 4C
			Carbon Dioxide in Water by RSK175	3 x 40 mL Glass	Cool 4C
			DHC in Wate by CENSUS-qPCR	1 x 1 L HDPE	Cool 4C
			Dissolved Fe and Mn in Water by 6020A	1 x 60 mL HDPE	HN03<pH2
			Dissolved Gases in Water by RSK175	3 x 40 mL Glass	Cool 4C
			Iron, total, in Water by 6020A	1 x 60 mL HDPE	HN03<pH2
			Perchlorate in Water by 6850	1 x 125 mL HDPE	Cool 4C
			Phosphorous in Water by E365.2	1 x 250 mL HDPE	H2SO4
			Sulfide in Water by E376.1	1 x 500 mL HDPE	NaOH>pH12; 2N Zinc Ac
			TOC in Water by E415.1	2 x 40 mL Amber	H2SO4
			VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Casing ID (in.): 4

Depth to Water - Initial (DTWi) (ft) 46.51

Depth to Well Bottom (ft) 58.40

Screen Interval (ft): 47.75-57.75

Edited by SS - Feb 26 2020

Purging Method/Equipment: Peristaltic / YSI

Purge Start Date/Time: 11/29/18 1450

Purge End Date/Time: 11/29/18

Discharge Tube Length: NA PID Reading: NA

Discharge Tube Diameter: NA Immersible Layer: Y / N

Sample Collection Log

APTIM

Approximate depth of pump inlet*(ft): 50 Pump Start Time: 1450

Location ID: 50WW06 Sample No: 50WW06-1811___										
Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
11/29/18		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
11/29/18	1457	250		19.05	9.179	19.32	5.89	8.6	155.7	5.03
	1500			19.09	9.142	19.31	5.82	7.7	157.3	5.09
	1503			19.11	9.147	19.31	5.78	7.1	161.8	5.16
	1506			19.18	9.144	19.27	5.76	7.3	164.8	5.16
	1509			19.21	9.143	19.19	5.75	7.6	162.7	5.20
	1512			19.29	9.111	19.15	5.74	7.5	162.4	5.21
	1515			19.33	9.211	19.11	5.73	7.1	163.4	5.43
	1518			19.37	9.259	19.09	5.75	6.7	160.0	5.68
	1521			19.47	9.299	19.07	5.77	4.8	162.3	5.87
	1524			19.49	9.377	19.05	5.76	4.1	161.1	4.1

Logged by: Wesley Garcia Date: 11/29/18

QC'd by: _____ Date: _____

Final well depth 58.40

Sample Collection Log

APTIM

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **50WW18**

Sampler(s): Scott Beesinger

FIELD CONDITIONS OVERCAST / RAIN

SAMPLING INFORMATION

Edited by SS - Feb 26 2020

Sample No: 50WW18-181130

DATE/TIME: 11/30/18 / 0817

Sample Interval: ~~10.38 19.63~~

Sampling Method:

Sample Purpose: REG

Sample Matrix: GW

Appearance of Sample	Assoc. QC Samples	Decontamination Procedures

Chain of Custody	Lab	COC Notes	Analyses	Container	Preserv
	ALSHT		Perchlorate in Water by 6850	1 x 125 mL HDPE	Cool 4C
			VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Casing ID (in.): 2

Depth to Water - Initial (DTWi) (ft) 19.38

Depth to Well Bottom (ft) ~~38.2~~ 37.65

Screen Interval (ft): 22.37-36.87

Approximate depth of pump inlet*(ft): ~~27.35~~ 29.60

Purging Method/Equipment: Low flow / Bladder Pump

Purge Start Date/Time: 11/30/18 0830

Purge End Date/Time: 11/30/18 0900

Discharge Tube Length: NA

PID Reading: NA

Discharge Tube Diameter: 1/4"

Immersible Layer: Y / (N)

Pump Start Time: 0830

0905 – 2nd Check Depth TD Bottom – 37.65

APTIM

Sample Collection Log

Location ID: 50WW18 Sample No: 50WW18-181130

Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
11/30/18	0835	100	.5	19.45	3.35	17.98	6.04	145	304	0.87
	0840	100	1.0	19.51	3.36	17.88	5.80	120	289	0.30
	0845	100	1.5	19.55	3.36	17.87	5.73	109	283	0.06
	0850	100	2.0	19.58	3.37	17.87	5.72	108	282	0.06
	0855	100	2.5	19.61	3.37	17.86	5.72	107	282	0.05
	0900	100	3.0	19.63	3.37	17.86	5.72	106	281	0.05

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

Sample Collection Log

APTIM

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **50WW17**

Sampler(s): Scott Beesinger

FIELD CONDITIONS Overcast / light rain

SAMPLING INFORMATION

Edited by SS - Feb 26 2020

Sample No: 50WW17-181130

DATE/TIME: 11/30/18 / 0910

Sample Interval: ~~[illegible]~~

Sampling Method:

Sample Purpose: REG

Sample Matrix: GW

Appearance of Sample

Assoc. QC Samples

Decontamination Procedures

Chain of Custody	Lab	COC Notes	Analyses	Container	Preserv
	ALSHT		Perchlorate in Water by 6850	1 x 125 mL HDPE	Cool 4C
			VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Casing ID (in.): 2

Depth to Water - Initial (DTWi) (ft) 19.61

Depth to Well Bottom (ft) ~~68~~ 67.00

Screen Interval (ft): 22.30 - 66.80

Approximate depth of pump inlet*(ft): ~~43.15~~ 44.55

Purging Method/Equipment: Low flow / Bladder Pump

Purge Start Date/Time: 11/30/18 0920

Purge End Date/Time: 11/30/18 0955

Discharge Tube Length: NA

PID Reading: NA

Discharge Tube Diameter: 1/4"

Immersible Layer: Y / (N)

Pump Start Time: 0920

0955 - 2nd Check Depth to Bottom - 67.00

APTIM

Sample Collection Log

Location ID: 50WW17 Sample No: 50WW17-181130

Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
11/30/18	0925	100	.5	19.69	2.57	18.41	5.69	607	169	0.88
	0930	100	1.0	19.75	2.54	18.40	5.30	577	203	0.19
	0935	100	1.5	19.78	2.50	18.44	5.12	543	208	0.07
	0940	100	2.0	19.80	2.49	18.48	5.11	542	208	0.06
	0945	100	2.5	19.82	2.48	18.50	5.10	541	209	0.06
↓	0950	100	3.0	19.83	2.48	18.53	5.10	540	209	0.06

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

Sample Collection Log

APTIM

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **50WW24**

Sampler(s): Scott Buesingar

FIELD CONDITIONS OVERCAST

SAMPLING INFORMATION

Edited by SS - Feb 26 2020

Sample No: 50WW24-181130

DATE/TIME: 11/30/18 / 1005

Sample Interval: ~~25.46 - 35.70~~

Sampling Method:

Sample Purpose: REG

Sample Matrix: GW

Appearance of Sample	Assoc. QC Samples	Decontamination Procedures

Chain of Custody	Lab	COC Notes	Analyses	Container	Preserv
	ALSHT		Perchlorate in Water by 6850	1 x 125 mL HDPE	Cool 4C
			VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Casing ID (in.): 2

Depth to Water - Initial (DTWi) (ft) 25.46

Depth to Well Bottom (ft) ~~38.05~~ 38.05

Screen Interval (ft): 22.66 - 37.16

Approximate depth of pump inlet*(ft): ~~38.05~~ 29.90

Purging Method/Equipment: Low flow / BLADDER Pump

Purge Start Date/Time: 11/30/18 1015

Purge End Date/Time: 11/30/18 1045

Discharge Tube Length: NA PID Reading: NA

Discharge Tube Diameter: NA Immersible Layer: Y / N

Pump Start Time: 1015

1050 - 2ND check Depth to Bottom - 38.05

APTIM

Sample Collection Log

Location ID: 50WW24 Sample No: 50WW24-181130

Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
11/30/18	1020	100	.5	25.53	1.91	18.64	5.92	56.9	196	0.75
	1025	100	1.0	25.60	1.90	18.44	5.89	32.2	229	0.25
	1030	100	1.5	25.64	1.90	18.42	5.77	28.9	235	0.11
	1035	100	2.0	25.67	1.89	18.40	5.76	28.5	235	0.10
	1040	100	2.5	25.69	1.89	18.35	5.76	28.0	236	0.10
	1045	100	3.0	25.70	1.89	18.32	5.76	27.7	236	0.10

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

Sample Collection Log

APTIM

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **50WW21**

Sampler(s): Scott Baesinger

FIELD CONDITIONS Overcast

SAMPLING INFORMATION

Edited by SS - Feb 26 2020

Sample No: 50WW21-181130

DATE/TIME: 11/30/18 / 1055

Sample Interval: ~~23.90 24.12~~

Sampling Method:

Sample Purpose: REG

Sample Matrix: GW

Appearance of Sample	Assoc. QC Samples	Decontamination Procedures

Chain of Custody	Lab	COC Notes	Analyses	Container	Preserv
	ALSHT		Perchlorate in Water by 6850	1 x 125 mL HDPE	Cool 4C
			VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Casing ID (in.): 2

Depth to Water - Initial (DTWi) (ft) 23.90

Depth to Well Bottom (ft) ~~35~~ 37.67

Screen Interval (ft): 22.36 - 37.86

Approximate depth of pump inlet*(ft): ~~27.19~~ 29.60

Purging Method/Equipment: Low flow / BLADDER PUMP

Purge Start Date/Time: 11/30/18 1105

Purge End Date/Time: 11/30/18 1135

Discharge Tube Length: NA PID Reading: NA

Discharge Tube Diameter: 1/4" Immersible Layer: Y / (N)

Pump Start Time: 1105

1140 - 2ND check Depth to Bottom - 37.67

APTIM

Sample Collection Log

Location ID: 50WW21 Sample No: 50WW21-181130

Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
11/30/18	1110	100	.5	23.97	7.37	18.99	6.20	54.3	257	0.99
	1115	100	1.0	24.03	7.48	18.80	6.24	40.7	253	0.75
	1120	100	1.5	24.07	7.48	18.80	6.24	34.0	253	0.72
	1125	100	2.0	24.09	7.48	18.81	6.24	33.6	252	0.71
	1130	100	2.5	24.11	7.48	18.82	6.24	33.1	252	0.70
	1135	100	3.0	24.12	7.48	18.82	6.24	32.7	252	0.69

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

Sample Collection Log

APTIM

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **50WW15**

Sampler(s): Scott Beesinger

FIELD CONDITIONS Overcast

SAMPLING INFORMATION

Edited by SS - Feb 26 2020

Sample No: 50WW15-181130

DATE/TIME: 11/30/18 / 1150

Sample Interval: ~~19.44 - 20.12~~

Sampling Method:

Sample Purpose: REG

Sample Matrix: GW

Appearance of Sample	Assoc. QC Samples	Decontamination Procedures

Chain of Custody	Lab	COC Notes	Analyses	Container	Preserv
	ALSHT		Perchlorate in Water by 6850	1 x 125 mL HDPE	Cool 4C
			VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Casing ID (in.): 2

Depth to Water - Initial (DTWi) (ft) 19.88

Depth to Well Bottom (ft) 37.92

Screen Interval (ft): 22.25 - 36.75

Approximate depth of pump inlet*(ft): ~~27.75~~ 29.50

Purging Method/Equipment: Low flow/Bladder Pump

Purge Start Date/Time: 11/30/18 1200

Purge End Date/Time: 11/30/18

Discharge Tube Length: NA PID Reading: NA

Discharge Tube Diameter: 1/4" Immersible Layer: Y / (N)

Pump Start Time: 1200

1235 - 2ND Check Depth to Bottom - 37.92

APTIM

Sample Collection Log

Location ID: 50WW15 Sample No: 50WW15-181130D

Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
11/30/18	1205	100	.5	19.95	1.93	19.03	6.27	110	226	0.57
|	1210	100	1.0	20.01	1.92	18.97	5.97	83.6	230	0.23
|	1215	100	1.5	20.05	1.92	18.97	5.85	80.1	235	0.08
|	1220	100	2.0	20.08	1.93	18.97	5.85	79.5	236	0.08
|	1225	100	2.5	20.10	1.93	18.97	5.84	78.9	236	0.08
V	1230	100	3.0	20.12	1.93	18.97	5.84	78.4	237	0.07

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

Sample Collection Log

APTIM

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **50WW23**

Sampler(s): Scott Beesinger

FIELD CONDITIONS Clear / Cold

SAMPLING INFORMATION

Edited by SS - Feb 26 2020

Sample No: 50WW23-181203

DATE/TIME: 12/3/18 / 0833

Sample Interval: ~~24.77 - 29.01~~

Sampling Method:

Sample Purpose: REG

Sample Matrix: GW

Appearance of Sample

Assoc. QC Samples

Decontamination Procedures

Chain of Custody	Lab	COC Notes	Analyses	Container	Preserv
	ALSHT		Anions in Water by E300, Alkalinity in Water by E310.1	1 x 250 mL HDPE	Cool 4C
			Carbon Dioxide in Water by RSK175	3 x 40 mL Glass	Cool 4C
			DHC in Wate by CENSUS-qPCR	1 x 1 L HDPE	Cool 4C
			Dissolved Fe and Mn in Water by 6020A	1 x 60 mL HDPE	HN03<pH2
			Dissolved Gases in Water by RSK175	3 x 40 mL Glass	Cool 4C
			Iron, total, in Water by 6020A	1 x 60 mL HDPE	HN03<pH2
			Perchlorate in Water by 6850	1 x 125 mL HDPE	Cool 4C
			Phosphorous in Water by E365.2	1 x 250 mL HDPE	H2SO4
			Sulfide in Water by E376.1	1 x 500 mL HDPE	NaOH>pH12; 2N Zinc Ac
			TOC in Water by E415.1	2 x 40 mL Amber	H2SO4
			VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Casing ID (in.): 2

Depth to Water - Initial (DTWi) (ft) 24.77

Depth to Well Bottom (ft) ~~36.91~~ 37.92

Screen Interval (ft): 22.42 - 36.92

Purging Method/Equipment: Low flow / Bladder Pump

Purge Start Date/Time: 12/3/18 0845

Purge End Date/Time: 12/3/18 0915

Discharge Tube Length: NA

PID Reading: NA

Discharge Tube Diameter: 1/4"

Immersible Layer: Y / N

0930 - 2ND check Depth to Bottom - 37.92

Sample Collection Log

APTIM

Approximate depth of pump inlet*(ft): ~~27.95~~ 29.65 Pump Start Time: 0845

Location ID: 50WW23					Sample No: 50WW23-181203					
Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
12/3/18	0850	100	.5	24.85	6.26	14.97	5.84	44.1	314	1.40
	0855	100	1.0	24.91	6.32	14.78	5.60	28.8	315	1.08
	0900	100	1.5	24.95	6.40	14.77	5.60	21.0	315	0.80
	0905	100	2.0	24.98	6.41	14.75	5.60	20.7	315	0.79
	0910	100	2.5	25.00	6.41	14.73	5.60	20.1	316	0.78
	0915	100	3.0	25.01	6.41	14.72	5.60	19.6	316	0.78

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

Sample Collection Log

APTIM

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **50WW22**

Sampler(s): Scott Beesinger

FIELD CONDITIONS

CLEAR / COLD

SAMPLING INFORMATION

Edited by SS - Feb 26 2020

Sample No: 50WW22-181203

DATE/TIME: 12/3/18 / 0935

Sample Interval: ~~25.97 - 36.57~~

Sampling Method:

Sample Purpose: REG

Sample Matrix: GW

Appearance of Sample

Assoc. QC Samples

Decontamination Procedures

Chain of Custody	Lab	COC Notes	Analyses	Container	Preserv
	ALSHT		Anions in Water by E300, Alkalinity in Water by E310.1	1 x 250 mL HDPE	Cool 4C
			Carbon Dioxide in Water by RSK175	3 x 40 mL Glass	Cool 4C
			DHC in Wate by CENSUS-qPCR	1 x 1 L HDPE	Cool 4C
			Dissolved Fe and Mn in Water by 6020A	1 x 60 mL HDPE	HN03<pH2
			Dissolved Gases in Water by RSK175	3 x 40 mL Glass	Cool 4C
			Iron, total, in Water by 6020A	1 x 60 mL HDPE	HN03<pH2
			Perchlorate in Water by 6850	1 x 125 mL HDPE	Cool 4C
			Phosphorous in Water by E365.2	1 x 250 mL HDPE	H2SO4
			Sulfide in Water by E376.1	1 x 500 mL HDPE	NaOH>pH12; 2N Zinc Ac
			TOC in Water by E415.1	2 x 40 mL Amber	H2SO4
			VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Casing ID (in.): 2

Depth to Water - Initial (DTWi) (ft) 25.97

Depth to Well Bottom (ft) ~~35~~ 37.90

Screen Interval (ft): 21.97 - 36.57

Purging Method/Equipment: Low flow/BLADDER Pump

Purge Start Date/Time: 12/3/18 0945

Purge End Date/Time: 12/3/18 1015

Discharge Tube Length: NA

PID Reading: NA

Discharge Tube Diameter: 1/4"

Immersible Layer: Y / N

1030 - 2ND check Depth to Bottom - 37.90

Sample Collection Log

APTIM

Approximate depth of pump inlet*(ft): ~~27~~ 29.30 Pump Start Time: 0945

Location ID: 50WW22				Sample No: 50WW22-181203						
Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
12/3/18	0950	100	.5	26.05	4.81	14.79	6.04	33.9	312	0.91
	0955	100	1.0	26.11	4.79	15.48	5.71	25.6	313	0.39
	1000	100	1.5	26.15	4.80	15.53	5.67	23.9	313	0.04
	1005	100	2.0	26.18	4.81	15.57	5.66	23.4	314	0.04
	1010	100	2.5	26.20	4.81	15.62	5.66	22.9	314	0.03
	1015	100	3.0	26.21	4.81	15.69	5.66	22.6	314	0.03

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

Sample Collection Log

APTIM

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **50WW05**

Sampler(s): Scott Beesinger

FIELD CONDITIONS Clear / cool

SAMPLING INFORMATION

Edited by SS - Feb 26 2020

Sample No: 50WW05-1812-03

DATE/TIME: 12/3/18 / 1036

Sample Interval: ~~21.74~~

Sampling Method:

Sample Purpose: REG

Sample Matrix: GW

Appearance of Sample	Assoc. QC Samples	Decontamination Procedures

Chain of Custody	Lab	COC Notes	Analyses	Container	Preserv
	ALSHT		Perchlorate in Water by 6850	1 x 125 mL HDPE	Cool 4C
			VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Casing ID (in.): 4

Depth to Water - Initial (DTWi) (ft) 21.52

Depth to Well Bottom (ft) 25.50

Screen Interval (ft): 15.24 - 25.24

Approximate depth of pump inlet*(ft): 22.50

Purging Method/Equipment: Low flow / Bladder Pump

Purge Start Date/Time: 12/3/18 1045

Purge End Date/Time: 12/3/18 1115

Discharge Tube Length: NA

PID Reading: NA

Discharge Tube Diameter: 1/4"

Immersible Layer: Y (N)

Pump Start Time: 1045

1120 - 2ND check Depth to Bottom - 25.50

APTIM

Sample Collection Log

Location ID: 50WW05 Sample No: 50WW05-181203

Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
12/3/18	1050	100	.5	21.59	1.61	16.95	6.29	16.0	217	0.65
	1055	100	1.0	21.65	1.55	17.41	5.67	7.1	200	0.21
	1100	100	1.5	21.68	1.55	17.49	5.64	7.1	201	0.06
	1105	100	2.0	21.70	1.55	17.55	5.64	7.2	202	0.06
	1110	100	2.5	21.71	1.55	17.60	5.63	7.2	202	0.05
	1115	100	3.0	21.71	1.55	17.66	5.62	6.5	203	0.05

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

Sample Collection Log

APTIM

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **50WW09**

Sampler(s): Scott Bassinger

FIELD CONDITIONS Clear / cool

SAMPLING INFORMATION

Edited by SS - Feb 26 2020

Sample No: 50WW09-181203

DATE/TIME: 12/3/18 1234

Sample Interval: ~~[illegible]~~

Sampling Method:

Sample Purpose: REG

Sample Matrix: GW

Appearance of Sample	Assoc. QC Samples	Decontamination Procedures

Chain of Custody	Lab	COC Notes	Analyses	Container	Preserv
	ALSHT		Perchlorate in Water by 6850	1 x 125 mL HDPE	Cool 4C
			VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Casing ID (in.): 2

Depth to Water - Initial (DTWi) (ft) 23.10

Depth to Well Bottom (ft) ~~[illegible]~~ 62.50

Screen Interval (ft): 46.75 - 61.25

Approximate depth of pump inlet*(ft): ~~[illegible]~~ 54.00

Purging Method/Equipment: Low flow / Bladder Pump

Purge Start Date/Time: 12/3/18 1245

Purge End Date/Time: 12/3/18 1315

Discharge Tube Length: NA PID Reading: NA

Discharge Tube Diameter: 1/4" Immersible Layer: Y / N

Pump Start Time: 1245

1320 - 2ND Depth to Bottom - 62.50

APTIM

Sample Collection Log

Location ID: 50WW09 Sample No: 50WW09-181203

Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
12/3/18	1250	100	.5	23.17	0.953	16.21	6.00	124	224	2.00
	1255	100	1.0	23.24	0.990	16.43	5.97	83.2	255	1.85
	1300	100	1.5	23.28	0.999	16.43	5.93	67.4	245	1.55
	1305	100	2.0	23.30	1.00	16.44	5.93	66.9	244	1.54
	1310	100	2.5	23.31	1.00	16.43	5.93	66.2	244	1.53
	1315	100	3.0	23.31	1.01	16.44	5.93	65.9	243	1.52

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

Sample Collection Log

APTIM

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **50WW10**

Sampler(s): Scott Baessinger

FIELD CONDITIONS Clear / Cool

SAMPLING INFORMATION

Edited by SS - Feb 26 2020

Sample No: 50WW10-181203

DATE/TIME: 12/3/18 / 1226

Sample Interval: ~~23.80 - 24.04~~

Sampling Method:

Sample Purpose: REG

Sample Matrix: GW

Appearance of Sample	Assoc. QC Samples	Decontamination Procedures

Chain of Custody	Lab	COC Notes	Analyses	Container	Preserv
	ALSHT		Perchlorate in Water by 6850	1 x 125 mL HDPE	Cool 4C
			VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Casing ID (in.): 2

Depth to Water - Initial (DTWi) (ft) 23.80

Depth to Well Bottom (ft) ~~109~~ 111.54

Screen Interval (ft): 101.43 - 110.93

Approximate depth of pump inlet*(ft): ~~100.65~~ 106.2

Purging Method/Equipment: Low flow / Bladder Pump

Purge Start Date/Time: 12/3/18 1345

Purge End Date/Time: 12/3/18 1415

Discharge Tube Length: NA PID Reading: NA

Discharge Tube Diameter: 1/4" Immersible Layer: Y / N

Pump Start Time: 1345

1420 - 2ND check Depth to Bottom - 111.54

APTIM

Sample Collection Log

Location ID: 50WW10 Sample No: 50WW10-181203

Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
12/3/18	1350	100	.5	23.88	1.27	15.73	9.81	43.5	11	0.88
	1355	100	1.0	23.95	1.31	15.60	9.85	40.3	5	0.63
	1400	100	1.5	23.99	1.31	15.61	9.85	38.9	3	0.48
	1405	100	2.0	24.02	1.31	15.63	9.86	38.4	3	0.47
	1410	100	2.5	24.03	1.31	15.64	9.87	37.8	2	0.47
	1415	100	3.0	24.04	1.31	15.65	9.87	37.1	2	0.46

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

Sample Collection Log

APTIM

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **50WW27**

Sampler(s): Scott Bassinger

FIELD CONDITIONS CLEAR / COOL

SAMPLING INFORMATION

Edited by SS - Feb 26 2020

Sample No: 50WW27-181203

DATE/TIME: 12/3/18 / 1127

Sample Interval: ~~20.0 30.23~~

Sampling Method:

Sample Purpose: REG

Sample Matrix: GW

Appearance of Sample	Assoc. QC Samples	Decontamination Procedures

Chain of Custody	Lab	COC Notes	Analyses	Container	Preserv
	ALSHT		Perchlorate in Water by 6850	1 x 125 mL HDPE	Cool 4C
			VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Casing ID (in.): 2

Depth to Water - Initial (DTWi) (ft) 20.00

Depth to Well Bottom (ft) ~~59~~ 59.95

Screen Interval (ft): 42.28 - 59.78

Approximate depth of pump inlet*(ft): ~~50.15~~ 52.50

Purging Method/Equipment: Low flow/BLADDER Pump

Purge Start Date/Time: 12/3/18 1150

Purge End Date/Time: 12/3/18 1220

Discharge Tube Length: NA PID Reading: NA

Discharge Tube Diameter: 1/4" Immersible Layer: Y / N

Pump Start Time: 1150

1225 - 2ND Check Depth to Bottom - 59.95

APTIM

Sample Collection Log

Location ID: 50WW27 Sample No: 50WW27-181203

Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
12/3/18	1155	100	.5	20.08	1.72	16.46	5.95	149	165	0.53
	1200	100	1.0	20.15	1.67	16.65	6.08	109	142	0.19
	1205	100	1.5	20.19	1.63	16.62	6.16	98.2	117	0.07
	1210	100	2.0	20.21	1.62	16.59	6.17	97.6	116	0.07
	1215	100	2.5	20.22	1.62	16.55	6.18	97.1	115	0.08
	1220	100	3.0	20.23	1.62	16.51	6.18	96.7	114	0.08

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

Sample Collection Log

APTIM

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **50WW27**

Sampler(s): Scott Beesinger

FIELD CONDITIONS Clear / Cool

SAMPLING INFORMATION

Edited by SS - Feb 26 2020

Sample No: 50WW27-181203-FD

DATE/TIME: 12/3/18 / 1127

Sample Interval: ~~20.00 - 20.23~~

Sampling Method:

Sample Purpose: FD

Sample Matrix: GW

Appearance of Sample	Assoc. QC Samples	Decontamination Procedures

Chain of Custody	Lab	COC Notes	Analyses	Container	Preserv
	ALSHT		Perchlorate in Water by 6850	1 x 125 mL HDPE	Cool 4C
			VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Casing ID (in.): 2

Depth to Water - Initial (DTWi) (ft) 20.00

Depth to Well Bottom (ft) 59.95

Screen Interval (ft): 42.28 - 59.78

Approximate depth of pump inlet*(ft): ~~50.00~~ 52.50

Purging Method/Equipment: Lowflow / Bladder Pump

Purge Start Date/Time: 12/3/18 1150

Purge End Date/Time: 12/3/18 1220

Discharge Tube Length: NA

PID Reading: NA

Discharge Tube Diameter: 1/4"

Immersible Layer: Y (N)

Pump Start Time: 1150

APTIM

Sample Collection Log

Location ID: 50WW27 Sample No: 50WW27-181213-FD

Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
12/3/18	1155	100	.5	20.08	1.72	16.46	5.95	149	165	0.53
	1200	100	1.0	20.15	1.67	16.65	6.08	109	142	0.19
	1205	100	1.5	20.19	1.63	16.62	6.16	98.2	117	0.07
	1210	100	2.0	20.21	1.62	16.59	6.17	97.6	116	0.07
	1215	100	2.5	20.22	1.62	16.55	6.18	97.1	115	0.08
↓	1220	100	3.0	20.23	1.62	16.51	6.18	96.7	114	0.08

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

Depth to water, LHAAP-50

Well I.D	Aquifer	Gauging Date	Top of Casing Elevation	Depth to Water	Measured Well Depth
50WW01	Upper Shallow	5/17/19	198.5	18.70	23.30
50WW02	Upper Shallow	5/16/19	200.74	21.45	22.21
50WW03	Upper Shallow	5/16/19	202.94	DRY	23.03
50WW04	Upper Shallow	5/16/19	204.51	DRY	23.21
50WW05	Upper Shallow	5/7/19	197.6758	18.98	25.35
50WW06	Lower Shallow	5/6/19	195.3462	16.47	58.18
50WW07	Upper Shallow	5/17/19	202.55	24.79	31.86
50WW08	Upper Shallow	5/7/19	199.67	21.00	32.78
50WW09	Lower Shallow	5/7/19	199.41	20.70	62.18
50WW10	Intermediate	5/7/19	199.25	23.22	111.06
50WW11	Upper Shallow	5/6/19	197.07	18.65	37.81
50WW12	Upper Shallow	5/16/19	195.66	17.40	37.83
50WW13	Upper Shallow	5/6/19	197.45	18.94	37.70
50WW14	Lower Shallow	5/6/19	197.52	19.05	60.73
50WW15	Upper Shallow	5/17/19	196.3	17.15	37.93
50WW16	Upper Shallow	5/6/19	196.66	18.05	38.06
50WW17	Fully Screened Shallow	5/16/19	195.13	17.63	66.90
50WW18	Upper Shallow	5/16/19	194.84	17.35	37.66
50WW19	Fully Screened Shallow	5/17/19	195.96	18.16	64.88
50WW20	Fully Screened Shallow	5/16/19	202.54	24.25	55.83
50WW21	Upper Shallow	5/16/19	200.14	22.00	37.68
50WW22	Upper Shallow	5/6/19	202.1	23.70	37.88
50WW23	Upper Shallow	5/7/19	200.75	22.80	37.88
50WW24	Upper Shallow	5/7/19	201.63	23.81	38.06
50WW25	Lower Shallow	5/17/19	196	16.97	57.98
50WW26	Lower Shallow	5/16/19	200.07	21.71	62.80
50WW27	Lower Shallow	5/17/19	196.22	17.18	59.98
50WW28	Upper Shallow	5/17/19	194.71	16.15	27.13

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Location ID: **50SW06**

Project No: **501032**

Sampler(s): Scott Beesinger

FIELD CONDITIONS Clear/Sunny

SAMPLING INFORMATION

Sample No: 50SW06-190506

DATE/TIME: 5/6/19 / 1240

Sample Interval: ___ - ___

Sampling Method:

Sample Purpose: REG

Sample Matrix: GW

Appearance of Sample	Assoc. QC Samples	Decontamination Procedures

Chain of Custody	COC Notes	Lab	Analyses	Container	Preserv
		ALSHT	Perchlorate in Water by 6850	1 x 125 mL HDPE	Cool 4C
		ALSHT	VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: NA

Casing ID (in.):

Purge Start Date/Time: NA

Depth to Water - Initial (DTWi) (ft) 50SW06 18.05

Purge End Date/Time: NA

Depth to Well Bottom (ft) NA

Discharge Tube Length: NA

PID Reading: NA

Screen Interval (ft): NA

Discharge Tube Diameter: NA

Immersible Layer: Y / N

Approximate depth of pump inlet*(ft): Screen Interval Not Defined

Pump Start Time: NA

Ferrous Iron (Required Y or (N)) _____ mg/L

APTIM

Sample Collection Log

Location ID: 50SW06 Sample No: 50SW06-190506

Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
		NO Sample Collected								

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **50WW05**

Sampler(s): Scott Bergsmark

FIELD CONDITIONS CLEAR/SUNNY

SAMPLING INFORMATION

Edited by SS on Feb 26 2020

Sample No: 50WW05-190507

DATE/TIME: 5/7/19 / 1235

Sample Interval: ~~1245 1315~~

Sampling Method:

Sample Purpose: REG

Sample Matrix: GW

Appearance of Sample	Assoc. QC Samples	Decontamination Procedures

Chain of Custody	COC Notes	Lab	Analyses	Container	Preserv
		ALSHT	Perchlorate in Water by 6850	1 x 125 mL HDPE	Cool 4C
		ALSHT	VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Low flow/BLADDER Pump

Casing ID (in.): 4

Purge Start Date/Time: 5/7/19 1245

Depth to Water - Initial (DTWi) (ft) 18.98

Purge End Date/Time: 5/7/19 1305

Depth to Well Bottom (ft) 25.35

Discharge Tube Length: NA

PID Reading: NA

Screen Interval (ft): 15.24-25.24

Discharge Tube Diameter: 1/4"

Immersible Layer: Y / (N)

Approximate depth of pump inlet*(ft): 20.24

Pump Start Time: 1245

Ferrous Iron (Required Y or (N)) _____ mg/L

2ND DTW PRE-PURGE - 18.98

APTIM

Sample Collection Log

Location ID: 50WW05 Sample No: 50WW05-190507

Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
5/7/19	1250	100	.5	19.05	1.45	23.69	6.88	0.0	145	0.75
	1255	100	1.0	19.10	1.46	22.98	6.45	0.0	152	0.25
	1300	100	1.5	19.14	1.46	22.71	6.32	0.0	160	0.08
	1305	100	2.0	19.16	1.46	22.64	6.31	0.0	161	0.08
	1310	100	2.5	19.18	1.46	22.59	6.30	0.0	161	0.07
↓	1315	100	3.0	19.19	1.46	22.55	6.30	0.0	162	0.07

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **50WW06**

Sampler(s): Scott Beesinger

FIELD CONDITIONS Clear / Sunny

SAMPLING INFORMATION

Edited by SS on Feb 26 2020

Sample No: 50WW06-190506

DATE/TIME: 5/6/19 / 0745

Sample Interval: ~~16.47 16.70~~

Sampling Method:

Sample Purpose: REG

Sample Matrix: GW

Appearance of Sample

Assoc. QC Samples

Decontamination Procedures

Chain of Custody	COC Notes	Lab	Analyses	Container	Preserv
		ALSHT	Anions in Water by 9056	1 x 250 mL HDPE	Cool 4C
		ALSHT	Carbon Dioxide in Water by RSK175	3 x 40 mL Glass	Cool 4C
		ALSHT	Dissolved Gases in Water by RSK175	3 x 40 mL Glass	HCL<pH2
		ALSHT	Perchlorate in Water by 6850	1 x 125 mL HDPE	Cool 4C
		ALSHT	TOC in Water by SM5310C	2 x 40 mL Amber	H2SO4
		ALSHT	VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Low flow/Bladder Pump

Casing ID (in.): 4

Purge Start Date/Time: 5/6/19 0755

Depth to Water - Initial (DTWi) (ft) 16.47

Purge End Date/Time: 5/6/19 0825

Depth to Well Bottom (ft) ~~58~~ 58.18

Discharge Tube Length: NA

PID Reading: NA

Screen Interval (ft): 47.85 - 57.75

Discharge Tube Diameter: 1/4"

Immersible Layer: Y (N)

Approximate depth of pump inlet*(ft): ~~50~~ 52.80

Pump Start Time: 0755

Ferrous Iron (Required (Y) or N) 0.01 mg/L

2ND DTW PRE-PURGE - 16.47

APTIM

Sample Collection Log

Location ID: 50WW06 Sample No: 50WW06-190506

Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
5/6/19	0800	100	.5	16.55	0.088	19.28	5.35	4.3	275	2.83
	0805	100	1.0	16.60	0.080	19.21	5.13	2.1	286	2.41
	0810	100	1.5	16.64	0.080	19.20	5.05	0.9	291	2.30
	0815	100	2.0	16.67	0.080	19.18	5.04	0.0	292	2.28
	0820	100	2.5	16.69	0.080	19.17	5.04	0.0	293	2.26
↓	0825	100	3.0	16.70	0.080	19.16	5.04	0.0	294	2.24

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **50WW08**

Sampler(s): Scott Brasinger

FIELD CONDITIONS Cloudy

SAMPLING INFORMATION

Edited by SS on Feb 26 2020

Sample No: 50WW08-190507

DATE/TIME: 5/7/19 / 0931

Sample Interval: ~~[illegible]~~

Sampling Method:

Sample Purpose: REG

Sample Matrix: GW

Appearance of Sample	Assoc. QC Samples	Decontamination Procedures

Chain of Custody	COC Notes	Lab	Analyses	Container	Preserv
		ALSHT	Anions in Water by 9056	1 x 250 mL HDPE	Cool 4C
		ALSHT	Carbon Dioxide in Water by RSK175	3 x 40 mL Glass	Cool 4C
		ALSHT	Dissolved Gases in Water by RSK175	3 x 40 mL Glass	HCL<pH2
		ALSHT	Perchlorate in Water by 6850	1 x 125 mL HDPE	Cool 4C
		ALSHT	TOC in Water by SM5310C	2 x 40 mL Amber	H2SO4
		ALSHT	VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Casing ID (in.): 2

Depth to Water - Initial (DTWi) (ft) 21.00

Depth to Well Bottom (ft) ~~29.75~~ 32.78

Screen Interval (ft): 17.11 - 31.71

Approximate depth of pump inlet*(ft): ~~29.0~~ 24.41

Ferrous Iron (Required (Y) or N) 0.00 mg/L

Purging Method/Equipment: Low flow / Bladder Pump

Purge Start Date/Time: 5/7/19 0940

Purge End Date/Time: 5/7/19 1010

Discharge Tube Length: NA

PID Reading: NA

Discharge Tube Diameter: 1/4"

Immersible Layer: Y / (N)

Pump Start Time: 0940

2ND DTW PRE PURGE - 21.00

APTIM

Sample Collection Log

Location ID: 50WW08 Sample No: 50WW08-190507

Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
5/7/19	0945	100	.5	21.08	2.38	20.77	6.18	3.3	126	0.76
	0950	100	1.0	21.15	2.38	20.88	6.17	2.2	130	0.29
	0955	100	1.5	21.20	2.38	21.02	6.18	1.0	130	0.07
	1000	100	2.0	21.23	2.38	21.05	6.19	0.8	129	0.07
	1005	100	2.5	21.25	2.39	21.08	6.20	0.0	129	0.06
↓	1010	100	3.0	21.26	2.39	21.10	6.20	0.0	129	0.06

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **50WW09**

Sampler(s): Scott Beasinger

FIELD CONDITIONS

Cloudy

SAMPLING INFORMATION

Edited by SS on Feb 26 2020

Sample No: 50WW09-190507

DATE/TIME: 5/7/19 / 0839

Sample Interval: ~~20.70~~ 20.95

Sampling Method:

Sample Purpose: REG

Sample Matrix: GW

Appearance of Sample

Assoc. QC Samples

Decontamination Procedures

Chain of Custody	COC Notes	Lab	Analyses	Container	Preserv
		ALSHT	Perchlorate in Water by 6850	1 x 125 mL HDPE	Cool 4C
		ALSHT	VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Casing ID (in.): 2

Depth to Water - Initial (DTWi) (ft) 20.70

Depth to Well Bottom (ft) ~~59.5~~ 62.18

Screen Interval (ft): 46.75 - 61.25

Approximate depth of pump inlet*(ft): ~~54.00~~ 54.00

Ferrous Iron (Required Y or (N)) _____ mg/L

Purging Method/Equipment: Low flow/Bladder Pump

Purge Start Date/Time: 5/7/19 0850

Purge End Date/Time: 5/7/19 0920

Discharge Tube Length: NA

PID Reading: NA

Discharge Tube Diameter: 1/4"

Immersible Layer: Y / (N)

Pump Start Time: 0850

2ND DTW PRE-PURGE - 20.70

APTIM

Sample Collection Log

Location ID: 50WW09 Sample No: 50WW09-190507

Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
5/7/19	0855	100	.5	20.77	0.410	21.14	5.89	692	106	2.27
	0900	100	1.0	20.84	0.397	21.15	5.50	643	130	2.09
	0905	100	1.5	20.88	0.397	21.19	5.40	620	147	1.93
	0910	100	2.0	20.91	0.396	21.24	5.39	629	148	1.91
	0915	100	2.5	20.93	0.396	21.27	5.38	618	149	1.89
	0920	100	3.0	20.95	0.396	21.30	5.38	617	150	1.88

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **50WW09**

Sampler(s): Scott Bressinger

FIELD CONDITIONS

Cloudy

SAMPLING INFORMATION

Edited by SS on Feb 26 2020

Sample No: 50WW09-1905 07 -FD

DATE/TIME: 5/7/19 / 0839

Sample Interval: ~~20.70 20.95~~

Sampling Method:

Sample Purpose: FD

Sample Matrix: GW

Appearance of Sample

Assoc. QC Samples

Decontamination Procedures

Chain of Custody	COC Notes	Lab	Analyses	Container	Preserv
		ALSHT	Perchlorate in Water by 6850	1 x 125 mL HDPE	Cool 4C
		ALSHT	VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Low flow/Bladder Pump

Casing ID (in.): 2

Purge Start Date/Time: 5/7/19 0850

Depth to Water - Initial (DTWi) (ft) 20.70

Purge End Date/Time: 5/7/19 0920

Depth to Well Bottom (ft) ~~62.05~~ 62.18

Discharge Tube Length: NA

PID Reading: NA

Screen Interval (ft): 46.75 - 61.25

Discharge Tube Diameter: 1/4"

Immersible Layer: Y / (N)

Approximate depth of pump inlet*(ft): ~~54.05~~ 54.00

Pump Start Time: 0850

Ferrous Iron (Required Y or (N) _____ mg/L

APTIM

Sample Collection Log

Location ID: 50WW09 Sample No: 50WW09-190507-FD

Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
5/7/19	0855	100	.5	20.77	0.410	21.14	5.89	692	106	2.27
	0900	100	1.0	20.84	0.397	21.15	5.50	643	130	2.09
	0905	100	1.5	20.88	0.397	21.19	5.40	620	147	1.93
	0910	100	2.0	20.91	0.396	21.24	5.39	619	148	1.91
	0915	100	2.5	20.93	0.396	21.27	5.38	618	149	1.89
	0920	100	3.0	20.95	0.396	21.30	5.38	617	150	1.88

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **50WW10**

Sampler(s): Scott Baesinger

FIELD CONDITIONS Cloudy

SAMPLING INFORMATION

Edited by SS on Feb 26 2020

Sample No: 50WW10-190507

DATE/TIME: 5/7/19 / 0746

Sample Interval: ~~23.22 - 23.42~~

Sampling Method:

Sample Purpose: REG

Sample Matrix: GW

Appearance of Sample	Assoc. QC Samples	Decontamination Procedures

Chain of Custody	COC Notes	Lab	Analyses	Container	Preserv
		ALSHT	Perchlorate in Water by 6850	1 x 125 mL HDPE	Cool 4C
		ALSHT	VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Low flow/BLADDER Pump

Casing ID (in.): 2

Purge Start Date/Time: 5/7/19 0800

Depth to Water - Initial (DTWi) (ft) 23.22

Purge End Date/Time: 5/7/19 0830

Depth to Well Bottom (ft) ~~109~~ 111.08

Discharge Tube Length: NA

PID Reading: NA

Screen Interval (ft): 101.43 - 110.93

Discharge Tube Diameter: 1/4"

Immersible Layer: Y / (N)

Approximate depth of pump inlet*(ft): ~~105~~ 106.2

Pump Start Time: 0800

Ferrous Iron (Required Y or (N)) _____ mg/L

2ND DTW PREPURGE - 23.22

APTIM

Sample Collection Log

Location ID: 50WW10 Sample No: 50WW10-190507

Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
5/9/19	0805	100	.5	23.27	1.24	20.66	7.11	6.8	67	1.12
	0810	100	1.0	23.32	1.26	20.33	6.14	3.1	40	0.88
	0815	100	1.5	23.35	1.26	20.37	6.00	1.1	36	0.62
	0820	100	2.0	23.37	1.27	20.39	5.99	0.4	35	0.61
	0825	100	2.5	23.39	1.27	20.42	5.99	0.0	34	0.60
	0830	100	3.0	23.40	1.27	20.44	5.98	0.0	34	0.59

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **50WW11**

Sampler(s): Scott Beesinger

FIELD CONDITIONS

Clear/Sunny

SAMPLING INFORMATION

Edited by SS on Feb 26 2020

Sample No: 50WW11-190506

DATE/TIME: 5/6/19 / 0844

Sample Interval: ~~18.65 18.85~~

Sampling Method:

Sample Purpose: REG

Sample Matrix: GW

Appearance of Sample	Assoc. QC Samples	Decontamination Procedures

Chain of Custody	COC Notes	Lab	Analyses	Container	Preserv
		ALSHT	Anions in Water by 9056	1 x 250 mL HDPE	Cool 4C
		ALSHT	Carbon Dioxide in Water by RSK175	3 x 40 mL Glass	Cool 4C
		ALSHT	Dissolved Gases in Water by RSK175	3 x 40 mL Glass	HCL<pH2
		ALSHT	Perchlorate in Water by 6850	1 x 125 mL HDPE	Cool 4C
		ALSHT	TOC in Water by SM5310C	2 x 40 mL Amber	H2SO4
		ALSHT	VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Low flow/Bladder Pump

Casing ID (in.): 2

Purge Start Date/Time: 5/6/19 0855

Depth to Water - Initial (DTWi) (ft) 18.65

Purge End Date/Time: 5/6/19 0925

Depth to Well Bottom (ft) ~~38.8~~ 37.81

Discharge Tube Length: NA

PID Reading: NA

Screen Interval (ft): 22.55-37.05

Discharge Tube Diameter: 1/4"

Immersible Layer: Y / (N)

Approximate depth of pump inlet*(ft): ~~27.45~~ 29.80

Pump Start Time: 0855

Ferrous Iron (Required (Y) or N) 0.52 mg/L

2ND DTW PRE-PURGE - 18.65

APTIM

Sample Collection Log

Location ID: 50WW11 Sample No: 50WW11-190506

Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
5/6/19	0900	100	.5	18.73	1.75	19.54	6.03	121	274	0.73
	0905	100	1.0	18.79	1.77	19.57	5.96	92.3	249	0.23
	0910	100	1.5	18.82	1.77	19.59	5.95	85.1	237	0.07
	0915	100	2.0	18.85	1.77	19.61	5.94	84.7	237	0.07
	0920	100	2.5	18.87	1.77	19.63	5.94	84.2	236	0.06
	0925	100	3.0	18.88	1.77	19.65	5.94	83.8	236	0.06

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

Sample Collection Log

APTIM

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **50WW12**

Sampler(s): Scott Beesinger

FIELD CONDITIONS Clear/Sunny

SAMPLING INFORMATION

Edited by SS on Feb 26 2020

Sample No: 50WW12-190516

DATE/TIME: 5/16/19 / 1040

Sample Interval: ~~17.40 17.63~~

Sampling Method:

Sample Purpose: REG

Sample Matrix: GW

Appearance of Sample

Assoc. QC Samples

Decontamination Procedures

Chain of Custody	COC Notes	Lab	Analyses	Container	Preserv
		ALSHT	Anions in Water by 9056	1 x 250 mL HDPE	Cool 4C
		ALSHT	Carbon Dioxide in Water by RSK175	3 x 40 mL Glass	Cool 4C
		ALSHT	Dissolved Gases in Water by RSK175	3 x 40 mL Glass	HCL<pH2
		ALSHT	Perchlorate in Water by 6850	1 x 125 mL HDPE	Cool 4C
		ALSHT	TOC in Water by SM5310C	2 x 40 mL Amber	H2SO4
		ALSHT	VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Lowflow/Bladder Pump

Casing ID (in.): 2

Purge Start Date/Time: 5/16/19 1055

Depth to Water - Initial (DTWi) (ft) 17.40

Purge End Date/Time: 5/16/19 1130

Depth to Well Bottom (ft) ~~37.50~~ 37.83

Discharge Tube Length: NA

PID Reading: NA

Screen Interval (ft): 22.50 - 37.00

Discharge Tube Diameter: 1/4"

Immersible Layer: Y / (N)

Approximate depth of pump inlet*(ft): ~~27.35~~ 29.75

Pump Start Time: 1055

Ferrous Iron (Required) (Y or N) 0.00 mg/L

2ND DTW prepurge ~ 17.40

APTIM

Sample Collection Log

Location ID: 50WW12 Sample No: 50WW12-190516

Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
5/16/19	1100	100	.5	17.47	4.08	20.73	6.23	11.7	183	0.74
	1105	100	1.0	17.53	4.08	20.55	5.95	4.3	192	0.42
	1110	100	1.5	17.57	4.08	20.62	5.88	0.9	195	0.20
	1115	100	2.0	17.60	4.08	20.60	5.88	0.0	196	0.09
	1120	100	2.5	17.62	4.08	20.57	5.88	0.0	197	0.08
	1125	100	3.0	17.63	4.08	20.55	5.88	0.0	198	0.09
	1130	100	3.5	17.63	4.08	20.53	5.88	0.0	199	0.08

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **50WW12**

Sampler(s): Scott Beggs, NGAP

FIELD CONDITIONS Clear / Sunny

SAMPLING INFORMATION

Edited by SS on Feb 26 2020

Sample No: 50WW12-190516-FD

DATE/TIME: 5/16/19 / 1040

Sample Interval: ~~17.40 - 17.83~~

Sampling Method:

Sample Purpose: FD

Sample Matrix: GW

Appearance of Sample	Assoc. QC Samples	Decontamination Procedures

Chain of Custody	COC Notes	Lab	Analyses	Container	Preserv
		ALSHT	Anions in Water by 9056	1 x 250 mL HDPE	Cool 4C
		ALSHT	Carbon Dioxide in Water by RSK175	3 x 40 mL Glass	Cool 4C
		ALSHT	Dissolved Gases in Water by RSK175	3 x 40 mL Glass	HCL<pH2
		ALSHT	Perchlorate in Water by 6850	1 x 125 mL HDPE	Cool 4C
		ALSHT	TOC in Water by SM5310C	2 x 40 mL Amber	H2SO4
		ALSHT	VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Low flow / BLADDER Pump

Casing ID (in.): 2

Purge Start Date/Time: 5/16/19 1055

Depth to Water - Initial (DTWi) (ft) 17.40

Purge End Date/Time: 5/16/19 1130

Depth to Well Bottom (ft) ~~35~~ 37.83

Discharge Tube Length: NA

PID Reading: NA

Screen Interval (ft): 22.50 - 37.00

Discharge Tube Diameter: ~~3/8~~ 1/4"

Immersible Layer: Y / (N)

Approximate depth of pump inlet*(ft): ~~25~~ 24.75

Pump Start Time: 1055

Ferrous Iron (Required (Y) or N) 0.00 mg/L

APTIM

Sample Collection Log

Location ID: 50WW12 Sample No: 50WW12-1905/16-FD

Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
5/16/19	1100	100	.5	17.47	4.08	20.73	6.23	11.7	183	0.74
↓	1105	100	1.0	17.53	4.08	20.55	5.95	4.3	192	0.42
	1110	100	1.5	17.57	4.08	20.62	5.88	0.9	195	0.20
	1115	100	2.0	17.60	4.08	20.60	5.88	0.0	196	0.09
	1120	100	2.5	17.62	4.08	20.57	5.88	0.0	197	0.08
	1125	100	3.0	17.63	4.08	20.55	5.88	0.0	198	0.09
↓	1130	100	3.5	17.63	4.08	20.53	5.88	0.0	199	0.08

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Location ID: **50WW13**

Project No: **501032**

Sampler(s): Scott Bressinger

FIELD CONDITIONS

CLEAR/SUNNY

SAMPLING INFORMATION

Edited by SS on Feb 26 2020

Sample No: 50WW13-190506

DATE/TIME: 5/6/19 / 1040

Sample Interval: ~~18.44 - 19.18~~

Sampling Method:

Sample Purpose: REG

Sample Matrix: GW

Appearance of Sample	Assoc. QC Samples	Decontamination Procedures

Chain of Custody	COC Notes	Lab	Analyses	Container	Preserv
		ALSHT	Anions in Water by 9056	1 x 250 mL HDPE	Cool 4C
		ALSHT	Carbon Dioxide in Water by RSK175	3 x 40 mL Glass	Cool 4C
		ALSHT	Dissolved Gases in Water by RSK175	3 x 40 mL Glass	HCL<pH2
		ALSHT	Perchlorate in Water by 6850	1 x 125 mL HDPE	Cool 4C
		ALSHT	TOC in Water by SM5310C	2 x 40 mL Amber	H2SO4
		ALSHT	VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Low Flow/Bladder Pump

Casing ID (in.): 2

Purge Start Date/Time: 5/6/19 1050

Depth to Water - Initial (DTWi) (ft) 18.94

Purge End Date/Time: 5/6/19 1120

Depth to Well Bottom (ft) ~~35.1~~ 37.70

Discharge Tube Length: NA

PID Reading: NA

Screen Interval (ft): 22.44-36.94

Discharge Tube Diameter: 1/4"

Immersible Layer: Y / (N)

Approximate depth of pump inlet*(ft): ~~27.35~~ 29.70

Pump Start Time: 1050

Ferrous Iron (Required) (Y) or N) 0.36 mg/L

2ND DTW PRE-PURGE - 18.94

APTIM

Sample Collection Log

Location ID: 50WW13 Sample No: 50WW13-190506

Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
5/6/19	1055	100	.5	19.01	2.22	20.91	6.53	89.1	82	0.77
	1100	100	1.0	19.07	2.20	20.79	6.10	77.9	122	0.24
	1105	100	1.5	19.11	2.21	20.80	6.07	74.8	129	0.10
	1110	100	2.0	19.14	2.21	20.81	6.06	74.2	130	0.09
	1115	100	2.5	19.16	2.21	20.82	6.06	73.9	131	0.10
	1120	100	3.0	19.18	2.21	20.83	6.06	73.4	131	0.09

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Location ID: **50WW14**

Project No: **501032**

Sampler(s): Scott Beesinger

FIELD CONDITIONS

Clear/ Sunny

SAMPLING INFORMATION

Edited by SS on Feb 26 2020

Sample No: 50WW14-190506

DATE/TIME: 5/6/19 / 0942

Sample Interval: ~~19.5 49.35~~

Sampling Method:

Sample Purpose: REG

Sample Matrix: GW

Appearance of Sample	Assoc. QC Samples	Decontamination Procedures

Chain of Custody	COC Notes	Lab	Analyses	Container	Preserv
		ALSHT	Anions in Water by 9056	1 x 250 mL HDPE	Cool 4C
		ALSHT	Carbon Dioxide in Water by RSK175	3 x 40 mL Glass	Cool 4C
		ALSHT	Dissolved Gases in Water by RSK175	3 x 40 mL Glass	HCL<pH2
		ALSHT	Perchlorate in Water by 6850	1 x 125 mL HDPE	Cool 4C
		ALSHT	TOC In Water by SM5310C	2 x 40 mL Amber	H2SO4
		ALSHT	VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Low flow/BLADDER Pump

Casing ID (in.): 2

Purge Start Date/Time: 5/6/19 0955

Depth to Water - Initial (DTWi) (ft) 19.05

Purge End Date/Time: 5/6/19 1025

Depth to Well Bottom (ft) ~~59.5~~ 60.73

Discharge Tube Length: NA

PID Reading: NA

Screen Interval (ft): 45.28 - 60.28

Discharge Tube Diameter: 1/4"

Immersible Layer: Y / (N)

Approximate depth of pump inlet*(ft): ~~50.05~~ 53.00

Pump Start Time: 0955

Ferrous Iron (Required (Y) or N) 0.34 mg/L

2ND DTW PRE PURGE - 19.05

APTIM

Sample Collection Log

Location ID: 50WW14		Sample No: 50WW14-190506								
Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
5/6/19	1000	100	.5	19.12	2.22	20.18	6.57	101	70	0.66
	1005	100	1.0	19.18	2.22	20.19	6.49	85.6	60	0.21
	1010	100	1.5	19.21	2.20	20.21	6.49	83.9	54	0.06
	1015	100	2.0	19.23	2.20	20.24	6.49	83.3	53	0.07
	1020	100	2.5	19.24	2.19	20.27	6.48	82.8	53	0.07
↓	1025	100	3.0	19.25	2.19	20.29	6.48	82.4	52	0.06

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

Sample Collection Log

APTIM

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **50WW15**

Sampler(s): Scott Bressinger

FIELD CONDITIONS Clear/Sunny

SAMPLING INFORMATION

Edited by SS on Feb 26 2020

Sample No: 50WW15-190517

DATE/TIME: 5/17/19 / 0715

Sample Interval: ~~9.15-17.40~~

Sampling Method:

Sample Purpose: REG

Sample Matrix: GW

Appearance of Sample	Assoc. QC Samples	Decontamination Procedures

Chain of Custody	COC Notes	Lab	Analyses	Container	Preserv
		ALSHT	Perchlorate in Water by 6850	1 x 125 mL HDPE	Cool 4C
		ALSHT	VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Casing ID (in.): 2

Depth to Water - Initial (DTWi) (ft) 17.15

Depth to Well Bottom (ft) ~~35~~ 37.93

Screen Interval (ft): 22.25-36.75

Approximate depth of pump inlet*(ft): ~~27.15~~ 29.50

Ferrous Iron (Required Y or (N) _____ mg/L

Purging Method/Equipment: Low flow/Bladder Pump

Purge Start Date/Time: 5/17/19 0725

Purge End Date/Time: 5/17/19 0755

Discharge Tube Length: NA

PID Reading: NA

Discharge Tube Diameter: 1/4"

Immersible Layer: Y / (N)

Pump Start Time: 0725

2ND DTW PRE-PURGE - 17.15

APTIM

Sample Collection Log

Location ID: 50WW15 Sample No: 50WW15-190517

Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
5/17/19	0830	100	.5	17.23	1.80	20.12	6.24	150	227	0.62
	0835	100	1.0	17.29	1.87	19.89	6.08	123	224	0.29
	0840	100	1.5	17.34	1.90	19.87	6.13	120	217	0.07
	0845	100	2.0	17.37	1.90	19.86	6.14	119	216	0.07
	0850	100	2.5	17.39	1.91	19.85	6.15	118	215	0.06
	0855	100	3.0	17.40	1.91	19.83	6.15	118	215	0.06

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **50WW16**

Sampler(s): Scott Beesinger

FIELD CONDITIONS Clear/Sunny

SAMPLING INFORMATION

Edited by SS on Feb 26 2020

Sample No: 50WW16-190506

DATE/TIME: 5/6/19 / 1240

Sample Interval: ~~18.5-18.29~~

Sampling Method:

Sample Purpose: REG

Sample Matrix: GW

Appearance of Sample	Assoc. QC Samples	Decontamination Procedures

Chain of Custody	COC Notes	Lab	Analyses	Container	Preserv
		ALSHT	Anions in Water by 9056	1 x 250 mL HDPE	Cool 4C
		ALSHT	Carbon Dioxide in Water by RSK175	3 x 40 mL Glass	Cool 4C
		ALSHT	Dissolved Gases in Water by RSK175	3 x 40 mL Glass	HCL<pH2
		ALSHT	Perchlorate in Water by 6850	1 x 125 mL HDPE	Cool 4C
		ALSHT	TOC in Water by SM5310C	2 x 40 mL Amber	H2SO4
		ALSHT	VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Casing ID (in.): 2

Depth to Water - Initial (DTWi) (ft) 18.05

Depth to Well Bottom (ft) ~~38~~ 38.06

Screen Interval (ft): 22.66 - 37.16

Approximate depth of pump inlet*(ft): ~~29~~ 29.90

Ferrous Iron (Required Y or N) 0.47 mg/L

Purging Method/Equipment: Low flow / Bladder Pump

Purge Start Date/Time: 5/6/19 1250

Purge End Date/Time: 5/6/19 1320

Discharge Tube Length: NA

PID Reading: NA

Discharge Tube Diameter: 1/4"

Immersible Layer: Y / (N)

Pump Start Time: 1250

2ND DTW pre-purge - 18.05

APTIM

Sample Collection Log

Location ID: 50WW16 Sample No: 50WW16-190506

Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
5/6/19	1255	100	.5	18.12	0.291	22.11	7.30	122	155	0.60
	1300	100	1.0	18.18	0.286	21.18	5.64	98.3	191	0.30
	1305	100	1.5	18.22	0.288	21.28	5.57	94.1	192	0.11
	1310	100	2.0	18.25	0.288	21.34	5.57	93.7	193	0.11
	1315	100	2.5	18.27	0.288	21.40	5.56	93.1	194	0.11
↓	1320	100	3.0	18.29	0.288	21.44	5.56	92.4	195	0.10

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **50WW17**

Sampler(s): Scott Beesinger

FIELD CONDITIONS Clear / Sunny

SAMPLING INFORMATION

Edited by SS on Feb 26 2020

Sample No: 50WW17-1905 16

DATE/TIME: 5/16/19 / 0853

Sample Interval: ~~17.63-17.81~~

Sampling Method:

Sample Purpose: REG

Sample Matrix: GW

Appearance of Sample	Assoc. QC Samples	Decontamination Procedures

Chain of Custody	COC Notes	Lab	Analyses	Container	Preserv
		ALSHT	Perchlorate in Water by 6850	1 x 125 mL HDPE	Cool 4C
		ALSHT	VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Casing ID (in.): 2

Depth to Water - Initial (DTWi) (ft) 17.63

Depth to Well Bottom (ft) ~~66~~ 66.90

Screen Interval (ft): 22.30-66.80

Approximate depth of pump inlet*(ft): ~~45~~ 44.55

Ferrous Iron (Required Y or (N) _____ mg/L

Purging Method/Equipment: Low flow / Bladder Pump

Purge Start Date/Time: 5/16/19 0905

Purge End Date/Time: 5/16/19 0935

Discharge Tube Length: NA

PID Reading: NA

Discharge Tube Diameter: 1/4"

Immersible Layer: Y (N)

Pump Start Time: 0905

2ND DTW PRE-PURGE - 17.63

APTIM

Sample Collection Log

Location ID: 50WW17 Sample No: 50WW17-190516

Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
5/16/19	0910	100	.5	17.70	2.34	20.41	6.77	677	88	0.64
	0915	100	1.0	17.75	2.29	20.26	5.90	703	125	0.21
	0920	100	1.5	17.78	2.21	20.31	5.54	715	138	0.08
	0925	100	2.0	17.80	2.20	20.37	5.53	716	139	0.08
	0930	100	2.5	17.81	2.19	20.42	5.52	716	139	0.07
	0935	100	3.0	17.81	2.19	20.48	5.51	717	140	0.07

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **50WW18**

Sampler(s): Scott Bessinger

FIELD CONDITIONS

CLEAR / SUNNY

SAMPLING INFORMATION

Edited by SS on Feb 26 2020

Sample No: 50WW18-190516

DATE/TIME: 5/16/19 / 0800

Sample Interval: ~~17.35-17.50~~

Sampling Method:

Sample Purpose: REG

Sample Matrix: GW

Appearance of Sample

Assoc. QC Samples

Decontamination Procedures

Chain of Custody	COC Notes	Lab	Analyses	Container	Preserv
		ALSHT	Perchlorate in Water by 6850	1 x 125 mL HDPE	Cool 4C
		ALSHT	VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Casing ID (in.): 2

Depth to Water - Initial (DTWi) (ft) 17.35

Depth to Well Bottom (ft) ~~37.52~~ 37.64

Screen Interval (ft): 22.37-36.87

Approximate depth of pump inlet*(ft): ~~27.35~~ 29.60

Ferrous Iron (Required Y or N) _____ mg/L

Purging Method/Equipment: Low flow / BLADDER Pump

Purge Start Date/Time: 5/16/19 0810

Purge End Date/Time: 5/16/19 0840

Discharge Tube Length: NA

PID Reading: NA

Discharge Tube Diameter: 1/4"

Immersible Layer: Y / (N)

Pump Start Time: 0810

2ND DTW PRE-PURGE - 17.35

APTIM

Sample Collection Log

Location ID: 50WW18 Sample No: 50WW18-190516

Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/l)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
5/16/19	0815	100	.5	17.43	3.14	19.53	6.32	38.3	278	3.04
	0820	100	1.0	17.49	3.15	19.27	6.24	19.2	287	2.39
	0825	100	1.5	17.53	3.20	19.24	6.22	9.9	263	2.15
	0830	100	2.0	17.55	3.20	19.20	6.21	9.1	262	2.12
	0835	100	2.5	17.57	3.21	19.18	6.21	8.3	261	2.10
	0840	100	3.0	17.58	3.21	19.16	6.21	7.5	260	2.08

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **50WW21**

Sampler(s): Scott Beesinger

FIELD CONDITIONS

SAMPLING INFORMATION

Edited by SS on Feb 26 2020

Sample No: 50WW21-1905 16

DATE/TIME: 5/16/19 / 0946

Sample Interval: ~~[illegible]~~

Sampling Method:

Sample Purpose: REG

Sample Matrix: GW

Appearance of Sample	Assoc. QC Samples	Decontamination Procedures

Chain of Custody	COC Notes	Lab	Analyses	Container	Preserv
		ALSHT	Perchlorate in Water by 6850	1 x 125 mL HDPE	Cool 4C
		ALSHT	VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Casing ID (in.): 2

Depth to Water - Initial (DTWi) (ft) 22.00

Depth to Well Bottom (ft) ~~37~~ 37.68

Screen Interval (ft): 22.36-36.86

Approximate depth of pump inlet*(ft): ~~27.45~~ 29.60

Ferrous Iron (Required Y or (N) _____ mg/L

Purging Method/Equipment: Low flow/BLADDER Pump

Purge Start Date/Time: 5/16/19 0955

Purge End Date/Time: 5/16/19 1025

Discharge Tube Length: NA

PID Reading: NA

Discharge Tube Diameter: 1/4"

Immersible Layer: Y / (N)

Pump Start Time: 0955

2ND DTW PRE-PURGE - 22.00

APTIM

Sample Collection Log

Location ID: 50WW21 Sample No: 50WW21-1905 16

Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
5/16/19	~~0900~~	100	.5	22.08	6.03	21.02	6.37	25.9	119	1.21
	1005	100	1.0	22.14	6.03	21.00	6.23	18.8	146	0.65
	1010	100	1.5	22.19	6.03	20.99	6.23	12.9	155	0.50
	1015	100	2.0	22.21	6.03	20.98	6.22	12.3	155	0.49
	1020	100	2.5	22.23	6.03	20.97	6.22	11.7	156	0.48
↓	1025	100	3.0	22.25	6.03	20.96	6.22	11.1	156	0.48

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Location ID: **50WW22**

Project No: **501032**

Sampler(s): Scott Bressler

FIELD CONDITIONS Clear / Sunny

SAMPLING INFORMATION

Edited by SS on Feb 26 2020

Sample No: 50WW22-190506

DATE/TIME: 5/6/19 / 1136

Sample Interval: ~~23.70 - 23.41~~

Sampling Method:

Sample Purpose: REG

Sample Matrix: GW

Appearance of Sample	Assoc. QC Samples	Decontamination Procedures

Chain of Custody	COC Notes	Lab	Analyses	Container	Preserv
		ALSHT	Anions in Water by 9056	1 x 250 mL HDPE	Cool 4C
		ALSHT	Carbon Dioxide in Water by RSK175	3 x 40 mL Glass	Cool 4C
		ALSHT	Dissolved Gases in Water by RSK175	3 x 40 mL Glass	HCL<pH2
		ALSHT	Perchlorate in Water by 6850	1 x 125 mL HDPE	Cool 4C
		ALSHT	TOC in Water by SM5310C	2 x 40 mL Amber	H2SO4
		ALSHT	VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Low flow / BLADDER Pump

Casing ID (in.): 2

Purge Start Date/Time: 5/6/19 1145

Depth to Water - Initial (DTWi) (ft) 23.70

Purge End Date/Time: 5/6/19 1220

Depth to Well Bottom (ft) ~~38~~ 37.88

Discharge Tube Length: NA

PID Reading: NA

Screen Interval (ft): 21.97 - 36.57

Discharge Tube Diameter: 1/4"

Immersible Layer: Y / (N)

Approximate depth of pump inlet*(ft): ~~27~~ 29.30

Pump Start Time: 1145

Ferrous Iron (Required (Y) or N) 0.10 mg/L

2ND DTW PRE-PURGE - 23.70

APTIM

Sample Collection Log

Location ID: 50WW22 Sample No: 50WW22-1905 DL

Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
5/6/19	1150	100	.5	23.78	3.69	23.41	6.97	30.7	122	0.75
	1155	100	1.0	23.83	3.71	23.04	7.11	21.2	119	0.96
	1200	100	1.5	23.86	3.71	22.91	7.15	11.9	119	0.95
	1205	100	2.0	23.88	3.71	23.10	7.20	11.4	120	0.97
	1210	100	2.5	23.90	3.71	23.19	7.21	11.8	121	0.98
	1215	100	3.0	23.91	3.71	23.27	7.21	12.1	121	0.99
↓	1220	100	3.5	23.91	3.71	23.35	7.21	12.5	121	0.99

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **50WW23**

Sampler(s): Scott Beesinger

FIELD CONDITIONS CLEAR/SUNNY

SAMPLING INFORMATION

Edited by SS on Feb 26 2020

Sample No: 50WW23-190507

DATE/TIME: 5/7/19 / 1025

Sample Interval: ~~22.80 37.88~~

Sampling Method:

Sample Purpose: REG

Sample Matrix: GW

Appearance of Sample	Assoc. QC Samples	Decontamination Procedures

Chain of Custody	COC Notes	Lab	Analyses	Container	Preserv
		ALSHT	Anions in Water by 9056	1 x 250 mL HDPE	Cool 4C
		ALSHT	Carbon Dioxide in Water by RSK175	3 x 40 mL Glass	Cool 4C
		ALSHT	Dissolved Gases in Water by RSK175	3 x 40 mL Glass	HCL<pH2
		ALSHT	Perchlorate in Water by 6850	1 x 125 mL HDPE	Cool 4C
		ALSHT	TOC in Water by SM5310C	2 x 40 mL Amber	H2SO4
		ALSHT	VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Low flow/BLADDER Pump

Casing ID (in.): 2

Purge Start Date/Time: 5/7/19 1035

Depth to Water - Initial (DTWi) (ft) 22.80

Purge End Date/Time: 5/7/19 1110

Depth to Well Bottom (ft) ~~37.88~~ 37.88

Discharge Tube Length: NA

PID Reading: NA

Screen Interval (ft): 22.42-36.92

Discharge Tube Diameter: 1/4"

Immersible Layer: Y / (N)

Approximate depth of pump inlet*(ft): ~~27.88~~ 29.65

Pump Start Time: 1035

Ferrous Iron (Required (Y) or N) 0.00 mg/L

2ND DTW PRE-PURGE - 22.80

APTIM

Sample Collection Log

Location ID: 50WW23 Sample No: 50WW23-190527

Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
5/7/19	1040	100	.5	22.88	4.08	21.26	5.89	74.2	162	0.68
	1045	100	1.0	22.94	4.10	20.89	5.82	29.3	166	0.27
	1050	100	1.5	22.98	4.11	20.81	5.83	15.2	165	0.18
	1055	100	2.0	23.01	4.11	20.79	5.83	8.3	166	0.09
	1100	100	2.5	23.03	4.12	20.77	5.84	6.5	166	0.09
	1105	100	3.0	23.04	4.12	20.75	5.84	4.2	167	0.08
	1110	100	3.5	23.04	4.12	20.74	5.84	3.1	167	0.08

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **50WW23**

Sampler(s): Scott Bressinger

FIELD CONDITIONS Clear/Sunny

SAMPLING INFORMATION

Edited by SS on Feb 26 2020

Sample No: 50WW23-190507-MS **DATE/TIME:** 5/7/19 / 1025 **Sample Interval:** ~~22.92 23.04~~

Sampling Method: **Sample Purpose:** MS **Sample Matrix:** GW

Appearance of Sample	Assoc. QC Samples	Decontamination Procedures

Chain of Custody	COC Notes	Lab	Analyses	Container	Preserv
		ALSHT	Anions in Water by 9056	1 x 250 mL HDPE	Cool 4C
		ALSHT	Carbon Dioxide in Water by RSK175	3 x 40 mL Glass	Cool 4C
		ALSHT	Dissolved Gases in Water by RSK175	3 x 40 mL Glass	HCL<pH2
		ALSHT	Perchlorate in Water by 6850	1 x 125 mL HDPE	Cool 4C
		ALSHT	TOC in Water by SM5310C	2 x 40 mL Amber	H2SO4
		ALSHT	VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Low flow/Bladder Pump

Casing ID (in.): 2

Purge Start Date/Time: 5/7/19 1035

Depth to Water - Initial (DTWi) (ft) 22.80

Purge End Date/Time: 5/7/19 1110

Depth to Well Bottom (ft) ~~35.4~~ 37.88

Discharge Tube Length: NA

PID Reading: NA

Screen Interval (ft): 22.42 - 36.42

Discharge Tube Diameter: 1/4"

Immersible Layer: Y / (N)

Approximate depth of pump inlet*(ft): ~~27.88~~ 29.65

Pump Start Time: 1035

Ferrous Iron (Required (Y) or N) 0.00 mg/L

APTIM

Sample Collection Log

Location ID: 50WW23 Sample No: 50WW23-190507-MS

Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/l)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
5/7/19	1040	100	.5	22.88	4.08	21.26	5.89	74.2	162	0.68
	1045	100	1.0	22.94	4.10	20.89	5.82	29.3	166	0.27
	1050	100	1.5	22.98	4.11	20.81	5.83	15.2	165	0.18
	1055	100	2.0	23.01	4.11	20.79	5.83	8.3	166	0.09
	1100	100	2.5	23.03	4.12	20.77	5.84	6.5	166	0.09
	1105	100	3.0	23.04	4.12	20.75	5.84	4.2	167	0.08
	1110	100	3.5	23.04	4.12	20.74	5.84	3.1	167	0.08

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **50WW23**

Sampler(s): Scott Beesinger

FIELD CONDITIONS CLEAR/SUNNY

SAMPLING INFORMATION

Edited by SS on Feb 26 2020

Sample No: 50WW23-190507-MSD

DATE/TIME: 5/7/19 / 1025

Sample Interval: ~~22.80 - 23.04~~

Sampling Method:

Sample Purpose: MSD

Sample Matrix: GW

Appearance of Sample	Assoc. QC Samples	Decontamination Procedures

Chain of Custody	COC Notes	Lab	Analyses	Container	Preserv
		ALSHT	Anions in Water by 9056	1 x 250 mL HDPE	Cool 4C
		ALSHT	Carbon Dioxide in Water by RSK175	3 x 40 mL Glass	Cool 4C
		ALSHT	Dissolved Gases in Water by RSK175	3 x 40 mL Glass	HCL<pH2
		ALSHT	Perchlorate in Water by 6850	1 x 125 mL HDPE	Cool 4C
		ALSHT	TOC in Water by SM5310C	2 x 40 mL Amber	H2SO4
		ALSHT	VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Low flow/Bladder Pump

Casing ID (in.): 2

Purge Start Date/Time: 5/7/19 1035

Depth to Water - Initial (DTWi) (ft) 22.80

Purge End Date/Time: 5/7/19 1110

Depth to Well Bottom (ft) ~~25.41~~ 37.88

Discharge Tube Length: NA

PID Reading: NA

Screen Interval (ft): 22.42 - 36.92

Discharge Tube Diameter: 1/4"

Immersible Layer: Y / N

Approximate depth of pump inlet*(ft): ~~27.25~~

Pump Start Time: 1035

Ferrous Iron (Required Y or N) 0.00 mg/L

APTIM

Sample Collection Log

Location ID: 50WW23 Sample No: 50WW23-1905_07MSD

Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
5/7/19	1040	100	.5	22.88	4.08	21.26	5.89	74.2	162	0.68
	1045	100	1.0	22.94	4.10	20.89	5.82	29.3	166	0.27
	1050	100	1.5	22.98	4.11	20.81	5.83	15.2	165	0.18
	1055	100	2.0	23.01	4.11	20.89	5.83	8.3	166	0.09
	1100	100	2.5	23.03	4.12	20.79	5.84	6.5	166	0.09
	1105	100	3.0	23.04	4.12	20.75	5.84	4.2	167	0.08
	1110	100	3.5	23.04	4.12	20.74	5.84	3.1	167	0.08

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Location ID: **50WW24**

Project No: **501032**

Sampler(s): Scott Beesinger

FIELD CONDITIONS Clear / Sunny

SAMPLING INFORMATION

Edited by SS on Feb 26 2020

Sample No: 50WW24-190507

DATE/TIME: 5/7/19 / 1143

Sample Interval: ~~23.81 - 38.06~~

Sampling Method:

Sample Purpose: REG

Sample Matrix: GW

Appearance of Sample	Assoc. QC Samples	Decontamination Procedures

Chain of Custody	COC Notes	Lab	Analyses	Container	Preserv
		ALSHT	Perchlorate in Water by 6850	1 x 125 mL HDPE	Cool 4C
		ALSHT	VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Low flow/Bladder pump

Casing ID (in.): 2

Purge Start Date/Time: 5/7/19 1155

Depth to Water - Initial (DTWi) (ft) 23.81

Purge End Date/Time: 5/7/19 1205

Depth to Well Bottom (ft) [redacted] 38.06

Discharge Tube Length: NA

PID Reading: NA

Screen Interval (ft): 22.66-37.16

Discharge Tube Diameter: 1/4"

Immersible Layer: Y (N)

Approximate depth of pump inlet*(ft): [redacted] 29.90

Pump Start Time: 1155

Ferrous Iron (Required Y or (N) _____ mg/L

2ND DTW PRE-PURGE - 23.81

APTIM

Sample Collection Log

Location ID: 50WW24 Sample No: 50WW24-190507

Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
5/7/19	1200	100	.5	23.88	1.76	21.78	6.15	10.9	163	0.11
	1205	100	1.0	23.93	1.75	21.56	5.90	6.1	168	0.27
	1210	100	1.5	23.97	1.75	21.55	5.90	3.0	165	0.10
	1215	100	2.0	24.00	1.76	21.54	5.90	1.1	165	0.09
	1220	100	2.5	24.02	1.76	21.53	5.90	0.5	164	0.10
	1225	100	3.0	24.04	1.76	21.53	5.90	0.0	164	0.09

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **50WW27**

Sampler(s): Scott Baesinger

FIELD CONDITIONS Clear/Sunny

SAMPLING INFORMATION

Edited by SS on Feb 26 2020

Sample No: 50WW27-190517

DATE/TIME: 5/17/19 / 0805

Sample Interval: ~~17.18 17.40~~

Sampling Method:

Sample Purpose: REG

Sample Matrix: GW

Appearance of Sample

Assoc. QC Samples

Decontamination Procedures

Chain of Custody	COC Notes	Lab	Analyses	Container	Preserv
		ALSHT	Perchlorate in Water by 6850	1 x 125 mL HDPE	Cool 4C
		ALSHT	VOCs in Water by 8260B	3 x 40 mL Glass	HCl <pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Low Flow/Bladder Pump

Casing ID (in.): 2

Purge Start Date/Time: 5/17/19 0810

Depth to Water - Initial (DTWi) (ft) 17.18

Purge End Date/Time: 5/17/19 0840

Depth to Well Bottom (ft) ~~59~~ 59.98

Discharge Tube Length: NA

PID Reading: NA

Screen Interval (ft): 45.28 - 59.78

Discharge Tube Diameter: 1/4"

Immersible Layer: Y / (N)

Approximate depth of pump inlet*(ft): ~~59~~ 52.50

Pump Start Time: 0810

Ferrous Iron (Required Y or (N) _____ mg/L

2ND DTW PRE-PURGE - 17.18

APTIM

Sample Collection Log

Location ID: 50WW27 Sample No: 50WW27-190517

Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
5/17/19	0815	100	.5	17.25	1.72	20.02	6.43	500	163	0.82
	0820	100	1.0	17.30	1.66	19.95	5.91	441	161	0.27
	0825	100	1.5	17.34	1.62	19.93	5.80	420	160	0.10
	0830	100	2.0	17.37	1.61	19.92	5.80	419	159	0.09
	0835	100	2.5	17.39	1.61	19.94	5.79	419	158	0.10
↓	0840	100	3.0	17.40	1.61	19.96	5.79	418	157	0.09

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

Appendix D

Laboratory Analytical Data Package

(Provided as separate pdf on CD and on the Portal)

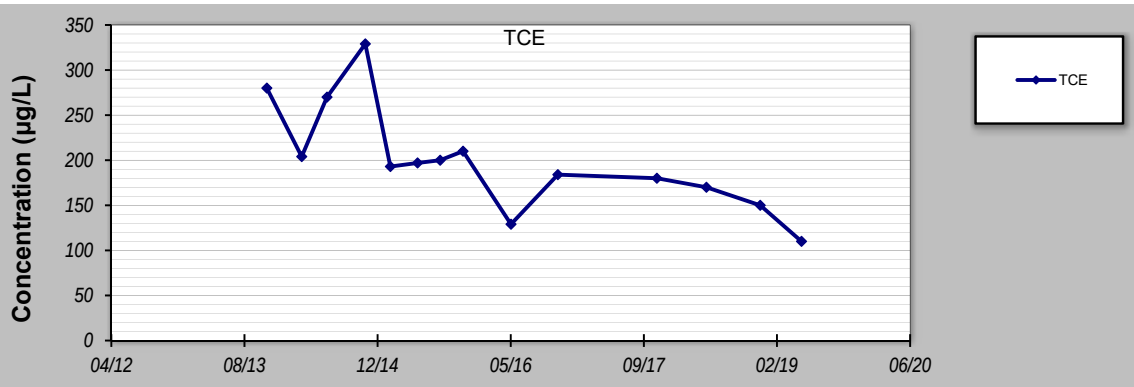
Appendix E

Mann-Kendall Trend Test Results

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	15-Oct-19	Job ID:	501032
Facility Name:	LHAAP-50	Constituent:	50WW05
Conducted By:	Robert Mayer	Concentration Units:	µg/L
Sampling Point ID:	TCE		

Sampling Event	Sampling Date	50WW05 CONCENTRATION (µg/L)
1	6-Nov-13	280
2	17-Mar-14	204
3	20-Jun-14	270
4	11-Nov-14	329
5	13-Feb-15	193
6	26-May-15	197
7	19-Aug-15	200
8	13-Nov-15	210
9	11-May-16	129
10	3-Nov-16	184
11	10-Nov-17	180
12	15-May-18	170
13	3-Dec-18	150
14	7-May-19	110
15		
16		
17		
18		
19		
20		
Coefficient of Variation:		0.29
Mann-Kendall Statistic (S):		-61
Confidence Factor:		>99.9%
Concentration Trend:		Decreasing



Notes:

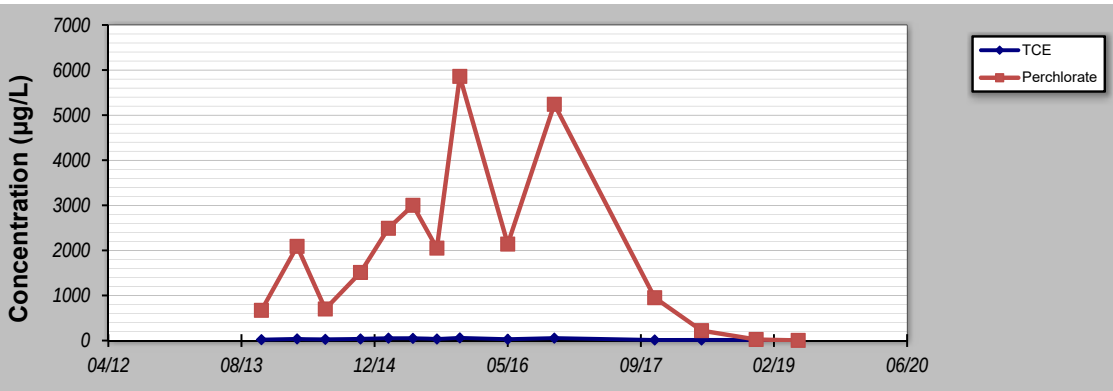
1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water* , 41(3):355-367, 2003.

DISCLAIMER: The GSI Mann-Kendall Toolkit is available "as is". Considerable care has been exercised in preparing this software product; however, no party, including without limitation GSI Environmental Inc., makes any representation or warranty regarding the accuracy, correctness, or completeness of the information contained herein, and no such party shall be liable for any direct, indirect, consequential, incidental or other damages resulting from the use of this product or the information contained herein. Information in this publication is subject to change without notice. GSI Environmental Inc., disclaims any responsibility or obligation to update the information contained herein.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	15-Oct-19	Job ID:	501032
Facility Name:	LHAAP-50	Constituent:	50WW06
Conducted By:	Robert Mayer	Concentration Units:	µg/L

Sampling Point ID:	TCE	Perchlorate					
Sampling Event	Sampling Date	50WW06 CONCENTRATION (µg/L)					
1	28-Oct-13	20.9	670				
2	11-Mar-14	36.5	2,090				
3	25-Jun-14	27.4	700				
4	4-Nov-14	36.1	1,510				
5	17-Feb-15	53.9	2,490				
6	20-May-15	49.1	3,000				
7	18-Aug-15	34.7	2,050				
8	12-Nov-15	59.4	5,860				
9	10-May-16	29.5	2,140				
10	1-Nov-16	54.2	5,240				
11	13-Nov-17	13	950				
12	8-May-18	14	220				
13	29-Nov-18	14	24				
14	6-May-19	1.4	4.3				
15							
16							
17							
18							
19							
20							
Coefficient of Variation:		0.56	0.94				
Mann-Kendall Statistic (S):		-24	-15				
Confidence Factor:		89.4%	77.5%				
Concentration Trend:		Stable	Stable				



Notes:

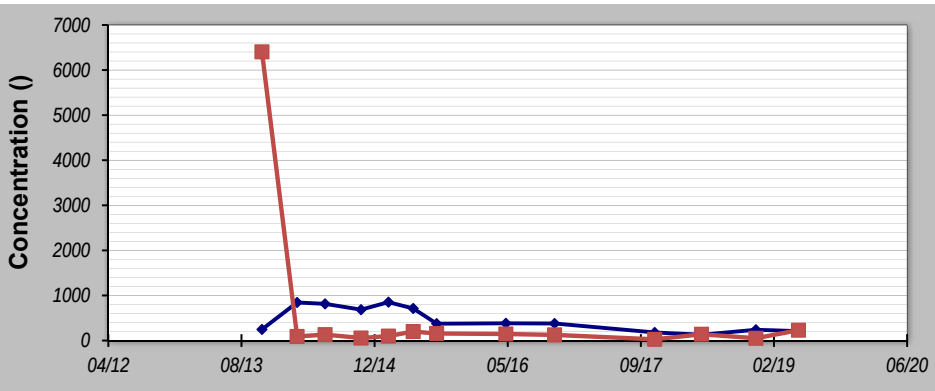
1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water* , 41(3):355-367, 2003.

DISCLAIMER: The GSI Mann-Kendall Toolkit is available "as is". Considerable care has been exercised in preparing this software product; however, no party, including without limitation GSI Environmental Inc., makes any representation or warranty regarding the accuracy, correctness, or completeness of the information contained herein, and no such party shall be liable for any direct, indirect, consequential, incidental or other damages resulting from the use of this product or the information contained herein. Information in this publication is subject to change without notice. GSI Environmental Inc., disclaims any responsibility or obligation to update the information contained herein.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	15-Oct-19	Job ID:	501032
Facility Name:	LHAAP-50	Constituent:	50WW08
Conducted By:	Robert Mayer	Concentration Units:	

Sampling Point ID:	TCE	Perchlorate					
Sampling Event	Sampling Date	50WW08 CONCENTRATION ()					
1	30-Oct-13	247	6,404				
2	11-Mar-14	845	91.5				
3	24-Jun-14	814	132				
4	6-Nov-14	685	56.3				
5	17-Feb-15	852	99				
6	21-May-15	712	200				
7	17-Aug-15	375	157				
8	3-May-16	383	146				
9	2-Nov-16	379	126				
10	13-Nov-17	180	27				
11	8-May-18	130	140				
12	28-Nov-18	240	51				
13	7-May-19	210	230				
14							
15							
16							
17							
18							
19							
20							
Coefficient of Variation:		0.59	2.88				
Mann-Kendall Statistic (S):		-42	-6				
Confidence Factor:		99.5%	61.7%				
Concentration Trend:		Decreasing	No Trend				



Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water* , 41(3):355-367, 2003.

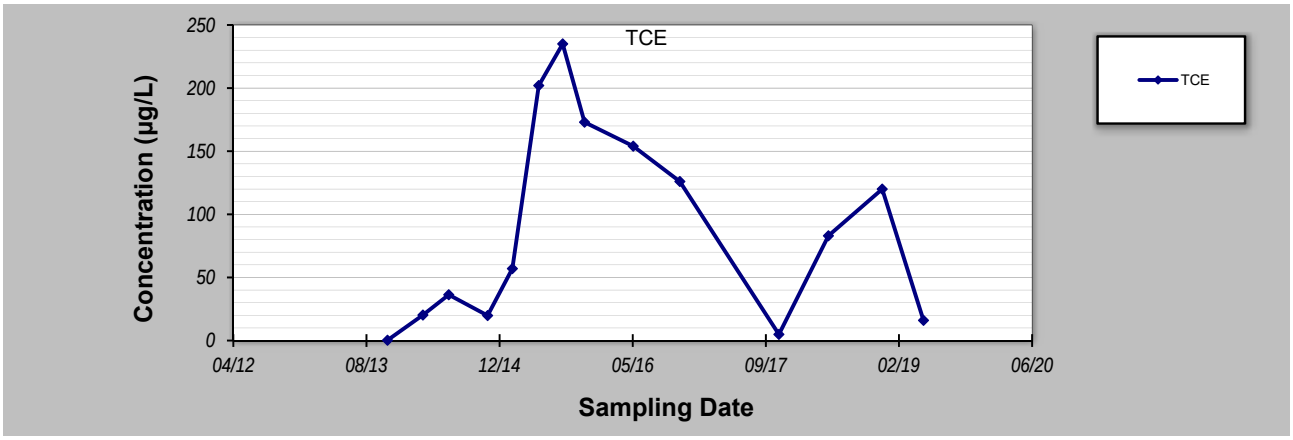
DISCLAIMER: The GSI Mann-Kendall Toolkit is available "as is". Considerable care has been exercised in preparing this software product; however, no party, including without limitation GSI Environmental Inc., makes any representation or warranty regarding the accuracy, correctness, or completeness of the information contained herein, and no such party shall be liable for any direct, indirect, consequential, incidental or other damages resulting from the use of this product or the information contained herein. Information in this publication is subject to change without notice. GSI Environmental Inc., disclaims any responsibility or obligation to update the information contained herein.

GSI Environmental Inc., www.gsi-net.com

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	15-Oct-19	Job ID:	501032
Facility Name:	LHAAP-50	Constituent:	50WW09
Conducted By:	Robert Mayer	Concentration Units:	µg/L
Sampling Point ID:	TCE		

Sampling Event	Sampling Date	50WW09 CONCENTRATION (µg/L)
1	1-Nov-13	0.26
2	14-Mar-14	20.2
3	19-Jun-14	36.3
4	12-Nov-14	19.8
5	13-Feb-15	57
6	23-May-15	202
7	21-Aug-15	235
8	11-Nov-15	173
9	12-May-16	154
10	3-Nov-16	126
11	10-Nov-17	4.9
12	15-May-18	83
13	3-Dec-18	120
14	7-May-19	16
15		
16		
17		
18		
19		
20		
Coefficient of Variation:		0.89
Mann-Kendall Statistic (S):		9
Confidence Factor:		66.6%
Concentration Trend:		No Trend



Notes:

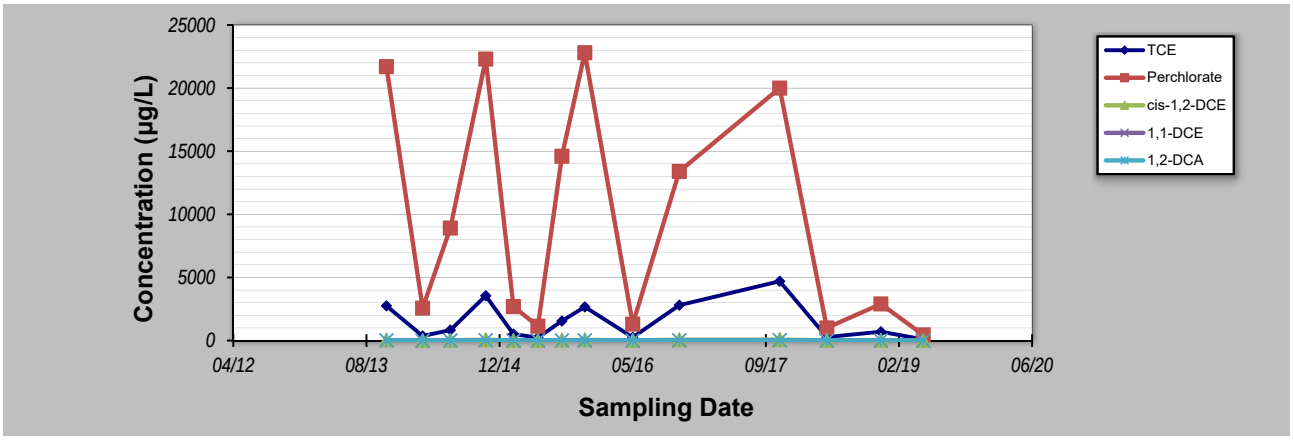
1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water* , 41(3):355-367, 2003.

DISCLAIMER: The GSI Mann-Kendall Toolkit is available "as is". Considerable care has been exercised in preparing this software product; however, no party, including without limitation GSI Environmental Inc., makes any representation or warranty regarding the accuracy, correctness, or completeness of the information contained herein, and no such party shall be liable for any direct, indirect, consequential, incidental or other damages resulting from the use of this product or the information contained herein. Information in this publication is subject to change without notice. GSI Environmental Inc., disclaims any responsibility or obligation to update the information contained herein.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	15-Oct-19	Job ID:	501032
Facility Name:	LHAAP-50	Constituent:	50WW11
Conducted By:	Robert Mayer	Concentration Units:	µg/L

Sampling Point ID:	TCE	Perchlorate	cis-1,2-DCE	1,1-DCE	1,2-DCA		
Sampling Event	Sampling Date	50WW11 CONCENTRATION (µg/L)						
1	28-Oct-13	2,750	21,700	43.9	17.4	15.2		
2	13-Mar-14	362	2,570	4.46	1.88	2.28		
3	25-Jun-14	831	8,910	12.6	7.35	6.01		
4	5-Nov-14	3,550	22,300	70.8	27.9	24.3		
5	17-Feb-15	512	2,690	6.86	2.47	2.42		
6	20-May-15	230	1,140	2.4	1.03	1.2		
7	18-Aug-15	1,550	14,600	36.3	13.1	16.7		
8	12-Nov-15	2,670	22,800	54.1	17.5	22.9		
9	10-May-16	254	1,300	5.35	1.5	1.84		
10	1-Nov-16	2,800	13,400	67.4	21.4	26.1		
11	13-Nov-17	4,700	20,000	78	33	30		
12	9-May-18	280	1,000	11	1.7	2		
13	28-Nov-18	700	2,900	18	5.5	5.6		
14	6-May-19	95	450	3.1	0.5	0.75		
15								
16								
17								
18								
19								
20								
Coefficient of Variation:		0.98	0.94	0.95	1.00	0.96		
Mann-Kendall Statistic (S):		-11	-23	1	-9	-5		
Confidence Factor:		70.5%	88.3%	50.0%	66.6%	58.5%		
Concentration Trend:		Stable	Stable	No Trend	No Trend	Stable		



Notes:

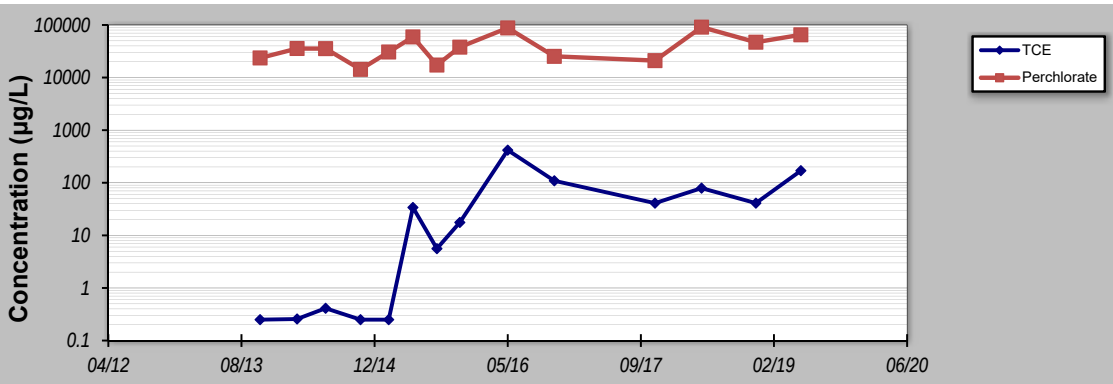
1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water* , 41(3):355-367, 2003.

DISCLAIMER: The GSI Mann-Kendall Toolkit is available "as is". Considerable care has been exercised in preparing this software product; however, no party, including without limitation GSI Environmental Inc., makes any representation or warranty regarding the accuracy, correctness, or completeness of the information contained herein, and no such party shall be liable for any direct, indirect, consequential, incidental or other damages resulting from the use of this product or the information contained herein. Information in this publication is subject to change without notice. GSI Environmental Inc., disclaims any responsibility or obligation to update the information contained herein.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	15-Oct-19	Job ID:	501032
Facility Name:	LHAAP-50	Constituent:	50WW12
Conducted By:	Robert Mayer	Concentration Units:	µg/L

Sampling Point ID:	TCE	Perchlorate					
Sampling Event	Sampling Date	50WW12 CONCENTRATION (µg/L)					
1	23-Oct-13	0.25	23,600				
2	11-Mar-14	0.257	35,700				
3	26-Jun-14	0.411	35,500				
4	4-Nov-14	0.25	14,300				
5	18-Feb-15	0.25	30,600				
6	20-May-15	33.9	59,200				
7	18-Aug-15	5.59	17,300				
8	12-Nov-15	17.6	37,900				
9	10-May-16	417	87,800				
10	1-Nov-16	109	25,300				
11	14-Nov-17	41	21,000				
12	8-May-18	79	91,000				
13	28-Nov-18	41	47,000				
14	16-May-19	170	65,000				
15							
16							
17							
18							
19							
20							
Coefficient of Variation:		1.73	0.59				
Mann-Kendall Statistic (S):		57	29				
Confidence Factor:		99.9%	93.7%				
Concentration Trend:		Increasing	Prob. Increasing				



Notes:

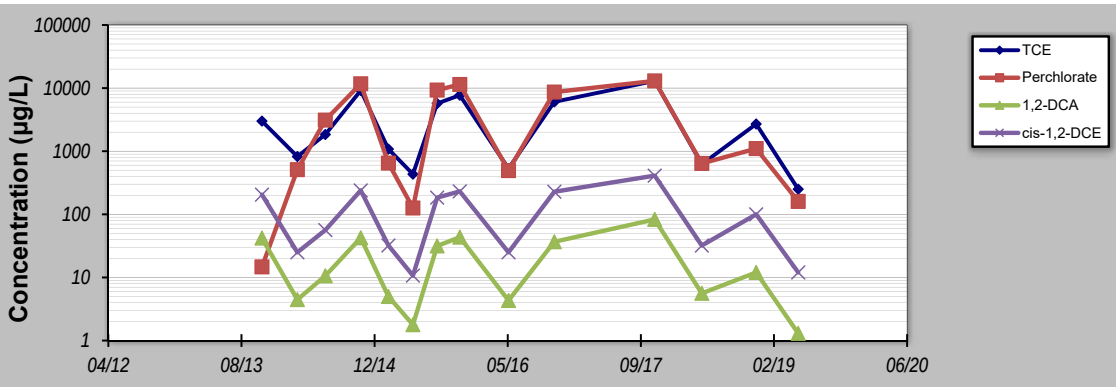
1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water* , 41(3):355-367, 2003.

DISCLAIMER: The GSI Mann-Kendall Toolkit is available "as is". Considerable care has been exercised in preparing this software product; however, no party, including without limitation GSI Environmental Inc., makes any representation or warranty regarding the accuracy, correctness, or completeness of the information contained herein, and no such party shall be liable for any direct, indirect, consequential, incidental or other damages resulting from the use of this product or the information contained herein. Information in this publication is subject to change without notice. GSI Environmental Inc., disclaims any responsibility or obligation to update the information contained herein.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	15-Oct-19	Job ID:	501032
Facility Name:	LHAAP-50	Constituent:	50WW13
Conducted By:	Robert Mayer	Concentration Units:	µg/L

Sampling Point ID:	TCE	Perchlorate	1,2-DCA	cis-1,2-DCE			
Sampling Event	Sampling Date	50WW13 CONCENTRATION (µg/L)						
1	30-Oct-13	3,000	15	42	205			
2	12-Mar-14	823	510	4	25			
3	25-Jun-14	1,840	3,110	11	56			
4	5-Nov-14	9,150	11,700	42	239			
5	17-Feb-15	1,080	648	5	32			
6	20-May-15	433	126	2	11			
7	19-Aug-15	5,700	9,300	32	184			
8	12-Nov-15	7,710	11,400	43	231			
9	13-May-16	529	493	4	25			
10	1-Nov-16	6,050	8,650	37	228			
11	13-Nov-17	13,000	13,000	83	410			
12	9-May-18	620	640	6	32			
13	29-Nov-18	2,700	1,100	12	100			
14	6-May-19	250	160	1.3	12			
15								
16								
17								
18								
19								
20								
Coefficient of Variation:		1.05	1.19	1.04	0.96			
Mann-Kendall Statistic (S):		-7	9	-5	-4			
Confidence Factor:		62.6%	66.6%	58.5%	56.4%			
Concentration Trend:		No Trend	No Trend	No Trend	Stable			



Notes:

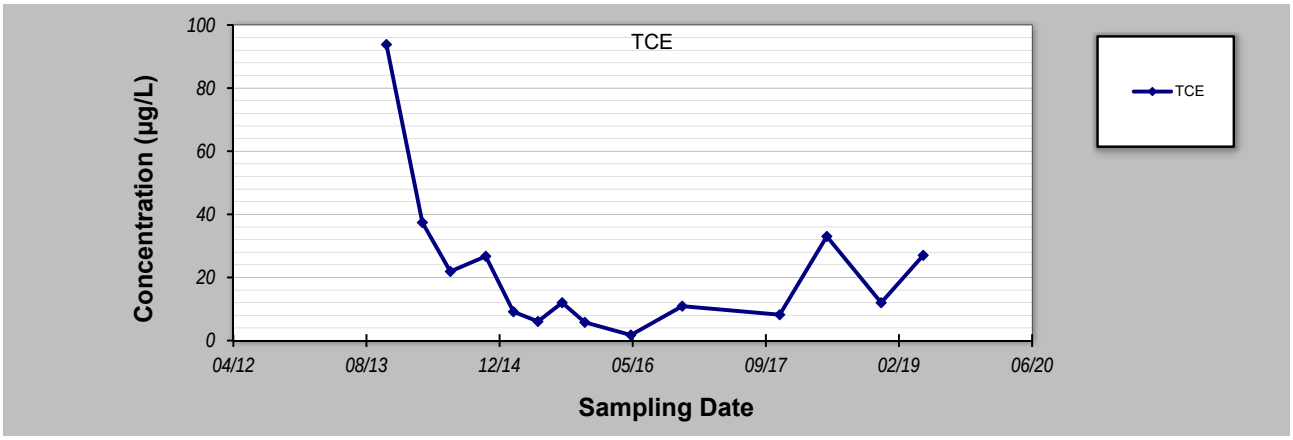
1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water* , 41(3):355-367, 2003.

DISCLAIMER: The GSI Mann-Kendall Toolkit is available "as is". Considerable care has been exercised in preparing this software product; however, no party, including without limitation GSI Environmental Inc., makes any representation or warranty regarding the accuracy, correctness, or completeness of the information contained herein, and no such party shall be liable for any direct, indirect, consequential, incidental or other damages resulting from the use of this product or the information contained herein. Information in this publication is subject to change without notice. GSI Environmental Inc., disclaims any responsibility or obligation to update the information contained herein.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	15-Oct-19	Job ID:	501032
Facility Name:	LHAAP-50	Constituent:	50WW14
Conducted By:	Robert Mayer	Concentration Units:	µg/L
Sampling Point ID:	TCE		

Sampling Event	Sampling Date	50WW14 CONCENTRATION (µg/L)
1	28-Oct-13	93.8
2	12-Mar-14	37.4
3	25-Jun-14	21.9
4	5-Nov-14	26.7
5	17-Feb-15	9.14
6	20-May-15	6.05
7	19-Aug-15	12
8	12-Nov-15	5.78
9	3-May-16	1.75
10	12-Nov-16	10.9
11	13-Nov-17	8.2
12	9-May-18	33
13	29-Nov-18	12
14	6-May-19	27
15		
16		
17		
18		
19		
20		
Coefficient of Variation:		1.08
Mann-Kendall Statistic (S):		-20
Confidence Factor:		84.8%
Concentration Trend:		No Trend



Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water* , 41(3):355-367, 2003.

DISCLAIMER: The GSI Mann-Kendall Toolkit is available "as is". Considerable care has been exercised in preparing this software product; however, no party, including without limitation GSI Environmental Inc., makes any representation or warranty regarding the accuracy, correctness, or completeness of the information contained herein, and no such party shall be liable for any direct, indirect, consequential, incidental or other damages resulting from the use of this product or the information contained herein. Information in this publication is subject to change without notice. GSI Environmental Inc., disclaims any responsibility or obligation to update the information contained herein.

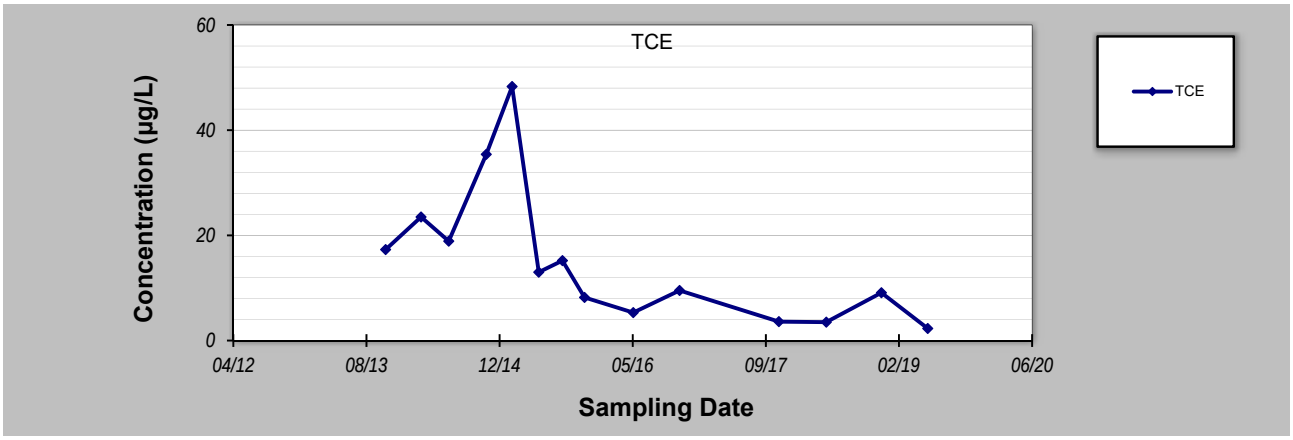
GSI Environmental Inc., www.gsi-net.com

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	21-Jan-20	Job ID:	501032
Facility Name:	LHAAP-50	Constituent:	50WW15
Conducted By:	Robert Mayer	Concentration Units:	µg/L

Sampling Point ID: TCE

Sampling Event	Sampling Date	50WW15 CONCENTRATION (µg/L)
1	25-Oct-13	17.3
2	7-Mar-14	23.5
3	19-Jun-14	18.9
4	7-Nov-14	35.4
5	12-Feb-15	48.3
6	23-May-15	13
7	20-Aug-15	15.2
8	11-Nov-15	8.2
9	12-May-16	5.32
10	2-Nov-16	9.52
11	10-Nov-17	3.6
12	7-May-18	3.5
13	30-Nov-18	9.1
14	23-May-19	2.3
15		
16		
17		
18		
19		
20		
Coefficient of Variation:		0.86
Mann-Kendall Statistic (S):		-59
Confidence Factor:		100.0%
Concentration Trend:		Decreasing



Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water* , 41(3):355-367, 2003.

DISCLAIMER: The GSI Mann-Kendall Toolkit is available "as is". Considerable care has been exercised in preparing this software product; however, no party, including without limitation GSI Environmental Inc., makes any representation or warranty regarding the accuracy, correctness, or completeness of the information contained herein, and no such party shall be liable for any direct, indirect, consequential, incidental or other damages resulting from the use of this product or the information contained herein. Information in this publication is subject to change without notice. GSI Environmental Inc., disclaims any responsibility or obligation to update the information contained herein.

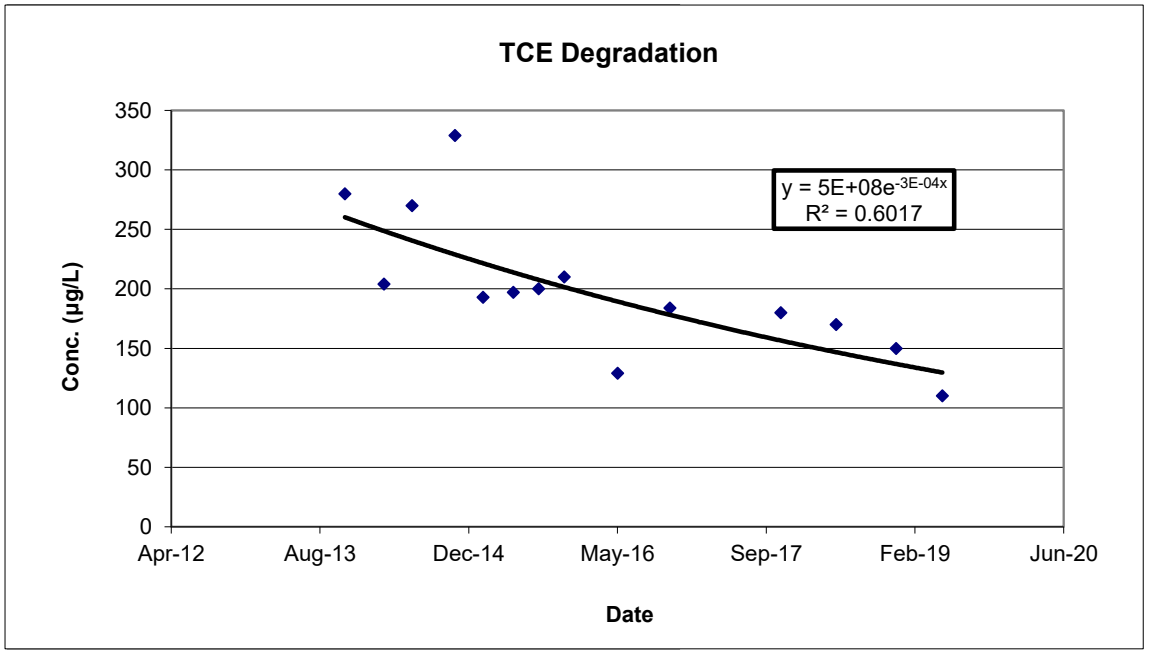
GSI Environmental Inc., www.gsi-net.com

Appendix F

Regression Analysis

Figure F-1
Time-Dependent Attenuation Rate Constant and Estimated Cleanup Time
50WW05

Date	TCE in 50WW05 (µg/L)
11/6/2013	280
3/17/2014	204
6/20/2014	270
11/11/2014	329
2/13/2015	193
5/26/2015	197
8/19/2015	200
11/13/2015	210
5/11/2016	129
11/3/2016	184
11/10/17	180
05/15/18	170
12/03/18	150
05/07/19	110



Chemical: TCE Well ID	Attenuation Rate Constant (day^{-1})	Attenuation Half-life (days)	Attenuation Half-life (years)	Current Conc. (µg/L)	Target Concentration for TCE (µg/L)	Estimated Cleanup Time (years)
50WW05	0.0003	2310.5	6.3	110	5	28.2

Notes:

The estimated cleanup time was calculated as the time it would take the most recent detected TCE concentration to reach the MCL using the site-specific attenuation rate, and assuming first order degradation kinetics.

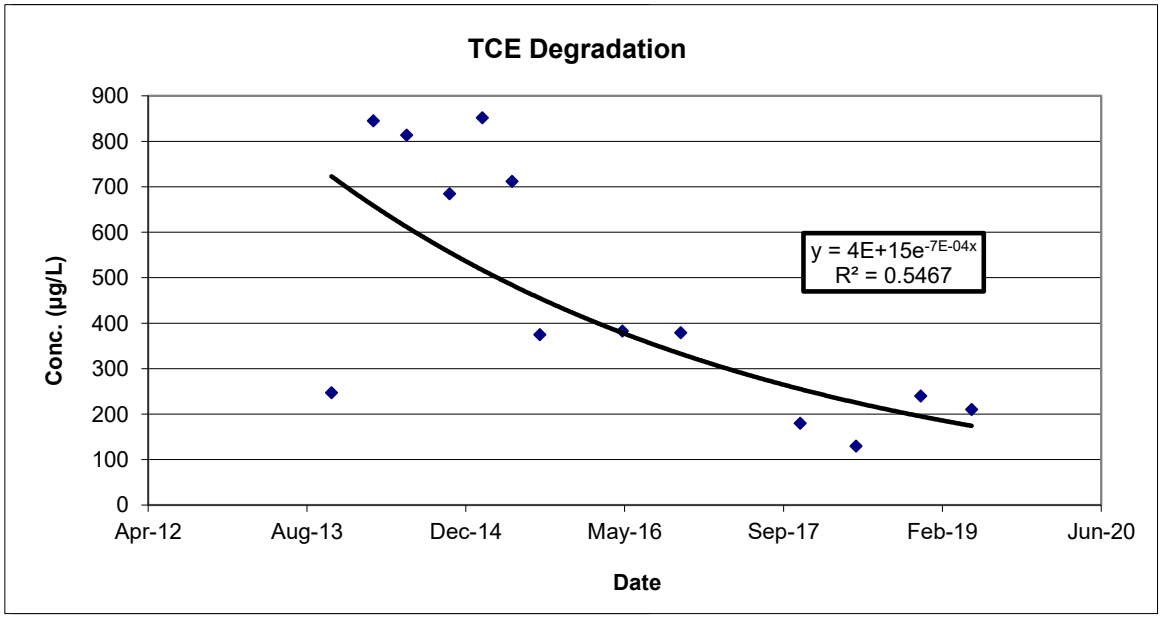
µg/L - micrograms per liter

MCL - maximum contaminant level

TCE - trichloroethene

Figure F-2
Time-Dependent Attenuation Rate Constant and Estimated Cleanup Time
50WW08

Sampling Date	TCE in 50WW08 (µg/L)
10/30/2013	247
3/11/2014	845
6/24/2014	814
11/6/2014	685
2/17/2015	852
5/21/2015	712
8/17/2015	375
5/3/2016	383
11/2/2016	379
11/13/2017	180
5/8/2018	130
11/28/2018	240
5/7/2019	210



Chemical: TCE Well ID	Attenuation Rate Constant (day^{-1})	Attenuation Half-life (days)	Attenuation Half-life (years)	Current Conc. (µg/L)	Target Concentration for TCE (µg/L)	Estimated Cleanup Time (years)
50WW08	0.0007	990.2	2.7	210	5	14.6

Notes:

The estimated cleanup time was calculated as the time it would take the most recent detected TCE concentration to reach the MCL using the site-specific attenuation rate, and assuming first order degradation kinetics.

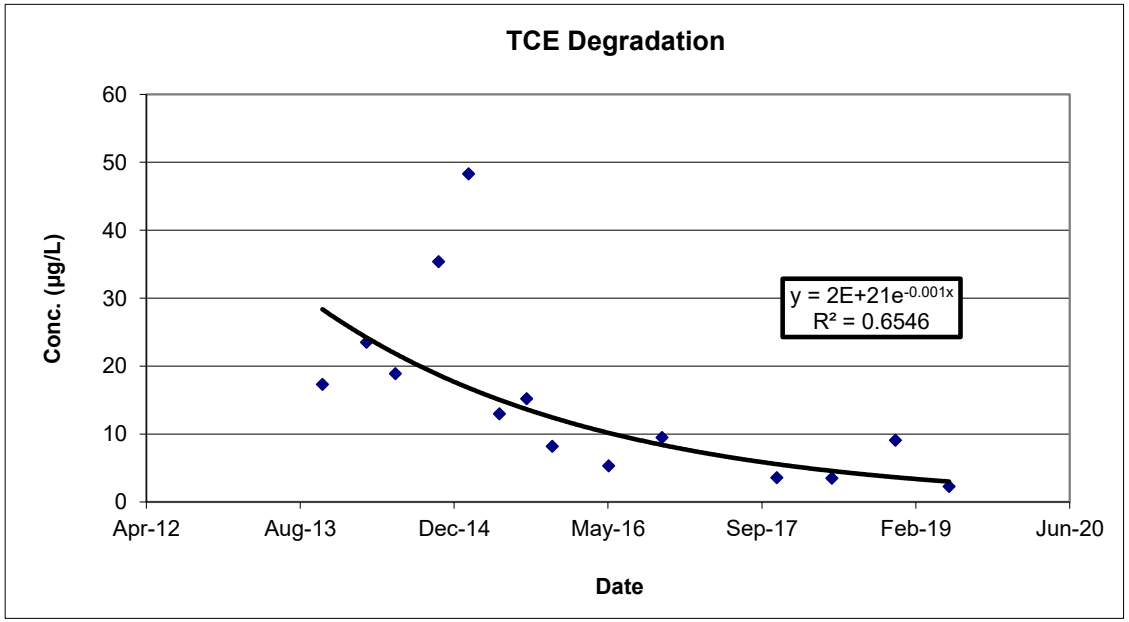
µg/L - micrograms per liter

MCL - maximum contaminant level

TCE - trichloroethene

Figure F-3
Time-Dependent Attenuation Rate Constant and Estimated Cleanup Time
50WW015

Sampling Date	TCE in 50WW15 (µg/L)
10/25/2013	17.3
3/17/2014	23.5
6/19/2014	18.9
11/7/2014	35.4
2/12/2015	48.3
5/23/2015	13
8/20/2015	15.2
11/11/2015	8.2
5/12/2016	5.32
11/2/2016	9.52
11/10/2017	3.6
5/7/2018	3.5
11/30/2018	9.1
5/23/2019	2.3



Chemical: TCE Well ID	Attenuation Rate Constant (day^{-1})	Attenuation Half-life (days)	Attenuation Half-life (years)	Current Conc. (µg/L)	Target Concentration for TCE (µg/L)	Estimated Cleanup Time (years)
50WW015	0.0010	693.1	1.9	2.3	5	0.0

Notes:

The estimated cleanup time was calculated as the time it would take the most recent detected TCE concentration to reach the MCL using the site-specific attenuation rate, and assuming first order degradation kinetics.

µg/L - micrograms per liter

MCL - maximum contaminant level

TCE - trichloroethene

10515 Research Drive
Knoxville, TN 37932
Phone: (865) 573-8188
Fax: (865) 573-8133

Client: Kim Napier
APTIM
2410 Cherahala Blvd
Knoxville, TN 37932
United States

Phone:

Fax:

Identifier: 093PK **Date Rec:** 11/29/2018 **Report Date:** 12/06/2018

Client Project #: 501032 **Client Project Name:** Longhorn AAP - LHAAP-50

Purchase Order #: 204818

Analysis Requested: CENSUS, Miscellaneous

Reviewed By:



NOTICE: This report is intended only for the addressee shown above and may contain confidential or privileged information. If the recipient of this material is not the intended recipient or if you have received this in error, please notify Microbial Insights, Inc. immediately. The data and other information in this report represent only the sample(s) analyzed and are rendered upon condition that it is not to be reproduced without approval from Microbial Insights, Inc. Thank you for your cooperation.

MICROBIAL INSIGHTS, INC.

10515 Research Dr., Knoxville, TN 37932
Tel. (865) 573-8188 Fax. (865) 573-8133

CENSUS

Client: **APTIM**
Project: Longhorn AAP - LHAAP-50

MI Project Number: **093PK**
Date Received: 11/29/2018

Sample Information

Client Sample ID:		**50WW16-181128**	**50WW11-181128**	**50WW12-181128**	**50WW08-181128**	**50WW06-181129**
Sample Date:		11/28/2018	11/28/2018	11/28/2018	11/28/2018	11/29/2018
Units:		cells/mL	cells/mL	cells/mL	cells/mL	cells/mL
Analyst/Reviewer:		JS	JS	JS	JS	JS
Dechlorinating Bacteria						
Dehalococcoides	*DHC*	**4.50E+00**	**4.00E-01 (J)**	<5.00E-01	**1.40E+00**	**3.00E-01 (J)**

Legend:
NA = Not Analyzed NS = Not Sampled J = Estimated gene copies below PQL but above LQL I = Inhibited
< = Result not detected

MICROBIAL INSIGHTS, INC.

10515 Research Dr., Knoxville, TN 37932
Tel. (865) 573-8188 Fax. (865) 573-8133

CENSUS

Client: **APTIM**
Project: Longhorn AAP - LHAAP-50

MI Project Number: **093PK**
Date Received: 11/29/2018

Sample Information

Client Sample ID:		**50WW13-181129**	**50WW14-181129**	**50WW23-181203**	**50WW22-181203**
Sample Date:		11/29/2018	11/29/2018	12/03/2018	12/03/2018
Units:		cells/mL	cells/mL	cells/mL	cells/mL
Analyst/Reviewer:		JS	JS	JS	JS
Dechlorinating Bacteria					
Dehalococcoides	*DHC*	**2.90E+00**	**3.10E+00**	<5.00E-01	<5.00E-01

Legend:
NA = Not Analyzed NS = Not Sampled J = Estimated gene copies below PQL but above LQL I = Inhibited
< = Result not detected

Quality Assurance/Quality Control Data

Samples Received **11/29/2018**

Component	Date Prepared	Date Analyzed	Arrival Temperature	Positive Control	Extraction Blank	Negative Control
DHC	11/29/2018	12/06/2018	0 °C	107%	non-detect	non-detect

Samples Received **11/30/2018**

Component	Date Prepared	Date Analyzed	Arrival Temperature	Positive Control	Extraction Blank	Negative Control
DHC	11/30/2018	12/06/2018	0 °C	105%	non-detect	non-detect

Samples Received **12/4/2018**

Component	Date Prepared	Date Analyzed	Arrival Temperature	Positive Control	Extraction Blank	Negative Control
DHC	12/04/2018	12/06/2018	1 °C	104%	non-detect	non-detect

00962782

APTIM

COC ID: 50-NOV2018-MI-1811___ TURNAROUND TIME: normal RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO			
Facility Name	Longhorn AAP			Lab Name	Microbial Insights, Inc.			Email Invoice To	FedInvoices@CBIFederalServices.com		
Project Number	501032			Lab Contact	Customer Service						
Site	LHAAP-50			Email				Email Report To	kim.napier@aptim.com		
Address	1203-B East Grand Avenue			Address	10515 Research Drive			Mail Reports To	Kim Napier		
	PMB 202							Address	2410 Cherahala Blvd.		
City	Marshall	State	TX	City	Knoxville	State	TN	City	Knoxville	State	TN
Postal Code	75670	Country	USA	Postal Code	37932	Country	USA	Postal Code	37932	Country	USA
Phone Number	713.243.7264			Phone Number	865.573.8188						
Project Manager	Praveen Srivastav							Shipping Company			

SAMPLE DETAILS / ANALYSIS REQUESTED

Sample ID/Number	Location	Start Depth	End Depth	Depth Unit	Field Matrix	Date	Time (24hr)	# Of Cont.	ANALYSIS: DHC IN Water (mi-dhc)	
50WW16-181128	LHAAP 50	20.73	20.92		WG	11/28/18	0845	1	X	093pK 1
50WW11-181128	LHAAP 50	21.85	22.06		WG	11/28/18	1105	1	X	2
50WW12-181128	LHAAP 50	19.71	19.95		WG	11/28/18	1220	1	X	3
50WW08-181128	LHAAP 50	23.26	23.46		WG	11/28/18	1325	1	X	4

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
	Scott Blessing / BHATE	11/28/18 1430	MI	11/29/18 1020

00962783

APTIM

COC ID: 50-NOV2018-MI-181129

TURNAROUND TIME: normal

RUSH:

PROJECT/CLIENT INFO			
Facility Name	Longhorn AAP		
Project Number	501032		
Site	LHAAP-50		
Address	1203-B East Grand Avenue		
	PMB 202		
City	Marshall	State	TX
Postal Code	75670	Country	USA
Phone Number	713.243.7264		
Project Manager	Praveen Srivastav		

LABORATORY			
Lab Name	Microbial Insights, Inc.		
Lab Contact	Customer Service		
Email			
Address	10515 Research Drive		
City	Knoxville	State	TN
Postal Code	37932	Country	USA
Phone Number	865.573.8188		

OTHER INFO			
Email Invoice To	FedInvoices@CBIFederalServices.com		
Email Report To	kim.napier@aptim.com		
Mail Reports To	Kim Napier		
Address	2410 Cherahala Blvd.		
City	Knoxville	State	TN
Postal Code	37932	Country	USA
Shipping Company	FedEx		

SAMPLE DETAILS / ANALYSIS REQUESTED

Sample ID/Number	Location	Start Depth	End Depth	Depth Unit	Field Matrix	Date	Time (24hr)	# Of Cont.	ANALYSIS: DHC IN Water (mi-dhc)										
50WW06-181129	50WW06				WG	11/29/18	1525	1	✓							093PK	5		
50WW13-181129	50WW13				WG	11/29/18	1115	1	✓								6		
50WW14-181129	50WW14					11/29/18	1320	1	✓								7		

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
	Wesley Grace	11/29/18 1900	MI	11/30/18 1055

00962784

APTIM

COC ID: 50-NOV2018-MI-1811___ TURNAROUND TIME: normal RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO			
Facility Name	Longhorn AAP			Lab Name	Microbial Insights, Inc.			Email Invoice To	FedInvoices@CBIFederalServices.com		
Project Number	501032			Lab Contact	Customer Service						
Site	LHAAP-50			Email				Email Report To	kim.napier@aptim.com		
Address	1203-B East Grand Avenue			Address	10515 Research Drive			Mail Reports To	Kim Napier		
	PMB 202							Address	2410 Cherahala Blvd.		
City	Marshall	State	TX	City	Knoxville	State	TN	City	Knoxville	State	TN
Postal Code	75670	Country	USA	Postal Code	37932	Country	USA	Postal Code	37932	Country	USA
Phone Number	713.243.7264			Phone Number	865.573.8188						
Project Manager	Praveen Srivastav							Shipping Company			

SAMPLE DETAILS / ANALYSIS REQUESTED

Sample ID/Number	Location	Start Depth	End Depth	Depth Unit	Field Matrix	Date	Time (24hr)	# Of Cont.	ANALYSIS: DHC IN Water (mi-dhc)								
50ww23-181203	LHAAP50	24.77	25.01		WG	12/3/18	0915	1	X						093PK8		
50ww22-181203	LHAAP50	25.97	26.21		WG	12/3/18	1015	1	X							9	

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
	Scott Bessinger/BHATT	12/3/18 1430	MI	12/4/18 1020

How to Use Estimated Percentile Ranks from the Microbial Insights Database

The MI Database and Client Portal

The Microbial Insights Database is the largest collection of field concentrations of key microorganisms and functional genes currently containing qPCR and QuantArray results for more than 32,000 unique groundwater, soil, and sediment samples from all 50 states and 33 countries worldwide. Driven by field samples, the database reflects the impacts of common contaminants, geochemical conditions, and site management practices on critical microbial populations.

With your report, you received a passcode enabling you to retrieve estimates of the percentile ranks of your results based on those compiled in the MI database at no additional charge. When accessing the database, you will be asked to provide background information about the sample (e.g. contaminant concentrations) to aid in understanding the links between environmental conditions and microbial populations. As with all client information provided to MI, site specific data will be treated as confidential.

Is that low, medium or high?

In practice, biodegradation depends not just on the presence but the actual concentrations of the contaminant degrading microorganisms. Simply put, qPCR and QuantArray results demonstrating high concentrations of target microorganisms or functional genes suggest in situ selection, enrichment and growth of those specific contaminant degraders and therefore a greater probability that monitored natural attenuation (MNA) or bioremediation will be successful.

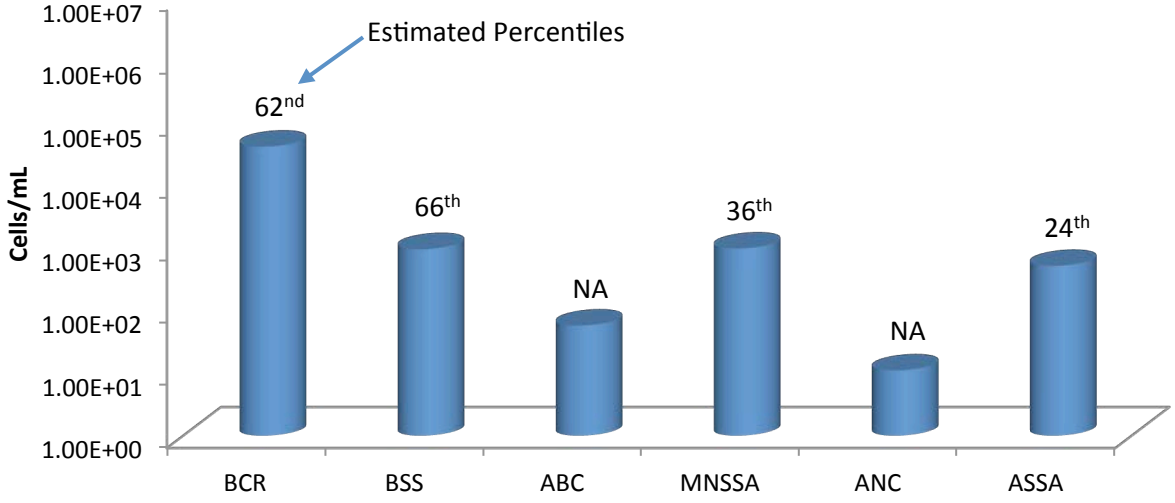
Is that a low, medium, or high concentration? The estimated percentile ranks retrieved from the MI Database answer that question by comparing your qPCR and QuantArray results to those of the literally thousands of other environmental samples submitted to MI for analysis over the last 20+ years.

Using the Estimated Percentile - Interpretation Examples

MNA Assessment – Petroleum Hydrocarbon Site:

Whenever possible, interpretation of qPCR and QuantArray results should include comparisons between samples obtained from background and impacted wells. The estimated percentile ranks however provide an additional avenue for comparison and evaluation of treatment options as shown below.

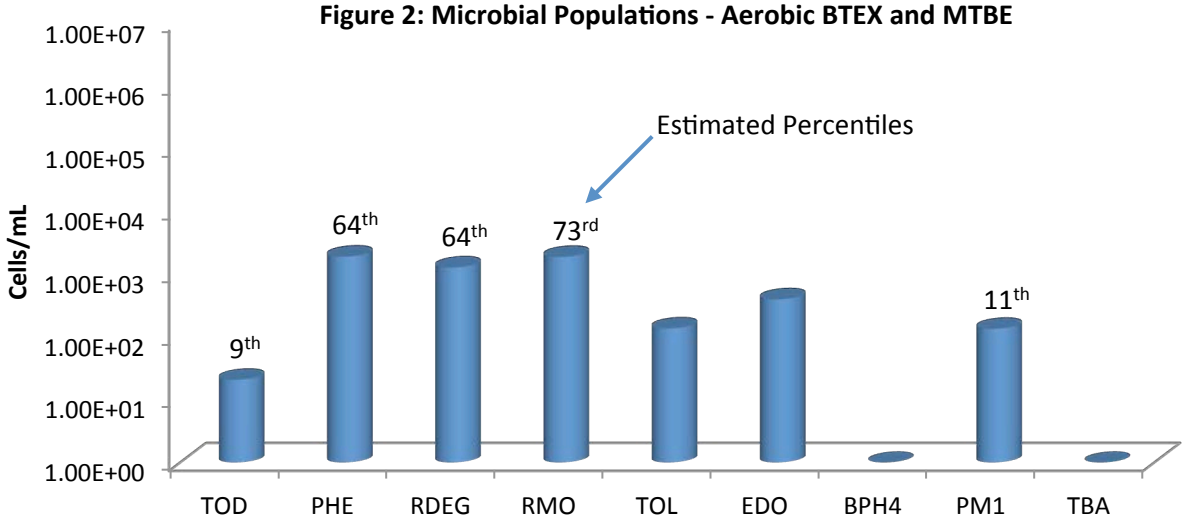
Figure 1: Microbial Populations - Anaerobic BTEX and PAHs



Anaerobic BTEX and PAH Biodegradation (Figure 1):

- With moderate concentrations of functional genes involved in anaerobic BTEX metabolism detected, the QuantArray-Petro® results were encouraging in terms of evaluating biodegradation potential under existing site conditions.
- More specifically, benzylsuccinate synthase (BSS) was detected on the order of nearly 10^3 cells/mL indicating the presence of a substantial population (66^{th} percentile) capable of anaerobic biodegradation of toluene and other alkyl substituted benzenes.
- Naphthyl-2-methylsuccinate synthase (MNSSA) and alkylsuccinate synthase (ASSA) genes were also detected indicating the potential for anaerobic biodegradation of 2-methylnaphthalene and normal alkanes.
- The concentration of MNSSA genes would be considered modest with an estimated percentile of 36^{th}.
- While the percentile rank for MNSSA would be "below average", a number of additional factors should be considered.
    - First, anaerobic hydrocarbon degraders are less prevalent than aerobic BTEX degraders and overall detection frequencies for many genes involved in anaerobic hydrocarbon biodegradation are less than 50%.
    - Therefore, the detection of genes like BSS, MNSSA, ASSA, anaerobic benzene carboxylase (ABC), and anaerobic naphthalene carboxylase (ANC) even at low concentrations is certainly noteworthy and inherently "better than average".
    - The estimated percentiles for all assays are based only on samples where the concentration of the target gene was greater than the practical quantitation limit (PQL).
    - For less commonly detected targets like many of the genes involved in anaerobic hydrocarbon biodegradation this is an especially important consideration.
    - Excluding samples where a gene target is below the PQL ensured that the median concentrations of less commonly detected targets would not be unduly biased low by the fact that the gene is not detected in most samples.
- Anaerobic benzene carboxylase (ABC) and naphthalene carboxylase (ANC) genes were also detected indicating the presence of bacterial populations capable of anaerobic biodegradation of benzene and naphthalene.
- For newly identified genes like ABC and ANC, estimated percentile ranks are not yet available due to the limited number of field samples that have been analyzed to date.
- However, like MNSSA and other genes involved in anaerobic hydrocarbon biodegradation, ABC and ANC detection frequencies are relatively low so the detection of these genes even at low concentrations should be considered when evaluating biodegradation potential under existing site conditions.

Figure 2: Microbial Populations - Aerobic BTEX and MTBE



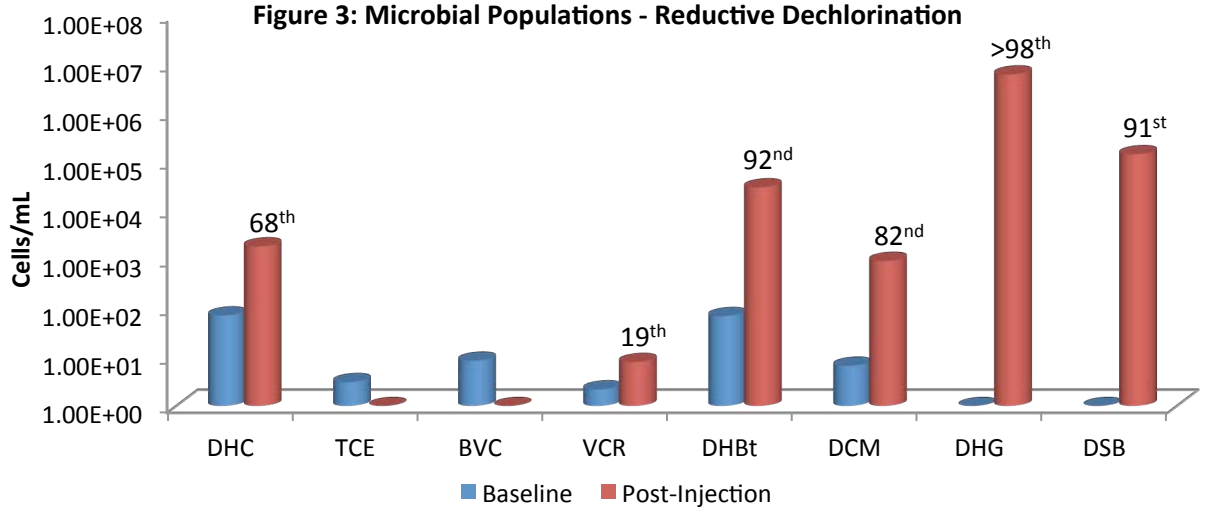
Aerobic BTEX and MTBE Biodegradation (Figure 2):

- With growing evidence that aromatic oxygenases function at low dissolved oxygen concentrations, aerobic BTEX biodegradation pathways should also be evaluated when considering MNA.
- Again, the QuantArray-Petro results were encouraging – genes encoding the first step in multiple pathways for aerobic BTEX biodegradation were detected indicating the presence of a diverse population of aerobic BTEX degraders.
- However, aerobic BTEX degraders are often considered ubiquitous. Therefore answering the question "Is that low, medium or high?" becomes especially important when evaluating aerobic BTEX biodegradation at petroleum hydrocarbon sites.
- In this case, the estimated percentile ranks of the concentrations of toluene/benzene monooxygenase (RMO and RDEG) and phenol hydroxylase (PHE) genes ranged from the 64th to 73rd percentile.
- In other words, the concentrations of RMO, RDEG, and PHE detected in this groundwater sample were greater than the concentrations detected in 64% to 73% of all other groundwater samples where these genes were analyzed and detected above the PQL.
- Aerobic BTEX degraders are common in the environment, but in this sample concentrations of toluene/benzene monooxygenase genes could be viewed as "better than average" when compared to the MI Database.

Biostimulation – Chlorinated Solvent Site:

Whenever possible, interpretation of qPCR and QuantArray results should include comparisons between baseline and post-injection monitoring events as shown below (Figure 3). The estimated percentile ranks however provide an additional avenue for comparison and evaluation of remedy performance.

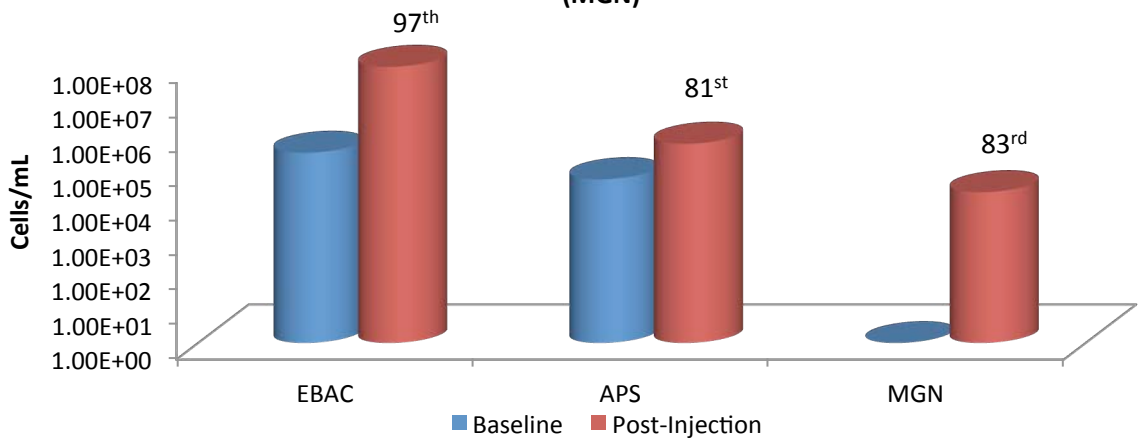
Figure 3: Microbial Populations - Reductive Dechlorination



- During the baseline groundwater sampling event, *Dehalococcoides* and vinyl chloride reductase genes were detected indicating the potential for complete reductive dechlorination of PCE and TCE to ethene.
- However, the *Dehalococcoides* concentration was well below the 10^4 cells/mL recommended by Lu et al. (2006) for generally effective rates of reductive dechlorination.
- Based on qPCR results as well as traditional groundwater monitoring, biostimulation with electron donor addition was selected as the site management plan.
- By the first monitoring event after injection, populations of halorespiring bacteria had increased substantially in response to electron donor addition.
    - *Dehalobacter* populations increased by more than two orders of magnitude to post-injection concentrations greater than 10^4 cells/mL (92^{nd} percentile).
    - *Dehalogenimonas* (10^6 cells/mL) and *Desulfitobacterium* (10^5 cells/mL) which had not been detected prior electron donor addition were present at concentrations greater than observed in over 90% of other groundwater samples where these halorespiring bacteria were detected.
- After injection, *Dehalococcoides* populations increased by more than an order of magnitude to a concentration of over 10^3 cells/mL (68^{th} percentile) demonstrating growth of this key group of halorespiring bacteria.
- Despite a substantial increase and a "better than average" concentration, the *Dehalococcoides* population was still below the 10^4 cells/mL threshold and vinyl chloride reductase gene copies were low (19^{th} percentile).
    - In terms of electron donors and acceptors, the metabolic capabilities of *Dehalococcoides* are rather specialized (hydrogen utilizing obligate halorespiring bacteria) so the median concentration is low. With a low median concentration across the database, a "better than average" *Dehalococcoides* concentration in a given sample may not exceed the 10^4 cells/mL threshold established for effective reductive dechlorination (Lu et al. 2006) and ethene production (Microbial Insights, unpublished data).

- In this case, the initial growth of *Dehalococcoides* was substantial but may have been somewhat hindered by competition with sulfate reducing bacteria (Figure 4 below).
    - The baseline population of sulfate reducing bacteria was moderate (10^4 cells/mL; 63rd percentile). Consistent with an observed decreased in dissolved sulfate concentrations, populations of sulfate reducing bacteria increased and were detected at a relatively high concentration (81st percentile) after electron donor addition.
    - After injection, methanogen populations also increased to a relatively high concentration (83rd percentile) suggesting generation of methanogenic conditions.
- With sulfate depletion and generation of highly anaerobic conditions more conducive to reductive dechlorination, *Dehalococcoides* populations may continue to increase and exceed the 10^4 *Dehalococcoides* cells/mL threshold in subsequent monitoring events.
- Overall, QuantArray analysis conclusively demonstrated that electron donor addition stimulated growth of halorespiring bacteria with the estimated percentiles retrieved from the MI Database providing the "low, medium or high" perspective to the observed changes in microbial populations.

Figure 4: Total Bacteria (EBAC), Sulfate Reducering Bacteria (APS) and Methanogens (MGN)



References

Lu, X., J.T. Wilson, and D.H. Kampbell. 2006. Relationship between *Dehalococcoides* DNA in ground water and rates of reductive dechlorination at field scale. *Water Research* 40 no. 16: 3131-3140.

HS18111440 Cover Page

ALS WO# HS18111440

ALS Environmental
ALS Group USA, Corp
1317 South 13th Avenue
Kelso, WA 98626
T : +1 360 577 7222
F : +1 360 636 1068
www.alsglobal.com

Table of Contents

HS18111440 Cover Page
- CoverPage
- HS18111440 Longhorn Army Ammunition Plant LHAAP50 Final II
  - CoverLetter
  - Sample Summary
  - CaseNarrative
  - 50WW16-181128
  - 50WW11-181128
  - 50WW11-181128-FD
  - 50WW12-181128
  - 50WW08-181128
  - Trip Blank
  - Weight/Volume Log
  - Dates Report
  - QC
  - Acronyms
  - Certifications
  - SampleReceiptCheckList
  - COC
  - HS18111440 ALS Kelso Report K1811673
  - HS18111440 ALS Salt Lake City Report Combined Report 1833461
  - HS18111440 ALS Simi Valley EDD P1806583 Tier IV

Table of Contents (continued)

HS18111440 8260 Raw Data
HS18111440 Longhorn Army Ammunition Plant LHAAP50
- Form 11 - ICPMS05 Internal Standard Association
- Form 12 - ICPMS05_328925 Preparation Log
- Form 12 - ICPMS05_328971 Preparation Log
- Form 13 - ICPMS05_328925 Run Log
- Form 13 - ICPMS05_328971 Run Log
- Form 2 - ICPMS05_328925 CCV
- Form 2 - ICPMS05_328971 CCV
- Form 3 - ICPMS05_328925 CCB
- Form 3 - ICPMS05_328971 CCB
- Form 4 - ICPMS05_328925 ICSA
- Form 4 - ICPMS05_328971 ICSA
- Form 5A - ICPMS05_328925 MS
- Form 5A - ICPMS05_328971 MS
- Form 5B - ICPMS05_328925 PDS
- Form 5B - ICPMS05_328971 PDS
- Form 7 - ICPMS05_328925 LCS
- Form 7 - ICPMS05_328971 LCS
- Form 8 - ICPMS05_328925 SD
- Form 8 - ICPMS05_328971 SD

HS18111440 Wet Chem Raw Data

10450 Stancliff Rd. Suite 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887
www.alsglobal.com

WorkOrder: HS18111440

Longhorn Army Ammunition Plant LHAAP-50

Aptim Environmental & Infrastucture, Inc.

Susan Huang
2500 City West Blvd., Suite 1700
Houston TX 77042

28-Jan-2019

HS18111440 Longhorn Army Ammunition Plant
LHAAP50 Final II

ALS WO# HS18111440

10450 Stancliff Rd. Suite 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887

December 17, 2018

Susan Huang
Aptim Environmental & Infrastucture, Inc.
2500 City West Blvd., Suite 1700
Houston, TX 77042

Work Order: **HS18111440**

Laboratory Results for: **Longhorn Army Ammunition Plant LHAAP-50**

Dear Susan,

ALS Environmental received 6 sample(s) on Nov 29, 2018 for the analysis presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

Generated By: JUMOKE.LAWAL
RJ Modashia
Project Manager

ALS Houston, US Date: 17-Dec-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant LHAAP-50
Work Order: HS18111440

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS18111440-01	50WW16-181128	Groundwater		28-Nov-2018 08:45	29-Nov-2018 10:20	☐
HS18111440-02	50WW11-181128	Groundwater		28-Nov-2018 11:05	29-Nov-2018 10:20	☐
HS18111440-03	50WW11-181128-FD	Groundwater		28-Nov-2018 11:05	29-Nov-2018 10:20	☐
HS18111440-04	50WW12-181128	Groundwater		28-Nov-2018 12:20	29-Nov-2018 10:20	☐
HS18111440-05	50WW08-181128	Groundwater		28-Nov-2018 13:25	29-Nov-2018 10:20	☐
HS18111440-06	Trip Blank	Water	ALS 071918-80	28-Nov-2018 00:00	29-Nov-2018 10:20	☐

ALS Houston, US Date: 17-Dec-18

Client: Aptim Environmental & Infrastucture, Inc. **CASE NARRATIVE**
Project: Longhorn Army Ammunition Plant LHAAP-50
Work Order:

Work Order Comments

- The analysis for Methane, Methene, Ethane and CO2 by RSK175 was subcontracted to ALS Simi Valley, CA. Final report attached.
- The analysis for Perchlorate was subcontracted to ALS Salt Lake City, UT. Final report attached.

Work Order Comments

- The analysis for TOC was subcontracted to ALS Kelso , WA. Final report attached

GCMS Volatiles by Method SW8260

Batch ID: R328510

Sample ID: 50WW16-181128(HS18111440-01MS)

- MS/MSD recovered outside the control limits for select target compounds.

Metals by Method SW6020

Batch ID: 135349

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

Batch ID: 135382

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

WetChemistry by Method E376.1

Batch ID: R328727

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

WetChemistry by Method SM2320B

Batch ID: R329027

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

WetChemistry by Method SW9056

Batch ID: R328488

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

WetChemistry by Method SM4500P E

Batch ID: 135148,135291

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

ALS Houston, US Date: 17-Dec-18

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: Longhorn Army Ammunition Plant LHAAP-50 WorkOrder:HS18111440
Sample ID: 50WW16-181128 Lab ID:HS18111440-01
Collection Date: 28-Nov-2018 08:45 Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2018 12:25
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2018 12:25
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	03-Dec-2018 12:25
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	ug/L	1	03-Dec-2018 12:25
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2018 12:25
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2018 12:25
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2018 12:25
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2018 12:25
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	03-Dec-2018 12:25
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	03-Dec-2018 12:25
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	03-Dec-2018 12:25
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2018 12:25
1,2-Dibromo-3-chloropropane	1.0	U	1.0	1.0	1.0	ug/L	1	03-Dec-2018 12:25
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2018 12:25
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	03-Dec-2018 12:25
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2018 12:25
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	03-Dec-2018 12:25
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2018 12:25
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	03-Dec-2018 12:25
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2018 12:25
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	03-Dec-2018 12:25
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2018 12:25
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	03-Dec-2018 12:25
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2018 12:25
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	03-Dec-2018 12:25
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	03-Dec-2018 12:25
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2018 12:25
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	03-Dec-2018 12:25
Acetone	2.0	U	2.0	2.0	2.0	ug/L	1	03-Dec-2018 12:25
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2018 12:25
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	03-Dec-2018 12:25
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2018 12:25
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2018 12:25
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	03-Dec-2018 12:25
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	03-Dec-2018 12:25
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	03-Dec-2018 12:25
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	03-Dec-2018 12:25
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2018 12:25
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2018 12:25

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 17-Dec-18

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: Longhorn Army Ammunition Plant LHAAP-50 WorkOrder:HS18111440
Sample ID: 50WW16-181128 Lab ID:HS18111440-01
Collection Date: 28-Nov-2018 08:45 Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: PC
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2018 12:25
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2018 12:25
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2018 12:25
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	03-Dec-2018 12:25
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2018 12:25
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2018 12:25
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2018 12:25
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2018 12:25
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	ug/L	1	03-Dec-2018 12:25
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2018 12:25
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	03-Dec-2018 12:25
Methylene chloride	0.50	U	1.0	0.50	2.0	ug/L	1	03-Dec-2018 12:25
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	03-Dec-2018 12:25
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2018 12:25
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2018 12:25
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2018 12:25
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2018 12:25
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2018 12:25
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2018 12:25
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2018 12:25
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2018 12:25
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2018 12:25
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2018 12:25
Trichloroethene	**1.9**		**0.20**	**0.50**	**1.0**	**ug/L**	1	03-Dec-2018 12:25
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2018 12:25
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2018 12:25
Surr: 1,2-Dichloroethane-d4	*94.1*			**0**	*70-126*	*%REC*	*1*	*03-Dec-2018 12:25*
Surr: 4-Bromofluorobenzene	*97.8*			**0**	*81-113*	*%REC*	*1*	*03-Dec-2018 12:25*
Surr: Dibromofluoromethane	*89.1*			**0**	*77-123*	*%REC*	*1*	*03-Dec-2018 12:25*
Surr: Toluene-d8	*105*			**0**	*82-127*	*%REC*	*1*	*03-Dec-2018 12:25*
ICP-MS METALS BY SW6020A		**Method:SW6020**				Prep:SW3010A / 07-Dec-2018		Analyst: JCJ
Iron	**0.800**		**0.0120**	**0.100**	**0.200**	**mg/L**	1	11-Dec-2018 21:53
DISSOLVED METALS BY SW6020A		**Method:SW6020 (dissolved)**				Prep:SW3010A / 10-Dec-2018		Analyst: ALR
Iron	**1.55**		**0.0120**	**0.100**	**0.200**	**mg/L**	1	10-Dec-2018 20:11
Manganese	**0.0385**		**0.000700**	**0.00100**	**0.00500**	**mg/L**	1	10-Dec-2018 20:11
SULFIDE BY E376.1		**Method:E376.1**						Analyst: KVL
Sulfide	**1.08**		**1.00**	**1.00**	**1.00**	**mg/L**	1	05-Dec-2018 18:00
ALKALINITY BY SM2320B		**Method:SM2320B**						Analyst: AJH
Alkalinity, Total (As CaCO3)	**118**		**5.00**	**5.00**	**5.00**	**mg/L**	1	11-Dec-2018 20:19

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 17-Dec-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant LHAAP-50
Sample ID: 50WW16-181128
Collection Date: 28-Nov-2018 08:45

ANALYTICAL REPORT
WorkOrder:HS18111440
Lab ID:HS18111440-01
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
PHOSPHORUS BY SM4500P E		**Method:SM4500P E**				Prep:SM4500P E / 06-Dec-2018		Analyst: MZD
Phosphorus, Total (As P)	**0.910**		**0.200**	**0.250**	**0.500**	**mg/L**	1	06-Dec-2018 15:15
ANIONS BY SW9056A		**Method:SW9056**						Analyst: KMU
Chloride	**6.58**		**0.200**	**0.500**	**0.500**	**mg/L**	1	30-Nov-2018 00:49
Nitrogen, Nitrate (As N)	0.500	U	0.0300	0.500	0.100	mg/L	1	30-Nov-2018 00:49
Nitrogen, Nitrite (As N)	0.100	U	0.0300	0.100	0.100	mg/L	1	30-Nov-2018 00:49
Sulfate	**33.6**		**0.200**	**0.500**	**0.500**	**mg/L**	1	30-Nov-2018 00:49
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	13-Dec-2018 16:53
SUBCONTRACT ANALYSIS - RSK		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	11-Dec-2018 16:56
SUBCONTRACT ANALYSIS - TOC ANALYSIS		**Method:NA**						Analyst: SUBK
Subcontract Analysis	See Attached		0	0		NA	1	17-Dec-2018 16:04

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 17-Dec-18

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: Longhorn Army Ammunition Plant LHAAP-50 WorkOrder:HS18111440
Sample ID: 50WW11-181128 Lab ID:HS18111440-02
Collection Date: 28-Nov-2018 11:05 Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2018 13:40
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2018 13:40
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	03-Dec-2018 13:40
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	ug/L	1	03-Dec-2018 13:40
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2018 13:40
1,1-Dichloroethane	**1.3**		**0.20**	**0.50**	**1.0**	**ug/L**	1	03-Dec-2018 13:40
1,1-Dichloroethene	**5.5**		**0.20**	**0.50**	**1.0**	**ug/L**	1	03-Dec-2018 13:40
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2018 13:40
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	03-Dec-2018 13:40
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	03-Dec-2018 13:40
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	03-Dec-2018 13:40
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2018 13:40
1,2-Dibromo-3-chloropropane	1.0	U	1.0	1.0	1.0	ug/L	1	03-Dec-2018 13:40
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2018 13:40
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	03-Dec-2018 13:40
1,2-Dichloroethane	**5.6**		**0.20**	**0.50**	**1.0**	**ug/L**	1	03-Dec-2018 13:40
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	03-Dec-2018 13:40
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2018 13:40
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	03-Dec-2018 13:40
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2018 13:40
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	03-Dec-2018 13:40
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2018 13:40
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	03-Dec-2018 13:40
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2018 13:40
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	03-Dec-2018 13:40
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	03-Dec-2018 13:40
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2018 13:40
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	03-Dec-2018 13:40
Acetone	2.0	U	2.0	2.0	2.0	ug/L	1	03-Dec-2018 13:40
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2018 13:40
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	03-Dec-2018 13:40
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2018 13:40
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2018 13:40
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	03-Dec-2018 13:40
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	03-Dec-2018 13:40
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	03-Dec-2018 13:40
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	03-Dec-2018 13:40
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2018 13:40
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2018 13:40

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 17-Dec-18

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: Longhorn Army Ammunition Plant LHAAP-50 WorkOrder:HS18111440
Sample ID: 50WW11-181128 Lab ID:HS18111440-02
Collection Date: 28-Nov-2018 11:05 Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: PC
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2018 13:40
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2018 13:40
cis-1,2-Dichloroethene	**18**		**0.20**	**0.50**	**1.0**	**ug/L**	1	03-Dec-2018 13:40
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	03-Dec-2018 13:40
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2018 13:40
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2018 13:40
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2018 13:40
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2018 13:40
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	ug/L	1	03-Dec-2018 13:40
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2018 13:40
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	03-Dec-2018 13:40
Methylene chloride	0.50	U	1.0	0.50	2.0	ug/L	1	03-Dec-2018 13:40
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	03-Dec-2018 13:40
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2018 13:40
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2018 13:40
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2018 13:40
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2018 13:40
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2018 13:40
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2018 13:40
Tetrachloroethene	**1.7**		**0.30**	**0.50**	**1.0**	**ug/L**	1	03-Dec-2018 13:40
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2018 13:40
trans-1,2-Dichloroethene	**0.41**	J	**0.20**	**0.50**	**1.0**	**ug/L**	1	03-Dec-2018 13:40
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2018 13:40
Trichloroethene	**700**		**5.0**	**12**	**25**	**ug/L**	25	03-Dec-2018 15:44
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2018 13:40
Vinyl chloride	**0.99**	J	**0.20**	**0.50**	**1.0**	**ug/L**	1	03-Dec-2018 13:40
Surr: 1,2-Dichloroethane-d4	*94.1*			**0**	*70-126*	*%REC*	*25*	*03-Dec-2018 15:44*
Surr: 1,2-Dichloroethane-d4	*93.4*			**0**	*70-126*	*%REC*	*1*	*03-Dec-2018 13:40*
Surr: 4-Bromofluorobenzene	*97.5*			**0**	*81-113*	*%REC*	*1*	*03-Dec-2018 13:40*
Surr: 4-Bromofluorobenzene	*97.0*			**0**	*81-113*	*%REC*	*25*	*03-Dec-2018 15:44*
Surr: Dibromofluoromethane	*89.2*			**0**	*77-123*	*%REC*	*25*	*03-Dec-2018 15:44*
Surr: Dibromofluoromethane	*88.5*			**0**	*77-123*	*%REC*	*1*	*03-Dec-2018 13:40*
Surr: Toluene-d8	*105*			**0**	*82-127*	*%REC*	*1*	*03-Dec-2018 13:40*
Surr: Toluene-d8	*106*			**0**	*82-127*	*%REC*	*25*	*03-Dec-2018 15:44*
ICP-MS METALS BY SW6020A		**Method:SW6020**				Prep:SW3010A / 07-Dec-2018		Analyst: JCJ
Iron	**0.609**		**0.0120**	**0.100**	**0.200**	**mg/L**	1	11-Dec-2018 22:08
DISSOLVED METALS BY SW6020A		**Method:SW6020 (dissolved)**				Prep:SW3010A / 10-Dec-2018		Analyst: ALR
Iron	**1.10**		**0.0120**	**0.100**	**0.200**	**mg/L**	1	10-Dec-2018 20:22
Manganese	**0.0850**		**0.000700**	**0.00100**	**0.00500**	**mg/L**	1	10-Dec-2018 20:22

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 17-Dec-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant LHAAP-50
Sample ID: 50WW11-181128
Collection Date: 28-Nov-2018 11:05

ANALYTICAL REPORT
WorkOrder:HS18111440
Lab ID:HS18111440-02
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
SULFIDE BY E376.1		**Method:E376.1**						Analyst: KVL
Sulfide	**3.08**		**1.00**	**1.00**	**1.00**	**mg/L**	1	05-Dec-2018 18:00
ALKALINITY BY SM2320B		**Method:SM2320B**						Analyst: AJH
Alkalinity, Total (As CaCO3)	**312**		**5.00**	**5.00**	**5.00**	**mg/L**	1	11-Dec-2018 20:31
PHOSPHORUS BY SM4500P E		**Method:SM4500P E**				Prep:SM4500P E / 03-Dec-2018		Analyst: MZD
Phosphorus, Total (As P)	**0.128**		**0.0200**	**0.0250**	**0.0500**	**mg/L**	1	03-Dec-2018 15:15
ANIONS BY SW9056A		**Method:SW9056**						Analyst: KMU
Chloride	**260**		**4.00**	**10.0**	**10.0**	**mg/L**	20	30-Nov-2018 02:16
Nitrogen, Nitrate (As N)	**0.148**	J	**0.0600**	**1.00**	**0.200**	**mg/L**	2	30-Nov-2018 01:54
Nitrogen, Nitrite (As N)	0.200	U	0.0600	0.200	0.200	mg/L	2	30-Nov-2018 01:54
Sulfate	**258**		**4.00**	**10.0**	**10.0**	**mg/L**	20	30-Nov-2018 02:16
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	13-Dec-2018 16:53
SUBCONTRACT ANALYSIS - RSK		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	11-Dec-2018 16:56
SUBCONTRACT ANALYSIS - TOC ANALYSIS		**Method:NA**						Analyst: SUBK
Subcontract Analysis	See Attached		0	0		NA	1	17-Dec-2018 16:04

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 17-Dec-18

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: Longhorn Army Ammunition Plant LHAAP-50 WorkOrder:HS18111440
Sample ID: 50WW11-181128-FD Lab ID:HS18111440-03
Collection Date: 28-Nov-2018 11:05 Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2018 14:04
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2018 14:04
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	03-Dec-2018 14:04
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	ug/L	1	03-Dec-2018 14:04
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2018 14:04
1,1-Dichloroethane	**1.2**		**0.20**	**0.50**	**1.0**	**ug/L**	1	03-Dec-2018 14:04
1,1-Dichloroethene	**5.5**		**0.20**	**0.50**	**1.0**	**ug/L**	1	03-Dec-2018 14:04
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2018 14:04
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	03-Dec-2018 14:04
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	03-Dec-2018 14:04
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	03-Dec-2018 14:04
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2018 14:04
1,2-Dibromo-3-chloropropane	1.0	U	1.0	1.0	1.0	ug/L	1	03-Dec-2018 14:04
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2018 14:04
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	03-Dec-2018 14:04
1,2-Dichloroethane	**5.4**		**0.20**	**0.50**	**1.0**	**ug/L**	1	03-Dec-2018 14:04
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	03-Dec-2018 14:04
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2018 14:04
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	03-Dec-2018 14:04
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2018 14:04
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	03-Dec-2018 14:04
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2018 14:04
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	03-Dec-2018 14:04
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2018 14:04
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	03-Dec-2018 14:04
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	03-Dec-2018 14:04
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2018 14:04
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	03-Dec-2018 14:04
Acetone	2.0	U	2.0	2.0	2.0	ug/L	1	03-Dec-2018 14:04
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2018 14:04
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	03-Dec-2018 14:04
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2018 14:04
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2018 14:04
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	03-Dec-2018 14:04
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	03-Dec-2018 14:04
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	03-Dec-2018 14:04
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	03-Dec-2018 14:04
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2018 14:04
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2018 14:04

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 17-Dec-18

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: Longhorn Army Ammunition Plant LHAAP-50 WorkOrder:HS18111440
Sample ID: 50WW11-181128-FD Lab ID:HS18111440-03
Collection Date: 28-Nov-2018 11:05 Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: PC
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2018 14:04
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2018 14:04
cis-1,2-Dichloroethene	**17**		**0.20**	**0.50**	**1.0**	**ug/L**	1	03-Dec-2018 14:04
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	03-Dec-2018 14:04
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2018 14:04
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2018 14:04
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2018 14:04
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2018 14:04
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	ug/L	1	03-Dec-2018 14:04
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2018 14:04
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	03-Dec-2018 14:04
Methylene chloride	0.50	U	1.0	0.50	2.0	ug/L	1	03-Dec-2018 14:04
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	03-Dec-2018 14:04
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2018 14:04
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2018 14:04
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2018 14:04
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2018 14:04
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2018 14:04
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2018 14:04
Tetrachloroethene	**1.7**		**0.30**	**0.50**	**1.0**	**ug/L**	1	03-Dec-2018 14:04
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2018 14:04
trans-1,2-Dichloroethene	**0.45**	J	**0.20**	**0.50**	**1.0**	**ug/L**	1	03-Dec-2018 14:04
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2018 14:04
Trichloroethene	**710**		**5.0**	**12**	**25**	**ug/L**	25	03-Dec-2018 16:08
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2018 14:04
Vinyl chloride	**1.0**		**0.20**	**0.50**	**1.0**	**ug/L**	1	03-Dec-2018 14:04
Surr: 1,2-Dichloroethane-d4	*94.3*			**0**	*70-126*	*%REC*	*25*	*03-Dec-2018 16:08*
Surr: 1,2-Dichloroethane-d4	*93.1*			**0**	*70-126*	*%REC*	*1*	*03-Dec-2018 14:04*
Surr: 4-Bromofluorobenzene	*97.8*			**0**	*81-113*	*%REC*	*1*	*03-Dec-2018 14:04*
Surr: 4-Bromofluorobenzene	*97.0*			**0**	*81-113*	*%REC*	*25*	*03-Dec-2018 16:08*
Surr: Dibromofluoromethane	*88.5*			**0**	*77-123*	*%REC*	*25*	*03-Dec-2018 16:08*
Surr: Dibromofluoromethane	*88.9*			**0**	*77-123*	*%REC*	*1*	*03-Dec-2018 14:04*
Surr: Toluene-d8	*105*			**0**	*82-127*	*%REC*	*25*	*03-Dec-2018 16:08*
Surr: Toluene-d8	*105*			**0**	*82-127*	*%REC*	*1*	*03-Dec-2018 14:04*
ICP-MS METALS BY SW6020A		**Method:SW6020**				Prep:SW3010A / 07-Dec-2018		Analyst: JCJ
Iron	**0.568**		**0.0120**	**0.100**	**0.200**	**mg/L**	1	11-Dec-2018 22:10
DISSOLVED METALS BY SW6020A		**Method:SW6020 (dissolved)**				Prep:SW3010A / 10-Dec-2018		Analyst: ALR
Iron	**0.799**		**0.0120**	**0.100**	**0.200**	**mg/L**	1	10-Dec-2018 20:24
Manganese	**0.0807**		**0.000700**	**0.00100**	**0.00500**	**mg/L**	1	10-Dec-2018 20:24

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 17-Dec-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant LHAAP-50
Sample ID: 50WW11-181128-FD
Collection Date: 28-Nov-2018 11:05

ANALYTICAL REPORT
WorkOrder:HS18111440
Lab ID:HS18111440-03
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
SULFIDE BY E376.1		**Method:E376.1**						Analyst: KVL
Sulfide	1.00	U	1.00	1.00	1.00	mg/L	1	05-Dec-2018 18:00
ALKALINITY BY SM2320B		**Method:SM2320B**						Analyst: AJH
Alkalinity, Total (As CaCO3)	**313**		**5.00**	**5.00**	**5.00**	**mg/L**	1	11-Dec-2018 20:37
PHOSPHORUS BY SM4500P E		**Method:SM4500P E**				Prep:SM4500P E / 03-Dec-2018		Analyst: MZD
Phosphorus, Total (As P)	**0.104**		**0.0200**	**0.0250**	**0.0500**	**mg/L**	1	03-Dec-2018 15:15
ANIONS BY SW9056A		**Method:SW9056**						Analyst: KMU
Chloride	**263**		**4.00**	**10.0**	**10.0**	**mg/L**	20	30-Nov-2018 02:59
Nitrogen, Nitrate (As N)	**0.269**		**0.0300**	**0.500**	**0.100**	**mg/L**	1	30-Nov-2018 02:37
Nitrogen, Nitrite (As N)	0.100	U	0.0300	0.100	0.100	mg/L	1	30-Nov-2018 02:37
Sulfate	0.500	U	0.200	0.500	0.500	mg/L	1	30-Nov-2018 02:37
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	13-Dec-2018 16:53
SUBCONTRACT ANALYSIS - RSK		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	11-Dec-2018 16:56
SUBCONTRACT ANALYSIS - TOC ANALYSIS		**Method:NA**						Analyst: SUBK
Subcontract Analysis	See Attached		0	0		NA	1	17-Dec-2018 16:04

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 17-Dec-18

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: Longhorn Army Ammunition Plant LHAAP-50 WorkOrder:HS18111440
Sample ID: 50WW12-181128 Lab ID:HS18111440-04
Collection Date: 28-Nov-2018 12:20 Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2018 12:50
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2018 12:50
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	03-Dec-2018 12:50
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	ug/L	1	03-Dec-2018 12:50
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2018 12:50
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2018 12:50
1,1-Dichloroethene	**0.83**	J	**0.20**	**0.50**	**1.0**	**ug/L**	1	03-Dec-2018 12:50
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2018 12:50
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	03-Dec-2018 12:50
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	03-Dec-2018 12:50
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	03-Dec-2018 12:50
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2018 12:50
1,2-Dibromo-3-chloropropane	1.0	U	1.0	1.0	1.0	ug/L	1	03-Dec-2018 12:50
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2018 12:50
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	03-Dec-2018 12:50
1,2-Dichloroethane	**0.56**	J	**0.20**	**0.50**	**1.0**	**ug/L**	1	03-Dec-2018 12:50
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	03-Dec-2018 12:50
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2018 12:50
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	03-Dec-2018 12:50
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2018 12:50
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	03-Dec-2018 12:50
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2018 12:50
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	03-Dec-2018 12:50
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2018 12:50
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	03-Dec-2018 12:50
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	03-Dec-2018 12:50
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2018 12:50
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	03-Dec-2018 12:50
Acetone	2.0	U	2.0	2.0	2.0	ug/L	1	03-Dec-2018 12:50
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2018 12:50
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	03-Dec-2018 12:50
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2018 12:50
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2018 12:50
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	03-Dec-2018 12:50
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	03-Dec-2018 12:50
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	03-Dec-2018 12:50
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	03-Dec-2018 12:50
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2018 12:50
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2018 12:50

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 17-Dec-18

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: Longhorn Army Ammunition Plant LHAAP-50 WorkOrder:HS18111440
Sample ID: 50WW12-181128 Lab ID:HS18111440-04
Collection Date: 28-Nov-2018 12:20 Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: PC
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2018 12:50
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2018 12:50
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2018 12:50
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	03-Dec-2018 12:50
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2018 12:50
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2018 12:50
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2018 12:50
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2018 12:50
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	ug/L	1	03-Dec-2018 12:50
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2018 12:50
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	03-Dec-2018 12:50
Methylene chloride	0.50	U	1.0	0.50	2.0	ug/L	1	03-Dec-2018 12:50
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	03-Dec-2018 12:50
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2018 12:50
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2018 12:50
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2018 12:50
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2018 12:50
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2018 12:50
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2018 12:50
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2018 12:50
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2018 12:50
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2018 12:50
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2018 12:50
Trichloroethene	**41**		**0.20**	**0.50**	**1.0**	**ug/L**	1	03-Dec-2018 12:50
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2018 12:50
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2018 12:50
Surr: 1,2-Dichloroethane-d4	*94.2*			**0**	*70-126*	*%REC*	*1*	*03-Dec-2018 12:50*
Surr: 4-Bromofluorobenzene	*96.6*			**0**	*81-113*	*%REC*	*1*	*03-Dec-2018 12:50*
Surr: Dibromofluoromethane	*90.5*			**0**	*77-123*	*%REC*	*1*	*03-Dec-2018 12:50*
Surr: Toluene-d8	*105*			**0**	*82-127*	*%REC*	*1*	*03-Dec-2018 12:50*
ICP-MS METALS BY SW6020A		**Method:SW6020**				Prep:SW3010A / 07-Dec-2018		Analyst: JCJ
Iron	**2.30**		**0.0120**	**0.100**	**0.200**	**mg/L**	1	11-Dec-2018 22:12
DISSOLVED METALS BY SW6020A		**Method:SW6020 (dissolved)**				Prep:SW3010A / 10-Dec-2018		Analyst: ALR
Iron	**1.46**		**0.0120**	**0.100**	**0.200**	**mg/L**	1	10-Dec-2018 20:26
Manganese	**0.0645**		**0.000700**	**0.00100**	**0.00500**	**mg/L**	1	10-Dec-2018 20:26
SULFIDE BY E376.1		**Method:E376.1**						Analyst: KVL
Sulfide	1.00	U	1.00	1.00	1.00	mg/L	1	05-Dec-2018 18:00
ALKALINITY BY SM2320B		**Method:SM2320B**						Analyst: AJH
Alkalinity, Total (As CaCO3)	**239**		**5.00**	**5.00**	**5.00**	**mg/L**	1	11-Dec-2018 20:43

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 17-Dec-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant LHAAP-50
Sample ID: 50WW12-181128
Collection Date: 28-Nov-2018 12:20

ANALYTICAL REPORT
WorkOrder:HS18111440
Lab ID:HS18111440-04
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
PHOSPHORUS BY SM4500P E		**Method:SM4500P E**				Prep:SM4500P E / 03-Dec-2018		Analyst: MZD
Phosphorus, Total (As P)	**0.142**		**0.0200**	**0.0250**	**0.0500**	**mg/L**	1	03-Dec-2018 15:15
ANIONS BY SW9056A		**Method:SW9056**						Analyst: KMU
Chloride	**1,030**		**4.00**	**10.0**	**10.0**	**mg/L**	20	30-Nov-2018 03:43
Nitrogen, Nitrate (As N)	**0.327**		**0.0600**	**1.00**	**0.200**	**mg/L**	2	30-Nov-2018 03:21
Nitrogen, Nitrite (As N)	0.200	U	0.0600	0.200	0.200	mg/L	2	30-Nov-2018 03:21
Sulfate	1.00	U	0.400	1.00	1.00	mg/L	2	30-Nov-2018 03:21
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	13-Dec-2018 16:53
SUBCONTRACT ANALYSIS - RSK		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	11-Dec-2018 16:56
SUBCONTRACT ANALYSIS - TOC ANALYSIS		**Method:NA**						Analyst: SUBK
Subcontract Analysis	See Attached		0	0		NA	1	17-Dec-2018 16:04

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 17-Dec-18

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: Longhorn Army Ammunition Plant LHAAP-50 WorkOrder:HS18111440
Sample ID: 50WW08-181128 Lab ID:HS18111440-05
Collection Date: 28-Nov-2018 13:25 Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2018 13:15
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2018 13:15
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	03-Dec-2018 13:15
1,1,2-Trichlor-1,2,2-trifluoroethane	**0.76**	J	**0.50**	**0.50**	**1.0**	**ug/L**	1	03-Dec-2018 13:15
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2018 13:15
1,1-Dichloroethane	**0.44**	J	**0.20**	**0.50**	**1.0**	**ug/L**	1	03-Dec-2018 13:15
1,1-Dichloroethene	**0.62**	J	**0.20**	**0.50**	**1.0**	**ug/L**	1	03-Dec-2018 13:15
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2018 13:15
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	03-Dec-2018 13:15
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	03-Dec-2018 13:15
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	03-Dec-2018 13:15
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2018 13:15
1,2-Dibromo-3-chloropropane	1.0	U	1.0	1.0	1.0	ug/L	1	03-Dec-2018 13:15
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2018 13:15
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	03-Dec-2018 13:15
1,2-Dichloroethane	**1.5**		**0.20**	**0.50**	**1.0**	**ug/L**	1	03-Dec-2018 13:15
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	03-Dec-2018 13:15
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2018 13:15
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	03-Dec-2018 13:15
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2018 13:15
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	03-Dec-2018 13:15
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2018 13:15
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	03-Dec-2018 13:15
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2018 13:15
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	03-Dec-2018 13:15
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	03-Dec-2018 13:15
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2018 13:15
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	03-Dec-2018 13:15
Acetone	2.0	U	2.0	2.0	2.0	ug/L	1	03-Dec-2018 13:15
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2018 13:15
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	03-Dec-2018 13:15
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2018 13:15
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2018 13:15
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	03-Dec-2018 13:15
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	03-Dec-2018 13:15
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	03-Dec-2018 13:15
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	03-Dec-2018 13:15
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2018 13:15
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2018 13:15

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 17-Dec-18

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: Longhorn Army Ammunition Plant LHAAP-50 WorkOrder:HS18111440
Sample ID: 50WW08-181128 Lab ID:HS18111440-05
Collection Date: 28-Nov-2018 13:25 Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: PC
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2018 13:15
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2018 13:15
cis-1,2-Dichloroethene	**20**		**0.20**	**0.50**	**1.0**	**ug/L**	1	03-Dec-2018 13:15
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	03-Dec-2018 13:15
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2018 13:15
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2018 13:15
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2018 13:15
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2018 13:15
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	ug/L	1	03-Dec-2018 13:15
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2018 13:15
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	03-Dec-2018 13:15
Methylene chloride	0.50	U	1.0	0.50	2.0	ug/L	1	03-Dec-2018 13:15
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	03-Dec-2018 13:15
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2018 13:15
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2018 13:15
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2018 13:15
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2018 13:15
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2018 13:15
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2018 13:15
Tetrachloroethene	**1.1**		**0.30**	**0.50**	**1.0**	**ug/L**	1	03-Dec-2018 13:15
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2018 13:15
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2018 13:15
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2018 13:15
Trichloroethene	**240**		**2.0**	**5.0**	**10**	**ug/L**	10	03-Dec-2018 15:19
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2018 13:15
Vinyl chloride	**0.66**	J	**0.20**	**0.50**	**1.0**	**ug/L**	1	03-Dec-2018 13:15
Surr: 1,2-Dichloroethane-d4	*93.1*			**0**	*70-126*	*%REC*	*10*	*03-Dec-2018 15:19*
Surr: 1,2-Dichloroethane-d4	*94.5*			**0**	*70-126*	*%REC*	*1*	*03-Dec-2018 13:15*
Surr: 4-Bromofluorobenzene	*96.7*			**0**	*81-113*	*%REC*	*1*	*03-Dec-2018 13:15*
Surr: 4-Bromofluorobenzene	*96.8*			**0**	*81-113*	*%REC*	*10*	*03-Dec-2018 15:19*
Surr: Dibromofluoromethane	*88.7*			**0**	*77-123*	*%REC*	*10*	*03-Dec-2018 15:19*
Surr: Dibromofluoromethane	*89.1*			**0**	*77-123*	*%REC*	*1*	*03-Dec-2018 13:15*
Surr: Toluene-d8	*105*			**0**	*82-127*	*%REC*	*1*	*03-Dec-2018 13:15*
Surr: Toluene-d8	*107*			**0**	*82-127*	*%REC*	*10*	*03-Dec-2018 15:19*
ICP-MS METALS BY SW6020A		**Method:SW6020**				Prep:SW3010A / 07-Dec-2018		Analyst: JCJ
Iron	**0.0452**	J	**0.0120**	**0.100**	**0.200**	**mg/L**	1	11-Dec-2018 22:14
DISSOLVED METALS BY SW6020A		**Method:SW6020 (dissolved)**				Prep:SW3010A / 10-Dec-2018		Analyst: ALR
Iron	**0.0559**	J	**0.0120**	**0.100**	**0.200**	**mg/L**	1	10-Dec-2018 20:28
Manganese	**0.0844**		**0.000700**	**0.00100**	**0.00500**	**mg/L**	1	10-Dec-2018 20:28

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 17-Dec-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant LHAAP-50
Sample ID: 50WW08-181128
Collection Date: 28-Nov-2018 13:25

ANALYTICAL REPORT
WorkOrder:HS18111440
Lab ID:HS18111440-05
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
SULFIDE BY E376.1		**Method:E376.1**						Analyst: KVL
Sulfide	1.00	U	1.00	1.00	1.00	mg/L	1	05-Dec-2018 18:00
ALKALINITY BY SM2320B		**Method:SM2320B**						Analyst: AJH
Alkalinity, Total (As CaCO3)	**435**		**5.00**	**5.00**	**5.00**	**mg/L**	1	11-Dec-2018 20:49
PHOSPHORUS BY SM4500P E		**Method:SM4500P E**				Prep:SM4500P E / 03-Dec-2018		Analyst: MZD
Phosphorus, Total (As P)	**0.104**		**0.0200**	**0.0250**	**0.0500**	**mg/L**	1	03-Dec-2018 15:15
ANIONS BY SW9056A		**Method:SW9056**						Analyst: KMU
Chloride	**372**		**2.00**	**5.00**	**5.00**	**mg/L**	10	30-Nov-2018 04:04
Nitrogen, Nitrate (As N)	**0.239**		**0.0300**	**0.500**	**0.100**	**mg/L**	1	30-Nov-2018 05:53
Nitrogen, Nitrite (As N)	0.100	U	0.0300	0.100	0.100	mg/L	1	30-Nov-2018 05:53
Sulfate	**303**		**2.00**	**5.00**	**5.00**	**mg/L**	10	30-Nov-2018 04:04
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	13-Dec-2018 16:53
SUBCONTRACT ANALYSIS - RSK		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	11-Dec-2018 16:56
SUBCONTRACT ANALYSIS - TOC ANALYSIS		**Method:NA**						Analyst: SUBK
Subcontract Analysis	See Attached		0	0		NA	1	17-Dec-2018 16:04

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 17-Dec-18

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: Longhorn Army Ammunition Plant LHAAP-50 WorkOrder:HS18111440
Sample ID: Trip Blank Lab ID:HS18111440-06
Collection Date: 28-Nov-2018 00:00 Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2018 12:01
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2018 12:01
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	03-Dec-2018 12:01
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	ug/L	1	03-Dec-2018 12:01
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2018 12:01
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2018 12:01
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2018 12:01
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2018 12:01
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	03-Dec-2018 12:01
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	03-Dec-2018 12:01
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	03-Dec-2018 12:01
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2018 12:01
1,2-Dibromo-3-chloropropane	1.0	U	1.0	1.0	1.0	ug/L	1	03-Dec-2018 12:01
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2018 12:01
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	03-Dec-2018 12:01
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2018 12:01
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	03-Dec-2018 12:01
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2018 12:01
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	03-Dec-2018 12:01
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2018 12:01
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	03-Dec-2018 12:01
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2018 12:01
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	03-Dec-2018 12:01
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2018 12:01
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	03-Dec-2018 12:01
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	03-Dec-2018 12:01
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2018 12:01
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	03-Dec-2018 12:01
Acetone	**2.7**		**2.0**	**2.0**	**2.0**	**ug/L**	1	03-Dec-2018 12:01
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2018 12:01
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	03-Dec-2018 12:01
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2018 12:01
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2018 12:01
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	03-Dec-2018 12:01
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	03-Dec-2018 12:01
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	03-Dec-2018 12:01
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	03-Dec-2018 12:01
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2018 12:01
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2018 12:01

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 17-Dec-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant LHAAP-50
Sample ID: Trip Blank
Collection Date: 28-Nov-2018 00:00

ANALYTICAL REPORT
WorkOrder:HS18111440
Lab ID:HS18111440-06
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**							Analyst: PC
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2018 12:01
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2018 12:01
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2018 12:01
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	03-Dec-2018 12:01
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2018 12:01
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2018 12:01
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2018 12:01
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2018 12:01
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	ug/L	1	03-Dec-2018 12:01
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2018 12:01
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	03-Dec-2018 12:01
Methylene chloride	0.50	U	1.0	0.50	2.0	ug/L	1	03-Dec-2018 12:01
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	03-Dec-2018 12:01
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2018 12:01
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2018 12:01
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2018 12:01
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2018 12:01
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2018 12:01
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2018 12:01
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2018 12:01
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2018 12:01
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2018 12:01
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2018 12:01
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2018 12:01
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2018 12:01
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2018 12:01
Surr: 1,2-Dichloroethane-d4	*93.1*			**0**	*70-126*	*%REC*	*1*	*03-Dec-2018 12:01*
Surr: 4-Bromofluorobenzene	*97.3*			**0**	*81-113*	*%REC*	*1*	*03-Dec-2018 12:01*
Surr: Dibromofluoromethane	*89.7*			**0**	*77-123*	*%REC*	*1*	*03-Dec-2018 12:01*
Surr: Toluene-d8	*106*			**0**	*82-127*	*%REC*	*1*	*03-Dec-2018 12:01*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

WEIGHT LOG

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant LHAAP-50
WorkOrder: HS18111440

Batch ID: 135148 **Method:** PHOSPHORUS BY SM4500P E **Prep:** P_TW_PR4500

SampID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS18111440-02	1	50	50 (mL)	1
HS18111440-03	1	50	50 (mL)	1
HS18111440-04	1	50	50 (mL)	1
HS18111440-05	1	50	50 (mL)	1

Batch ID: 135291 **Method:** PHOSPHORUS BY SM4500P E **Prep:** P_TW_PR4500

SampID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS18111440-01	1	5	50 (mL)	10

Batch ID: 135349 **Method:** ICP-MS METALS BY SW6020A **Prep:** 3010A

SampID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS18111440-01	1	10	10 (mL)	1
HS18111440-02	1	10	10 (mL)	1
HS18111440-03	1	10	10 (mL)	1
HS18111440-04	1	10	10 (mL)	1
HS18111440-05	1	10	10 (mL)	1

Batch ID: 135382 **Method:** DISSOLVED METALS BY SW6020A **Prep:** 3010A DISS

SampID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS18111440-01	1	10	10 (mL)	1
HS18111440-02	1	10	10 (mL)	1
HS18111440-03	1	10	10 (mL)	1
HS18111440-04	1	10	10 (mL)	1
HS18111440-05	1	10	10 (mL)	1

ALS Houston, US Date: 17-Dec-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant LHAAP-50
WorkOrder: HS18111440

DATES REPORT

Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
Batch ID 135148	**Test Name :** PHOSPHORUS BY SM4500P E			**Matrix:** Groundwater		
HS18111440-02	50WW11-181128	28 Nov 2018 11:05		03 Dec 2018 10:00	03 Dec 2018 15:15	1
HS18111440-03	50WW11-181128-FD	28 Nov 2018 11:05		03 Dec 2018 10:00	03 Dec 2018 15:15	1
HS18111440-04	50WW12-181128	28 Nov 2018 12:20		03 Dec 2018 10:00	03 Dec 2018 15:15	1
HS18111440-05	50WW08-181128	28 Nov 2018 13:25		03 Dec 2018 10:00	03 Dec 2018 15:15	1
Batch ID 135291	**Test Name :** PHOSPHORUS BY SM4500P E			**Matrix:** Groundwater		
HS18111440-01	50WW16-181128	28 Nov 2018 08:45		06 Dec 2018 09:30	06 Dec 2018 15:15	1
Batch ID 135349	**Test Name :** ICP-MS METALS BY SW6020A			**Matrix:** Groundwater		
HS18111440-01	50WW16-181128	28 Nov 2018 08:45		07 Dec 2018 13:30	11 Dec 2018 21:53	1
HS18111440-02	50WW11-181128	28 Nov 2018 11:05		07 Dec 2018 13:30	11 Dec 2018 22:08	1
HS18111440-03	50WW11-181128-FD	28 Nov 2018 11:05		07 Dec 2018 13:30	11 Dec 2018 22:10	1
HS18111440-04	50WW12-181128	28 Nov 2018 12:20		07 Dec 2018 13:30	11 Dec 2018 22:12	1
HS18111440-05	50WW08-181128	28 Nov 2018 13:25		07 Dec 2018 13:30	11 Dec 2018 22:14	1
Batch ID 135382	**Test Name :** DISSOLVED METALS BY SW6020A			**Matrix:** Groundwater		
HS18111440-01	50WW16-181128	28 Nov 2018 08:45		10 Dec 2018 09:30	10 Dec 2018 20:11	1
HS18111440-02	50WW11-181128	28 Nov 2018 11:05		10 Dec 2018 09:30	10 Dec 2018 20:22	1
HS18111440-03	50WW11-181128-FD	28 Nov 2018 11:05		10 Dec 2018 09:30	10 Dec 2018 20:24	1
HS18111440-04	50WW12-181128	28 Nov 2018 12:20		10 Dec 2018 09:30	10 Dec 2018 20:26	1
HS18111440-05	50WW08-181128	28 Nov 2018 13:25		10 Dec 2018 09:30	10 Dec 2018 20:28	1
Batch ID R328488	**Test Name :** ANIONS BY SW9056A			**Matrix:** Groundwater		
HS18111440-01	50WW16-181128	28 Nov 2018 08:45			30 Nov 2018 00:49	1
HS18111440-02	50WW11-181128	28 Nov 2018 11:05			30 Nov 2018 02:16	20
HS18111440-02	50WW11-181128	28 Nov 2018 11:05			30 Nov 2018 01:54	2
HS18111440-03	50WW11-181128-FD	28 Nov 2018 11:05			30 Nov 2018 02:59	20
HS18111440-03	50WW11-181128-FD	28 Nov 2018 11:05			30 Nov 2018 02:37	1
HS18111440-04	50WW12-181128	28 Nov 2018 12:20			30 Nov 2018 03:43	20
HS18111440-04	50WW12-181128	28 Nov 2018 12:20			30 Nov 2018 03:21	2
HS18111440-05	50WW08-181128	28 Nov 2018 13:25			30 Nov 2018 05:53	1
HS18111440-05	50WW08-181128	28 Nov 2018 13:25			30 Nov 2018 04:04	10
Batch ID R328510	**Test Name :** LOW LEVEL VOLATILES BY SW8260C			**Matrix:** Water		
HS18111440-06	Trip Blank	28 Nov 2018 00:00			03 Dec 2018 12:01	1

ALS Houston, US Date: 17-Dec-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant LHAAP-50
WorkOrder: HS18111440

DATES REPORT

Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
Batch ID R328510	**Test Name :** LOW LEVEL VOLATILES BY SW8260C				**Matrix:** Groundwater	
HS18111440-01	50WW16-181128	28 Nov 2018 08:45			03 Dec 2018 12:25	1
HS18111440-02	50WW11-181128	28 Nov 2018 11:05			03 Dec 2018 15:44	25
HS18111440-02	50WW11-181128	28 Nov 2018 11:05			03 Dec 2018 13:40	1
HS18111440-03	50WW11-181128-FD	28 Nov 2018 11:05			03 Dec 2018 16:08	25
HS18111440-03	50WW11-181128-FD	28 Nov 2018 11:05			03 Dec 2018 14:04	1
HS18111440-04	50WW12-181128	28 Nov 2018 12:20			03 Dec 2018 12:50	1
HS18111440-05	50WW08-181128	28 Nov 2018 13:25			03 Dec 2018 15:19	10
HS18111440-05	50WW08-181128	28 Nov 2018 13:25			03 Dec 2018 13:15	1
Batch ID R328727	**Test Name :** SULFIDE BY E376.1				**Matrix:** Groundwater	
HS18111440-01	50WW16-181128	28 Nov 2018 08:45			05 Dec 2018 18:00	1
HS18111440-02	50WW11-181128	28 Nov 2018 11:05			05 Dec 2018 18:00	1
HS18111440-03	50WW11-181128-FD	28 Nov 2018 11:05			05 Dec 2018 18:00	1
HS18111440-04	50WW12-181128	28 Nov 2018 12:20			05 Dec 2018 18:00	1
HS18111440-05	50WW08-181128	28 Nov 2018 13:25			05 Dec 2018 18:00	1
Batch ID R329007	**Test Name :** SUBCONTRACT ANALYSIS - RSK				**Matrix:** Groundwater	
HS18111440-01	50WW16-181128	28 Nov 2018 08:45			11 Dec 2018 16:56	1
HS18111440-02	50WW11-181128	28 Nov 2018 11:05			11 Dec 2018 16:56	1
HS18111440-03	50WW11-181128-FD	28 Nov 2018 11:05			11 Dec 2018 16:56	1
HS18111440-04	50WW12-181128	28 Nov 2018 12:20			11 Dec 2018 16:56	1
HS18111440-05	50WW08-181128	28 Nov 2018 13:25			11 Dec 2018 16:56	1
Batch ID R329027	**Test Name :** ALKALINITY BY SM2320B				**Matrix:** Groundwater	
HS18111440-01	50WW16-181128	28 Nov 2018 08:45			11 Dec 2018 20:19	1
HS18111440-02	50WW11-181128	28 Nov 2018 11:05			11 Dec 2018 20:31	1
HS18111440-03	50WW11-181128-FD	28 Nov 2018 11:05			11 Dec 2018 20:37	1
HS18111440-04	50WW12-181128	28 Nov 2018 12:20			11 Dec 2018 20:43	1
HS18111440-05	50WW08-181128	28 Nov 2018 13:25			11 Dec 2018 20:49	1
Batch ID R329197	**Test Name :** SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)				**Matrix:** Groundwater	
HS18111440-01	50WW16-181128	28 Nov 2018 08:45			13 Dec 2018 16:53	1
HS18111440-02	50WW11-181128	28 Nov 2018 11:05			13 Dec 2018 16:53	1
HS18111440-03	50WW11-181128-FD	28 Nov 2018 11:05			13 Dec 2018 16:53	1
HS18111440-04	50WW12-181128	28 Nov 2018 12:20			13 Dec 2018 16:53	1
HS18111440-05	50WW08-181128	28 Nov 2018 13:25			13 Dec 2018 16:53	1

ALS Houston, US Date: 17-Dec-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant LHAAP-50
WorkOrder: HS18111440

DATES REPORT

Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
Batch ID R329395	**Test Name :** SUBCONTRACT ANALYSIS - TOC ANALYSIS				**Matrix:** Groundwater	
HS18111440-01	50WW16-181128	28 Nov 2018 08:45			17 Dec 2018 16:04	1
HS18111440-02	50WW11-181128	28 Nov 2018 11:05			17 Dec 2018 16:04	1
HS18111440-03	50WW11-181128-FD	28 Nov 2018 11:05			17 Dec 2018 16:04	1
HS18111440-04	50WW12-181128	28 Nov 2018 12:20			17 Dec 2018 16:04	1
HS18111440-05	50WW08-181128	28 Nov 2018 13:25			17 Dec 2018 16:04	1

ALS Houston, US Date: 17-Dec-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant LHAAP-50
WorkOrder: HS18111440

QC BATCH REPORT

Batch ID: 135349 **Instrument: ICPMS05** **Method: SW6020**

MBLK Sample ID: **MBLK-135349** Units: **mg/L** Analysis Date: **11-Dec-2018 21:49**
Client ID: Run ID: **ICPMS05_328971** SeqNo: **4860013** PrepDate: **07-Dec-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Iron	0.100	0.200								U

LCS Sample ID: **LCS-135349** Units: **mg/L** Analysis Date: **11-Dec-2018 21:51**
Client ID: Run ID: **ICPMS05_328971** SeqNo: **4860014** PrepDate: **07-Dec-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Iron	5.264	0.200	5	0	105	80 - 120				

MS Sample ID: **HS18111440-01MS** Units: **mg/L** Analysis Date: **11-Dec-2018 21:57**
Client ID: **50WW16-181128** Run ID: **ICPMS05_328971** SeqNo: **4860017** PrepDate: **07-Dec-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Iron	6.291	0.200	5	0.8	110	80 - 120				

MSD Sample ID: **HS18111440-01MSD** Units: **mg/L** Analysis Date: **11-Dec-2018 21:59**
Client ID: **50WW16-181128** Run ID: **ICPMS05_328971** SeqNo: **4860018** PrepDate: **07-Dec-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Iron	6.526	0.200	5	0.8	115	80 - 120	6.291	3.67	20	

PDS Sample ID: **HS18111440-01PDS** Units: **mg/L** Analysis Date: **11-Dec-2018 22:01**
Client ID: **50WW16-181128** Run ID: **ICPMS05_328971** SeqNo: **4860019** PrepDate: **07-Dec-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Iron	11.15	0.200	10	0.8	104	75 - 125				

SD Sample ID: **HS18111440-01SD** Units: **mg/L** Analysis Date: **11-Dec-2018 21:55**
Client ID: **50WW16-181128** Run ID: **ICPMS05_328971** SeqNo: **4860016** PrepDate: **07-Dec-2018** DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Iron	0.7999	1.00					0.8	0	10	J

The following samples were analyzed in this batch: HS18111440-01 HS18111440-02 HS18111440-03 HS18111440-04 HS18111440-05

ALS Houston, US Date: 17-Dec-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant LHAAP-50
WorkOrder: HS18111440

QC BATCH REPORT

Batch ID: 135382 **Instrument: ICPMS05** **Method: SW6020 (dissolved) (DISSOLVED)**

MBLK Sample ID: **MBLKF1-135382** Units: **mg/L** Analysis Date: **10-Dec-2018 19:59**
Client ID: Run ID: **ICPMS05_328925** SeqNo: **4857201** PrepDate: **10-Dec-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Iron	0.100	0.200								U
Manganese	0.00226	0.00500								J

MBLK Sample ID: **MBLK-135382** Units: **mg/L** Analysis Date: **10-Dec-2018 20:01**
Client ID: Run ID: **ICPMS05_328925** SeqNo: **4857202** PrepDate: **10-Dec-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Iron	0.100	0.200								U
Manganese	0.001521	0.00500								J

LCS Sample ID: **LCS-135382** Units: **mg/L** Analysis Date: **10-Dec-2018 20:03**
Client ID: Run ID: **ICPMS05_328925** SeqNo: **4857203** PrepDate: **10-Dec-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Iron	5.001	0.200	5	0	100	80 - 120				
Manganese	0.05062	0.00500	0.05	0	101	80 - 120				

LCSD Sample ID: **LCSD-135382** Units: **mg/L** Analysis Date: **10-Dec-2018 20:05**
Client ID: Run ID: **ICPMS05_328925** SeqNo: **4857204** PrepDate: **10-Dec-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Iron	5.082	0.200	5	0	102	80 - 120	5.001	1.61	20	
Manganese	0.05048	0.00500	0.05	0	101	80 - 120	0.05062	0.277	20	

MS Sample ID: **HS18111440-01MS** Units: **mg/L** Analysis Date: **10-Dec-2018 20:16**
Client ID: **50WW16-181128** Run ID: **ICPMS05_328925** SeqNo: **4857209** PrepDate: **10-Dec-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Iron	6.274	0.200	5	1.553	94.4	75 - 125				
Manganese	0.08137	0.00500	0.05	0.03851	85.7	75 - 125				

ALS Houston, US Date: 17-Dec-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant LHAAP-50
WorkOrder: HS18111440

QC BATCH REPORT

Batch ID: 135382 **Instrument: ICPMS05** **Method: SW6020 (dissolved) (DISSOLVED)**

MSD Sample ID: **HS18111440-01MSD** Units: **mg/L** Analysis Date: **10-Dec-2018 20:18**
Client ID: **50WW16-181128** Run ID: **ICPMS05_328925** SeqNo: **4857210** PrepDate: **10-Dec-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Iron	6.289	0.200	5	1.553	94.7	75 - 125	6.274	0.246	20	
Manganese	0.08202	0.00500	0.05	0.03851	87.0	75 - 125	0.08137	0.785	20	

PDS Sample ID: **HS18111440-01PDS** Units: **mg/L** Analysis Date: **10-Dec-2018 20:20**
Client ID: **50WW16-181128** Run ID: **ICPMS05_328925** SeqNo: **4857211** PrepDate: **10-Dec-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Iron	11.44	0.200	10	1.553	98.9	75 - 125				
Manganese	0.1314	0.00500	0.1	0.03851	92.9	75 - 125				

SD Sample ID: **HS18111440-01SD** Units: **mg/L** Analysis Date: **10-Dec-2018 20:13**
Client ID: **50WW16-181128** Run ID: **ICPMS05_328925** SeqNo: **4857208** PrepDate: **10-Dec-2018** DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Iron	1.642	1.00					1.553	5.73	10	

The following samples were analyzed in this batch: HS18111440-01 HS18111440-02 HS18111440-03 HS18111440-04 HS18111440-05

ALS Houston, US Date: 17-Dec-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant LHAAP-50
WorkOrder: HS18111440

QC BATCH REPORT

Batch ID: R328510 **Instrument: VOA9** **Method: SW8260**

MBLK Sample ID: **VBLKW-181203** Units: **ug/L** Analysis Date: **03-Dec-2018 11:36**
Client ID: Run ID: **VOA9_328510** SeqNo: **4846052** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	0.50	1.0								U
1,1,1-Trichloroethane	0.50	1.0								U
1,1,2,2-Tetrachloroethane	0.50	1.0								U
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	1.0								U
1,1,2-Trichloroethane	0.50	1.0								U
1,1-Dichloroethane	0.50	1.0								U
1,1-Dichloroethene	0.50	1.0								U
1,1-Dichloropropene	0.50	1.0								U
1,2,3-Trichlorobenzene	0.50	1.0								U
1,2,3-Trichloropropane	0.50	1.0								U
1,2,4-Trichlorobenzene	0.50	1.0								U
1,2,4-Trimethylbenzene	0.50	1.0								U
1,2-Dibromo-3-chloropropane	1.0	1.0								U
1,2-Dibromoethane	0.50	1.0								U
1,2-Dichlorobenzene	0.50	1.0								U
1,2-Dichloroethane	0.50	1.0								U
1,2-Dichloropropane	0.50	1.0								U
1,3,5-Trimethylbenzene	0.50	1.0								U
1,3-Dichlorobenzene	0.50	1.0								U
1,3-Dichloropropane	0.50	1.0								U
1,4-Dichlorobenzene	0.50	1.0								U
2,2-Dichloropropane	0.50	1.0								U
2-Butanone	1.0	2.0								U
2-Chlorotoluene	0.50	1.0								U
2-Hexanone	1.0	2.0								U
4-Chlorotoluene	0.50	1.0								U
4-Isopropyltoluene	0.50	1.0								U
4-Methyl-2-pentanone	1.0	2.0								U
Acetone	2.0	2.0								U
Benzene	0.50	1.0								U
Bromobenzene	0.50	1.0								U
Bromochloromethane	0.50	1.0								U
Bromodichloromethane	0.50	1.0								U
Bromoform	0.50	1.0								U

ALS Houston, US Date: 17-Dec-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant LHAAP-50
WorkOrder: HS18111440

QC BATCH REPORT

Batch ID: R328510 **Instrument: VOA9** **Method: SW8260**

MBLK Sample ID: **VBLKW-181203** Units: **ug/L** Analysis Date: **03-Dec-2018 11:36**
Client ID: Run ID: **VOA9_328510** SeqNo: **4846052** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromomethane	0.50	1.0								U
Carbon disulfide	1.0	2.0								U
Carbon tetrachloride	0.50	1.0								U
Chlorobenzene	0.50	1.0								U
Chloroethane	0.50	1.0								U
Chloroform	0.50	1.0								U
Chloromethane	0.50	1.0								U
cis-1,2-Dichloroethene	0.50	1.0								U
cis-1,3-Dichloropropene	0.50	1.0								U
Dibromochloromethane	0.50	1.0								U
Dibromomethane	0.50	1.0								U
Dichlorodifluoromethane	0.50	1.0								U
Ethylbenzene	0.50	1.0								U
Hexachlorobutadiene	1.0	1.0								U
Isopropylbenzene	0.50	1.0								U
m,p-Xylene	1.0	2.0								U
Methylene chloride	0.50	2.0								U
Naphthalene	0.50	1.0								U
n-Butylbenzene	0.50	1.0								U
n-Propylbenzene	0.50	1.0								U
o-Xylene	0.50	1.0								U
sec-Butylbenzene	0.50	1.0								U
Styrene	0.50	1.0								U
tert-Butylbenzene	0.50	1.0								U
Tetrachloroethene	0.50	1.0								U
Toluene	0.50	1.0								U
trans-1,2-Dichloroethene	0.50	1.0								U
trans-1,3-Dichloropropene	0.50	1.0								U
Trichloroethene	0.50	1.0								U
Trichlorofluoromethane	0.50	1.0								U
Vinyl chloride	0.50	1.0								U
Surr: 1,2-Dichloroethane-d4	*46.05*	*1.0*	*50*	*0*	*92.1*	*70 - 123*				
Surr: 4-Bromofluorobenzene	*48.45*	*1.0*	*50*	*0*	*96.9*	*82 - 115*				
Surr: Dibromofluoromethane	*44*	*1.0*	*50*	*0*	*88.0*	*73 - 126*				

ALS Houston, US Date: 17-Dec-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant LHAAP-50
WorkOrder: HS18111440

QC BATCH REPORT

Batch ID: R328510 **Instrument: VOA9** **Method: SW8260**

MBLK Sample ID: **VBLKW-181203** Units: **ug/L** Analysis Date: **03-Dec-2018 11:36**
Client ID: Run ID: **VOA9_328510** SeqNo: **4846052** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Surr: Toluene-d8	*52.87*	*1.0*	*50*	*0*	*106*	*81 - 120*				

ALS Houston, US Date: 17-Dec-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant LHAAP-50
WorkOrder: HS18111440

QC BATCH REPORT

Batch ID: R328510 **Instrument: VOA9** **Method: SW8260**

LCS Sample ID: **VLCSW-181203** Units: **ug/L** Analysis Date: **03-Dec-2018 10:46**
Client ID: Run ID: **VOA9_328510** SeqNo: **4846051** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	21.37	1.0	20	0	107	77 - 118				
1,1,1-Trichloroethane	18.76	1.0	20	0	93.8	70 - 130				
1,1,2,2-Tetrachloroethane	21.29	1.0	20	0	106	70 - 120				
1,1,2-Trichlor-1,2,2-trifluoroethane	18.42	1.0	20	0	92.1	70 - 130				
1,1,2-Trichloroethane	21.49	1.0	20	0	107	77 - 113				
1,1-Dichloroethane	20	1.0	20	0	100.0	71 - 122				
1,1-Dichloroethene	19.64	1.0	20	0	98.2	70 - 130				
1,1-Dichloropropene	20.61	1.0	20	0	103	78 - 118				
1,2,3-Trichlorobenzene	21.48	1.0	20	0	107	70 - 130				
1,2,3-Trichloropropane	21.67	1.0	20	0	108	70 - 127				
1,2,4-Trichlorobenzene	20.9	1.0	20	0	104	77 - 126				
1,2,4-Trimethylbenzene	21.62	1.0	20	0	108	73 - 121				
1,2-Dibromo-3-chloropropane	19.68	1.0	20	0	98.4	70 - 130				
1,2-Dibromoethane	21.88	1.0	20	0	109	76 - 123				
1,2-Dichlorobenzene	20.27	1.0	20	0	101	77 - 113				
1,2-Dichloroethane	20.36	1.0	20	0	102	70 - 124				
1,2-Dichloropropane	21.95	1.0	20	0	110	72 - 119				
1,3,5-Trimethylbenzene	21.19	1.0	20	0	106	75 - 118				
1,3-Dichlorobenzene	20.42	1.0	20	0	102	78 - 118				
1,3-Dichloropropane	21.74	1.0	20	0	109	75 - 116				
1,4-Dichlorobenzene	21.94	1.0	20	0	110	79 - 113				
2,2-Dichloropropane	19.99	1.0	20	0	99.9	70 - 130				
2-Butanone	41.41	2.0	40	0	104	70 - 130				
2-Chlorotoluene	20.98	1.0	20	0	105	70 - 128				
2-Hexanone	46.53	2.0	40	0	116	70 - 130				
4-Chlorotoluene	21.54	1.0	20	0	108	74 - 126				
4-Isopropyltoluene	21.34	1.0	20	0	107	74 - 126				
4-Methyl-2-pentanone	46.29	2.0	40	0	116	70 - 130				
Acetone	43.89	2.0	40	0	110	70 - 130				
Benzene	21.34	1.0	20	0	107	74 - 120				
Bromobenzene	20.7	1.0	20	0	104	78 - 113				
Bromochloromethane	20.75	1.0	20	0	104	76 - 124				
Bromodichloromethane	20.61	1.0	20	0	103	74 - 122				
Bromoform	19.4	1.0	20	0	97.0	73 - 128				

ALS Houston, US Date: 17-Dec-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant LHAAP-50
WorkOrder: HS18111440

QC BATCH REPORT

Batch ID: R328510 **Instrument: VOA9** **Method: SW8260**

LCS Sample ID: **VLCSW-181203** Units: **ug/L** Analysis Date: **03-Dec-2018 10:46**
Client ID: Run ID: **VOA9_328510** SeqNo: **4846051** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromomethane	23.23	1.0	20	0	116	70 - 130				
Carbon disulfide	40.98	2.0	40	0	102	70 - 130				
Carbon tetrachloride	19.69	1.0	20	0	98.5	71 - 125				
Chlorobenzene	21.05	1.0	20	0	105	76 - 113				
Chloroethane	19.89	1.0	20	0	99.5	70 - 130				
Chloroform	19.21	1.0	20	0	96.1	71 - 121				
Chloromethane	23.23	1.0	20	0	116	70 - 129				
cis-1,2-Dichloroethene	19.86	1.0	20	0	99.3	75 - 122				
cis-1,3-Dichloropropene	22.2	1.0	20	0	111	73 - 127				
Dibromochloromethane	21.84	1.0	20	0	109	77 - 122				
Dibromomethane	20.79	1.0	20	0	104	78 - 121				
Dichlorodifluoromethane	18.81	1.0	20	0	94.1	70 - 130				
Ethylbenzene	21.09	1.0	20	0	105	77 - 117				
Hexachlorobutadiene	22.58	1.0	20	0	113	70 - 130				
Isopropylbenzene	21.16	1.0	20	0	106	73 - 127				
m,p-Xylene	42.87	2.0	40	0	107	77 - 122				
Methylene chloride	21.4	2.0	20	0	107	70 - 127				
Naphthalene	22.11	1.0	20	0	111	70 - 130				
n-Butylbenzene	21.71	1.0	20	0	109	72 - 130				
n-Propylbenzene	21.28	1.0	20	0	106	73 - 124				
o-Xylene	21.87	1.0	20	0	109	75 - 119				
sec-Butylbenzene	20.66	1.0	20	0	103	73 - 128				
Styrene	22.52	1.0	20	0	113	72 - 126				
tert-Butylbenzene	20.53	1.0	20	0	103	73 - 124				
Tetrachloroethene	20.12	1.0	20	0	101	76 - 119				
Toluene	21.53	1.0	20	0	108	77 - 118				
trans-1,2-Dichloroethene	19.87	1.0	20	0	99.3	72 - 127				
trans-1,3-Dichloropropene	20.19	1.0	20	0	101	77 - 119				
Trichloroethene	20.16	1.0	20	0	101	77 - 121				
Trichlorofluoromethane	18.5	1.0	20	0	92.5	70 - 130				
Vinyl chloride	21.61	1.0	20	0	108	70 - 130				
Surr: 1,2-Dichloroethane-d4	*44.46*	*1.0*	*50*	*0*	*88.9*	*70 - 130*				
Surr: 4-Bromofluorobenzene	*51.96*	*1.0*	*50*	*0*	*104*	*82 - 115*				
Surr: Dibromofluoromethane	*44.66*	*1.0*	*50*	*0*	*89.3*	*73 - 126*				

ALS Houston, US Date: 17-Dec-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant LHAAP-50
WorkOrder: HS18111440

QC BATCH REPORT

Batch ID: R328510 **Instrument: VOA9** **Method: SW8260**

LCS Sample ID: **VLCSW-181203** Units: **ug/L** Analysis Date: **03-Dec-2018 10:46**
Client ID: Run ID: **VOA9_328510** SeqNo: **4846051** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Surr: Toluene-d8	*53.23*	*1.0*	*50*	*0*	*106*	*81 - 120*				

ALS Houston, US Date: 17-Dec-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant LHAAP-50
WorkOrder: HS18111440

QC BATCH REPORT

Batch ID: R328510 **Instrument: VOA9** **Method: SW8260**

MS Sample ID: **HS18111440-01MS** Units: **ug/L** Analysis Date: **03-Dec-2018 14:29**
Client ID: **50WW16-181128** Run ID: **VOA9_328510** SeqNo: **4846059** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	22.55	1.0	20	0	113	70 - 120				
1,1,1-Trichloroethane	21.69	1.0	20	0	108	70 - 130				
1,1,2,2-Tetrachloroethane	22.44	1.0	20	0	112	70 - 123				
1,1,2-Trichlor-1,2,2-trifluoroethane	23	1.0	20	0	115	70 - 130				
1,1,2-Trichloroethane	22.89	1.0	20	0	114	70 - 117				
1,1-Dichloroethane	22.06	1.0	20	0	110	70 - 127				
1,1-Dichloroethene	22.32	1.0	20	0	112	70 - 130				
1,1-Dichloropropene	24.65	1.0	20	0	123	70 - 129				
1,2,3-Trichlorobenzene	22.2	1.0	20	0	111	70 - 130				
1,2,3-Trichloropropane	23	1.0	20	0	115	70 - 130				
1,2,4-Trichlorobenzene	22.01	1.0	20	0	110	70 - 125				
1,2,4-Trimethylbenzene	23.82	1.0	20	0	119	70 - 125				
1,2-Dibromo-3-chloropropane	20.31	1.0	20	0	102	70 - 130				
1,2-Dibromoethane	23.03	1.0	20	0	115	70 - 124				
1,2-Dichlorobenzene	21.88	1.0	20	0	109	70 - 115				
1,2-Dichloroethane	22.08	1.0	20	0	110	70 - 127				
1,2-Dichloropropane	24.18	1.0	20	0	121	70 - 122				
1,3,5-Trimethylbenzene	23.86	1.0	20	0	119	70 - 126				
1,3-Dichlorobenzene	22.2	1.0	20	0	111	70 - 119				
1,3-Dichloropropane	22.78	1.0	20	0	114	70 - 121				
1,4-Dichlorobenzene	23.13	1.0	20	0	116	70 - 114				S
2,2-Dichloropropane	22.3	1.0	20	0	112	70 - 130				
2-Butanone	43.5	2.0	40	0	109	70 - 130				
2-Chlorotoluene	23.46	1.0	20	0	117	70 - 130				
2-Hexanone	47.65	2.0	40	0	119	70 - 130				
4-Chlorotoluene	23.59	1.0	20	0	118	70 - 130				
4-Isopropyltoluene	25.03	1.0	20	0	125	70 - 130				
4-Methyl-2-pentanone	47.39	2.0	40	0	118	70 - 130				
Acetone	45.5	2.0	40	0	114	70 - 130				
Benzene	23.93	1.0	20	0	120	70 - 127				
Bromobenzene	22.17	1.0	20	0	111	70 - 115				
Bromochloromethane	22.86	1.0	20	0	114	70 - 127				
Bromodichloromethane	22.05	1.0	20	0	110	70 - 124				
Bromoform	19.99	1.0	20	0	100.0	70 - 129				

ALS Houston, US Date: 17-Dec-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant LHAAP-50
WorkOrder: HS18111440

QC BATCH REPORT

Batch ID: R328510 **Instrument: VOA9** **Method: SW8260**

MS Sample ID: **HS18111440-01MS** Units: **ug/L** Analysis Date: **03-Dec-2018 14:29**
Client ID: **50WW16-181128** Run ID: **VOA9_328510** SeqNo: **4846059** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromomethane	25.04	1.0	20	0	125	70 - 130				
Carbon disulfide	42.56	2.0	40	0	106	70 - 130				
Carbon tetrachloride	23.63	1.0	20	0	118	70 - 130				
Chlorobenzene	22.63	1.0	20	0	113	70 - 114				
Chloroethane	22.2	1.0	20	0	111	70 - 130				
Chloroform	20.89	1.0	20	0	104	70 - 125				
Chloromethane	22.22	1.0	20	0	111	70 - 130				
cis-1,2-Dichloroethene	21.82	1.0	20	0	109	70 - 128				
cis-1,3-Dichloropropene	23.26	1.0	20	0	116	70 - 125				
Dibromochloromethane	22.63	1.0	20	0	113	70 - 124				
Dibromomethane	22.07	1.0	20	0	110	70 - 124				
Dichlorodifluoromethane	15.49	1.0	20	0	77.4	70 - 130				
Ethylbenzene	23.54	1.0	20	0	118	70 - 124				
Hexachlorobutadiene	28.92	1.0	20	0	145	70 - 130				S
Isopropylbenzene	24.14	1.0	20	0	121	70 - 130				
m,p-Xylene	48.09	2.0	40	0	120	70 - 130				
Methylene chloride	22.85	2.0	20	0	114	70 - 128				
Naphthalene	23.24	1.0	20	0	116	70 - 130				
n-Butylbenzene	25.65	1.0	20	0	128	70 - 130				
n-Propylbenzene	24.68	1.0	20	0	123	70 - 130				
o-Xylene	23.98	1.0	20	0	120	70 - 124				
sec-Butylbenzene	24.75	1.0	20	0	124	70 - 130				
Styrene	24.29	1.0	20	0	121	70 - 130				
tert-Butylbenzene	23.97	1.0	20	0	120	70 - 130				
Tetrachloroethene	24.07	1.0	20	0	120	70 - 130				
Toluene	23.82	1.0	20	0	119	70 - 123				
trans-1,2-Dichloroethene	22.22	1.0	20	0	111	70 - 130				
trans-1,3-Dichloropropene	20.84	1.0	20	0	104	70 - 121				
Trichloroethene	28.52	1.0	20	1.874	133	70 - 129				S
Trichlorofluoromethane	21.43	1.0	20	0	107	70 - 130				
Vinyl chloride	22.24	1.0	20	0	111	70 - 130				
Surr: 1,2-Dichloroethane-d4	*45.46*	*1.0*	*50*	*0*	*90.9*	*70 - 126*				
Surr: 4-Bromofluorobenzene	*50.71*	*1.0*	*50*	*0*	*101*	*81 - 113*				
Surr: Dibromofluoromethane	*45.11*	*1.0*	*50*	*0*	*90.2*	*77 - 123*				

ALS Houston, US Date: 17-Dec-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant LHAAP-50
WorkOrder: HS18111440

QC BATCH REPORT

Batch ID: R328510 **Instrument:** VOA9 **Method:** SW8260

MS Sample ID: **HS18111440-01MS** Units: **ug/L** Analysis Date: **03-Dec-2018 14:29**
Client ID: **50WW16-181128** Run ID: **VOA9_328510** SeqNo: **4846059** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Surr: Toluene-d8	*53*	*1.0*	*50*	*0*	*106*	*82 - 127*				

ALS Houston, US Date: 17-Dec-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant LHAAP-50
WorkOrder: HS18111440

QC BATCH REPORT

Batch ID: R328510 **Instrument:** VOA9 **Method:** SW8260

MSD Sample ID: **HS18111440-01MSD** Units: **ug/L** Analysis Date: **03-Dec-2018 14:54**
Client ID: **50WW16-181128** Run ID: **VOA9_328510** SeqNo: **4846060** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	23.66	1.0	20	0	118	70 - 120	22.55	4.81	20	
1,1,1-Trichloroethane	22.08	1.0	20	0	110	70 - 130	21.69	1.79	20	
1,1,2,2-Tetrachloroethane	22.64	1.0	20	0	113	70 - 123	22.44	0.888	20	
1,1,2-Trichlor-1,2,2-trifluoroethane	23.2	1.0	20	0	116	70 - 130	23	0.903	20	
1,1,2-Trichloroethane	23.3	1.0	20	0	116	70 - 117	22.89	1.78	20	
1,1-Dichloroethane	22.34	1.0	20	0	112	70 - 127	22.06	1.26	20	
1,1-Dichloroethene	22.9	1.0	20	0	115	70 - 130	22.32	2.55	20	
1,1-Dichloropropene	24.87	1.0	20	0	124	70 - 129	24.65	0.891	20	
1,2,3-Trichlorobenzene	22.24	1.0	20	0	111	70 - 130	22.2	0.191	20	
1,2,3-Trichloropropane	23.4	1.0	20	0	117	70 - 130	23	1.72	20	
1,2,4-Trichlorobenzene	22.01	1.0	20	0	110	70 - 125	22.01	0.0344	20	
1,2,4-Trimethylbenzene	23.88	1.0	20	0	119	70 - 125	23.82	0.246	20	
1,2-Dibromo-3-chloropropane	20.63	1.0	20	0	103	70 - 130	20.31	1.56	20	
1,2-Dibromoethane	23.42	1.0	20	0	117	70 - 124	23.03	1.64	20	
1,2-Dichlorobenzene	22.07	1.0	20	0	110	70 - 115	21.88	0.858	20	
1,2-Dichloroethane	22.45	1.0	20	0	112	70 - 127	22.08	1.66	20	
1,2-Dichloropropane	24.59	1.0	20	0	123	70 - 122	24.18	1.68	20	S
1,3,5-Trimethylbenzene	23.76	1.0	20	0	119	70 - 126	23.86	0.414	20	
1,3-Dichlorobenzene	22.42	1.0	20	0	112	70 - 119	22.2	0.971	20	
1,3-Dichloropropane	23.44	1.0	20	0	117	70 - 121	22.78	2.84	20	
1,4-Dichlorobenzene	23.33	1.0	20	0	117	70 - 114	23.13	0.853	20	S
2,2-Dichloropropane	22.91	1.0	20	0	115	70 - 130	22.3	2.69	20	
2-Butanone	44.51	2.0	40	0	111	70 - 130	43.5	2.3	20	
2-Chlorotoluene	23.49	1.0	20	0	117	70 - 130	23.46	0.124	20	
2-Hexanone	48.97	2.0	40	0	122	70 - 130	47.65	2.74	20	
4-Chlorotoluene	23.72	1.0	20	0	119	70 - 130	23.59	0.588	20	
4-Isopropyltoluene	24.96	1.0	20	0	125	70 - 130	25.03	0.259	20	
4-Methyl-2-pentanone	48.56	2.0	40	0	121	70 - 130	47.39	2.43	20	
Acetone	46.53	2.0	40	0	116	70 - 130	45.5	2.23	20	
Benzene	24.4	1.0	20	0	122	70 - 127	23.93	1.94	20	
Bromobenzene	22.52	1.0	20	0	113	70 - 115	22.17	1.55	20	
Bromochloromethane	23.55	1.0	20	0	118	70 - 127	22.86	2.99	20	
Bromodichloromethane	22.56	1.0	20	0	113	70 - 124	22.05	2.25	20	
Bromoform	20.32	1.0	20	0	102	70 - 129	19.99	1.64	20	

ALS Houston, US Date: 17-Dec-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant LHAAP-50
WorkOrder: HS18111440

QC BATCH REPORT

Batch ID: R328510 **Instrument: VOA9** **Method: SW8260**

MSD Sample ID: **HS18111440-01MSD** Units: **ug/L** Analysis Date: **03-Dec-2018 14:54**
Client ID: **50WW16-181128** Run ID: **VOA9_328510** SeqNo: **4846060** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
Bromomethane	24.43	1.0	20	0	122	70 - 130	25.04	2.45	20	
Carbon disulfide	43.69	2.0	40	0	109	70 - 130	42.56	2.63	20	
Carbon tetrachloride	24.28	1.0	20	0	121	70 - 130	23.63	2.68	20	
Chlorobenzene	23.01	1.0	20	0	115	70 - 114	22.63	1.66	20	S
Chloroethane	22.74	1.0	20	0	114	70 - 130	22.2	2.4	20	
Chloroform	21.65	1.0	20	0	108	70 - 125	20.89	3.58	20	
Chloromethane	21.5	1.0	20	0	107	70 - 130	22.22	3.32	20	
cis-1,2-Dichloroethene	22.43	1.0	20	0	112	70 - 128	21.82	2.74	20	
cis-1,3-Dichloropropene	24.21	1.0	20	0	121	70 - 125	23.26	3.99	20	
Dibromochloromethane	23.37	1.0	20	0	117	70 - 124	22.63	3.24	20	
Dibromomethane	22.72	1.0	20	0	114	70 - 124	22.07	2.9	20	
Dichlorodifluoromethane	15.63	1.0	20	0	78.1	70 - 130	15.49	0.902	20	
Ethylbenzene	24.39	1.0	20	0	122	70 - 124	23.54	3.54	20	
Hexachlorobutadiene	27.24	1.0	20	0	136	70 - 130	28.92	5.96	20	S
Isopropylbenzene	24.37	1.0	20	0	122	70 - 130	24.14	0.949	20	
m,p-Xylene	48.06	2.0	40	0	120	70 - 130	48.09	0.0635	20	
Methylene chloride	23.51	2.0	20	0	118	70 - 128	22.85	2.84	20	
Naphthalene	23.19	1.0	20	0	116	70 - 130	23.24	0.239	20	
n-Butylbenzene	25.39	1.0	20	0	127	70 - 130	25.65	1.04	20	
n-Propylbenzene	24.62	1.0	20	0	123	70 - 130	24.68	0.218	20	
o-Xylene	24.04	1.0	20	0	120	70 - 124	23.98	0.269	20	
sec-Butylbenzene	24.67	1.0	20	0	123	70 - 130	24.75	0.293	20	
Styrene	24.49	1.0	20	0	122	70 - 130	24.29	0.824	20	
tert-Butylbenzene	24.1	1.0	20	0	121	70 - 130	23.97	0.537	20	
Tetrachloroethene	23.84	1.0	20	0	119	70 - 130	24.07	0.936	20	
Toluene	24.16	1.0	20	0	121	70 - 123	23.82	1.4	20	
trans-1,2-Dichloroethene	22.74	1.0	20	0	114	70 - 130	22.22	2.3	20	
trans-1,3-Dichloropropene	21.29	1.0	20	0	106	70 - 121	20.84	2.15	20	
Trichloroethene	27.55	1.0	20	1.874	128	70 - 129	28.52	3.47	20	
Trichlorofluoromethane	21.95	1.0	20	0	110	70 - 130	21.43	2.38	20	
Vinyl chloride	23.18	1.0	20	0	116	70 - 130	22.24	4.13	20	
Surr: 1,2-Dichloroethane-d4	*44.99*	*1.0*	*50*	*0*	*90.0*	*70 - 126*	*45.46*	*1.04*	*20*	
Surr: 4-Bromofluorobenzene	*51.23*	*1.0*	*50*	*0*	*102*	*81 - 113*	*50.71*	*1.01*	*20*	
Surr: Dibromofluoromethane	*44.69*	*1.0*	*50*	*0*	*89.4*	*77 - 123*	*45.11*	*0.939*	*20*	

ALS Houston, US Date: 17-Dec-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant LHAAP-50
WorkOrder: HS18111440

QC BATCH REPORT

Batch ID: R328510 **Instrument:** VOA9 **Method:** SW8260

MSD Sample ID: **HS18111440-01MSD** Units: **ug/L** Analysis Date: **03-Dec-2018 14:54**
Client ID: **50WW16-181128** Run ID: **VOA9_328510** SeqNo: **4846060** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Surr: Toluene-d8	*53.35*	*1.0*	*50*	*0*	*107*	*82 - 127*	*53*	*0.644*	*20*	

The following samples were analyzed in this batch: HS18111440-01 HS18111440-02 HS18111440-03 HS18111440-04 HS18111440-05 HS18111440-06

ALS Houston, US Date: 17-Dec-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant LHAAP-50
WorkOrder: HS18111440

QC BATCH REPORT

Batch ID: 135148 **Instrument: UV-2450** **Method: SM4500P E**

MBLK Sample ID: **MBLK-135148** Units: **mg/L** Analysis Date: **03-Dec-2018 15:15**
Client ID: Run ID: **UV-2450_328499** SeqNo: **4845845** PrepDate: **03-Dec-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Phosphorus, Total (As P)	0.0250	0.0500								U

LCS Sample ID: **LCS-135148** Units: **mg/L** Analysis Date: **03-Dec-2018 15:15**
Client ID: Run ID: **UV-2450_328499** SeqNo: **4845843** PrepDate: **03-Dec-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Phosphorus, Total (As P)	0.227	0.0500	0.25	0	90.8	80 - 120				

LCSD Sample ID: **LCSD-135148** Units: **mg/L** Analysis Date: **03-Dec-2018 15:15**
Client ID: Run ID: **UV-2450_328499** SeqNo: **4845844** PrepDate: **03-Dec-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Phosphorus, Total (As P)	0.228	0.0500	0.25	0	91.2	80 - 120	0.227	0.44	20	

MS Sample ID: **HS18111426-03MS** Units: **mg/L** Analysis Date: **03-Dec-2018 15:15**
Client ID: Run ID: **UV-2450_328499** SeqNo: **4845841** PrepDate: **03-Dec-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Phosphorus, Total (As P)	0.252	0.0500	0.25	0.029	89.2	80 - 120				

MSD Sample ID: **HS18111426-03MSD** Units: **mg/L** Analysis Date: **03-Dec-2018 15:15**
Client ID: Run ID: **UV-2450_328499** SeqNo: **4845842** PrepDate: **03-Dec-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Phosphorus, Total (As P)	0.263	0.0500	0.25	0.029	93.6	80 - 120	0.252	4.27	20	

The following samples were analyzed in this batch: HS18111440-02 HS18111440-03 HS18111440-04 HS18111440-05

ALS Houston, US Date: 17-Dec-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant LHAAP-50
WorkOrder: HS18111440

QC BATCH REPORT

Batch ID: 135291 **Instrument: UV-2450** **Method: SM4500P E**

MBLK Sample ID: **MBLK-135291** Units: **mg/L** Analysis Date: **06-Dec-2018 15:15**
Client ID: Run ID: **UV-2450_328729** SeqNo: **4852202** PrepDate: **06-Dec-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Phosphorus, Total (As P)	0.0250	0.0500								U

LCS Sample ID: **LCS-135291** Units: **mg/L** Analysis Date: **06-Dec-2018 15:15**
Client ID: Run ID: **UV-2450_328729** SeqNo: **4852201** PrepDate: **06-Dec-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Phosphorus, Total (As P)	0.23	0.0500	0.25	0	92.0	80 - 120				

MS Sample ID: **HS18111440-01MS** Units: **mg/L** Analysis Date: **06-Dec-2018 15:15**
Client ID: **50WW16-181128** Run ID: **UV-2450_328729** SeqNo: **4852199** PrepDate: **06-Dec-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Phosphorus, Total (As P)	3.43	0.500	2.5	0.91	101	80 - 120				

MSD Sample ID: **HS18111440-01MSD** Units: **mg/L** Analysis Date: **06-Dec-2018 15:15**
Client ID: **50WW16-181128** Run ID: **UV-2450_328729** SeqNo: **4852200** PrepDate: **06-Dec-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Phosphorus, Total (As P)	3.42	0.500	2.5	0.91	100	80 - 120	3.43	0.292	20	

The following samples were analyzed in this batch: HS18111440-01

ALS Houston, US Date: 17-Dec-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant LHAAP-50
WorkOrder: HS18111440

QC BATCH REPORT

Batch ID: R328488 **Instrument: ICS3K2** **Method: SW9056**

MBLK Sample ID: **WBLKW1-112918** Units: **mg/L** Analysis Date: **29-Nov-2018 16:08**
Client ID: Run ID: **ICS3K2_328488** SeqNo: **4845629** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	0.500	0.500								U
Nitrogen, Nitrate (As N)	0.500	0.100								U
Nitrogen, Nitrite (As N)	0.100	0.100								U
Sulfate	0.500	0.500								U

LCS Sample ID: **WLCSW1-112918** Units: **mg/L** Analysis Date: **29-Nov-2018 16:30**
Client ID: Run ID: **ICS3K2_328488** SeqNo: **4845630** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	19.38	0.500	20	0	96.9	80 - 120				
Nitrogen, Nitrate (As N)	3.816	0.100	4	0	95.4	80 - 120				
Nitrogen, Nitrite (As N)	4.332	0.100	4	0	108	80 - 120				
Sulfate	18.58	0.500	20	0	92.9	80 - 120				

LCSD Sample ID: **WLCSDW1-112918** Units: **mg/L** Analysis Date: **29-Nov-2018 16:51**
Client ID: Run ID: **ICS3K2_328488** SeqNo: **4845631** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	19.32	0.500	20	0	96.6	80 - 120	19.38	0.32	20	
Nitrogen, Nitrate (As N)	3.814	0.100	4	0	95.4	80 - 120	3.816	0.0524	20	
Nitrogen, Nitrite (As N)	4.327	0.100	4	0	108	80 - 120	4.332	0.115	20	
Sulfate	18.62	0.500	20	0	93.1	80 - 120	18.58	0.242	20	

MS Sample ID: **HS18111440-01MS** Units: **mg/L** Analysis Date: **30-Nov-2018 01:11**
Client ID: **50WW16-181128** Run ID: **ICS3K2_328488** SeqNo: **4845637** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	15.9	0.500	10	6.577	93.2	80 - 120				
Nitrogen, Nitrate (As N)	1.739	0.100	2	0	87.0	80 - 120				
Nitrogen, Nitrite (As N)	2.102	0.100	2	0	105	80 - 120				
Sulfate	42.88	0.500	10	33.62	92.6	80 - 120				

ALS Houston, US Date: 17-Dec-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant LHAAP-50
WorkOrder: HS18111440

QC BATCH REPORT

Batch ID: R328488 **Instrument: ICS3K2** **Method: SW9056**

MSD Sample ID: **HS18111440-01MSD** Units: **mg/L** Analysis Date: **30-Nov-2018 01:32**
Client ID: **50WW16-181128** Run ID: **ICS3K2_328488** SeqNo: **4845638** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	16.02	0.500	10	6.577	94.5	80 - 120	15.9	0.796	20	
Nitrogen, Nitrate (As N)	1.765	0.100	2	0	88.2	80 - 120	1.739	1.48	20	
Nitrogen, Nitrite (As N)	2.126	0.100	2	0	106	80 - 120	2.102	1.14	20	
Sulfate	43.11	0.500	10	33.62	94.9	80 - 120	42.88	0.53	20	

The following samples were analyzed in this batch: HS18111440-01 HS18111440-02 HS18111440-03 HS18111440-04 HS18111440-05

ALS Houston, US Date: 17-Dec-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant LHAAP-50
WorkOrder: HS18111440

QC BATCH REPORT

Batch ID: R328727 **Instrument: WetChem_HS** **Method: E376.1**

MBLK Sample ID: **MBLK-R328727** Units: **mg/L** Analysis Date: **05-Dec-2018 18:00**
Client ID: Run ID: **WetChem_HS_328727** SeqNo: **4852033** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfide	1.00	1.00								U

LCS Sample ID: **LCS-R328727** Units: **mg/L** Analysis Date: **05-Dec-2018 18:00**
Client ID: Run ID: **WetChem_HS_328727** SeqNo: **4852032** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfide	21.68	1.00	25	0	86.7	80 - 120				

LCSD Sample ID: **LCSD-R328727** Units: **mg/L** Analysis Date: **05-Dec-2018 18:00**
Client ID: Run ID: **WetChem_HS_328727** SeqNo: **4852031** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfide	21.68	1.00	25	0	86.7	80 - 120	21.68	0	20	

MS Sample ID: **HS18111440-01MS** Units: **mg/L** Analysis Date: **05-Dec-2018 18:00**
Client ID: **50WW16-181128** Run ID: **WetChem_HS_328727** SeqNo: **4852034** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfide	22.08	1.00	25	1.08	84.0	80 - 120				

The following samples were analyzed in this batch: HS18111440-01 HS18111440-02 HS18111440-03 HS18111440-04 HS18111440-05

ALS Houston, US Date: 17-Dec-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant LHAAP-50
WorkOrder: HS18111440

QC BATCH REPORT

Batch ID: R329027 **Instrument: ManTech01** **Method: SM2320B**

MBLK Sample ID: **WBLKW1-181211** Units: **mg/L** Analysis Date: **11-Dec-2018 19:56**
Client ID: Run ID: **ManTech01_329027** SeqNo: **4859850** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Total (As CaCO3)	5.00	5.00								U

LCS Sample ID: **LCS1-181211** Units: **mg/L** Analysis Date: **11-Dec-2018 20:04**
Client ID: Run ID: **ManTech01_329027** SeqNo: **4859851** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Total (As CaCO3)	1070	5.00	1000	0	107	85 - 115				

LCSD Sample ID: **LCSD1-181211** Units: **mg/L** Analysis Date: **11-Dec-2018 20:13**
Client ID: Run ID: **ManTech01_329027** SeqNo: **4859852** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Total (As CaCO3)	1072	5.00	1000	0	107	85 - 115	1070	0.156	20	

DUP Sample ID: **HS18111440-01DUP** Units: **mg/L** Analysis Date: **11-Dec-2018 20:25**
Client ID: **50WW16-181128** Run ID: **ManTech01_329027** SeqNo: **4859854** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Total (As CaCO3)	114.7	5.00					118.2	3.01	20	

The following samples were analyzed in this batch: HS18111440-01 HS18111440-02 HS18111440-03 HS18111440-04 HS18111440-05

ALS Houston, US Date: 17-Dec-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant LHAAP-50
WorkOrder: **HS18111440**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL/SDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitaion Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

Unit Reported	Description
mg/L	Milligrams per Liter

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
North Carolina	624-2018	31-Dec-2018
Arkansas	88-0356	27-Mar-2019
Texas	T10470231-18-21	30-Apr-2019
North Dakota	R193 2018-2019	30-Apr-2019
Illinois	004438	29-Jun-2019
Louisiana	03087	30-Jun-2019
Dept of Defense	ANAB L2231	22-Dec-2018
Kentucky	123043 - 2018	30-Apr-2019
Kansas	E-10352 2018-2019	31-Jul-2019
Oklahoma	2018-156	31-Aug-2019

ALS Houston, US Date: 17-Dec-18

Sample Receipt Checklist

Client Name: CBI-Houston
Work Order: HS18111440
Date/Time Received: **29-Nov-2018 10:20**
Received by: **JRM**

Checklist completed by: *Jared R. Makan* eSignature 29-Nov-2018 Date
Reviewed by: *RJ Modashia* eSignature 30-Nov-2018 Date

Matrices: **Water**
Carrier name: **ALS Courier**

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
TX1005 solids received in hermetically sealed vials?	Yes ☐	No ☐	N/A ☑
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	1.4c/1.7c UC/C	IR25	
Cooler(s)/Kit(s):	25351		
Date/Time sample(s) sent to storage:	11/29/2018 16:25		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☑	No ☐	N/A ☐
pH adjusted?	Yes ☐	No ☑	N/A ☐
pH adjusted by:			

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

APTIM

Page 1 of _____

COC ID: 50-NOV2018-GW-ALSHT-1811___ TURNAROUND TIME: normal RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO			
Facility Name	Longhorn AAP			Lab Name	ALS Laboratories			Email Invoice To	FedInvoices@CBIFederalServices.com		
Project Number	501032			Lab Contact	RJ Modashia						
	LHAAP-50			Email	RJ.Modashia@alsglobal.com			Email Report To	Kim.napier@aptim.com		
Address	1203-B East Grand Avenue			Address	10450 Stancliff Rd., Suite 210			Mail Reports To	Kim Napier		
	PMB 202							Address	2410 Cherahala Blvd.		
City	Marshall	State	TX	City	Houston	State	TX	City	Knoxville	State	TN
Postal Code	75670	Country	USA	Postal Code	77099	Country	USA	Postal Code	37932	Country	USA
Phone Number	713.243.7264			Phone Number	281.575.2279 or 281.530.5656						
Project Manager	Praveen Srivastav							Shipping Company			

SAMPLE DETAILS / ANALYSIS REQUESTED

Sample ID	Location	Start Depth	End Depth	Depth Unit	Field Matrix	Date	Time (24hr)	# Of Cont.	VOCs in Water by 8260B	Carbon Dioxide in Water by RSK175	Methane, Ethane, Ethene in Water by RSK175	Anions in Water by E300.0	TOC in Water by E415.1	Perchlorate by 6850	Sulfide in Water by E376.1	Phosphorous by E365.2	Alkalinity by E310.1	Dissolved Fe and Mn by 6020	Fe Total by 6020
SDWW16-181128	LHAAP 50	20.73	20.92		WG	11/28/18	0845	16	X	X	X	X	X	X	X	X	X	X	X
SDWW16-181128-MS	LHAAP50	20.73	20.92		WG	11/28/18	0845	16	X	X	X	X	X	X	X	X	X	X	X
SDWW16-181128-MSD	LHAAP50	20.73	20.92		WG	11/28/18	0845	16	X	X	X	X	X	X	X	X	X	X	X
SDWW11-181128	LHAAP 50	21.85	22.06		WG	11/28/18	1105	16	X	X	X	X	X	X	X	X	X	X	X
SDWW11-181128-FD	LHAAP 50	21.85	22.06		WG	11/28/18	1105	16	X	X	X	X	X	X	X	X	X	X	X
SDWW12-181128	LHAAP 50	19.71	19.95		WG	11/28/18	1220	16	X	X	X	X	X	X	X	X	X	X	X
SDWW08-181128	LHAAP 50	23.26	23.46		WG	11/28/18	1325	16	X	X	X	X	X	X	X	X	X	X	X
TRIP BLANK					W	11/28/18		2	X										

HS18111440

Aptim Environmental & Infrastucture, Inc.

Longhorn Army Ammunition Plant LHAAP-50

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
Anions should include chloride, nitrate, nitrite, and sulfate.	Sam Benzon / BHATE	11/28/18 1430	SM / ALS Houc	11/29/18 10:20

Cooler - 25351 IR2.5

Temp 1.4 CF0.3

ALS
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5887

25551

CUSTODY SEAL

Date: 11/28/16 Time: 1730
Name: Scott Beesinger
Company: RHAMZ

Seal Broken By: PA
Date: 11/29/16

25551 AAD9253UPS

J4616879948

ALS Environmental
ALS Group USA, Corp
1317 South 13th Avenue
Kelso, WA 98626
T : +1 360 577 7222
F : +1 360 636 1068
www.alsglobal.com

December 17, 2018 **Analytical Report for Service Request No:** K1811673

RJ Modashia
ALS Laboratory Group
10450 Stancliff Road
Suite 210
Houston, TX 77099-4338

RE: ALS Houston DOD TOC / HS18111440

Dear RJ,

Enclosed are the results of the sample(s) submitted to our laboratory November 30, 2018
For your reference, these analyses have been assigned our service request number **K1811673.**

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. All results are intended to be considered in their entirety, and ALS Group USA Corp. dba ALS Environmental (ALS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please contact me if you have any questions. My extension is 3350. You may also contact me via email at Kelley.Lovejoy@alsglobal.com.

Respectfully submitted,

ALS Group USA, Corp. dba ALS Environmental

for Kelley Lovejoy
Project Manager

ALS Environmental
ALS Group USA, Corp
1317 South 13th Avenue
Kelso, WA 98626
T : +1 360 577 7222
F : +1 360 636 1068
www.alsglobal.com

Table of Contents

Acronyms
Qualifiers
State Certifications, Accreditations, And Licenses
Case Narrative
Chain of Custody
General Chemistry
Raw Data
    General Chemistry

Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LOD	Limit of Detection
LOQ	Limit of Quantitation
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Inorganic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
E	The result is an estimate amount because the value exceeded the instrument calibration range.
J	The result is an estimated value.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.
H	The holding time for this test is immediately following sample collection. The samples were analyzed as soon as possible after receipt by the laboratory.

Metals Data Qualifiers

#	The control limit criteria is not applicable. See case narrative.
J	The result is an estimated value.
E	The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
M	The duplicate injection precision was not met.
N	The Matrix Spike sample recovery is not within control limits. See case narrative.
S	The reported value was determined by the Method of Standard Additions (MSA).
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
W	The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
+	The correlation coefficient for the MSA is less than 0.995.
Q	See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
A	A tentatively identified compound, a suspected aldol-condensation product.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
C	The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
D	The reported result is from a dilution.
E	The result is an estimated value.
J	The result is an estimated value.
N	The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
P	The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

F	The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
L	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
H	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
O	The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
Y	The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
Z	The chromatographic fingerprint does not resemble a petroleum product.

ALS Group USA Corp. dba ALS Environmental (ALS) - Kelso
State Certifications, Accreditations, and Licenses

Agency	Web Site	Number
Alaska DEH	http://dec.alaska.gov/eh/lab/cs/csapproval.htm	UST-040
Arizona DHS	http://www.azdhs.gov/lab/license/env.htm	AZ0339
Arkansas - DEQ	http://www.adeq.state.ar.us/techsvs/labcert.htm	88-0637
California DHS (ELAP)	http://www.cdph.ca.gov/certlic/labs/Pages/ELAP.aspx	2795
DOD ELAP	http://www.denix.osd.mil/edqw/Accreditation/AccreditedLabs.cfm	L16-58-R4
Florida DOH	http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm	E87412
Hawaii DOH	http://health.hawaii.gov/	-
ISO 17025	http://www.pjlabs.com/	L16-57
Louisiana DEQ	http://www.deq.louisiana.gov/page/la-lab-accreditation	03016
Maine DHS	http://www.maine.gov/dhhs/	WA01276
Minnesota DOH	http://www.health.state.mn.us/accreditation	053-999-457
Nevada DEP	http://ndep.nv.gov/bsdw/labservice.htm	WA01276
New Jersey DEP	http://www.nj.gov/dep/enforcement/oqa.html	WA005
New York - DOH	https://www.wadsworth.org/regulatory/elap	12060
North Carolina DEQ	https://deq.nc.gov/about/divisions/water-resources/water-resources-data/water-sciences-home-page/laboratory-certification-branch/non-field-lab-certification	605
Oklahoma DEQ	http://www.deq.state.ok.us/CSDnew/labcert.htm	9801
Oregon – DEQ (NELAP)	http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	WA100010
South Carolina DHEC	http://www.scdhec.gov/environment/EnvironmentalLabCertification/	61002
Texas CEQ	http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html	T104704427
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C544
Wyoming (EPA Region 8)	https://www.epa.gov/region8-waterops/epa-region-8-certified-drinking-water-	-
Kelso Laboratory Website	www.alsglobal.com	NA

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. A complete listing of specific NELAP-certified analytes, can be found in the certification section at www.ALSGlobal.com or at the accreditation bodies web site.
Please refer to the certification and/or accreditation body's web site if samples are submitted for compliance purposes. The states highlighted above, require the analysis be listed on the state certification if used for compliance purposes and if the method/anlayte is offered by that state.

Case Narrative

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

1317 South 13th Ave, Kelso, WA 98626 | 1-360-577-7222 | www.alsglobal.com

ALS Environmental

Client: ALS Environmental - US
Project: ALS Houston DOD TOC
Sample Matrix: Ground Water

Service Request: K1811673
Date Received: 11/30/2018

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples designated for Tier IV validation deliverables including summary forms and all of the associated raw data for each of the analyses. When appropriate to the method, method blank results have been reported with each analytical test.

Sample Receipt:

Five ground water samples were received for analysis at ALS Environmental on 11/30/2018. The samples were received in good condition and consistent with the accompanying chain of custody form. The samples were stored in a refrigerator at 4ºC upon receipt at the laboratory.

General Chemistry:

Method SM 5310 C, 12/12/2018:The Relative Percent Difference (RPD) criterion for the replicate analysis of Total Organic Carbon in sample 50WW08-181128 was not applicable because the analyte concentration was not significantly greater than the Method Reporting Limit (MRL). Analytical values derived from measurements close to the detection limit are not subject to the same accuracy and precision criteria as results derived from measurements higher on the calibration range for the method.

Approved by Noe D. Davis Date 12/17/2018

Chain of Custody

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

K1811673

10450 Stancliff Rd, Ste 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887
www.alsglobal.com

Subcontract Chain of Custody

COC ID: 10324

SUBCONTRACT TO:

ALS Environmental Kelso
1317 S. 13th Avenue
Kelso, WA 98626

Phone: +1 360 501 3312

CUSTOMER INFORMATION:

Company:	ALS Houston
Contact:	RJ Modashia
Address:	10450 Stancliff Rd, Ste 210
Phone:	+1 281 530 5656
Email:	RJ.Modashia@alsglobal.com
Alternate Contact:	Jumoke M. Lawal
Email:	jumoke.lawal@alsglobal.com

INVOICE INFORMATION:

Company:	ALS Houston
Contact:	Accounts Payable
Address:	10450 Stancliff Rd, Ste 210
Phone:	+1 281 530 5656
Reference:	HS18111440
TSR:	Sonia West

	LAB SAMPLE ID	CLIENT SAMPLE ID	MATRIX	COLLECT DATE
	ANALYSIS REQUESTED			DUE DATE
1.	**HS18111440-01**	**50WW16-181128**	**Groundwater**	**28 Nov 2018 08:45**
	TOC Analysis with DOD Level IV			13 Dec 2018
2.	**HS18111440-02**	**50WW11-181128**	**Groundwater**	**28 Nov 2018 11:05**
	TOC Analysis with DOD Level IV			13 Dec 2018
3.	**HS18111440-03**	**50WW11-181128-FD**	**Groundwater**	**28 Nov 2018 11:05**
	TOC Analysis with DOD Level IV			13 Dec 2018
4.	**HS18111440-04**	**50WW12-181128**	**Groundwater**	**28 Nov 2018 12:20**
	TOC Analysis with DOD Level IV			13 Dec 2018
5.	**HS18111440-05**	**50WW08-181128**	**Groundwater**	**28 Nov 2018 13:25**
	TOC Analysis with DOD Level IV			13 Dec 2018

Comments: Please analyze for the analysis listed above.
Send report to the emails shown above.

HS18111440-01 MS/MSD

QC Level: DOD IV (DoD Data Package)

Reed C
11/30/18 1000

K1811673

Subcontract Chain of Custody

COC ID: 10324

Relinquished By:	J. MACKAY	Date/Time:	11/29/18 18:00
Received By:	K MORROW ALS KELSO	Date/Time:	11/30/18 10:02
Cooler ID(s):	10324	Temperature(s):	

PC KL

Cooler Receipt and Preservation Form

Client ALS- Houston Service Request K18 116073

Received: 11/30/18 Opened: 11/30/18 By: KM Unloaded: 11/30/18 By: KM

1. Samples were received via? *USPS* (*Fed Ex*) *UPS* *DHL* *PDX* *Courier* *Hand Delivered*
2. Samples were received in: (circle) (*Cooler*) *Box* *Envelope* *Other* _____ *NA*
3. Were custody seals on coolers? NA (Y) N If yes, how many and where? 2 Front
   If present, were custody seals intact? (Y) N If present, were they signed and dated? (Y) N

Raw Cooler Temp	Corrected Cooler Temp	Raw Temp Blank	Corrected Temp Blank	Corr. Factor	Thermometer ID	Cooler/COC ID	Tracking Number NA	Filed
-0.4	-0.5	0.8	0.7	-0.1	351	10324	4380 9535 1482	

4. Packing material: *Inserts* *Baggies* (*Bubble Wrap*) *Gel Packs* (*Wet Ice*) *Dry Ice* *Sleeves* _____
5. Were custody papers properly filled out (ink, signed, etc.)? NA (Y) N
6. Were samples received in good condition (temperature, unbroken)? *Indicate in the table below.* NA (Y) N
   If applicable, tissue samples were received: *Frozen* *Partially Thawed* *Thawed*
7. Were all sample labels complete (i.e analysis, preservation, etc.)? NA (Y) N
8. Did all sample labels and tags agree with custody papers? *Indicate major discrepancies in the table on page 2.* NA (Y) N
9. Were appropriate bottles/containers and volumes received for the tests indicated? NA (Y) N
10. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below* (NA) Y N
11. Were VOA vials received without headspace? *Indicate in the table below.* (NA) Y N
12. Was C12/Res negative? (NA) Y N

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count Bottle Type	Out of Temp	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

Notes, Discrepancies, & Resolutions: _____

General Chemistry

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	K1811673
Project:	ALS Houston DOD TOC/HS18111440	**Date Collected:**	11/28/18
Sample Matrix:	Ground Water	**Date Received:**	11/30/18
Analysis Method:	SM 5310 C	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA

Carbon, Total Organic

Sample Name	Lab Code	Result	LOQ	LOD	MDL	Dil.	Date Analyzed	Q
50WW16-181128	K1811673-001	**1.79**	0.50	0.20	0.07	1	12/12/18 11:07	
50WW11-181128	K1811673-002	**2.18**	0.50	0.20	0.07	1	12/12/18 13:18	
50WW11-181128-FD	K1811673-003	**2.25**	0.50	0.20	0.07	1	12/12/18 13:49	
50WW12-181128	K1811673-004	**2.97**	0.50	0.20	0.07	1	12/12/18 14:21	
50WW08-181128	K1811673-005	**2.39**	0.50	0.20	0.07	1	12/12/18 14:53	
Method Blank	K1811673-MB	ND U	0.50	0.20	0.07	1	12/12/18 03:38	

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	K1811673
Project	ALS Houston DOD TOC/HS18111440	**Date Collected:**	11/28/18
Sample Matrix:	Ground Water	**Date Received:**	11/30/18
Analysis Method:	SM 5310 C	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA

Replicate Sample Summary
Carbon, Total Organic

Sample Name:	Lab Code:	MRL	LOQ	MDL	Sample Result	Duplicate Result	Average	RPD	RPD Limit	Date Analyzed
50WW16-181128	K1811673-001DUP	0.50	0.20	0.07	1.79	1.75	1.77	2	10	12/12/18
50WW11-181128	K1811673-002DUP	0.50	0.20	0.07	2.18	2.09	2.14	4	10	12/12/18
50WW11-181128-FD	K1811673-003DUP	0.50	0.20	0.07	2.25	2.12	2.18	6	10	12/12/18
50WW12-181128	K1811673-004DUP	0.50	0.20	0.07	2.97	2.77	2.87	7	10	12/12/18
50WW08-181128	K1811673-005DUP	0.50	0.20	0.07	2.39	3.02	2.71	23 *	10	12/12/18

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	K1811673
Project:	ALS Houston DOD TOC/HS18111440	**Date Collected:**	11/28/18
Sample Matrix:	Ground Water	**Date Received:**	11/30/18
		Date Analyzed:	12/12/18
		Date Extracted:	NA

Matrix Spike Summary
Carbon, Total Organic

Sample Name:	50WW16-181128	**Units:**	mg/L
Lab Code:	K1811673-001	**Basis:**	NA
Analysis Method:	SM 5310 C		
Prep Method:	None		

Matrix Spike
K1811673-001MS

Analyte Name	Sample Result	Result	Spike Amount	% Rec	% Rec Limits
Carbon, Total Organic	1.79	26.5	25.0	99	83-117

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	K1811673
Project:	ALS Houston DOD TOC/HS18111440	**Date Analyzed:**	12/12/18
Sample Matrix:	Ground Water	**Date Extracted:**	NA

Lab Control Sample Summary
Carbon, Total Organic

Analysis Method:	SM 5310 C	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA
		Analysis Lot:	618379

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1811673-LCS	20.0	21.9	91	83-117

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US **Service Request:** K1811673
Project: ALS Houston DOD TOC/HS18111440

Continuing Calibration Verification (CCV) Summary

Carbon, Total Organic

Analysis Method: SM 5310 C **Units:** mg/L

	Analysis Lot	Lab Code	Date Analyzed	True Value	Measured Value	Percent Recovery	Acceptance Limits
CCV1	618379	KQ1818161-18	12/12/18 03:05	25.0	24.5	98	90-110
CCV2	618379	KQ1818161-19	12/12/18 07:23	25.0	24.2	97	90-110
CCV3	618379	KQ1818161-20	12/12/18 12:11	25.0	24.3	97	90-110
CCV4	618379	KQ1818161-21	12/12/18 17:01	25.0	24.5	98	90-110
CCV5	618379	KQ1818161-22	12/12/18 22:35	25.0	24.9	100	90-110

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US **Service Request:**K1811673
Project: ALS Houston DOD TOC/HS18111440

Continuing Calibration Blank (CCB) Summary
Carbon, Total Organic

Analysis Method: SM 5310 C **Units:**mg/L

	Analysis Lot	Lab Code	Date Analyzed	LOQ	LOD	MDL	Result	Q
CCB1	618379	KQ1818161-23	12/12/18 03:21	0.50	0.20	0.07	ND	U
CCB2	618379	KQ1818161-24	12/12/18 07:39	0.50	0.20	0.07	ND	U
CCB3	618379	KQ1818161-25	12/12/18 12:28	0.50	0.20	0.07	ND	U
CCB4	618379	KQ1818161-26	12/12/18 17:17	0.50	0.20	0.07	ND	U
CCB5	618379	KQ1818161-27	12/12/18 22:52	0.50	0.20	0.07	0.14	J

Raw Data

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

General Chemistry

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

Work Request # (Original) K1811890, 1464, 1305, 1335, 1527, 1673, 0656, 2010

Tier: IV IV I II II IV II II

Date Analyzed: 12/11/18

Analyst: /CLS

Run # 618378, 618379, 618381

Analysis: TOC

DATA QUALITY REPORT
INORGANICS

Explain any "no" responses to questions below, and any corrective actions in the comments section below.

1.	Is the method name and number correct and appropriate?	yes/no/NA
2.	Holding times met for all analyses and for all samples?	yes/no/NA
3.	Are calculations correct?	yes/no/NA
4.	Is the reporting basis correct? (Dry Weight)	yes/no/NA
5.	All quality control criteria met?	yes/no
6.	Is the calibration curve correlation coefficient ≥ 0.995?	yes/no/NA
7.	MBs, CCVs, CCBs, LCSs, Dups, and Spikes, analyzed at proper frequency?	yes/no/NA
8.	Are ICVs, CCVs, and CCBs all within acceptance limits?	yes/no/NA
9.	Are results for methods blanks all ND?	yes/no/NA
10.	Are all QC samples within acceptance criteria? (LCS % rec, MS/DMS % rec, DUP or MS/DMS RPDs, etc.)	yes/no/NA
11.	Are all exceptions explained?	yes/no/NA
12.	Have all applicable service requests been reviewed?	yes/no/NA
13.	Are all samples labeled correctly?	yes/no/NA
14.	Have all instructions on the service request been followed? (e.g. Special MRLs, QC on a specific sample, Form V)	yes/no/NA
15.	Are detection limits and units reported correctly?	yes/no/NA
16.	Is the unused space on the benchsheet crossed out?	yes/no/NA
17.	Was analysis turned in by the due date? (n-2) (If not record SR#)	yes/no/NA

COMMENTS:

1890-1, 1464-4, 2, 3, 7 1335-1, 2, 4, 1673-5, 0656-5 RPD not within acceptance limits. The sample results are less than 5x the MRL.

RA run 618381 CCV/LCS Fail

0656-12 RPD not within acceptance limits - cloudy non homogeneous sample.

Final Approved by: _____ Date: 12/13/18

DQREPORT

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 618378 **Method/Testcode:** SM 5310 C/TOC T

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
K1811305-001	Carbon, Total Organic	N/A		Drinking Water	1.43 mg/L	10 ml	1.43 mg/L	1	0.07	0.50			12/12/18 02:33	N	I
K1811305-003	Carbon, Total Organic	N/A		Drinking Water	1.00 mg/L	10 ml	1.00 mg/L	1	0.07	0.50			12/12/18 04:43	N	I
K1811335-001	Carbon, Total Organic	N/A		Ground Water	1.25 mg/L	10 ml	1.25 mg/L	1	0.07	0.50			12/12/18 05:15	N	II
K1811335-002	Carbon, Total Organic	N/A		Ground Water	1.84 mg/L	10 ml	1.84 mg/L	1	0.07	0.50			12/12/18 06:19	N	II
K1811335-003	Carbon, Total Organic	N/A		Ground Water	0.60 mg/L	10 ml	0.60 mg/L	1	0.07	0.50			12/12/18 06:51	N	II
K1811335-004	Carbon, Total Organic	N/A		Ground Water	0.28 mg/L	10 ml	0.28 mg/L J	1	0.07	0.50			12/12/18 07:56	N	II
K1811464-001	Carbon, Total Organic	N/A		Water	1.00 mg/L	10 ml	1.00 mg/L	1	0.07	0.50			12/11/18 23:23	N	IV
K1811464-002	Carbon, Total Organic	N/A		Water	0.89 mg/L	10 ml	0.89 mg/L	1	0.07	0.50			12/11/18 23:55	N	IV
K1811464-003	Carbon, Total Organic	N/A		Water	0.94 mg/L	10 ml	0.94 mg/L	1	0.07	0.50			12/12/18 00:26	N	IV
K1811464-004	Carbon, Total Organic	N/A		Water	0.87 mg/L	10 ml	0.87 mg/L	1	0.07	0.50			12/11/18 22:18	Y	IV
K1811464-005	Carbon, Total Organic	N/A		Water	2.31 mg/L	10 ml	2.31 mg/L	1	0.07	0.50			12/12/18 00:58	N	IV
K1811464-006	Carbon, Total Organic	N/A		Water	2.23 mg/L	10 ml	2.23 mg/L	1	0.07	0.50			12/12/18 01:30	N	IV
K1811464-007	Carbon, Total Organic	N/A		Water	0.89 mg/L	10 ml	0.89 mg/L	1	0.07	0.50			12/12/18 02:01	N	IV
K1811527-001	Carbon, Total Organic	N/A		Water	0.77 mg/L	10 ml	0.77 mg/L	1	0.07	0.50			12/12/18 08:27	N	II
K1811527-002	Carbon, Total Organic	N/A		Water	2.38 mg/L	10 ml	11.9 mg/L	5	0.4	2.5			12/12/18 09:32	N	II
K1811527-003	Carbon, Total Organic	N/A		Water	0.77 mg/L	10 ml	3.9 mg/L	5	0.4	2.5			12/12/18 10:04	N	II
K1811527-004	Carbon, Total Organic	N/A		Water	0.17 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			12/12/18 10:35	N	II
K1811890-001	Carbon, Total Organic (TOC)	N/A		Water	1.52 mg/L	10 ml	1.52 mg/L	1	0.07	0.50			12/11/18 20:09	N	IV
KQ1818155-01	Carbon, Total Organic (TOC)	MS	K1811890-001	Water	25.14 mg/L	10 ml	25.1 mg/L	1	0.07	0.50	95		12/11/18 21:12	N	IV
KQ1818155-02	Carbon, Total Organic (TOC)	DUP	K1811890-001	Water	0.84 mg/L	10 ml	0.84 mg/L	1	0.07	0.50		57*	12/11/18 20:09	N	IV
KQ1818155-03	Carbon, Total Organic (TOC)	TRP	K1811890-001	Water	0.95 mg/L	10 ml	0.95 mg/L	1	0.07	0.50		33*	12/11/18 20:09	N	IV
KQ1818155-04	Carbon, Total Organic (TOC)	QUAD	K1811890-001	Water	0.88 mg/L	10 ml	0.88 mg/L	1	0.07	0.50		30*	12/11/18 20:09	N	IV
KQ1818155-05	Carbon, Total Organic	MS	K1811464-004	Water	25.56 mg/L	10 ml	25.6 mg/L	1	0.07	0.50	99		12/11/18 22:50	N	IV
KQ1818155-06	Carbon, Total Organic	DUP	K1811464-004	Water	0.62 mg/L	10 ml	0.62 mg/L	1	0.07	0.50		34*	12/11/18 22:18	N	IV
KQ1818155-07	Carbon, Total Organic	DUP	K1811464-001	Water	1.00 mg/L	10 ml	1.00 mg/L	1	0.07	0.50		<1	12/11/18 23:23	N	IV
KQ1818155-08	Carbon, Total Organic	DUP	K1811464-002	Water	0.76 mg/L	10 ml	0.76 mg/L	1	0.07	0.50		17*	12/11/18 23:55	N	IV
KQ1818155-09	Carbon, Total Organic	DUP	K1811464-003	Water	1.07 mg/L	10 ml	1.07 mg/L	1	0.07	0.50		13*	12/12/18 00:26	N	IV
KQ1818155-10	Carbon, Total Organic	DUP	K1811464-005	Water	2.18 mg/L	10 ml	2.18 mg/L	1	0.07	0.50		6	12/12/18 00:58	N	IV
KQ1818155-11	Carbon, Total Organic	DUP	K1811464-006	Water	2.16 mg/L	10 ml	2.16 mg/L	1	0.07	0.50		3	12/12/18 01:30	N	IV
KQ1818155-12	Carbon, Total Organic	DUP	K1811464-007	Water	0.79 mg/L	10 ml	0.79 mg/L	1	0.07	0.50		13*	12/12/18 02:01	N	IV

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

CES 12/13/18

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 618378 **Method/Testcode:** SM 5310 C/TOC T

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
KQ1818155-13	Carbon, Total Organic	MS	K1811305-001	Drinking Water	26.08 mg/L	10 ml	26.1 mg/L	1	0.07	0.50	99		12/12/18 04:10	N	I
KQ1818155-14	Carbon, Total Organic	DUP	K1811305-001	Drinking Water	1.34 mg/L	10 ml	1.34 mg/L	1	0.07	0.50		7	12/12/18 02:33	N	I
KQ1818155-15	Carbon, Total Organic	DUP	K1811305-003	Drinking Water	0.92 mg/L	10 ml	0.92 mg/L	1	0.07	0.50		8	12/12/18 04:43	N	I
KQ1818155-16	Carbon, Total Organic	MS	K1811335-001	Ground Water	26.01 mg/L	10 ml	26.0 mg/L	1	0.07	0.50	99		12/12/18 05:47	N	II
KQ1818155-17	Carbon, Total Organic	DUP	K1811335-001	Ground Water	1.10 mg/L	10 ml	1.10 mg/L	1	0.07	0.50		13*	12/12/18 05:15	N	II
KQ1818155-18	Carbon, Total Organic	DUP	K1811335-002	Ground Water	2.10 mg/L	10 ml	2.10 mg/L	1	0.07	0.50		13*	12/12/18 06:19	N	II
KQ1818155-19	Carbon, Total Organic	DUP	K1811335-003	Ground Water	0.66 mg/L	10 ml	0.66 mg/L	1	0.07	0.50		8	12/12/18 06:51	N	II
KQ1818155-20	Carbon, Total Organic	DUP	K1811335-004	Ground Water	0.09 mg/L	10 ml	0.09 mg/L J	1	0.07	0.50		98*	12/12/18 07:56	N	II
KQ1818155-21	Carbon, Total Organic	MS	K1811527-001	Water	25.43 mg/L	10 ml	25.4 mg/L	1	0.07	0.50	99		12/12/18 08:59	N	II
KQ1818155-22	Carbon, Total Organic	DUP	K1811527-001	Water	0.77 mg/L	10 ml	0.77 mg/L	1	0.07	0.50		<1	12/12/18 08:27	N	II
KQ1818155-23	Carbon, Total Organic	DUP	K1811527-002	Water	2.30 mg/L	10 ml	11.5 mg/L	5	0.4	2.5		3	12/12/18 09:32	N	II
KQ1818155-24	Carbon, Total Organic	DUP	K1811527-003	Water	0.67 mg/L	10 ml	3.3 mg/L	5	0.4	2.5		15*	12/12/18 10:04	N	II
KQ1818155-25	Carbon, Total Organic	DUP	K1811527-004	Water	0.15 mg/L	10 ml	0.15 mg/L J	1	0.07	0.50		NC	12/12/18 10:35	N	II
KQ1818155-26	Carbon, Total Organic	MB		Water	0.14 mg/L	10 ml	0.14 mg/L J	1	0.07	0.50			12/11/18 18:31	N	IV
KQ1818155-26	Carbon, Total Organic (TOC)	MB		Water	0.14 mg/L	10 ml	0.14 mg/L J	1	0.07	0.50			12/11/18 18:31	N	IV
KQ1818155-27	Carbon, Total Organic	LCS		Water	20.58 mg/L	10 ml	20.6 mg/L	1	0.07	0.50	94		12/11/18 18:47	N	IV
KQ1818155-27	Carbon, Total Organic (TOC)	LCS		Water	20.58 mg/L	10 ml	20.6 mg/L	1	0.07	0.50	94		12/11/18 18:47	N	IV
KQ1818155-28	Carbon, Total Organic	CCV		Water	24.41 mg/L	10 ml	24.4 mg/L	1			98		12/11/18 17:58	N	IV
KQ1818155-28	Carbon, Total Organic (TOC)	CCV		Water	24.41 mg/L	10 ml	24.4 mg/L	1			98		12/11/18 17:58	N	IV
KQ1818155-29	Carbon, Total Organic	CCV		Water	24.44 mg/L	10 ml	24.4 mg/L	1			98		12/11/18 21:45	N	IV
KQ1818155-29	Carbon, Total Organic (TOC)	CCV		Water	24.44 mg/L	10 ml	24.4 mg/L	1			98		12/11/18 21:45	N	IV
KQ1818155-30	Carbon, Total Organic	CCV		Water	24.52 mg/L	10 ml	24.5 mg/L	1			98		12/12/18 03:05	N	IV
KQ1818155-30	Carbon, Total Organic (TOC)	CCV		Water	24.52 mg/L	10 ml	24.5 mg/L	1			98		12/12/18 03:05	N	IV
KQ1818155-31	Carbon, Total Organic	CCV		Water	24.25 mg/L	10 ml	24.2 mg/L	1			97		12/12/18 07:23	N	IV
KQ1818155-31	Carbon, Total Organic (TOC)	CCV		Water	24.25 mg/L	10 ml	24.2 mg/L	1			97		12/12/18 07:23	N	IV
KQ1818155-32	Carbon, Total Organic	CCV		Water	24.30 mg/L	10 ml	24.3 mg/L	1			97		12/12/18 12:11	N	IV
KQ1818155-32	Carbon, Total Organic (TOC)	CCV		Water	24.30 mg/L	10 ml	24.3 mg/L	1			97		12/12/18 12:11	N	IV
KQ1818155-33	Carbon, Total Organic	CCB		Water	0.03 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			12/11/18 18:14	N	IV

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 618378 **Method/Testcode:** 9060A/TOC T

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
KQ1818155-33	Carbon, Total Organic (TOC)	CCB		Water	0.03 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			12/11/18 18:14	N	IV
KQ1818155-34	Carbon, Total Organic	CCB		Water	0.21 mg/L	10 ml	0.21 mg/L J	1	0.07	0.50			12/11/18 22:01	N	IV
KQ1818155-34	Carbon, Total Organic (TOC)	CCB		Water	0.21 mg/L	10 ml	0.21 mg/L J	1	0.07	0.50			12/11/18 22:01	N	IV
KQ1818155-35	Carbon, Total Organic	CCB		Water	0.00 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			12/12/18 03:21	N	IV
KQ1818155-35	Carbon, Total Organic (TOC)	CCB		Water	0.00 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			12/12/18 03:21	N	IV
KQ1818155-36	Carbon, Total Organic	CCB		Water	-0.21 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			12/12/18 07:39	N	IV
KQ1818155-36	Carbon, Total Organic (TOC)	CCB		Water	-0.21 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			12/12/18 07:39	N	IV
KQ1818155-37	Carbon, Total Organic	CCB		Water	-0.14 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			12/12/18 12:28	N	IV
KQ1818155-37	Carbon, Total Organic (TOC)	CCB		Water	-0.14 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			12/12/18 12:28	N	IV
KQ1818155-38	Carbon, Total Organic	LODV		Water	0.31 mg/L	10 ml	0.31 mg/L J	1	0.07	0.50			12/11/18 19:36	N	IV
KQ1818155-38	Carbon, Total Organic (TOC)	LODV		Water	0.31 mg/L	10 ml	0.31 mg/L J	1	0.07	0.50			12/11/18 19:36	N	IV
KQ1818155-39	Carbon, Total Organic	LOQV		Water	0.61 mg/L	10 ml	0.61 mg/L	1	0.07	0.50			12/11/18 19:53	N	IV
KQ1818155-39	Carbon, Total Organic (TOC)	LOQV		Water	0.61 mg/L	10 ml	0.61 mg/L	1	0.07	0.50			12/11/18 19:53	N	IV
KQ1818155-40	Carbon, Total Organic	MDL		Water	0.39 mg/L	10 ml	0.387 mg/L J	1	0.07	0.50			12/11/18 19:20	N	IV
KQ1818155-40	Carbon, Total Organic (TOC)	MDL		Water	0.39 mg/L	10 ml	0.387 mg/L J	1	0.07	0.50			12/11/18 19:20	N	IV

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 618379 **Method/Testcode:** SM 5310 C/TOC T

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
K1810656-004	Carbon, Total Organic	N/A		Water	4.45 mg/L	10 ml	17.8 mg/L	4	0.3	2.0			12/12/18 16:29	N	II
K1810656-005	Carbon, Total Organic	N/A		Water	2.47 mg/L	10 ml	2.47 mg/L	1	0.07	0.50			12/12/18 15:24	N	II
K1810656-006	Carbon, Total Organic	N/A		Water	7.20 mg/L	10 ml	28.8 mg/L	4	0.3	2.0			12/12/18 17:34	N	II
K1810656-007	Carbon, Total Organic	N/A		Water	6.24 mg/L	10 ml	24.9 mg/L	4	0.3	2.0			12/12/18 18:05	N	II
K1810656-010	Carbon, Total Organic	N/A		Water	3.99 mg/L	10 ml	16.0 mg/L	4	0.3	2.0			12/12/18 18:37	N	II
K1810656-011	Carbon, Total Organic	N/A		Water	6.29 mg/L	10 ml	25.2 mg/L	4	0.3	2.0			12/12/18 19:09	N	II
K1810656-012	Carbon, Total Organic	N/A		Water	3.00 mg/L	10 ml	3.00 mg/L	1	0.07	0.50			12/12/18 19:41	N	II
K1810656-014	Carbon, Total Organic	N/A		Water	11.22 mg/L	10 ml	44.9 mg/L	4	0.3	2.0			12/12/18 20:12	N	II
K1811673-001	Carbon, Total Organic	N/A		Ground Water	1.79 mg/L	10 ml	1.79 mg/L	1	0.07	0.50			12/12/18 11:07	Y	IV
K1811673-002	Carbon, Total Organic	N/A		Ground Water	2.18 mg/L	10 ml	2.18 mg/L	1	0.07	0.50			12/12/18 13:18	N	IV
K1811673-003	Carbon, Total Organic	N/A		Ground Water	2.25 mg/L	10 ml	2.25 mg/L	1	0.07	0.50			12/12/18 13:49	N	IV
K1811673-004	Carbon, Total Organic	N/A		Ground Water	2.97 mg/L	10 ml	2.97 mg/L	1	0.07	0.50			12/12/18 14:21	N	IV
K1811673-005	Carbon, Total Organic	N/A		Ground Water	2.39 mg/L	10 ml	2.39 mg/L	1	0.07	0.50			12/12/18 14:53	N	IV
KQ1818161-01	Carbon, Total Organic	MS	K1811673-001	Ground Water	26.49 mg/L	10 ml	26.5 mg/L	1	0.07	0.50	99		12/12/18 11:39	N	IV
KQ1818161-02	Carbon, Total Organic	DUP	K1811673-001	Ground Water	1.75 mg/L	10 ml	1.75 mg/L	1	0.07	0.50		2	12/12/18 11:07	N	IV
KQ1818161-03	Carbon, Total Organic	DUP	K1811673-002	Ground Water	2.09 mg/L	10 ml	2.09 mg/L	1	0.07	0.50		4	12/12/18 13:18	N	IV
KQ1818161-04	Carbon, Total Organic	DUP	K1811673-003	Ground Water	2.12 mg/L	10 ml	2.12 mg/L	1	0.07	0.50		6	12/12/18 13:49	N	IV
KQ1818161-05	Carbon, Total Organic	DUP	K1811673-004	Ground Water	2.77 mg/L	10 ml	2.77 mg/L	1	0.07	0.50		7	12/12/18 14:21	N	IV
KQ1818161-06	Carbon, Total Organic	DUP	K1811673-005	Ground Water	3.02 mg/L	10 ml	3.02 mg/L	1	0.07	0.50		23*	12/12/18 14:53	N	IV
KQ1818161-07	Carbon, Total Organic	MS	K1810656-005	Water	28.04 mg/L	10 ml	28.0 mg/L	1	0.07	0.50	102		12/12/18 15:56	N	II
KQ1818161-08	Carbon, Total Organic	DUP	K1810656-005	Water	1.89 mg/L	10 ml	1.89 mg/L	1	0.07	0.50		27*	12/12/18 15:24	N	II
KQ1818161-09	Carbon, Total Organic	DUP	K1810656-004	Water	4.13 mg/L	10 ml	16.5 mg/L	4	0.3	2.0		7	12/12/18 16:29	N	II
KQ1818161-10	Carbon, Total Organic	DUP	K1810656-006	Water	7.11 mg/L	10 ml	28.4 mg/L	4	0.3	2.0		1	12/12/18 17:34	N	II
KQ1818161-11	Carbon, Total Organic	DUP	K1810656-007	Water	5.72 mg/L	10 ml	22.9 mg/L	4	0.3	2.0		9	12/12/18 18:05	N	II
KQ1818161-12	Carbon, Total Organic	DUP	K1810656-010	Water	3.60 mg/L	10 ml	14.4 mg/L	4	0.3	2.0		10	12/12/18 18:37	N	II
KQ1818161-13	Carbon, Total Organic	DUP	K1810656-011	Water	6.35 mg/L	10 ml	25.4 mg/L	4	0.3	2.0		<1	12/12/18 19:09	N	II
KQ1818161-14	Carbon, Total Organic	DUP	K1810656-012	Water	2.52 mg/L	10 ml	2.52 mg/L	1	0.07	0.50		18*	12/12/18 19:41	N	II
KQ1818161-15	Carbon, Total Organic	DUP	K1810656-014	Water	11.33 mg/L	10 ml	45.3 mg/L	4	0.3	2.0		<1	12/12/18 20:12	N	II
KQ1818161-16	Carbon, Total Organic	MB		Ground Water	0.02 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			12/12/18 03:38	N	IV

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

CES 12/13/18

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 618379 **Method/Testcode:** SM 5310 C/TOC T

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
KQ1818161-17	Carbon, Total Organic	LCS		Ground Water	19.97 mg/L	10 ml	20.0 mg/L	1	0.07	0.50	91		12/12/18 03:54	N	IV
KQ1818161-18	Carbon, Total Organic	CCV		Ground Water	24.52 mg/L	10 ml	24.5 mg/L	1			98		12/12/18 03:05	N	IV
KQ1818161-19	Carbon, Total Organic	CCV		Ground Water	24.25 mg/L	10 ml	24.2 mg/L	1			97		12/12/18 07:23	N	IV
KQ1818161-20	Carbon, Total Organic	CCV		Ground Water	24.30 mg/L	10 ml	24.3 mg/L	1			97		12/12/18 12:11	N	IV
KQ1818161-21	Carbon, Total Organic	CCV		Ground Water	24.51 mg/L	10 ml	24.5 mg/L	1			98		12/12/18 17:01	N	IV
KQ1818161-22	Carbon, Total Organic	CCV		Ground Water	24.95 mg/L	10 ml	24.9 mg/L	1			100		12/12/18 22:35	N	IV
KQ1818161-23	Carbon, Total Organic	CCB		Ground Water	0.00 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			12/12/18 03:21	N	IV
KQ1818161-24	Carbon, Total Organic	CCB		Ground Water	-0.21 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			12/12/18 07:39	N	IV
KQ1818161-25	Carbon, Total Organic	CCB		Ground Water	-0.14 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			12/12/18 12:28	N	IV
KQ1818161-26	Carbon, Total Organic	CCB		Ground Water	-0.10 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			12/12/18 17:17	N	IV
KQ1818161-27	Carbon, Total Organic	CCB		Ground Water	0.14 mg/L	10 ml	0.14 mg/L J	1	0.07	0.50			12/12/18 22:52	N	IV

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

Analytical Results Summary

LCS/CCV fail RA

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 618381 **Method/Testcode:** SM 5310 C/TOC T

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
K1812010-009	Carbon, Total Organic	N/A		Water	5.04 mg/L	10 ml	5.04 mg/L	1	0.07	0.50			12/12/18 20:44	N	II
K1812010-010	Carbon, Total Organic	N/A		Water	7.22 mg/L	10 ml	36.1 mg/L	5	0.4	2.5			12/12/18 22:04	N	II
K1812010-011	Carbon, Total Organic	N/A		Water	0.87 mg/L	10 ml	4.3 mg/L	5	0.4	2.5			12/12/18 23:41	N	II
K1812010-012	Carbon, Total Organic	N/A		Water	1.15 mg/L	10 ml	5.8 mg/L	5	0.4	2.5			12/13/18 00:13	N	II
K1812010-013	Carbon, Total Organic	N/A		Water	4.76 mg/L	10 ml	4.76 mg/L	1	0.07	0.50			12/13/18 00:44	N	II
K1812010-014	Carbon, Total Organic	N/A		Water	10.70 mg/L	10 ml	53.5 mg/L	5	0.4	2.5			12/13/18 01:16	N	II
K1812010-015	Carbon, Total Organic	N/A		Water	8.36 mg/L	10 ml	41.8 mg/L	5	0.4	2.5			12/13/18 01:48	N	II
K1812010-016	Carbon, Total Organic	N/A		Water	-0.22 mg/L	10 ml	2.5 mg/L U	5	0.4	2.5			12/13/18 02:20	N	II
K1812010-017	Carbon, Total Organic	N/A		Water	110.72 mg/L	10 ml	554 mg/L	5	0.4	2.5			12/13/18 02:51	N	II
K1812010-018	Carbon, Total Organic	N/A		Water	7.42 mg/L	10 ml	37.1 mg/L	5	0.4	2.5			12/13/18 04:28	N	II
K1812010-019	Carbon, Total Organic	N/A		Water	5.59 mg/L	10 ml	22.4 mg/L	4	0.3	2.0			12/13/18 05:00	N	II
K1812010-020	Carbon, Total Organic	N/A		Water	7.18 mg/L	10 ml	71.8 mg/L	10	0.7	5.0			12/13/18 05:32	N	II
K1812010-021	Carbon, Total Organic	N/A		Water	8.02 mg/L	10 ml	40.1 mg/L	5	0.4	2.5			12/13/18 06:04	N	II
KQ1818162-01	Carbon, Total Organic	MS	K1812010-009	Water	29.55 mg/L	10 ml	29.5 mg/L	1	0.07	0.50	98		12/12/18 21:16	N	II
KQ1818162-02	Carbon, Total Organic	DUP	K1812010-009	Water	5.25 mg/L	10 ml	5.25 mg/L	1	0.07	0.50		4	12/12/18 20:44	N	II
KQ1818162-03	Carbon, Total Organic	DUP	K1812010-010	Water	6.54 mg/L	10 ml	32.7 mg/L	5	0.4	2.5		10	12/12/18 22:04	N	II
KQ1818162-04	Carbon, Total Organic	DUP	K1812010-011	Water	3.54 mg/L	10 ml	17.7 mg/L	5	0.4	2.5		121*	12/12/18 23:41	N	II
KQ1818162-05	Carbon, Total Organic	DUP	K1812010-012	Water	0.87 mg/L	10 ml	4.4 mg/L	5	0.4	2.5		28*	12/13/18 00:13	N	II
KQ1818162-06	Carbon, Total Organic	DUP	K1812010-013	Water	4.72 mg/L	10 ml	4.72 mg/L	1	0.07	0.50		<1	12/13/18 00:44	N	II
KQ1818162-07	Carbon, Total Organic	DUP	K1812010-014	Water	16.59 mg/L	10 ml	83.0 mg/L	5	0.4	2.5		43*	12/13/18 01:16	N	II
KQ1818162-08	Carbon, Total Organic	DUP	K1812010-015	Water	7.50 mg/L	10 ml	37.5 mg/L	5	0.4	2.5		11*	12/13/18 01:48	N	II
KQ1818162-09	Carbon, Total Organic	DUP	K1812010-016	Water	-0.22 mg/L	10 ml	2.5 mg/L U	5	0.4	2.5		NC	12/13/18 02:20	N	II
KQ1818162-10	Carbon, Total Organic	DUP	K1812010-017	Water	18.33 mg/L	10 ml	91.6 mg/L	5	0.4	2.5		143*	12/13/18 02:51	N	II
KQ1818162-11	Carbon, Total Organic	DUP	K1812010-018	Water	7.34 mg/L	10 ml	36.7 mg/L	5	0.4	2.5		1	12/13/18 04:28	N	II
KQ1818162-12	Carbon, Total Organic	DUP	K1812010-019	Water	5.14 mg/L	10 ml	20.5 mg/L	4	0.3	2.0		8	12/13/18 05:00	N	II
KQ1818162-13	Carbon, Total Organic	DUP	K1812010-020	Water	6.71 mg/L	10 ml	67.1 mg/L	10	0.7	5.0		7	12/13/18 05:32	N	II
KQ1818162-14	Carbon, Total Organic	DUP	K1812010-021	Water	7.43 mg/L	10 ml	37.2 mg/L	5	0.4	2.5		8	12/13/18 06:04	N	II
KQ1818162-15	Carbon, Total Organic	MB		Water	-0.05 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			12/12/18 12:45	N	II
KQ1818162-16	Carbon, Total Organic	LCS		Water	18.95 mg/L	10 ml	18.9 mg/L	1	0.07	0.50	87		12/12/18 23:25	N	II
KQ1818162-17	Carbon, Total Organic	CCV		Water	24.30 mg/L	10 ml	24.3 mg/L	1					12/12/18 12:11	N	II
KQ1818162-18	Carbon, Total Organic	CCV		Water	24.51 mg/L	10 ml	24.5 mg/L	1					12/12/18 17:01	N	II
KQ1818162-19	Carbon, Total Organic	CCV		Water	24.95 mg/L	10 ml	24.9 mg/L	1					12/12/18 22:35	N	II
KQ1818162-20	Carbon, Total Organic	CCV		Water	29.50 mg/L	10 ml	29.5 mg/L	1					12/13/18 03:55	N	II
KQ1818162-21	Carbon, Total Organic	CCV		Water	24.73 mg/L	10 ml	24.7 mg/L	1					12/13/18 07:38	N	II
KQ1818162-22	Carbon, Total Organic	CCB		Water	-0.14 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			12/12/18 12:28	N	II
KQ1818162-23	Carbon, Total Organic	CCB		Water	-0.10 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			12/12/18 17:17	N	II

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 618381 **Method/Testcode:** SM 5310 C/TOC T

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
KQ1818162-24	Carbon, Total Organic	CCB		Water	0.14 mg/L	10 ml	0.14 mg/L J	1	0.07	0.50			12/12/18 22:52	N	II
KQ1818162-25	Carbon, Total Organic	CCB		Water	2.24 mg/L	10 ml	2.24 mg/L	1	0.07	0.50			12/13/18 04:12	N	II
KQ1818162-26	Carbon, Total Organic	CCB		Water	0.24 mg/L	10 ml	0.24 mg/L J	1	0.07	0.50			12/13/18 07:55	N	II
KQ1818162-27	Carbon, Total Organic	LCS		Water	18.06 mg/L	10 mL	18.1 mg/L	1	0.07	0.50	82*		12/12/18 13:01:00	N	II
KQ1818162-28	Carbon, Total Organic	MB		Water	0.11 mg/L	10 ml	0.11 mg/L J	1	0.07	0.50			12/12/18 23:09	N	II

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

StarLIMS Run: 618378, 618379, 618381

Analysis: TOC

Method: SM 5310 C, 9060A

CCV: 1 1-GEN-05-73F 50 ppm LCS: 11-GEN-05-73C 21.9 ppm

ICAL Date: 11/26/18

ICAL ID: 11-GEN-05-72J

ICS ID: 11-GEN-05-67D

ICS TV: 25.0 ppm ICS % R = 2

Spike ID: 11-GEN-05-70O 0.05 ml of 5000 ppm stock ---> 10.0 ml = 25.0 ppm x dilution factor

Sodium Persulfate: 11-GEN-05-73F

21 % H3PO4: 11-GEN-05-73H

Equipment ID: K-TOC-03

PIPETTE ID: 124276B, Marge

FILTER ID: NA

Analyzed By: CES	Date Analyzed: 12/11/18
Reviewed By: K	Date Reviewed: 12/13/18

0.250	0.250	0.250	0.250	OBSERVATIONS	10	0.2503
0.361				STD Deviation	0.13399	ABOVE
0.428				AVERAGE	0.22170	ABOVE
0.216	0.216	0.216	0.216	UCL	0.35569	0.2159
0.241	0.241	0.241	0.241	LCL	0.08771	0.2413
.007						BELO
0.077						BELOW
0.168	0.168	0.168	0.168	OBSERVATIONS	6	0.1677
0.116	0.116			STD Deviation	0.08457	0.1155
0.354	0.354			AVERAGE	0.22408	0.3538
				UCL	0.30865	BELOW
				LCL	0.13952	BELOW
						BELOW
						BELOW
				OBSERVATIONS	4	BELOW
				STD Deviation	0.06934	BELOW
				AVERAGE	0.21880	BELOW
				UCL	0.28814	BELOW
				LCL	0.14946	BELOW
						BELOW
						BELOW
				OBSERVATIONS	4	BELOW
				STD Deviation	0.04278	BELOW
				AVERAGE	0.21880	BELOW
						BELOW
						BELOW
						BELOW
						BELOW
						BELOW
						BELOW

TOC: 618378, 618379, 618381

Schedule: 12112018

Version: 10
Instrument: Fusion1
Last Saved by: Fusion1 (Fusion1)
Last Saved on: 2018/12/11 17:43 - Tuesday

Position	Sample Type	Sample ID	Method ID (Calibration ID)	Reps
(Clean)	Clean	Clean		1
D	Sample	RB	Extended Reaction 021711 (Extended Reaction 021711)	1
(Clean)	Clean	Clean		1
D	Sample	RB	Extended Reaction 021711 (Extended Reaction 021711)	1
(Clean)	Clean	Clean		1
D	Sample	RB	Extended Reaction 021711 (Extended Reaction 021711)	1
(Blank)	Blank	Reagent/Acid Blank		1
D	Sample	RB	Extended Reaction 021711 (Extended Reaction 021711)	1
B	Check Standard	[TOC] CCV 021711 [25 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1
D	Check Standard	[TOC] CCB 021711 [0.0 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1
1	Sample	MB1	Extended Reaction 021711 (Extended Reaction 021711)	1
2	Check Standard	[TOC] LCS ER [21.9 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1
3	Sample	ICS	Extended Reaction 021711 (Extended Reaction 021711)	1
4	Sample	MDL	Extended Reaction 021711 (Extended Reaction 021711)	1
5	Sample	LOD	Extended Reaction 021711 (Extended Reaction 021711)	1
6	Sample	LOQ	Extended Reaction 021711 (Extended Reaction 021711)	1
7	Sample	K1811890-001.01	Extended Reaction 021711 (Extended Reaction 021711)	4
8	Sample	K1811890-001.01 ms	Extended Reaction 021711 (Extended Reaction 021711)	1
9	Sample	RB	Extended Reaction 021711 (Extended Reaction 021711)	1
B	Check Standard	[TOC] CCV 021711 [25 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1
D	Check Standard	[TOC] CCB 021711 [0.0 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1
10	Sample	K1811464-004.01	Extended Reaction 021711 (Extended Reaction 021711)	2
11	Sample	K1811464-004.01 ms	Extended Reaction 021711 (Extended Reaction 021711)	1
12	Sample	RB	Extended Reaction 021711 (Extended Reaction 021711)	1
13	Sample	K1811464-001.01	Extended Reaction 021711 (Extended Reaction 021711)	2
14	Sample	K1811464-002.01	Extended Reaction 021711 (Extended Reaction 021711)	2
15	Sample	K1811464-003.01	Extended Reaction 021711 (Extended Reaction 021711)	2
16	Sample	K1811464-005.01	Extended Reaction 021711 (Extended Reaction 021711)	2
17	Sample	K1811464-006.01	Extended Reaction 021711 (Extended Reaction 021711)	2
18	Sample	K1811464-007.01	Extended Reaction 021711 (Extended Reaction 021711)	2
19	Sample	K1811305-001.02	Extended Reaction 021711 (Extended Reaction 021711)	2
B	Check Standard	[TOC] CCV 021711 [25 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1
D	Check Standard	[TOC] CCB 021711 [0.0 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1
20	Sample	MB2	Extended Reaction 021711 (Extended Reaction 021711)	1
2	Check Standard	[TOC] LCS ER [21.9 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1
21	Sample	K1811305-001.02 ms	Extended Reaction 021711 (Extended Reaction 021711)	1
22	Sample	RB	Extended Reaction 021711 (Extended Reaction 021711)	1
23	Sample	K1811305-003.02	Extended Reaction 021711 (Extended Reaction 021711)	2
24	Sample	K1811335-001.03	Extended Reaction 021711 (Extended Reaction 021711)	2
25	Sample	K1811335-001.03 ms	Extended Reaction 021711 (Extended Reaction 021711)	1
26	Sample	RB	Extended Reaction 021711 (Extended Reaction 021711)	1
27	Sample	K1811335-002.03	Extended Reaction 021711 (Extended Reaction 021711)	2
28	Sample	K1811335-003.03	Extended Reaction 021711 (Extended Reaction 021711)	2
B	Check Standard	[TOC] CCV 021711 [25 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1
D	Check Standard	[TOC] CCB 021711 [0.0 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1
29	Sample	K1811335-004.03	Extended Reaction 021711 (Extended Reaction 021711)	2
30	Sample	K1811527-001.01	Extended Reaction 021711 (Extended Reaction 021711)	2
31	Sample	K1811527-001.01 ms	Extended Reaction 021711 (Extended Reaction 021711)	1
32	Sample	RB	Extended Reaction 021711 (Extended Reaction 021711)	1
33	Sample	K1811527-002.01 5x	Extended Reaction 021711 (Extended Reaction 021711)	2
34	Sample	K1811527-003.01 5x	Extended Reaction 021711 (Extended Reaction 021711)	2
35	Sample	K1811527-004.01	Extended Reaction 021711 (Extended Reaction 021711)	2
36	Sample	K1811673-001.01	Extended Reaction 021711 (Extended Reaction 021711)	2
37	Sample	K1811673-001.01 ms	Extended Reaction 021711 (Extended Reaction 021711)	1

Schedule: 12112018

Position	Sample Type	Sample ID	Method ID (Calibration ID)	Reps
38	Sample	RB	Extended Reaction 021711 (Extended Reaction 021711)	1
B	Check Standard	[TOC] CCV 021711 [25 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1
D	Check Standard	[TOC] CCB 021711 [0.0 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1
39	Sample	MB3	Extended Reaction 021711 (Extended Reaction 021711)	1
2	Check Standard	[TOC] LCS ER [21.9 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1
40	Sample	K1811673-002.01	Extended Reaction 021711 (Extended Reaction 021711)	2
41	Sample	K1811673-003.01	Extended Reaction 021711 (Extended Reaction 021711)	2
42	Sample	K1811673-004.01	Extended Reaction 021711 (Extended Reaction 021711)	2
43	Sample	K1811673-005.01	Extended Reaction 021711 (Extended Reaction 021711)	2
44	Sample	K1810656-005.08	Extended Reaction 021711 (Extended Reaction 021711)	2
45	Sample	K1810656-005.08 ms	Extended Reaction 021711 (Extended Reaction 021711)	1
46	Sample	RB	Extended Reaction 021711 (Extended Reaction 021711)	1
47	Sample	K1810656-004.08 4x	Extended Reaction 021711 (Extended Reaction 021711)	2
B	Check Standard	[TOC] CCV 021711 [25 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1
D	Check Standard	[TOC] CCB 021711 [0.0 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1
48	Sample	K1810656-006.08 4x	Extended Reaction 021711 (Extended Reaction 021711)	2
49	Sample	K1810656-007.08 4x	Extended Reaction 021711 (Extended Reaction 021711)	2
50	Sample	K1810656-010.08 4x	Extended Reaction 021711 (Extended Reaction 021711)	2
51	Sample	K1810656-011.08 4x	Extended Reaction 021711 (Extended Reaction 021711)	2
52	Sample	K1810656-012.08	Extended Reaction 021711 (Extended Reaction 021711)	2
53	Sample	K1810656-014.08 4x	Extended Reaction 021711 (Extended Reaction 021711)	2
54	Sample	K1812010-009.01	Extended Reaction 021711 (Extended Reaction 021711)	2
55	Sample	K1812010-009.01 ms	Extended Reaction 021711 (Extended Reaction 021711)	1
56	Sample	RB	Extended Reaction 021711 (Extended Reaction 021711)	2
57	Sample	K1812010-010.01 5x	Extended Reaction 021711 (Extended Reaction 021711)	2
B	Check Standard	[TOC] CCV 021711 [25 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1
D	Check Standard	[TOC] CCB 021711 [0.0 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1
58	Sample	MB4	Extended Reaction 021711 (Extended Reaction 021711)	1
2	Check Standard	[TOC] LCS ER [21.9 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1
59	Sample	K1812010-011.01 5x	Extended Reaction 021711 (Extended Reaction 021711)	2
60	Sample	K1812010-012.01 5x	Extended Reaction 021711 (Extended Reaction 021711)	2
61	Sample	K1812010-013.01	Extended Reaction 021711 (Extended Reaction 021711)	2
62	Sample	K1812010-014.01 5x	Extended Reaction 021711 (Extended Reaction 021711)	2
63	Sample	K1812010-015.01 5x	Extended Reaction 021711 (Extended Reaction 021711)	2
64	Sample	K1812010-016.01 5x	Extended Reaction 021711 (Extended Reaction 021711)	2
65	Sample	K1812010-017.01 5x	Extended Reaction 021711 (Extended Reaction 021711)	2
66	Sample	RB	Extended Reaction 021711 (Extended Reaction 021711)	2
B	Check Standard	[TOC] CCV 021711 [25 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1
D	Check Standard	[TOC] CCB 021711 [0.0 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1
67	Sample	K1812010-018.01 5x	Extended Reaction 021711 (Extended Reaction 021711)	2
68	Sample	K1812010-019.01 4x	Extended Reaction 021711 (Extended Reaction 021711)	2
69	Sample	K1812010-020.01 10x	Extended Reaction 021711 (Extended Reaction 021711)	2
70	Sample	K1812010-021.01 5x	Extended Reaction 021711 (Extended Reaction 021711)	2
71	Sample	RB	Extended Reaction 021711 (Extended Reaction 021711)	4
B	Check Standard	[TOC] CCV 021711 [25 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1
D	Check Standard	[TOC] CCB 021711 [0.0 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1

fail —

— NR

Fusion Report - 12112018
Tuesday, December 11, 2018 03:00 PM

(View - Reps, Unused Reps, Meta-Data, Signature, History)
Printed on 2018/12/13 10:55 - Thursday

Report Summary Information

Company Location:	Gen Chem Lab		
Schedule Name:	12112018	Engine Version:	1.1.5.1
Instrument Name:	Fusion1	Firmware Version:	1.2.0696
Report Version:	1 of 1	Connection:	RS232 COM1
Report Creation by Operators (schedule version):	Fusion1 (Fusion1) (v2) Fusion1 (Fusion1) (v3) Fusion1 (Fusion1) (v4) Fusion1 (Fusion1) (v5) Fusion1 (Fusion1) (v6) Fusion1 (Fusion1) (v7) Fusion1 (Fusion1) (v8) Fusion1 (Fusion1) (v9) Fusion1 (Fusion1) (v10)		
Comment:			

Report Results

Sample Type: Clean — From Schedule Version 2

	Pos	Analysis Type	Sample ID	Start Time
◈	(clean)		Clean	2018/12/11 15:00

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	12.20	17.43	5.22	49.43	05:27
2	TC Clean	20.64	23.35	2.71	50.00	04:03
3	TC Clean	2.72	5.35	2.63	50.02	03:47
4	TC Clean	2.05	4.74	2.69	50.15	03:46

Sample Type: Sample — From Schedule Version 3

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	D	TOC	RB	0.0000 ppm	0.0000 ppm	0.0000%	2018/12/11 15:24

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	13.29	16.01	2.71	50.17	12:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 16.8616 (IC) (v1197)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

Sample Type: Clean — From Schedule Version 4

	Pos	Analysis Type	Sample ID	Start Time
◈	(clean)		Clean	2018/12/11 15:42

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	11.38	14.87	3.49	49.41	05:26
2	TC Clean	5.13	7.79	2.67	49.97	04:01
3	TC Clean	2.69	5.42	2.73	50.09	03:46
4	TC Clean	1.80	4.63	2.83	50.08	03:45

Sample Type: Sample — From Schedule Version 5

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	D	TOC	RB	0.0000 ppm	0.0000 ppm	0.0000%	2018/12/11 16:05

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	14.55	17.33	2.79	50.22	12:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 16.8616 (IC) (v1197)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

Sample Type: Clean — From Schedule Version 6

	Pos	Analysis Type	Sample ID	Start Time
◈	(clean)		Clean	2018/12/11 16:22

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	11.45	14.66	3.21	49.26	05:24
2	TC Clean	5.24	8.07	2.82	50.14	03:59
3	TC Clean	2.17	4.87	2.70	50.09	03:46
4	TC Clean	1.66	4.35	2.69	50.17	03:46

Sample Type: Sample — From Schedule Version 7

	Pos	Analysis	Sample ID	Result (ppmC)	Std. Dev.	RSD	Start Time

		Type			(ppmC)		
◈	D	TOC	RB	0.0000 ppm	0.0000 ppm	0.0000%	2018/12/11 16:47

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	15.89	18.39	2.50	50.30	12:33

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 16.8616 (IC) (v1197)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

Sample Type: Blank (Creating v1198) From Schedule Version 8

	Pos	Analysis Type	Sample ID	Start Time
◈	(blank)		Reagent/Acid Blank	2018/12/11 17:04

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	11.51	14.65	3.14	49.45	05:25
2	TC Clean	5.21	8.06	2.85	50.00	04:00
3	TC Clean	2.07	4.83	2.76	50.17	03:46
4	TC Clean	2.03	4.70	2.67	50.20	03:55
5	Reagent Blank	7.28	10.00	2.72	50.07	05:03
6	Acid Blank	1.67	4.34	2.66	49.47	05:28

Sample Type: Sample From Schedule Version 9

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	D	TOC	RB	1.5919 ppm	0.0000 ppm	0.0000%	2018/12/11 17:41

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.5919	15.9194	29.26	32.13	2.87	50.24	12:31

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 17.0882 (IC) (v1198)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

Sample Type: Check Standard --> CCV 021711 From Schedule Version 10

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	B	TOC	25.0000	1:2	[TOC] CCV 021711 [25 ppm]	0 / infinity (NA / NA)	24.6239 ppm (PASS)	0.0000 ppm	0%	2018/12/11 17:58

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	24.6239	246.2390	206.69	209.44	2.76	50.25	12:30

Completion State: Success - Criteria met.
Success Action: Do Nothing
Method: Extended Reaction 021711 (v3)
Calibration: Extended Reaction 021711 (v24)
STD Conc - Pos B: 50 ppmC

Sample Type: Check Standard --> CCB 021711 From Schedule Version 10

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	D	TOC	0.0000	1:2	[TOC] CCB 021711 [0.0 ppm]	0 / infinity (NA / NA)	0.2503 ppm (PASS)	0.0000 ppm	0%	2018/12/11 18:14

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0.0 ppm	1	0.2503	2.5028	20.36	23.27	2.91	50.25	12:30

Completion State: Success - Criteria met.
Success Action: Do Nothing
Method: Extended Reaction 021711 (v3)
Calibration: Extended Reaction 021711 (v24)
STD Conc - Pos D: 0 ppmC

Sample Type: Sample From Schedule Version 10

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	1	TOC	MB1	0.3606 ppm	0.0000 ppm	0.0000%	2018/12/11 18:31

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.3606	3.6062	19.84	22.72	2.88	50.29	12:29

Dilution: 1:10
Blank Contribution: (TC) 17.0882 (IC) (v1198)
Method: Extended Reaction 021711 (v3)
Calibration: Extended Reaction 021711 (v24)

Sample Type: Check Standard --> LCS ER From Schedule Version 10

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	2	TOC	21.9000	1:1	[TOC] LCS ER [21.9 ppm]	0 / infinity (NA / NA)	20.7974 ppm (PASS)	0.0000 ppm	0%	2018/12/11 18:47

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
2	TOC	21.9 ppm	1	20.7974	207.9744	177.44	180.40	2.96	50.28	12:32

Completion State: Success - Criteria met.
Success Action: Do Nothing
Method: Extended Reaction 021711 (v3)
Calibration: Extended Reaction 021711 (v24)
STD Conc - Pos 2: 21.9 ppmC

Sample Type: Sample From Schedule Version 10

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	3	TOC	ICS	0.6657 ppm	0.0000 ppm	0.0000%	2018/12/11 19:04

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.6657	6.6567	22.18	25.15	2.98	50.30	12:33

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 17.0882 (IC) (v1198)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	4	TOC	MDL	0.6058 ppm	0.0000 ppm	0.0000%	2018/12/11 19:20

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.6058	6.0576	21.72	24.64	2.92	50.33	12:32

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 17.0882 (IC) (v1198)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	5	TOC	LOD	0.5300 ppm	0.0000 ppm	0.0000%	2018/12/11 19:36

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.5300	5.3002	21.14	23.87	2.73	50.34	12:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 17.0882 (IC) (v1198)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	6	TOC	LOQ	0.8326 ppm	0.0000 ppm	0.0000%	2018/12/11 19:53

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.8326	8.3259	23.45	26.29	2.84	50.38	12:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 17.0882 (IC) (v1198)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	7	TOC	K1811890-001.01	1.2654 ppm	0.3171 ppm	25.0600%	2018/12/11 20:09

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.7362	17.3622	30.36	33.44	3.08	50.36	12:27
2	TOC	1.0594	10.5941	25.19	28.09	2.90	50.38	12:25
3	TOC	1.1680	11.6798	26.02	28.98	2.96	50.37	12:26

4	TOC	1.0979	10.9787	25.48	28.49	3.01	50.41	12:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 17.0882 (IC) (v1198)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	8	TOC	K1811890-001.01 ms	25.3636 ppm	0.0000 ppm	0.0000%	2018/12/11 21:12

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	25.3636	253.6357	210.98	213.83	2.85	50.38	12:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 17.0882 (IC) (v1198)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	9	TOC	RB	0.7642 ppm	0.0000 ppm	0.0000%	2018/12/11 21:28

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.7642	7.6417	22.93	26.04	3.11	50.39	12:33

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 17.0882 (IC) (v1198)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

Sample Type: Check Standard --> CCV 021711 From Schedule Version 10

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	B	TOC	25.0000	1:2	[TOC] CCV 021711 [25 ppm]	0 / infinity (NA / NA)	24.6571 ppm (PASS)	0.0000 ppm	0%	2018/12/11 21:45

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	24.6571	246.5713	206.94	209.74	2.80	50.41	12:35

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)	50 ppmC

Sample Type: Check Standard --> CCB 021711 From Schedule Version 10

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	D	TOC	0.0000	1:2	[TOC] CCB 021711 [0.0 ppm]	0 / infinity (NA / NA)	0.4277 ppm (PASS)	0.0000 ppm	0%	2018/12/11 22:01

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time

D	TOC	0.0 ppm	1	0.4277	4.2766	21.72	24.55	2.84	50.40	12:30

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)	0 ppmC

Sample Type: Sample From Schedule Version 10

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	10	TOC	K1811464-004.01	0.9626 ppm	0.1776 ppm	18.4500%	2018/12/11 22:18

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.0882	10.8819	25.41	28.31	2.90	50.39	12:26
2	TOC	0.8370	8.3703	23.49	26.26	2.77	50.37	12:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 17.0882 (IC) (v1198)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	11	TOC	K1811464-004.01 ms	25.7739 ppm	0.0000 ppm	0.0000%	2018/12/11 22:50

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	25.7739	257.7392	214.12	216.83	2.71	50.36	12:31

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 17.0882 (IC) (v1198)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	12	TOC	RB	0.5779 ppm	0.0000 ppm	0.0000%	2018/12/11 23:06

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.5779	5.7790	21.51	24.40	2.89	50.34	12:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 17.0882 (IC) (v1198)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	13	TOC	K1811464-001.01	1.2190 ppm	0.0035 ppm	0.2900%	2018/12/11 23:23

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.2165	12.1651	26.39	29.37	2.98	50.32	12:27
2	TOC	1.2215	12.2148	26.43	29.37	2.95	50.29	12:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 17.0882 (IC) (v1198)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	14	TOC	K1811464-002.01	1.0448 ppm	0.0967 ppm	9.2500%	2018/12/11 23:55

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.1132	11.1317	25.60	28.47	2.87	50.29	12:25
2	TOC	0.9765	9.7648	24.55	27.34	2.78	50.28	12:26

Dilution 1:10

Blank Contribution (TC) 17.0882 (IC) (v1198)

Method Extended Reaction 021711 (v3)

Calibration Extended Reaction 021711 (v24)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	15	TOC	K1811464-003.01	1.2191 ppm	0.0916 ppm	7.5100%	2018/12/12 00:26

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.1544	11.5438	25.91	28.64	2.73	50.29	12:28
2	TOC	1.2839	12.8388	26.90	29.52	2.61	50.27	12:27

Dilution 1:10

Blank Contribution (TC) 17.0882 (IC) (v1198)

Method Extended Reaction 021711 (v3)

Calibration Extended Reaction 021711 (v24)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	16	TOC	K1811464-005.01	2.4664 ppm	0.0931 ppm	3.7700%	2018/12/12 00:58

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.5322	25.3220	36.45	39.14	2.69	50.26	12:23
2	TOC	2.4006	24.0061	35.44	38.26	2.82	50.26	12:22

Dilution 1:10

Blank Contribution (TC) 17.0882 (IC) (v1198)

Method Extended Reaction 021711 (v3)

Calibration Extended Reaction 021711 (v24)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	17	TOC	K1811464-006.01	2.4125 ppm	0.0527 ppm	2.1900%	2018/12/12 01:30

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.4498	24.4979	35.82	38.52	2.70	50.25	12:24
2	TOC	2.3752	23.7523	35.25	38.12	2.87	50.23	12:22

Dilution 1:10

Blank Contribution (TC) 17.0882 (IC) (v1198)

Method Extended Reaction 021711 (v3)

Calibration Extended Reaction 021711 (v24)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	18	TOC	K1811464-007.01	1.0588 ppm	0.0745 ppm	7.0300%	2018/12/12 02:01

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.1115	11.1147	25.58	28.34	2.75	50.24	12:26

2	TOC	1.0062	10.0617	24.78	27.52	2.74	50.24	12:25

Dilution: 1:10
Blank Contribution: (TC) 17.0882 (IC) (v1198)
Method: Extended Reaction 021711 (v3)
Calibration: Extended Reaction 021711 (v24)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	19	TOC	K1811305-001.02	1.6053 ppm	0.0669 ppm	4.1700%	2018/12/12 02:33

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.6526	16.5264	29.72	32.62	2.90	50.23	12:25
2	TOC	1.5581	15.5806	29.00	31.80	2.80	50.22	12:28

Dilution: 1:10
Blank Contribution: (TC) 17.0882 (IC) (v1198)
Method: Extended Reaction 021711 (v3)
Calibration: Extended Reaction 021711 (v24)

Sample Type: Check Standard --> CCV 021711 — From Schedule Version 10

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	B	TOC	25.0000	1:2	[TOC] CCV 021711 [25 ppm]	0 / infinity (NA / NA)	24.7384 ppm (PASS)	0.0000 ppm	0%	2018/12/12 03:05

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	24.7384	247.3836	207.56	210.41	2.85	50.22	12:29

Completion State: Success - Criteria met.
Success Action: Do Nothing
Method: Extended Reaction 021711 (v3)
Calibration: Extended Reaction 021711 (v24)
STD Conc - Pos B: 50 ppmC

Sample Type: Check Standard --> CCB 021711 — From Schedule Version 10

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	D	TOC	0.0000	1:2	[TOC] CCB 021711 [0.0 ppm]	0 / infinity (NA / NA)	0.2159 ppm (PASS)	0.0000 ppm	0%	2018/12/12 03:21

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0.0 ppm	1	0.2159	2.1588	20.10	22.93	2.84	50.22	12:33

Completion State: Success - Criteria met.
Success Action: Do Nothing
Method: Extended Reaction 021711 (v3)
Calibration: Extended Reaction 021711 (v24)
STD Conc - Pos D: 0 ppmC

Sample Type: Sample — From Schedule Version 10

		Analysis			Std. Dev.		

	Pos	Type	Sample ID	Result (ppmC)	(ppmC)	RSD	Start Time
◈	20	TOC	MB2	0.2413 ppm	0.0000 ppm	0.0000%	2018/12/12 03:38

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.2413	2.4132	18.93	21.58	2.64	50.21	12:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 17.0882 (IC) (v1198)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

Sample Type: Check Standard --> LCS ER — From Schedule Version 10

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	2	TOC	21.9000	1:1	[TOC] LCS ER [21.9 ppm]	0 / infinity (NA / NA)	20.1914 ppm (PASS)	0.0000 ppm	0%	2018/12/12 03:54

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
2	TOC	21.9 ppm	1	20.1914	201.9139	172.80	175.74	2.94	50.18	12:33

Completion State	Success Action	Method	Calibration	STD Conc - Pos 2
Success - Criteria met.	Do Nothing	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)	21.9 ppmC

Sample Type: Sample — From Schedule Version 10

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	21	TOC	K1811305-001.02 ms	26.2956 ppm	0.0000 ppm	0.0000%	2018/12/12 04:10

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	26.2956	262.9559	218.11	220.98	2.87	50.20	12:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 17.0882 (IC) (v1198)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	22	TOC	RB	0.4166 ppm	0.0000 ppm	0.0000%	2018/12/12 04:27

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.4166	4.1661	20.27	23.17	2.89	50.19	12:33

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 17.0882 (IC) (v1198)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	23	TOC	K1811305-003.02	1.1791 ppm	0.0564 ppm	4.7900%	2018/12/12 04:43

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.2190	12.1900	26.41	29.34	2.93	50.20	12:24
2	TOC	1.1392	11.3921	25.80	28.62	2.82	50.20	12:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 17.0882 (IC) (v1198)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	24	TOC	K1811335-001.03	1.3955 ppm	0.1088 ppm	7.7900%	2018/12/12 05:15

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.4724	14.7238	28.34	31.04	2.69	50.18	12:27
2	TOC	1.3185	13.1855	27.17	30.16	2.99	50.17	12:24

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 17.0882 (IC) (v1198)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	25	TOC	K1811335-001.03 ms	26.2337 ppm	0.0000 ppm	0.0000%	2018/12/12 05:47

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	26.2337	262.3372	217.64	220.42	2.79	50.19	12:34

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 17.0882 (IC) (v1198)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	26	TOC	RB	0.1360 ppm	0.0000 ppm	0.0000%	2018/12/12 06:03

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.1360	1.3602	18.13	20.87	2.74	50.17	12:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 17.0882 (IC) (v1198)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	27	TOC	K1811335-002.03	2.1850 ppm	0.1830 ppm	8.3700%	2018/12/12 06:19

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.0557	20.5566	32.80	35.47	2.67	50.15	12:25
2	TOC	2.3144	23.1440	34.78	37.75	2.97	50.17	12:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 17.0882 (IC) (v1198)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

		Analysis		93 of 363	Std. Dev.		

	Pos	Type	Sample ID	Result (ppmC)	(ppmC)	RSD	Start Time
◈	28	TOC	K1811335-003.03	0.8492 ppm	0.0364 ppm	4.2900%	2018/12/12 06:51

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.8234	8.2343	23.38	26.11	2.73	50.17	12:27
2	TOC	0.8750	8.7497	23.78	26.55	2.78	50.16	12:24

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 17.0882 (IC) (v1198)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

Sample Type: Check Standard --> CCV 021711 From Schedule Version 10

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	B	TOC	25.0000	1:2	[TOC] CCV 021711 [25 ppm]	0 / infinity (NA / NA)	24.4676 ppm (PASS)	0.0000 ppm	0%	2018/12/12 07:23

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	24.4676	244.6758	205.49	208.18	2.69	50.16	12:28

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)	50 ppmC

Sample Type: Check Standard --> CCB 021711 From Schedule Version 10

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	D	TOC	0.0000	1:2	[TOC] CCB 021711 [0.0 ppm]	0 / infinity (NA / NA)	0.0071 ppm (PASS)	0.0000 ppm	0%	2018/12/12 07:39

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0.0 ppm	1	0.0071	0.0711	18.50	21.19	2.69	50.15	12:30

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)	0 ppmC

Sample Type: Sample From Schedule Version 10

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	29	TOC	K1811335-004.03	0.4040 ppm	0.1288 ppm	31.8900%	2018/12/12 07:56

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.4951	4.9510	20.87	23.55	2.68	50.15	12:25

2	TOC	0.3129	3.1288	19.48	22.12	2.64	50.16	12:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 17.0882 (IC) (v1198)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	30	TOC	K1811527-001.01	0.9867 ppm	0.0028 ppm	0.2800%	2018/12/12 08:27

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.9886	9.8864	24.65	27.57	2.92	50.13	12:27
2	TOC	0.9847	9.8472	24.62	27.50	2.88	50.13	12:24

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 17.0882 (IC) (v1198)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	31	TOC	K1811527-001.01 ms	25.6466 ppm	0.0000 ppm	0.0000%	2018/12/12 08:59

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	25.6466	256.4664	213.15	216.10	2.95	50.14	12:33

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 17.0882 (IC) (v1198)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	32	TOC	RB	0.1870 ppm	0.0000 ppm	0.0000%	2018/12/12 09:16

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.1870	1.8704	18.52	21.42	2.90	50.12	12:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 17.0882 (IC) (v1198)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	33	TOC	K1811527-002.01 5x	2.5582 ppm	0.0554 ppm	2.1700%	2018/12/12 09:32

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.5973	25.9735	36.94	39.65	2.71	50.15	12:26
2	TOC	2.5190	25.1899	36.34	39.03	2.69	50.09	12:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 17.0882 (IC) (v1198)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	34	TOC	K1811527-003.01 5x	0.9399 ppm	0.0758 ppm	8.0600%	2018/12/12 10:04

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.9935	9.9348	24.68	27.43	2.75	50.07	12:25
2	TOC	0.8863	8.8635	23.86	26.51	2.65	50.03	12:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 17.0882 (IC) (v1198)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	35	TOC	K1811527-004.01	0.3785 ppm	0.0178 ppm	4.6900%	2018/12/12 10:35

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.3911	3.9110	20.08	22.71	2.63	50.05	12:30
2	TOC	0.3660	3.6599	19.89	22.42	2.54	49.97	12:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 17.0882 (IC) (v1198)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	36	TOC	K1811673-001.01	1.9917 ppm	0.0263 ppm	1.3200%	2018/12/12 11:07

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.0103	20.1027	32.46	35.17	2.71	49.95	12:27
2	TOC	1.9731	19.7312	32.17	34.87	2.70	49.94	12:24

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 17.0882 (IC) (v1198)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	37	TOC	K1811673-001.01 ms	26.7049 ppm	0.0000 ppm	0.0000%	2018/12/12 11:39

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	26.7049	267.0490	221.24	223.94	2.71	49.99	12:32

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 17.0882 (IC) (v1198)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	38	TOC	RB	0.2344 ppm	0.0000 ppm	0.0000%	2018/12/12 11:55

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.2344	2.3439	18.88	21.56	2.68	50.00	12:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 17.0882 (IC) (v1198)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

Sample Type: Check Standard --> CCV 021711 From Schedule Version 10

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	B	TOC	25.0000	1:2	[TOC] CCV 021711 [25 ppm]	0 / infinity (NA / NA)	24.5160 ppm (PASS)	0.0000 ppm	0%	2018/12/12 12:11

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	24.5160	245.1598	205.86	208.44	2.58	50.01	12:32

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)	50 ppmC

Sample Type: Check Standard --> CCB 021711 From Schedule Version 10

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	D	TOC	0.0000	1:2	[TOC] CCB 021711 [0.0 ppm]	0 / infinity (NA / NA)	0.0771 ppm (PASS)	0.0000 ppm	0%	2018/12/12 12:28

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0.0 ppm	1	0.0771	0.7709	19.04	21.89	2.85	50.07	12:32

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)	0 ppmC

Sample Type: Sample From Schedule Version 10

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	39	TOC	MB3	0.1677 ppm	0.0000 ppm	0.0000%	2018/12/12 12:45

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.1677	1.6768	18.37	21.20	2.83	50.07	12:32

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 17.0882 (IC) (v1198)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

Sample Type: Check Standard --> LCS ER From Schedule Version 10

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	2	TOC	21.9000	1:1	[TOC] LCS ER [21.9 ppm]	0 / infinity (NA / NA)	18.2817 ppm (PASS)	0.0000 ppm	0%	2018/12/12 13:01

	Base

Pos	Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
2	TOC	21.9 ppm	1	18.2817	182.8170	158.21	161.06	2.86	50.07	12:31

Completion State	Success Action	Method	Calibration	STD Conc - Pos 2
Success - Criteria met.	Do Nothing	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)	21.9 ppmC

Sample Type: Sample From Schedule Version 10

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◉	40	TOC	K1811673-002.01	2.3550 ppm	0.0679 ppm	2.8800%	2018/12/12 13:18

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.4030	24.0296	35.46	38.15	2.69	50.08	12:28
2	TOC	2.3069	23.0695	34.72	37.68	2.96	50.07	12:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 17.0882 (IC) (v1198)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◉	41	TOC	K1811673-003.01	2.3994 ppm	0.0910 ppm	3.7900%	2018/12/12 13:49

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.4638	24.6379	35.92	38.64	2.72	50.09	12:27
2	TOC	2.3351	23.3507	34.94	37.76	2.82	50.07	12:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 17.0882 (IC) (v1198)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◉	42	TOC	K1811673-004.01	3.0871 ppm	0.1387 ppm	4.4900%	2018/12/12 14:21

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	3.1852	31.8521	41.44	44.30	2.87	50.03	12:28
2	TOC	2.9890	29.8899	39.94	42.62	2.68	50.04	12:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 17.0882 (IC) (v1198)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◉	43	TOC	K1811673-005.01	2.9265 ppm	0.4442 ppm	15.1800%	2018/12/12 14:53

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.6124	26.1239	37.06	39.86	2.80	50.11	12:24
2	TOC	3.2405	32.4054	41.86	44.66	2.80	50.09	12:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 17.0882 (IC) (v1198)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	44	TOC	K1810656-005.08	2.4018 ppm	0.4116 ppm	17.1400%	2018/12/12 15:24

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.6928	26.9284	37.67	40.61	2.94	50.09	12:23
2	TOC	2.1107	21.1073	33.22	36.02	2.80	50.11	12:22

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 17.0882 (IC) (v1198)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	45	TOC	K1810656-005.08 ms	28.2614 ppm	0.0000 ppm	0.0000%	2018/12/12 15:56

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	28.2614	282.6141	233.14	235.99	2.85	50.12	12:35

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 17.0882 (IC) (v1198)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	46	TOC	RB	0.9906 ppm	0.0000 ppm	0.0000%	2018/12/12 16:12

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.9906	9.9060	24.66	27.45	2.79	50.15	12:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 17.0882 (IC) (v1198)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	47	TOC	K1810656-004.08 4x	4.5129 ppm	0.2254 ppm	4.9900%	2018/12/12 16:29

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	4.6723	46.7226	52.81	55.67	2.86	50.14	12:30
2	TOC	4.3535	43.5348	50.37	53.42	3.05	50.11	12:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 17.0882 (IC) (v1198)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

Sample Type: Check Standard --> CCV 021711 From Schedule Version 10

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time

◈	B	TOC	25.0000	1:2	[TOC] CCV 021711 [25 ppm]	0 / infinity (NA / NA)	24.7265 ppm (PASS)	0.0000 ppm	0%	2018/12/12 17:01

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	24.7265	247.2646	207.47	210.23	2.76	50.12	12:31

Completion State: Success - Criteria met.
Success Action: Do Nothing
Method: Extended Reaction 021711 (v3)
Calibration: Extended Reaction 021711 (v24)
STD Conc - Pos B: 50 ppmC

Sample Type: Check Standard --> CCB 021711 From Schedule Version 10

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	D	TOC	0.0000	1:2	[TOC] CCB 021711 [0.0 ppm]	0 / infinity (NA / NA)	0.1155 ppm (PASS)	0.0000 ppm	0%	2018/12/12 17:17

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0.0 ppm	1	0.1155	1.1555	19.33	22.08	2.75	50.17	12:30

Completion State: Success - Criteria met.
Success Action: Do Nothing
Method: Extended Reaction 021711 (v3)
Calibration: Extended Reaction 021711 (v24)
STD Conc - Pos D: 0 ppmC

Sample Type: Sample From Schedule Version 10

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	48	TOC	K1810656-006.08 4x	7.3717 ppm	0.0610 ppm	0.8300%	2018/12/12 17:34

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	7.4148	74.1483	73.77	76.54	2.77	50.13	12:26
2	TOC	7.3285	73.2849	73.11	75.86	2.75	50.13	12:23

Dilution: 1:10
Blank Contribution: (TC) 17.0882 (IC) (v1198)
Method: Extended Reaction 021711 (v3)
Calibration: Extended Reaction 021711 (v24)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	49	TOC	K1810656-007.08 4x	6.1978 ppm	0.3644 ppm	5.8800%	2018/12/12 18:05

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	6.4555	64.5547	66.44	69.25	2.81	50.11	12:29
2	TOC	5.9401	59.4007	62.50	65.50	3.00	50.13	12:27

Dilution: 1:10
Blank Contribution: (TC) 17.0882 (IC) (v1198)
Method: Extended Reaction 021711 (v3)
Calibration: Extended Reaction 021711 (v24)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	50	TOC	K1810656-010.08 4x	4.0113 ppm	0.2794 ppm	6.9700%	2018/12/12 18:37

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	4.2089	42.0893	49.26	52.26	3.00	50.09	12:27
2	TOC	3.8138	38.1375	46.24	49.12	2.88	50.12	12:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 17.0882 (IC) (v1198)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	51	TOC	K1810656-011.08 4x	6.5407 ppm	0.0417 ppm	0.6400%	2018/12/12 19:09

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	6.5112	65.1119	66.86	69.68	2.82	50.23	12:28
2	TOC	6.5702	65.7019	67.32	70.10	2.78	50.17	12:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 17.0882 (IC) (v1198)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	52	TOC	K1810656-012.08	2.9799 ppm	0.3433 ppm	11.5200%	2018/12/12 19:41

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	3.2226	32.2262	41.72	44.47	2.74	50.17	12:28
2	TOC	2.7372	27.3718	38.01	40.73	2.72	50.15	12:23

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 17.0882 (IC) (v1198)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	53	TOC	K1810656-014.08 4x	11.4909 ppm	0.0781 ppm	0.6800%	2018/12/12 20:12

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	11.4357	114.3567	104.51	107.31	2.80	50.16	12:27
2	TOC	11.5461	115.4608	105.35	108.22	2.86	50.15	12:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 17.0882 (IC) (v1198)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	54	TOC	K1812010-009.01	5.3652 ppm	0.1505 ppm	2.8000%	2018/12/12 20:44

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	5.2588	52.5881	57.29	60.00	2.71	50.15	12:28

2	TOC	5.4716	54.7164	58.92	61.86	2.94	50.14	12:26

Dilution 1:10 | **Blank Contribution** (TC) 17.0882 (IC) (v1198) | **Method** Extended Reaction 021711 (v3) | **Calibration** Extended Reaction 021711 (v24)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◉	55	TOC	K1812010-009.01 ms	29.7647 ppm	0.0000 ppm	0.0000%	2018/12/12 21:16

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	29.7647	297.6468	244.63	247.62	2.99	50.13	12:31

Dilution 1:10 | **Blank Contribution** (TC) 17.0882 (IC) (v1198) | **Method** Extended Reaction 021711 (v3) | **Calibration** Extended Reaction 021711 (v24)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◉	56	TOC	RB	0.9116 ppm	0.1715 ppm	18.8100%	2018/12/12 21:32

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.0329	10.3286	24.98	27.91	2.92	50.10	12:27
2	TOC	0.7903	7.9033	23.13	26.20	3.07	50.05	12:25

Dilution 1:10 | **Blank Contribution** (TC) 17.0882 (IC) (v1198) | **Method** Extended Reaction 021711 (v3) | **Calibration** Extended Reaction 021711 (v24)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◉	57	TOC	K1812010-010.01 5x	7.0992 ppm	0.4858 ppm	6.8400%	2018/12/12 22:04

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	7.4427	74.4269	73.98	76.79	2.80	50.05	12:29
2	TOC	6.7557	67.5567	68.73	71.47	2.73	50.04	12:25

Dilution 1:10 | **Blank Contribution** (TC) 17.0882 (IC) (v1198) | **Method** Extended Reaction 021711 (v3) | **Calibration** Extended Reaction 021711 (v24)

Sample Type: Check Standard --> CCV 021711 From Schedule Version 10

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◉	B	TOC	25.0000	1:2	[TOC] CCV 021711 [25 ppm]	0 / infinity (NA / NA)	25.1674 ppm (PASS)	0.0000 ppm	0%	2018/12/12 22:35

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	25.1674	251.6742	210.84	213.79	2.95	49.97	12:28

Completion State **Success Action** **Method** **Calibration** **STD Conc - Pos B**

Success - Criteria met.	Do Nothing	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)	50 ppmC

Sample Type: Check Standard --> CCB 021711 — From Schedule Version 10

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	D	TOC	0.0000	1:2	[TOC] CCB 021711 [0.0 ppm]	0 / infinity (NA / NA)	0.3538 ppm (PASS)	0.0000 ppm	0%	2018/12/12 22:52

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0.0 ppm	1	0.3538	3.5375	21.15	23.90	2.75	49.94	12:32

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)	0 ppmC

Sample Type: Sample — From Schedule Version 10

NR

CES 12/13/18

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	58	TOC	MB4	0.3300 ppm	0.0000 ppm	0.0000%	2018/12/12 23:09

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.3300	3.3001	19.61	22.48	2.87	49.94	12:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 17.0882 (IC) (v1198)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

Sample Type: Check Standard --> LCS ER — From Schedule Version 10

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	2	TOC	21.9000	1:1	[TOC] LCS ER [21.9 ppm]	0 / infinity (NA / NA)	19.1671 ppm (PASS)	0.0000 ppm	0%	2018/12/12 23:25

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
2	TOC	21.9 ppm	1	19.1671	191.6715	164.97	167.93	2.95	49.94	12:29

Completion State	Success Action	Method	Calibration	STD Conc - Pos 2
Success - Criteria met.	Do Nothing	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)	21.9 ppmC

Sample Type: Sample — From Schedule Version 10

	Pos	Analysis	Sample ID	Result (ppmC)	Std. Dev.	RSD	Start Time

NR

CES 12/13/18

		Type			(ppmC)		
◈	59	TOC	K1812010-011.01 5x	2.4218 ppm	1.8910 ppm	78.0800%	2018/12/12 23:41

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.0847	10.8466	25.38	28.29	2.91	49.94	12:25
2	TOC	3.7589	37.5894	45.82	49.32	3.49	49.95	12:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 17.0882 (IC) (v1198)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	60	TOC	K1812010-012.01 5x	1.2324 ppm	0.1982 ppm	16.0800%	2018/12/13 00:13

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.3726	13.7257	27.58	30.46	2.88	49.94	12:25
2	TOC	1.0922	10.9224	25.44	28.45	3.02	49.92	12:24

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 17.0882 (IC) (v1198)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	61	TOC	K1812010-013.01	4.9603 ppm	0.0235 ppm	0.4700%	2018/12/13 00:44

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	4.9769	49.7692	55.14	57.69	2.55	49.90	12:24
2	TOC	4.9437	49.4369	54.88	57.70	2.82	49.89	12:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 17.0882 (IC) (v1198)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	62	TOC	K1812010-014.01 5x	13.8675 ppm	4.1649 ppm	30.0300%	2018/12/13 01:16

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	10.9225	109.2251	100.59	103.37	2.78	49.87	12:26
2	TOC	16.8125	168.1250	145.61	148.52	2.90	49.89	12:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 17.0882 (IC) (v1198)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	63	TOC	K1812010-015.01 5x	8.1454 ppm	0.6094 ppm	7.4800%	2018/12/13 01:48

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	8.5763	85.7629	82.65	85.88	3.23	49.91	12:22
2	TOC	7.7145	77.1451	76.06	78.92	2.85	49.90	12:25

NR
CES 12/13/18

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	64	TOC	K1812010-016.01 5x	0.0000 ppm	0.0000 ppm	0.0000%	2018/12/13 02:20

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	-2.94	0.00	2.94	49.91	12:25
2	TOC	0.0000	0.0000	-375232.71	-375220.43	12.28	49.90	12:26

Dilution: 1:10
Blank Contribution: (TC) 17.0882 (IC) (v1198)
Method: Extended Reaction 021711 (v3)
Calibration: Extended Reaction 021711 (v24)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	65	TOC	K1812010-017.01 5x	64.7443 ppm	65.3341 ppm	100.9100%	2018/12/13 02:51

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	110.9425	1109.4253	865.21	873.76	8.56	49.88	12:27
2	TOC	18.5461	185.4613	158.87	162.92	4.05	49.85	12:24

Dilution: 1:10
Blank Contribution: (TC) 17.0882 (IC) (v1198)
Method: Extended Reaction 021711 (v3)
Calibration: Extended Reaction 021711 (v24)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	66	TOC	RB	7.1584 ppm	1.7966 ppm	25.1000%	2018/12/13 03:23

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	8.4287	84.2874	81.52	84.60	3.08	49.86	12:26
2	TOC	5.8880	58.8801	62.10	65.34	3.24	49.87	12:27

Dilution: 1:10
Blank Contribution: (TC) 17.0882 (IC) (v1198)
Method: Extended Reaction 021711 (v3)
Calibration: Extended Reaction 021711 (v24)

Sample Type: Check Standard --> CCV 021711 — From Schedule Version 10

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	B	TOC	25.0000	1:2	[TOC] CCV 021711 [25 ppm]	0 / infinity (NA / NA)	29.7222 ppm (PASS)	0.0000 ppm	0%	2018/12/13 03:55

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	29.7222	297.2223	245.66	248.52	2.86	49.86	12:31

Completion State: Success - Criteria
Success Action: Do Nothing
Method: Extended Reaction
Calibration: Extended Reaction
STD Conc - Pos B: 50 ppmC

met.	021711 (v3)	021711 (v24)

Sample Type: Check Standard --> CCB 021711 — From Schedule Version 10

NR CES 12/13/18

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	D	TOC	0.0000	1:2	[TOC] CCB 021711 [0.0 ppm]	0 / infinity (NA / NA)	2.4612 ppm (PASS)	0.0000 ppm	0%	2018/12/13 04:12

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0.0 ppm	1	2.4612	24.6124	37.26	40.17	2.90	49.85	12:32

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)	0 ppmC

Sample Type: Sample — From Schedule Version 10

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	67	TOC	K1812010-018.01 5x	7.5993 ppm	0.0573 ppm	0.7500%	2018/12/13 04:28

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	7.6398	76.3982	75.49	78.24	2.74	49.86	12:26
2	TOC	7.5587	75.5872	74.87	77.90	3.03	49.88	12:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 17.0882 (IC) (v1198)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	68	TOC	K1812010-019.01 4x	5.5813 ppm	0.3202 ppm	5.7400%	2018/12/13 05:00

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	5.8077	58.0769	61.49	64.33	2.85	49.87	12:26
2	TOC	5.3548	53.5483	58.02	60.89	2.87	49.89	12:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 17.0882 (IC) (v1198)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	69	TOC	K1812010-020.01 10x	7.1645 ppm	0.3321 ppm	4.6300%	2018/12/13 05:32

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	7.3993	73.9926	73.65	76.51	2.86	49.88	12:29
2	TOC	6.9297	69.2965	70.06	72.95	2.88	49.86	12:27

NR

CES 12/13/18

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 17.0882 (IC) (v1198)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	70	TOC	K1812010-021.01 5x	7.9470 ppm	0.4174 ppm	5.2500%	2018/12/13 06:04

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	8.2422	82.4220	80.10	82.96	2.86	49.85	12:26
2	TOC	7.6519	76.5186	75.58	78.60	3.01	49.82	12:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 17.0882 (IC) (v1198)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	71	TOC	RB	0.8691 ppm	0.3256 ppm	37.4700%	2018/12/13 06:35

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.3303	13.3032	27.26	30.36	3.10	49.85	12:23
2	TOC	0.8641	8.6411	23.69	26.76	3.06	49.83	12:26
3	TOC	0.6663	6.6633	22.18	25.06	2.88	49.82	12:23
4	TOC	0.6156	6.1557	21.79	24.44	2.65	49.83	12:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 17.0882 (IC) (v1198)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

Sample Type: Check Standard --> CCV 021711 From Schedule Version 10

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	B	TOC	25.0000	1:2	[TOC] CCV 021711 [25 ppm]	0 / infinity (NA / NA)	24.9443 ppm (PASS)	0.0000 ppm	0%	2018/12/13 07:38

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	24.9443	249.4425	209.14	211.95	2.81	49.85	12:33

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)	50 ppmC

Sample Type: Check Standard --> CCB 021711 From Schedule Version 10

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	D	TOC	0.0000	1:2	[TOC] CCB 021711 [0.0 ppm]	0 / infinity (NA / NA)	0.4580 ppm (PASS)	0.0000 ppm	0%	2018/12/13 07:55

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0.0 ppm	1	0.4580	4.5801	21.95	24.67	2.72	49.83	12:32

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)	0 ppmC

Meta Data Used in this Report

Blanks

Version	Reagent (Abs)	Acid (Abs)	DI IC (Abs)	DI TC (Abs)	DI TOC (Abs)	Save Time	Operator
v1197	1.2933	0.9880	0.0000	0.0000	0.0000	2018/12/07 13:33	Fusion1 (Fusion1)
v1198	2.4263	1.6720	0.0000	0.0000	0.0000	2018/12/11 17:38	Fusion1 (Fusion1)

Calibrations

Name: Extended Reaction 021711 (TOC)

Version: v24
Ver Creation: 2018/11/26 18:53
Comment:
Operator: Fusion1 (Fusion1)
Basic Analysis Type: TOC
Calibration curve formula: TOC: y = 7.645x + 18.448
r^2 value: TOC: r^2 = 0.99984

Basic Analysis Type: TOC

Sample ID	Y Raw Value	X Expected	Message	End Time
0.0 ppm	19.1720	0.0000		2018/11/26 17:15
0.50 ppm	23.8410	0.5000		2018/11/26 17:31
1.00 ppm	25.1300	1.0000		2018/11/26 17:47
5.00 ppm	53.5500	5.0000		2018/11/26 18:03
10.0 ppm	95.3860	10.0000		2018/11/26 18:20
25.0 ppm	211.7220	25.0000		2018/11/26 18:36
50.0 ppm	399.8190	50.0000		2018/11/26 18:52

Methods

Name: Extended Reaction 021711 (TOC)

Version: v3
Ver Creation: 2013/02/04 11:44
Operator: Gen Chem Lab (Fusion1)

Comment:

Parameter	Value
SampleVolume	10.0 mL
Dilution	1:10
AcidVolume	0.5 ml
ReagentVolume	2.0 ml
UVReactorPrerinse	Off
UVReactorPrerinseVolume	5.0
NumberOfUVReactorPrerinses	1
ICSpargeTime	1.00 mins
DetectorSweepFlow	500 ml/min
PreSpargeTime	4.00 mins
SystemFlow	500 ml/min

Advanced Parameter	Value
NeedleRinseVolume	5.0 ml
VialPrimeVolume	2.0 ml
ICSamplePrimeVolume	2.0 ml
ICSpargeRinseVolume	12.0 ml
BaselineStabilizeTime	0.70 min
DetectorPressureFlow	150 ml/min
SyringeSpeedWaste	10
SyringeSpeedAcid	7
SyringeSpeedReagent	7
SyringeSpeedDIWater	7
NDIRPressurization	60 psig
SyringeSpeedSampleDispense	5
SyringeSpeedSampleAspirate	4
SyringeSpeedUVDispense	7
SyringeSpeedUVAspirate	5
SyringeSpeedICDispense	7
SyringeSpeedICAspirate	5
NDIRPressureStabilize	1.75 min
SampleMixing	Off
SampleMixingCycles	1
SampleMixingVolume	10.0
LowLevelFilterNDIR	Off

Acceptance / Approval

Electronic Signatures

Report Version	User Name	Acceptance	Reason	Date

Report History

Report History

Report Version	User Name	System Reason	User Reason	Date
1	Fusion1 (Fusion1)	Schedule completed	Schedule completed	2018/12/13 08:14

Service Request Summary

8 - 40 mL-Glass Vial VOA CLEAR Tef/Silicone Septa H2SO4

Folder #: **K1811890**
Client Name: ALS Environmental - US
Project Name: HS18120063
Project Number:
P.O. Number: HS18120063

Report To: Dane Wacasey
ALS Group USA, Corp.
10450 Stancliff Road
Suite 210
Houston, TX 77099-4338
Phone Number: 281-530-5656
Cell Number:
Fax Number: 281-530-5887
E-mail: dane.wacasey@alsglobal.com

Project Chemist: Kelley Lovejoy
Logged By: CGRAVES
Date Received: 12/ 5/18
Time Received: 1526
Archive? N
Folder Due Date: 12/12/18
Internal Due Date: 12/12/18
QAP: DOD QSM v5.1 Kelso
Qualifier Set: DOD
Formset: DOD
Report to MDL?: Y
Merged?: Y Batch QC?: Y
PC Approved?: Y
State of Sampling Location: TX
EDD: BASIC_WQC, SEDD 2A, URS Subsurface

Location: GENPRE 107 (K-GEN PRES)
RUSH

Lab Samp No.	Client Samp No.	Matrix	Collected	GenChem 9060A/ TOC T
K1811890-001	ERH694	Water	10/23/18 0830	IV

TOC
1
1 MS

Folder Comments:

Please report MDL/MRL for this Service Request.

Service Request Summary

18 - 40 mL-Glass Vial VOA AMBER Tef/Silicone Septa H2SO4

Location: GENPRE 89 (K-ATHENA)

Folder #:	K1811464
Client Name:	ALS Environmental - US
Project Name:	ALS Houston DOD TOC
Project Number:	HS18111135
P.O. Number:	HS18111135

Report To: RJ Modashia
ALS Laboratory Group
10450 Stancliff Road
Suite 210
Houston, TX 77099-4338

Phone Number:	281-530-5656
Cell Number:	
Fax Number:	281-530-5887
E-mail:	rj.modashia@alsglobal.com

Project Chemist:	Kelley Lovejoy
Logged By:	CGRAVES
Date Received:	11/27/18
Time Received:	0940
Archive?	N
Folder Due Date:	12/7/18
Internal Due Date:	12/5/18
QAP:	DOD QSM v5.1 Kelso
Qualifier Set:	DOD
Formset:	DOD
Report to MDL?:	Y
Merged?: Y	Batch QC?: Y
PC Approved?:	Y
State of Sampling Location:	TX
EDD:	Adapt 8.3 DOD, BASIC_WQC_L EQUIS EFWEDD_LHAAP

TOC
1→7
4MS

Lab Samp No.	Client Samp No.	Matrix	Collected	GenChem SM 5310 C/TOC T
K1811464-001	35BWW23-181120	Water	11/20/18 0955	IV
K1811464-002	35BWW14-181120	Water	11/20/18 1053	IV
K1811464-003	35BWW26-181120	Water	11/20/18 1156	IV
K1811464-004	35BWW08-181120	Water	11/20/18 1258	IV
K1811464-005	35BWW04-181120	Water	11/20/18 1410	IV
K1811464-006	35BWW04-181120-FD	Water	11/20/18 1410	IV
K1811464-007	35BWW12-181119	Water	11/20/18 1510	IV

Run QC on sample K1811464-004 for SM 5310 C/TOC T

Service Request Summary

Folder #: **K1811305**
Client Name: Rainier, City of
Project Name: Monthly TOC Monitoring
Project Number: OR41 00689
P.O. Number:

Report To: John Dewey
Rainier, City of
P.O. Box 100
Rainier, OR 97048

Phone Number:
Cell Number: 503-410-2176
Fax Number:
E-mail: jdewey@cityofrainier.com

Project Chemist: Amanda Juell
Logged By: SWOLF
Date Received: 11/19/18
Time Received: 1540
Archive? N
Folder Due Date: 12/10/18
Internal Due Date: 12/6/18
QAP: LAB QAP
Qualifier Set: Lab Standard
Formset: Drinking Water
Report to MDL?: N
Merged?: Y Batch QC?: N
PC Approved?: Y
State of Sampling Location: OR
EDD: No EDD Specified

2 - 40 mL-Glass Vial VOA AMBER Tef/Silicone Septa H2SO4
1 - 125 mL-Plastic Bottle HDPE NM CLEAR Unpreserved

Location: GENPRE 79 (K-ATHENA), GENUNP 106 (K-GEN UNP)

TOC

1, 3
1/MS

				GenChem	
Lab Samp No.	**Client Samp No.**	**Matrix**	**Collected**	SM 2320 B/ Alkalinity Titr	SM 5310 C/ TOC T
K1811305-001	Raw Water Plant-TOC	DW	11/19/18 1350		I
K1811305-002	Raw Water Plant-ALK	DW	11/19/18 1350	I	
K1811305-003	Finish Water Plant-TOC	DW	11/19/18 1350		I

Folder Comments:

OR DW Form

Service Request Summary

Folder #: K1811335
Client Name: McKinley Paper Co. (Formerly Nippon Paper Indu
Project Name: McKinley Landfill - Groundwater Samples
Project Number:
P.O. Number: 7131700029

Report To: Amy Dougherty
McKinley Paper Co. - Washington Mill
1902 Marine Drive
P.O. Box 271
Port Angeles, WA 98362
Phone Number: 360-565-7019
Cell Number: 360-477-1316
Fax Number: 360-457-8675
E-mail: amy.dougherty@biopappel.com

Project Chemist: Chris Leaf
Logged By: DPLIMPTON
Date Received: 11/20/18
Time Received: 0940
Archive? N
Folder Due Date: 12/11/18
Internal Due Date: 12/7/18
QAP: LAB QAP
Qualifier Set: Lab Standard
Formset: Lab Standard
Report to MDL?: Y
Merged?: Y Batch QC?: N
PC Approved?: Y
State of Sampling Location: WA
EDD: NPIUSA-Port Angeles

TOC
1→4
1 MS

4 - 250 mL-Plastic Bottle HDPE WM CLEAR Unpreserved
4 - 125 mL-Plastic Bottle HDPE WM CLEAR Unpreserved
4 - 125 ml-Plastic Bottle WM CLEAR H2SO4
4 - 250 mL-Plastic Bottle WM CLEAR HNO3 (Diss)

Location: GENUNP 102 (K-GenChem), METALS 205 (K-MET LTS), GENPRE 82 (K-ATHENA), METALS 217 (K-MET LTS), METALS 218 (K-MET LTS)

NPDES

				GenChem								Metals	
Lab Samp No.	Client Samp No.	Matrix	Collected	300.0/ Chloride	300.0/ NO3	300.0/ SO4	350.1/ Ammonia LL	SM 2320 B/ Alkalinity Titr	SM 2320 B/ Bicarb Alk	SM 2540 C/ TDS	SM 5310 C/ TOC T	200.7/ Metals D	Filter Met/ Filter Met
K1811335-001	MW-5S	Ground	11/19/18 0810	II	II	II	II	II	II	II	II	II	II
K1811335-002	MW-6S	Ground	11/19/18 0810	II	II	II	II	II	II	II	II	II	II
K1811335-003	Weiler	Ground	11/19/18 0910	II	II	II	II	II	II	II	II	II	II
K1811335-004	Equip Blank	Ground	11/19/18 0945	II	II	II	II	II	II	II	II	II	II

Folder Comments:

Send two large and two small coolers for the sampling event 13 samples, 13 bottles each Report to Mg/L for metals: watch EDD for "Total Dissolved Solids" header and XX-XX name format.

Test Comments:

Group	Test/Method	Samples	Comments
GenChem	Ammonia LL/350.1	1-4	Low Level
Metals	Metals D/200.7	1-4	Lab Filter for Ca,Fe,Mg,Mn,Na REPORT TO mg/L

Test/Method	Samples	Elements
200.7/Metals D	1-4	Calcium / Iron / Magnesium / Manganese / Sodium

Service Request Summary

Folder #: K1811527
Client Name: Barr Engineering Company
Project Name: Gerdau FDLF
Project Number: 23/62-0884.41
P.O. Number:

Report To: Terri Olson
Barr Engineering
4300 Market Pointe Drive, Suite 200
Minneapolis, MN 55435
Phone Number: 952-842-3578
Cell Number:
Fax Number:
E-mail: tolson@barr.com

Project Chemist: Chris Leaf
Logged By: CGRAVES
Date Received: 11/28/18
Time Received: 1030
Archive? Y, 60 Days, N
Folder Due Date: 12/12/18
Internal Due Date: 12/7/18
QAP: LAB QAP
Qualifier Set: Lab Standard
Formset: Lab Standard
Report to MDL?: N
Merged?: Y Batch QC?: N
PC Approved?: Y
State of Sampling Location:
EDD: BARR - EQUIS

TOC
1→4
1 MS

8 - 125 mL-Plastic Bottle NM CLEAR HNO3
8 - 125 mL-Fluoropoly 1631 WM HCL
4 - 125 mL-Plastic Bottle HDPE WM CLEAR Unpreserved
4 - 500 mL-Glass Bottle NM AMBER Teflon Liner HCL
4 - 40 mL-Glass Vial VOA CLEAR Tef/Silicone Septa H2SO4
4 - 125 mL-Fluoropoly Natural HCl Cleaned WM Unpreserved

Location: METALS 213 (K-MET LTS), LL HG 45 (K-MET LTS), SMO, GENUNP 123 (K-SAMSON), SVEXT 107 (K-DELILAH), GENPRE 92 (K-GEN PRES), LL HG 44 (K-MET LTS)

				GenChem		Metals							SVG	SMO
Lab Samp No.	Client Samp No.	Matrix	Collected	300.0/ Chloride	SM 5310 C/ TOC T	1631E/ Hg LL D	1631E/ Hg LL T	6010C/ Metals D	6010C/ Metals T	6020A/ Metals D	6020A/ Metals T	Filter Hg LL/ Filter Hg LL	SW-141/ WI_DRO	Archive/ Archive 4C
K1811527-001	FD-MW-10D	Water	11/27/18 1445	II	II	II	II	II	II	II	II	II	II(C)	II
K1811527-002	FD-MW-10S	Water	11/27/18 1520	II	II	II	II	II	II	II	II	II	II(C)	II
K1811527-003	FD-MW-11D	Water	11/27/18 1555	II	II	II	II	II	II	II	II	II	II(C)	II
K1811527-004	FB-1	Water	11/27/18 1700	II	II	II	II	II	II	II	II	II	II(C)	II

Folder Comments:

Note that sample MW2-1 has high levels of Hg. Analyze by CVAA

Test Comments:

Group	Test/Method	Samples	Comments
Metals	Hg LL D/1631E	1-4	Filter at Lab - narrate if filtered past hold time
Metals	Metals D/6010C	1-4	Fe,Na,Mn
Metals	Metals D/6020A	1-4	Cr
Metals	Metals T/6010C	1-4	Fe,Na,Mn
Metals	Metals T/6020A	1-4	Cr

Service Request Summary

14 - 40 mL-Glass Vial VOA AMBER Tef/Silicone Septa H2SO4

Folder #: K1811673
Client Name: ALS Environmental - US
Project Name: ALS Houston DOD TOC
Project Number: HS18111440
P.O. Number: HS18111440

Report To: RJ Modashia
ALS Laboratory Group
10450 Stancliff Road
Suite 210
Houston, TX 77099-4338
Phone Number: 281-530-5656
Cell Number:
Fax Number: 281-530-5887
E-mail: rj.modashia@alsglobal.com

Project Chemist: Kelley Lovejoy
Logged By: CGRAVES
Date Received: 11/30/18
Time Received: 1000
Archive? N
Folder Due Date: 12/13/18
Internal Due Date: 12/10/18
QAP: DOD QSM v5.1 Kelso
Qualifier Set: ~~DOD~~
Formset: DOD
Report to MDL?: Y
Merged?: Y Batch QC?: Y
PC Approved?: Y
State of Sampling Location: TX
EDD: Adapt 8.3 DOD, BASIC_WQC_L
EQUIS EFWEDD_LHAAP

Location: GENPRE 98 (K-ATHENA)

Run if room
TOC
1→5

1 MS (must be 1

Lab Samp No.	Client Samp No.	Matrix	Collected	GenChem: SM 5310 C/TOC T
K1811673-001	50WW16-181128	Ground	11/28/18 0845	IV
K1811673-002	50WW11-181128	Ground	11/28/18 1105	IV
K1811673-003	50WW11-181128-FD	Ground	11/28/18 1105	IV
K1811673-004	50WW12-181128	Ground	11/28/18 1220	IV
K1811673-005	50WW08-181128	Ground	11/28/18 1325	IV

Run QC on sample K1811673-001 for SM 5310 C/TOC T

Service Request Summary

Folder #: K1810656
Client Name: General Atomics
Project Name: CS Tear Gas
Project Number: 30499
P.O. Number:

Report To: Ken Liberty
General Atomics
Electromagnetic Systems Group (GA-EMS)
16530 Via Esprillo
San Diego, CA 92127
Phone Number: 858-964-6742
Cell Number: 858-349-5428
Fax Number:
E-mail: kenneth.liberty@ga.com

Project Chemist: Mark Harris
Logged By: CGRAVES
Date Received: 11/ 1/18
Time Received: 0950
Archive? N
Folder Due Date: 11/22/18
Internal Due Date: 11/16/18
QAP: LAB QAP
Qualifier Set: Lab Standard
Formset: Lab Standard
Report to MDL?: N
Merged?: Y Batch QC?: N
PC Approved?: Y
State of Sampling Location: CA
EDD: No EDD Specified

24 - 500 mL-Plastic Bottle NM CLEAR Unpreserved
16 - 125 mL-Plastic Bottle NM CLEAR HNO3
14 - 250 mL-Plastic Bottle NM CLEAR H2SO4
14 - 500 mL-Plastic Bottle NM CLEAR NaOH
8 - 125 mL-Plastic Bottle HDPE WM CLEAR Unpreserved
8 - 40 mL-Glass Vial VOA AMBER Tef/Silicone Septa H2SO4

Location: GENUNP 56 (K-GEN UNP), GENUNP 57 (K-GEN UNP), METALS 176 (K-MET LTS), METALS 177 (K-MET LTS), GENPRE 40 (K-GEN PRES), GENPRE 41 (K-GEN PRES)

TOC
4→7, 10→12, 14
SAMS

					GenChem						Metals	
Lab Samp No.	Client Samp No.	Matrix	Collected		300.0/ Chloride	335.4/ CN T	350.1/ Ammonia T	7196A/ Cr6	SM 2540 D/ TSS	SM 5310 C/ TOC T	6020A/ Metals T	7470A/ Hg T
K1810656-001	LE-1000-Base	Water	8/14/18	1000		II	II	II	II			
K1810656-002	LE-1103	Water	8/14/18	1103		II	II	II	II			
K1810656-003	LE-1130	Water	8/14/18	1130		II	II	II	II		II	II
K1810656-004	LE-1200	Water	8/14/18	1200		II	II	II	II	II	II	II
K1810656-005	Cond-1235	Water	8/16/18	1235	II					II	II	
K1810656-006	LE-1011-Base	Water	8/16/18	1011	II	II	II	II	II	II	II	II
K1810656-007	LE-1045	Water	8/16/18	1045		II	II	II	II	II	II	II
K1810656-008	LE-1115	Water	8/16/18	1115		II	II	II	II		II	II
K1810656-009	LE-1145	Water	8/16/18	1145		II	II	II	II		II	II
K1810656-010	LE-1215	Water	8/16/18	1215	II	II	II	II	II	II	II	II
K1810656-011	LE-1150-Base	Water	6/25/18	1150	II	II	II	II	II	II	II	II
K1810656-012	LE-1330	Water	6/25/18	1330	II	II	II	II	II	II	II	II
K1810656-013	LE-1215-Base	Water	6/28/18	1215	II	II	II	II	II		II	II
K1810656-014	LE-1350	Water	6/28/18	1350	II	II	II	II	II	II	II	II
K1810656-015	Cond-1645	Water	6/28/18	1645	II	II	II				II	II
K1810656-016	Water Feed	Water	6/28/18	0640							II	II

Test Comments:

Group	Test/Method	Samples	Comments
Metals	Metals T/6020A	3-16	Cd,Cr,Cu,Pb,Ni,Ag,Zn

Service Request Summary

Folder #:	K1812010
Client Name:	General Atomics
Project Name:	Ansol
Project Number:	30504
P.O. Number:	4500073573

Report To: Ken Liberty
General Atomics
Electromagnetic Systems Group (GA-EMS)
16530 Via Esprillo
San Diego, CA 92127

Phone Number:	858-964-6742
Cell Number:	858-349-5428
Fax Number:	
E-mail:	kenneth.liberty@ga.com

Project Chemist:	Mark Harris
Logged By:	DPLIMPTON
Date Received:	12/ 8/18
Time Received:	0945
Archive?	N
Folder Due Date:	12/29/18
Internal Due Date:	12/25/18
QAP:	LAB QAP
Qualifier Set:	Lab Standard
Formset:	Lab Standard
Report to MDL?:	N
Merged?: Y	Batch QC?: N
PC Approved?:	Y
State of Sampling Location:	CA
EDD:	No EDD Specified

21 - 500 mL-Plastic Bottle NM CLEAR Unpreserved
21 - 250 mL-Plastic Bottle NM CLEAR H2SO4
21 - 40 mL-Glass Vial VOA AMBER Tef/Silicone Septa H2SO4
21 - 125 mL-Plastic Bottle NM CLEAR HNO3

Location: GENUNP 141 (K-GenChem), GENUNP 143 (K-GEN UNP), SMO, GENPRE 112 (K-GEN PRES), METALS 228 (K-METALS)

TOC
ANS
Maybe run ~~1-18~~
9→21

IHT!

Lab Sample No.	Client Samp No.	Matrix	Collected	GenChem: 350.1/ Ammonia T	GenChem: 353.2/ NO2 NO3 T	GenChem: SM 2540 D/ TSS	GenChem: SM 5310 C/ TOC T	Metals: 6010C/ Metals T	Metals: 6020A/ Metals T
K1812010-001	1-Feed	Water	7/13/18 1000	II	II	II	II	II	II
K1812010-002	1-Baseline	Water	7/13/18 1030	II	II	II	II	II	II
K1812010-003	1a-LE1130	Water	7/13/18 1130	II	II	II	II	II	II
K1812010-004	1b-LE1215	Water	7/13/18 1215	II	II	II	II	II	II
K1812010-005	1b-LE1400	Water	7/13/18 1400	II	II	II	II	II	II
K1812010-006	1b-LE1446	Water	7/13/18 1446	II	II	II	II	II	II
K1812010-007	1c-LE1600	Water	7/13/18 1600	II	II	II	II	II	II
K1812010-008	1c-LE1645	Water	7/13/18 1645	II	II	II	II	II	II
K1812010-009	2-LET200	Water	11/14/18 1200	II	II	II	II	II	II
K1812010-010	2a-LE1246	Water	11/14/18 1246	II	II	II	II	II	II
K1812010-011	2b-LE1345	Water	11/14/18 1345	II	II	II	II	II	II
K1812010-012	2b-LE1430	Water	11/14/18 1430	II	II	II	II	II	II
K1812010-013	2c-Baseline	Water	11/15/18 1200	II	II	II	II	II	II
K1812010-014	2c-LE1345	Water	11/15/18 1345	II	II	II	II	II	II
K1812010-015	2c-LE1430	Water	11/15/18 1430	II	II	II	II	II	II
K1812010-016	3/3-Feed	Water	11/15/18 1200	II	II	II	II	II	II
K1812010-017	3-LE1530	Water	11/15/18 1530	II	II	II	II	II	II
K1812010-018	3-LE1615	Water	11/15/18 1615	II	II	II	II	II	II
K1812010-019	4-Baseline	Water	11/16/18 1045	II	II	II	II	II	II
K1812010-020	4-LE1145	Water	11/16/18 1145	II	II	II	II	II	II

Case Narrative

Method: 6850
Analysis: Perchlorate
Analysis SOP: LC-MS-CLO4
ALS WO ID(s): 1833461; 1833875; 1833980

Client: ALS Laboratories (Houston, TX)
Matrix: Water
ELMS Batch (HBN): 2179 (229053)

General Set Information: There were twenty field samples in these Work Orders. The samples were analyzed for perchlorate.

Method Summary: Each sample was prepared as noted below and analyzed using an Agilent 1100 LC/MSD system in select ion monitoring (SIM) mode at m/z 83 and 85, which corresponds to the loss of one oxygen atom from the perchlorate molecule. ChemStation software was used for instrument control and data analysis. The ion ratio of m/z 83 to 85 was used to positively identify the response peak as perchlorate. Quantitation was performed using the m/z 83 peak area. An internal standard (ISTD) of ^{18}O labeled perchlorate was added to each sample to establish the perchlorate peak retention time and used in quantitation.

Sample Preparation: A 10.0mL aliquot of each sample was transferred into a 15-mL centrifuge tube. 50µL of an ^{18}O labeled perchlorate solution was added to each sample as an internal standard. The samples were then capped, vortexed, and filtered into autosampler vial using Phenex PES membrane 0.45µm Syringe filters.

Holding Times: Holding times were met for all analyses.

Dilutions: Field samples 1833461004/05 and 1833875002 were analyzed and reported from 1:100 dilutions. Field sample 1833461006 was analyzed and reported from 1:10,000 dilution. The reporting limits have been adjusted accordingly.

Method QC data: The method blank (LMB 631667) was less than 1/2 the CRDL. The recovery for the LCS (631668) was within acceptable parameters.

MS/MSD Analysis: MS/MSD was performed on samples 1833461002/03 (Client ID: 50WW16-181128). 5.0µl of Working Standard Solution Horizon ID 43701 was added to 10.0mL of sample preparation. The spike target was 5.µg/L. The MS/MSD percent recoveries and relative percent difference (RPD) were within the performance limits.

Instrument QC: Instrument initial and continuing calibrations were performed in accordance with published procedures.

NC/CAR(s): NA

Sample Calculation: Samples were reported in µg/L. Results were calculated in µg/L by the equation (A)x(B),

where: A = Analyte concentration from the standard curve (µg/L)
B = Dilution performed at time of analysis

Miscellaneous Comments: These samples were analyzed in accordance with the requirements found in the DOD QSM Version 5.1.1.

Thomas Bosch December 13, 2018
Analyst Date

ANALYTICAL REPORT

Report Date: December 13, 2018

RJ Modashia
ALS Environmental (Houston)
10450 Stancliff Road
Suite 210
Houston, TX 77099

Phone: 281 530-5656

E-mail: RJ.Modashia@ALSGlobal.com

Workorder: **34-1833461**
Project ID: HS18111440
Purchase Order: HS18111440
Project Manager Kevin W. Griffiths

Client Sample ID	Lab ID	Collect Date	Receive Date	Sampling Site
50WW16-181128	1833461001	11/28/18	11/30/18	
50WW11-181128	1833461004	11/28/18	11/30/18	
50WW11-181128-FD	1833461005	11/28/18	11/30/18	
50WW12-181128	1833461006	11/28/18	11/30/18	
50WW08-181128	1833461007	11/28/18	11/30/18	

Client QC ID *	Lab ID	Collect Date	Receive Date	Sampling Site
50WW16-181128MS	1833461002	11/28/18	11/30/18	
50WW16-181128MSD	1833461003	11/28/18	11/30/18	

***Client QC is reported as part of the Quality Control results report, if requested.**

ANALYTICAL REPORT

Workorder: 34-1833461
Client: ALS Environmental (Houston)
Project Manager: Kevin W. Griffiths

Analytical Results

Sample ID: **50WW16-181128** | Sampling Site: NA | Collected: 11/28/2018
Lab ID: 1833461001 | Media: 125 mL Nalgene | Received: 11/30/2018
Matrix: Water | Sampling Parameter: NA

Analysis Method - EPA 6850, DoD QSM

Preparation: Not Applicable
Analysis: EPA 6850, DoD QSM Water | **Instrument ID:** LCMS04
Batch: ELMS/2179 (HBN: 229053) | **Percent Solid:** NA
Analyzed: 12/11/2018 09:11 | **Report Basis:** Wet

Analyte	Result (ug/L)	DL (ug/L)	LOD (ug/L)	LOQ (ug/L)	Dilution	Qual
Perchlorate	ND	1.0	2.0	4.0	1	U

Sample ID: **50WW11-181128** | Sampling Site: NA | Collected: 11/28/2018
Lab ID: 1833461004 | Media: 125 mL Nalgene | Received: 11/30/2018
Matrix: Water | Sampling Parameter: NA

Analysis Method - EPA 6850, DoD QSM

Preparation: Not Applicable
Analysis: EPA 6850, DoD QSM Water | **Instrument ID:** LCMS04
Batch: ELMS/2179 (HBN: 229053) | **Percent Solid:** NA
Analyzed: 12/11/2018 09:53 | **Report Basis:** Wet

Analyte	Result (ug/L)	DL (ug/L)	LOD (ug/L)	LOQ (ug/L)	Dilution	Qual
Perchlorate	**2900**	100	200	400	100	

Sample ID: **50WW11-181128-FD** | Sampling Site: NA | Collected: 11/28/2018
Lab ID: 1833461005 | Media: 125 mL Nalgene | Received: 11/30/2018
Matrix: Water | Sampling Parameter: NA

Analysis Method - EPA 6850, DoD QSM

Preparation: Not Applicable
Analysis: EPA 6850, DoD QSM Water | **Instrument ID:** LCMS04
Batch: ELMS/2179 (HBN: 229053) | **Percent Solid:** NA
Analyzed: 12/11/2018 10:06 | **Report Basis:** Wet

Analyte	Result (ug/L)	DL (ug/L)	LOD (ug/L)	LOQ (ug/L)	Dilution	Qual
Perchlorate	**3200**	100	200	400	100	

Sample ID: **50WW12-181128** | Sampling Site: NA | Collected: 11/28/2018
Lab ID: 1833461006 | Media: 125 mL Nalgene | Received: 11/30/2018
Matrix: Water | Sampling Parameter: NA

Analysis Method - EPA 6850, DoD QSM

Preparation: Not Applicable
Analysis: EPA 6850, DoD QSM Water | **Instrument ID:** LCMS04
Batch: ELMS/2179 (HBN: 229053) | **Percent Solid:** NA
Analyzed: 12/11/2018 10:20 | **Report Basis:** Wet

Analyte	Result (ug/L)	DL (ug/L)	LOD (ug/L)	LOQ (ug/L)	Dilution	Qual
Perchlorate	**47000**	10000	20000	40000	10000	

ANALYTICAL REPORT

Workorder: 34-1833461
Client: ALS Environmental (Houston)
Project Manager: Kevin W. Griffiths

Analytical Results

Sample ID: **50WW08-181128** | Sampling Site: NA | Collected: 11/28/2018
Lab ID: 1833461007 | Media: 125 mL Nalgene | Received: 11/30/2018
Matrix: Water | Sampling Parameter: NA

Analysis Method - EPA 6850, DoD QSM

Preparation: Not Applicable
Analysis: EPA 6850, DoD QSM Water | **Instrument ID:** LCMS04
Batch: ELMS/2179 (HBN: 229053) | **Percent Solid:** NA
Analyzed: 12/11/2018 10:34 | **Report Basis:** Wet

Analyte	Result (ug/L)	DL (ug/L)	LOD (ug/L)	LOQ (ug/L)	Dilution	Qual
Perchlorate	**51**	1.0	2.0	4.0	1	

Comments

Quality Control: **EPA 6850, DoD QSM - (HBN: 229053)**

Field samples 1833461004/05 and 1833875002 were analyzed and reported from 1:100 dilutions. Field sample 1833461006 was analyzed and reported from 1:10,000 dilution. The reporting limits have been adjusted accordingly.

Report Authorization (/S/ is an electronic signature that complies with 21 CFR Part 11)

Method	Analyst	Peer Review
EPA 6850, DoD QSM	/S/ Thomas Bosch 12/12/2018 10:58	/S/ Stephen Brose 12/13/2018 14:23

Laboratory Contact Information

ALS Environmental
960 W Levoy Drive
Salt Lake City, Utah 84123

Phone: (801) 266-7700
Email: alslt.lab@ALSGlobal.com
Web: www.alsslc.com

ANALYTICAL REPORT

Workorder: 34-1833461
Client: ALS Environmental (Houston)
Project Manager: Kevin W. Griffiths

General Lab Comments

The results provided in this report relate only to the items tested.
Samples were received in acceptable condition unless otherwise noted.
Samples have not been blank corrected unless otherwise noted.
This test report shall not be reproduced, except in full, without written approval of ALS.

ALS provides professional analytical services for all samples submitted. ALS is not in a position to interpret the data and assumes no responsibility for the quality of the samples submitted.

All quality control samples processed with the samples in this report yielded acceptable results unless otherwise noted.

ALS is accredited for specific fields of testing (scopes) in the following testing sectors. The quality system implemented at ALS conforms to accreditation requirements and is applied to all analytical testing performed by ALS. The following table lists testing sector, accreditation body, accreditation number and website. Please contact these accrediting bodies or your ALS project manager for the current scope of accreditation that applies to your analytical testing.

Testing Sector	Accreditation Body	Certificate Number	Website
Environmental	PJLA (DoD ELAP)		
	Utah (TNI)		
	Nevada		
	Oklahoma		
	Iowa		

Result Symbol Definitions

MDL = Method Detection Limit, a statistical estimate of method/media/instrument sensitivity.
RL = Reporting Limit, a verified value of method/media/instrument sensitivity.
CRDL = Contract Required Detection Limit
Reg. Limit = Regulatory Limit.
ND = Not Detected, testing result not detected above the MDL or RL.
< This testing result is less than the numerical value.
** No result could be reported, see sample comments for details.

Qualifier Symbol Definitions

U = Qualifier indicates that the analyte was not detected above the MDL.
J = Qualifier Indicates that the analyte value is between the MDL and the RL. It is also used to indicate an estimated value for tentatively identified compounds in mass spectrometry where a 1:1 response is assumed.
B = Qualifier indicates that the analyte was detected in the blank.
E = Qualifier indicates that the analyte result exceeds calibration range.
P = Qualifier indicates that the RPD between the two columns is greater than 40%.

Quality Control Sample
Batch Report

Analysis Information

Workorder: 1833461

Limits:	Client SOW/Contract Specified	**Preparation:**	NA	**Analysis:**	EPA 6850, DoD QSM
Basis:	DoD QSM	**Batch:**	NA	**Batch:**	ELMS/2179 (HBN: 229053)
		Prepared By:	NA	**Analyzed By:**	Thom as Bosch

Blank

LMB: 631667
Analyzed: 12/11/2018 08:44
Units: ug/L

Analyte	Result	MDL	RL
Perchlorate	ND	1	2.00

Laboratory Control Sample

LCS: 631668
Analyzed: 12/11/2018 08:57
Dilution: 1
Units: ug/L

Analyte	Result	Target	% Rec	QC Limits	
Perchlorate	4.58	5.00	91.6	78.8	123.8

Matrix Spike - Matrix Spike Duplicate

Sample: 1833461001	**MS:** 1833461002	**MSD:** 1833461003
Analyzed: 12/11/2018 09:11	**Analyzed:** 12/11/2018 09:25	**Analyzed:** 12/11/2018 09:39
Dilution: 1	**Dilution:** 1	**Dilution:** 1
Units: ug/L	**Units:** ug/L	**Units:** ug/L

Analyte	Result	Result	Target	% Rec	QC Limits		Result	% Rec	RPD	QC Limits	
Perchlorate	ND	4.85	5	97.0	78.8	123.8	5.01	100	3.24	0.0	20.0

Continuing Calibration Verification

CCV: 631664	**CCV:** 631669	**CCV:** 631671
Analyzed: 12/11/2018 08:01	**Analyzed:** 12/11/2018 11:57	**Analyzed:** 12/11/2018 14:42
Units: ug/L	**Units:** ug/L	**Units:** ug/L
Criteria: ± 15%	**Criteria:** ± 15%	**Criteria:** ± 15%

Analyte	Result	Target	% Rec.	Result	Target	% Rec.	Result	Target	% Rec.
Perchlorate	25.8	25.0	103	23.6	25.0	94.3	23.8	25.0	95.3

Interference Check Sample

ICSA: 631666
Analyzed: 12/11/2018 08:30
Units: ug/L
Criteria: ± 30%

Analyte	Result	Target	% Rec.
Perchlorate	1.11	1.00	111

Limit of Detection Verification

LODV: 631665	**LODV:** 631670	**LODV:** 631672
Analyzed: 12/11/2018 08:16	**Analyzed:** 12/11/2018 12:10	**Analyzed:** 12/11/2018 14:56
Units: ug/L	**Units:** ug/L	**Units:** ug/L
Criteria: ± 50%	**Criteria:** ± 50%	**Criteria:** ± 50%

Analyte	Result	Target	% Rec.	Result	Target	% Rec.	Result	Target	% Rec.
Perchlorate	1.08	1.00	108	0.932	1.00	93.2	1.01	1.00	101

Quality Control Sample Batch Report

Analysis Information

Workorder: 1833461

Limits:	Client SOW/Contract Specified	**Preparation:**	NA	**Analysis:**	EPA 6850, DoD QSM
Basis:	DoD QSM	**Batch:**	NA	**Batch:**	ELMS/2179 (HBN: 229053)
		Prepared By:	NA	**Analyzed By:**	Thom as Bosch

Comments

Field samples 1833461004/05 and 1833875002 were analyzed and reported from 1:100 dilutions. Field sample 1833461006 was analyzed and reported from 1:10,000 dilution. The reporting limits have been adjusted accordingly.

QC Report Authorization (/S/ is an electronic signature that complies with 21 CFR Part 11)

Analyst	Peer Review
/S/ Thomas Bosch	/S/ Stephen Brose
12/12/2018 10:58	12/13/2018 14:23

Symbols and Definitions

* - Analyte above reporting limit or outside of control limits
▲ - Sample result is greater than 4 times the spike added
◓ - Sample and Matrix Duplicate less than 5 times the reporting limit
● - Result is above the calibration range
- The Matrix Spike, Matrix Spike duplicate or Matrix Duplicate is reported for your information only. The sample matrix may be inappropriate for the method selected.

RPD - Relative % Difference (Spike / Spike Duplicate)
ND - Not Detected (U - Qualifier also flags analyte as not detected)
NA - Not Applicable
QC results are not adjusted for moisture correction, where applicable

18698/#2





10450 Stancliff Rd, Ste 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887
www.alsglobal.com

Subcontract Chain of Custody

COC ID: 10322

1833461

SUBCONTRACT TO:

ALS Laboratory Group
960 LeVoy Dr
Salt Lake City, UT 84123

Phone: +1 801 266 7700

CUSTOMER INFORMATION:

Company:	ALS Houston
Contact:	RJ Modashia
Address:	10450 Stancliff Rd, Ste 210
Phone:	+1 281 530 5656
Email:	RJ.Modashia@alsglobal.com
Alternate Contact:	Jumoke M. Lawal
Email:	jumoke.lawal@alsglobal.com

INVOICE INFORMATION:

Company:	ALS Houston
Contact:	Accounts Payable
Address:	10450 Stancliff Rd, Ste 210
Phone:	+1 281 530 5656
Reference:	HS18111440
TSR:	Sonia West

	LAB SAMPLE ID	CLIENT SAMPLE ID	MATRIX	COLLECT DATE
	ANALYSIS REQUESTED			DUE DATE
1.	**HS18111440-01**	**50WW16-181128**	**Groundwater**	**28 Nov 2018 08:45** MS/MSD
	SUB_Perch-6850			13 Dec 2018
2.	**HS18111440-02**	**50WW11-181128**	**Groundwater**	**28 Nov 2018 11:05**
	SUB_Perch-6850			13 Dec 2018
3.	**HS18111440-03**	**50WW11-181128-FD**	**Groundwater**	**28 Nov 2018 11:05**
	SUB_Perch-6850			13 Dec 2018
4.	**HS18111440-04**	**50WW12-181128**	**Groundwater**	**28 Nov 2018 12:20**
	SUB_Perch-6850			13 Dec 2018
5.	**HS18111440-05**	**50WW08-181128**	**Groundwater**	**28 Nov 2018 13:25**
	SUB_Perch-6850			13 Dec 2018

Comments: Please analyze for the analysis listed above.
Send report to the emails shown above.

HS18111440-01 MS/MSD

QC Level: DOD IV (DoD Data Package)



Subcontract Chain of Custody

COC ID: 10322

Relinquished By: J. Hannan

Date/Time: 11/29/18 18:00

Received By: Jennifer Jessee

Date/Time: 11-30-18 11:15

Cooler ID(s):

Temperature(s):

ALS-SALT LAKE CITY-RELATED INFORMATION REPORT (CRIR)

COOLER OR CONTAINER INFORMATION CHECKLIST (Fill In or Circle) 18334161

Client Name: ALS Houston

Project/Task/Site:

Date/Time of Receipt: 11-30-18 11:15

Number of Coolers Received: 1

Condition of Coolers:	Acceptable/Unacceptable	Temperature Control:	Present/Not Included
Cooler Custody Seals:	Present/Absent/NA Intact/Broken/NA	Location Temp Taken:	Control/Between Samples
Container Custody Seals:	Present/Absent/NA Intact/Broken/NA	Are all temperatures within project specific guidelines?	Yes/No/NA
Ice Present:	Yes/No/NA Frozen/Melted/NA	VOA Headspace Present?	Yes/No/NA

pH Check Performed:							
	Metals	Yes/No/NA	Total Phenolics	Yes/No/NA	NO3/NO2	Yes/No/NA
	Cyanide	Yes/No/NA	TPH – 418.1	Yes/No/NA	Oil & Grease	Yes/No/NA
	Sulfide	Yes/No/NA	COD	Yes/No/NA	Total Phosphorous	Yes/No/NA
	Ammonia	Yes/No/NA	TKN	Yes/No/NA	Gross A.B, Gamma Spec	Yes/No/NA

Cooler Received	DCL Cooler No.	Temp.	Cooler Received	DCL Cooler No.	Temp.	Cooler Received	DCL Cooler No.	Temp.
1	C18 8981	1 °C	4	C18	°C	7	C18	°C
2	C18	°C	5	C18	°C	8	C18	°C
3	C18	°C	6	C18	°C	9	C18	°C

Taken By: Tamra Van Tassell (Signature) Tamra Van Tassell (Printed Name) 11-30-18 (Date)

CLIENT-RELATED INFORMATION

☐ Missing Cooler	☐ Missing Samples/Bottles	☐ Incorrect Preservation	☐ Insufficient Sample Volume
☐ Cooler Conditions	☐ Broken/Leaking Samples	☐ pH Criteria Not Met	☐ Chain of Custody Problems
☐ Missing Paperwork	☐ Incorrect Bottle Type	☐ Residual Chlorine Present	☐ Other:
☐ Missing/Incorrect Bottle Labels	☐ Cooler Temperatures Out of Range	☐ Head Space in Bottles	

BRIEFLY DESCRIBE THE PROBLEM AND THE ACTION TAKEN:

received (3) of the HS18111440-1 groundwater samples.

Client Notified? YES ☐ NO ☐

Response Required Within 24 Hours

PROJECT MANAGEMENT

PROJECT MANAGER COMMENTS:

ALS Project Manager: _____ (Printed Name) Returned to Sample Receipt by: _____ (Signature) Date: _____

CRIR.doc

Revised 01/01/2018

Must Deliver Next Business Day
Time and Tempature Sensitive!

Part # 159469-494 RITT2 EXP 07/19

ORIGIN ID:SGRA (281) 530-5656
CLIENT SERVICES
ALS LABORATORY GROUP
10450 STANCLIFF ROAD
SUITE 210
HOUSTON, TX 77099
UNITED STATES US

SHIP DATE: 29NOV18
ACTWGT: 15.90 LB
CAD: 300130/CAFE3211
DIMS: 19x16x13 IN

BILL THIRD PARTY

TO SAMPLE RECEIVING
ALS ENVIRONMENTAL
960 W. LEVOY DRIVE

SALT LAKE CITY UT 84123
(801) 266-7700
REF: HS18111440 RJ

551C1/F1FE/104C

FedEx Express

J181110605011aY

TRK# 0201 4380 9535 1471

FRI - 30 NOV 3:00P
STANDARD OVERNIGHT

AX BTFA

84123
UT-US SLC

ALS Environmental
CHAIN-OF-CUSTODY

Project / Job / Task: HS18111440	*Split:*	**Workorder ID:** 1833461	Level: ENV_LVL4
Client: ALS Environmental (Houston)		**Account:** 8101	Type: 125Poly
Comments:			Preservatives: COOL

Item	Collect Date/Time	Sample ID	Lab ID	QC	Matrix	Containers ID(s)	Containers Count	Requested Analysis: EPA 6850, DoD QSM
1	11/28/2018 08:45	50WW16-181128	1833461001		Water	A	1	A
2	11/28/2018 08:45	50WW16-181128MS	1833461002	MS	Water	A	1	A
3	11/28/2018 08:45	50WW16-181128MSD	1833461003	MSD	Water	A	1	A
4	11/28/2018 11:05	50WW11-181128	1833461004		Water	A	1	A
5	11/28/2018 11:05	50WW11-181128-FD	1833461005	FLDDUP	Water	A	1	A
6	11/28/2018 12:20	50WW12-181128	1833461006		Water	A	1	A
7	11/28/2018 13:25	50WW08-181128	1833461007		Water	A	1	A
8								
9								
10								

ORIGINAL FIELD SAMPLE CHAIN-OF-CUSTODY

Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Reason for Transfer / Storage Location
Warath, Julie	11/30/2018 11:15	ALS Sample Receiving	Sample Login
[signature]	12/1/18 1200	[signature]	[signature]
R.33.1	12-10-18/10:10	T. Bard	6850

SAMPLE PREPARATION / ANALYSIS CHAIN-OF-CUSTODY

Sample Prep / Analysis for: _____ Lab Notebook No.: _____

Prepared / Analyzed by: _____ Date / Time: _____

Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Reason for Transfer / Storage Location

00962924

Batch Worklist

Batch: ELMS/ 2179 **Created:** 12/10/2018 16:16 **Instrument:** **HBN:** 229053

Rule: EPA 6850, DoD QSM Water **Analyst:** T. Bosch **Status:** WP

Workorder: 1833461 [ENV_LVL4]
Workorder: 1833875 [ENV_LVL4]
Workorder: 1833980 [ENV_LVL4]

Pos	Lab ID	Sample ID	Prep Initial	Prep Final	Dust Weight	Type	Mx	Container	Procedure	Mgr	Expire Date	Due Date	Run Date
1	631664	CCV for HBN 229053 [ELMS/2179]				CCV	3		E685041C3Q	5311		12/13/2018	
2	631665	LODV for HBN 229053 [ELMS/2179				LODV	3		E6850..D3Q	5311		12/13/2018	
3	631666	ICS for HBN 229053 [ELMS/2179]				ICS	3		E6850..D3Q	5311		12/13/2018	
4	631667	LMB for HBN 229053 [ELMS/2179]				LMB	3		E6850Q413Q	5311		12/13/2018	
5	631668	LCS for HBN 229053 [ELMS/2179]				LCS	3		E6850Q413Q	5311		12/13/2018	
6	1833461001	50WW16-181128				SAMPLE	3	1833461001-A	E6850Q41.3	5480	12/26/2018	12/13/2018	
7	1833461002	50WW16-181128MS				MS	3	1833461002-A	E6850Q413Q	5480		12/13/2018	
8	1833461003	50WW16-181128MSD				MSD	3	1833461003-A	E6850Q413Q	5480		12/13/2018	
9	1833461004	50WW11-181128				SAMPLE	3	1833461004-A	E6850Q41.3	5480	12/26/2018	12/13/2018	
10	1833461005	50WW11-181128-FD				FLDDUP	3	1833461005-A	E6850Q41.3	5480	12/26/2018	12/13/2018	
11	1833461006	50WW12-181128				SAMPLE	3	1833461006-A	E6850Q41.3	5480	12/26/2018	12/13/2018	
12	1833461007	50WW08-181128				SAMPLE	3	1833461007-A	E6850Q41.3	5480	12/26/2018	12/13/2018	
13	1833875001	50WW06-181129				SAMPLE	3	1833875001-A	E6850Q41.3	5480	12/27/2018	12/13/2018	
14	1833875002	50WW13-181129				SAMPLE	3	1833875002-A	E6850Q41.3	5480	12/27/2018	12/13/2018	
15	1833875003	50WW14-181129				SAMPLE	3	1833875003-A	E6850Q41.3	5480	12/27/2018	12/13/2018	
16	1833980001	50WW18-181130				SAMPLE	3	1833980001-A	E6850Q41.3	5480	12/28/2018	12/18/2018	
17	1833980002	50WW17-181130				SAMPLE	3	1833980002-A	E6850Q41.3	5480	12/28/2018	12/18/2018	
18	631669	CCV for HBN 229053 [ELMS/2179]				CCV	3		E685041C3Q	5311		12/13/2018	
19	631670	LODV for HBN 229053 [ELMS/2179				LODV	3		E6850..D3Q	5311		12/13/2018	
20	1833980003	50WW24-181130				SAMPLE	3	1833980003-A	E6850Q41.3	5480	12/28/2018	12/18/2018	
21	1833980004	50WW21-181130				SAMPLE	3	1833980004-A	E6850Q41.3	5480	12/28/2018	12/18/2018	
22	1833980005	50WW15-181130				SAMPLE	3	1833980005-A	E6850Q41.3	5480	12/28/2018	12/18/2018	
23	1833980006	50WW23-181203				SAMPLE	3	1833980006-A	E6850Q41.3	5480	12/31/2018	12/18/2018	
24	1833980007	50WW22-181203				SAMPLE	3	1833980007-A	E6850Q41.3	5480	12/31/2018	12/18/2018	
25	1833980008	50WW05-181203				SAMPLE	3	1833980008-A	E6850Q41.3	5480	12/31/2018	12/18/2018	
26	1833980009	50WW27-181203				SAMPLE	3	1833980009-A	E6850Q41.3	5480	12/31/2018	12/18/2018	
27	1833980010	50WW27-181203FD				FLDDUP	3	1833980010-A	E6850Q41.3	5480	12/31/2018	12/18/2018	

Batch Worklist

Pos	Lab ID	Sample ID	Prep Initial	Prep Final	Dust Weight	Type	Mx	Container	Procedure	Mgr	Expire Date	Due Date	Run Date
28	1833980011	50WW09-181203				SAMPLE	3	1833980011-A	E6850Q41.3	5480	12/31/2018	12/18/2018	
29	1833980012	50WW10-181203				SAMPLE	3	1833980012-A	E6850Q41.3	5480	12/31/2018	12/18/2018	
30	631671	CCV for HBN 229053 [ELMS/2179]				CCV	3		E685041C3Q	5311		12/13/2018	
31	631672	LODV for HBN 229053 [ELMS/2179				LODV	3		E6850..D3Q	5311		12/13/2018	

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Analytical Documentation

ALS Work Order #'s & Sample #( )'s: 1833461 (001-07); 1833875 (001-03); 1833980 (001-12)
ELMS Batch/HBN ID: 2179 (229053)
Prep Date: 12/10/2018 Analysis Date: 12/11/2018 Analyst: T. Bosch
Analyte: **Perchlorate** Matrix: **Water** Method: **6850**
Sequence: \\HPCHEM\1\SEQUENCE\CLO4\2018\NOV\11DEC18D.s
Reported DL: **1.0µg/L** Reported LOD: **2.0µg/L** Reported LOQ: **4.0µg/L**

SAMPLE PREPARATION/ANALYSIS:
Water: Samples were prepared by TNB. 10.0mL of each sample was pipetted into a 15-mL centrifuge tube, and 50µL of an oxygen-18 labeled perchlorate solution was added as an internal standard. The samples were capped, vortexed, and filtered with Phenex PES membrane 0.45µm Syringe filters prior to analysis.

REAGENTS: Eluent A1: 95% ASTM Type II water (ALS)/ 5% ACN (B&J Lot AH015-4)/0.1% glacial acetic acid (JT-Baker Lot 04802).
Eluent B1: 95% ACN (B&J Lot AH015-4)/ 5% ASTM Type II water (ALS)/0.1% glacial acetic acid (JT-Baker Lot 04802).

STANDARDS: Internal Standard Spiking Solution Horizon# 43730. Dilutions of Working Standard Solution ID 43702 used for CCV's, LODV's, RLVS and IPC.

CALIBRATION CURVE: Used curve from 10/08/2018, sequence 08OCT18D.s Offline Quantitation Method: CLO4-DPR.M

INSTRUMENT CONDITIONS: Samples were analyzed with an Agilent 1100 LC/MSD system, in negative SIM mode, monitoring m/z 83, 85, and 89.
Instrument ID: LCMS04 Online Acquisition Method: CLO4-AQN.M Fragmentor: 160 Output Gain: 3 Injection Volume: 30µL
Column: KP-RPPX C8 separator, 250mm Mobile Phase: 70% Eluent A1; 30% Eluent B1

FLOW GRADIENT:

Time (min.)	Flow (mL/min)
0	0.50
5.0	0.50
5.3	0.25
10.0	0.25
10.5	0.50
12.0	0.50

QC DATA: 5.0µL of QC Solution Horizon ID 41830 was used for LCS 631668; Target = 5.0µg/L. ASTM type II water was used for LMB 631667.

MS/MSD: MS/MSD was performed on samples 1833461002/03 (Client ID: 50WW16-181128). 5.0µl of Working Standard Solution Horizon ID 43701 was added to 10.0mL of sample preparation. Spike target = 5.0µg/L.

COMMENTS:
1) Results reported in µg/L. Field samples 1833461004/05 and 1833875002 were analyzed and reported from 1:100 dilutions. Field sample 1833461006 was analyzed and reported from 1:10,000 dilution. The reporting limits have been adjusted accordingly.
2) All QC, Blank, CCV, and MS/MSD results were within method parameters.
3) Sample data can be viewed at two directories within the ALS system: \\ALSLTWS013\LCMS\LCMS04\2018\DEC\HBN# or through NuGenesis\Tree\PrintData\LCMS\DefaultView.
4) Notebook: \\alsltws013\ORGANIC\BOSCH\LCMS\Perchlorates\Waters\2018\229053-DoD-ALS-Hstn LCMS4 or through \\ALSLTWS013\DATAREVIEW\HBN#

5.5 Chromatography (GC, HPLC and LC/MS) Technical Review

Note: It is the peer reviewer's responsibility to ensure that appropriate criteria are used as defined in the HORIZON PROFILE. The evaluation criteria are prioritized as per Section 2.2 of this SOP. These items must be checked for all projects. The following checklist will be completed by both the analyst and the peer reviewer and scanned into the HBN folder with the raw data.

Chromatography (GC, HPLC, LC/MS) Technical Review Criteria **Batch(es)/SDG:** ELMS: 2179 HBN: 229053 **Sample Set IDs if Applicable:** 1833461 / 1833875/1833980	**Analyst Initials**	**Reviewer Initials**
Calibration standards analyzed and meets criteria	TB	SB
Standards traceability checked and meets criteria	TB	SB
Standard curve coefficients evaluated and meet criteria	TB	SB
ICVs analyzed and meet acceptance criteria	TB	SB
CCVs analyzed and meet acceptance criteria	TB	SB
Method Blanks analyzed and meet acceptance criteria	TB	SB
Retention Time Windows checked	TB	SB
For method 8081A, Endrin/DDT Breakdown is checked for compliance	—	—
Surrogate recoveries checked and appropriately addressed	—	—
Method Preparation Blanks analyzed and meet acceptance criteria	TB	SB
MSs, MSDs, and/or MDs analyzed and calculations checked; applicable flags applied on QC reports; LCSs analyzed and meet acceptance criteria when performed	TB	SB
RLVS analyzed	TB	SB
Preparation and analysis hold times met	TB	SB
Preparation deviations and re-preparations noted when performed	TB	SB
Analysis deviations and re-analyses noted when performed	TB	SB
Sample dilution factors noted on reports	TB	SB
Electronic records in HBN transcription accuracy and completeness checked	TB	SB
Preparation and analysis calculations checked	TB	SB
NCRs are completed as necessary NC/CAR# _____	—	—
Report forms are complete and accurate	TB	SB
Manual integrations checked	TB	SB

STANDARD REPORT

Working Standard - CLO4 WRK

CLO4 WRK — **Description - 6850 WKG Std 100.ug/L**

Standard: 43702
MFG: ALS/SLC
MFG Lot: TNB: 09/18/2018
Pipette ID: Not Provided

Created By: Thomas Bosch
Create Date: 09/18/2018 02:09PM

Amount: 10 mL
Expires: 09/18/2019
Usable: Yes
Lab Lot: CLO4 WRK

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	0.1 ug/mL

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
109	ASTM H2O	ASTM Type II Water	LAB 109	9.9 mL	11/07/2025
43701	CLO4 INT	6850 Intermdt AccStd 10.ug/mL	CLO4 INT	0.1 mL	09/18/2019

STANDARD REPORT

Constituent

Stock Standard - CLO4 STOCK

CLO4 STOCK — **Description - 6850 Stock AccStd 1,000ug/mL**

Standard: 43659
MFG: AccuStandard
MFG Lot: 218065075
Part ID: IC-PER-10X-1

Created By: Thomas Bosch
Create Date: 09/17/2018 09:09AM

Amount: 100 mL
Expires: 07/25/2020
Usable: No
Lab Lot: CLO4 STOCK

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	1000 ug/mL

STANDARD REPORT

Constituent

Solvent Standard - ASTM H2O

ASTM H2O			Description - ASTM Type II Water
Standard: 109	**Created By:** ALS Support (Lims)	**Amount:** 1000 L	
MFG: DCL In House	**Create Date:** 10/06/2005 09:10AM	**Expires:** 11/07/2025	
MFG Lot: Not Provided		**Usable:** Yes	
Part ID: Not Provided		**Lab Lot:** LAB 109	

Pos.	Analyte	Name	Concentration
Solvent - Analyte(s) not applicable			

STANDARD REPORT

Constituent

Working Standard - CLO4 INT

CLO4 INT — **Description - 6850 Intermdt AccStd 10.ug/mL**

Standard: 43701
MFG: ALS/SLC
MFG Lot: TNB: 09/18/2018
Pipette ID: Not Provided

Created By: Thomas Bosch
Create Date: 09/18/2018 02:09PM

Amount: 10 mL
Expires: 09/18/2019
Usable: Yes
Lab Lot: CLO4 INT

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	10 ug/mL

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
109	ASTM H2O	ASTM Type II Water	LAB 109	9.9 mL	11/07/2025
43659	CLO4 STOCK	6850 Stock AccStd 1,000ug/mL	CLO4 STOCK	0.1 mL	07/25/2020

STANDARD REPORT

Working Standard - CLO4 QC WRK

CLO4 QC WRK — **Description - 6850 QC WKG STD 100ug/L**

Standard: 41831
MFG: ALS/SLC
MFG Lot: TNB: 05/09/2018
Pipette ID: Not Provided

Created By: Thomas Bosch
Create Date: 05/09/2018 10:05AM

Amount: 10 mL
Expires: 05/09/2019
Usable: Yes
Lab Lot: CLO4 QC WRK 100.ug/L

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	100 ug/L

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
109	ASTM H2O	ASTM Type II Water	LAB 109	9.9 mL	11/07/2025
41830	CLO4 QC INT	6850 QC Intrmdt Std-QC 10ug/mL	CLO4 QC INT 10.ug/mL	0.1 mL	05/09/2019

STANDARD REPORT

Constituent

Working Standard - CLO4 QC INT

CLO4 QC INT — **Description** - 6850 QC Intrmdt Std-QC 10ug/mL

Standard: 41830
MFG: ALS/SLC
MFG Lot: TNB: 05/09/2018
Pipette ID: Not Provided

Created By: Thomas Bosch
Create Date: 05/09/2018 10:05AM

Amount: 10 mL
Expires: 05/09/2019
Usable: Yes
Lab Lot: CLO4 QC INT 10.ug/mL

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	10 ug/mL

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
109	ASTM H2O	ASTM Type II Water	LAB 109	9.9 mL	11/07/2025
36748	CLO4 QCSTOCK	6850 QC Stock STD 1,000ug/mL	CLO4 QC STOCK	0.1 mL	03/31/2020

STANDARD REPORT

Constituent

Solvent Standard - ASTM H2O

ASTM H2O		Description - ASTM Type II Water
Standard: 109	Created By: ALS Support (Lims)	Amount: 1000 L
MFG: DCL In House	Create Date: 10/06/2005 09:10AM	Expires: 11/07/2025
MFG Lot: Not Provided		Usable: Yes
Part ID: Not Provided		Lab Lot: LAB 109

Pos.	Analyte	Name	Concentration
Solvent - Analyte(s) not applicable			

STANDARD REPORT

Constituent

Stock Standard - CLO4 QCSTOCK

CLO4 QCSTOCK — **Description** - 6850 QC Stock STD 1,000ug/mL

Standard: 36748
MFG: Ultra Scientific
MFG Lot: CP-0860
Part ID: ICC-013

Created By: Thomas Bosch
Create Date: 05/11/2017 01:05PM

Amount: 100 mL
Expires: 03/31/2020
Usable: Yes
Lab Lot: CLO4 QC STOCK

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	1000 ug/mL

STANDARD REPORT

Working Standard - CLO4ISTDWRK

CLO4ISTDWRK — **Description - Perchlorate ISTD Wrk 1,000ug/L**

Standard: 43730
MFG: ALS/SLC
MFG Lot: TNB: 05/09/2018
Pipette ID: Not Provided

Created By: Thomas Bosch
Create Date: 09/20/2018 09:09AM
Verified By: Thomas Bosch
Verify Date:

Amount: 25 mL
Expires: 09/20/2019
Usable: Yes
Lab Lot: CLO4ISTDWRK

Pos.	Analyte	Name	Concentration
1	14797-73-0-8385	Perchlorate 83:85 Ratio	1000 ug/L
2	14797-73-0-89	Perchlorate 89	1000 ug/L

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
43729	CLO4ISTDSTK	Perchlorate ISTD Stock	CLO4ISTDSTK	0.25 mL	04/28/2026

STANDARD REPORT

Constituent

Stock Standard - CLO4ISTDSTK

CLO4ISTDSTK		Description - Perchlorate ISTD Stock
Standard: 43729	**Created By:** Thomas Bosch	**Amount:** 1 mL
MFG: Cambridge Isotope	**Create Date:** 09/20/2018 09:09AM	**Expires:** 04/28/2026
MFG Lot: SDFF-012A	**Verified By:** Thomas Bosch	**Usable:** Yes
Part ID: OLM-7310-S	**Verify Date:**	**Lab Lot:** CLO4ISTDSTK

Pos.	Analyte	Name	Concentration
1	14797-73-0-8385	Perchlorate 83:85 Ratio	100 ug/mL
2	14797-73-0-89	Perchlorate 89	100 ug/mL

ULTRA SCIENTIFIC
Analytical Solutions

Certificate of Analysis

ISO Guide 34 Reference Material

Product Number: ICC-013
Lot Number: CP-0860

Lot Issue Date: 29-Feb 2016
Expiration Date: 31-Mar 2020

Product Name: Perchlorate IC Standard

Description:
This Reference Material (RM) was gravimetrically prepared in accordance with ISO Guide 34 and under ULTRA Scientific's ISO 9001 registered quality system. The neat materials used for this product have been verified by ULTRA's ISO 17025 laboratory and under ULTRA's ISO Guide 34 accreditation. The analyte concentrations were verified by ULTRA's ISO 17025 accredited laboratory. For each analyte, the true value, with its uncertainty value calculated at the 95% confidence level, is reported below.

Analyte	Starting Material	Lot Number	Purity (%)	Calculated Value	True Value	Traceability & Method
perchlorate	potassium perchlorate	RM07987	100	1001 ± 5 µg/mL	976 ± 6 µg/mL	NIST SRM 3141A; ICP-OES

Solvent: water (low TOC, < 50 ppb)

Storage: Store at Room Temperature (15° to 30°C).

Traceability:
Traceability has been established through an unbroken chain of comparisons, each having stated uncertainties. Comparisons are based on appropriate physical or chemical measurements, including gravimetric or volumetric dilution, where the mass or volume of a solution before and after dilution is measured. The balances used for these measurements are calibrated with weights traceable to NIST in compliance with ANSI/NCSL Z-540-1, ISO 9001, ISO 17025, and ISO Guide 34. Calibrated Class A glassware is used for volumetric measurements. Thermometers are calibrated against a NIST traceable thermometer in accordance with NIST Special Publication 819.

Estimation of Uncertainties:
The true value is reported, with its uncertainty value calculated at the 95% confidence level.

Homogeneity:
This RM was formulated and unitized according to an in-house procedure and is guaranteed to be homogeneous. There is no minimum sub-sample size required.

Intended Use:
This RM is intended for the preparation of working reference samples for use in routine laboratory analyses, calibration of instruments, validation of analytical methods, assessments of measurement methods and continuing calibration verification.

Instructions for Use:
Sample aliquots for analysis should be withdrawn at 20°C to 25°C immediately after opening and should be processed without delay for the true value to be valid within the stated uncertainties. Do not pipet from the bottle. Do not return any material removed for pipetting to the bottle. Tightly cap the bottle after removing any material and store according to the instructions noted above.

Hazards:
Refer to the Safety Data Sheet for information regarding this RM.

Expiration of Certification:
The certification of this RM is valid, within the measurement uncertainty specified, until the expiration date specified above, provided the RM is handled and stored in accordance with the instructions given in this certificate. This certification is nullified if the RM is damaged, contaminated, or otherwise modified.

ULTRA SCIENTIFIC
Analytical Solutions

Certificate of Analysis

ISO Guide 34 Reference Material

Product Number: ICC-013
Lot Number: CP-0860

Lot Issue Date: 29-Feb 2016
Expiration Date: 31-Mar 2020

Maintenance of Certification:
The real-time, long term stability of the RM may be monitored over the lifetime of the certification. If substantive changes occur that affect the certification before the expiration of this certificate, ULTRA Scientific will notify the purchaser.

Peter A. King, Ph.D.
VP, Technical Operations

Daniel J. Lamendola
Director of QA/RA

125 Market Street
New Haven, CT 06513
USA

AccuStandard®

Tel (203)786-5290
Fax (203)786-5287
www.AccuStandard.com

CERTIFICATE OF ANALYSIS

S 43659

AccuTrace™ Reference Standard

Catalog No: IC-PER-10X-1
Description: Perchlorate Standard
Element: Perchlorate (ClO_4)
SRM: Ind. Std.
Lot: 218065075
Matrix: Water
Hazards: *Refer to SDS for complete safety information*

Signal Word: None

Date Certified: Jun 25, 2018
Expiration: Jul 25, 2020
Sample Size: 100 mL
Components: 1
Storage Condition: Ambient (>5 °C)
Included on ISO/IEC 17025 Scope of Accreditation: Yes
Included on ISO 17034 Scope of Accreditation: Yes

Component		SRM #	Prepared Concentration (µg/mL)
ClO_4	Perchlorate	Ind. Std.	1000

AccuStandard

The gravimetric uncertainty for this product is ±0.24%.
The final solution was checked against an independent standard to verify its concentration.
We use the highest purity raw materials available to minimize impurity levels in the final solution. Typically 99.999%+ pure starting materials are used as well as ASTM Type I 18 megohm deionized water.
All solutions are filtered through a 0.2 µm filter prior to being bottled.
All glassware used in preparation is Class A and calibrated regularly.
All weights are traceable through NIST, Test No. 822-275872-11
All bottles are triple rinsed with deionized water prior to use.
Shake bottle prior to use and do not pipette directly out of the bottle. Use only cleaned Class A volumetric glassware.
We certify the accuracy of this standard to be ±0.5% of the stated value until its expiration date provided it is kept tightly capped and stored under the conditions stated above.

Certified By: Meigan O'Leary
Meigan O'Leary, Inorganic QC Manager

For use in routine laboratory analysis.

AccuStandard is accredited to ISO 17034, ISO/IEC 17025 and certified to ISO 9001:2015

QR-ORG/INO-001
Rev. 5/18

Cambridge Isotope Laboratories, Inc.

Certificate of Analysis

Quality Standards:
ISO Guide 34 • ISO/IEC 17025 • ISO 13485 • cGMP

23118

Product Name: (Isotopic Label & Enrichment Specification)	PERCHLORIC ACID, SODIUM SALT (18O4, 90%+) 100 UG/ML IN WATER
Lot Number:	SDDG-013
Catalog Number:	OLM-7310-S

Product Information

Chemical Purity Specification:	≥98%
Labeled CAS Number:	NA
Unlabeled CAS Number:	7601-89-0
MW*:	130.4
Chemical Formula:	NaCl*O4
Storage:	Store at room temperature away from light and moisture.
Stability:	See storage and expiration date.

Certification

Cambridge Isotope Laboratories, Inc. guarantees that this material meets or exceeds the specifications stated. Absolute identity as well as chemical and isotopic purities are assured by the use of unambiguous synthetic routes and multiple chemical analyses whenever possible. Results are representative of QC testing at time of release from Quality Control unless otherwise stated.

Volumetric measurements were made with Class A glassware. Gravimetry is traceable to the NIST through calibrated balances and certified, calibrated, standard weights. The calibrations are traceable to the NIST under Test No. 822/270236-04. The calibrations also meet specifications outlined in ISO 9001, ISO/IEC 17025, ANSI/NSCL Z540-1-1994, NCR Document 10CFR50 Appendix B, and applicable subdocuments.

This COA references the bulk catalog number before packaging. The COA also applies to the CIL finished good catalog number. Some possible packaging sizes and their corresponding suffix are -1.2, -1, -0.5, -10, or -0.1.

* *For isotopically labeled compounds, MW listed is for the fully enriched product.*

Approved by: T. J. Eckersley

Timothy J. Eckersley, Ph.D., Quality Assurance

Quality Control Tests and Results

QC Release Date	2/27/2014
Expiration Date	2/27/2024
Concentration Based on Gravimetry	102 µg/mL
Chemical Purity of Neat Material(s)	98%
LC/MS for Concentration	109.4 ± 2.8 µg/mL (k=2)

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Raw Data

atch Report: C:\HPCHEM\1\DATA\11DEC18D\11DEC18S.B

Batch Review Method:
C:\HPCHEM\1\METHODS\CLO4-DPR.M

['#' ==> Run has not been reprocessed with Batch Review Method
'*' ==> Run has been saved with batch file]

#	Sample	Location	Inj	SampleType	Run	Perchlorate Area	Perchlorate RT	Perchlorate Amount
#*	631664 C	Vial 71	1	Control	1	3.48124e6	7.871	25.75214
#*	631665 L	Vial 72	1	Control	2	8.19641e4	7.889	1.08395
#*	631666 I	Vial 73	1	Control	3	6.66958e4	7.879	1.10767
#*	631667 L	Vial 74	1	Control	4	0.00000	0.000	0.00000
#*	631668 Q	Vial 75	1	Control	5	4.08977e5	7.891	4.57756
#*	1833461001	Vial 76	1	Sample	6	0.00000	0.000	0.00000
#*	1833461002	Vial 77	1	Sample	7	5.87665e5	7.876	4.85131
#*	1833461003	Vial 78	1	Sample	8	6.44190e5	7.865	5.01118
#*	1833461004	Vial 79	1	Sample	9	2.89111e6	7.906	2851.92545
#*	1833461005	Vial 80	1	Sample	10	3.29822e6	7.906	3211.78490
#*	1833461006	Vial 81	1	Sample	11	4.76196e5	7.903	4.73259e4
#*	1833461007	Vial 82	1	Sample	12	4.51305e6	7.852	50.94588
#*	1833875001	Vial 83	1	Sample	13	2.74604e6	7.870	24.07175
#*	1833875002	Vial 84	1	Sample	14	1.14039e6	7.899	1052.75983
#*	1833875003	Vial 85	1	Sample	15	1.68396e5	7.864	1.85043
#*	1833980001	Vial 86	1	Sample	16	0.00000	0.000	0.00000
#*	1833980002	Vial 87	1	Sample	17	0.00000	0.000	0.00000
#*	631669 C	Vial 71	1	Control	18	2.47816e6	7.907	23.56695
#*	631670 L	Vial 72	1	Control	19	5.69947e4	7.914	9.31810e-1
#*	1833980003	Vial 88	1	Sample	20	0.00000	0.000	0.00000
#*	1833980004	Vial 89	1	Sample	21	2.99274e4	7.855	5.87268e-1
#*	1833980005	Vial 90	1	Sample	22	0.00000	0.000	0.00000
#*	1833980006	Vial 91	1	Sample	23	0.00000	0.000	0.00000
#*	1833980007	Vial 92	1	Sample	24	4.79408e4	7.817	6.85344e-1
#*	1833980008	Vial 93	1	Sample	25	0.00000	0.000	0.00000
#*	1833980009	Vial 94	1	Sample	26	0.00000	0.000	0.00000
#*	1833980010	Vial 95	1	Sample	27	0.00000	0.000	0.00000
#*	1833980011	Vial 96	1	Sample	28	0.00000	0.000	0.00000
#*	1833980012	Vial 97	1	Sample	29	0.00000	0.000	0.00000
#*	631671 C	Vial 71	1	Control	30	2.59417e6	7.853	23.82186
*	631672 L	Vial 72	1	Control	31	6.79751e4	7.883	1.00534

#	Sample	Location	Inj	SampleType	Run	CLO4-85 Area	CLO4-85 RT	CLO4-85 Amount
#*	631664 C	Vial 71	1	Control	1	1.01321e6	7.889	24.86780
#*	631665 L	Vial 72	1	Control	2	2.63912e4	7.895	1.03937
#*	631666 I	Vial 73	1	Control	3	2.77513e4	7.895	1.35059
#*	631667 L	Vial 74	1	Control	4	0.00000	0.000	0.00000
#*	631668 Q	Vial 75	1	Control	5	1.28593e5	7.908	4.72010
#*	1833461001	Vial 76	1	Sample	6	0.00000	0.000	0.00000
#*	1833461002	Vial 77	1	Sample	7	1.87638e5	7.892	5.08460
#*	1833461003	Vial 78	1	Sample	8	1.92804e5	7.883	4.93604
#*	1833461004	Vial 79	1	Sample	9	8.51631e5	7.924	2782.22156
#*	1833461005	Vial 80	1	Sample	10	9.78590e5	7.922	3149.58587
#*	1833461006	Vial 81	1	Sample	11	1.52823e5	7.915	4.98186e4
#*	1833461007	Vial 82	1	Sample	12	1.38970e6	7.868	51.21926
#*	1833875001	Vial 83	1	Sample	13	8.29390e5	7.886	24.08637
#*	1833875002	Vial 84	1	Sample	14	3.43364e5	7.914	1052.74290
#*	1833875003	Vial 85	1	Sample	15	6.11284e4	7.880	2.09974
#*	1833980001	Vial 86	1	Sample	16	0.00000	0.000	0.00000
#*	1833980002	Vial 87	1	Sample	17	0.00000	0.000	0.00000
#*	631669 C	Vial 71	1	Control	18	7.61945e5	7.924	23.98608
#*	631670 L	Vial 72	1	Control	19	2.16085e4	7.928	1.01329
#*	1833980003	Vial 88	1	Sample	20	0.00000	0.000	0.00000
#*	1833980004	Vial 89	1	Sample	21	1.41879e4	7.866	6.93161e-1
#*	1833980005	Vial 90	1	Sample	22	0.00000	0.000	0.00000
#*	1833980006	Vial 91	1	Sample	23	0.00000	0.000	0.00000
#*	1833980007	Vial 92	1	Sample	24	1.99684e4	7.830	7.57624e-1
#*	1833980008	Vial 93	1	Sample	25	0.00000	0.000	0.00000
#*	1833980009	Vial 94	1	Sample	26	0.00000	0.000	0.00000

atch Report: C:\HPCHEM\1\DATA\11DEC18D\11DEC18S.B

#	Sample	Location	Inj	SampleType	Run	CLO4-85 Area	CLO4-85 RT	CLO4-85 Amount
#*	1833980010	Vial 95	1	Sample	27	0.00000	0.000	0.00000
#*	1833980011	Vial 96	1	Sample	28	0.00000	0.000	0.00000
#*	1833980012	Vial 97	1	Sample	29	0.00000	0.000	0.00000
#*	631671 C	Vial 71	1	Control	30	7.92460e5	7.872	24.09514
*	631672 L	Vial 72	1	Control	31	2.40769e4	7.903	1.04045

#	Sample	Location	Inj	SampleType	Run	CLO4-89-ISTD Area	CLO4-89-ISTD RT	CLO4-89-ISTD Amount
#*	631664 C	Vial 71	1	Control	1	4.02870e5	7.899	5.00000
#*	631665 L	Vial 72	1	Control	2	2.89019e5	7.911	5.00000
#*	631666 I	Vial 73	1	Control	3	2.28966e5	7.912	5.00000
#*	631667 L	Vial 74	1	Control	4	3.22648e5	7.925	5.00000
#*	631668 Q	Vial 75	1	Control	5	2.87169e5	7.921	5.00000
#*	1833461001	Vial 76	1	Sample	6	3.60792e5	7.921	5.00000
#*	1833461002	Vial 77	1	Sample	7	3.88117e5	7.903	5.00000
#*	1833461003	Vial 78	1	Sample	8	4.11170e5	7.891	5.00000
#*	1833461004	Vial 79	1	Sample	9	3.00445e5	7.933	500.00000
#*	1833461005	Vial 80	1	Sample	10	3.02235e5	7.931	500.00000
#*	1833461006	Vial 81	1	Sample	11	3.22820e5	7.929	5.00000e4
#*	1833461007	Vial 82	1	Sample	12	2.52017e5	7.879	5.00000
#*	1833875001	Vial 83	1	Sample	13	3.41152e5	7.897	5.00000
#*	1833875002	Vial 84	1	Sample	14	3.35467e5	7.926	500.00000
#*	1833875003	Vial 85	1	Sample	15	3.16169e5	7.893	5.00000
#*	1833980001	Vial 86	1	Sample	16	3.00388e5	7.891	5.00000
#*	1833980002	Vial 87	1	Sample	17	2.47847e5	7.882	5.00000
#*	631669 C	Vial 71	1	Control	18	3.14800e5	7.936	5.00000
#*	631670 L	Vial 72	1	Control	19	2.43309e5	7.942	5.00000
#*	1833980003	Vial 88	1	Sample	20	3.22751e5	7.879	5.00000
#*	1833980004	Vial 89	1	Sample	21	2.44118e5	7.893	5.00000
#*	1833980005	Vial 90	1	Sample	22	2.69834e5	7.873	5.00000
#*	1833980006	Vial 91	1	Sample	23	2.09759e5	7.843	5.00000
#*	1833980007	Vial 92	1	Sample	24	3.10572e5	7.850	5.00000
#*	1833980008	Vial 93	1	Sample	25	2.90513e5	7.867	5.00000
#*	1833980009	Vial 94	1	Sample	26	2.96165e5	7.855	5.00000
#*	1833980010	Vial 95	1	Sample	27	2.96909e5	7.863	5.00000
#*	1833980011	Vial 96	1	Sample	28	3.18562e5	7.861	5.00000
#*	1833980012	Vial 97	1	Sample	29	3.26637e5	7.918	5.00000
#*	631671 C	Vial 71	1	Control	30	3.25836e5	7.882	5.00000
*	631672 L	Vial 72	1	Control	31	2.63374e5	7.913	5.00000

*** End of Report ***

equence: C:\HPCHEM\1\SEQUENCE\CLO4\2018\DEC\11DEC18D.S

Sequence Table:

Method and Injection Info Part:

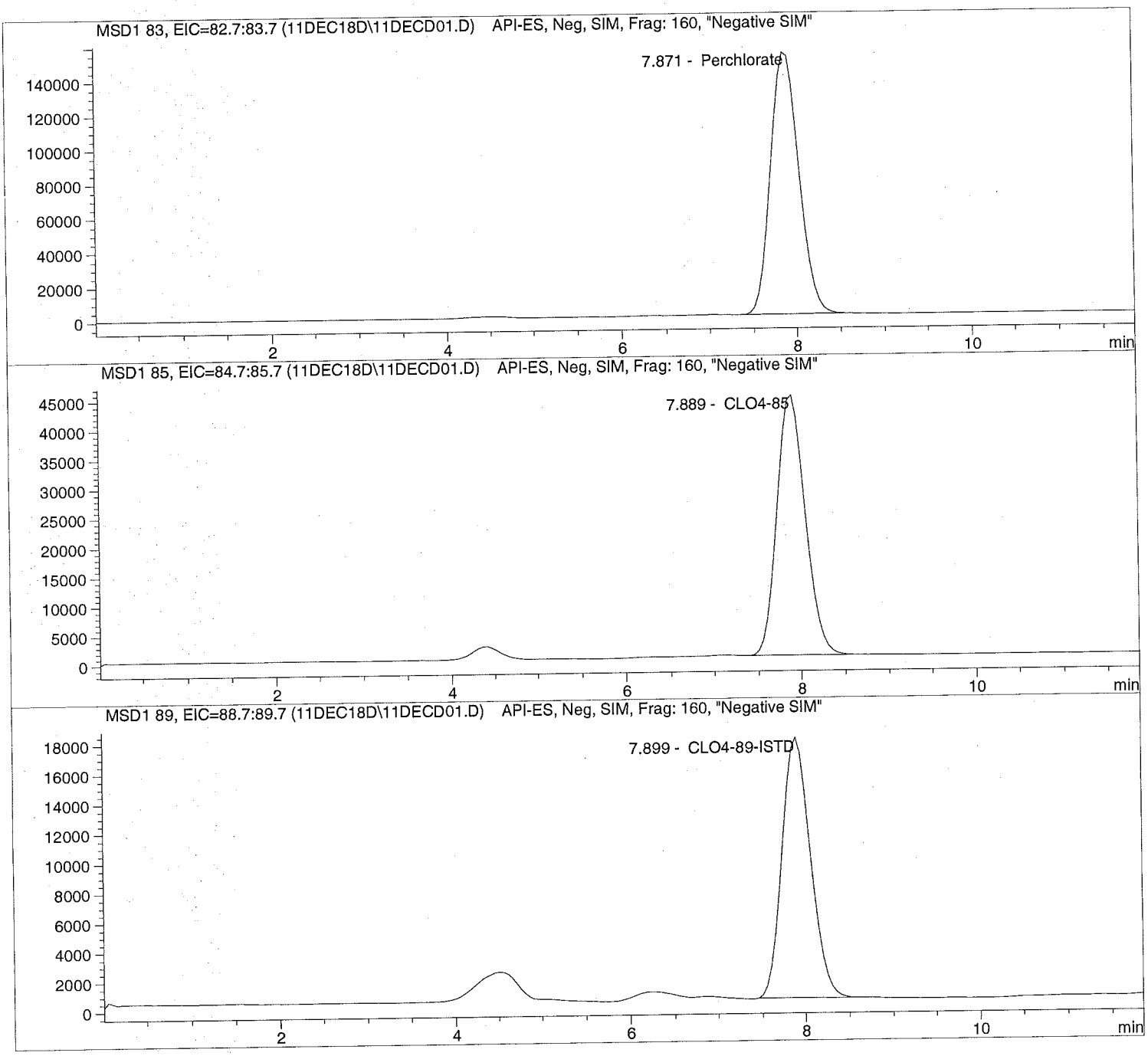
Line	Location	SampleName		Method	Inj	SampleType	InjVolume	DataFile
1	Vial 71	631664	CCV@25	CLO4-AQN	1	Ctrl Samp		
2	Vial 72	631665	LODV@1.	CLO4-AQN	1	Ctrl Samp		
3	Vial 73	631666	ICS@1.0	CLO4-AQN	1	Ctrl Samp		
4	Vial 74	631667	LMB	CLO4-AQN	1	Ctrl Samp		
5	Vial 75	631668	QC@5.0	CLO4-AQN	1	Ctrl Samp		
6	Vial 76	1833461001		CLO4-AQN	1	Sample		
7	Vial 77	1833461002	MS	CLO4-AQN	1	Sample		
8	Vial 78	1833461003	MSD	CLO4-AQN	1	Sample		
9	Vial 79	1833461004	100	CLO4-AQN	1	Sample		
10	Vial 80	1833461005	100	CLO4-AQN	1	Sample		
11	Vial 81	1833461006	10K	CLO4-AQN	1	Sample		
12	Vial 82	1833461007		CLO4-AQN	1	Sample		
13	Vial 83	1833875001		CLO4-AQN	1	Sample		
14	Vial 84	1833875002	100	CLO4-AQN	1	Sample		
15	Vial 85	1833875003		CLO4-AQN	1	Sample		
16	Vial 86	1833980001		CLO4-AQN	1	Sample		
17	Vial 87	1833980002		CLO4-AQN	1	Sample		
18	Vial 71	631669	CCV@25	CLO4-AQN	1	Ctrl Samp		
19	Vial 72	631670	LODV@1.	CLO4-AQN	1	Ctrl Samp		
20	Vial 88	1833980003		CLO4-AQN	1	Sample		
21	Vial 89	1833980004		CLO4-AQN	1	Sample		
22	Vial 90	1833980005		CLO4-AQN	1	Sample		
23	Vial 91	1833980006		CLO4-AQN	1	Sample		
24	Vial 92	1833980007		CLO4-AQN	1	Sample		
25	Vial 93	1833980008		CLO4-AQN	1	Sample		
26	Vial 94	1833980009		CLO4-AQN	1	Sample		
27	Vial 95	1833980010		CLO4-AQN	1	Sample		
28	Vial 96	1833980011		CLO4-AQN	1	Sample		
29	Vial 97	1833980012		CLO4-AQN	1	Sample		
30	Vial 71	631671	CCV@25	CLO4-AQN	1	Ctrl Samp		
31	Vial 72	631672	LODV@1.	CLO4-AQN	1	Ctrl Samp		

Data file: C:\HPCHEM\1\DATA\11DEC18D\11DECD01.D Sample Name: 631664 CCV@25

Injection Date:	12/11/2018 08:01:38	Seq Line:	1
Sample Name:	631664 CCV@25	Location:	Vial 71
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 12/3/2018 12:46:06

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\11DEC18D\11DECD01.D Sample Name: 631664 CCV@25

Injection Date:	12/11/2018 08:01:38	Seq Line:	1
Sample Name:	631664 CCV@25	Location:	Vial 71
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 12/3/2018 12:46:06

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 3. Dec. 2018, 00:29:27 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	25.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.871	PBA	3481236.5	25.7521	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.889	PBA	1013205.2	24.8678	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.899	PBA	402869.5	5.0000	CLO4-89-ISTD

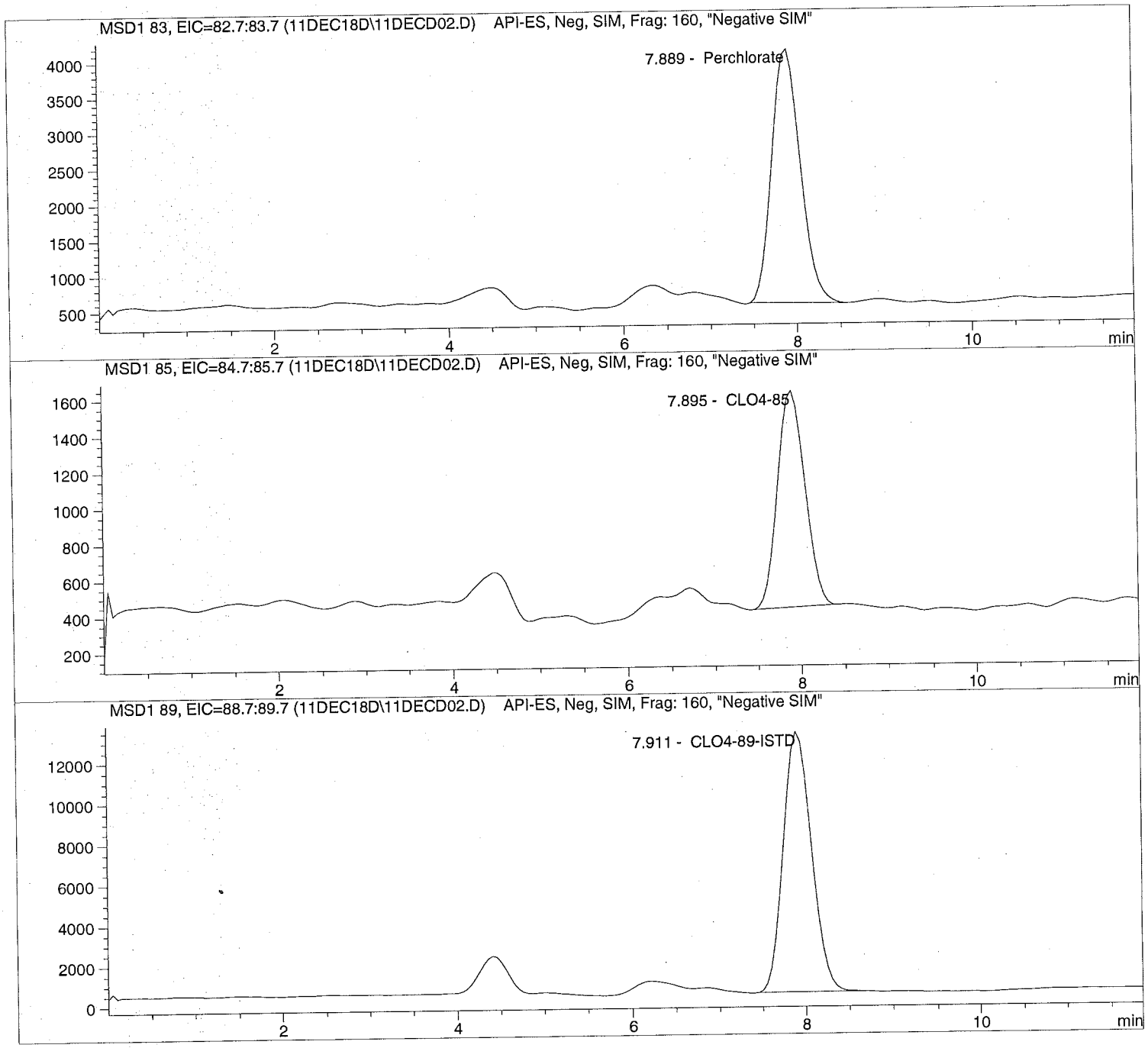
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\11DEC18D\11DECD02.D Sample Name: 631665 LODV@1.

Injection Date:	12/11/2018 08:16:29	Seq Line:	2
Sample Name:	631665 LODV@1.	Location:	Vial 72
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 12/3/2018 12:46:06

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\11DEC18D\11DECD02.D Sample Name: 631665 LODV@1.

Injection Date:	12/11/2018 08:16:29	Seq Line:	2
Sample Name:	631665 LODV@1.	Location:	Vial 72
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 12/3/2018 12:46:06

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 3. Dec. 2018, 00:29:27 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	1.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.889	PBA	81964.1	1.0839	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.895	PBA	26391.2	1.0394	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.911	PBA	289018.6	5.0000	CLO4-89-ISTD

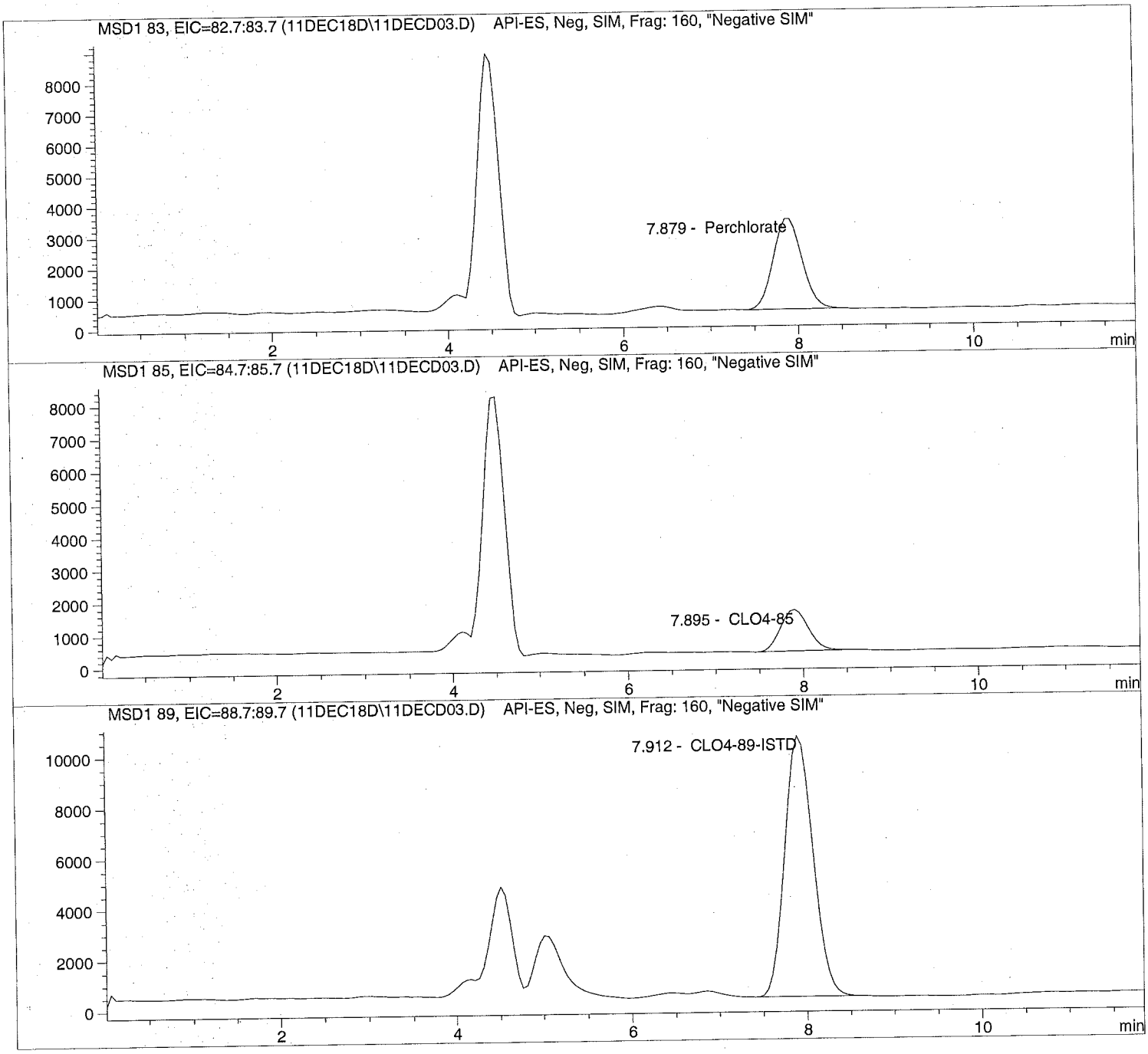
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\11DEC18D\11DECD03.D Sample Name: 631666 ICS@1.0

Injection Date:	12/11/2018 08:30:20	Seq Line:	3
Sample Name:	631666 ICS@1.0	Location:	Vial 73
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 12/3/2018 12:46:06

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\11DEC18D\11DECD03.D Sample Name: 631666 ICS@1.0

Injection Date:	12/11/2018 08:30:20	Seq Line:	3
Sample Name:	631666 ICS@1.0	Location:	Vial 73
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 12/3/2018 12:46:06

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 3. Dec. 2018, 00:29:27 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	1.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.879	PBA	66695.8	1.1077	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.895	PBA	27751.3	1.3506	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.912	PBA	228966.4	5.0000	CLO4-89-ISTD

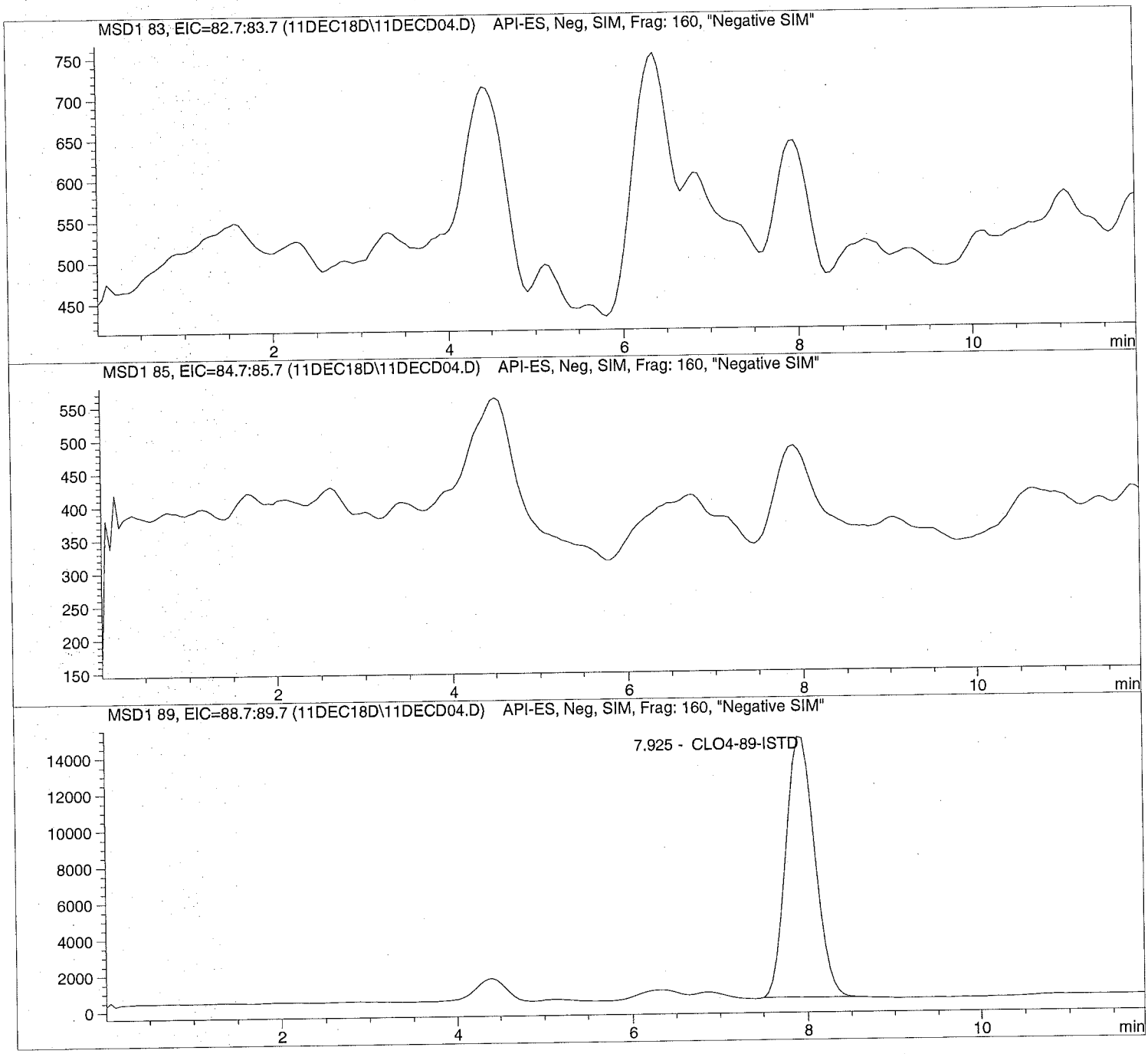
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\11DEC18D\11DECD04.D Sample Name: 631667 LMB

Injection Date:	12/11/2018 08:44:10	Seq Line:	4
Sample Name:	631667 LMB	Location:	Vial 74
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 12/3/2018 12:46:06

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\11DEC18D\11DECD04.D Sample Name: 631667 LMB

Injection Date:	12/11/2018 08:44:10	Seq Line:	4
Sample Name:	631667 LMB	Location:	Vial 74
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method:	CLO4-AQN.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	12/3/2018 12:46:06

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 3. Dec. 2018, 00:29:27 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.925	PBA	322647.7	5.0000	CLO4-89-ISTD

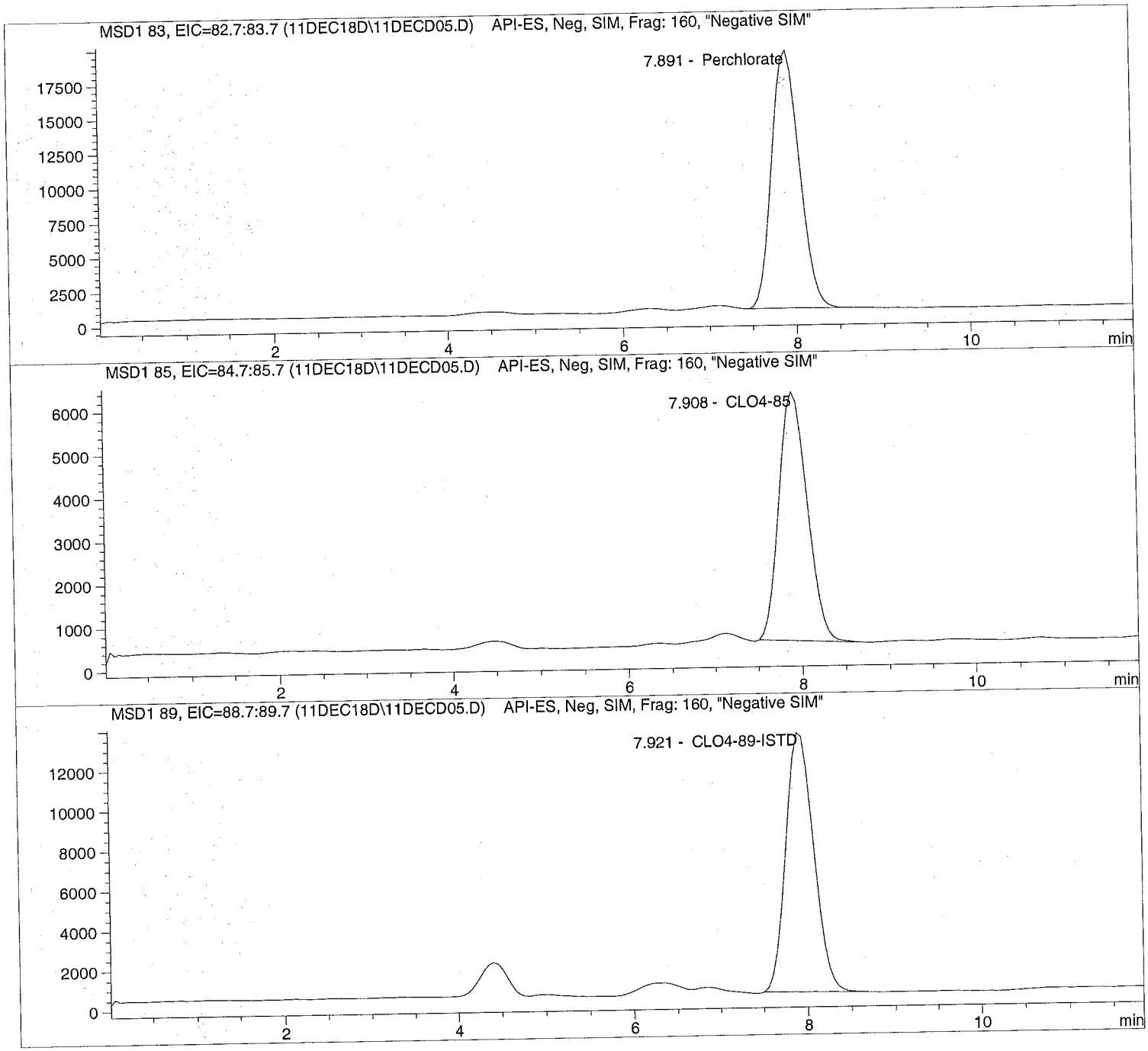
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\11DEC18D\11DECD05.D Sample Name: 631668 QC@5.0

Injection Date:	12/11/2018 08:57:58	Seq Line:	5
Sample Name:	631668 QC@5.0	Location:	Vial 75
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 12/3/2018 12:46:06

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\11DEC18D\11DECD05.D Sample Name: 631668 QC@5.0

Injection Date:	12/11/2018 08:57:58	Seq Line:	5
Sample Name:	631668 QC@5.0	Location:	Vial 75
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method:	CLO4-AQN.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	12/3/2018 12:46:06

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 3. Dec. 2018, 00:29:27 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	5.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.891	PBA	408977.5	4.5776	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.908	PBA	128593.4	4.7201	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.921	PBA	287168.8	5.0000	CLO4-89-ISTD

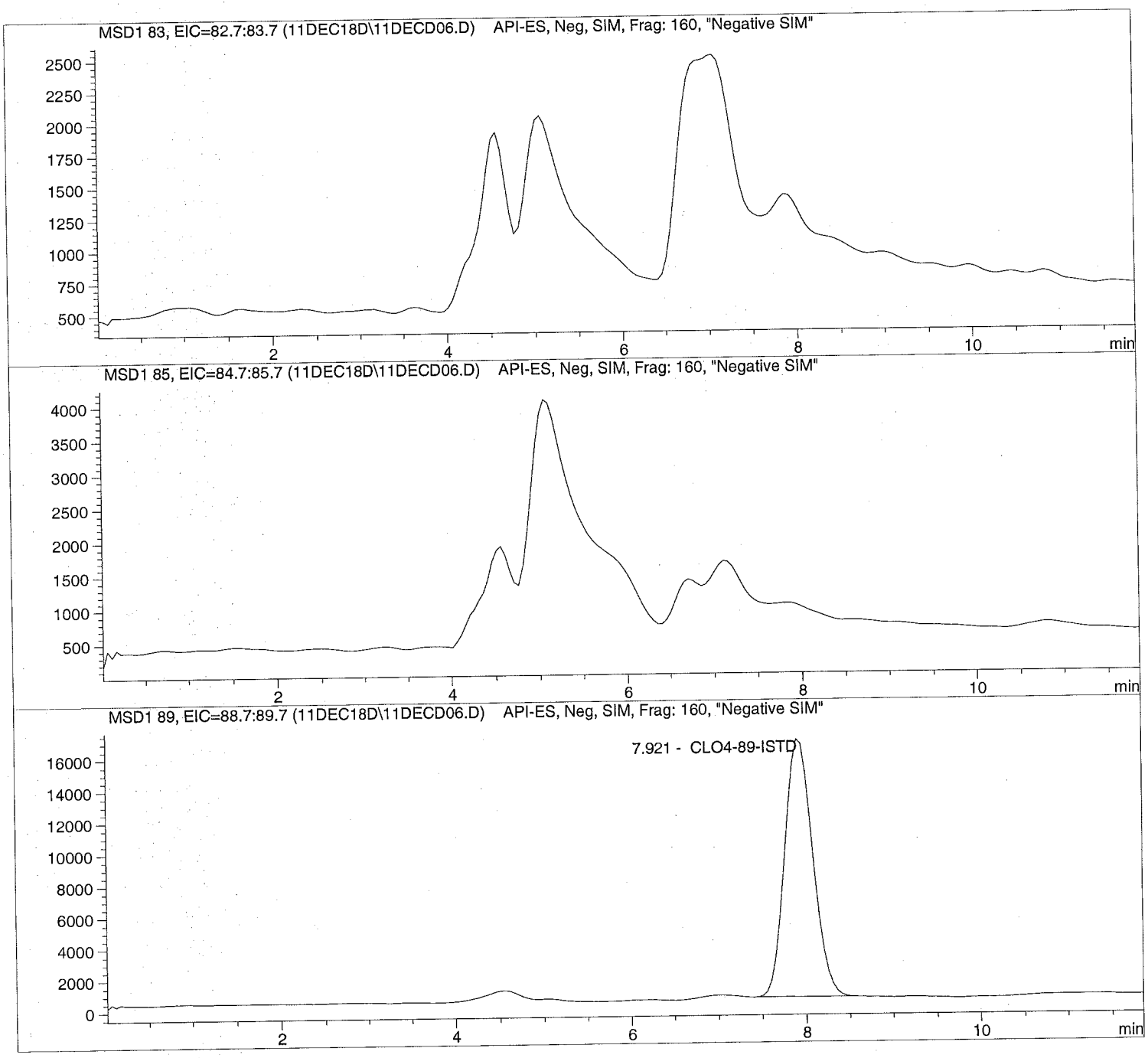
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\11DEC18D\11DECD06.D Sample Name: 1833461001

Injection Date:	12/11/2018 09:11:48	Seq Line:	6
Sample Name:	1833461001	Location:	Vial 76
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 12/3/2018 12:46:06

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\11DEC18D\11DECD06.D Sample Name: 1833461001

Injection Date:	12/11/2018 09:11:48	Seq Line:	6
Sample Name:	1833461001	Location:	Vial 76
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method:	CLO4-AQN.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	12/3/2018 12:46:06

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 3. Dec. 2018, 00:29:27 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.921	PBA	360792.0	5.0000	CLO4-89-ISTD

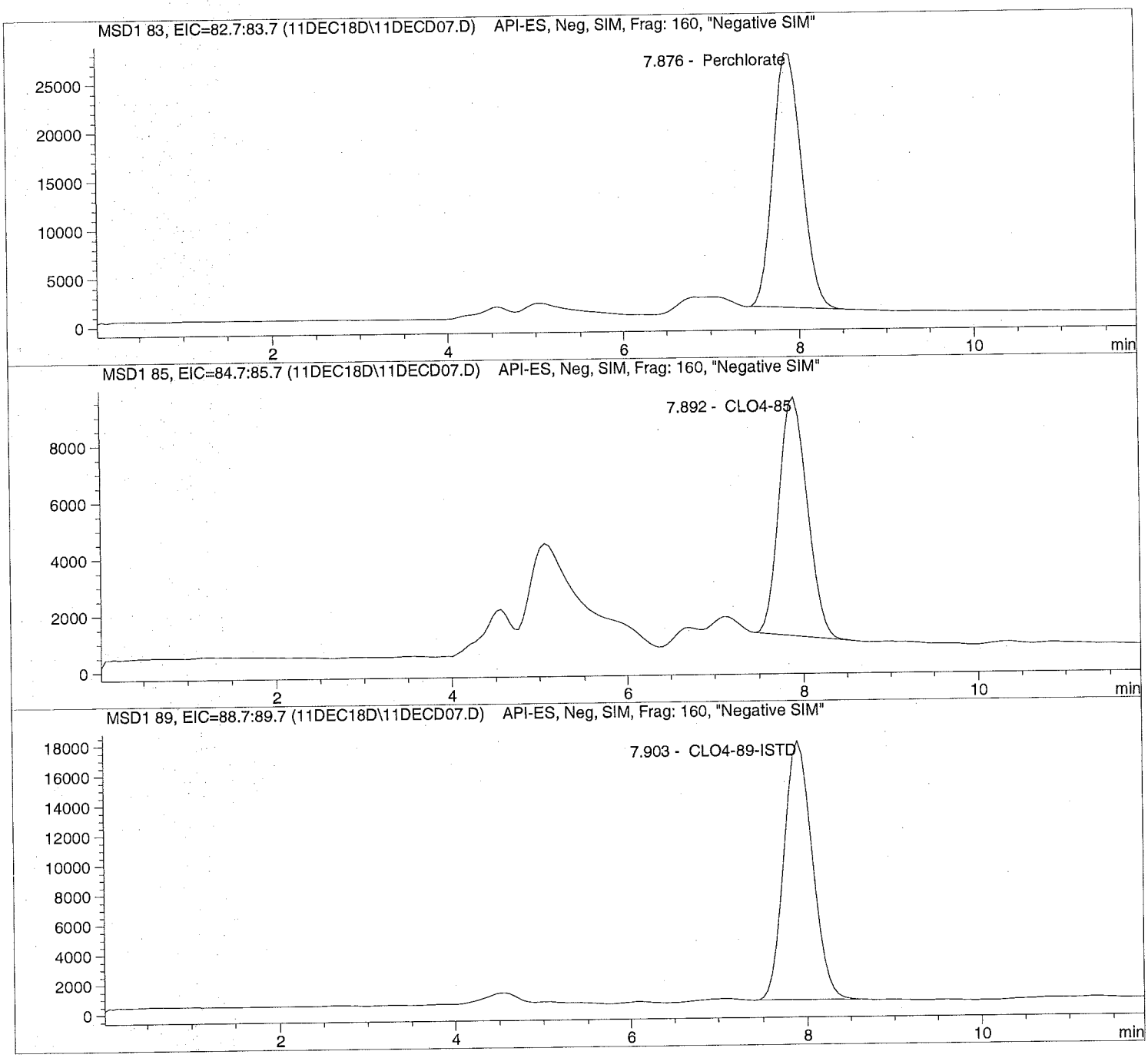
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\11DEC18D\11DECD07.D Sample Name: 1833461002 MS

Injection Date:	12/11/2018 09:25:39	Seq Line:	7
Sample Name:	1833461002 MS	Location:	Vial 77
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 12/3/2018 12:46:06

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\11DEC18D\11DECD07.D Sample Name: 1833461002 MS

Injection Date:	12/11/2018 09:25:39	Seq Line:	7
Sample Name:	1833461002 MS	Location:	Vial 77
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method:	CLO4-AQN.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	12/3/2018 12:46:06

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 3. Dec. 2018, 00:29:27 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.876	PBA	587664.7	4.8513	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.892	VBA	187637.6	5.0846	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.903	PBA	388117.1	5.0000	CLO4-89-ISTD

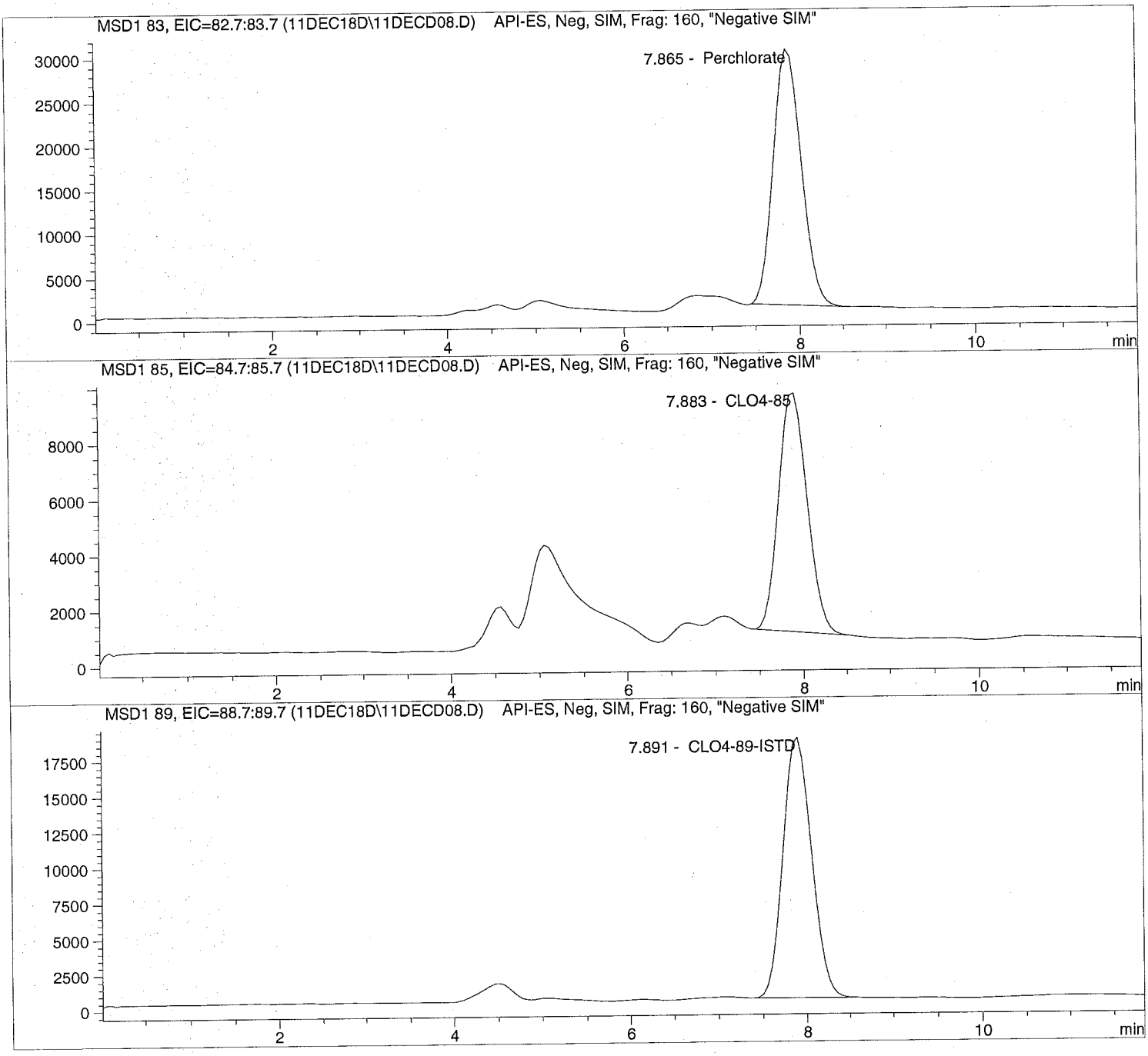
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\11DEC18D\11DECD08.D Sample Name: 1833461003 MSD

Injection Date:	12/11/2018 09:39:25	Seq Line:	8
Sample Name:	1833461003 MSD	Location:	Vial 78
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 12/3/2018 12:46:06

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\11DEC18D\11DECD08.D Sample Name: 1833461003 MSD

Injection Date:	12/11/2018 09:39:25	Seq Line:	8
Sample Name:	1833461003 MSD	Location:	Vial 78
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 12/3/2018 12:46:06

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 3. Dec. 2018, 00:29:27 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.865	PBA	644190.4	5.0112	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.883	PBA	192803.6	4.9360	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.891	PBA	411169.7	5.0000	CLO4-89-ISTD

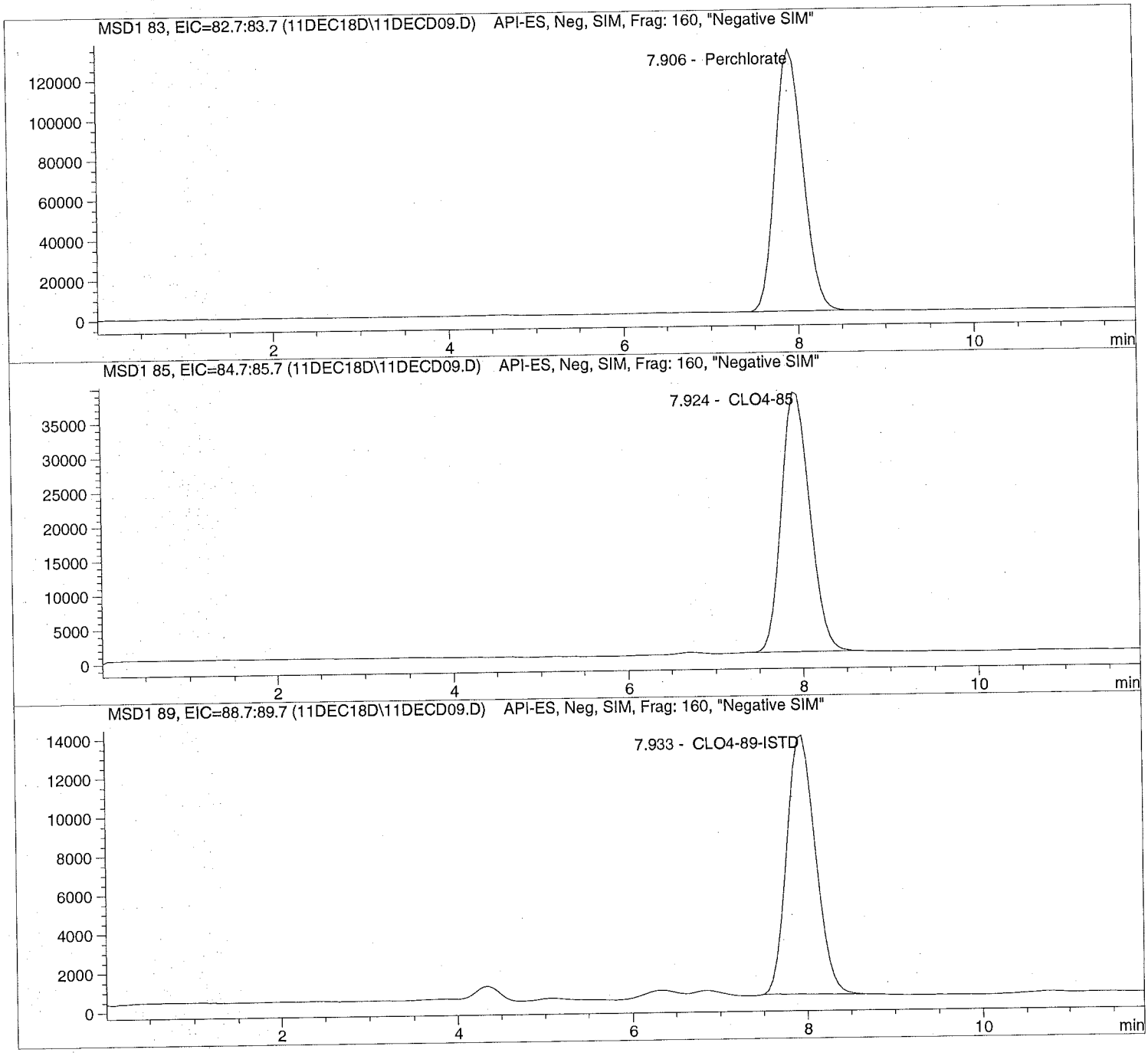
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\11DEC18D\11DECD09.D Sample Name: 1833461004 100

Injection Date:	12/11/2018 09:53:11	Seq Line:	9
Sample Name:	1833461004 100	Location:	Vial 79
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 12/3/2018 12:46:06

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\11DEC18D\11DECD09.D Sample Name: 1833461004 100

Injection Date:	12/11/2018 09:53:11	Seq Line:	9
Sample Name:	1833461004 100	Location:	Vial 79
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method:	CLO4-AQN.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	12/3/2018 12:46:06

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 3. Dec. 2018, 00:29:27 pm
Multiplier:	1.000000
Dilution:	100.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.906	PBA	2891111.8	2851.9254	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.924	BBA	851631.1	2782.2216	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.933	PBA	300444.9	500.0000	CLO4-89-ISTD

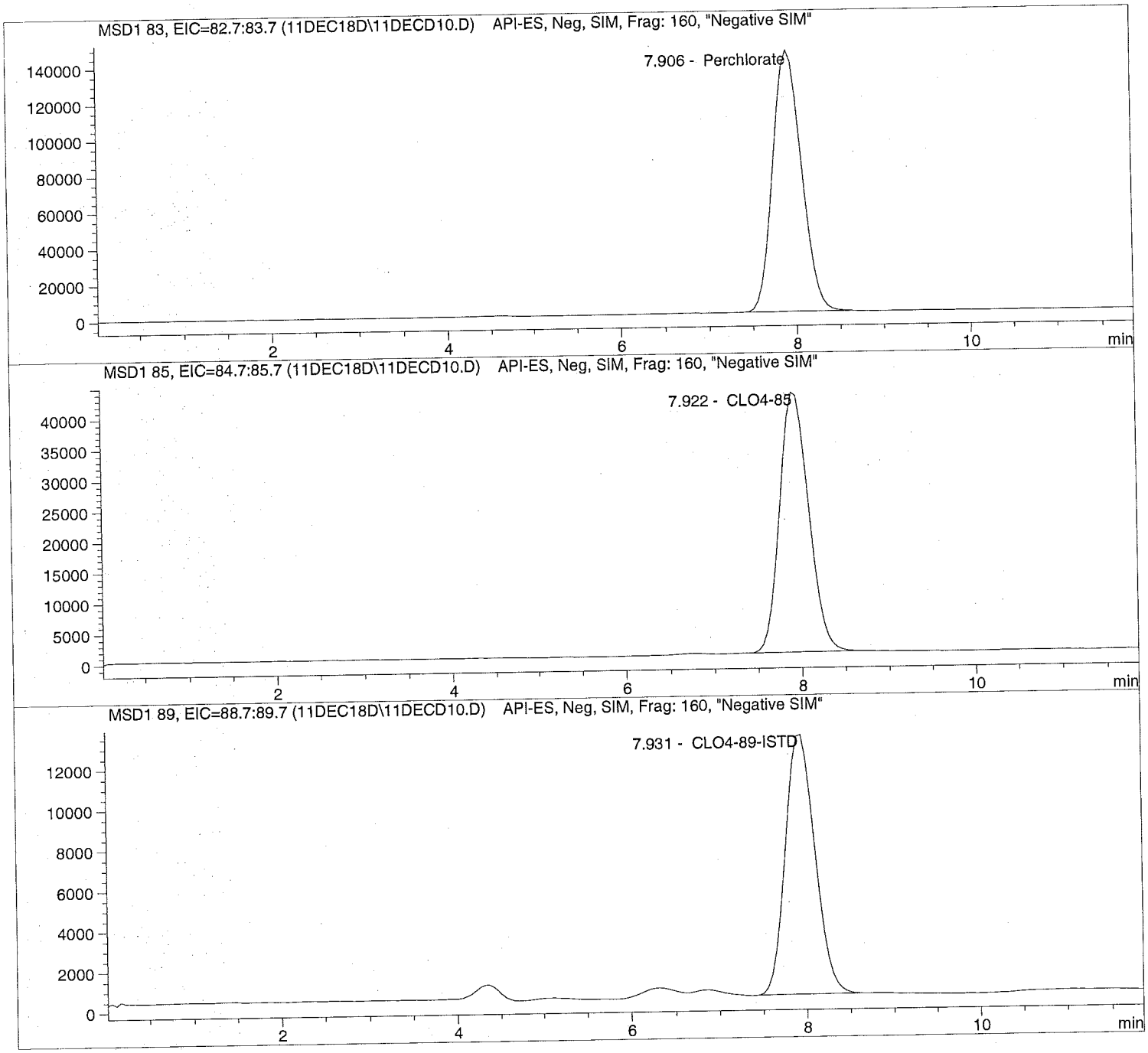
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\11DEC18D\11DECD10.D Sample Name: 1833461005 100

Injection Date:	12/11/2018 10:06:58	Seq Line:	10
Sample Name:	1833461005 100	Location:	Vial 80
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 12/3/2018 12:46:06

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\11DEC18D\11DECD10.D Sample Name: 1833461005 100

Injection Date:	12/11/2018 10:06:58	Seq Line:	10
Sample Name:	1833461005 100	Location:	Vial 80
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method:	CLO4-AQN.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	12/3/2018 12:46:06

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 3. Dec. 2018, 00:29:27 pm
Multiplier:	1.000000
Dilution:	100.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.906	PBA	3298217.8	3211.7849	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.922	PBA	978589.6	3149.5859	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.931	PBA	302235.4	500.0000	CLO4-89-ISTD

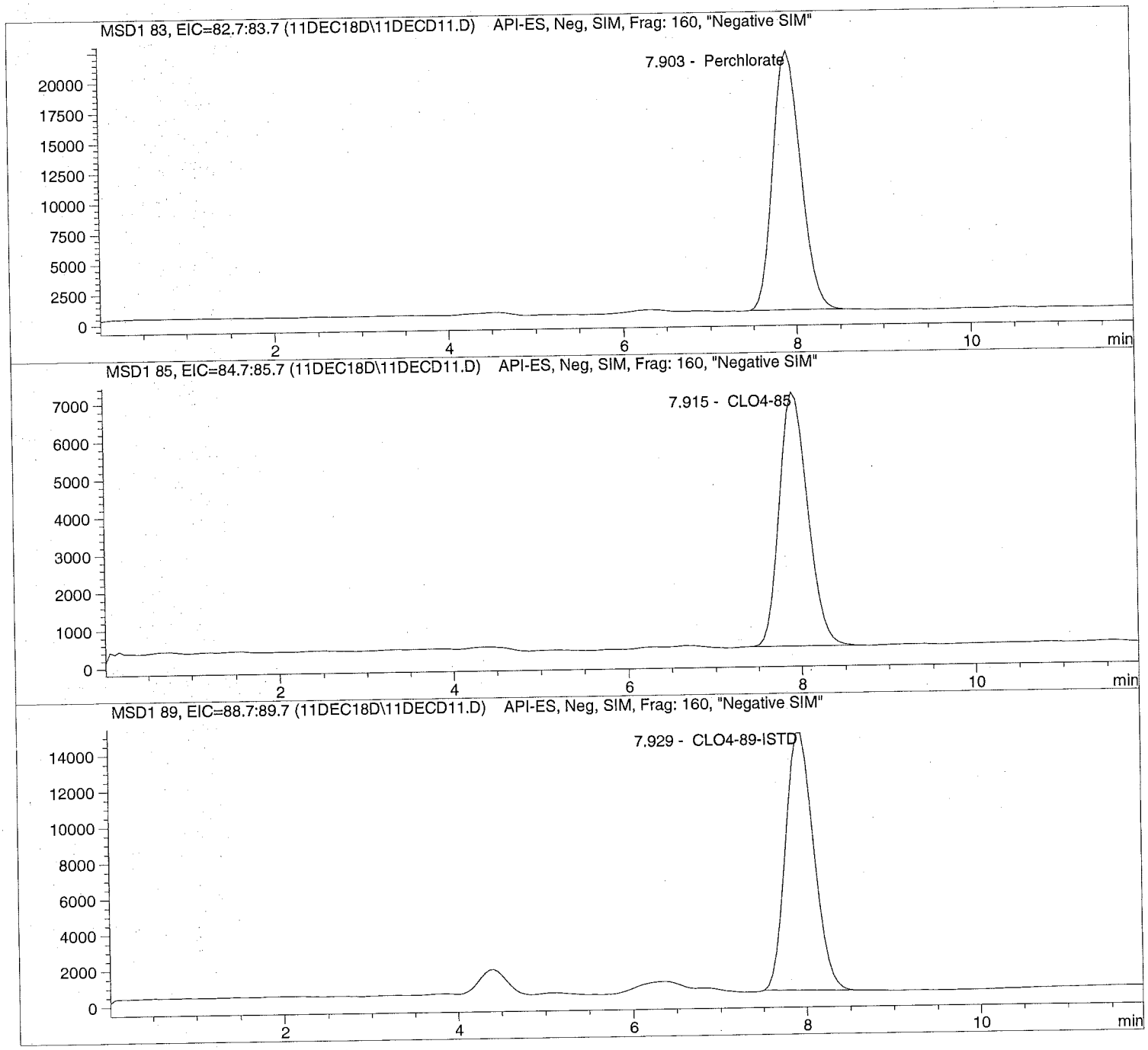
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\11DEC18D\11DECD11.D Sample Name: 1833461006 10K

Injection Date:	12/11/2018 10:20:44	Seq Line:	11
Sample Name:	1833461006 10K	Location:	Vial 81
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 12/3/2018 12:46:06

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\11DEC18D\11DECD11.D Sample Name: 1833461006 10K

Injection Date:	12/11/2018 10:20:44	Seq Line:	11
Sample Name:	1833461006 10K	Location:	Vial 81
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method:	CLO4-AQN.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	12/3/2018 12:46:06

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 3. Dec. 2018, 00:29:27 pm
Multiplier:	1.000000
Dilution:	10000.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.903	PBA	476196.3	47325.9026	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.915	BBA	152822.6	49818.5957	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.929	PBA	322820.2	50000.0000	CLO4-89-ISTD

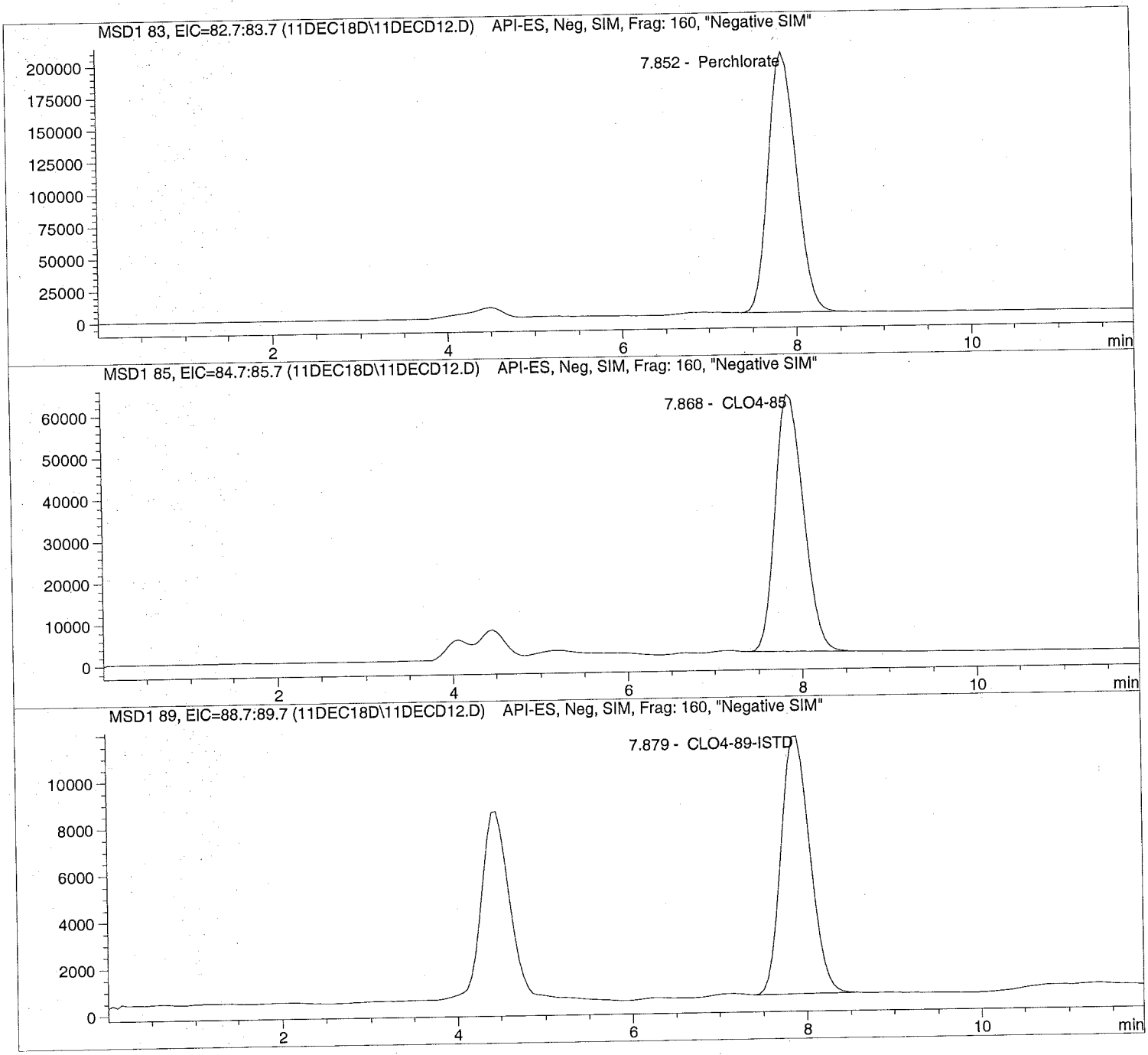
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\11DEC18D\11DECD12.D Sample Name: 1833461007

Injection Date:	12/11/2018 10:34:29	Seq Line:	12
Sample Name:	1833461007	Location:	Vial 82
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 12/3/2018 12:46:06

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\11DEC18D\11DECD12.D Sample Name: 1833461007

Injection Date:	12/11/2018 10:34:29	Seq Line:	12
Sample Name:	1833461007	Location:	Vial 82
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method:	CLO4-AQN.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	12/3/2018 12:46:06

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 3. Dec. 2018, 00:29:27 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.852	PBA	4513045.5	50.9459	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.868	VBA	1389702.0	51.2193	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.879	PBA	252017.3	5.0000	CLO4-89-ISTD

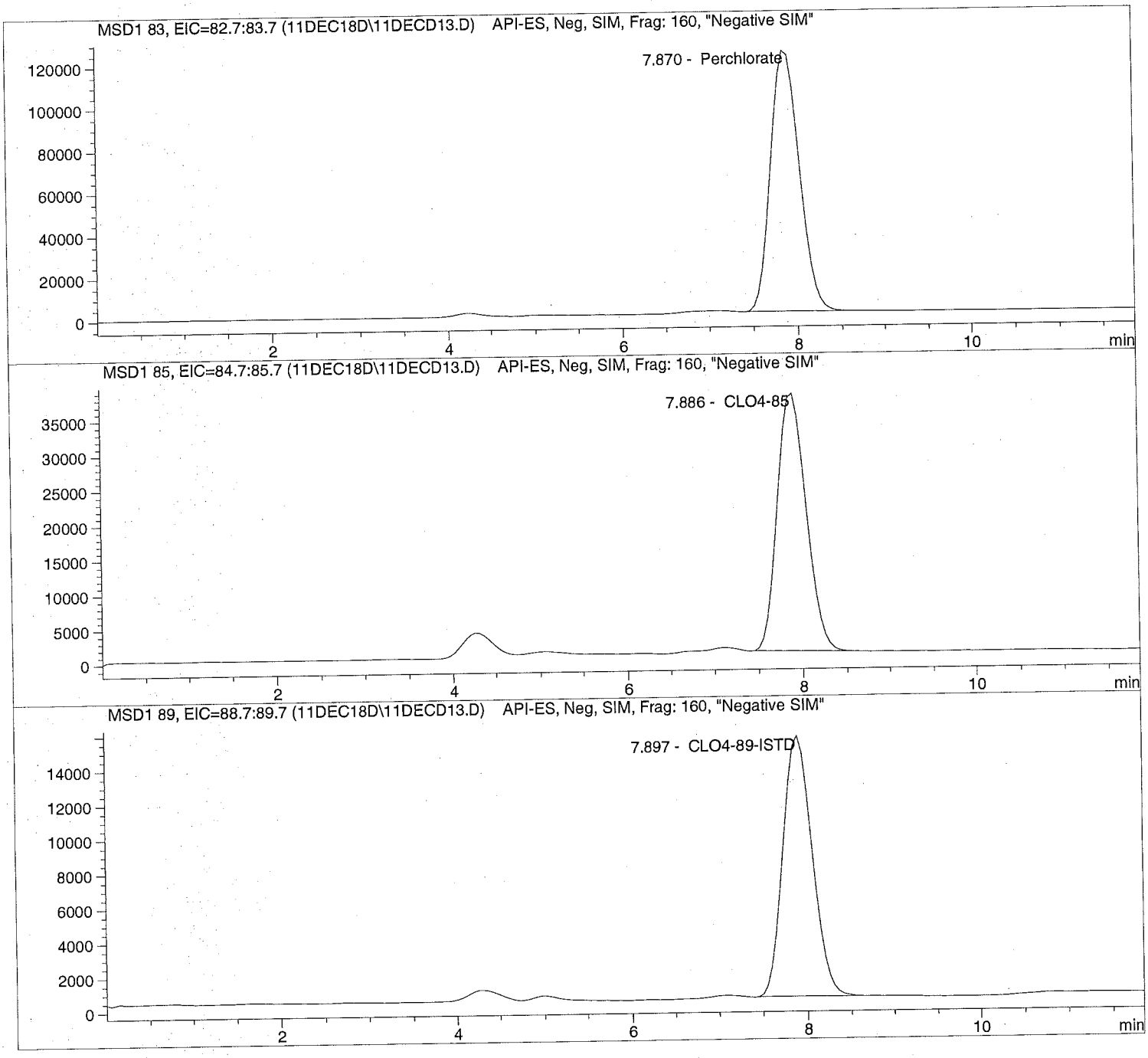
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\11DEC18D\11DECD13.D Sample Name: 1833875001

Injection Date:	12/11/2018 10:48:16	Seq Line:	13
Sample Name:	1833875001	Location:	Vial 83
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 12/3/2018 12:46:06

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\11DEC18D\11DECD13.D Sample Name: 1833875001

Injection Date:	12/11/2018 10:48:16	Seq Line:	13
Sample Name:	1833875001	Location:	Vial 83
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method:	CLO4-AQN.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	12/3/2018 12:46:06

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 3. Dec. 2018, 00:29:27 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.870	PBA	2746040.0	24.0717	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.886	PBA	829390.4	24.0864	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.897	PBA	341152.2	5.0000	CLO4-89-ISTD

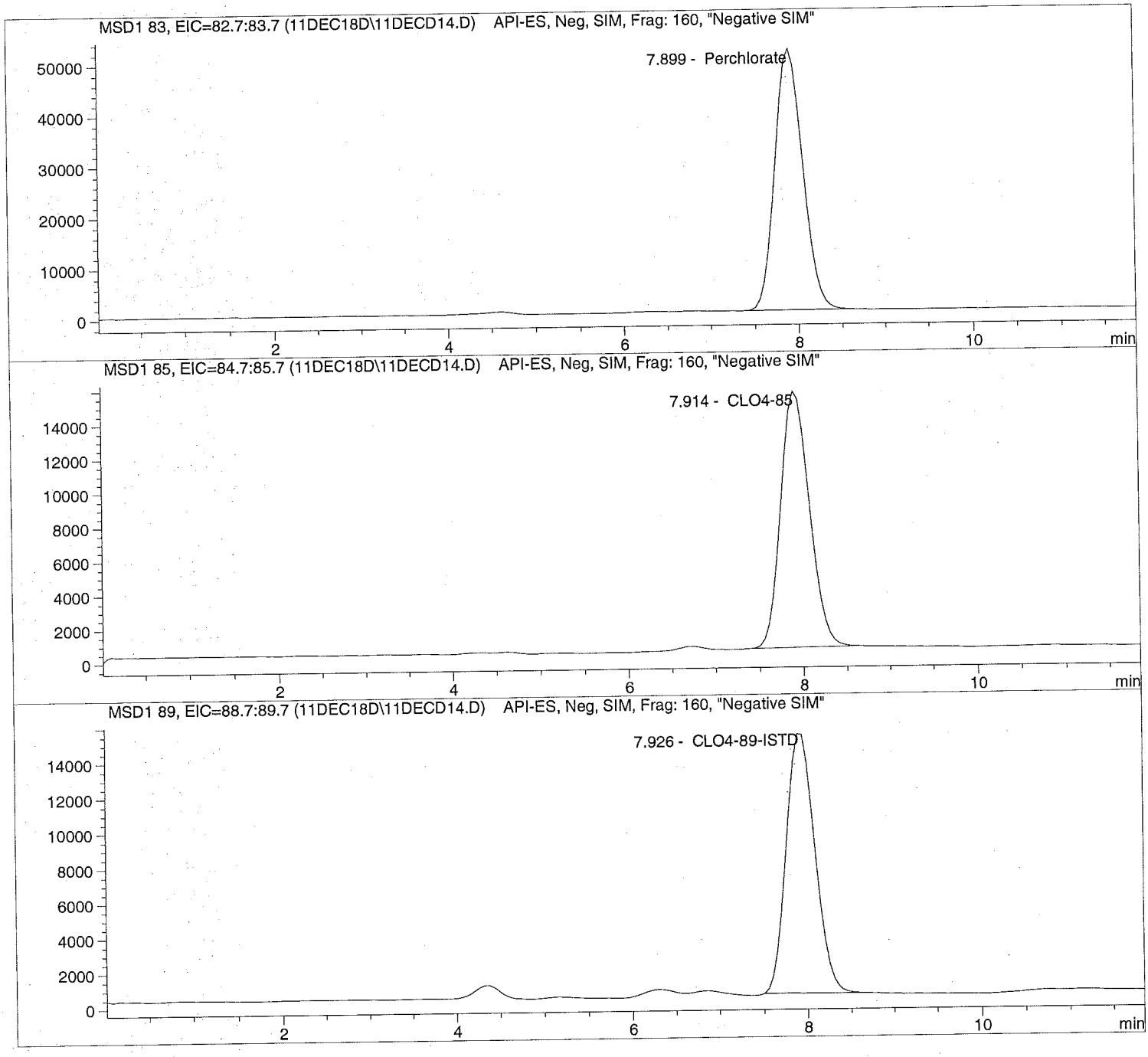
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\11DEC18D\11DECD14.D Sample Name: 1833875002 100

Injection Date:	12/11/2018 11:02:02	Seq Line:	14
Sample Name:	1833875002 100	Location:	Vial 84
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 12/3/2018 12:46:06

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\11DEC18D\11DECD14.D Sample Name: 1833875002 100

Injection Date:	12/11/2018 11:02:02	Seq Line:	14
Sample Name:	1833875002 100	Location:	Vial 84
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 12/3/2018 12:46:06

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 3. Dec. 2018, 00:29:27 pm
Multiplier:	1.000000
Dilution:	100.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.899	PBA	1140387.5	1052.7598	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.914	PBA	343363.9	1052.7429	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.926	PBA	335466.7	500.0000	CLO4-89-ISTD

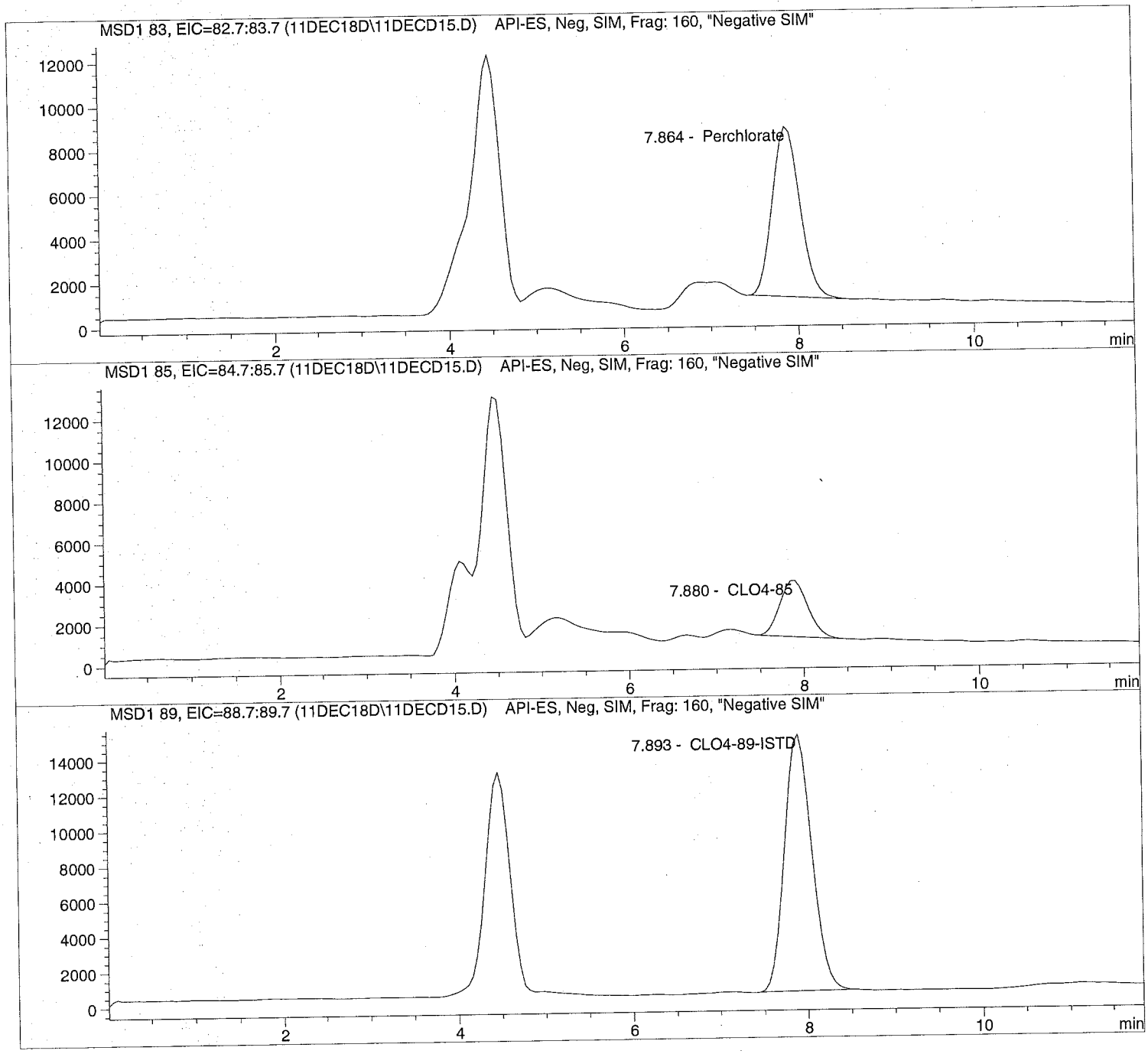
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\11DEC18D\11DECD15.D Sample Name: 1833875003

Injection Date:	12/11/2018 11:15:49	Seq Line:	15
Sample Name:	1833875003	Location:	Vial 85
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 12/3/2018 12:46:06

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\11DEC18D\11DECD15.D Sample Name: 1833875003

Injection Date:	12/11/2018 11:15:49	Seq Line:	15
Sample Name:	1833875003	Location:	Vial 85
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method:	CLO4-AQN.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	12/3/2018 12:46:06

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 3. Dec. 2018, 00:29:27 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.864	PBA	168396.0	1.8504	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.880	VBA	61128.4	2.0997	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.893	PBA	316168.6	5.0000	CLO4-89-ISTD

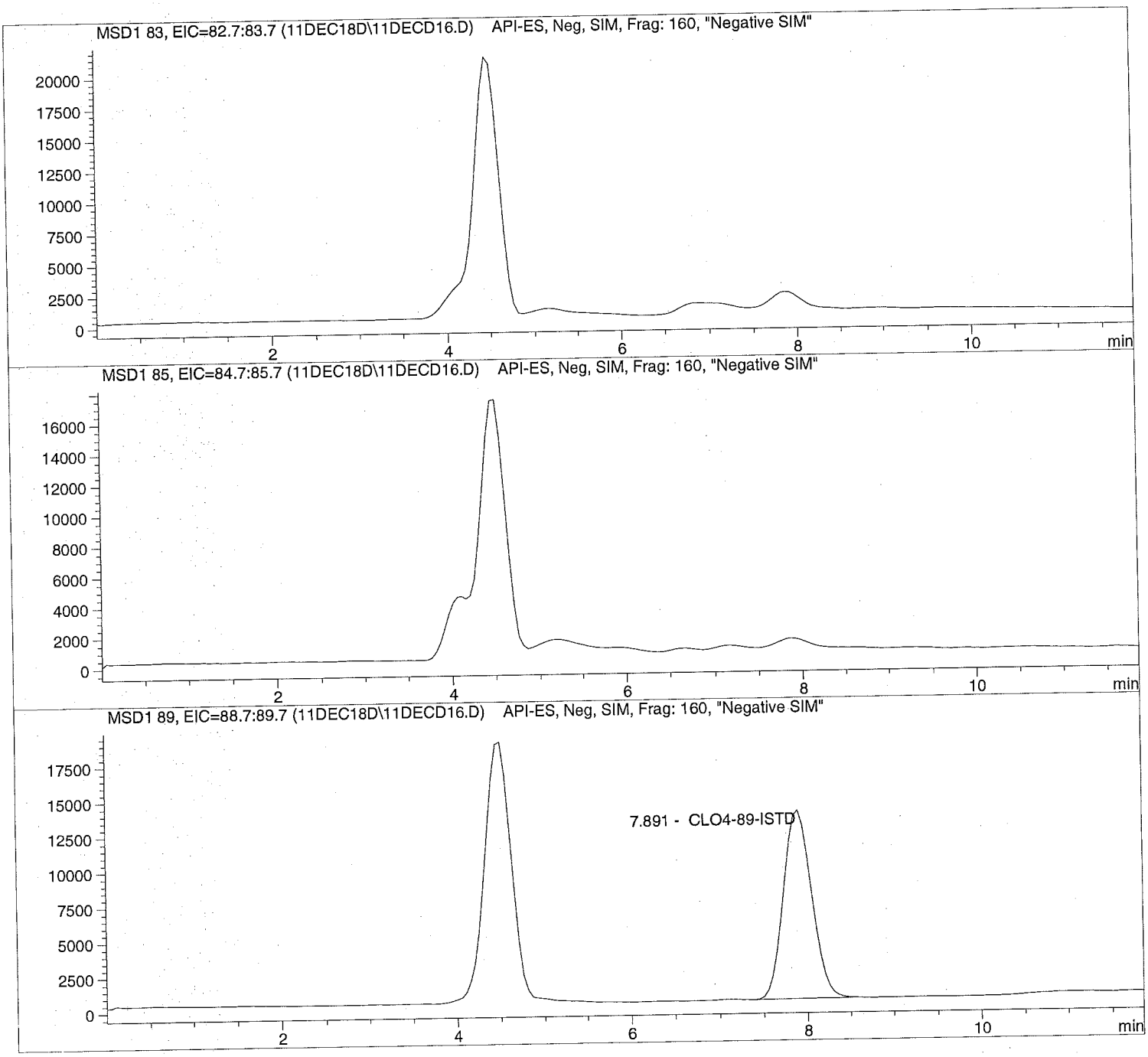
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\11DEC18D\11DECD16.D Sample Name: 1833980001

Injection Date:	12/11/2018 11:29:36	Seq Line:	16
Sample Name:	1833980001	Location:	Vial 86
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 12/3/2018 12:46:06

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\11DEC18D\11DECD16.D Sample Name: 1833980001

Injection Date:	12/11/2018 11:29:36	Seq Line:	16
Sample Name:	1833980001	Location:	Vial 86
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 12/3/2018 12:46:06

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 3. Dec. 2018, 00:29:27 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.891	PBA	300388.2	5.0000	CLO4-89-ISTD

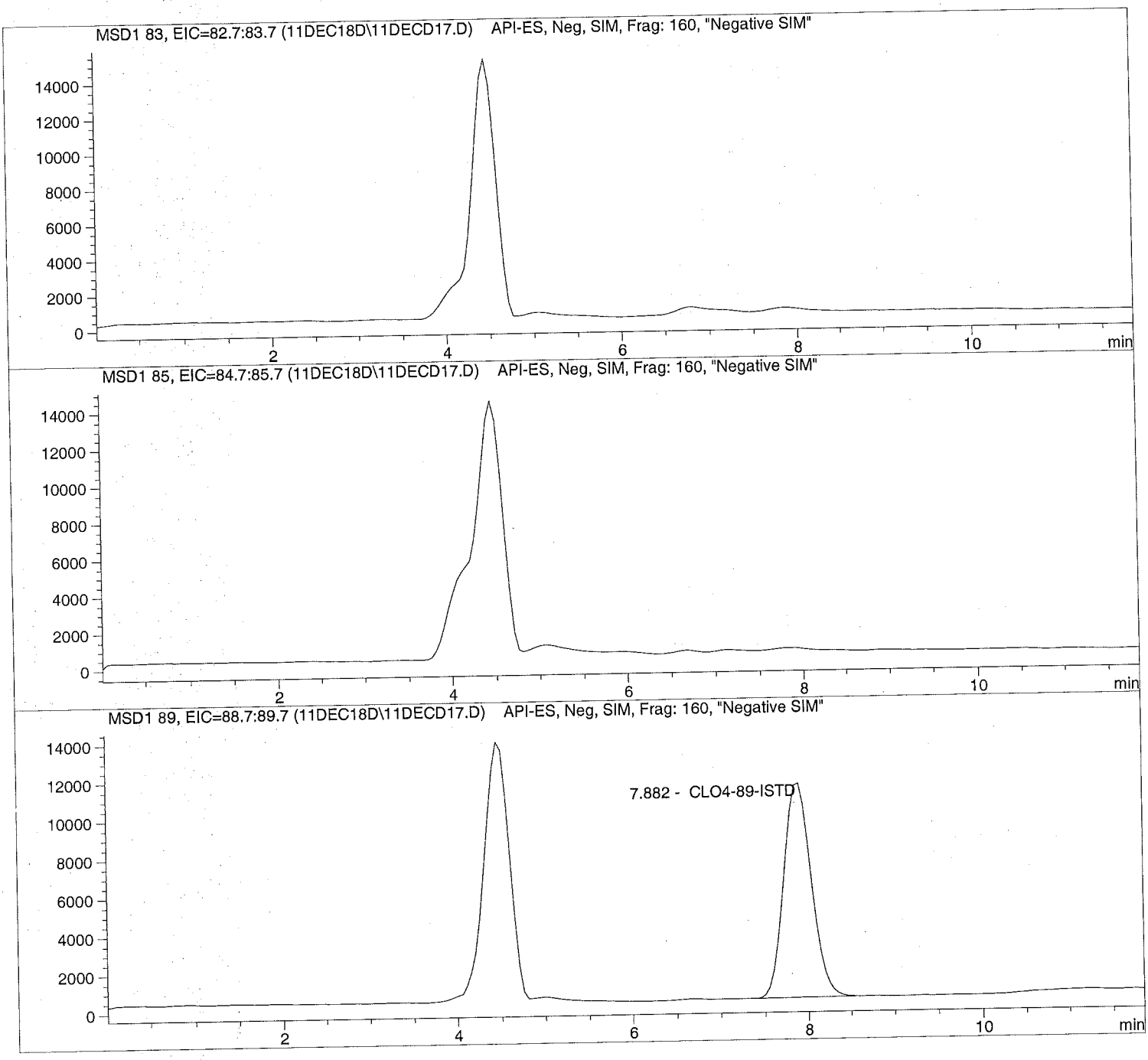
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\11DEC18D\11DECD17.D Sample Name: 1833980002

Injection Date:	12/11/2018 11:43:23	Seq Line:	17
Sample Name:	1833980002	Location:	Vial 87
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 12/3/2018 12:46:06

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\11DEC18D\11DECD17.D Sample Name: 1833980002

Injection Date:	12/11/2018 11:43:23	Seq Line:	17
Sample Name:	1833980002	Location:	Vial 87
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method:	CLO4-AQN.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	12/3/2018 12:46:06

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 3. Dec. 2018, 00:29:27 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.882	PBA	247846.6	5.0000	CLO4-89-ISTD

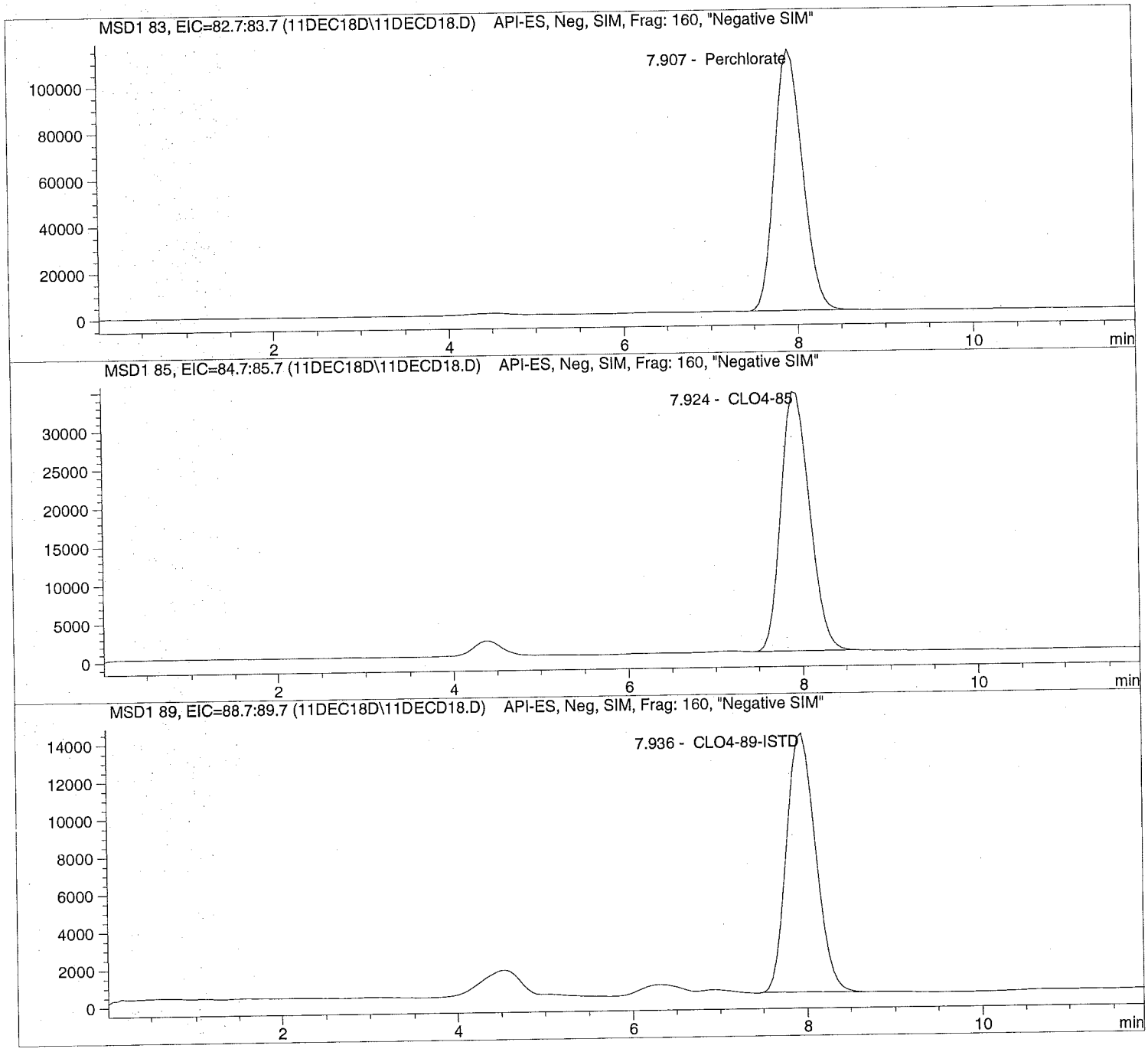
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\11DEC18D\11DECD18.D Sample Name: 631669 CCV@25

Injection Date:	12/11/2018 11:57:11	Seq Line:	18
Sample Name:	631669 CCV@25	Location:	Vial 71
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 12/3/2018 12:46:06

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\11DEC18D\11DECD18.D Sample Name: 631669 CCV@25

Injection Date:	12/11/2018 11:57:11	Seq Line:	18
Sample Name:	631669 CCV@25	Location:	Vial 71
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method:	CLO4-AQN.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	12/3/2018 12:46:06

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 3. Dec. 2018, 00:29:27 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	25.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.907	PBA	2478161.8	23.5670	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.924	PBA	761944.6	23.9861	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.936	PBA	314800.1	5.0000	CLO4-89-ISTD

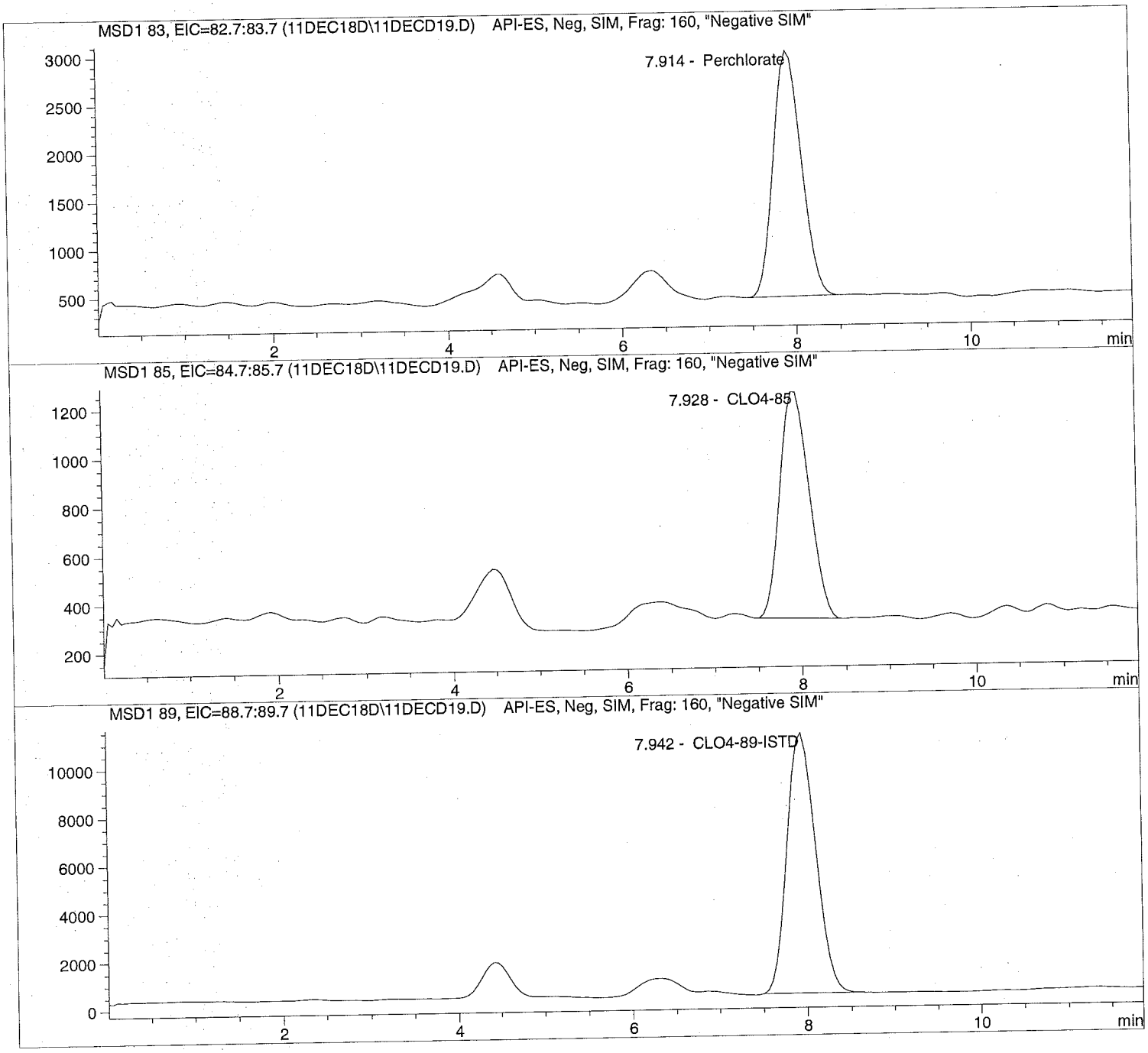
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\11DEC18D\11DECD19.D Sample Name: 631670 LODV@1.

Injection Date:	12/11/2018 12:10:56	Seq Line:	19
Sample Name:	631670 LODV@1.	Location:	Vial 72
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 12/3/2018 12:46:06

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\11DEC18D\11DECD19.D Sample Name: 631670 LODV@1.

Injection Date:	12/11/2018 12:10:56	Seq Line:	19
Sample Name:	631670 LODV@1.	Location:	Vial 72
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 12/3/2018 12:46:06

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 3. Dec. 2018, 00:29:27 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	1.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.914	PBA	56994.7	0.9318	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.928	PBA	21608.5	1.0133	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.942	PBA	243309.5	5.0000	CLO4-89-ISTD

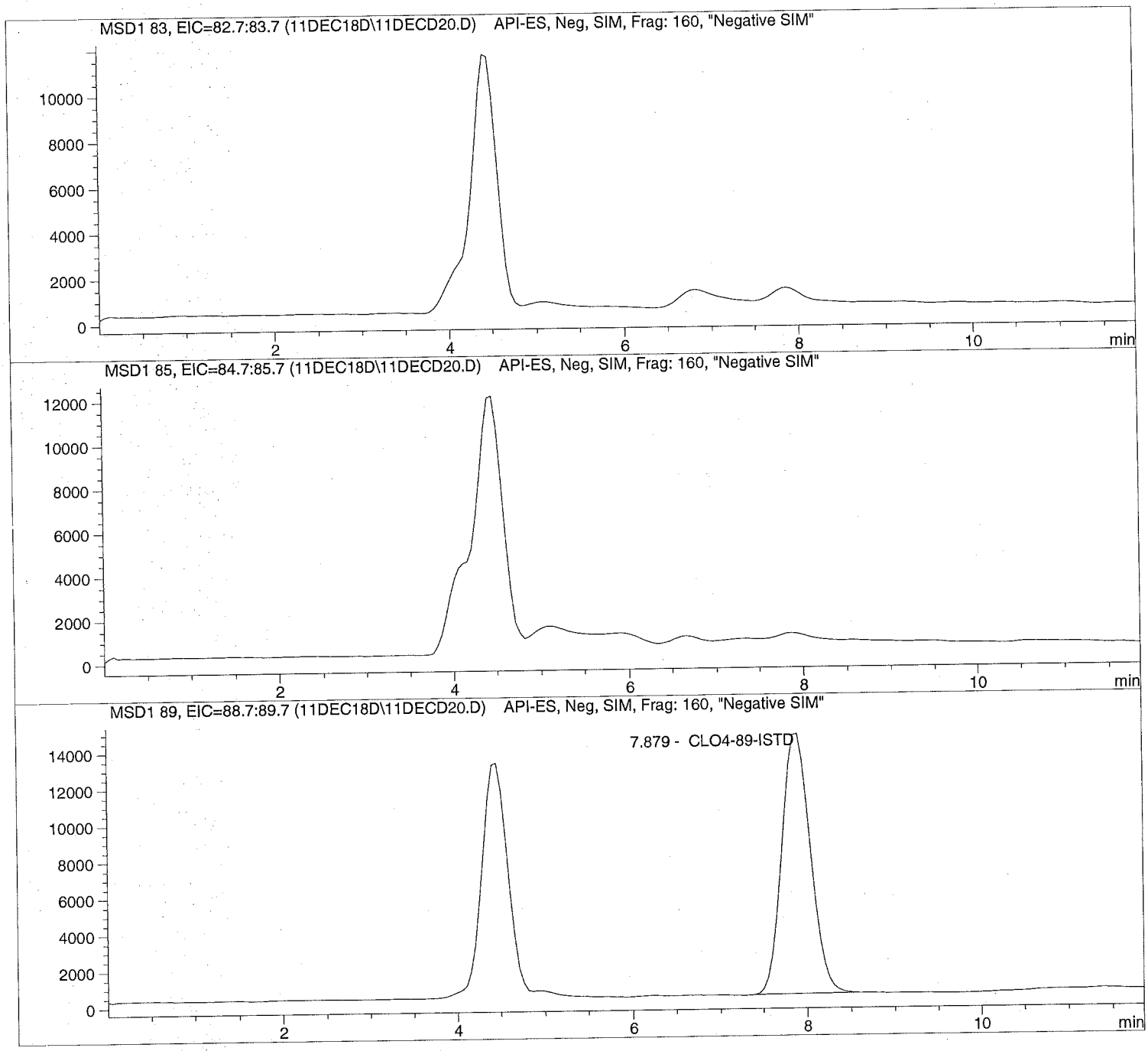
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\11DEC18D\11DECD20.D Sample Name: 1833980003

Injection Date:	12/11/2018 12:24:42	Seq Line:	20
Sample Name:	1833980003	Location:	Vial 88
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 12/3/2018 12:46:06

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\11DEC18D\11DECD20.D Sample Name: 1833980003

Injection Date:	12/11/2018 12:24:42	Seq Line:	20
Sample Name:	1833980003	Location:	Vial 88
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method:	CLO4-AQN.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	12/3/2018 12:46:06

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 3. Dec. 2018, 00:29:27 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.879	PBA	322750.5	5.0000	CLO4-89-ISTD

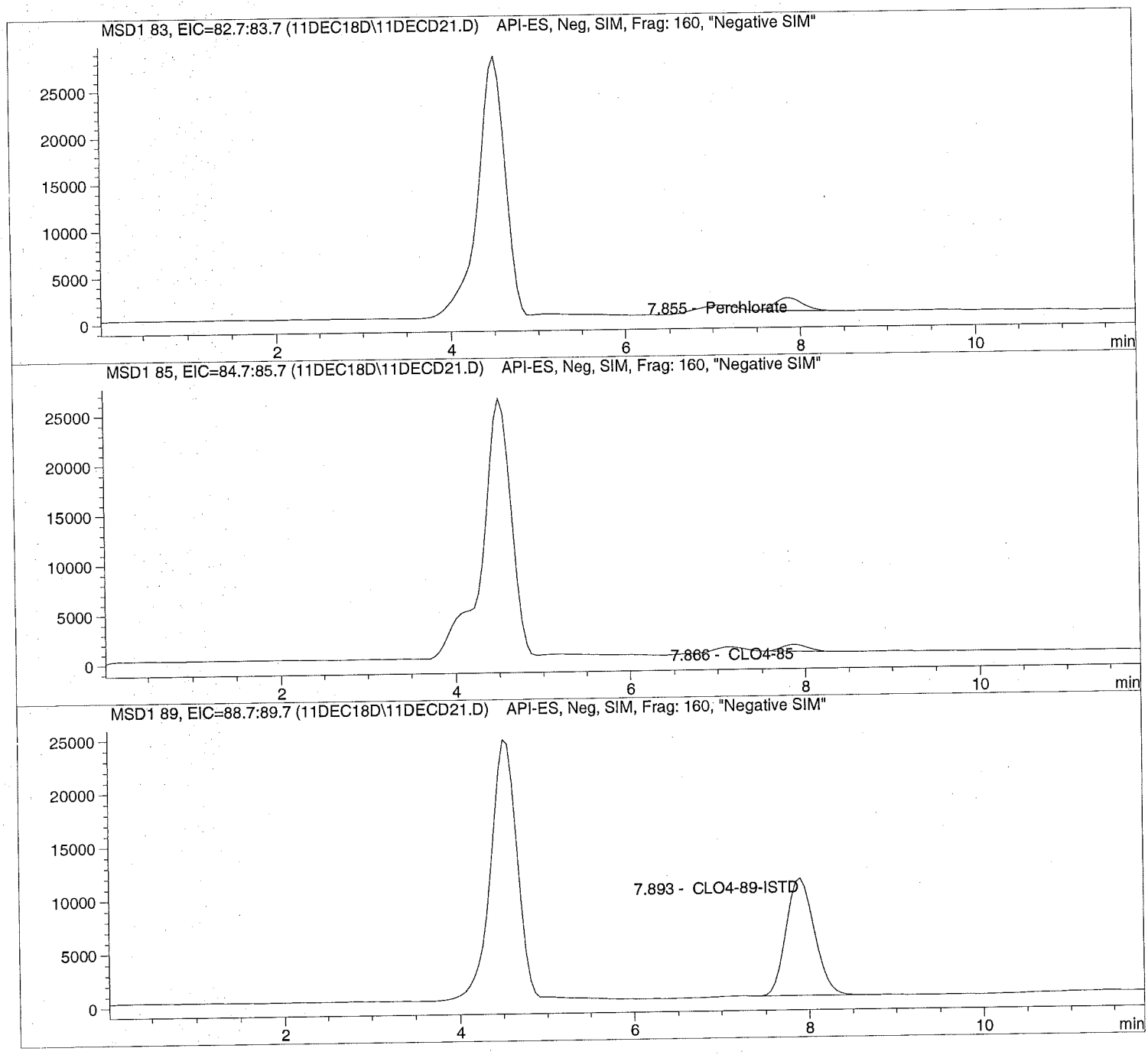
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\11DEC18D\11DECD21.D Sample Name: 1833980004

Injection Date:	12/11/2018 12:38:33	Seq Line:	21
Sample Name:	1833980004	Location:	Vial 89
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 12/3/2018 12:46:06

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\11DEC18D\11DECD21.D Sample Name: 1833980004

Injection Date:	12/11/2018 12:38:33	Seq Line:	21
Sample Name:	1833980004	Location:	Vial 89
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method:	CLO4-AQN.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	12/3/2018 12:46:06

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 3. Dec. 2018, 00:29:27 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.855	PBA	29927.4	0.5873	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.866	VBA	14187.9	0.6932	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.893	BBA	244118.1	5.0000	CLO4-89-ISTD

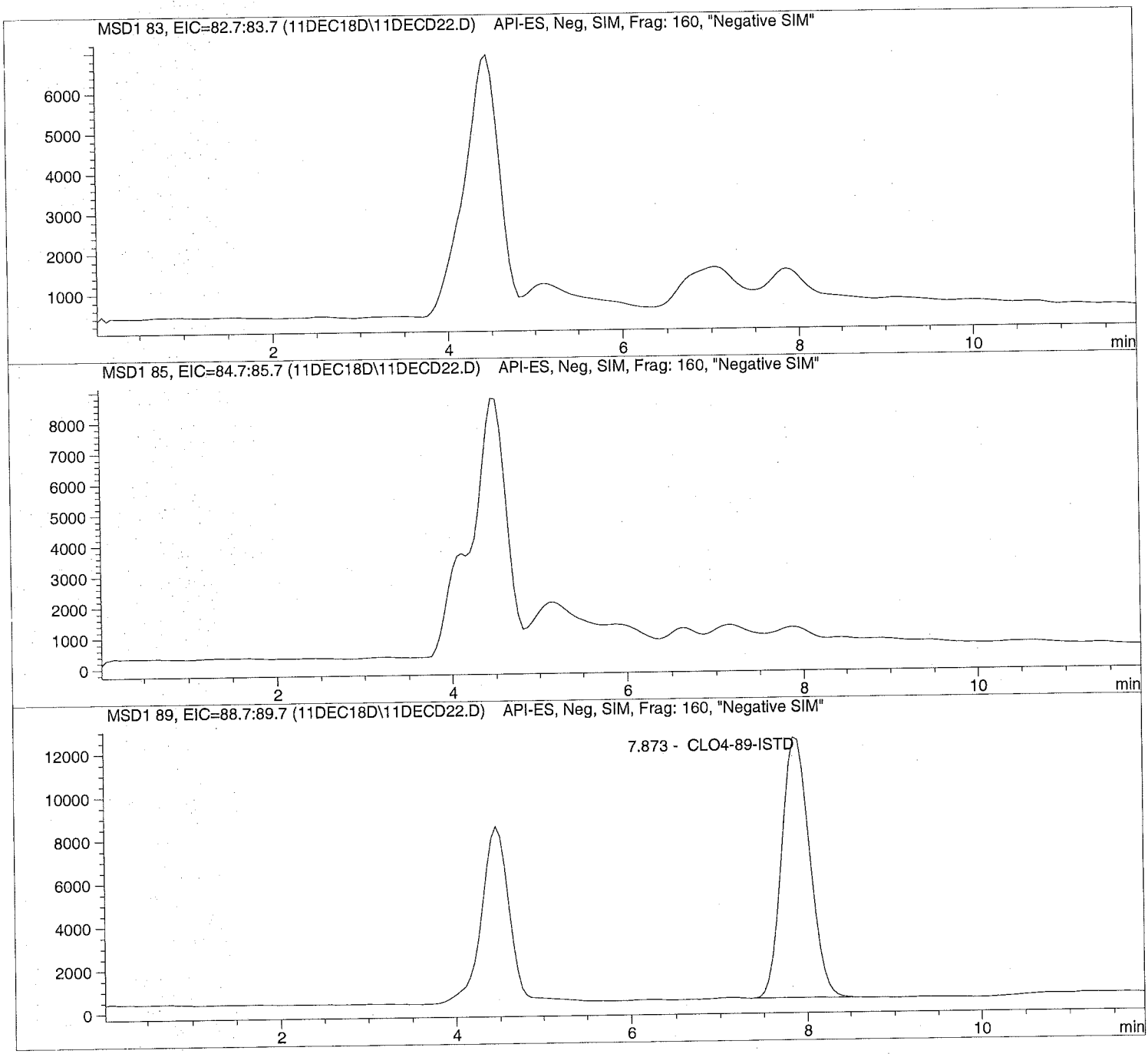
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\11DEC18D\11DECD22.D Sample Name: 1833980005

Injection Date:	12/11/2018 12:52:19	Seq Line:	22
Sample Name:	1833980005	Location:	Vial 90
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 12/3/2018 12:46:06

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\11DEC18D\11DECD22.D Sample Name: 1833980005

Injection Date:	12/11/2018 12:52:19	Seq Line:	22
Sample Name:	1833980005	Location:	Vial 90
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 12/3/2018 12:46:06

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 3. Dec. 2018, 00:29:27 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.873	PBA	269834.5	5.0000	CLO4-89-ISTD

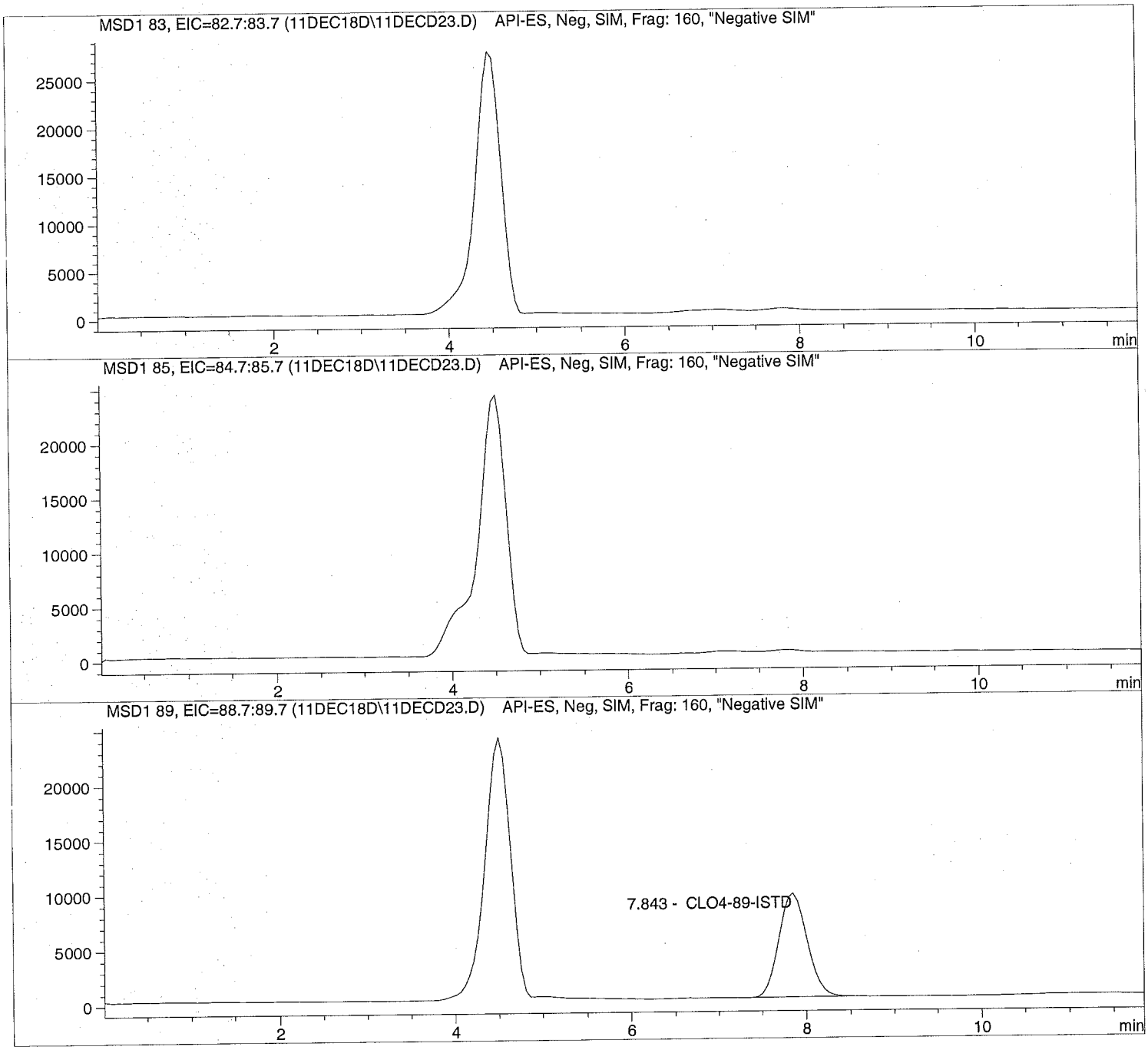
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\11DEC18D\11DECD23.D Sample Name: 1833980006

Injection Date:	12/11/2018 13:06:07	Seq Line:	23
Sample Name:	1833980006	Location:	Vial 91
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 12/3/2018 12:46:06

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\11DEC18D\11DECD23.D Sample Name: 1833980006

Injection Date:	12/11/2018 13:06:07	Seq Line:	23
Sample Name:	1833980006	Location:	Vial 91
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method:	CLO4-AQN.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	12/3/2018 12:46:06

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 3. Dec. 2018, 00:29:27 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.843	PBA	209759.2	5.0000	CLO4-89-ISTD

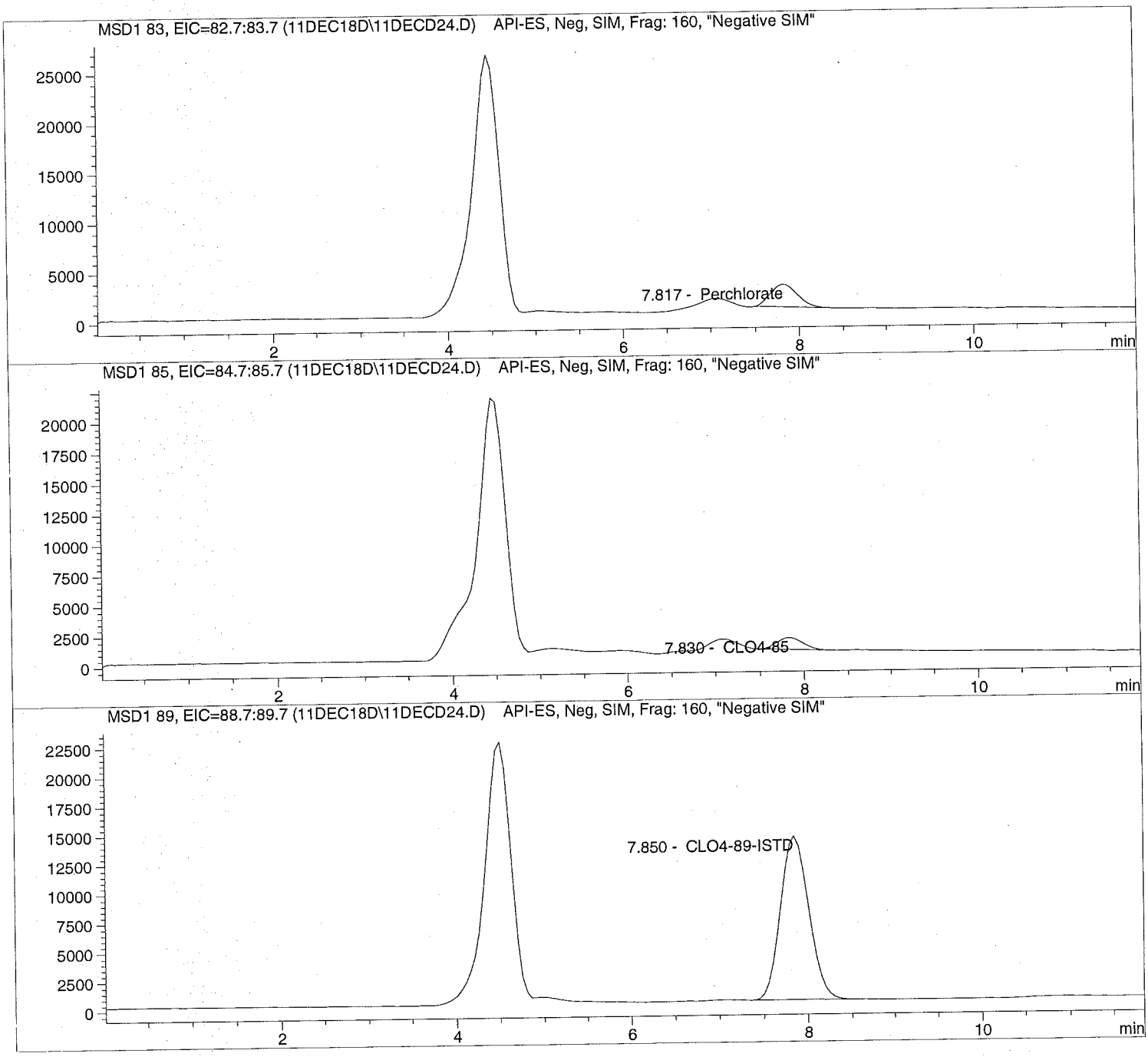
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\11DEC18D\11DECD24.D Sample Name: 1833980007

Injection Date:	12/11/2018 13:19:52	Seq Line:	24
Sample Name:	1833980007	Location:	Vial 92
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 12/3/2018 12:46:06

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\11DEC18D\11DECD24.D Sample Name: 1833980007

Injection Date:	12/11/2018 13:19:52	Seq Line:	24
Sample Name:	1833980007	Location:	Vial 92
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method:	CLO4-AQN.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	12/3/2018 12:46:06

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 3. Dec. 2018, 00:29:27 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.817	PBA	47940.8	0.6853	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.830	PBA	19968.4	0.7576	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.850	PBA	310571.8	5.0000	CLO4-89-ISTD

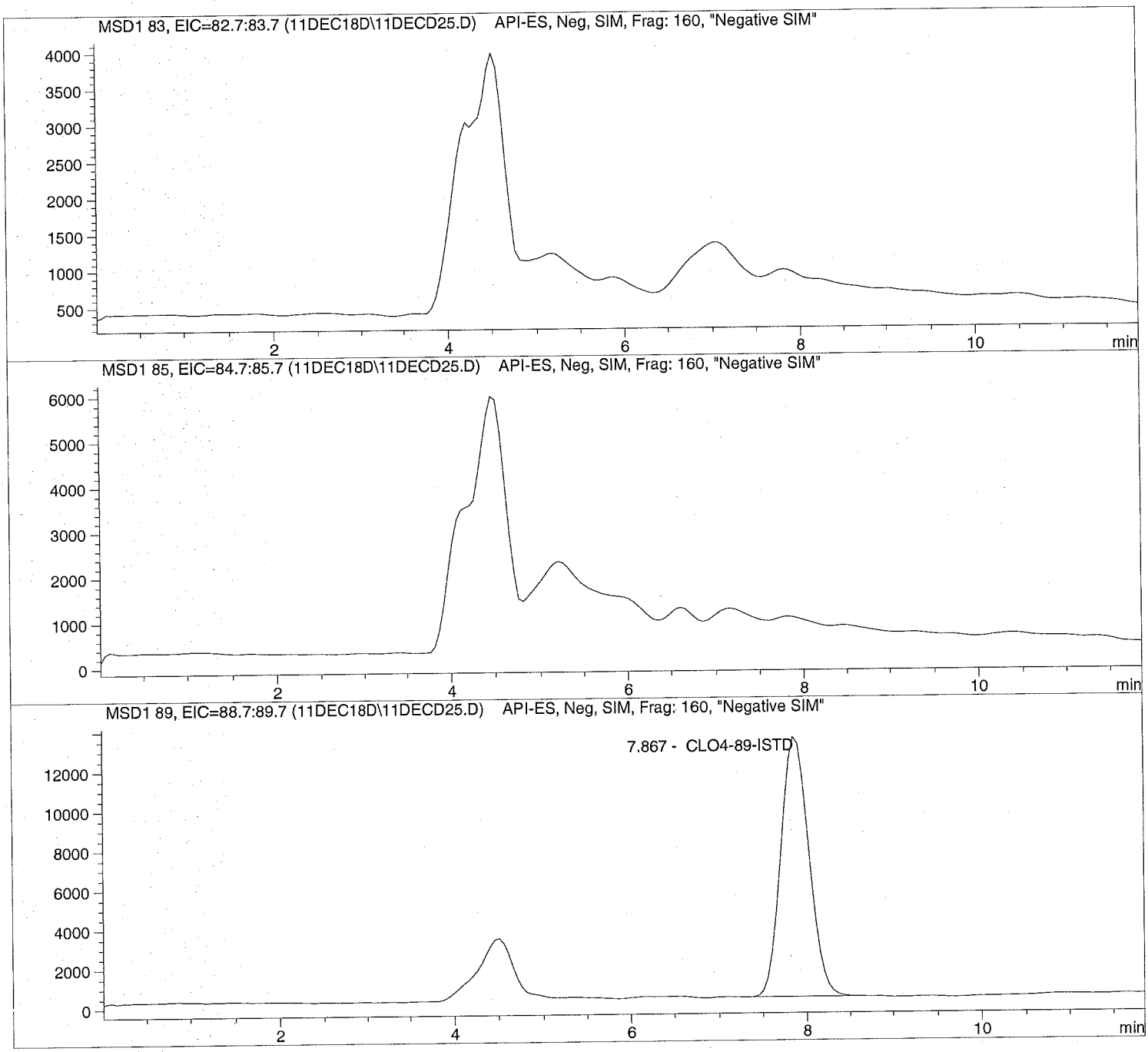
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\11DEC18D\11DECD25.D Sample Name: 1833980008

Injection Date:	12/11/2018 13:33:40	Seq Line:	25
Sample Name:	1833980008	Location:	Vial 93
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 12/3/2018 12:46:06

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\11DEC18D\11DECD25.D Sample Name: 1833980008

Injection Date:	12/11/2018 13:33:40	Seq Line:	25
Sample Name:	1833980008	Location:	Vial 93
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method:	CLO4-AQN.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	12/3/2018 12:46:06

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 3. Dec. 2018, 00:29:27 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.867	PBA	290513.1	5.0000	CLO4-89-ISTD

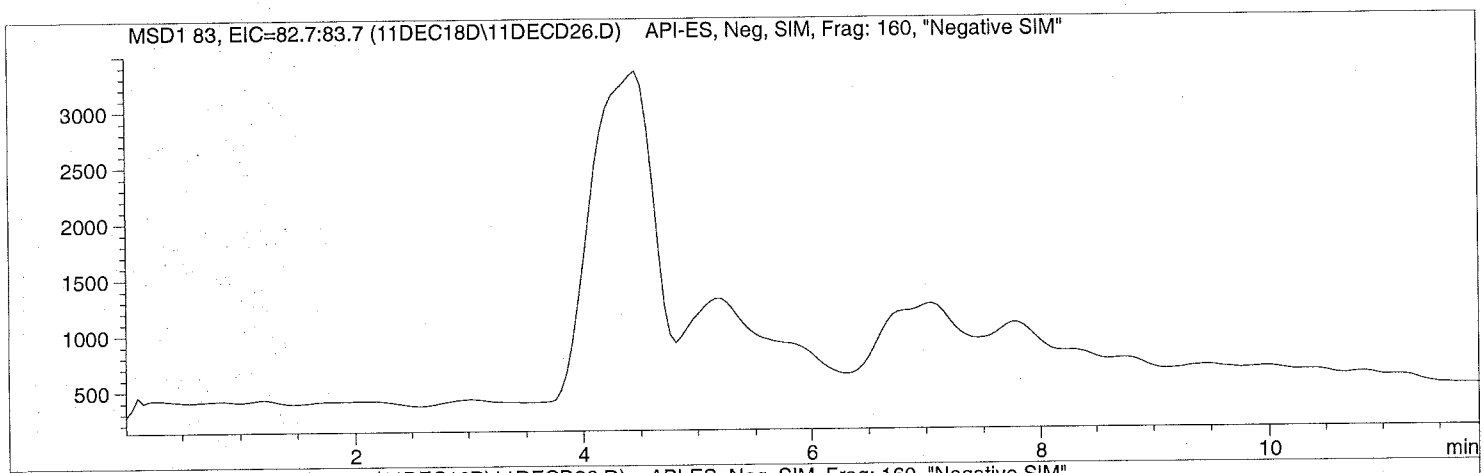
*** End of Report ***

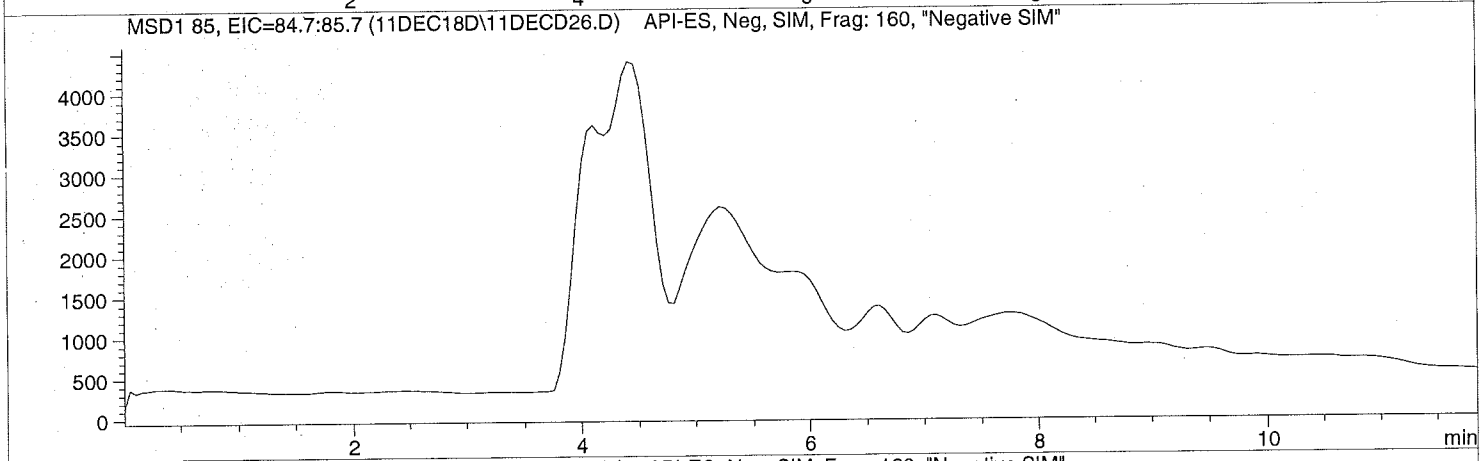
Data file: C:\HPCHEM\1\DATA\11DEC18D\11DECD26.D Sample Name: 1833980009

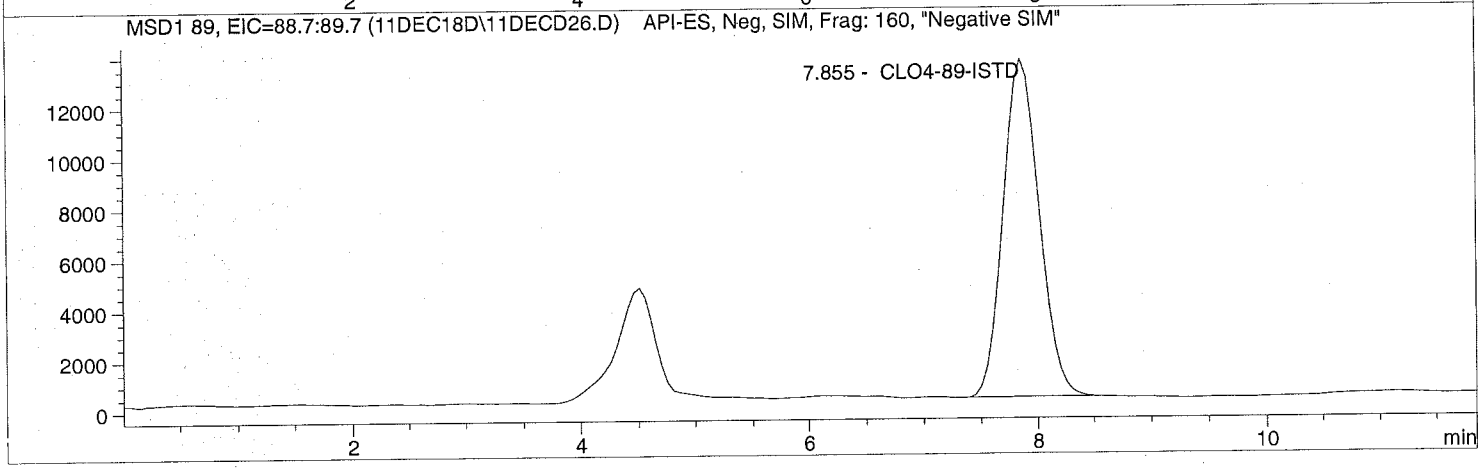
Injection Date:	12/11/2018 13:47:28	Seq Line:	26
Sample Name:	1833980009	Location:	Vial 94
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 12/3/2018 12:46:06

Perchlorate analysis







Data file: C:\HPCHEM\1\DATA\11DEC18D\11DECD26.D Sample Name: 1833980009

Injection Date:	12/11/2018 13:47:28	Seq Line:	26
Sample Name:	1833980009	Location:	Vial 94
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method:	CLO4-AQN.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	12/3/2018 12:46:06

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 3. Dec. 2018, 00:29:27 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.855	PBA	296165.2	5.0000	CLO4-89-ISTD

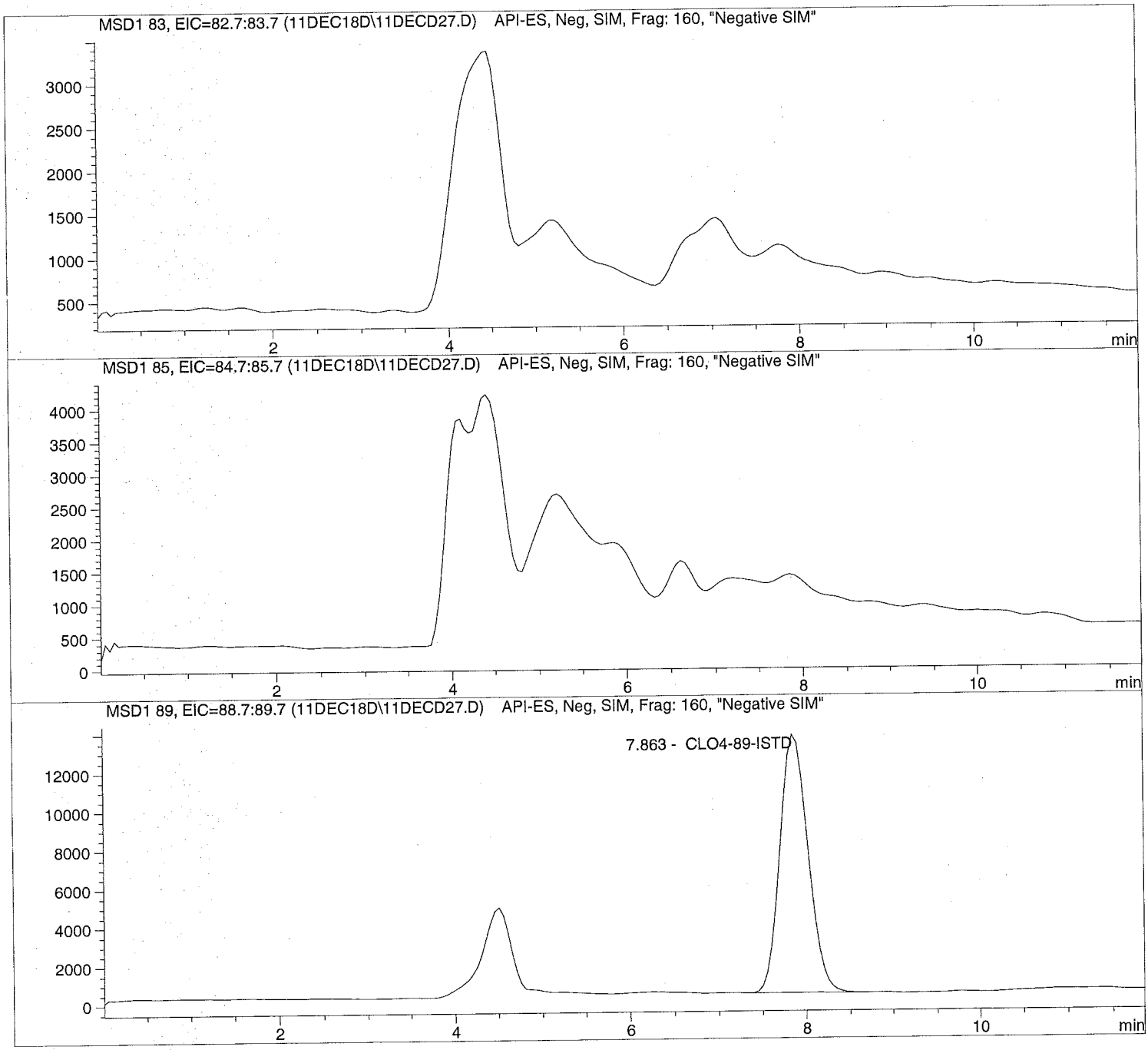
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\11DEC18D\11DECD27.D Sample Name: 1833980010

Injection Date:	12/11/2018 14:01:12	Seq Line:	27
Sample Name:	1833980010	Location:	Vial 95
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 12/3/2018 12:46:06

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\11DEC18D\11DECD27.D Sample Name: 1833980010

Injection Date:	12/11/2018 14:01:12	Seq Line:	27
Sample Name:	1833980010	Location:	Vial 95
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method:	CLO4-AQN.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	12/3/2018 12:46:06

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 3. Dec. 2018, 00:29:27 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.863	PBA	296908.7	5.0000	CLO4-89-ISTD

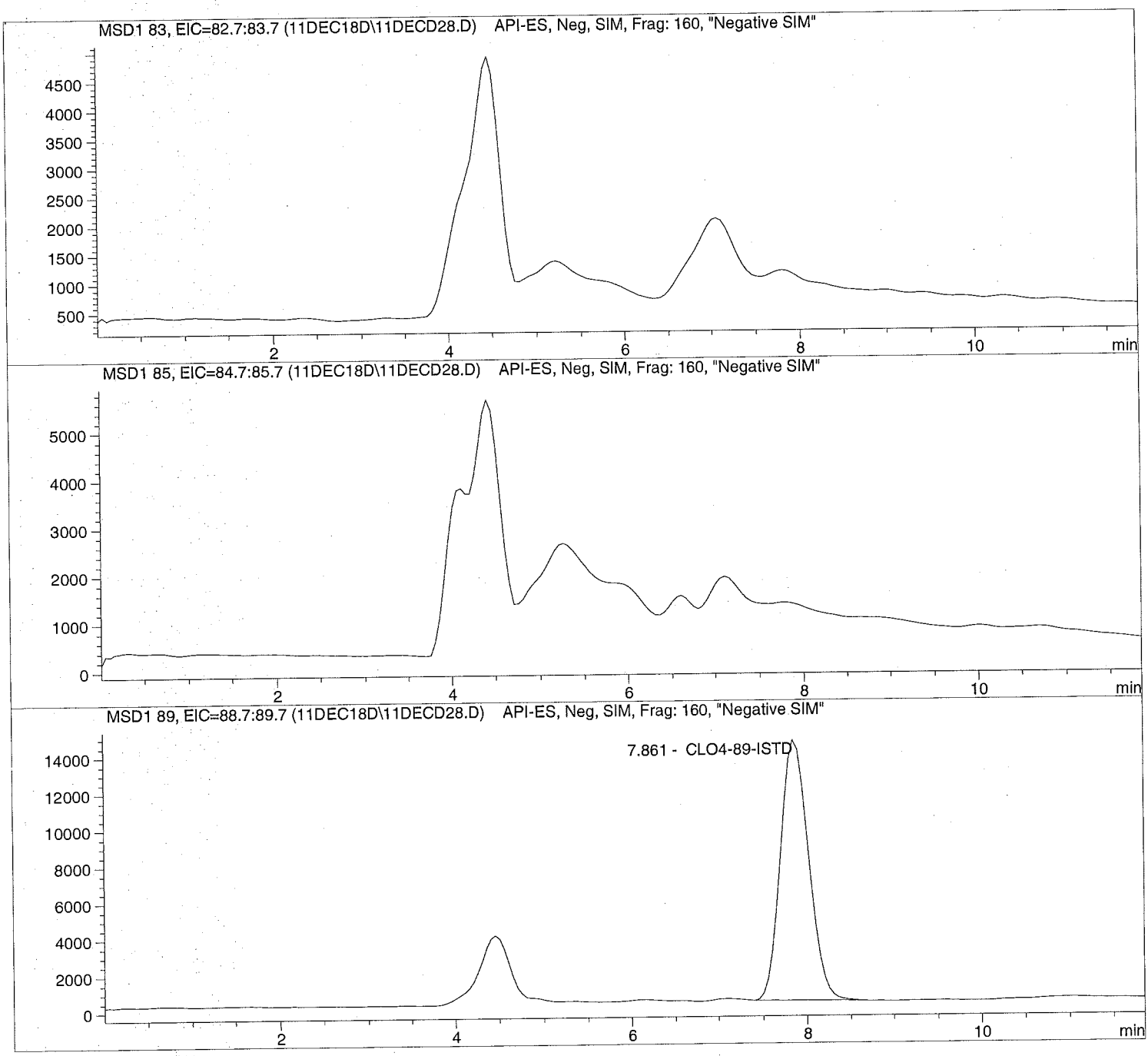
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\11DEC18D\11DECD28.D Sample Name: 1833980011

Injection Date:	12/11/2018 14:14:57	Seq Line:	28
Sample Name:	1833980011	Location:	Vial 96
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 12/3/2018 12:46:06

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\11DEC18D\11DECD28.D Sample Name: 1833980011

Injection Date:	12/11/2018 14:14:57	Seq Line:	28
Sample Name:	1833980011	Location:	Vial 96
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method:	CLO4-AQN.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	12/3/2018 12:46:06

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 3. Dec. 2018, 00:29:27 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.861	PBA	318562.2	5.0000	CLO4-89-ISTD

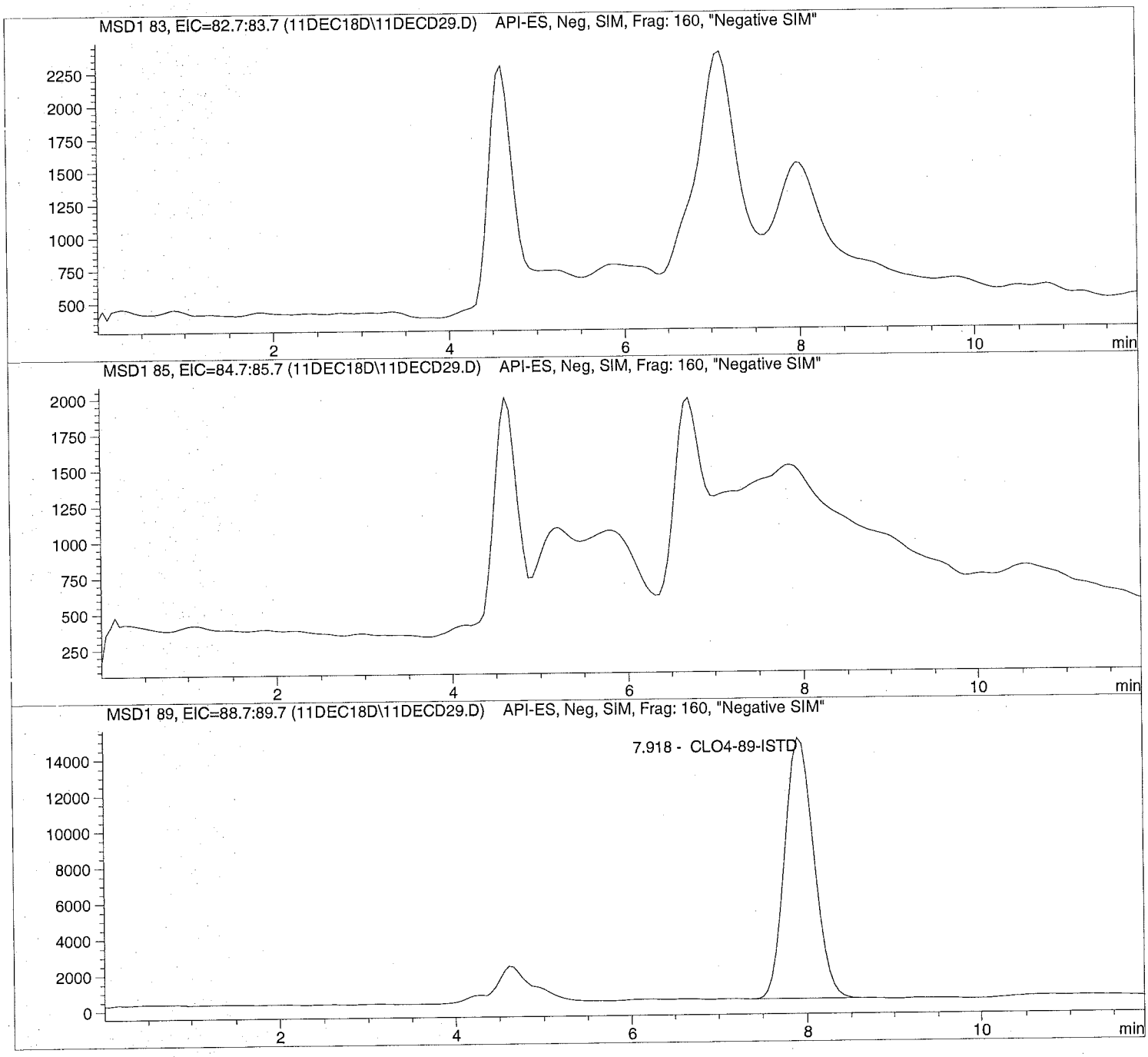
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\11DEC18D\11DECD29.D Sample Name: 1833980012

Injection Date:	12/11/2018 14:28:41	Seq Line:	29
Sample Name:	1833980012	Location:	Vial 97
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 12/3/2018 12:46:06

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\11DEC18D\11DECD29.D Sample Name: 1833980012

Injection Date:	12/11/2018 14:28:41	Seq Line:	29
Sample Name:	1833980012	Location:	Vial 97
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method:	CLO4-AQN.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	12/3/2018 12:46:06

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 3. Dec. 2018, 00:29:27 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.918	PBA	326637.3	5.0000	CLO4-89-ISTD

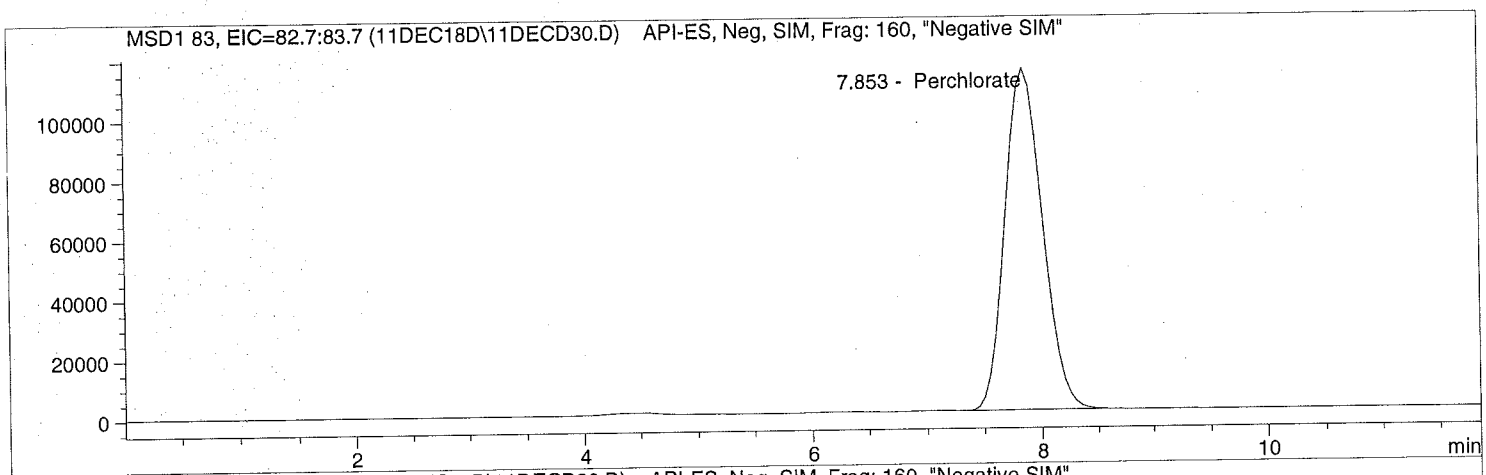
*** End of Report ***

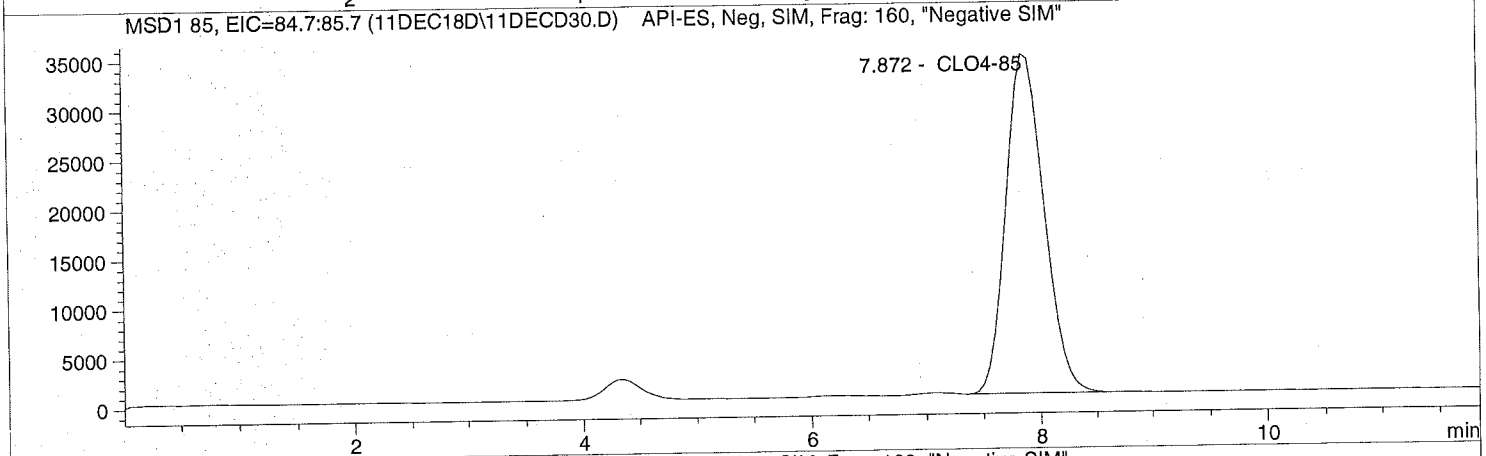
Data file: C:\HPCHEM\1\DATA\11DEC18D\11DECD30.D Sample Name: 631671 CCV@25

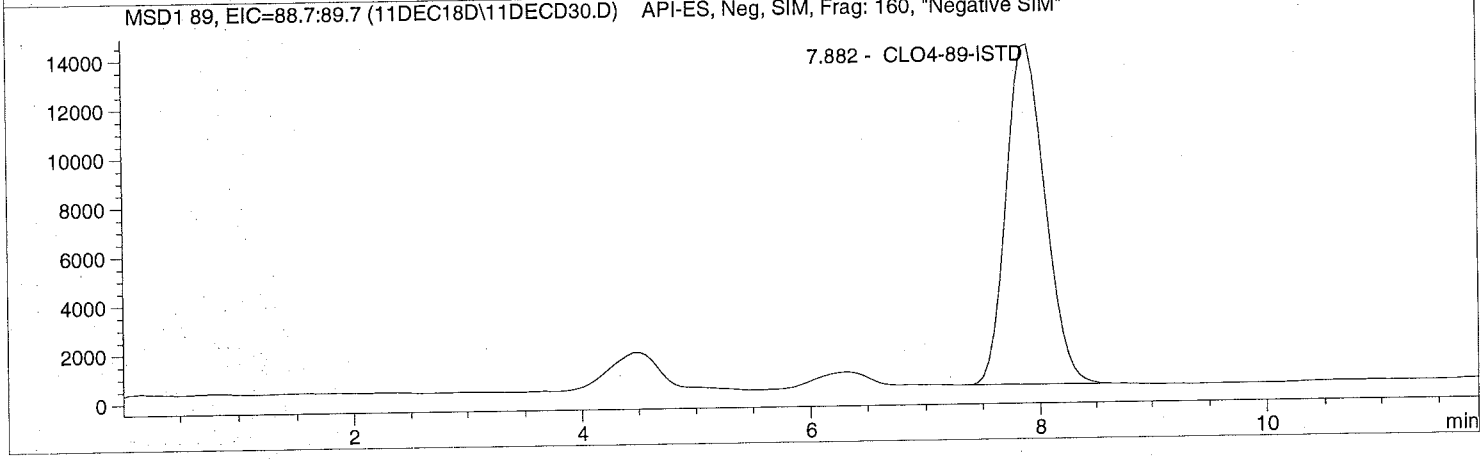
Injection Date:	12/11/2018 14:42:25	Seq Line:	30
Sample Name:	631671 CCV@25	Location:	Vial 71
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 12/3/2018 12:46:06

Perchlorate analysis







Data file: C:\HPCHEM\1\DATA\11DEC18D\11DECD30.D Sample Name: 631671 CCV@25

Injection Date:	12/11/2018 14:42:25	Seq Line:	30
Sample Name:	631671 CCV@25	Location:	Vial 71
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 12/3/2018 12:46:06

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 3. Dec. 2018, 00:29:27 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	25.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.853	PBA	2594170.3	23.8219	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.872	PBA	792459.8	24.0951	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.882	PBA	325835.8	5.0000	CLO4-89-ISTD

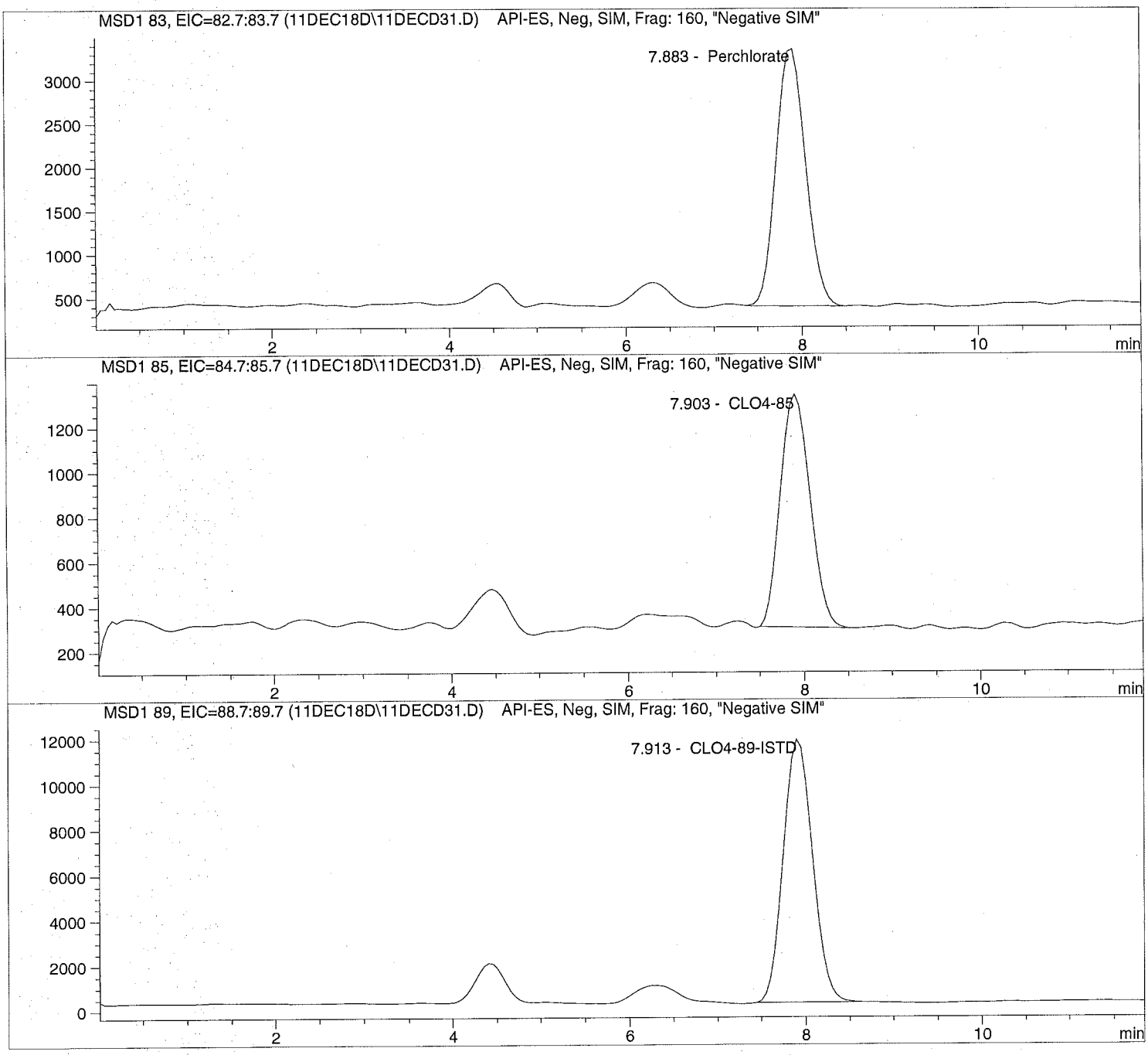
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\11DEC18D\11DECD31.D Sample Name: 631672 LODV@1.

Injection Date:	12/11/2018 14:56:09	Seq Line:	31
Sample Name:	631672 LODV@1.	Location:	Vial 72
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 12/3/2018 12:46:06

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\11DEC18D\11DECD31.D Sample Name: 631672 LODV@1.

Injection Date:	12/11/2018 14:56:09	Seq Line:	31
Sample Name:	631672 LODV@1.	Location:	Vial 72
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 12/3/2018 12:46:06

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 3. Dec. 2018, 00:29:27 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	1.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.883	BBA	67975.1	1.0053	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.903	PBA	24076.9	1.0404	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.913	PBA	263374.5	5.0000	CLO4-89-ISTD

*** End of Report ***

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Raw Data

Initial Calibration

atch Report: C:\HPCHEM\1\DATA\08OCT18I\08OCT18D.B

Batch Review Method:
C:\HPCHEM\1\METHODS\CLO4-DPR.M

['#' ==> Run has not been reprocessed with Batch Review Method
'*' ==> Run has been saved with batch file]

#	Sample	Location	Inj	SampleType	Run	Perchlorate Area	Perchlorate RT	Perchlorate Amount
#*	CLO4@ 1.0u	Vial 74	1	Control	4	9.40790e4	9.287	9.73826e-1
#*	CLO4@ 2.0u	Vial 75	1	Control	5	2.26957e5	9.259	2.19167
#*	CLO4@ 5.0u	Vial 76	1	Control	6	5.50307e5	9.208	4.80912
#*	CLO4@ 10.u	Vial 77	1	Control	7	1.07623e6	9.246	9.38291
#*	CLO4@ 25.u	Vial 78	1	Control	8	2.88097e6	9.175	25.83039
#*	CLO4@ 50.u	Vial 79	1	Control	9	6.29507e6	9.261	49.91981
#*	CLO4@ 75.u	Vial 80	1	Control	10	9.45737e6	9.236	74.88523
*	ICAL Verf@	Vial 81	1	Control	11	1.10069e6	9.244	9.38952

#	Sample	Location	Inj	SampleType	Run	CLO4-89-ISTD Area	CLO4-89-ISTD RT	CLO4-89-ISTD Amount
#*	CLO4@ 1.0u	Vial 74	1	Control	4	3.79545e5	9.314	5.00000
#*	CLO4@ 2.0u	Vial 75	1	Control	5	3.52582e5	9.297	5.00000
#*	CLO4@ 5.0u	Vial 76	1	Control	6	3.66805e5	9.223	5.00000
#*	CLO4@ 10.u	Vial 77	1	Control	7	3.56815e5	9.266	5.00000
#*	CLO4@ 25.u	Vial 78	1	Control	8	3.32340e5	9.196	5.00000
#*	CLO4@ 50.u	Vial 79	1	Control	9	3.59393e5	9.277	5.00000
#*	CLO4@ 75.u	Vial 80	1	Control	10	3.45193e5	9.253	5.00000
*	ICAL Verf@	Vial 81	1	Control	11	3.64657e5	9.264	5.00000

#	Sample	Location	Inj	SampleType	Run	CLO4-85 Area	CLO4-85 RT	CLO4-85 Amount
#*	CLO4@ 1.0u	Vial 74	1	Control	4	3.17987e4	9.316	9.60861e-1
#*	CLO4@ 2.0u	Vial 75	1	Control	5	7.05436e4	9.273	2.16955
#*	CLO4@ 5.0u	Vial 76	1	Control	6	1.69833e5	9.217	4.87565
#*	CLO4@ 10.u	Vial 77	1	Control	7	3.31565e5	9.259	9.58732
#*	CLO4@ 25.u	Vial 78	1	Control	8	8.62978e5	9.187	25.62680
#*	CLO4@ 50.u	Vial 79	1	Control	9	1.91847e6	9.278	49.74848
#*	CLO4@ 75.u	Vial 80	1	Control	10	2.93835e6	9.251	75.02646
*	ICAL Verf@	Vial 81	1	Control	11	3.27974e5	9.261	9.28908

*** End of Report ***

[ethod C:\HPCHEM\1\METHODS\CLO4-DPR.M

Calibration Table

Perchlorate

Calib. Data Modified : 10/9/2018 8:01:57 AM

Calculate : Internal Standard
Based on : Peak Area

Rel. Reference Window : 20.000 %
Abs. Reference Window : 0.000 min
Rel. Non-ref. Window : 20.000 %
Abs. Non-ref. Window : 0.000 min
Use Multiplier & Dilution Factor with ISTDs
Uncalibrated Peaks : not reported
Partial Calibration : No recalibration if peaks missing

Curve Type : Quadratic (some peaks differ, see below)
Origin : Ignored (some peaks differ, see below)
Weight : Linear (Amnt) (some peaks differ, see below)

Recalibration Settings:
Average Response : Average all calibrations
Average Retention Time: Floating Average New 75%

Calibration Report Options :
Printout of recalibrations within a sequence:
Calibration Table after Recalibration
Normal Report after Recalibration
If the sequence is done with bracketing:
Results of first cycle (ending previous bracket)

Default Sample ISTD Information (if not set in sample table):

ISTD #	ISTD Amount	Name
1	5.00000	CLO4-89-ISTD

Signal 1: MSD1 83, EIC=82.7:83.7
Signal 2: MSD1 85, EIC=84.7:85.7
Signal 3: MSD1 89, EIC=88.7:89.7

RetTime [min]	Sig	Lvl	Amount	Area	Amt/Area	Ref	Grp	Name
9.287	1	1	1.00000	9.40790e4	1.06294e-5	1		Perchlorate
		2	2.00000	2.26957e5	8.81224e-6			
		3	5.00000	5.50307e5	9.08584e-6			
		4	10.00000	1.07623e6	9.29172e-6			
		5	25.00000	2.88097e6	8.67764e-6			
		6	50.00000	6.29507e6	7.94272e-6			
		7	75.00000	9.45737e6	7.93033e-6			
9.314	3	1	5.00000	3.79545e5	1.31737e-5	+I1		CLO4-89-ISTD
		2	5.00000	3.52582e5	1.41811e-5			
		3	5.00000	3.66805e5	1.36312e-5			
		4	5.00000	3.56815e5	1.40129e-5			
		5	5.00000	3.32340e5	1.50448e-5			
		6	5.00000	3.59393e5	1.39124e-5			
		7	5.00000	3.45193e5	1.44847e-5			
9.316	2	1	1.00000	3.17987e4	3.14479e-5	1		CLO4-85
		2	2.00000	7.05436e4	2.83513e-5			
		3	5.00000	1.69833e5	2.94406e-5			
		4	10.00000	3.31565e5	3.01600e-5			
		5	25.00000	8.62978e5	2.89695e-5			
		6	50.00000	1.91847e6	2.60625e-5			

ethod C:\HPCHEM\1\METHODS\CLO4-DPR.M

RetTime [min]	Sig	Lvl	Amount	Area	Amt/Area	Ref	Grp	Name
		7	75.00000	2.93835e6	2.55246e-5			

More compound-specific settings:

Compound: Perchlorate
- Time Window : From 7.196 min To 11.196 min
- Curve Type : Quadratic
- Origin : Ignored
- Calibration Level Weights:/
  - Level 1 : 1
  - Level 2 : 0.5
  - Level 3 : 0.2
  - Level 4 : 0.1
  - Level 5 : 0.04
  - Level 6 : 0.02
  - Level 7 : 0.013333

Compound: CLO4-89-ISTD
- Time Window : From 7.207 min To 11.192 min
- Curve Type : Linear
- Origin : Included
- Calibration Level Weights:/
  - Level 1 : 1
  - Level 2 : 1
  - Level 3 : 1
  - Level 4 : 1
  - Level 5 : 1
  - Level 6 : 1
  - Level 7 : 1

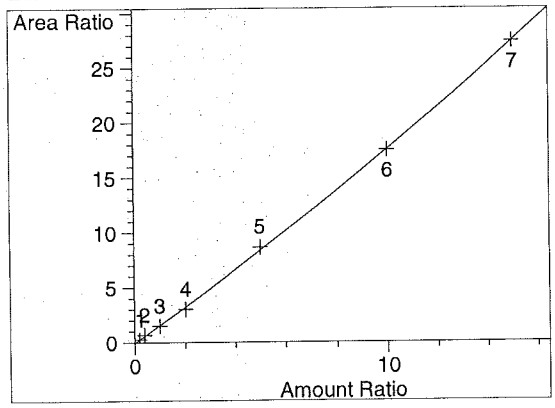
Compound: CLO4-85
- Time Window : From 7.211 min To 11.211 min
- Curve Type : Quadratic
- Origin : Ignored
- Calibration Level Weights:/
  - Level 1 : 1
  - Level 2 : 0.5
  - Level 3 : 0.2
  - Level 4 : 0.1
  - Level 5 : 0.04
  - Level 6 : 0.02
  - Level 7 : 0.013333

Peak Sum Table

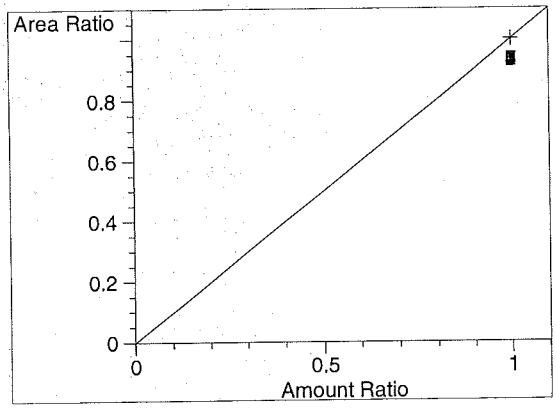
No Entries in table

[ethod C:\HPCHEM\1\METHODS\CLO4-DPR.M

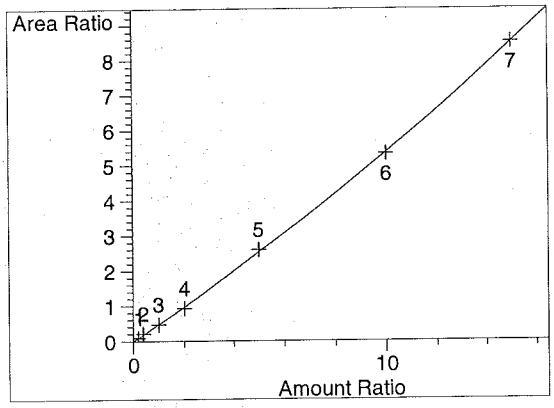
Calibration Curves



Perchlorate at exp. RT: 9.287
MSD1 83, EIC=82.7:83.7
Correlation: 0.99971
Residual Std. Dev.: 0.16701
Formula: $y = ax^2 + bx + c$
a: 1.45482e-2
b: 1.61590
c: -6.73998e-2
x: Amount Ratio
y: Area Ratio
Calibration Level Weights:
Level 1 : 1
Level 2 : 0.5
Level 3 : 0.2
Level 4 : 0.1
Level 5 : 0.04
Level 6 : 0.02
Level 7 : 0.013333



CLO4-89-ISTD at exp. RT: 9.314
MSD1 89, EIC=88.7:89.7
Correlation: 1.00000
Residual Std. Dev.: 0.00000
Formula: $y = mx + b$
m: 1.00000
b: 0.00000
x: Amount Ratio
y: Area Ratio
Calibration Level Weights:
Level 1 : 1
Level 2 : 1
Level 3 : 1
Level 4 : 1
Level 5 : 1
Level 6 : 1
Level 7 : 1



CLO4-85 at exp. RT: 9.316
MSD1 85, EIC=84.7:85.7
Correlation: 0.99984
Residual Std. Dev.: 0.03901
Formula: $y = ax^2 + bx + c$
a: 6.03220e-3
b: 4.77309e-1
c: -8.16718e-3
x: Amount Ratio
y: Area Ratio
Calibration Level Weights:
Level 1 : 1
Level 2 : 0.5
Level 3 : 0.2
Level 4 : 0.1
Level 5 : 0.04
Level 6 : 0.02
Level 7 : 0.013333

equence: C:\HPCHEM\1\SEQUENCE\CLO4\2018\OCT\08OCT18I.S

Sequence Table:

Method and Injection Info Part:

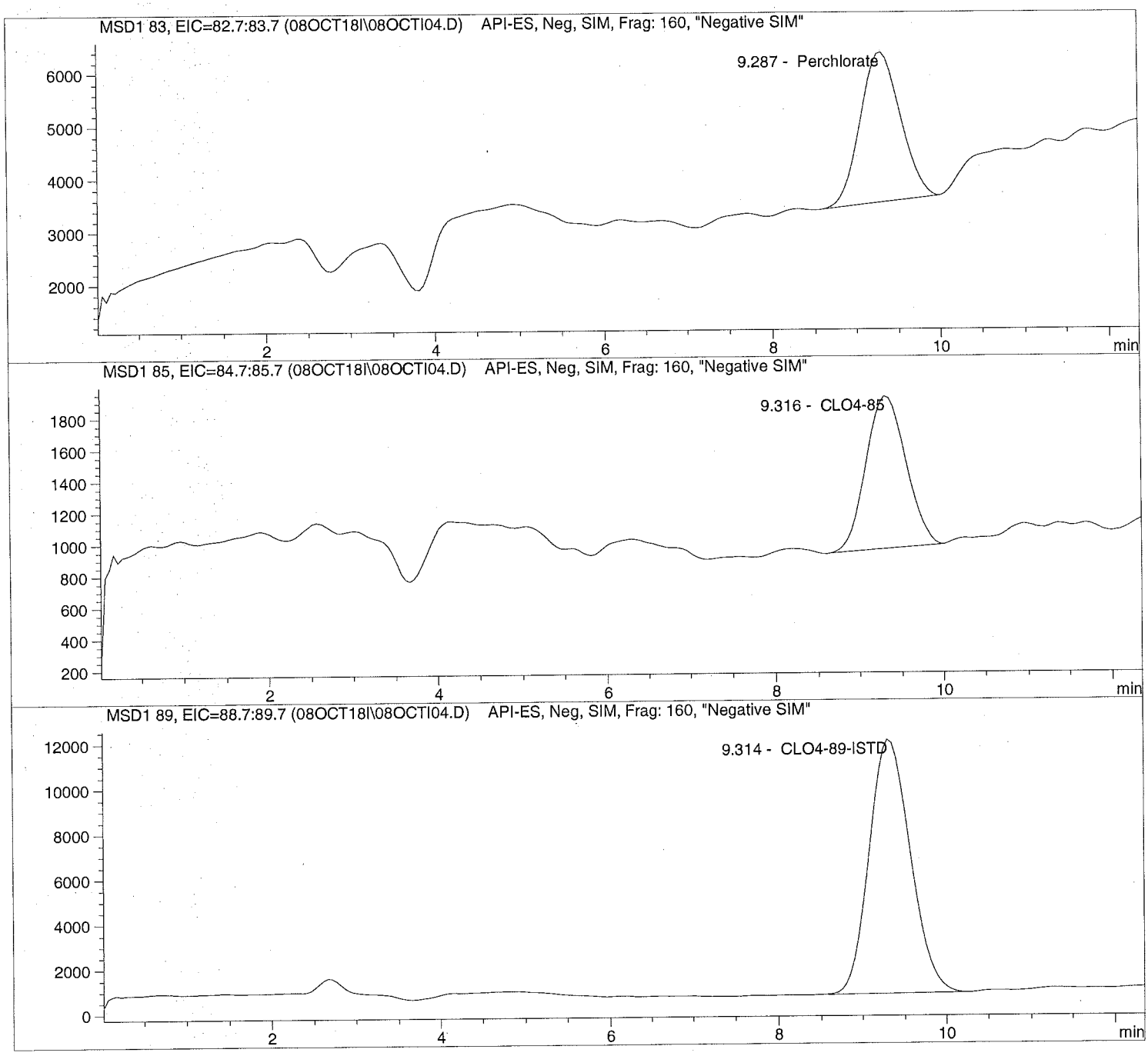
Line	Location	SampleName	Method	Inj	SampleType	InjVolume	DataFile
1	Vial 71	CLO4@ .10ug/L	CLO4-AQN	1	Ctrl Samp		
2	Vial 72	CLO4@ .20ug/L	CLO4-AQN	1	Ctrl Samp		
3	Vial 73	CLO4@ 0.5ug/L	CLO4-AQN	1	Ctrl Samp		
4	Vial 74	CLO4@ 1.0ug/L	CLO4-AQN	1	Ctrl Samp		
5	Vial 75	CLO4@ 2.0ug/L	CLO4-AQN	1	Ctrl Samp		
6	Vial 76	CLO4@ 5.0ug/L	CLO4-AQN	1	Ctrl Samp		
7	Vial 77	CLO4@ 10.ug/L	CLO4-AQN	1	Ctrl Samp		
8	Vial 78	CLO4@ 25.ug/L	CLO4-AQN	1	Ctrl Samp		
9	Vial 79	CLO4@ 50.ug/L	CLO4-AQN	1	Ctrl Samp		
10	Vial 80	CLO4@ 75.ug/L	CLO4-AQN	1	Ctrl Samp		
11	Vial 81	ICAL Verf@10ug/L	CLO4-AQN	1	Ctrl Samp		

Data file: C:\HPCHEM\1\DATA\08OCT18I\08OCTI04.D Sample Name: CLO4@ 1.0ug/L

Injection Date:	10/08/2018 11:37:35	Seq Line:	4
Sample Name:	CLO4@ 1.0ug/L	Location:	Vial 74
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 10/9/2018 08:22:51

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\08OCT18I\08OCTI04.D Sample Name: CLO4@ 1.0ug/L

Injection Date:	10/08/2018 11:37:35	Seq Line:	4
Sample Name:	CLO4@ 1.0ug/L	Location:	Vial 74
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 10/9/2018 08:22:51

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Tue, 9. Oct. 2018, 08:01:57 am
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	1.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.287	PBA	94079.0	0.9738	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.316	PBA	31798.7	0.9609	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.314	PBA	379544.7	5.0000	CLO4-89-ISTD

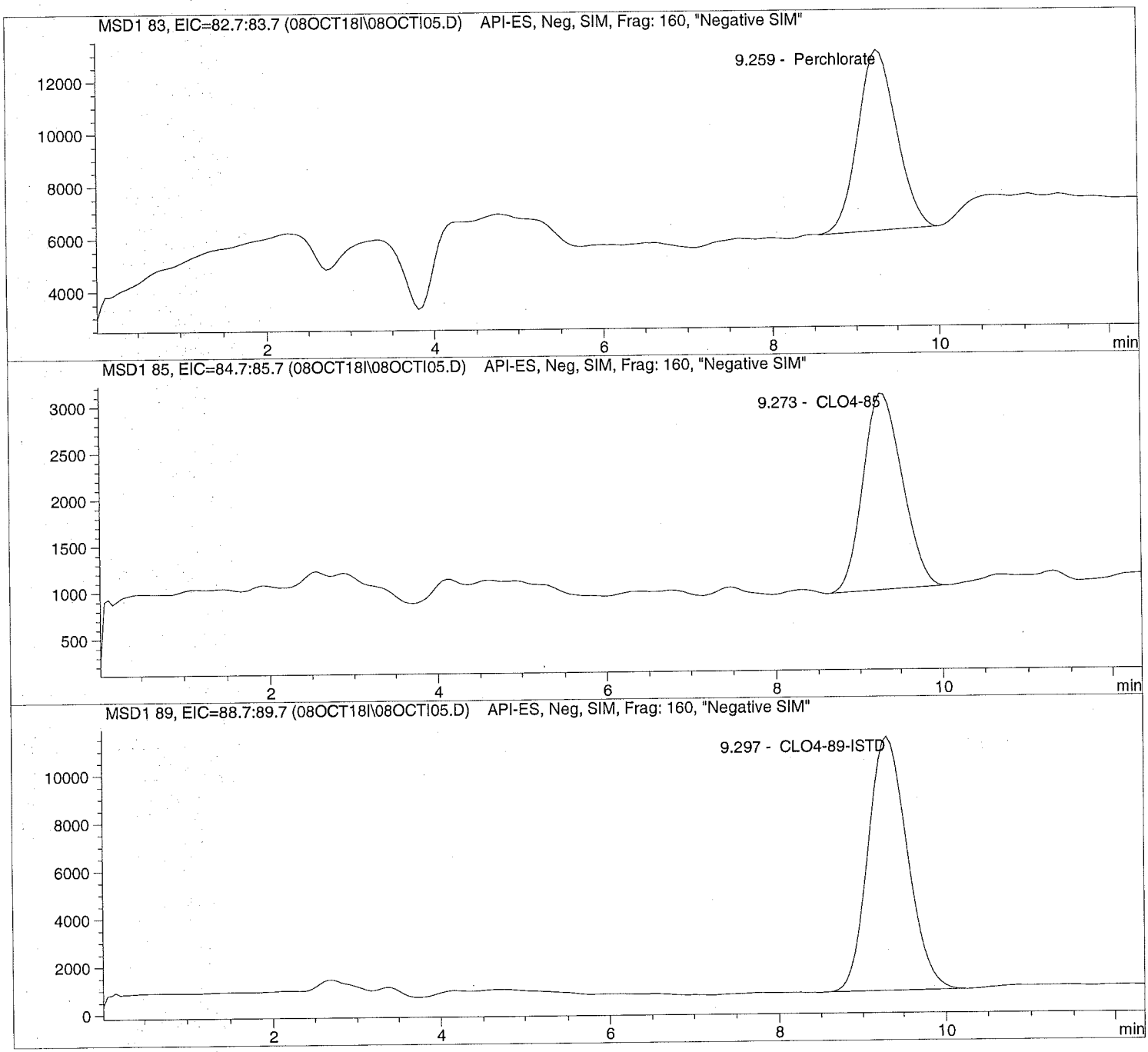
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\08OCT18I\08OCTI05.D Sample Name: CLO4@ 2.0ug/L

Injection Date:	10/08/2018 11:51:45	Seq Line:	5
Sample Name:	CLO4@ 2.0ug/L	Location:	Vial 75
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 10/9/2018 08:22:51

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\08OCT18I\08OCTI05.D Sample Name: CLO4@ 2.0ug/L

Injection Date:	10/08/2018 11:51:45	Seq Line:	5
Sample Name:	CLO4@ 2.0ug/L	Location:	Vial 75
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 10/9/2018 08:22:51

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Tue, 9. Oct. 2018, 08:01:57 am
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	2.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.259	BBA	226957.1	2.1917	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.273	PBA	70543.6	2.1695	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.297	PBA	352581.8	5.0000	CLO4-89-ISTD

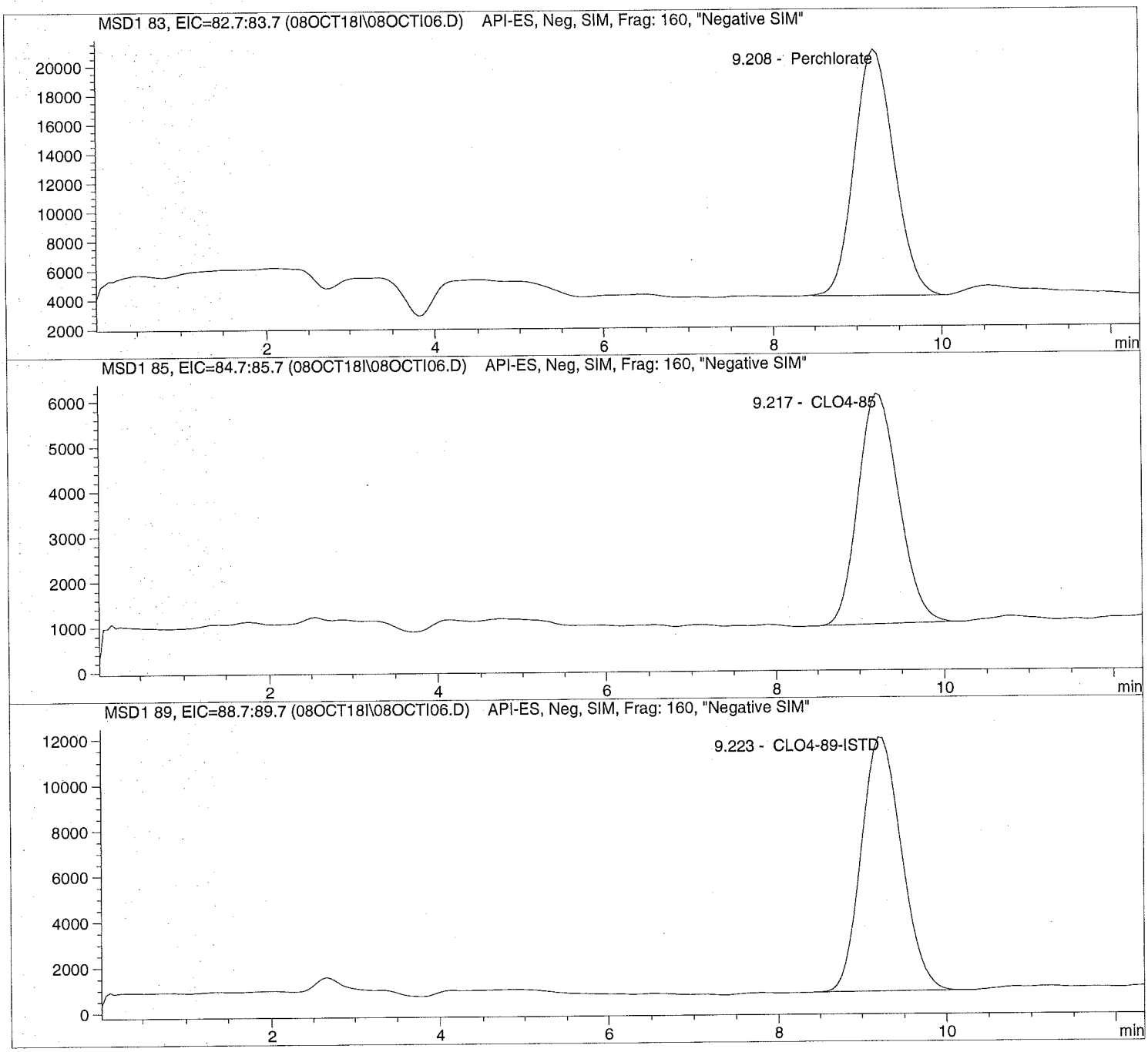
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\08OCT18I\08OCTI06.D Sample Name: CLO4@ 5.0ug/L

Injection Date:	10/08/2018 12:05:59	Seq Line:	6
Sample Name:	CLO4@ 5.0ug/L	Location:	Vial 76
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 10/9/2018 08:22:51

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\08OCT18I\08OCTI06.D Sample Name: CLO4@ 5.0ug/L

Injection Date:	10/08/2018 12:05:59	Seq Line:	6
Sample Name:	CLO4@ 5.0ug/L	Location:	Vial 76
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 10/9/2018 08:22:51

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Tue, 9. Oct. 2018, 08:01:57 am
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	5.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.208	BBA	550306.9	4.8091	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.217	PBA	169833.3	4.8757	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.223	PBA	366804.8	5.0000	CLO4-89-ISTD

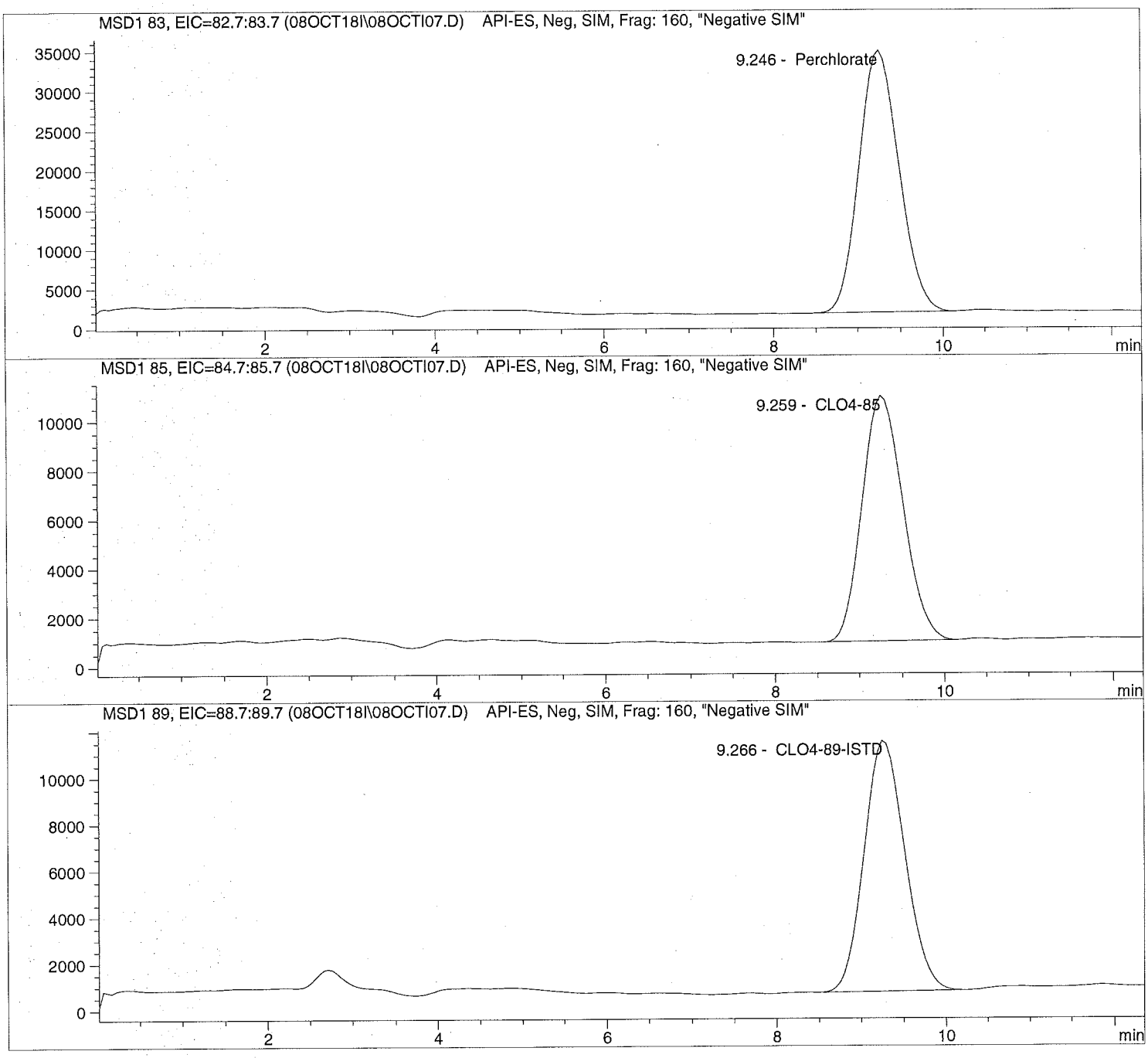
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\08OCT18I\08OCTI07.D Sample Name: CLO4@ 10.ug/L

Injection Date:	10/08/2018 12:20:10	Seq Line:	7
Sample Name:	CLO4@ 10.ug/L	Location:	Vial 77
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 10/9/2018 08:22:51

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\08OCT18I\08OCTI07.D Sample Name: CLO4@ 10.ug/L

Injection Date:	10/08/2018 12:20:10	Seq Line:	7
Sample Name:	CLO4@ 10.ug/L	Location:	Vial 77
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 10/9/2018 08:22:51

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Tue, 9. Oct. 2018, 08:01:57 am
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	10.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.246	PBA	1076227.4	9.3829	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.259	PBA	331564.9	9.5873	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.266	PBA	356815.3	5.0000	CLO4-89-ISTD

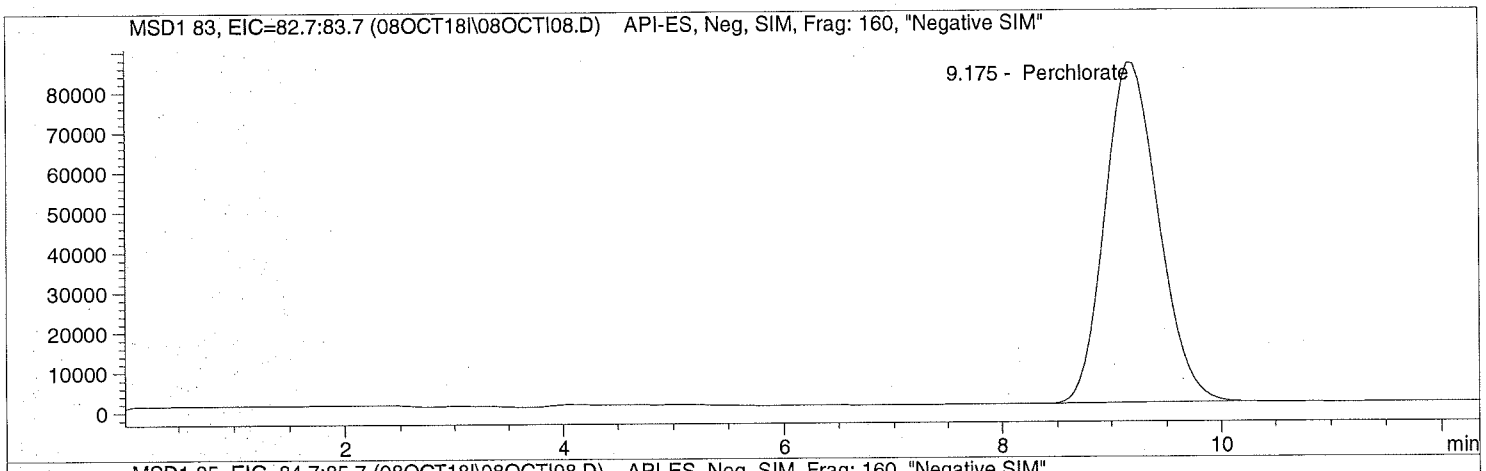
*** End of Report ***

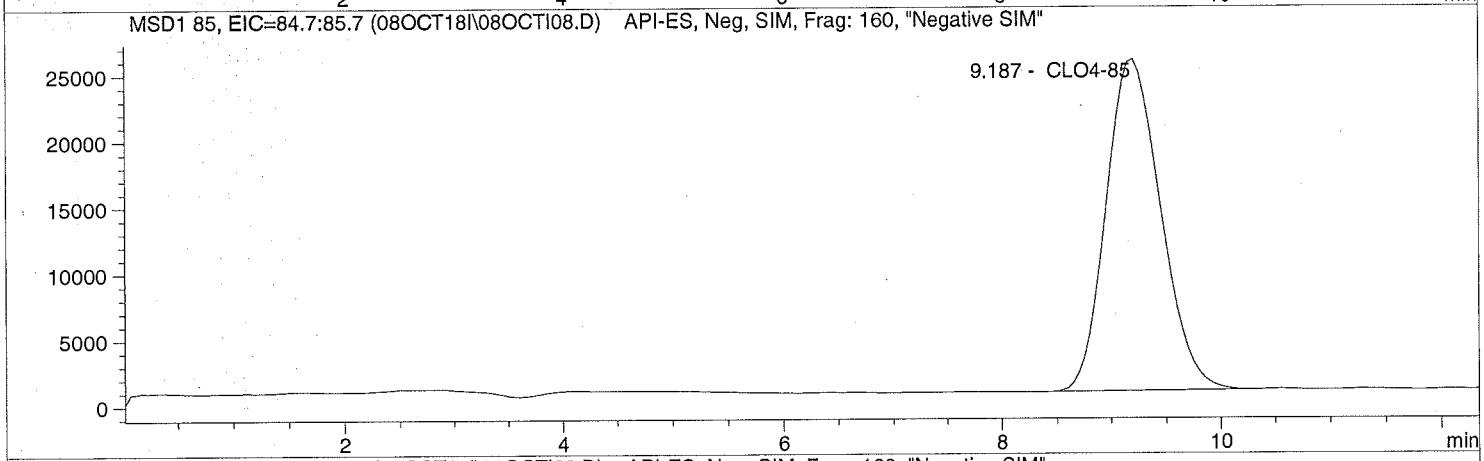
Data file: C:\HPCHEM\1\DATA\08OCT18I\08OCTI08.D Sample Name: CLO4@ 25.ug/L

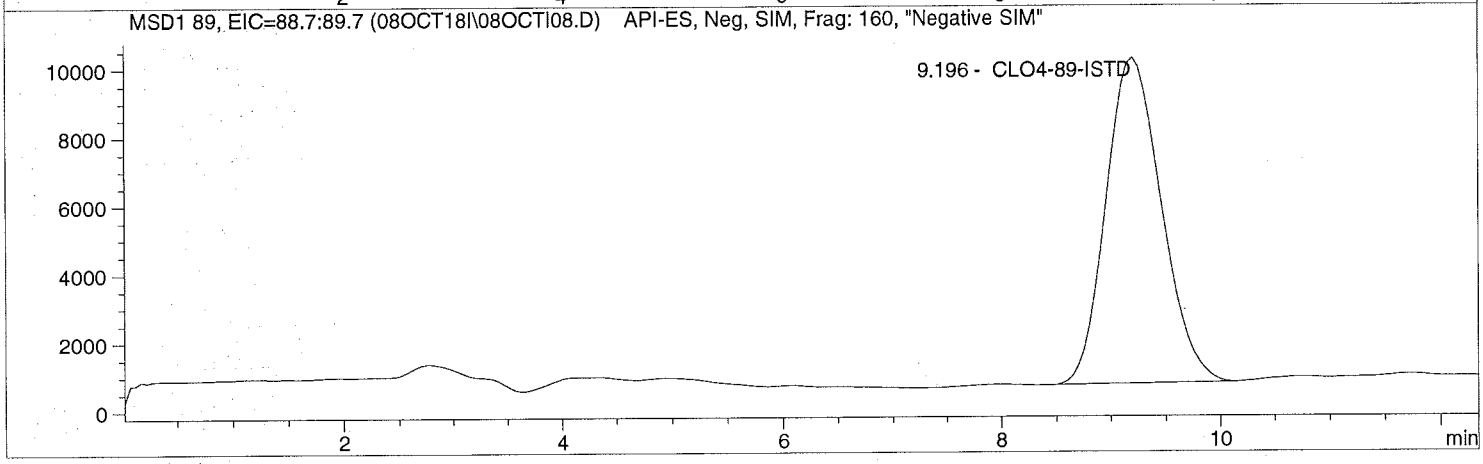
Injection Date:	10/08/2018 12:34:24	Seq Line:	8
Sample Name:	CLO4@ 25.ug/L	Location:	Vial 78
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 10/9/2018 08:22:51

Perchlorate analysis







Data file: C:\HPCHEM\1\DATA\08OCT18I\08OCTI08.D Sample Name: CLO4@ 25.ug/L

Injection Date:	10/08/2018 12:34:24	Seq Line:	8
Sample Name:	CLO4@ 25.ug/L	Location:	Vial 78
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 10/9/2018 08:22:51

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Tue, 9. Oct. 2018, 08:01:57 am
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	25.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.175	PBA	2880966.0	25.8304	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.187	PBA	862978.0	25.6268	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.196	PBA	332339.7	5.0000	CLO4-89-ISTD

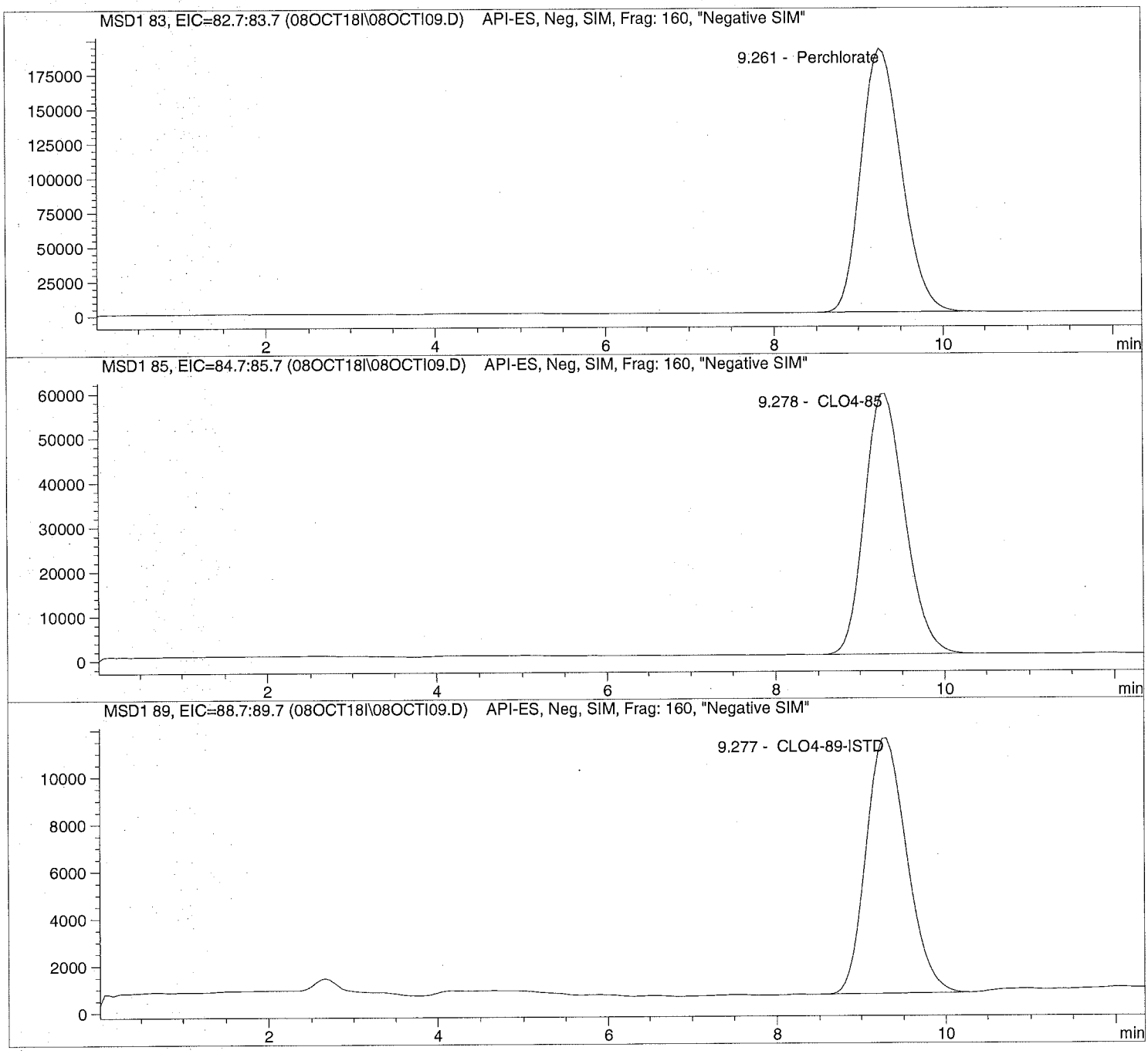
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\08OCT18I\08OCTI09.D Sample Name: CLO4@ 50.ug/L

Injection Date:	10/08/2018 12:48:34	Seq Line:	9
Sample Name:	CLO4@ 50.ug/L	Location:	Vial 79
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 10/9/2018 08:22:51

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\08OCT18I\08OCTI09.D Sample Name: CLO4@ 50.ug/L

Injection Date:	10/08/2018 12:48:34	Seq Line:	9
Sample Name:	CLO4@ 50.ug/L	Location:	Vial 79
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 10/9/2018 08:22:51

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Tue, 9. Oct. 2018, 08:01:57 am
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	50.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.261	PBA	6295070.5	49.9198	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.278	PBA	1918466.9	49.7485	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.277	PBA	359392.8	5.0000	CLO4-89-ISTD

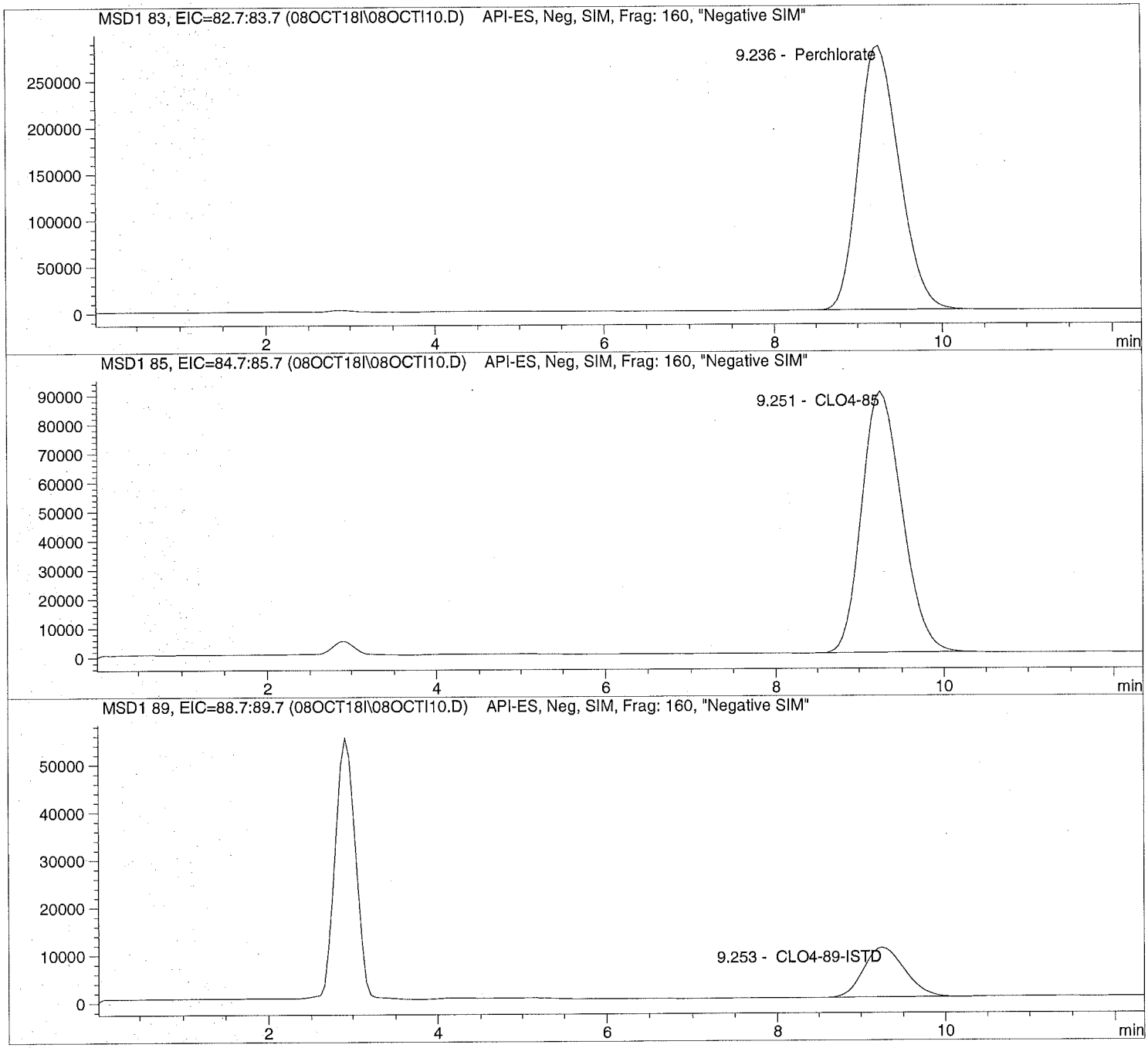
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\08OCT18I\08OCTI10.D Sample Name: CLO4@ 75.ug/L

Injection Date:	10/08/2018 13:02:48	Seq Line:	10
Sample Name:	CLO4@ 75.ug/L	Location:	Vial 80
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 10/9/2018 08:22:51

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\08OCT18I\08OCTI10.D Sample Name: CLO4@ 75.ug/L

Injection Date:	10/08/2018 13:02:48	Seq Line:	10
Sample Name:	CLO4@ 75.ug/L	Location:	Vial 80
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 10/9/2018 08:22:51

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Tue, 9. Oct. 2018, 08:01:57 am
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	75.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.236	PBA	9457367.0	74.8852	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.251	PBA	2938347.5	75.0265	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.253	PBA	345192.7	5.0000	CLO4-89-ISTD

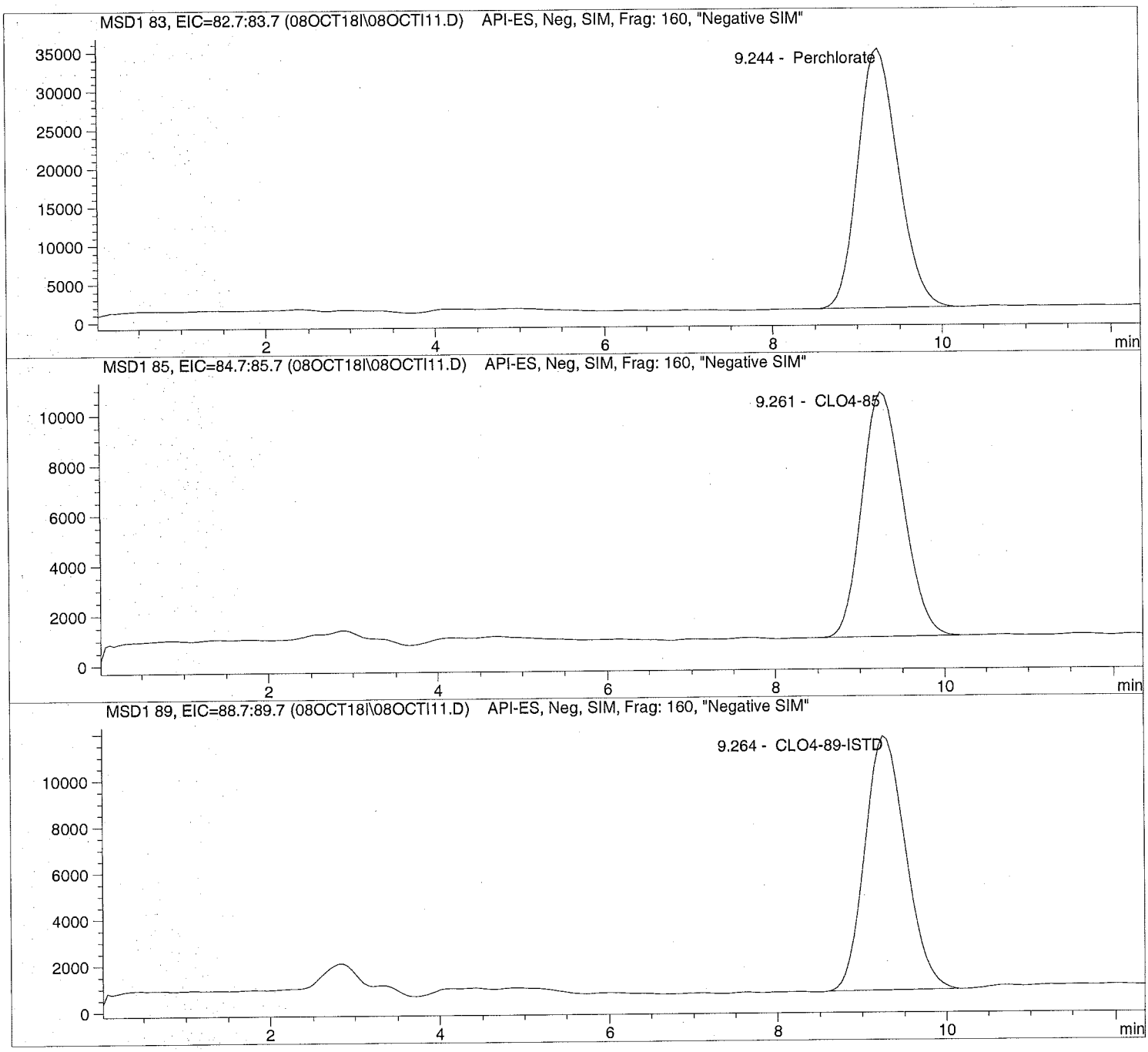
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\08OCT18I\08OCTI11.D Sample Name: ICAL Verf@10ug/L

Injection Date:	10/08/2018 13:17:00	Seq Line:	11
Sample Name:	ICAL Verf@10ug/L	Location:	Vial 81
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 10/9/2018 08:22:51

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\08OCT18I\08OCTI11.D Sample Name: ICAL Verf@10ug/L

Injection Date:	10/08/2018 13:17:00	Seq Line:	11
Sample Name:	ICAL Verf@10ug/L	Location:	Vial 81
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 10/9/2018 08:22:51

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Tue, 9. Oct. 2018, 08:01:57 am
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	10.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.244	PBA	1100685.7	9.3895	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.261	PBA	327974.4	9.2891	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.264	PBA	364657.2	5.0000	CLO4-89-ISTD

*** End of Report ***

LABORATORY REPORT

December 11, 2018

RJ Modashia
ALS Laboratory Group
10450 Stancliff Road Suite 210
Houston, TX 77099-4338

RE: HS18111440

Dear RJ:

Enclosed are the results of the samples submitted to our laboratory on November 30, 2018. For your reference, these analyses have been assigned our service request number P1806583.

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

Kate Kaneko
By Kate Kaneko at 2:44 pm, 12/11/18

Kate Kaneko
Laboratory Director

Client: ALS Laboratory Group Service Request No: P1806583
Project: HS18111440

CASE NARRATIVE

The samples were received intact under chain of custody on November 30, 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.

Carbon Dioxide Analysis

The samples were analyzed for carbon dioxide using a gas chromatograph equipped with a thermal conductivity detector (TCD). A known amount of liquid was displaced by injecting 8.0 milliliters of helium creating a headspace in the sample vial. Each sample vial was agitated using a sonic disrupter for fifteen minutes and then allowed to equilibrate for at least four hours. A volume of the headspace was withdrawn using a gas-tight syringe and analyzed using a manual injection technique. The amount of dissolved gases (carbon dioxide) in the original sample was calculated using Henry's Law. This method was performed with guidance from RSK 175 as described in laboratory SOP VOA-DISGAS. This analyte is included on the laboratory's NELAP and DoD-ELAP scope of accreditation.

Manual integrations were performed on the following sample(s) and analyte(s). Refer to the raw data for additional information.

Sample Identification(s)	Analyte(s)
P1806583-002	Carbon Dioxide

Methane, Ethene and Ethane Analysis

The samples were also analyzed for methane, ethene and ethane using a gas chromatograph equipped with a flame ionization detector (FID). A known amount of liquid was displaced by injecting 8.0 milliliters of helium creating a headspace in the sample vial. Each sample vial was agitated using a sonic disrupter for fifteen minutes and then allowed to equilibrate for at least two hours. A volume of the headspace was withdrawn using a gas-tight syringe and analyzed using a manual injection technique. The amount of dissolved gases (methane, ethene and ethane) in the original sample was calculated using Henry's Law. This method was performed with guidance from RSK 175. 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 laboratory's

The results of analyses are given in the attached laboratory report. All results are intended to be considered in their entirety, and ALS Environmental (ALS) is not responsible for utilization of less than the complete report.

Use of ALS Environmental (ALS)'s Name. Client shall not use ALS's name or trademark in any marketing or reporting materials, press releases or in any other manner ("Materials") whatsoever and shall not attribute to ALS any test result, tolerance or specification derived from ALS's data ("Attribution") without ALS's prior written consent, which may be withheld by ALS for any reason in its sole discretion. To request ALS's consent, Client shall provide copies of the proposed Materials or Attribution and describe in writing Client's proposed use of such Materials or Attribution. If ALS has not provided written approval of the Materials or Attribution within ten (10) days of receipt from Client, Client's request to use ALS's name or trademark in any Materials or Attribution shall be deemed denied. ALS may, in its discretion, reasonably charge Client for its time in reviewing Materials or Attribution requests. Client acknowledges and agrees that the unauthorized use of ALS's name or trademark may cause ALS to incur irreparable harm for which the recovery of money damages will be inadequate. Accordingly, Client acknowledges and agrees that a violation shall justify preliminary injunctive relief. For questions contact the laboratory.

ALS Environmental – Simi Valley

CERTIFICATIONS, ACCREDITATIONS, AND REGISTRATIONS

Agency	Web Site	Number
Alaska DEC	http://dec.alaska.gov/eh/lab.aspx	17-019
Arizona DHS	http://www.azdhs.gov/preparedness/state-laboratory/lab-licensure-certification/index.php#laboratory-licensure-home	AZ0694
Florida DOH (NELAP)	http://www.floridahealth.gov/licensing-and-regulation/environmental-laboratories/index.html	E871020
Louisiana DEQ (NELAP)	http://www.deq.louisiana.gov/page/la-lab-accreditation	05071
Maine DHHS	http://www.maine.gov/dhhs/mecdc/environmental-health/dwp/professionals/labCert.shtml	2018027
Minnesota DOH (NELAP)	http://www.health.state.mn.us/accreditation	1347317
New Jersey DEP (NELAP)	http://www.nj.gov/dep/enforcement/oqa.html	CA009
New York DOH (NELAP)	http://www.wadsworth.org/labcert/elap/elap.html	11221
Oregon PHD (NELAP)	http://www.oregon.gov/oha/ph/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	4068-005
Pennsylvania DEP	http://www.dep.pa.gov/Business/OtherPrograms/Labs/Pages/Laboratory-Accreditation-Program.aspx	68-03307 (Registration)
PJLA (DoD ELAP)	http://www.pjlabs.com/search-accredited-labs	65818 (Testing)
Texas CEQ (NELAP)	http://www.tceq.texas.gov/agency/qa/env_lab_accreditation.html	T104704413-18-9
Utah DOH (NELAP)	http://health.utah.gov/lab/lab_cert_env	CA016272018-9
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: ALS Laboratory Group
Project ID: HS18111440

Service Request: P1806583

Date Received: 11/30/2018
Time Received: 09:30

Client Sample ID	Lab Code	Matrix	Date Collected	Time Collected	RSK 175 - CO2	RSK 175 - Gases
50WW16-181128	P1806583-001	Water	11/28/2018	08:45	X	X
50WW11-181128	P1806583-002	Water	11/28/2018	11:05	X	X
50WW11-181128-FD	P1806583-003	Water	11/28/2018	11:05	X	X
50WW12-181128	P1806583-004	Water	11/28/2018	12:20	X	X
50WW08-181128	P1806583-005	Water	11/28/2018	13:25	X	X

10450 Stancliff Rd, Ste 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887
www.alsglobal.com

Subcontract Chain of Custody P1806583

COC ID: 10323

SUBCONTRACT TO:

ALS Environmental
2655 Park Center Drive, Suite A
Simi Valley, CA 93065

Phone: +1 805 526 7161

CUSTOMER INFORMATION:

Company:	ALS Houston
Contact:	RJ Modashia
Address:	10450 Stancliff Rd, Ste 210
Phone:	+1 281 530 5656
Email:	RJ.Modashia@alsglobal.com
Alternate Contact:	Jumoke M. Lawal
Email:	jumoke.lawal@alsglobal.com

INVOICE INFORMATION:

Company:	ALS Houston
Contact:	Accounts Payable
Address:	10450 Stancliff Rd, Ste 210
Phone:	+1 281 530 5656
Reference:	HS18111440
TSR:	Sonia West

	LAB SAMPLE ID	CLIENT SAMPLE ID	MATRIX	COLLECT DATE
	ANALYSIS REQUESTED			DUE DATE
1.	**HS18111440-01**	**50WW16-181128**	**Groundwater**	**28 Nov 2018 08:45**
	MEE + CO2. DOD IV. Equis EDD			13 Dec 2018
2.	**HS18111440-02**	**50WW11-181128**	**Groundwater**	**28 Nov 2018 11:05**
	MEE + CO2. DOD IV. Equis EDD			13 Dec 2018
3.	**HS18111440-03**	**50WW11-181128-FD**	**Groundwater**	**28 Nov 2018 11:05**
	MEE + CO2. DOD IV. Equis EDD			13 Dec 2018
4.	**HS18111440-04**	**50WW12-181128**	**Groundwater**	**28 Nov 2018 12:20**
	MEE + CO2. DOD IV. Equis EDD			13 Dec 2018
5.	**HS18111440-05**	**50WW08-181128**	**Groundwater**	**28 Nov 2018 13:25**
	MEE + CO2. DOD IV. Equis EDD			13 Dec 2018

Comments: Please analyze for the analysis listed above. Send report to the emails shown above.

HS18111440-01 MS/MSD

QC Level: DOD IV (DoD Data Package)

Received by: [signature]
12/2/18 AG 0930
11/30/18

P1806583

Subcontract Chain of Custody

COC ID: 10323

Relinquished By: J. Mangum Date/Time: 11/29/18 18:00

Received By: [signature] Date/Time: 11/30/18 0930

Cooler ID(s): Temperature(s):

ALS Environmental
Sample Acceptance Check Form

Client: ALS Laboratory Group Work order: P1806583

Project: HS18111440

Sample(s) received on: 11/30/18 Date opened: 11/30/18 by: AARON GONZALEZ

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?	☒	☐	☐
	Cooler Temperature: ° C Blank Temperature: 2° C Thermometer ID CO907034581 Wet Ic			
8	Were **custody seals** on outside of cooler/Box/Container?	☒	☐	☐
	Location of seal(s)? _____ 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
P1806583-001.01	40mL VOA NP		7		A	MR 12/7/18
P1806583-001.02	40mL VOA NP				A	
P1806583-001.03	40mL VOA NP				A	
P1806583-001.04	40ml VOA HCL		1		A	MR 12/4/18
P1806583-001.05	40ml VOA HCL				A	
P1806583-001.06	40ml VOA HCL				A	
P1806583-001.07	40ml VOA HCL				A	
P1806583-001.08	40ml VOA HCL				A	
P1806583-001.09	40ml VOA HCL				A	
P1806583-001.10	40ml VOA HCL				A	
P1806583-001.11	40ml VOA HCL				A	
P1806583-001.12	40ml VOA HCL				A	
P1806583-001.13	40mL VOA NP				A	
P1806583-001.14	40mL VOA NP				A	
P1806583-001.15	40mL VOA NP				A	

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

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

ALS Environmental
Sample Acceptance Check Form

Client: ALS Laboratory Group Work order: P1806583

Project: HS18111440

Sample(s) received on: 11/30/18 Date opened: 11/30/18 by: AARON GONZALEZ

Lab Sample ID	Container Description	Required pH *	Received pH	Adjusted pH	VOA Headspace (Presence/Absence)	Receipt / Preservation Comments
P1806583-002.01	40mL VOA NP		7		A	MR 12/7/18
P1806583-002.02	40mL VOA NP				A	
P1806583-002.04	40ml VOA HCL		1		A	MR 12/4/18
P1806583-002.05	40ml VOA HCL				A	
P1806583-002.06	40ml VOA HCL				A	
P1806583-003.01	40mL VOA NP		7		A	MR 12/7/18
P1806583-003.02	40mL VOA NP				A	
P1806583-003.04	40ml VOA HCL		1		A	MR 12/4/18
P1806583-003.05	40ml VOA HCL				A	
P1806583-003.06	40ml VOA HCL				A	
P1806583-004.01	40mL VOA NP		7		A	MR 12/7/18
P1806583-004.02	40mL VOA NP				A	
P1806583-004.04	40ml VOA HCL		1		A	MR 12/4/18
P1806583-004.05	40ml VOA HCL				A	
P1806583-004.06	40ml VOA HCL				A	
P1806583-005.01	40mL VOA NP		7		A	MR 12/7/18
P1806583-005.02	40mL VOA NP				A	
P1806583-005.04	40ml VOA HCL		1		A	MR 12/4/18
P1806583-005.05	40ml VOA HCL				A	
P1806583-005.06	40ml VOA HCL				A	

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: **ALS Laboratory Group**
Client Project ID: **HS18111440** ALS Project ID: P1806583

Carbon Dioxide

Test Code: RSK 175
Instrument ID: HP5890A/GC10/TCD
Analyst: Magaly Rodriguez
Matrix: Water
Test Notes:

Date(s) Collected: 11/28/18
Date Received: 11/30/18
Date Analyzed: 12/7/18

Client Sample ID	ALS Sample ID	Injection Volume ml(s)	Result µg/L	LOQ µg/L	LOD µg/L	MDL µg/L	Data Qualifier
50WW16-181128	P1806583-001	0.10	**250,000**	1,000	860	370	
50WW11-181128	P1806583-002	0.10	**410,000**	1,000	860	370	
50WW11-181128-FD	P1806583-003	0.10	**430,000**	1,000	860	370	
50WW12-181128	P1806583-004	0.050	**600,000**	2,000	1,700	740	
50WW08-181128	P1806583-005	0.10	**510,000**	1,000	860	370	
Method Control Sample	P181207-MB	0.10	860	1,000	860	370	**U**

The Method Control Sample is laboratory water carried through the entire analytical process.
U = Compound was analyzed for, but not detected above the laboratory detection limit.
LOQ = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

LABORATORY CONTROL SAMPLE / DUPLICATE LABORATORY CONTROL SAMPLE SUMMARY

Client: **ALS Laboratory Group**
Client Sample ID: **Duplicate Lab Control Sample**
Client Project ID: **HS18111440**

ALS Project ID: P1806583
ALS Sample ID: P181207-DLCS

Test Code: RSK 175
Instrument ID: HP5890A/GC10/TCD
Analyst: Magaly Rodriguez
Matrix: Water
Test Notes:

Date Collected: NA
Date Received: NA
Date Analyzed: 12/07/18
Volume(s) Analyzed: NA ml(s)

CAS #	Compound	Spike Amount LCS / DLCS ug/L	Result[1] LCS ug/L	Result[1] DLCS ug/L	% Recovery LCS	% Recovery DLCS	DOD Acceptance Limits	RPD	RPD Limit	Data Qualifier
124-38-9	Carbon Dioxide	22,900	18,400	18,400	**80**	**80**	80-122	0	12	

[1] = The concentration shown includes a subtraction of the Method Control Sample value, even if the result is less than the MRL.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **ALS Laboratory Group**
Client Sample ID: **50WW16-181128**
Client Project ID: **HS18111440**

ALS Project ID: P1806583
ALS Sample ID: P1806583-001

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Magaly Rodriguez
Matrix: Water
Test Notes:

Date Collected: 11/28/18
Date Received: 11/30/18
Date Analyzed: 12/4/18
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Result µg/L	LOQ µg/L	LOD µg/L	MDL µg/L	Data Qualifier
74-82-8	Methane	**15**	1.3	1.0	0.51	
74-85-1	Ethene	0.55	1.0	0.55	0.24	**U**
74-84-0	Ethane	0.47	0.60	0.47	0.16	**U**

U = Compound was analyzed for, but not detected above the laboratory detection limit.
LOQ = 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: **ALS Laboratory Group**
Client Sample ID: **50WW11-181128**
Client Project ID: **HS18111440**

ALS Project ID: P1806583
ALS Sample ID: P1806583-002

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Magaly Rodriguez
Matrix: Water
Test Notes:

Date Collected: 11/28/18
Date Received: 11/30/18
Date Analyzed: 12/4/18
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Result µg/L	LOQ µg/L	LOD µg/L	MDL µg/L	Data Qualifier
74-82-8	Methane	**16**	1.3	1.0	0.51	
74-85-1	Ethene	0.55	1.0	0.55	0.24	**U**
74-84-0	Ethane	0.47	0.60	0.47	0.16	**U**

U = Compound was analyzed for, but not detected above the laboratory detection limit.
LOQ = 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: **ALS Laboratory Group**
Client Sample ID: **50WW11-181128-FD**
Client Project ID: **HS18111440**

ALS Project ID: P1806583
ALS Sample ID: P1806583-003

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Magaly Rodriguez
Matrix: Water
Test Notes:

Date Collected: 11/28/18
Date Received: 11/30/18
Date Analyzed: 12/4/18
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Result µg/L	LOQ µg/L	LOD µg/L	MDL µg/L	Data Qualifier
74-82-8	Methane	**13**	1.3	1.0	0.51	
74-85-1	Ethene	0.55	1.0	0.55	0.24	**U**
74-84-0	Ethane	0.47	0.60	0.47	0.16	**U**

U = Compound was analyzed for, but not detected above the laboratory detection limit.
LOQ = 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: **ALS Laboratory Group**
Client Sample ID: **50WW12-181128**
Client Project ID: **HS18111440**

ALS Project ID: P1806583
ALS Sample ID: P1806583-004

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Magaly Rodriguez
Matrix: Water
Test Notes:

Date Collected: 11/28/18
Date Received: 11/30/18
Date Analyzed: 12/4/18
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Result µg/L	LOQ µg/L	LOD µg/L	MDL µg/L	Data Qualifier
74-82-8	Methane	1.0	1.3	1.0	0.51	**U**
74-85-1	Ethene	0.55	1.0	0.55	0.24	**U**
74-84-0	Ethane	0.47	0.60	0.47	0.16	**U**

U = Compound was analyzed for, but not detected above the laboratory detection limit.
LOQ = 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: **ALS Laboratory Group**
Client Sample ID: **50WW08-181128**
Client Project ID: **HS18111440**

ALS Project ID: P1806583
ALS Sample ID: P1806583-005

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Magaly Rodriguez
Matrix: Water
Test Notes:

Date Collected: 11/28/18
Date Received: 11/30/18
Date Analyzed: 12/4/18
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Result µg/L	LOQ µg/L	LOD µg/L	MDL µg/L	Data Qualifier
74-82-8	Methane	**2.4**	1.3	1.0	0.51	
74-85-1	Ethene	0.55	1.0	0.55	0.24	**U**
74-84-0	Ethane	0.47	0.60	0.47	0.16	**U**

U = Compound was analyzed for, but not detected above the laboratory detection limit.
LOQ = 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: **ALS Laboratory Group**
Client Sample ID: **Method Control Sample**
Client Project ID: **HS18111440**

ALS Project ID: P1806583
ALS Sample ID: P181204-MB

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Magaly Rodriguez
Matrix: Water
Test Notes:

Date Collected: NA
Date Received: NA
Date Analyzed: 12/04/18
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Result µg/L	LOQ µg/L	LOD µg/L	MDL µg/L	Data Qualifier
74-82-8	Methane	1.0	1.3	1.0	0.51	**U**
74-85-1	Ethene	0.55	1.0	0.55	0.24	**U**
74-84-0	Ethane	0.47	0.60	0.47	0.16	**U**

The Method Control Sample is laboratory water carried through the entire analytical process.
U = Compound was analyzed for, but not detected above the laboratory detection limit.
LOQ = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

LABORATORY CONTROL SAMPLE / DUPLICATE LABORATORY CONTROL SAMPLE SUMMARY

Client: **ALS Laboratory Group**
Client Sample ID: **Duplicate Lab Control Sample**
Client Project ID: **HS18111440**

ALS Project ID: P1806583
ALS Sample ID: P181204-LCS
P181204-DLCS

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Magaly Rodriguez
Matrix: Water
Test Notes:

Date Collected: NA
Date Received: NA
Date Analyzed: 12/04/18
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Spike Amount LCS / DLCS µg/L	Result$_1$ LCS µg/L	Result$_1$ DLCS µg/L	% Recovery LCS	% Recovery DLCS	DOD Acceptance Limits	RPD	RPD Limit	Data Qualifier
74-82-8	Methane	2.50	2.43	2.76	**97**	**110**	73-125	13	26	
74-85-1	Ethene	4.37	4.78	4.80	**109**	**110**	72-133	0.9	11	
74-84-0	Ethane	4.69	5.04	4.91	**107**	**105**	74-131	2	10	

$_1$ = The concentration shown includes a subtraction of the Method Control Sample value, even if the result is less than the MRL.

Data Path : J:\GC10\DATA\RSK_FID\2018_12\07\
Data File : 12071806.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 07-Dec-2018, 13:07:01
Operator : MR
Sample : P1806583-001 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Dec 07 15:24:18 2018
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

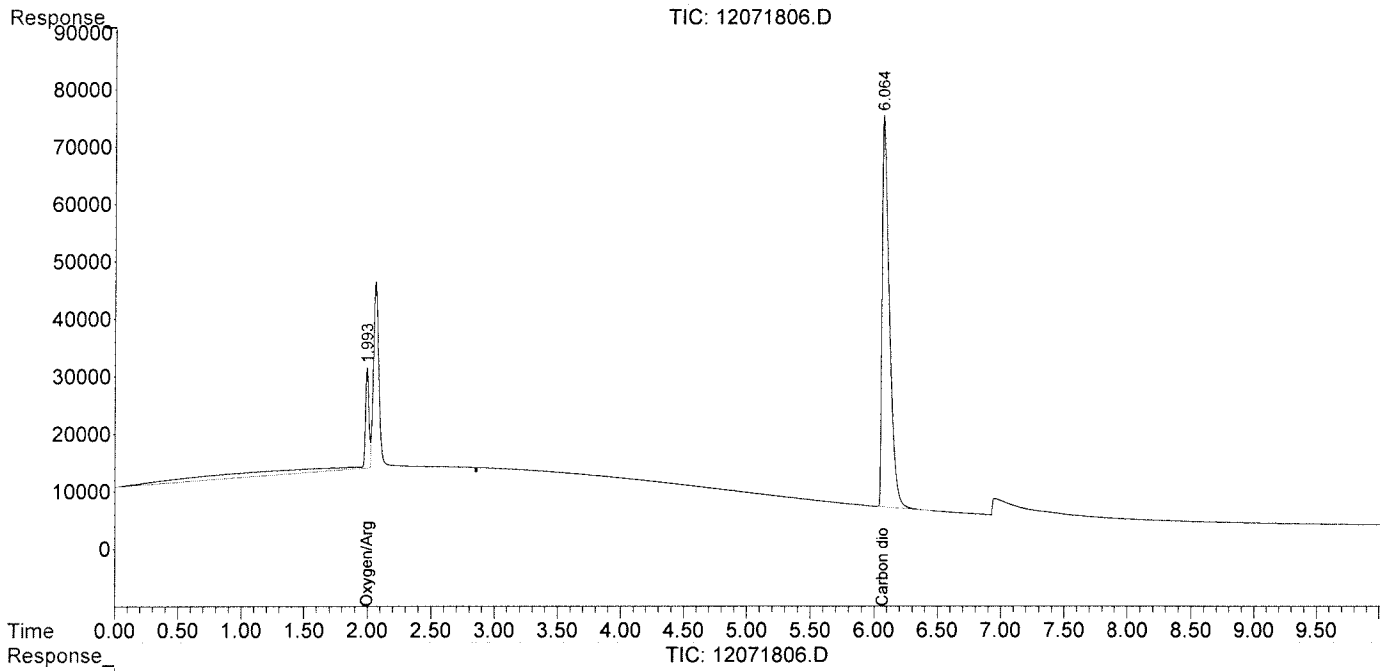
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.993f	960213	0.202	ppm
2)	Carbon monoxide	1.993f	960213	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	6.065	2714278	11563.445	ppm
6)	Methane (FID)	1.120	23940	2.534	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	0.000	0	N.D.	ppm
10)	Propane	0.000	0	N.D.	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

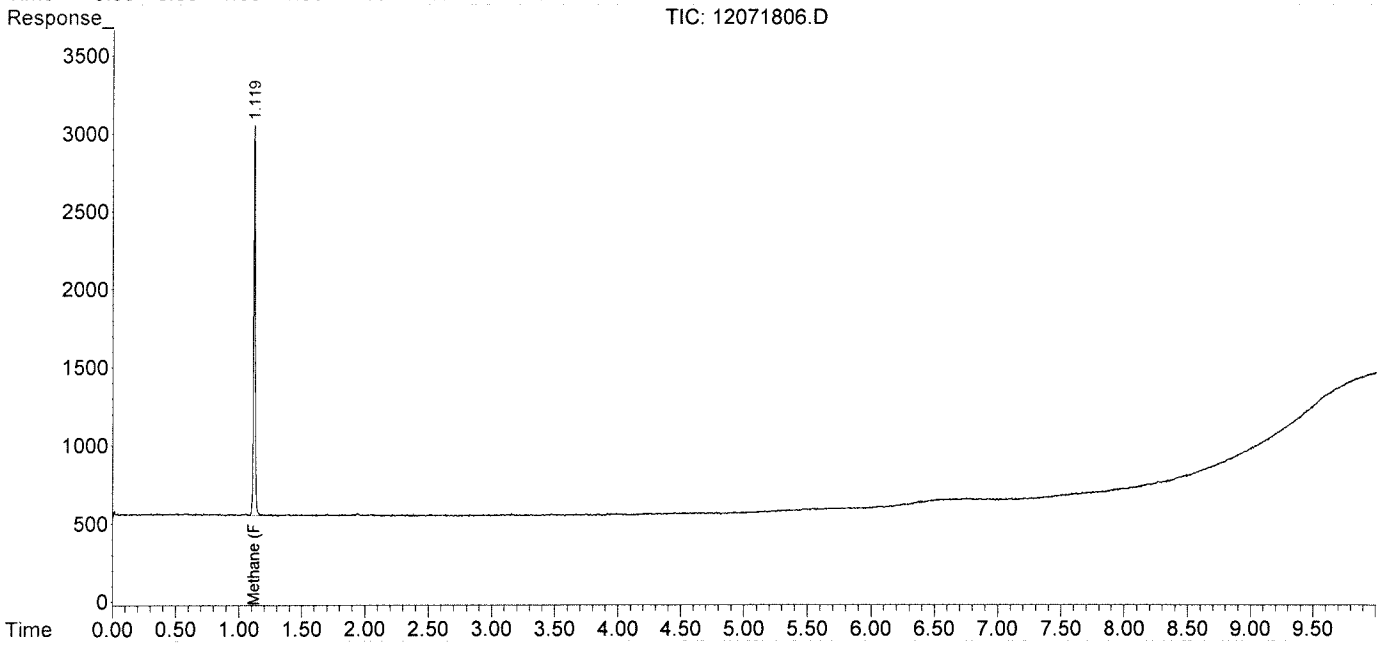
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2018_12\07\
Data File : 12071806.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 07-Dec-2018, 13:07:01
Operator : MR
Sample : P1806583-001 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Dec 07 15:24:18 2018
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_FID\2018_12\07\
Data File : 12071807.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 07-Dec-2018, 13:21:35
Operator : MR
Sample : P1806583-002 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Dec 07 13:36:09 2018
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

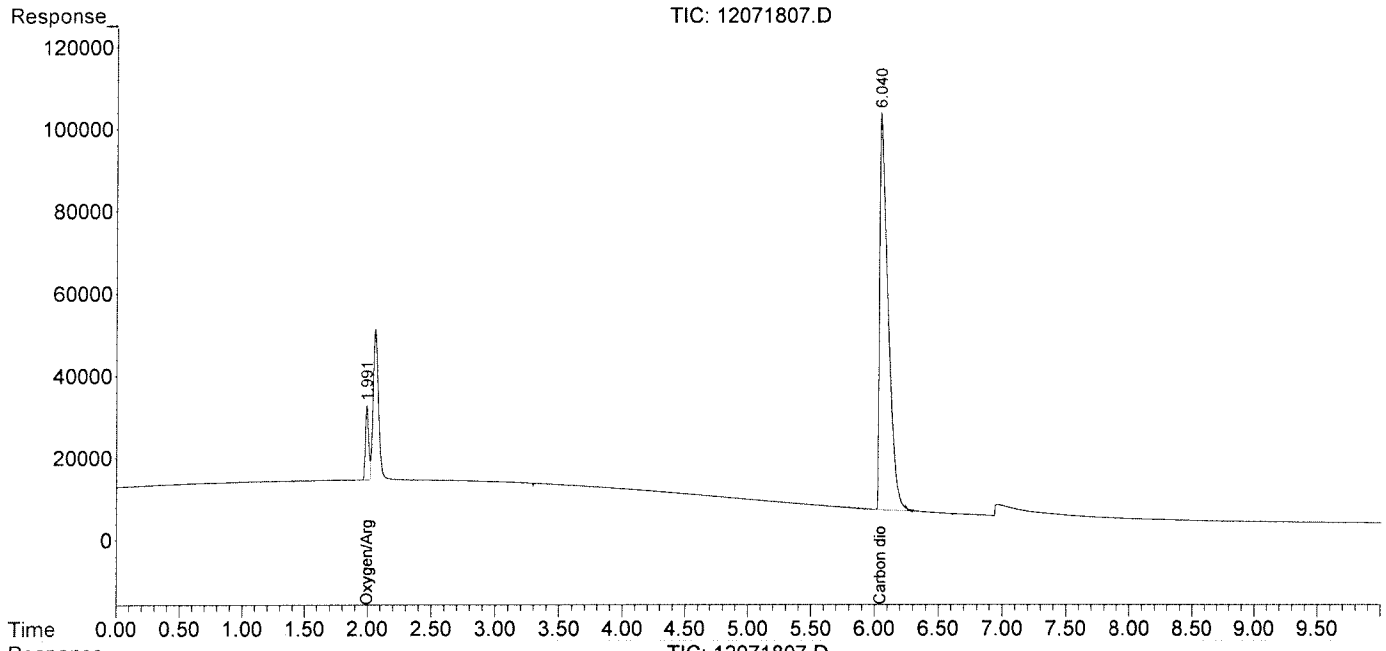
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	1.992f	326717	0.069	ppm	
2)	Carbon monoxide	1.992f	326717	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	
4)	Carbon dioxide	6.040	4459561	18998.747	ppm	m
6)	Methane (FID)	1.120	69675	7.375	ppm	
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

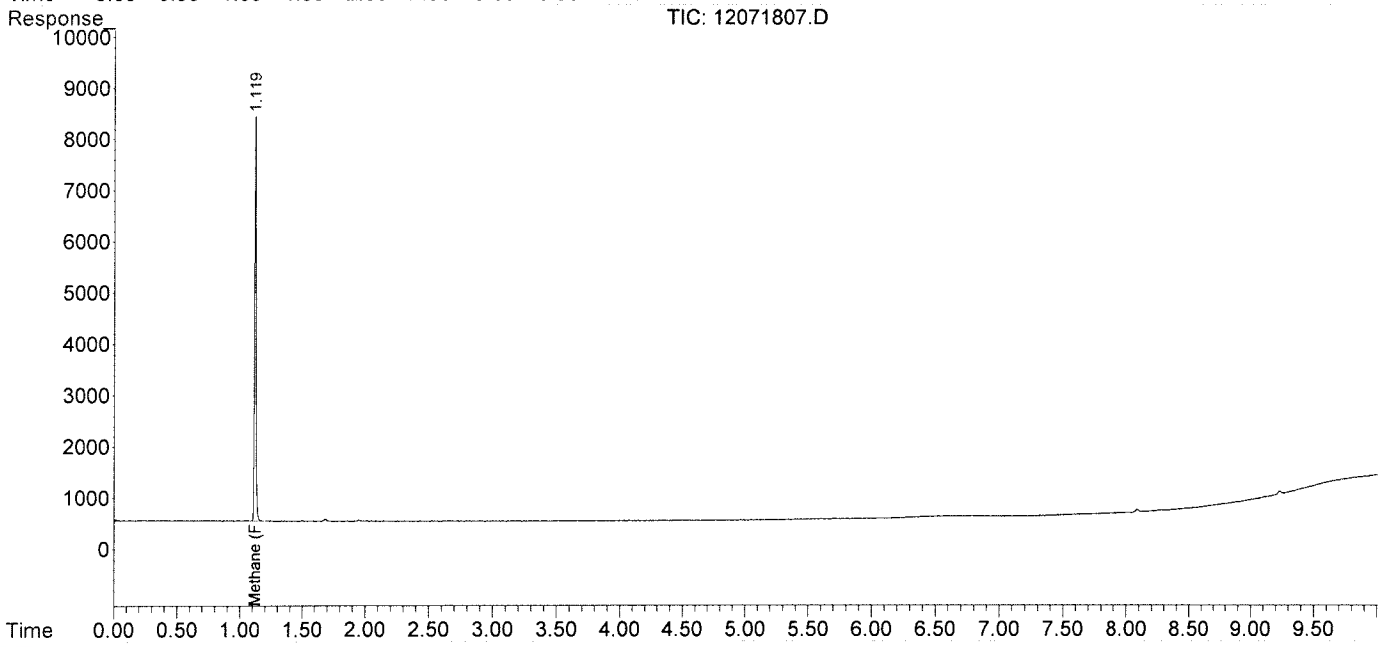
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2018_12\07\
Data File : 12071807.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 07-Dec-2018, 13:21:35
Operator : MR
Sample : P1806583-002 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Dec 07 13:36:09 2018
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

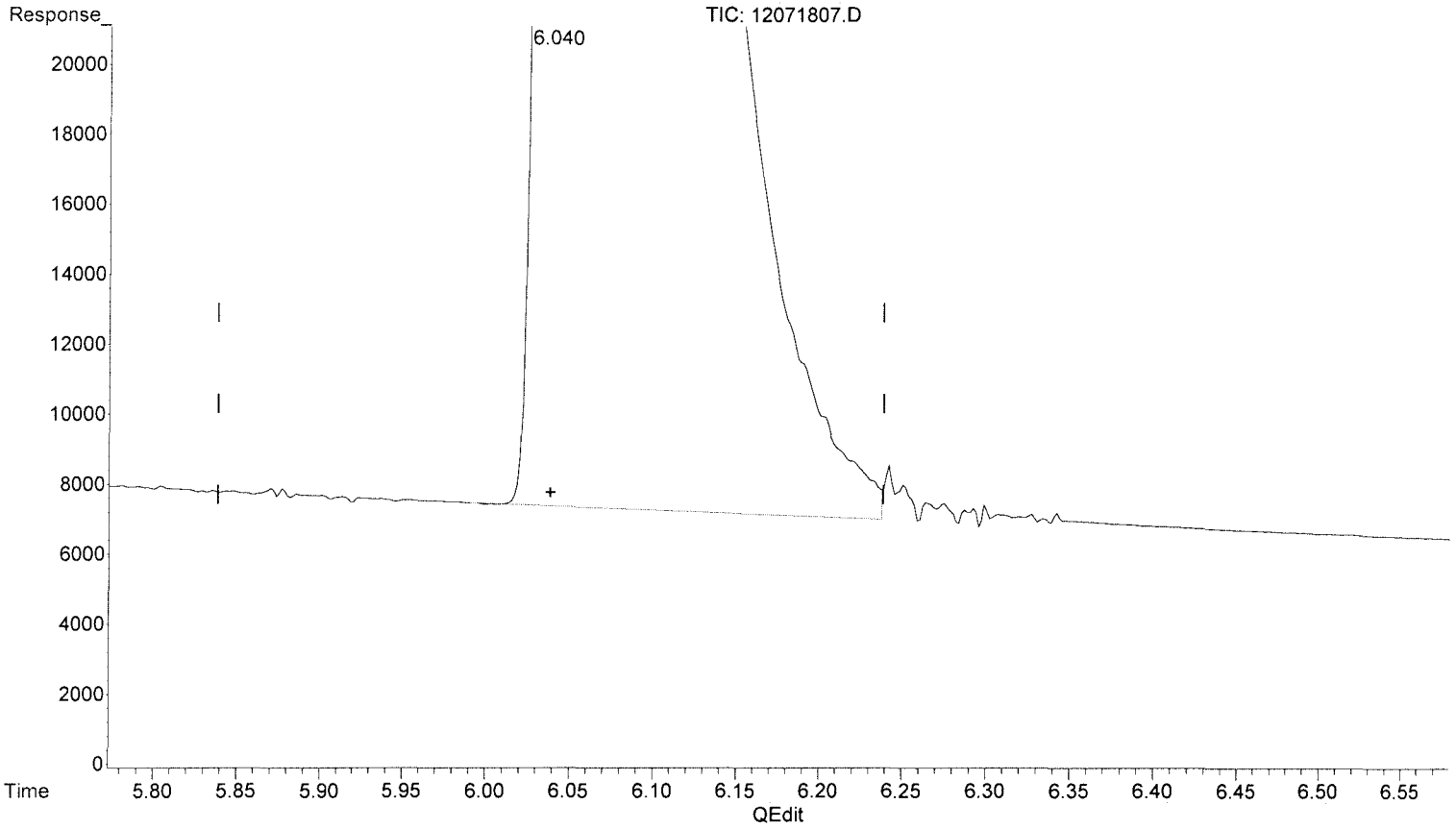




Data Path : J:\GC10\DATA\RSK_FID\2018_12\07\
Data File : 12071807.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 07-Dec-2018, 13:21:35
Operator : MR
Sample : P1806583-002 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Dec 07 13:36:09 2018
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



(4) Carbon dioxide

6.041min 18944.645 ppm

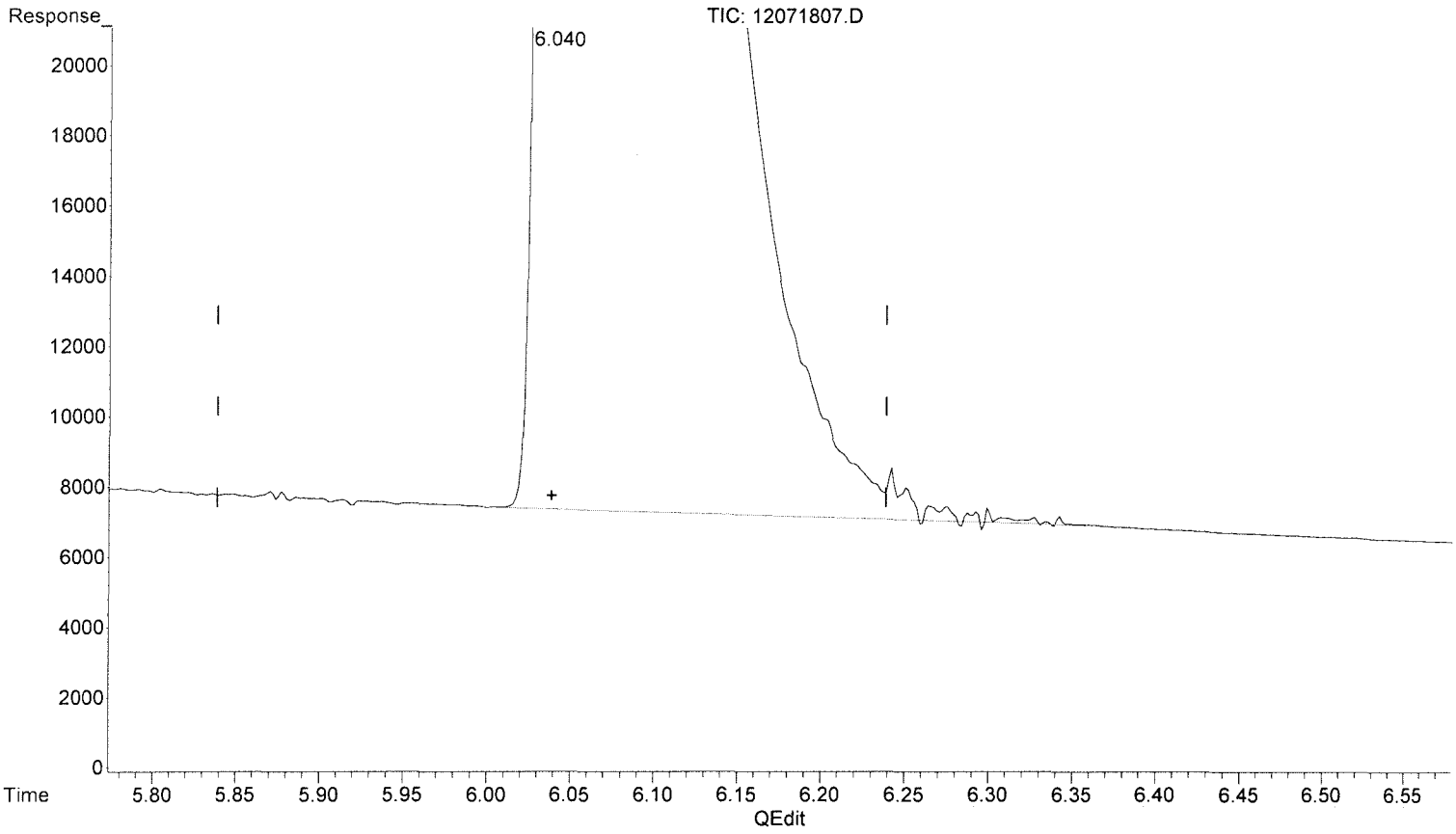
response 4446861

(+) = Expected Retention Time

Data Path : J:\GC10\DATA\RSK_FID\2018_12\07\
Data File : 12071807.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 07-Dec-2018, 13:21:35
Operator : MR
Sample : P1806583-002 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Dec 07 13:36:09 2018
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



(4) Carbon dioxide

6.040min 18998.747 ppm m

response 4459561

MR 12/7/18
BLC
12/10/18

(+) = Expected Retention Time

Data Path : J:\GC10\DATA\RSK_FID\2018_12\07\
Data File : 12071808.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 07-Dec-2018, 13:37:07
Operator : MR
Sample : P1806583-003 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Dec 07 13:53:50 2018
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

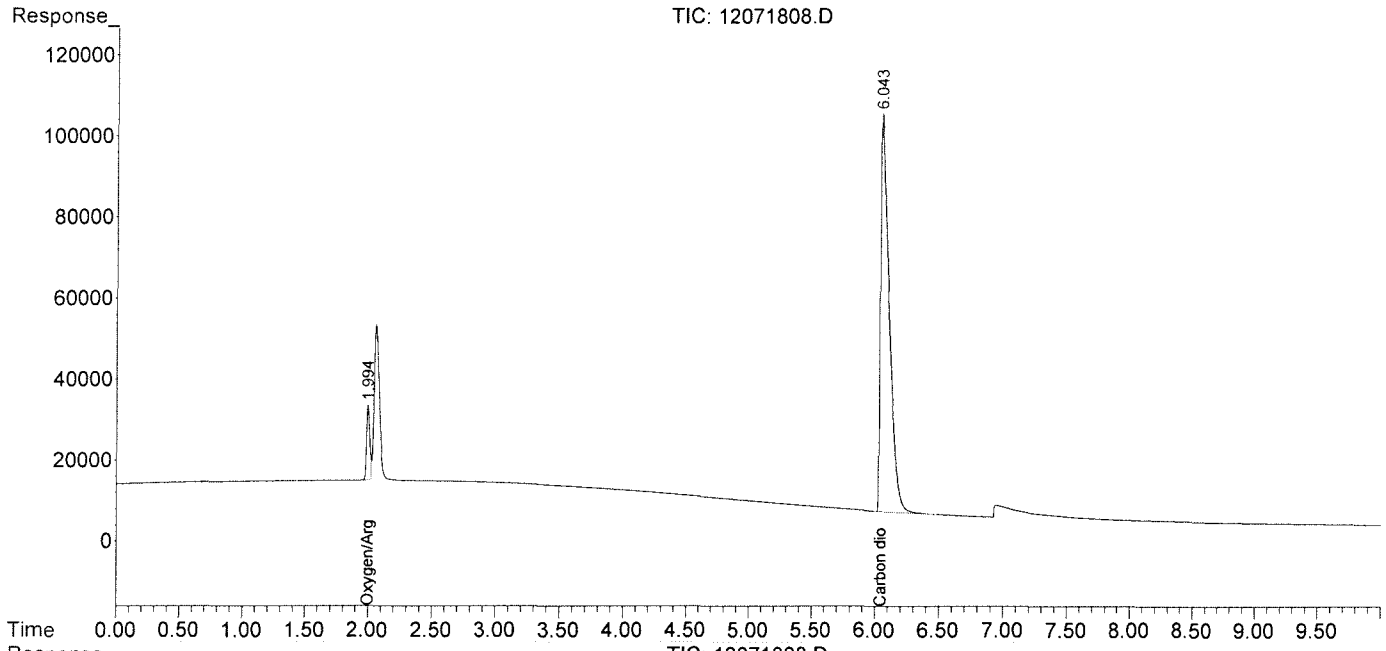
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.995f	332626	0.070	ppm
2)	Carbon monoxide	1.995f	332626	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	6.043	4614772	19659.984	ppm
6)	Methane (FID)	1.121	84974	8.994	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	0.000	0	N.D.	ppm
10)	Propane	0.000	0	N.D.	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

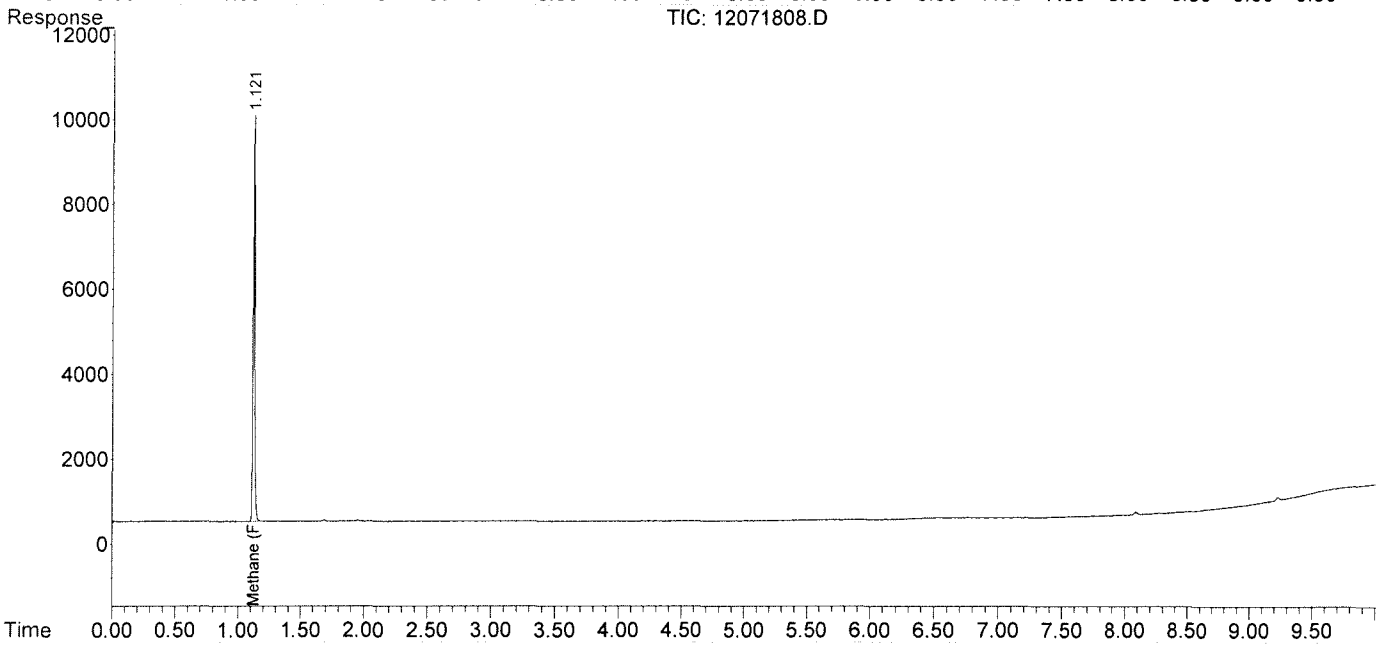
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2018_12\07\
Data File : 12071808.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 07-Dec-2018, 13:37:07
Operator : MR
Sample : P1806583-003 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Dec 07 13:53:50 2018
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_FID\2018_12\07\
Data File : 12071814.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 07-Dec-2018, 15:02:35
Operator : MR
Sample : P1806583-004 50ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Dec 07 15:23:57 2018
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

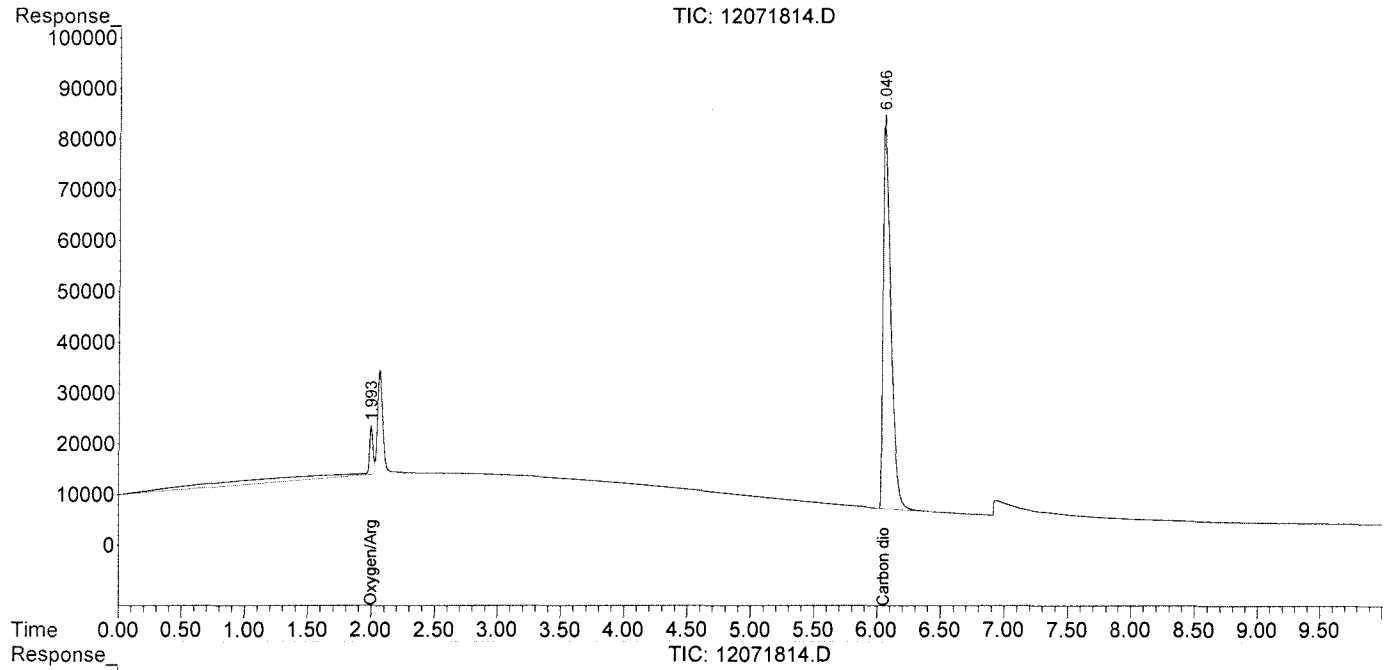
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.994f	834890	0.175	ppm
2)	Carbon monoxide	1.994f	834890	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	6.047	3215147	13697.259	ppm
6)	Methane (FID)	1.121	1748	0.185	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	0.000	0	N.D.	ppm
10)	Propane	0.000	0	N.D.	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

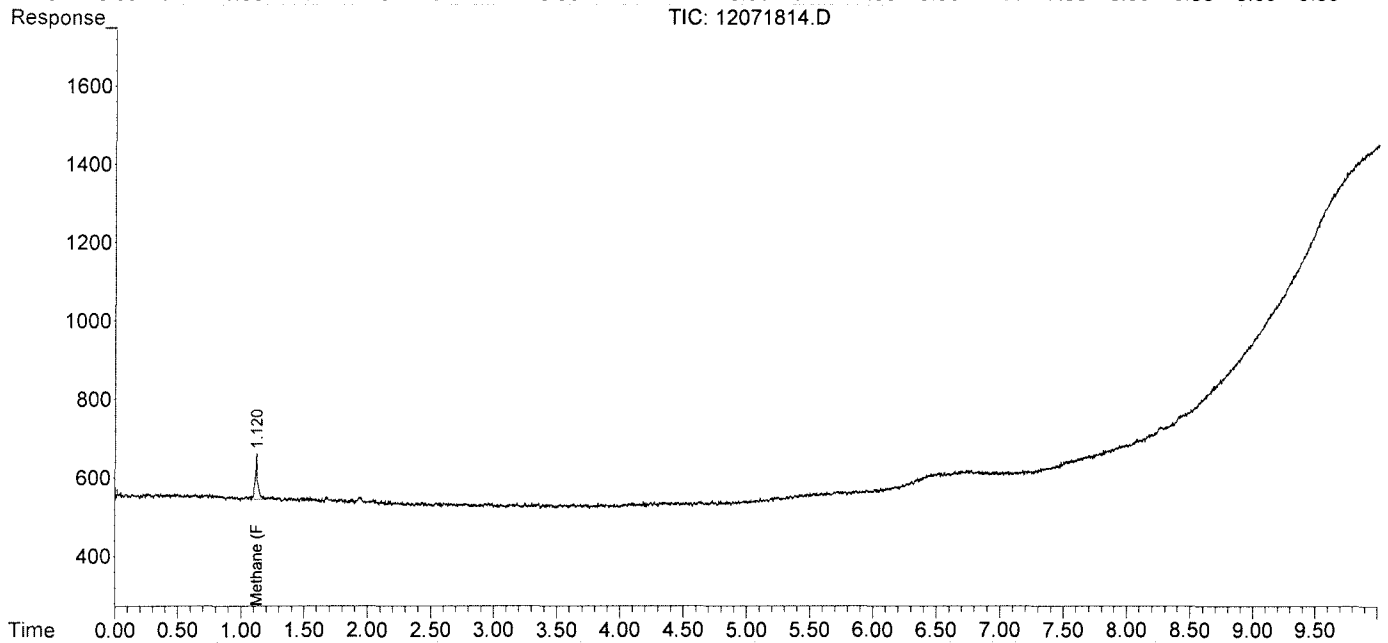
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2018_12\07\
Data File : 12071814.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 07-Dec-2018, 15:02:35
Operator : MR
Sample : P1806583-004 50ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Dec 07 15:23:57 2018
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_FID\2018_12\07\
Data File : 12071810.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 07-Dec-2018, 14:08:45
Operator : MR
Sample : P1806583-005 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Dec 07 14:36:26 2018
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

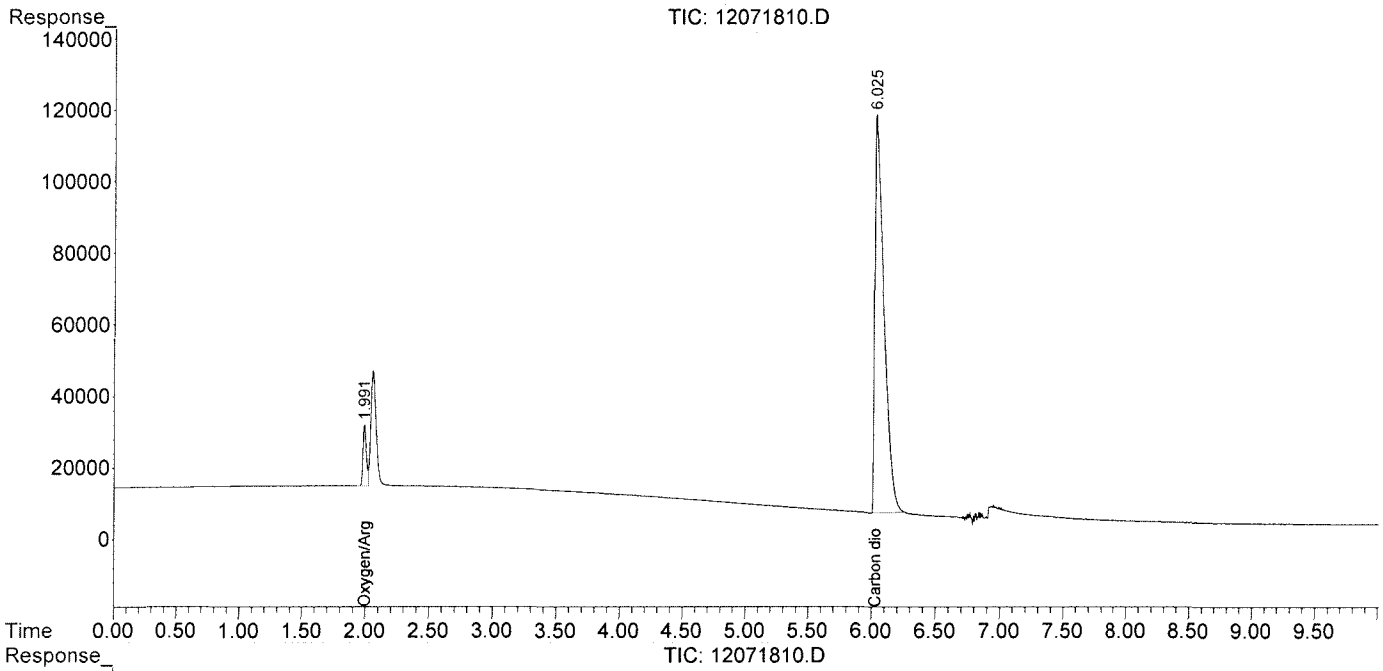
	Compound	R.T.	Response	Conc Units
Target Compounds				
1)	Oxygen/Argon	1.992f	309239	0.065 ppm
2)	Carbon monoxide	1.992f	309239	N.D. ppm
3)	Methane (TCD)	0.000	0	N.D. ppm
4)	Carbon dioxide	6.026	5538329	23594.547 ppm
6)	Methane (FID)	1.120	15687	1.660 ppm
7)	Ethylene	0.000	0	N.D. ppm
8)	Ethane	0.000	0	N.D. ppm
9)	Propylene	0.000	0	N.D. ppm
10)	Propane	0.000	0	N.D. ppm
11)	Isobutylene	0.000	0	N.D. ppm
12)	Isobutane	0.000	0	N.D. ppm
13)	n-Butane	0.000	0	N.D. ppm

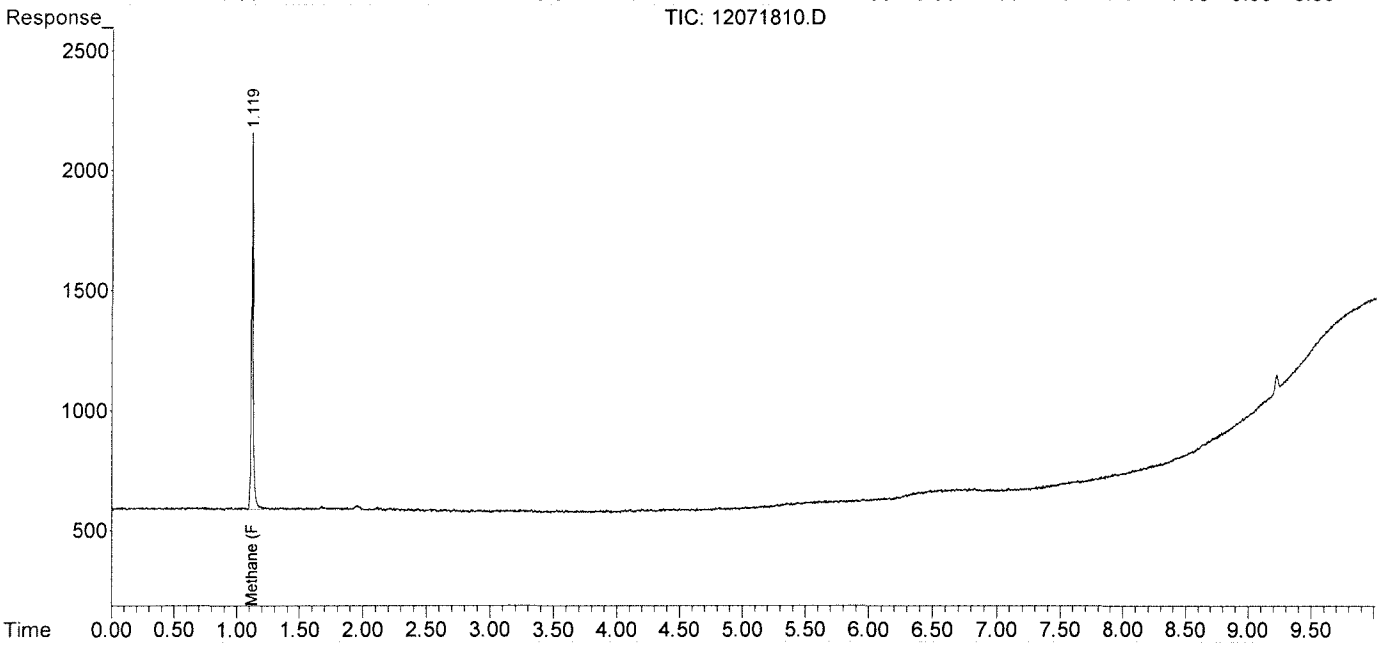
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2018_12\07\
Data File : 12071810.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 07-Dec-2018, 14:08:45
Operator : MR
Sample : P1806583-005 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Dec 07 14:36:26 2018
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_FID\2018_12\07\
Data File : 12071803.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 07-Dec-2018, 11:59:04
Operator : MR
Sample : mcs 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Dec 07 16:22:27 2018
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

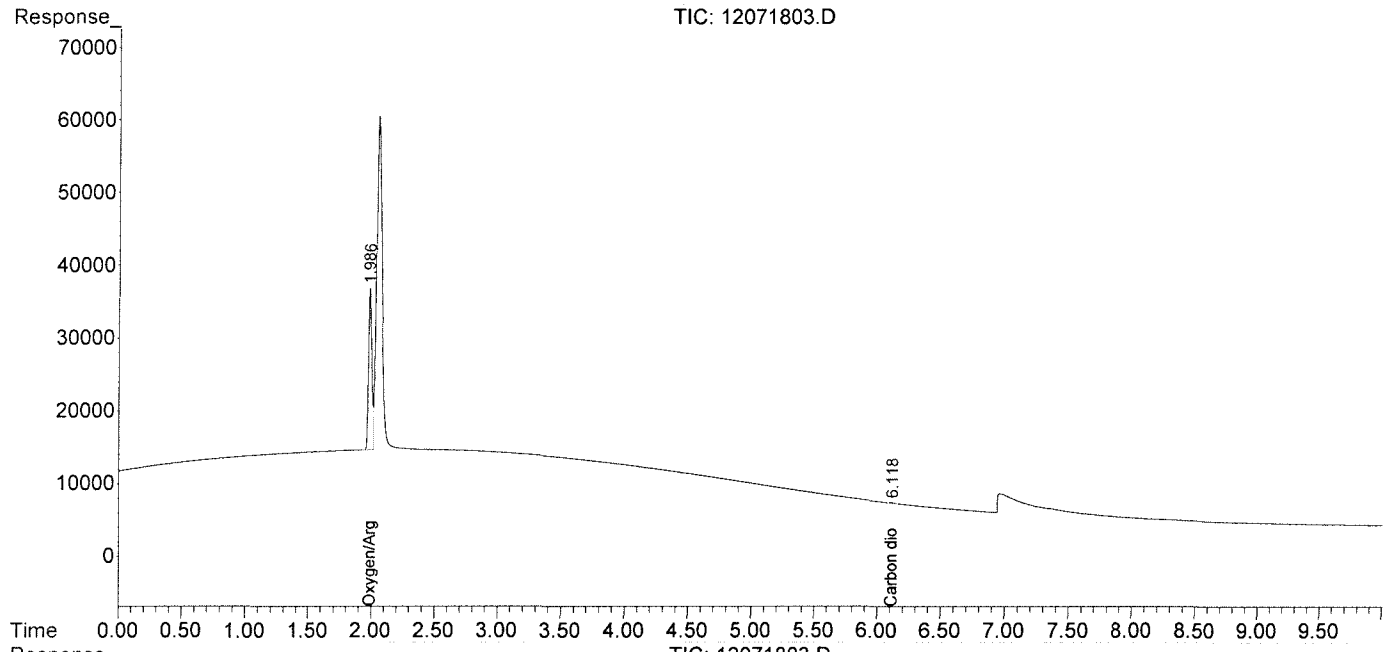
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	1.987f	395636	0.083	ppm	
2)	Carbon monoxide	1.987f	395636	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	
4)	Carbon dioxide	6.118	1885	8.031	ppm	m
6)	Methane (FID)	1.118	2631	0.278	ppm	
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

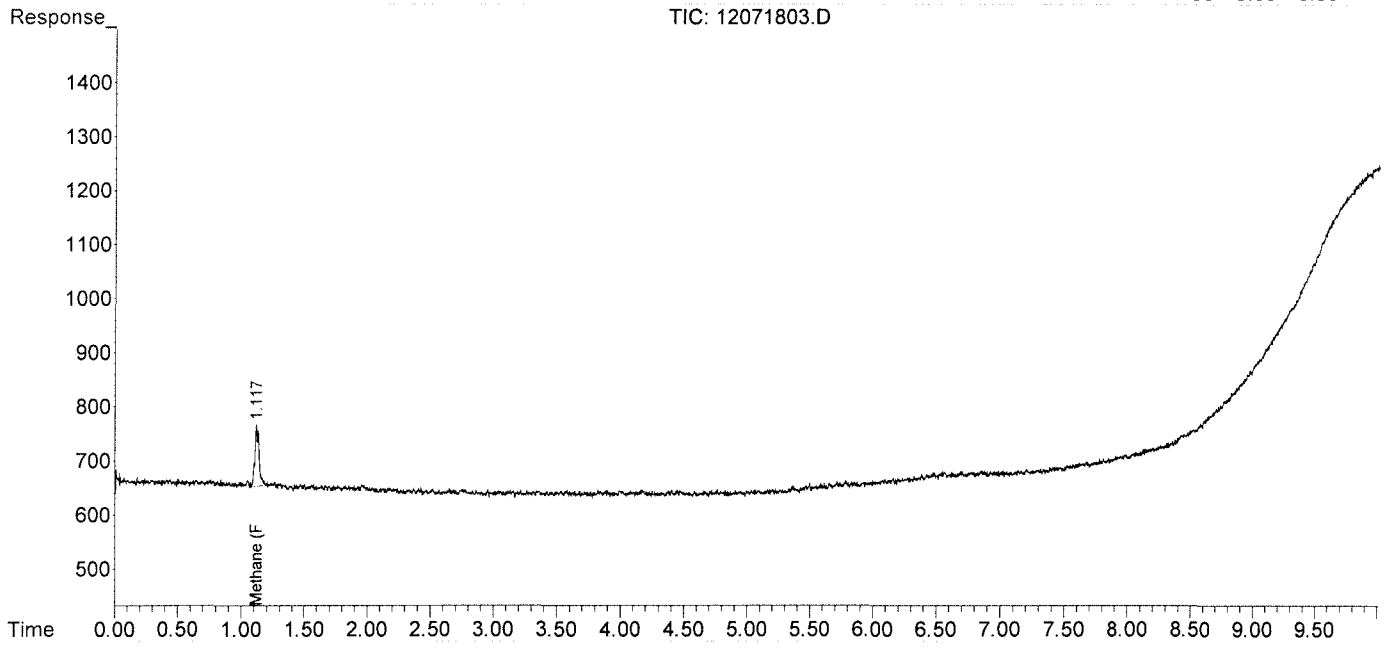
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2018_12\07\
Data File : 12071803.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 07-Dec-2018, 11:59:04
Operator : MR
Sample : mcs 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Dec 07 16:22:27 2018
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

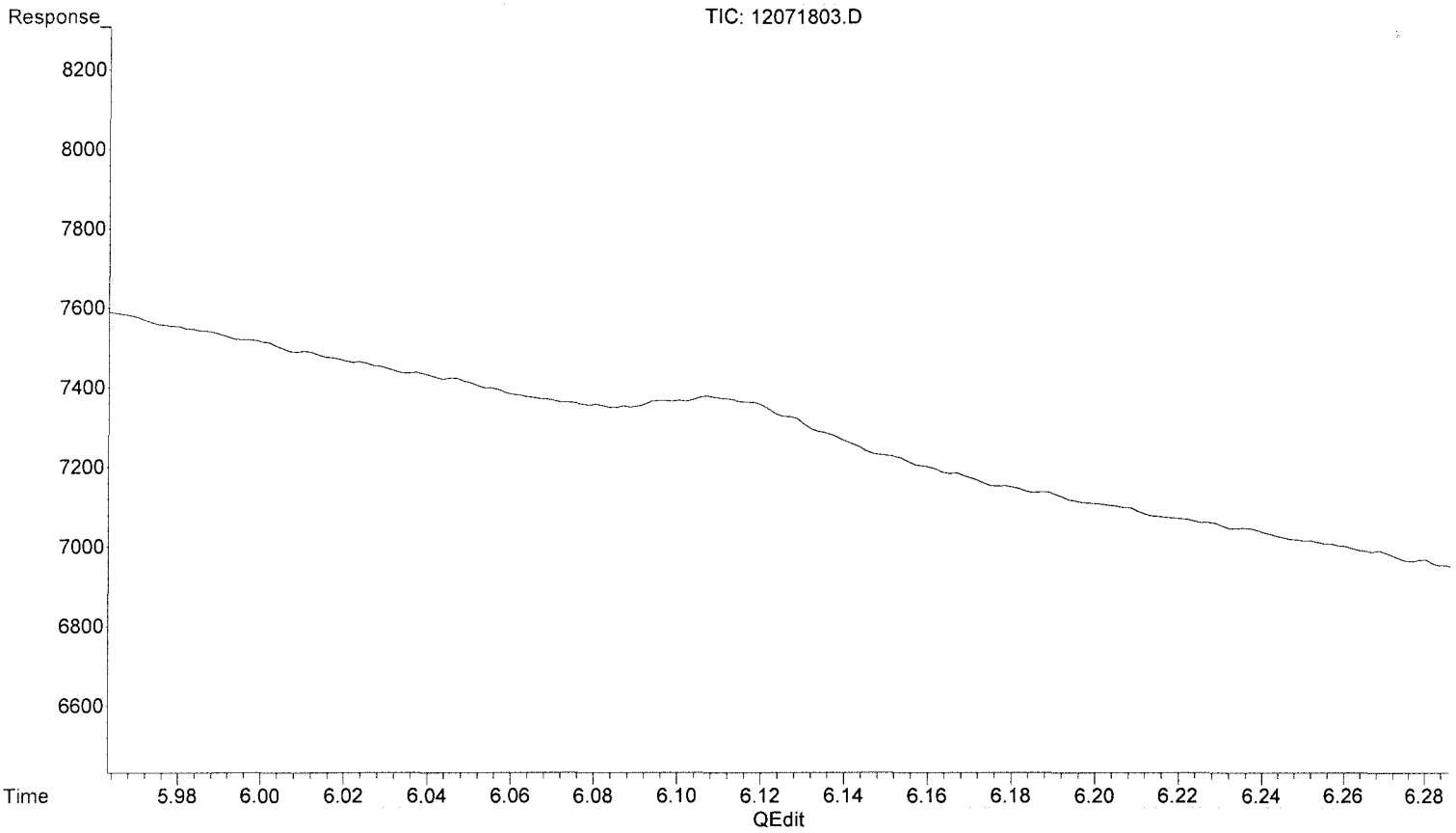




Data Path : J:\GC10\DATA\RSK_FID\2018_12\07\
Data File : 12071803.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 07-Dec-2018, 11:59:04
Operator : MR
Sample : mcs 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Dec 07 16:22:27 2018
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



(4) Carbon dioxide

6.039min 0.000 ppm

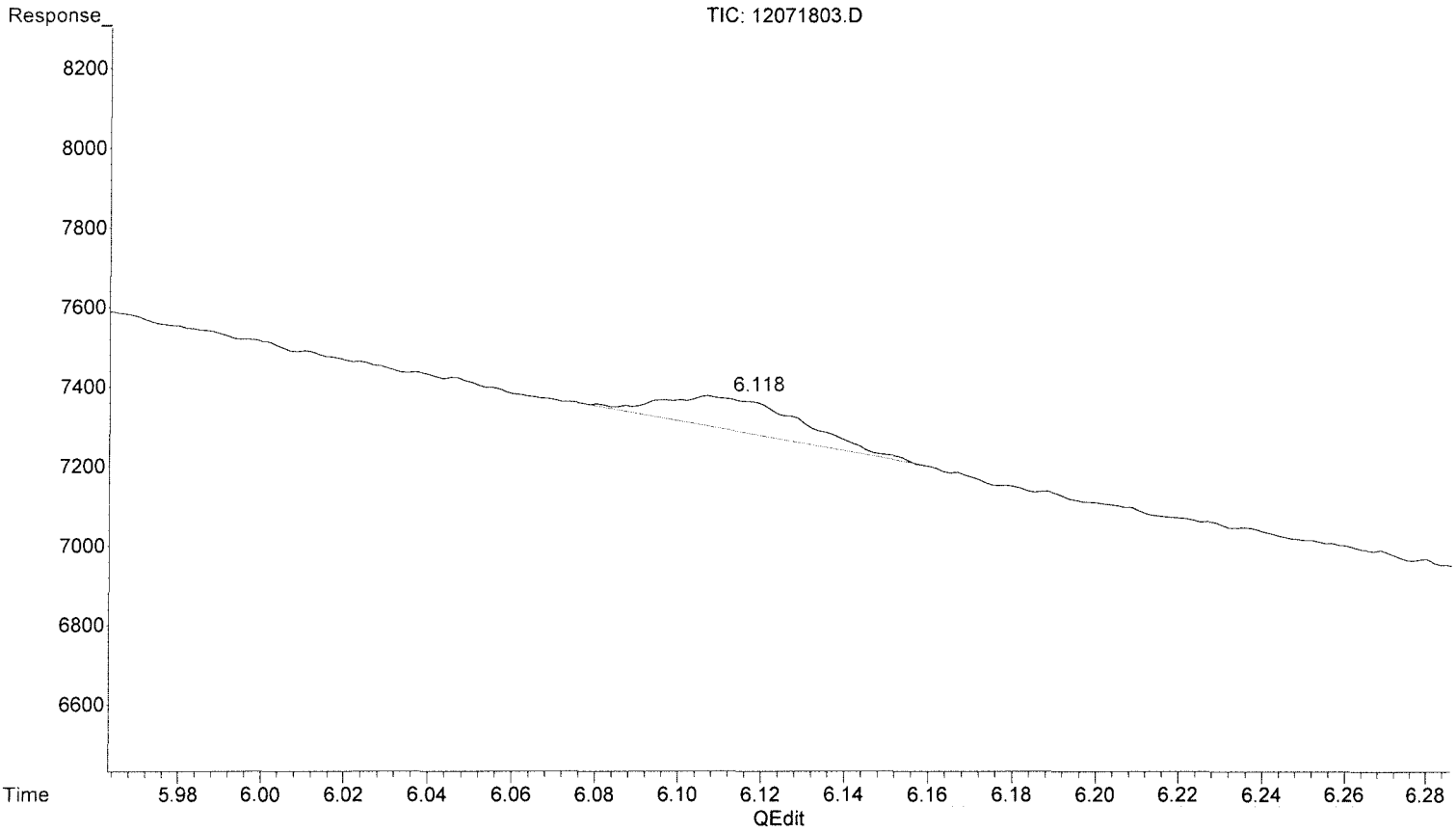
response 0

(+) = Expected Retention Time

Data Path : J:\GC10\DATA\RSK_FID\2018_12\07\
Data File : 12071803.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 07-Dec-2018, 11:59:04
Operator : MR
Sample : mcs 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Dec 07 16:22:27 2018
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



(4) Carbon dioxide

6.118min 8.031 ppm m

response 1885

MR 12/7/18
MP
12/10/18

(+) = Expected Retention Time

Data Path : J:\GC10\DATA\RSK_FID\2018_12\07\
Data File : 12071805.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 07-Dec-2018, 12:53:12
Operator : MR
Sample : tcd lcs s32-10081801
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Dec 07 16:23:48 2018
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

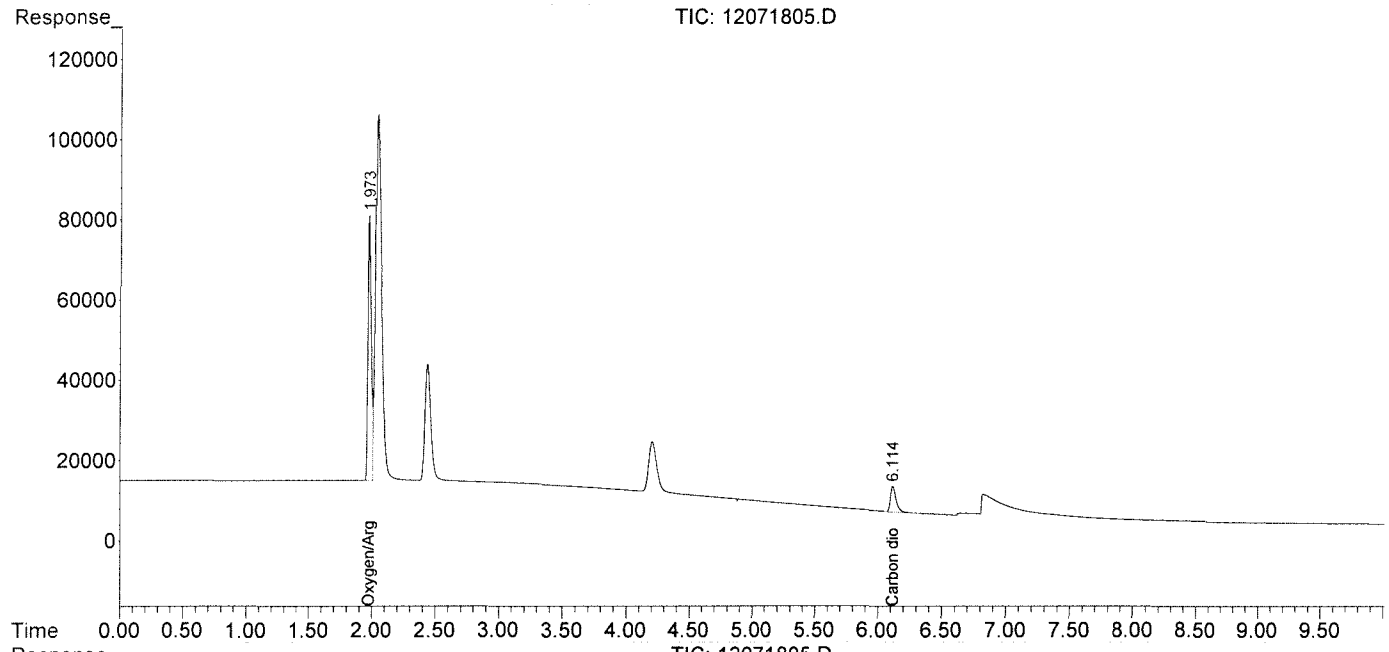
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	1.974f	1191913	0.250	ppm	
2)	Carbon monoxide	1.974f	1191913	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	
4)	Carbon dioxide	6.114	199503	849.928	ppm	m
6)	Methane (FID)	1.117	33494235	3545.183	ppm	
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

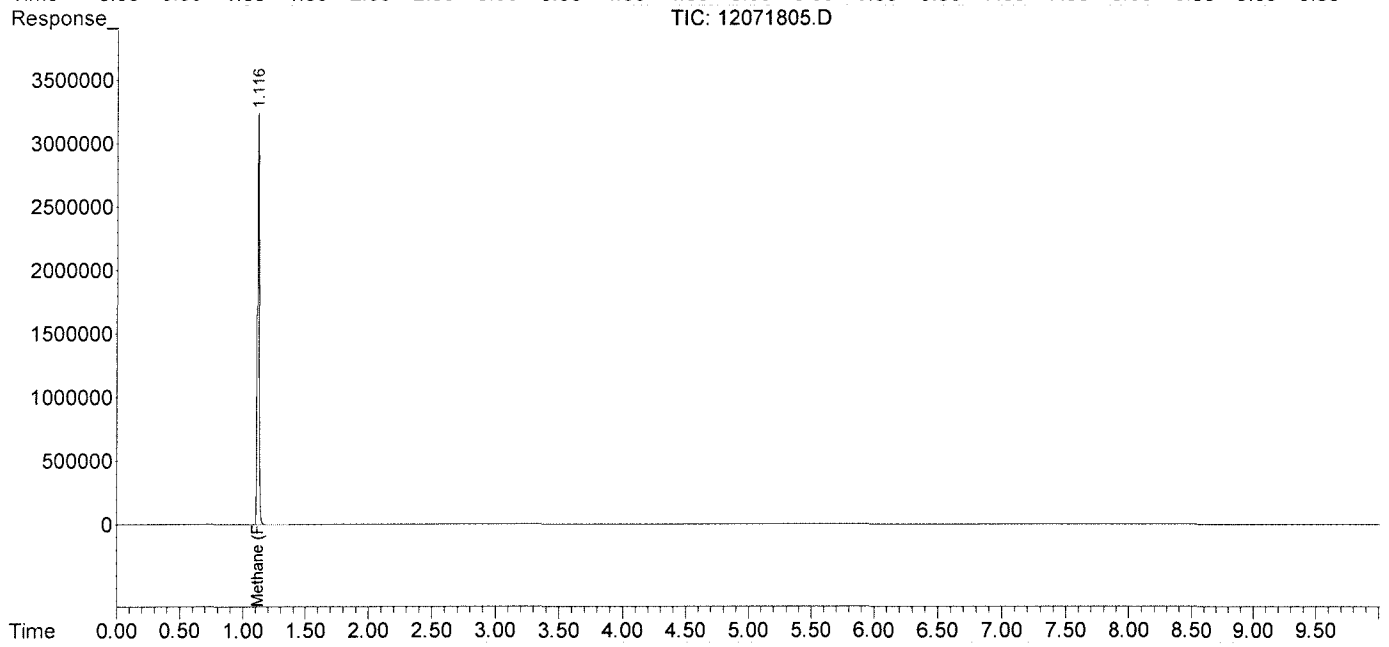
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2018_12\07\
Data File : 12071805.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 07-Dec-2018, 12:53:12
Operator : MR
Sample : tcd lcs s32-10081801
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Dec 07 16:23:48 2018
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

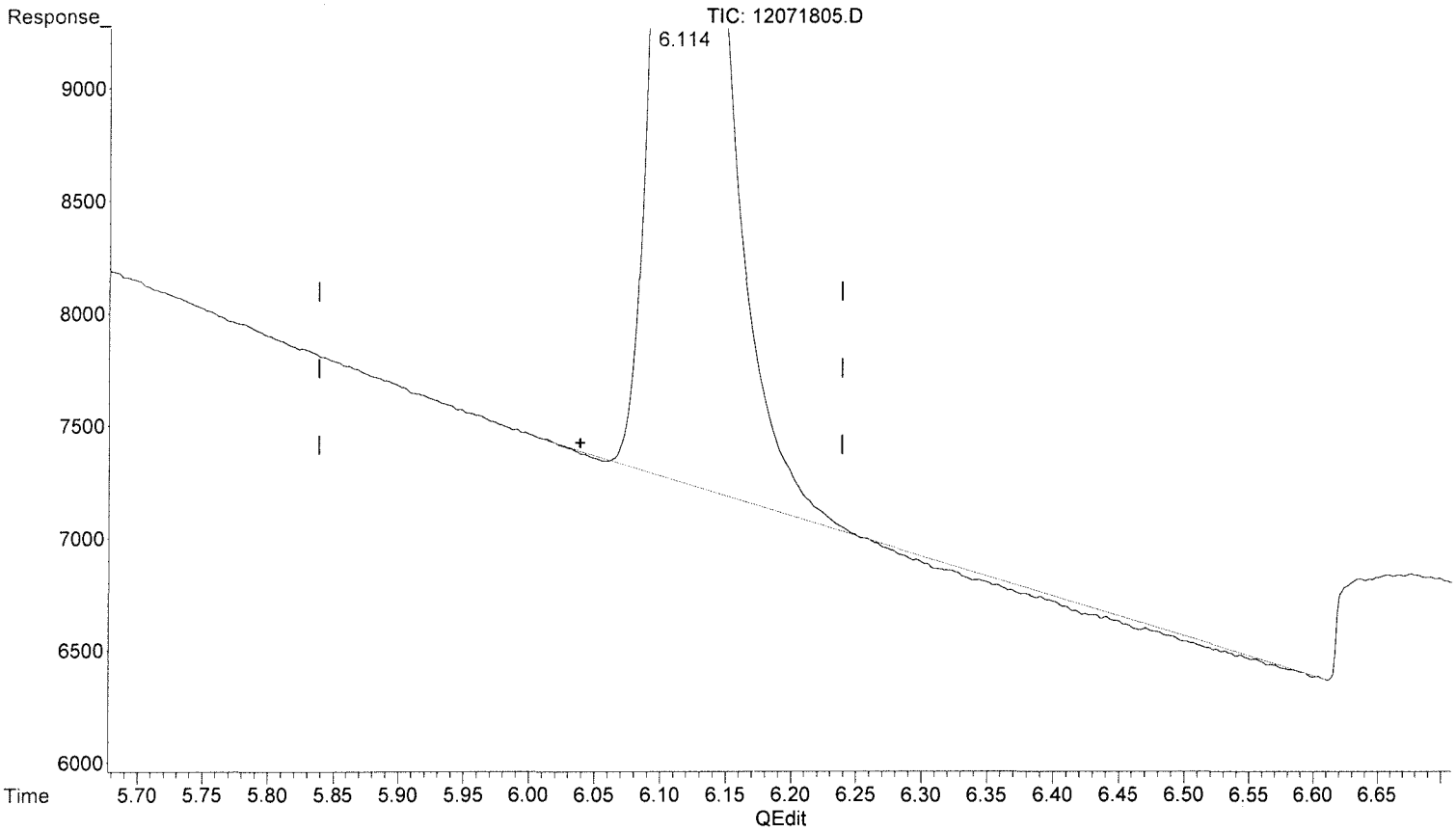




Data Path : J:\GC10\DATA\RSK_FID\2018_12\07\
Data File : 12071805.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 07-Dec-2018, 12:53:12
Operator : MR
Sample : tcd lcs s32-10081801
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Dec 07 16:23:48 2018
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



(4) Carbon dioxide

6.115min 816.574 ppm

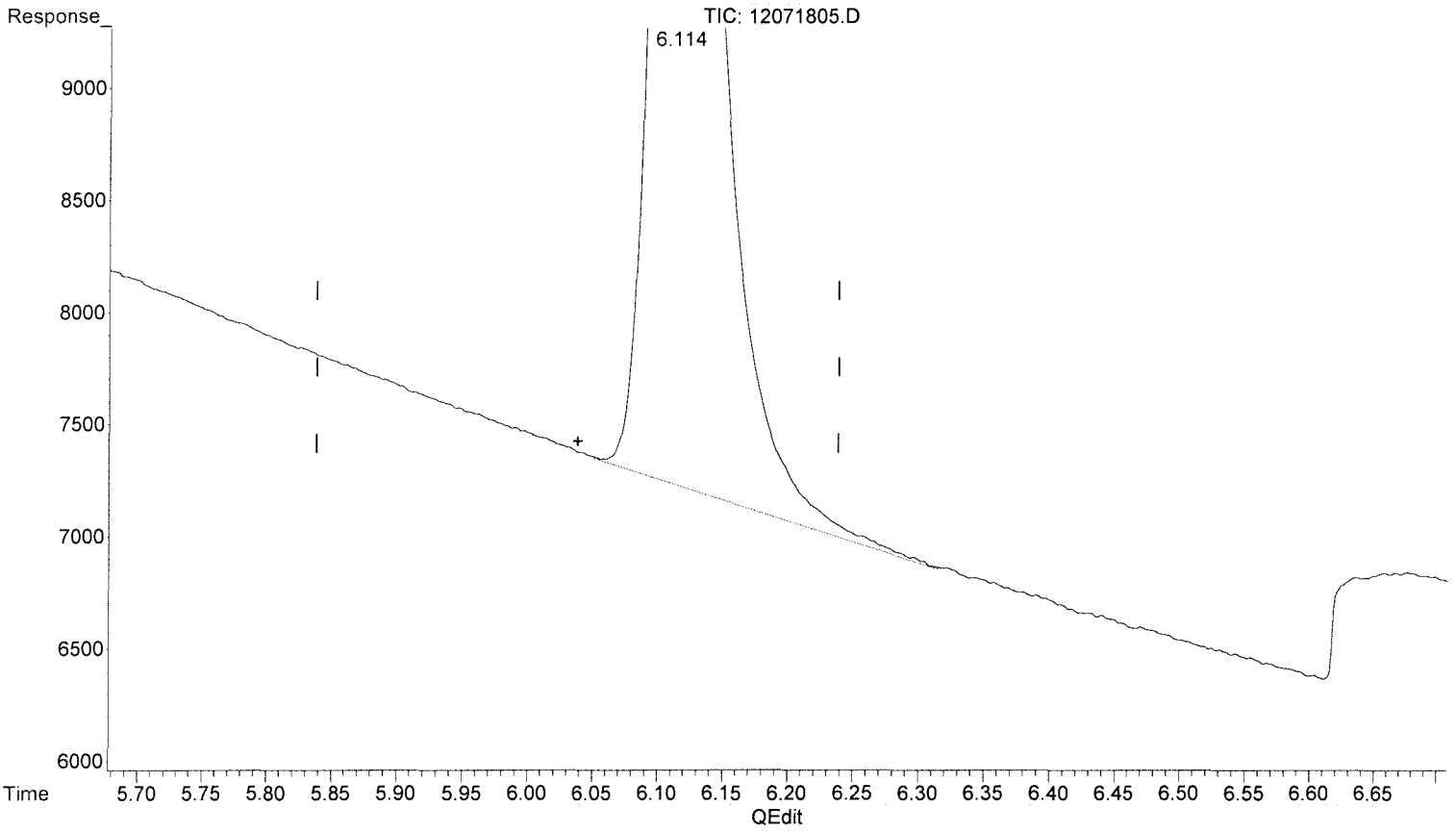
response 191674

(+) = Expected Retention Time

Data Path : J:\GC10\DATA\RSK_FID\2018_12\07\
Data File : 12071805.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 07-Dec-2018, 12:53:12
Operator : MR
Sample : tcd lcs s32-10081801
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Dec 07 16:23:48 2018
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



(4) Carbon dioxide

6.114min 849.928 ppm m

response 199503

ML 12/7/18
BLC

(+) = Expected Retention Time

RS082817_CO2.M Fri Dec 07 16:24:23 2018 Page: 1

Data Path : J:\GC10\DATA\RSK_FID\2018_12\07\
Data File : 12071815.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 07-Dec-2018, 15:16:21
Operator : MR
Sample : tcd lcsd s32-10081801
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Dec 07 16:24:55 2018
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

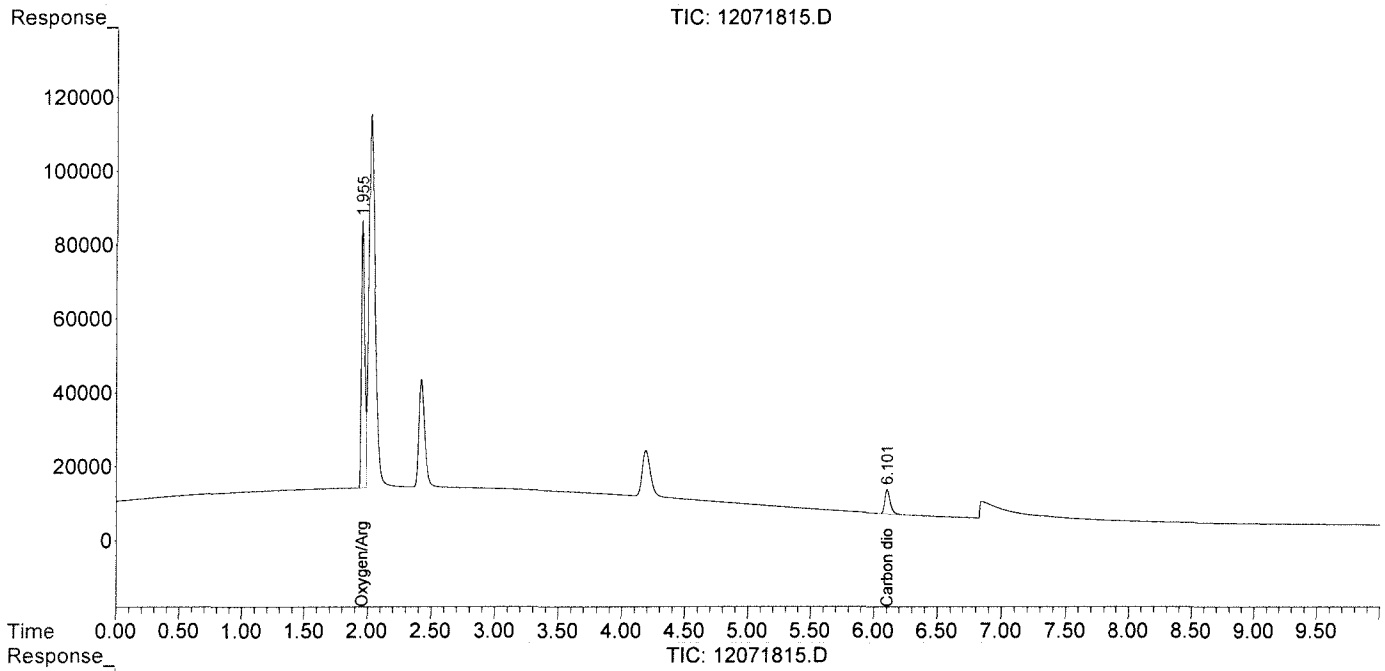
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	1.956f	1294006	0.272	ppm	
2)	Carbon monoxide	1.956f	1294006	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	
4)	Carbon dioxide	6.101	199445	849.681	ppm	m
6)	Methane (FID)	1.105	33145216	3508.241	ppm	
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

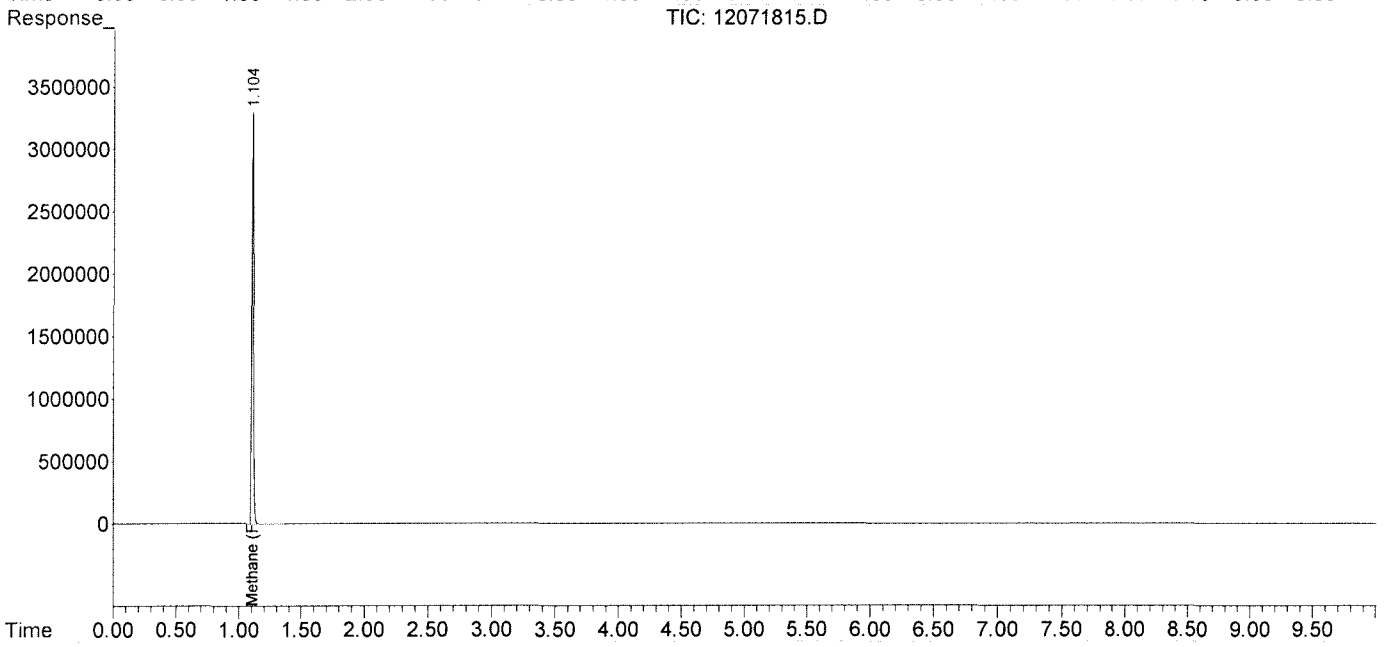
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2018_12\07\
Data File : 12071815.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 07-Dec-2018, 15:16:21
Operator : MR
Sample : tcd lcsd s32-10081801
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Dec 07 16:24:55 2018
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

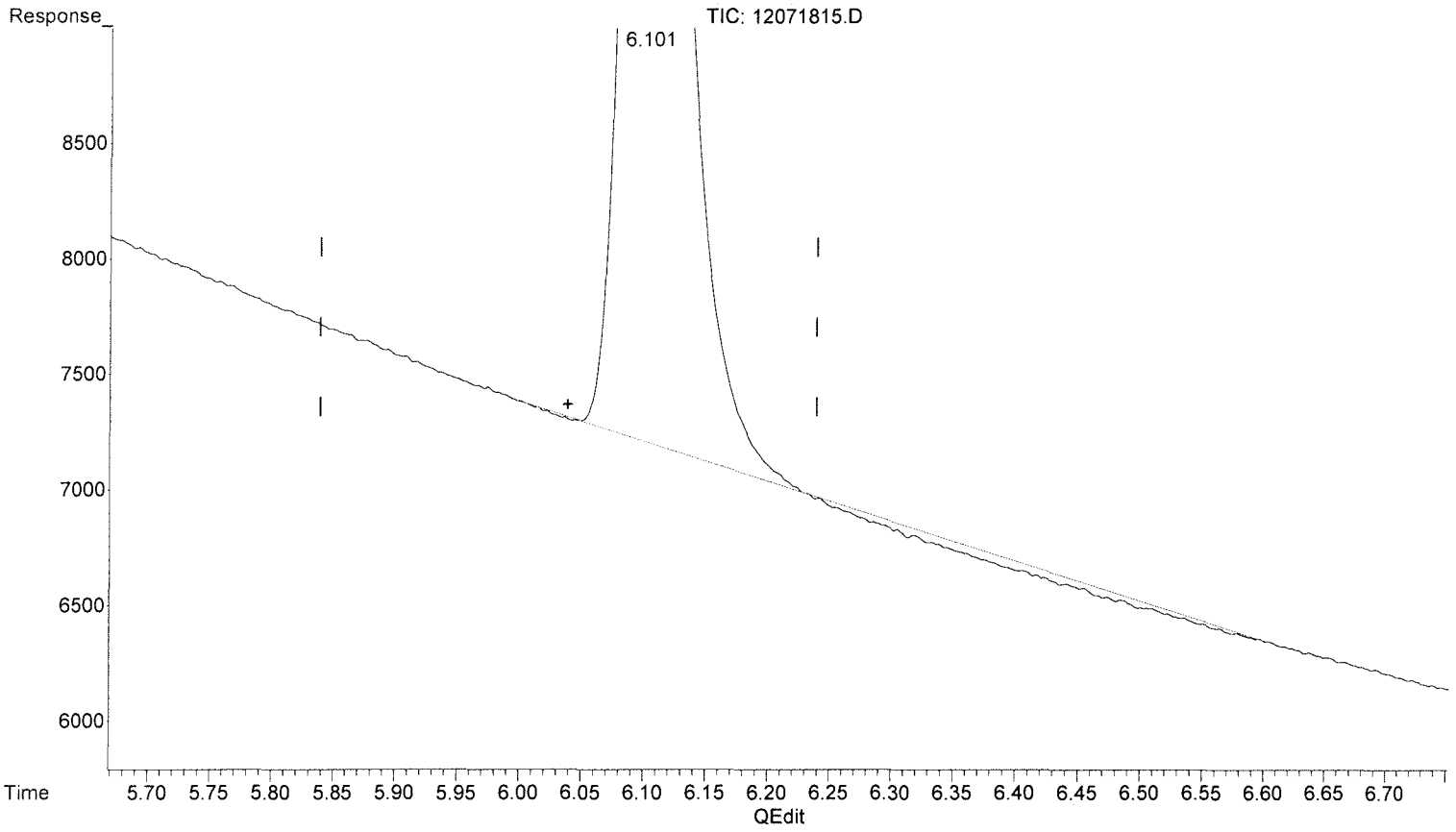




Data Path : J:\GC10\DATA\RSK_FID\2018_12\07\
Data File : 12071815.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 07-Dec-2018, 15:16:21
Operator : MR
Sample : tcd lcsd s32-10081801
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Dec 07 16:24:55 2018
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



(4) Carbon dioxide

6.102min 810.129 ppm

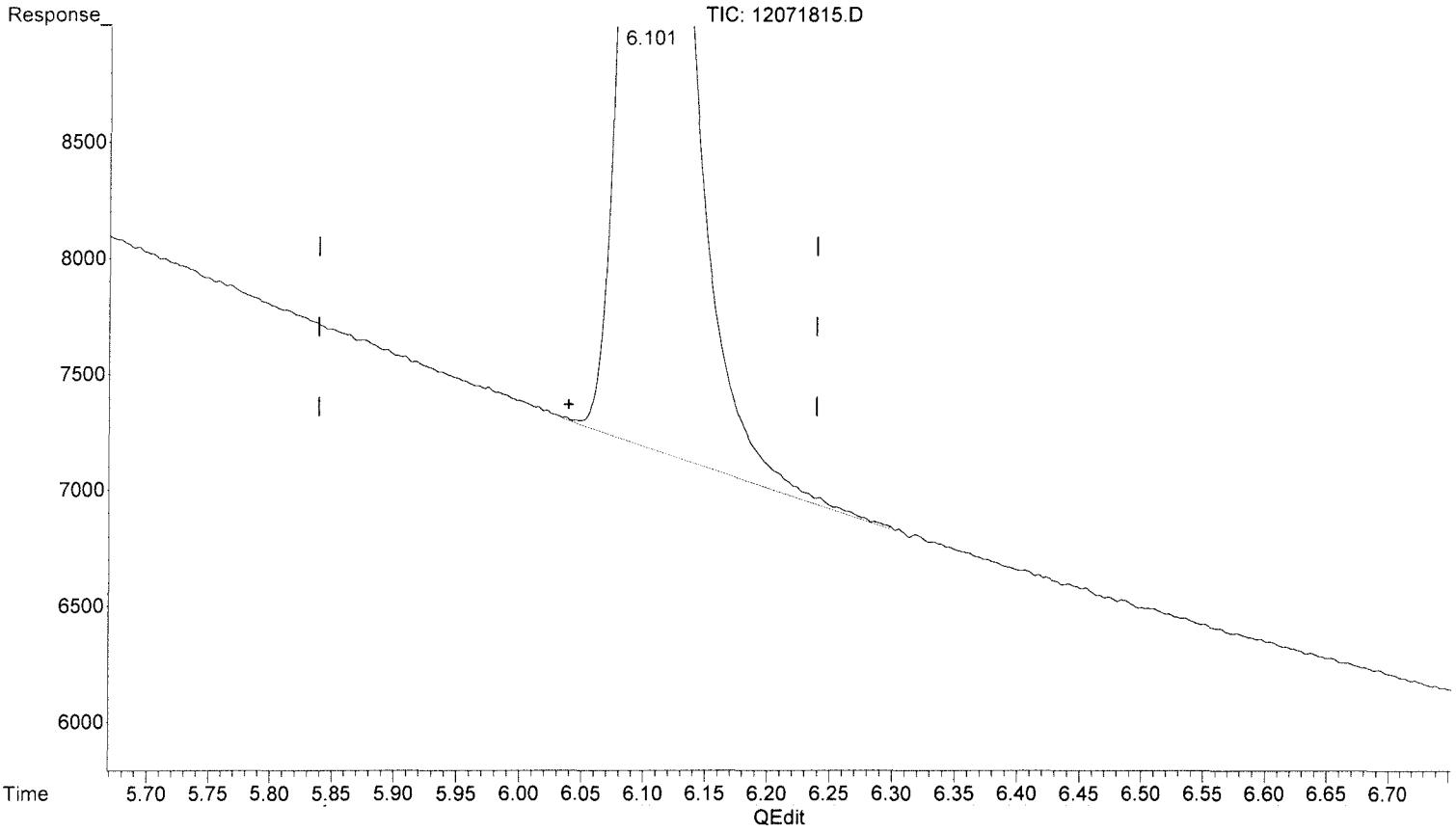
response 190161

(+) = Expected Retention Time

Data Path : J:\GC10\DATA\RSK_FID\2018_12\07\
Data File : 12071815.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 07-Dec-2018, 15:16:21
Operator : MR
Sample : tcd lcsd s32-10081801
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Dec 07 16:24:55 2018
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



(4) Carbon dioxide

6.101min 849.681 ppm m

response 199445

MK 12/7/18
BLC

LM 12/10/18

(+) = Expected Retention Time

Response Factor Report HP5890

Method Path : I:\GC10\METHODS\
Method File : RS082817_CO2.M
Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
Last Update : Tue Aug 29 16:13:13 2017
Response Via : Initial Calibration

Calibration Files
1 =08291715.D 2 =08291716.D 3 =08291717.D
4 =08291719.D 5 =08291720.D 6 =08291721.D

	Compound	1	2	3	4	5	6	Avg		%RSD
1)	Oxygen/Argon	4.760						4.760	E6	0.00
2)	Carbon monoxide	2.775		1.066	0.043	0.033	0.027	0.657	E6	170.12
3)	Methane (TCD)							9.457		0.00
4)	Carbon dioxide	2.717	2.193	2.338	2.272	2.265	2.298	2.347	E2	7.99

Signal #2 Calibration Files
1 =08291715.D 2 =08291716.D 3 =08291717.D
4 =08291719.D 5 =08291720.D 6 =08291721.D

	Compound	1	2	3	4	5	6	Avg		%RSD
6)	Methane (FID)	1.253	1.160	1.005	0.927	0.848	0.848	0.945	E4	15.85
7)	Ethylene	1.677	1.605	1.900	1.749	1.597	1.579	1.684	E4	7.30
8)	Ethane	1.769	1.631	1.866	1.767	1.639	1.667	1.723	E4	5.40
9)	Propylene	2.402	2.309	2.767	2.551	2.331	2.333	2.449	E4	7.32
10)	Propane	2.906	2.737	2.817	2.639	2.410	2.420	2.655	E4	7.75
11)	Isobutylene							0.000		-1.00
12)	Isobutane							0.000		-1.00
13)	n-Butane							0.000		-1.00

(#) = Out of Range ### Number of calibration levels exceeded format ###

RS082817_CO2.M Wed Aug 30 13:24:19 2017

Compounds -- Compound #4 -- Carbon dioxide

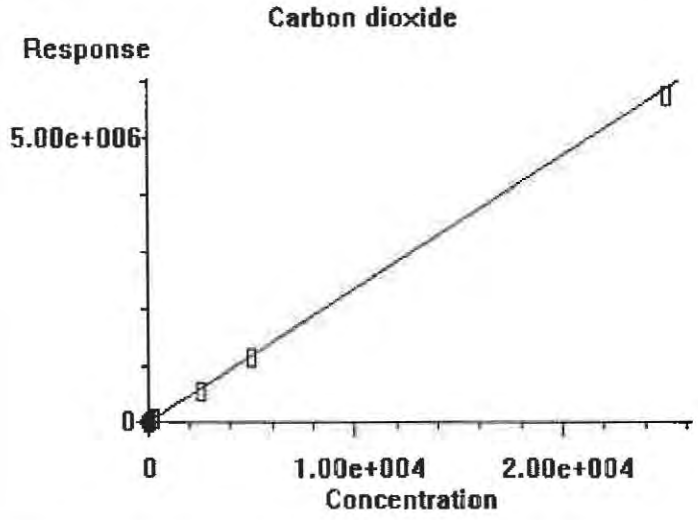
Search by: Ret Time | Name | Index | Find Compound

Compound Database
External Standard Compoun
- Oxygen/Argon
- Carbon monoxide
- Methane (TCD)
- Carbon dioxide
- Signal #2
- Methane (FID)
- Ethylene
- Ethane
- Propylene
- Propane
- Isobutylene
- Isobutane
- n-Butane

Identification | Calibration | User-Defined | Advanced | Reporting

Lvl ID	Concentration	Response
1	25.000000	6793.665186
2	100.000000	21932.418000
3	250.000000	58460.642510
4	2500.000000	568043.388750
5	5000.000000	1132363.215937
6	25000.000000	5744294.891563
7	25000.000000	
8	25000.000000	
9	2000.000000	
10	30000.000000	

Lvl ID	Concentration	Response



0.000e+000	Quadratic term
2.347e+002	Linear term
0.000e+000	Constant term
7.987%	RF Rel Std Dev

OK | Cancel | Help | Print Calibration Curve | Copy Calibration Curve

Calibration Status Report HP5890

Method Path : I:\GC10\METHODS\
Method File : RS082817_CO2.M
Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
Last Update : Tue Aug 29 16:13:13 2017
Response Via : Initial Calibration

#	ID	Conc	ISTD Conc	Path\File
1	1	0	0	J:\GC10\DATA\RSK_FID\2017_08\29\08291715.D
2	2	0	0	J:\GC10\DATA\RSK_FID\2017_08\29\08291716.D
3	3	3	0	J:\GC10\DATA\RSK_FID\2017_08\29\08291717.D
4	4	10	0	J:\GC10\DATA\RSK_FID\2017_08\29\08291719.D
5	5	25	0	J:\GC10\DATA\RSK_FID\2017_08\29\08291720.D
6	6	125	0	J:\GC10\DATA\RSK_FID\2017_08\29\08291721.D
7	7	5000	0	J:\GC10\DATA\RSK_FID\2017_08\24\08241708.D
8	8	25000	0	J:\GC10\DATA\RSK_FID\2017_08\24\08241709.D
9	9	2000	0	J:\GC10\DATA\RSK_FID\2017_08\24\08241710.D
10	10	30000	0	J:\GC10\DATA\RSK_FID\2017_08\24\08241711.D

#	ID	Update Time	Quant Time	Acquisition Time
1	1	Aug 29 14:21 2017	Aug 29 14:20 2017	29-Aug-2017, 14:07
2	2	Aug 29 14:52 2017	Aug 29 14:51 2017	29-Aug-2017, 14:22
3	3	Aug 29 15:04 2017	Aug 29 15:04 2017	29-Aug-2017, 14:53
4	4	Aug 29 15:36 2017	Aug 29 15:36 2017	29-Aug-2017, 15:23
5	5	Aug 29 15:57 2017	Aug 29 15:57 2017	29-Aug-2017, 15:44
6	6	Aug 29 16:13 2017	Aug 29 16:13 2017	29-Aug-2017, 16:00
7	7	Aug 25 09:05 2017	Aug 24 16:00 2017	24-Aug-2017, 15:44
8	8	Aug 25 09:06 2017	Aug 24 16:13 2017	24-Aug-2017, 16:02
9	9	Aug 25 09:06 2017	Aug 24 16:31 2017	24-Aug-2017, 16:16
10	10	Aug 25 09:07 2017	Aug 24 16:42 2017	24-Aug-2017, 16:33

RS082817_CO2.M Wed Aug 30 13:24:30 2017

Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291715.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 14:07
Operator : MC
Sample : 25ppm s32-08291701 0.25ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 14:20:06 2017
Quant Method : I:\GC10\METHODS\RS082417.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Fri Aug 25 09:19:14 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

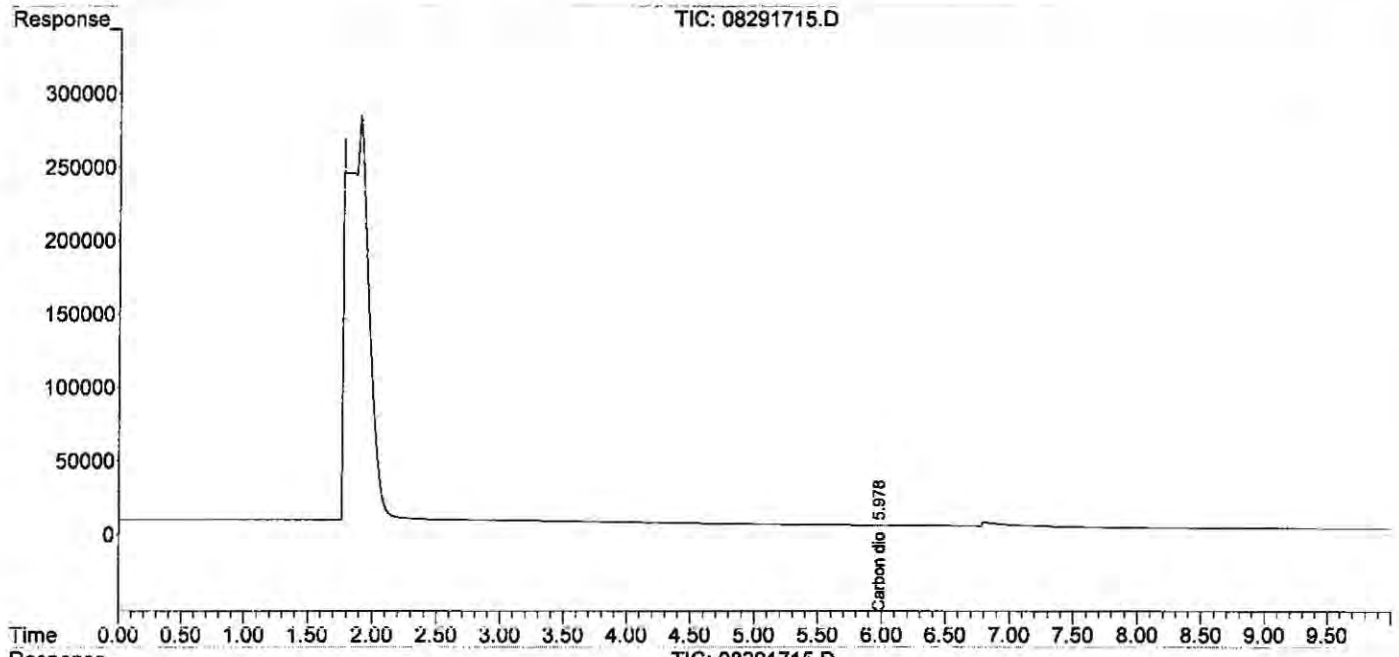
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	0.000	0	N.D.	ppm	d
2)	Carbon monoxide	1.776	277465	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	
4)	Carbon dioxide	5.978	6794	27.870	ppm	m
6)	Methane (FID)	0.000	0	N.D.	ppm	d
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

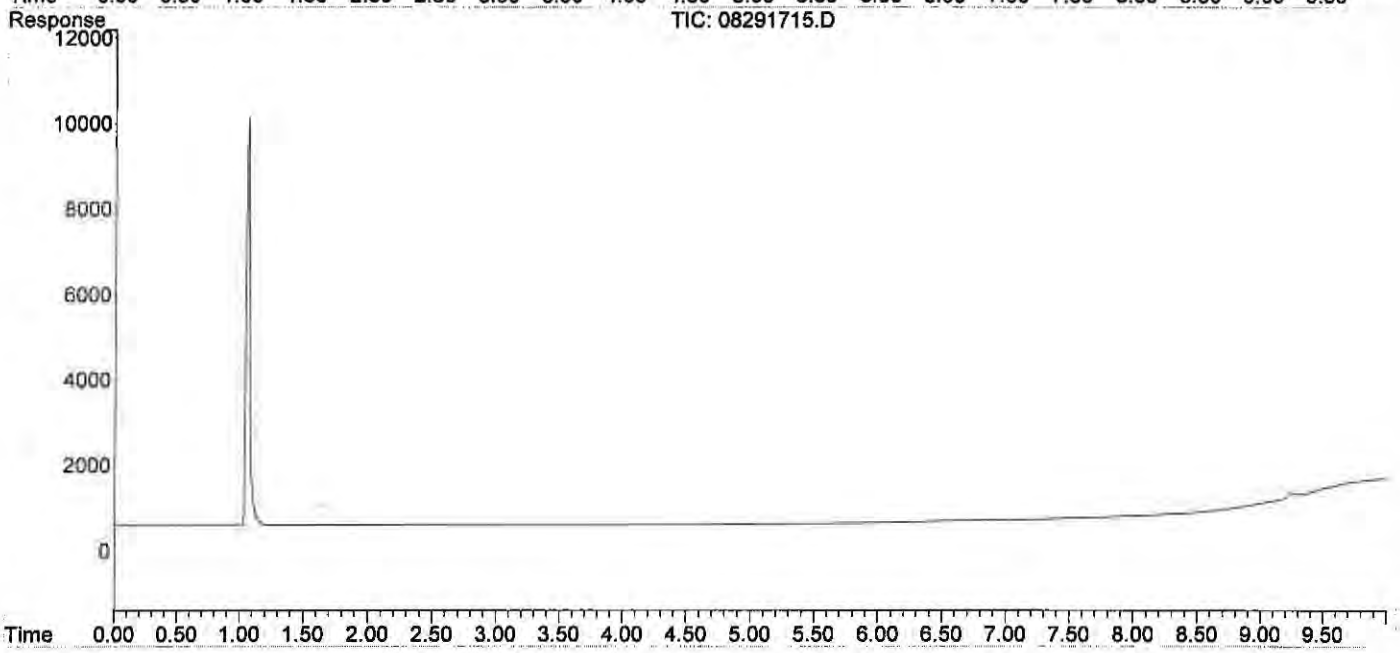
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291715.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 14:07
Operator : MC
Sample : 25ppm s32-08291701 0.25ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 14:20:06 2017
Quant Method : I:\GC10\METHODS\RS082417.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Fri Aug 25 09:19:14 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



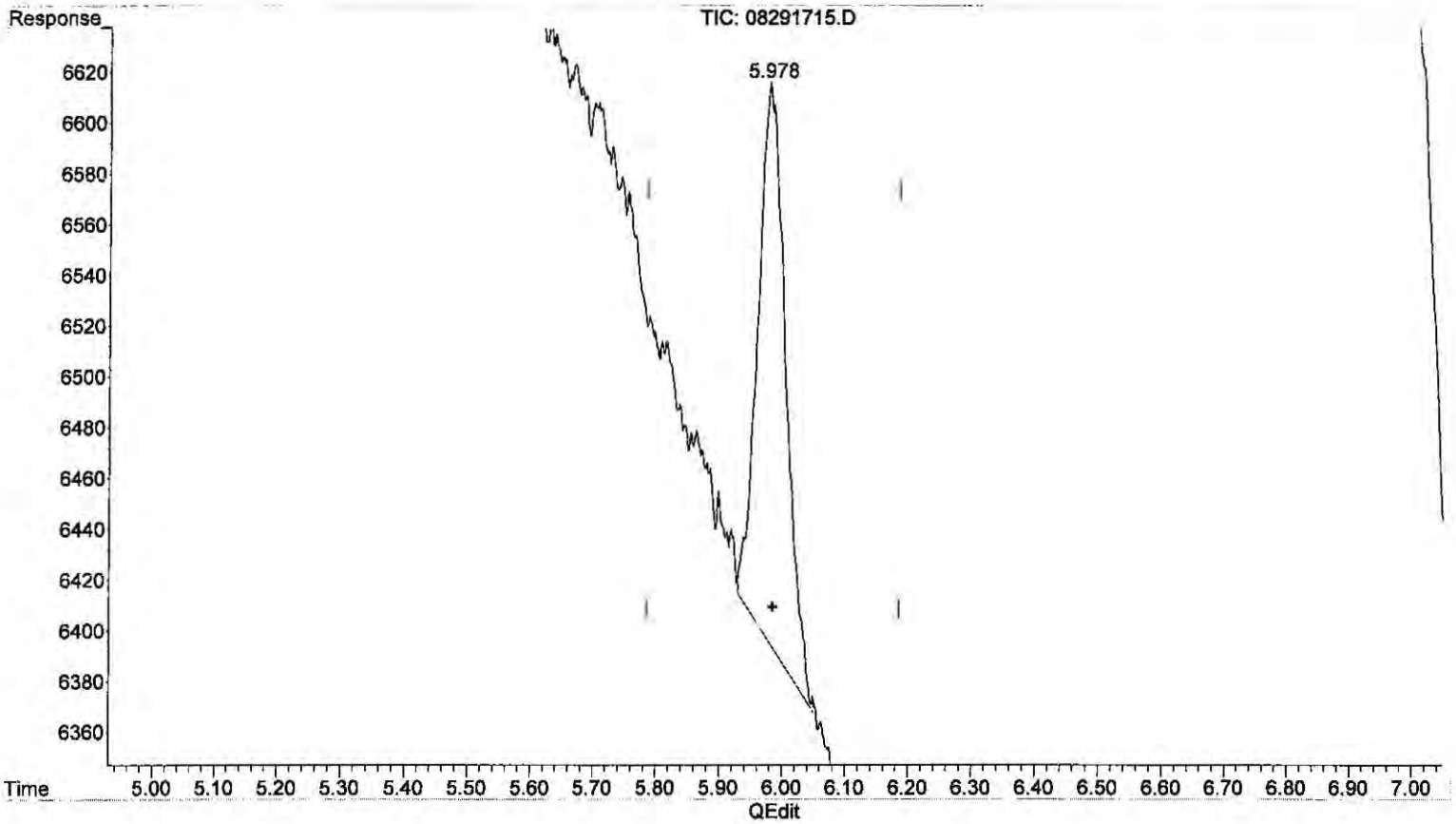


Quantitation Report (Qedit)

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291715.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 14:07
Operator : MC
Sample : 25ppm s32-08291701 0.25ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 14:20:06 2017
Quant Method : I:\GC10\METHODS\RS082417.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Fri Aug 25 09:19:14 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



(4) Carbon dioxide
5.978min 27.870 ppm m
response 6794

(+) = Expected Retention Time
RS082817_CO2.M Wed Aug 30 13:17:47 2017

Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291716.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 14:22
Operator : MC
Sample : 100ppm s32-08291702 0.2ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 14:51:38 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 14:21:08 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	1.790	-598962	N.D.	ppm	
2)	Carbon monoxide	0.000	0	N.D.	ppm	d
3)	Methane (TCD)	0.000	0	N.D.	ppm	
4)	Carbon dioxide	5.978	21932	87.858	ppm	
6)	Methane (FID)	0.000	0	N.D.	ppm	d
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

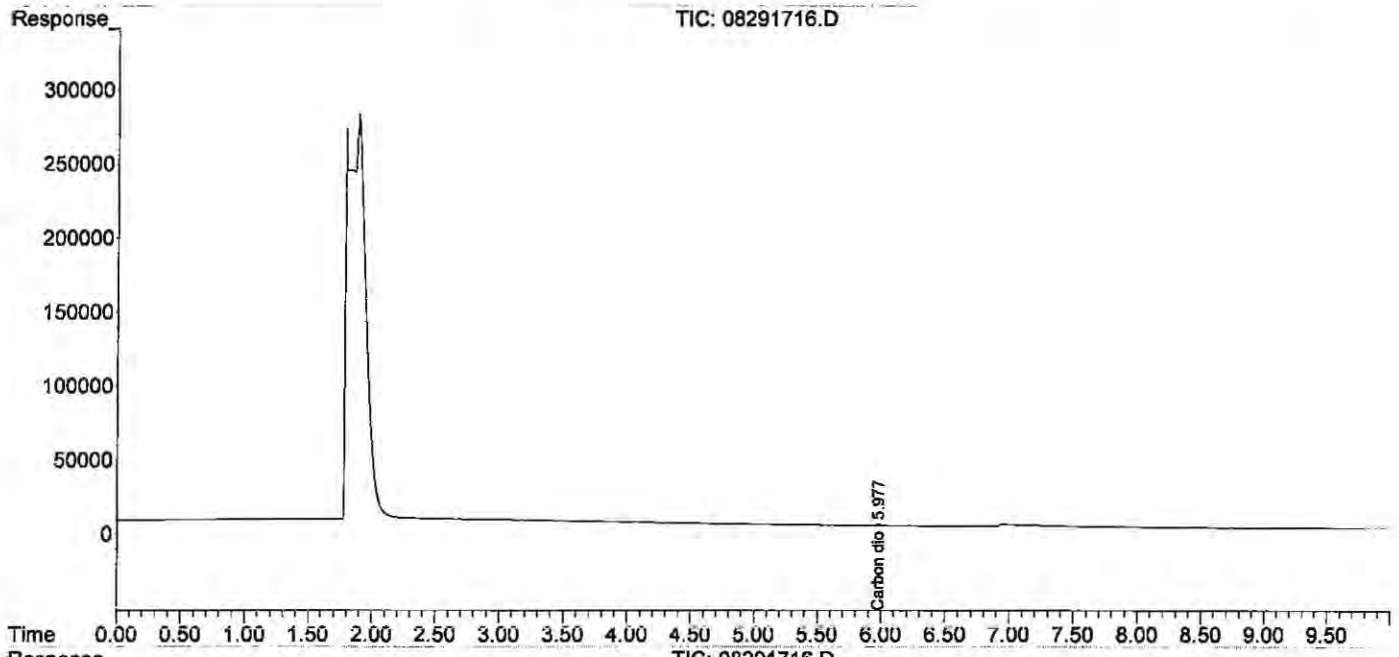
(f)=RT Delta > 1/2 Window (m)=manual int.

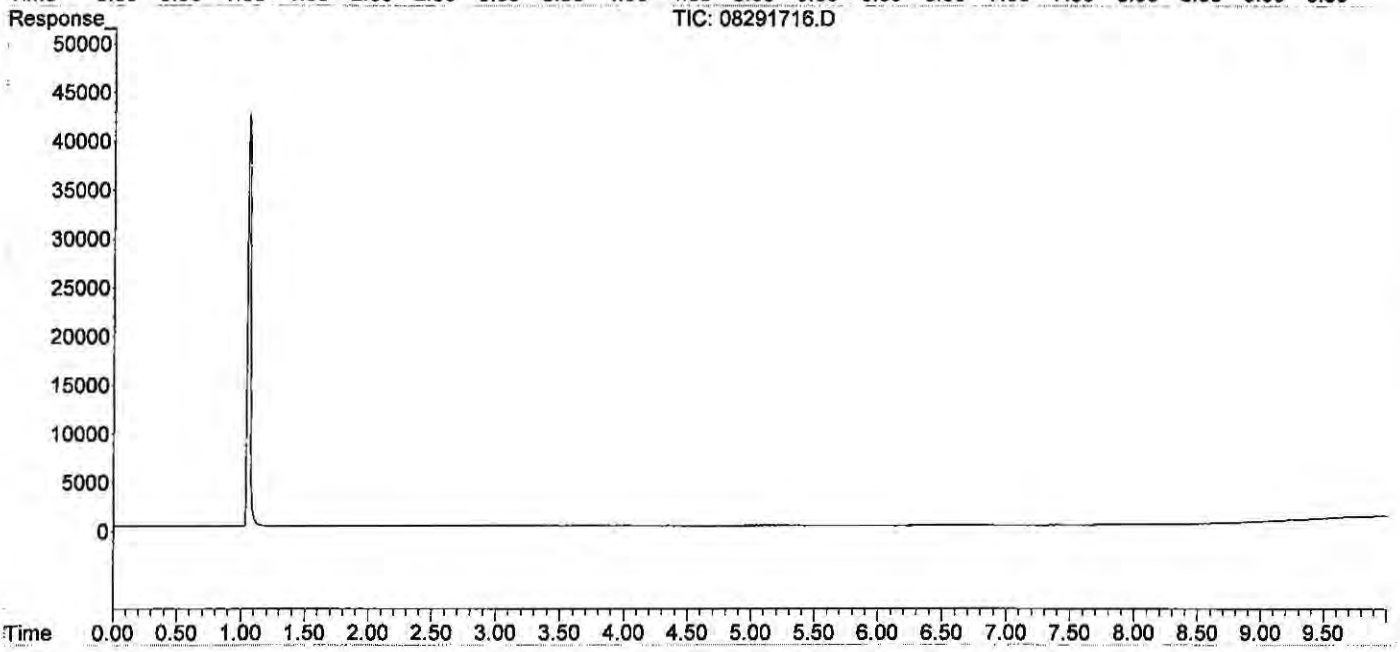
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291716.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 14:22
Operator : MC
Sample : 100ppm s32-08291702 0.2ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 14:51:38 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 14:21:08 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291717.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 14:53
Operator : MC
Sample : 250ppm s32-08291702 0.5ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 15:03:42 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 14:52:06 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	1.920f	-30716454	N.D.	ppm	
2)	Carbon monoxide	0.000	0	N.D.	ppm	d
3)	Methane (TCD)	0.000	0	N.D.	ppm	d
4)	Carbon dioxide	5.970	58461	240.204	ppm	m
6)	Methane (FID)	0.000	0	N.D.	ppm	d
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

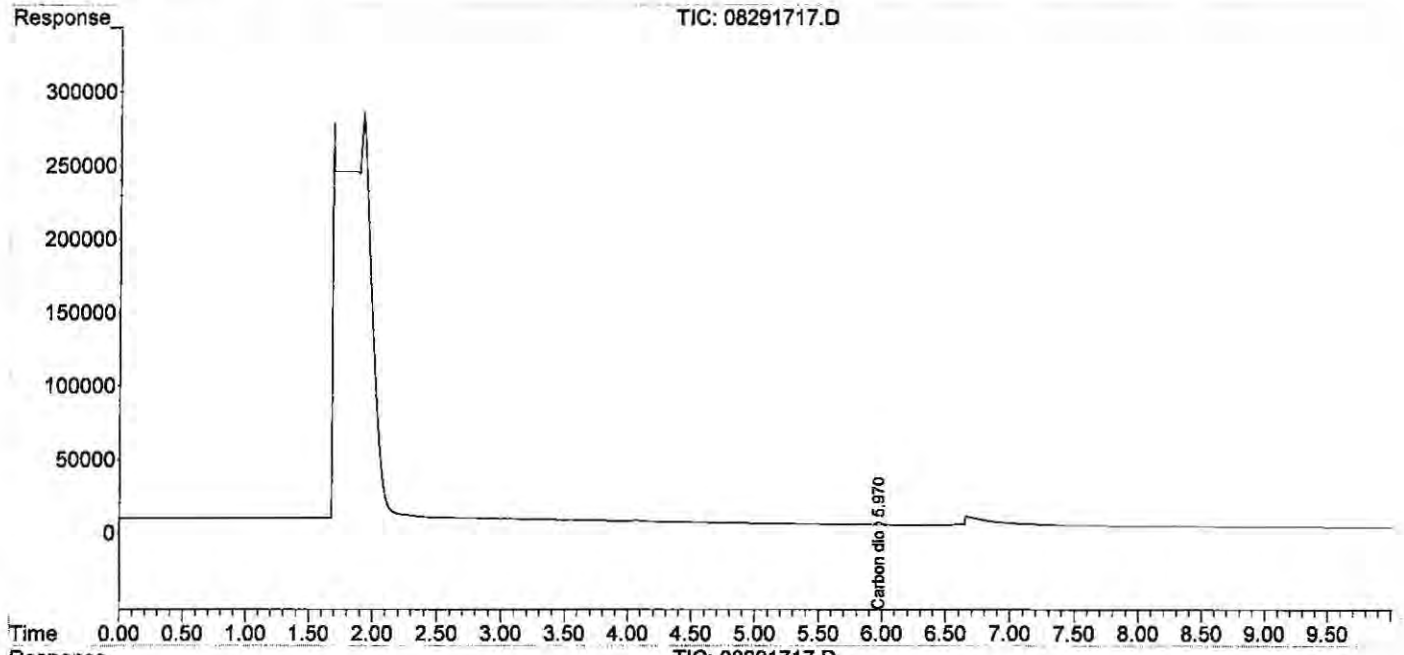
(f)=RT Delta > 1/2 Window (m)=manual int.

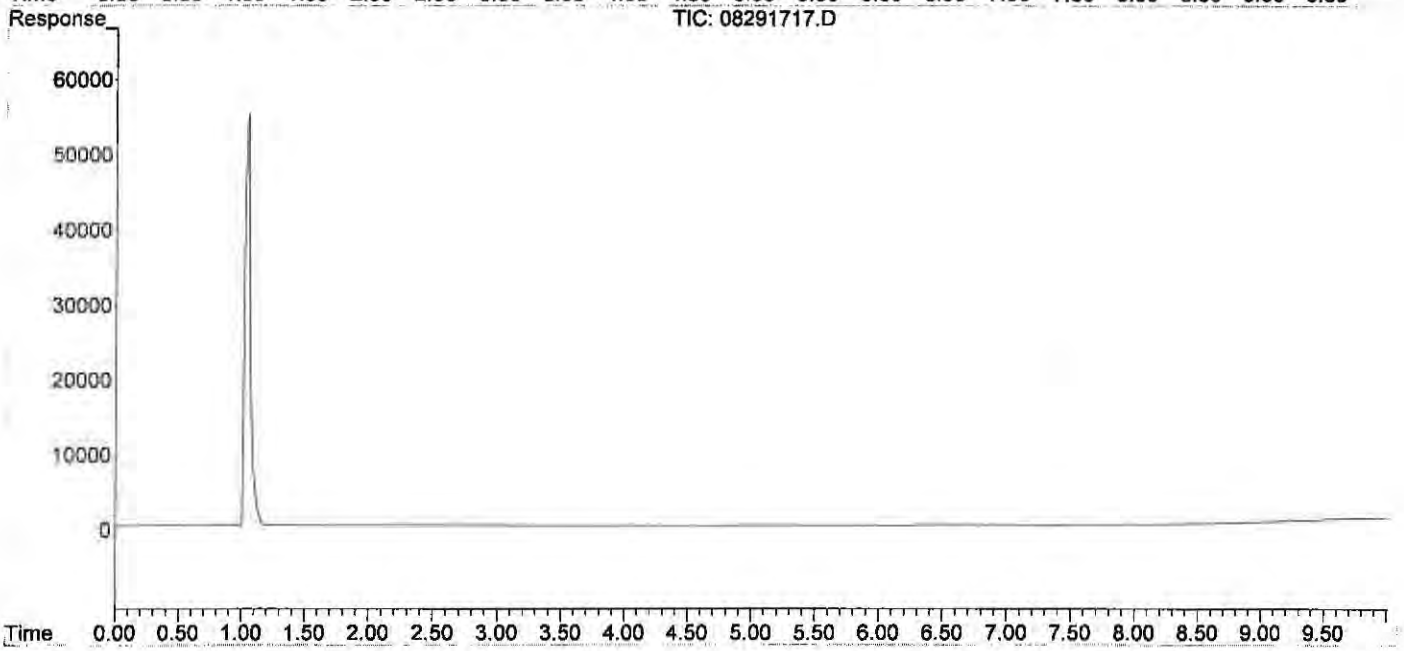
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291717.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 14:53
Operator : MC
Sample : 250ppm s32-08291702 0.5ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 15:03:42 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 14:52:06 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



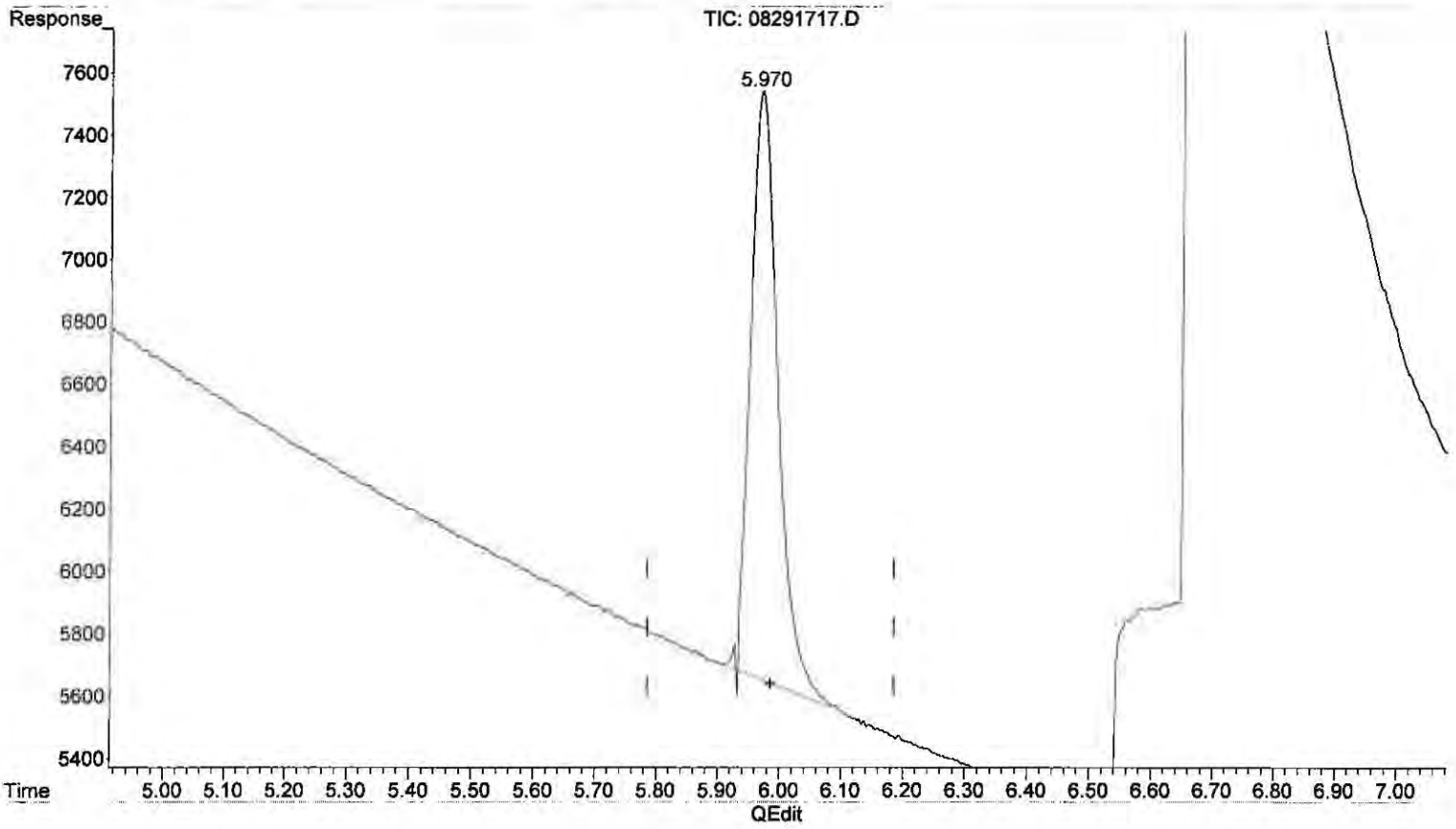


Quantitation Report (Qedit)

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291717.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 14:53
Operator : MC
Sample : 250ppm s32-08291702 0.5ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 15:03:42 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 14:52:06 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



(4) Carbon dioxide

5.970min 240.204 ppm m

response 58461

(+) = Expected Retention Time

RS082817_CO2.M Wed Aug 30 13:19:20 2017

Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291719.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 15:23
Operator : MC
Sample : 2500ppm s32-08231701 50ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 15:35:50 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 15:04:14 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

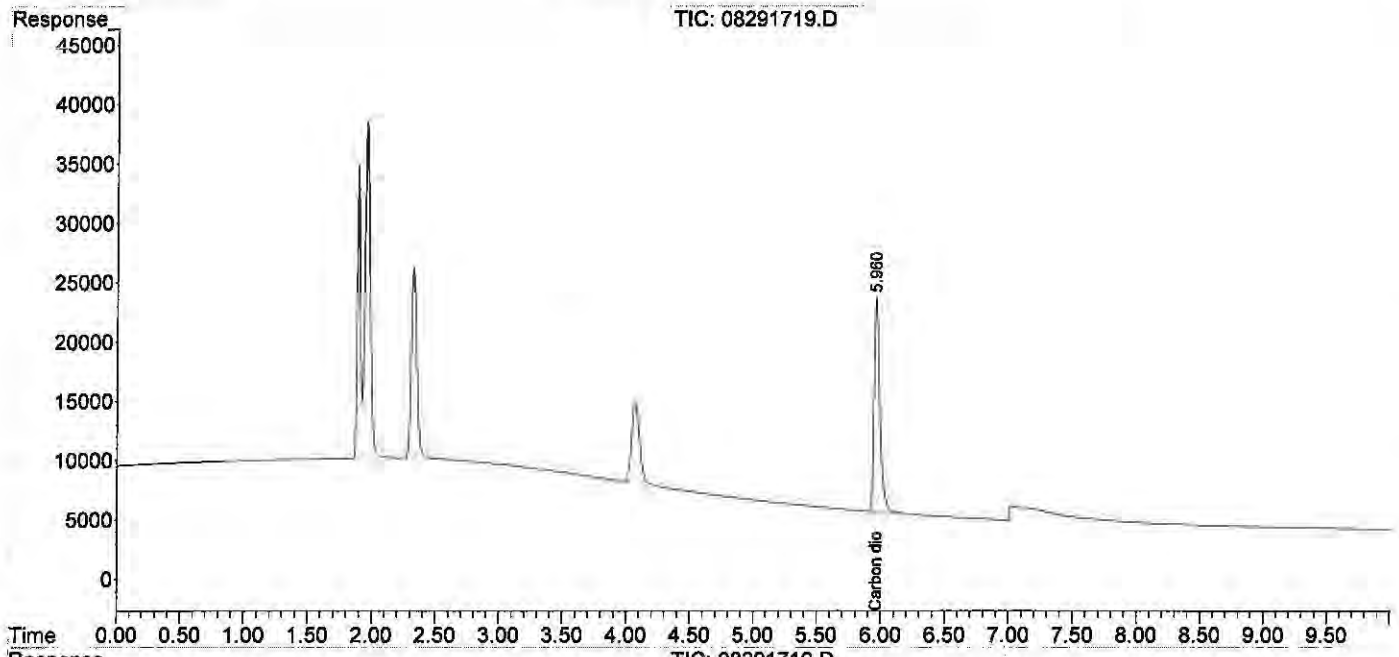
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	0.000	0	N.D.	ppm	d
2)	Carbon monoxide	1.891	425113	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	d
4)	Carbon dioxide	5.962	568043	2369.673	ppm	
6)	Methane (FID)	0.000	0	N.D.	ppm	d
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

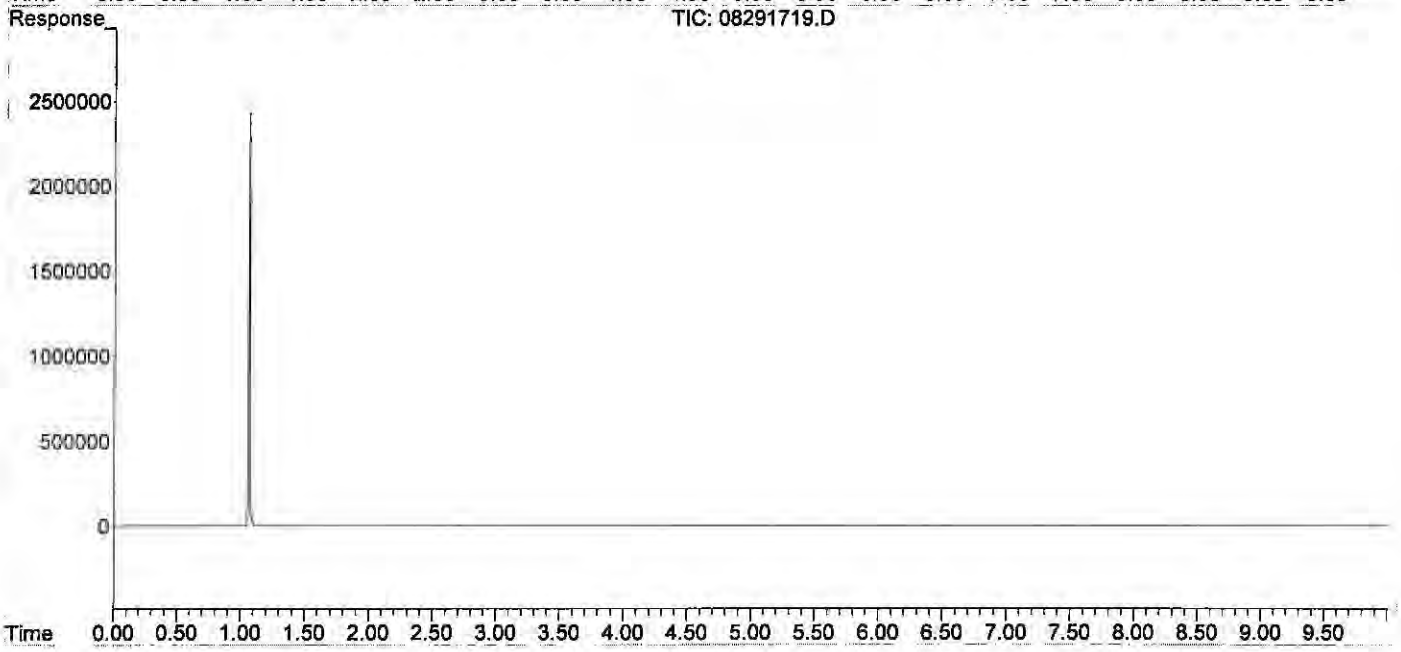
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291719.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 15:23
Operator : MC
Sample : 2500ppm s32-08231701 50ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 15:35:50 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 15:04:14 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291720.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 15:44
Operator : MC
Sample : 5000ppm s32-08231701 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 15:57:17 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 15:36:14 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

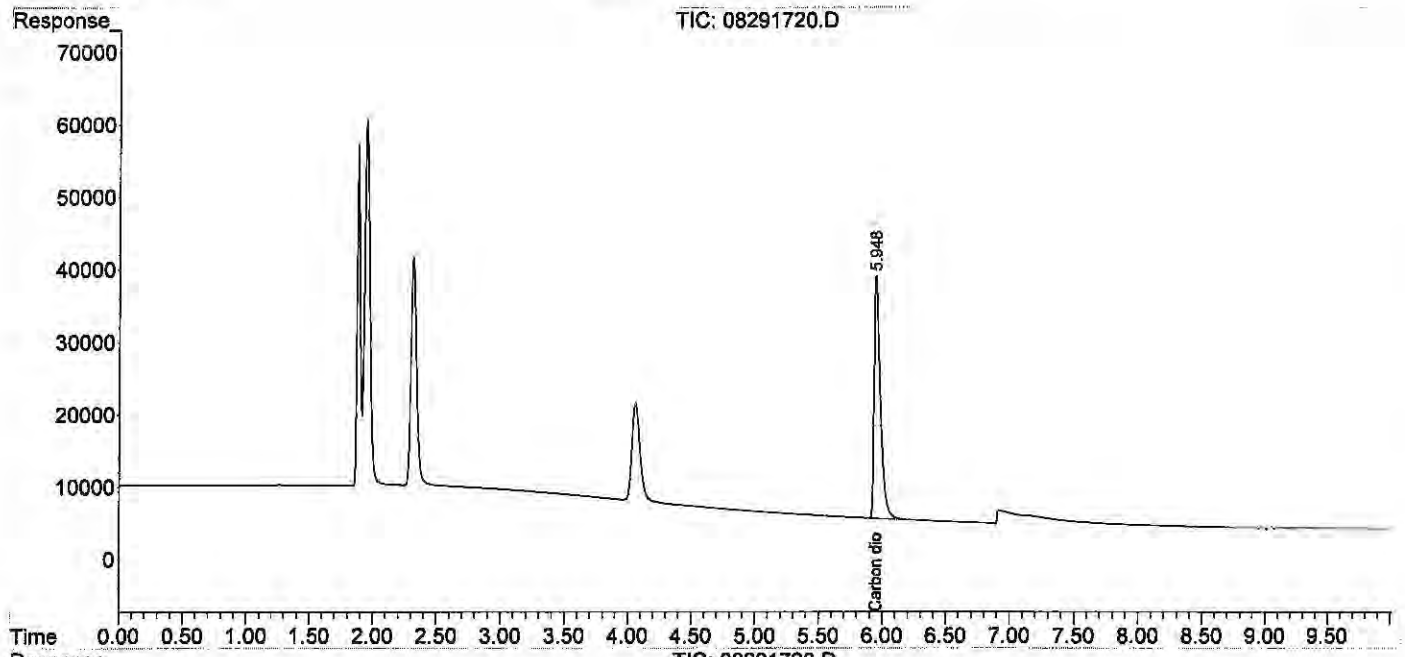
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	0.000	0	N.D.	ppm	d
2)	Carbon monoxide	1.880	819221	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	d
4)	Carbon dioxide	5.948	1132363	4753.126	ppm	
6)	Methane (FID)	0.000	0	N.D.	ppm	d
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

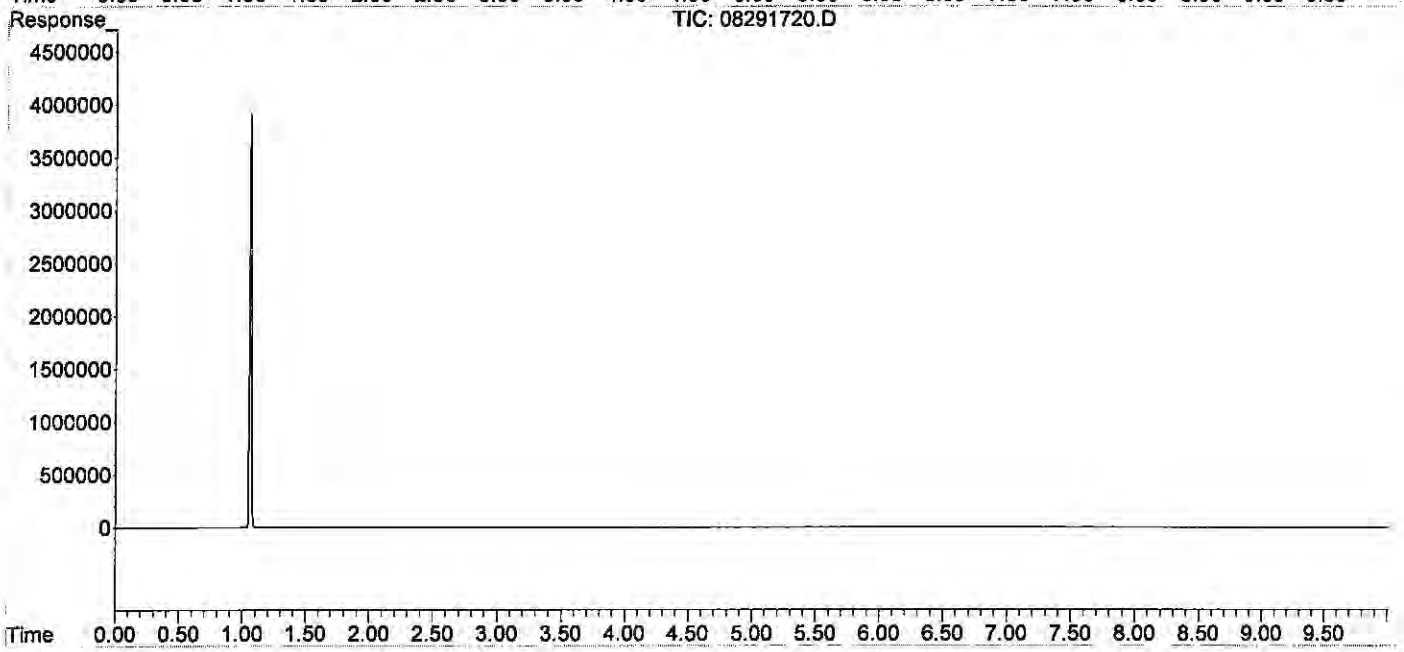
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291720.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 15:44
Operator : MC
Sample : 5000ppm s32-08231701 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 15:57:17 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 15:36:14 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291721.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 16:00
Operator : MC
Sample : 25000ppm s32-08231701 0.5ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 16:12:53 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 15:57:37 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	0.000	0	N.D.	ppm	d
2)	Carbon monoxide	1.827	3325463	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	d
4)	Carbon dioxide	5.879f	5744295	24443.288	ppm	
6)	Methane (FID)	0.000	0	N.D.	ppm	d
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

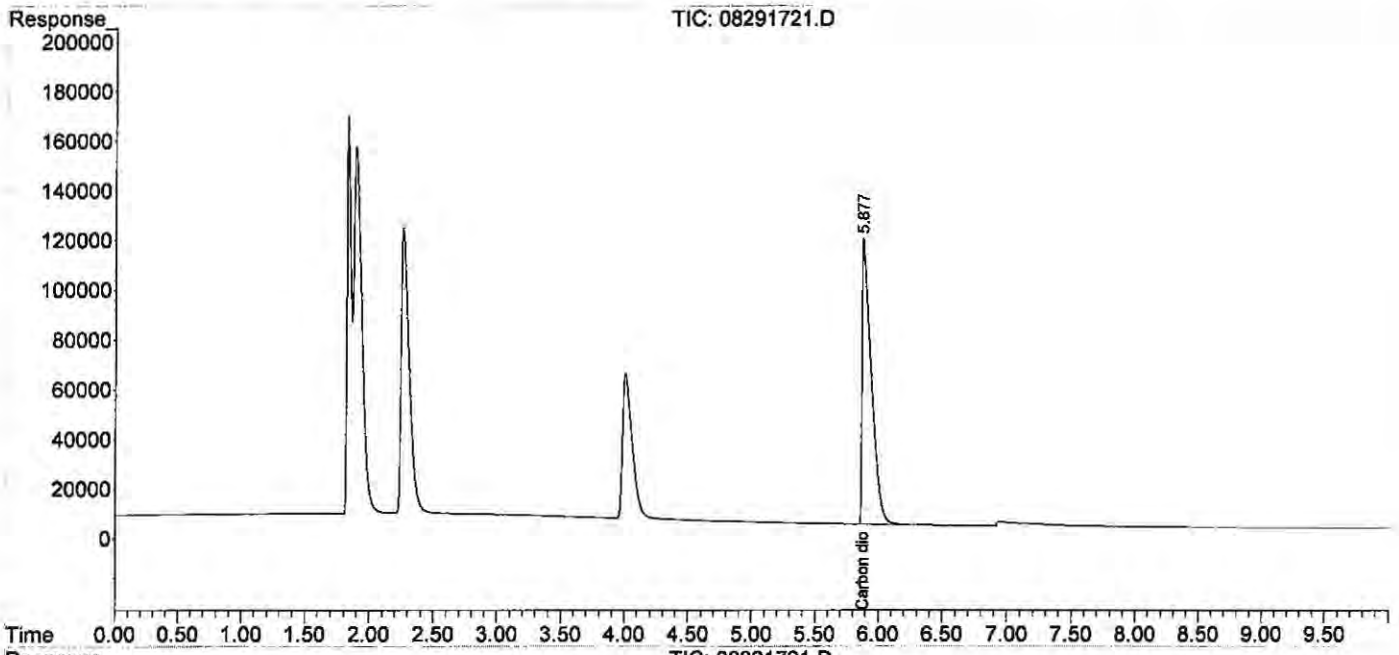
(f)=RT Delta > 1/2 Window (m)=manual int.

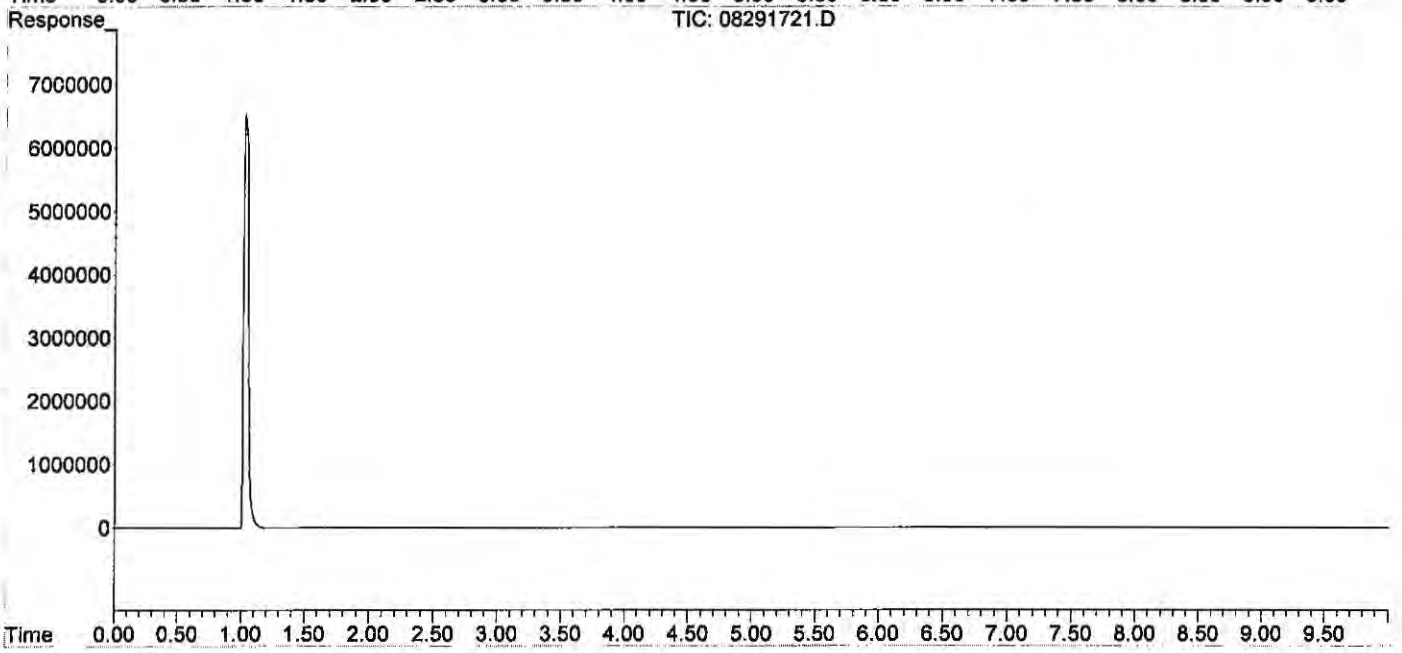
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291721.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 16:00
Operator : MC
Sample : 25000ppm s32-08231701 0.5ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 16:12:53 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 15:57:37 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291723.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 16:35
Operator : MC
Sample : icv s30-07071701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 16:54:07 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.886	536422	0.113	ppm
2)	Carbon monoxide	1.886	536422	N.D.	ppm
3)	Methane (TCD)	4.059f	626500	66244.710	ppm
4)	Carbon dioxide	5.947	1163775	4957.948	ppm
6)	Methane (FID)	1.062	37290742	3947.023	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	0.000	0	N.D.	ppm
10)	Propane	0.000	0	N.D.	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

Actual %D
5000 99.16

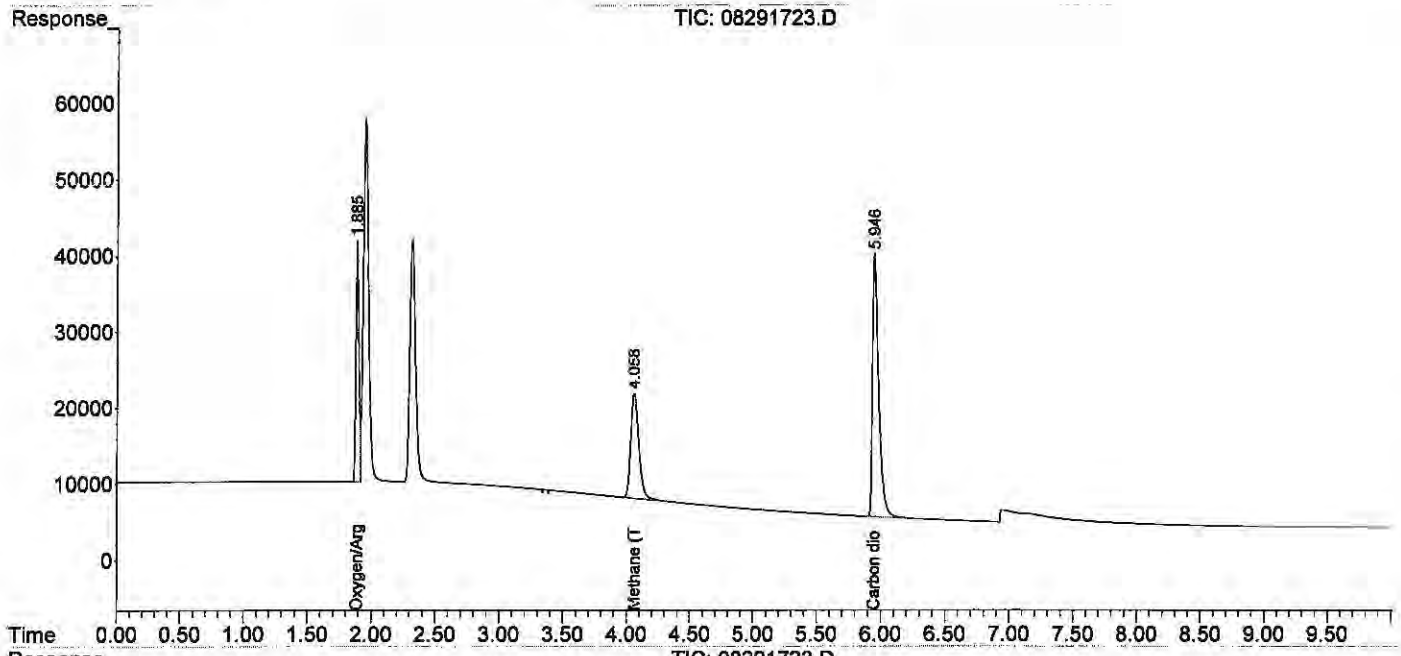
(f)=RT Delta > 1/2 Window (m)=manual int.

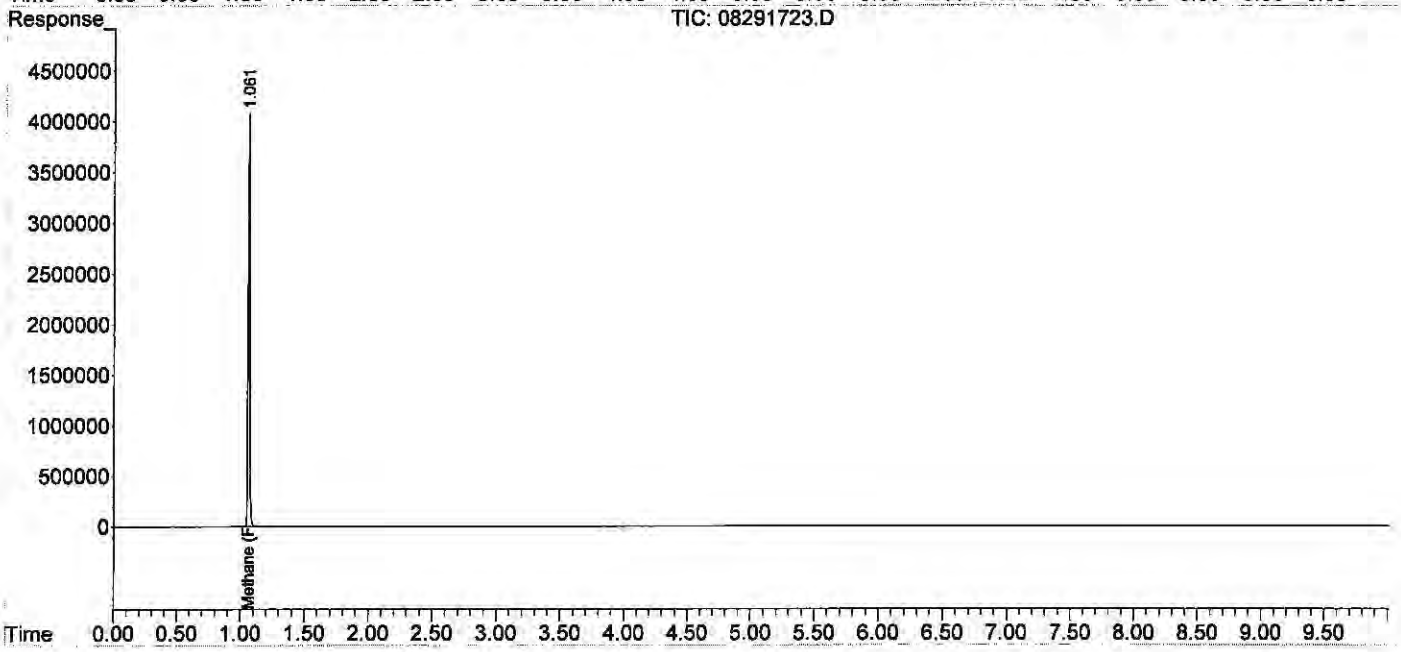
W 9/4/17

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291723.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 16:35
Operator : MC
Sample : icv s30-07071701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 16:54:07 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





ALS Environmental

Method : RSK175 Headspace Method for Dissolved Hydrocarbon in Water by FID/TCD
Client : ALS Laboratory Group | Analyst : MR | Instrument : GC#10
Service Request: P1806583 | Date Analysis : 12/07/18 | Detector : FID#10, TCD#10
Sample Vol. (ml) : 32.00 ml | Head Space Vol.(ml) : 8.00 ml | Gas Constant : 24.05684 (20°C)

HEAD SPACE RESULT (ppm)

Sample ID	Inj. Vol.	Carbon Dioxide
std s32-11091801	0.100	4912.902
ACTUAL		5000.00
%Difference		1.7%
mcs 0.1ml	0.100	8.031
rb 0.1ml	0.100	0.000
tcd lcs s32-10081801	0.100	849.928
tcd lcsd s32-10081801	0.100	849.681
P1806583-001 0.1ml	0.100	11563.45
P1806583-002 0.1ml	0.100	18998.75
P1806583-003 0.1ml	0.100	19659.98
P1806583-004 50ul	0.050	13697.26
P1806583-005 0.1ml	0.100	23594.55

FINAL HEAD SPACE RESULT (ppm)

	Carbon Dioxide
WWt.	44.10
HENRY'S CONSTANT	1.42E+03
RL	100.00
mcs 0.1ml	80.310
tcd lcs s32-10081801	8499.280
tcd lcsd s32-10081801	8496.810
P1806583-001 0.1ml	115634.45
P1806583-002 0.1ml	189987.47
P1806583-003 0.1ml	196599.84
P1806583-004 50ul	273945.18
P1806583-005 0.1ml	235945.47

std s32-11091801	4995.339
ACTUAL	5000.00
%Difference	0.1%

Data Path : J:\GC10\DATA\RSK_FID\2018_12\07\
Data File : 12071801.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 07-Dec-2018, 11:29:47
Operator : MR
Sample : std s32-11091801
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Dec 07 11:42:08 2018
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

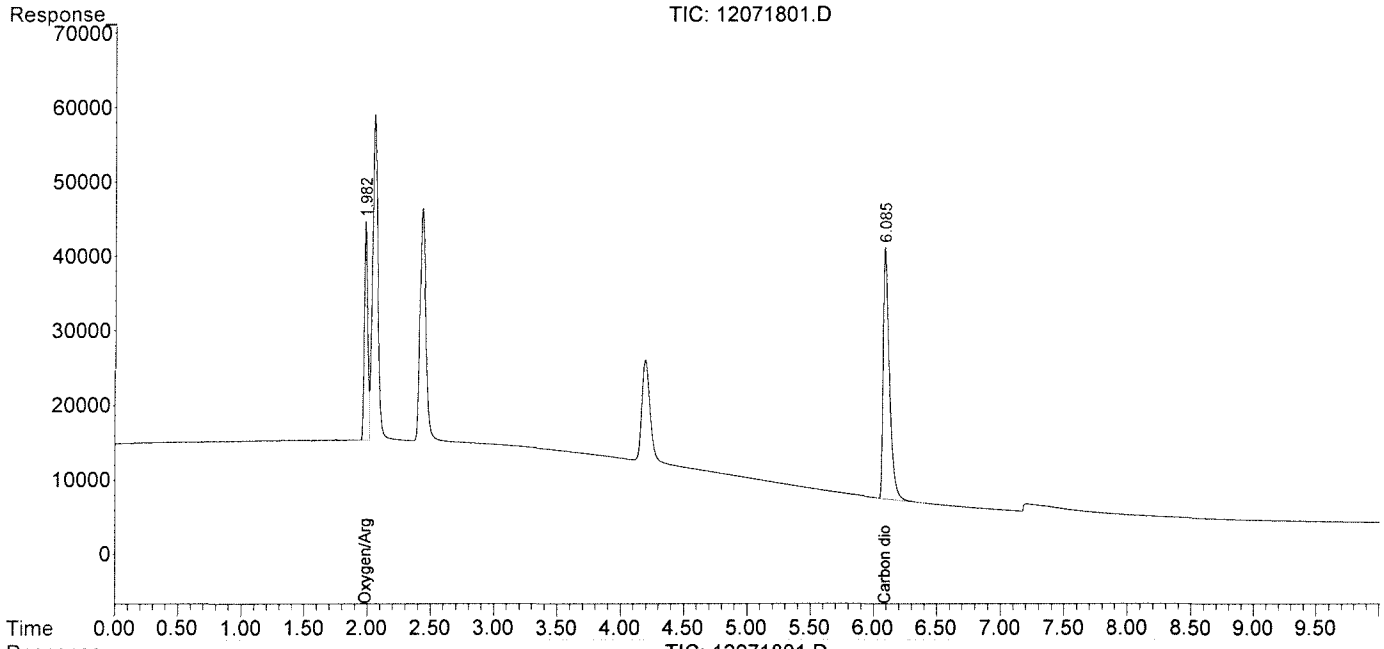
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	1.983f	522071	0.110	ppm	
2)	Carbon monoxide	1.983f	522071	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	
4)	Carbon dioxide	6.085	1153201	4912.902	ppm	m
6)	Methane (FID)	1.114	36227742	3834.510	ppm	
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

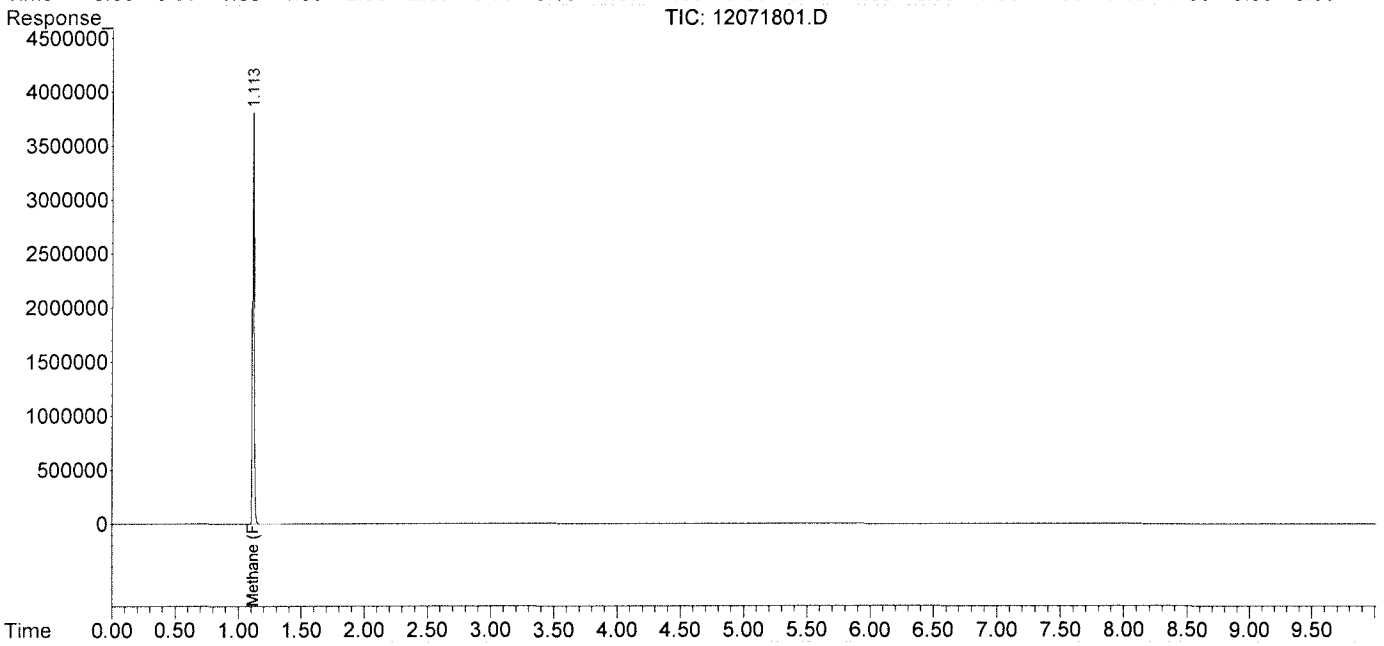
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2018_12\07\
Data File : 12071801.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 07-Dec-2018, 11:29:47
Operator : MR
Sample : std s32-11091801
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Dec 07 11:42:08 2018
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

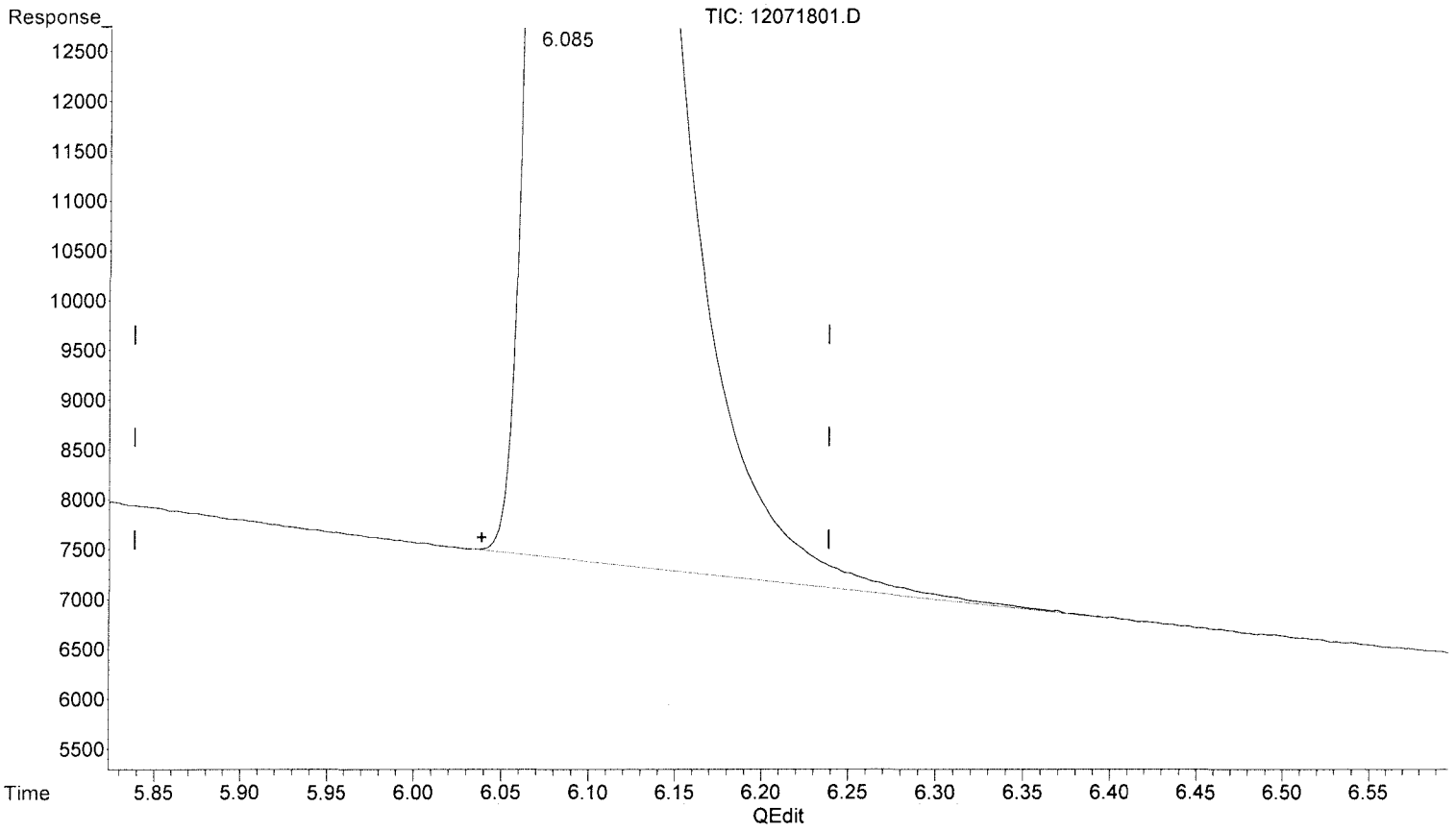




Data Path : J:\GC10\DATA\RSK_FID\2018_12\07\
Data File : 12071801.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 07-Dec-2018, 11:29:47
Operator : MR
Sample : std s32-11091801
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Dec 07 11:42:08 2018
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



(4) Carbon dioxide

6.085min 4912.902 ppm m

response 1153201

MK 12/7/18
BLC
no previous

(+) = Expected Retention Time

RS082817_CO2.M Fri Dec 07 16:35:19 2018 Page: 1

Data Path : J:\GC10\DATA\RSK_FID\2018_12\07\
Data File : 12071816.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 07-Dec-2018, 15:35:36
Operator : MR
Sample : std s32-11091801
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Dec 07 16:06:13 2018
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

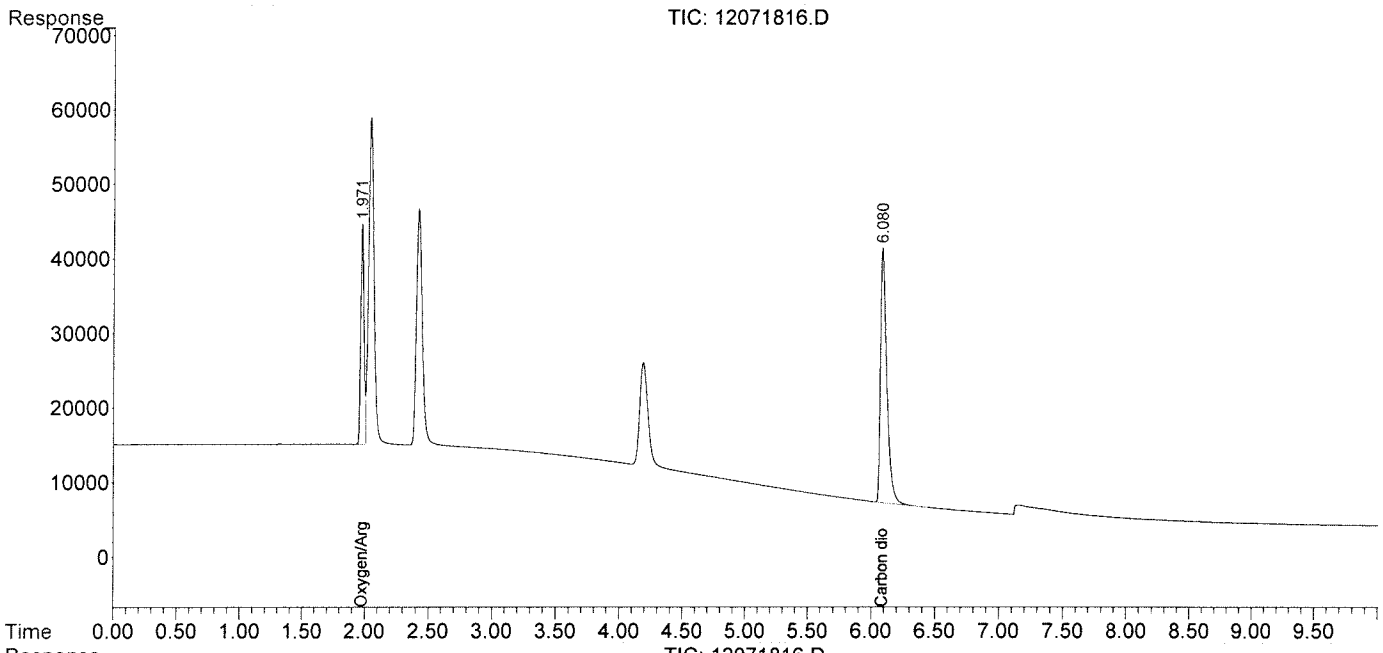
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.972f	527365	0.111	ppm
2)	Carbon monoxide	1.972f	527365	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	6.082	1172552	4995.339	ppm
6)	Methane (FID)	1.104	36158659	3827.198	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	0.000	0	N.D.	ppm
10)	Propane	0.000	0	N.D.	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

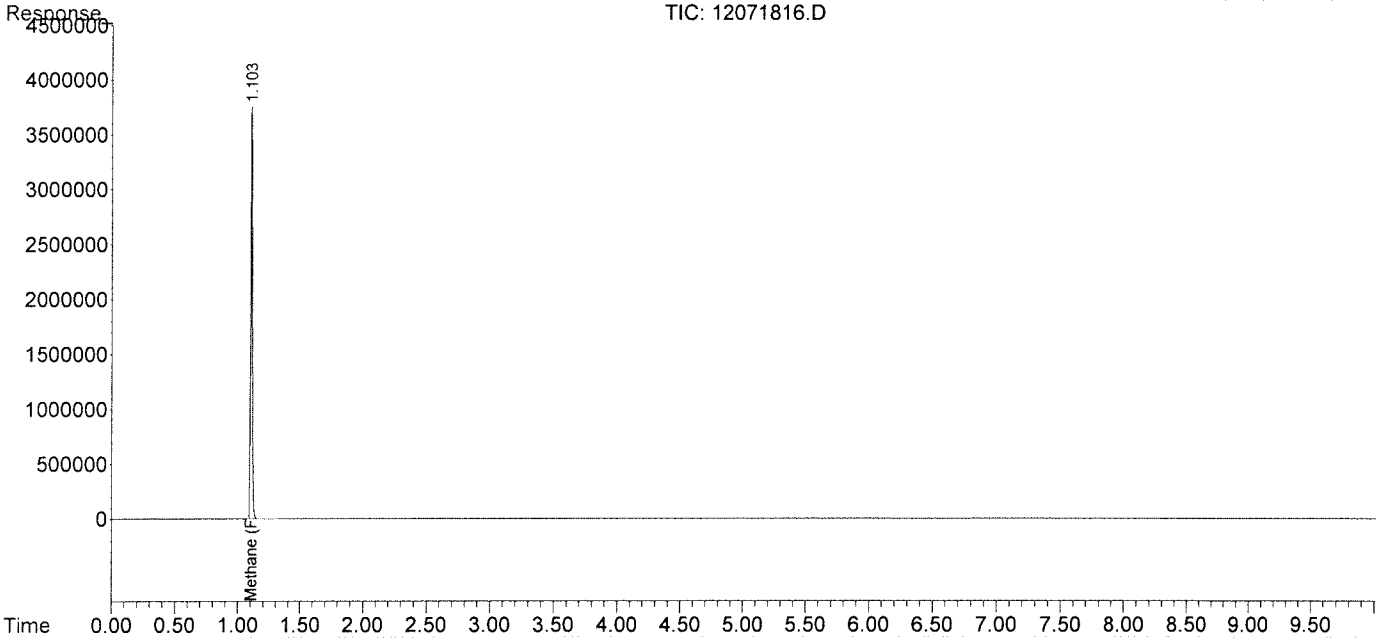
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2018_12\07\
Data File : 12071816.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 07-Dec-2018, 15:35:36
Operator : MR
Sample : std s32-11091801
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Dec 07 16:06:13 2018
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Injection Log

Directory: I:\GC10\DATA\RSK_FID\2017_08\29\

	Date/Time	File Name	Sample ID	Misc Info	Operator	Acquisition Method	Comments
1	29-Aug-17, 07:58:00	08291701.D	std s30-06161601		MC	RSKBOTH.M	Pass
2	29-Aug-17, 08:11:02	08291702.D	mb 0.5ml		MC	RSKBOTH.M	Pass
3	29-Aug-17, 08:24:13	08291703.D	4089-001 0.5ml		MC	RSKBOTH.M	
4	29-Aug-17, 08:39:29	08291704.D	4089-002 0.5ml		MC	RSKBOTH.M	
5	29-Aug-17, 08:53:38	08291705.D	4089-003 0.5ml		MC	RSKBOTH.M	
6	29-Aug-17, 09:33:52	08291706.D	4089-004 0.5ml		MC	RSKBOTH.M	
7	29-Aug-17, 09:50:51	08291707.D	4089-005 0.5ml		MC	RSKBOTH.M	
8	29-Aug-17, 10:07:54	08291708.D	4089-006 0.5ml		MC	RSKBOTH.M	
9	29-Aug-17, 10:42:34	08291709.D	4089-007 0.5ml		MC	RSKBOTH.M	
10	29-Aug-17, 11:06:01	08291710.D	4089-008 0.5ml		MC	RSKBOTH.M	
11	29-Aug-17, 11:23:53	08291711.D	4089-009 0.5ml		MC	RSKBOTH.M	
12	29-Aug-17, 11:37:17	08291712.D	lcs s30-05241604		MC	RSKBOTH.M	Pass
13	29-Aug-17, 11:50:31	08291713.D	lcs s30-05241604		MC	RSKBOTH.M	Pass
14	29-Aug-17, 12:29:45	08291714.D	std s30-06161601		MC	RSKBOTH.M	Pass
15	29-Aug-17, 14:07:01	08291715.D	25ppm s32-08291701 0.25ml		MC	RSKBOTH.M	Curve
16	29-Aug-17, 14:22:12	08291716.D	100ppm s32-08291702 0.2ml		MC	RSKBOTH.M	Curve
17	29-Aug-17, 14:53:00	08291717.D	250ppm s32-08291702 0.5ml		MC	RSKBOTH.M	Curve
18	29-Aug-17, 15:07:43	08291718.D	mls inject		MC	RSKBOTH.M	
19	29-Aug-17, 15:23:21	08291719.D	2500ppm s32-08231701 50ul		MC	RSKBOTH.M	Curve
20	29-Aug-17, 15:44:54	08291720.D	5000ppm s32-08231701 0.1ml		MC	RSKBOTH.M	Curve
21	29-Aug-17, 16:00:09	08291721.D	25000ppm s32-08231701 0.5ml		MC	RSKBOTH.M	Curve
22	29-Aug-17, 16:15:43	08291722.D	mb 0.1ml		MC	RSKBOTH.M	Pass
23	29-Aug-17, 16:35:37	08291723.D	lcv s30-07071701		MC	RSKBOTH.M	Pass

Injection Log

Directory: I:\GC10\DATA\RSK_TCD\2018_12\07\

	Date/Time	File Name	Sample ID	Misc Info	Operator	Acquisition Method	Comments
1	07-Dec-18, 11:29:47	12071801.D	std s32-11091801		MR	RSKBOTH.M	pass
2	07-Dec-18, 11:44:59	12071802.D	rb 0.1ml		MR	RSKBOTH.M	pass
3	07-Dec-18, 11:59:04	12071803.D	mcs 0.1ml		MR	RSKBOTH.M	pass
4	07-Dec-18, 12:12:51	12071804.D	XXtcd lcs		MR	RSKBOTH.M	
5	07-Dec-18, 12:53:12	12071805.D	tcd lcs s32-10081801		MR	RSKBOTH.M	pass
6	07-Dec-18, 13:07:01	12071806.D	P1806583-001 0.1ml		MR	RSKBOTH.M	
7	07-Dec-18, 13:21:35	12071807.D	P1806583-002 0.1ml		MR	RSKBOTH.M	
8	07-Dec-18, 13:37:07	12071808.D	P1806583-003 0.1ml		MR	RSKBOTH.M	
9	07-Dec-18, 13:52:35	12071809.D	XXP1806583-004 0.1		MR	RSKBOTH.M	
10	07-Dec-18, 14:08:45	12071810.D	P1806583-005 0.1ml		MR	RSKBOTH.M	
11	07-Dec-18, 14:22:08	12071811.D	P1806587-001 0.1ml		MR	RSKBOTH.M	
12	07-Dec-18, 14:35:39	12071812.D	P1806587-002 0.1ml		MR	RSKBOTH.M	
13	07-Dec-18, 14:48:58	12071813.D	P1806587-003 0.1ml		MR	RSKBOTH.M	
14	07-Dec-18, 15:02:35	12071814.D	P1806583-004 50ul		MR	RSKBOTH.M	
15	07-Dec-18, 15:16:21	12071815.D	tcd lcsd s32-10081801		MR	RSKBOTH.M	pass
16	07-Dec-18, 15:35:36	12071816.D	std s32-11091801		MR	RSKBOTH.M	pass

Data Path : J:\GC10\DATA\RSK_FID\2018_12\04\
Data File : 12041806.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 04-Dec-2018, 10:45:03
Operator : MR
Sample : P1806583-001 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Dec 05 10:34:36 2018
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

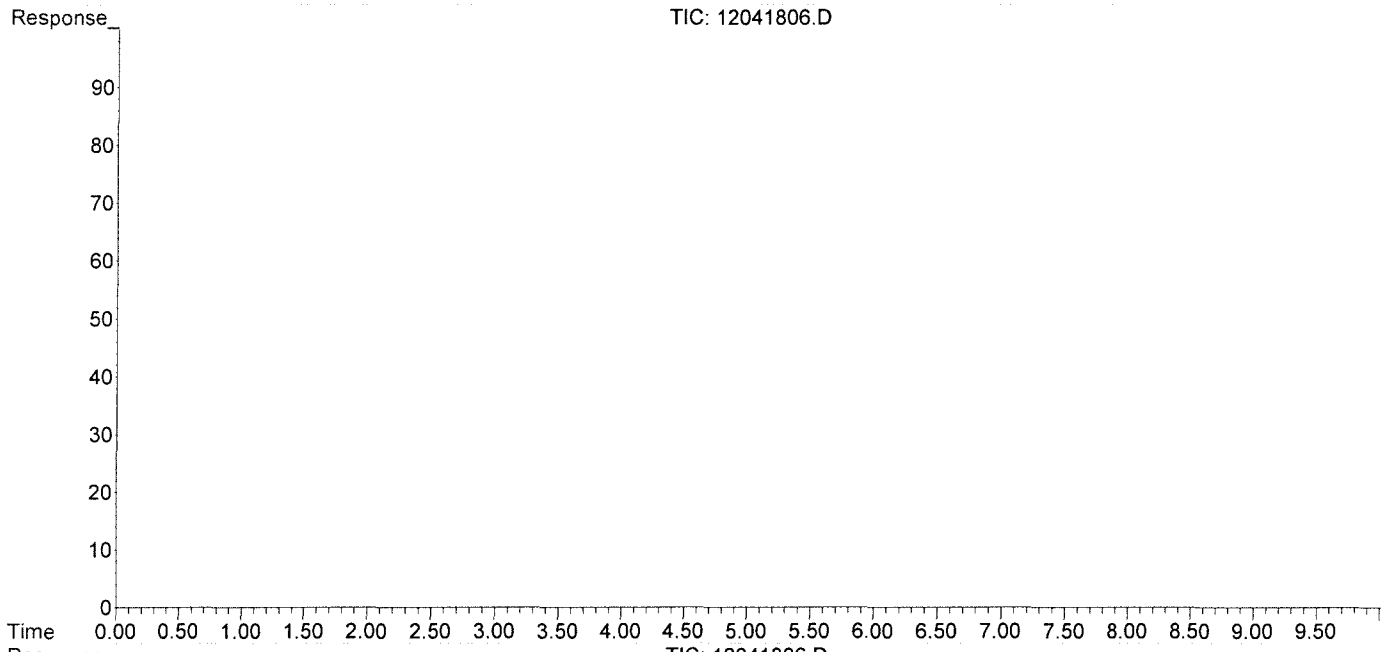
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	0.000	0	N.D.	ppm
2)	Carbon monoxide	0.000	0	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.120	72187	7.958	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	0.000	0	N.D.	ppm
10)	Propane	0.000	0	N.D.	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

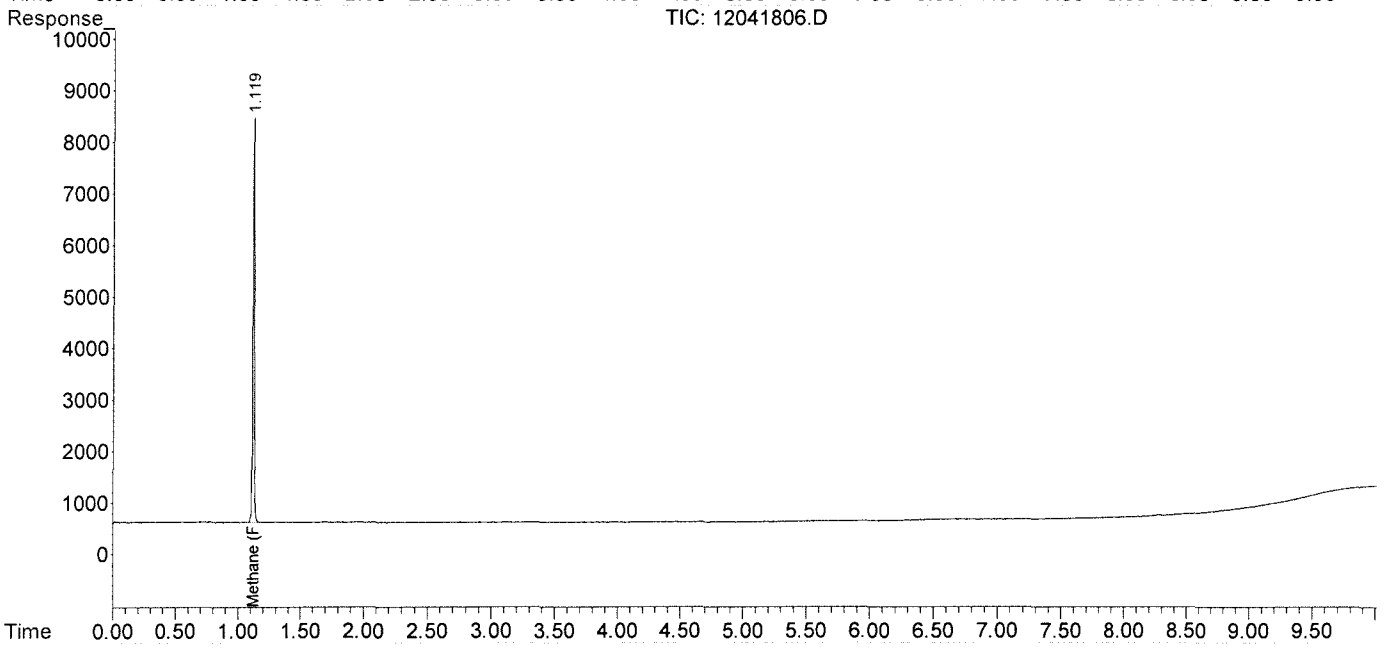
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2018_12\04\
Data File : 12041806.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 04-Dec-2018, 10:45:03
Operator : MR
Sample : P1806583-001 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Dec 05 10:34:36 2018
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_FID\2018_12\04\
Data File : 12041807.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 04-Dec-2018, 11:00:26
Operator : MR
Sample : P1806583-002 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Dec 05 10:45:21 2018
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

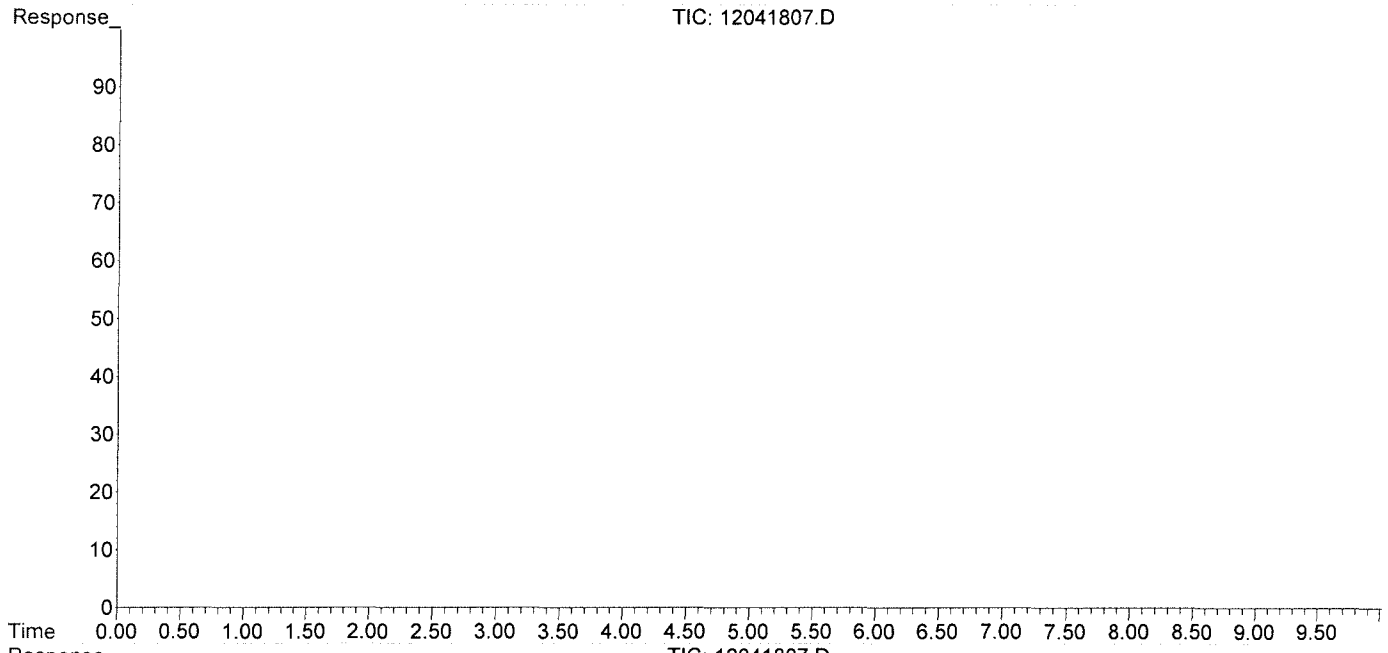
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	0.000	0	N.D.	ppm
2)	Carbon monoxide	0.000	0	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.122	78109	8.611	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	0.000	0	N.D.	ppm
10)	Propane	0.000	0	N.D.	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

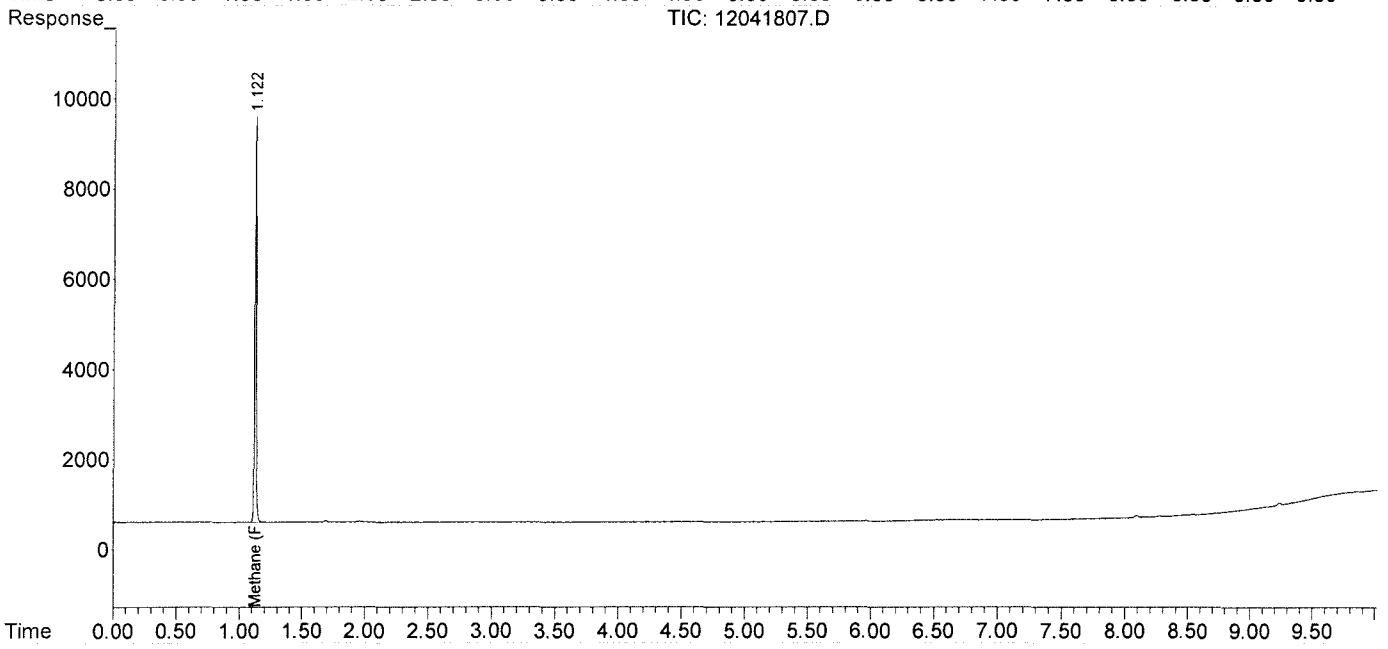
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2018_12\04\
Data File : 12041807.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 04-Dec-2018, 11:00:26
Operator : MR
Sample : P1806583-002 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Dec 05 10:45:21 2018
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_FID\2018_12\04\
Data File : 12041808.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 04-Dec-2018, 11:13:52
Operator : MR
Sample : P1806583-003 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Dec 05 10:46:11 2018
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

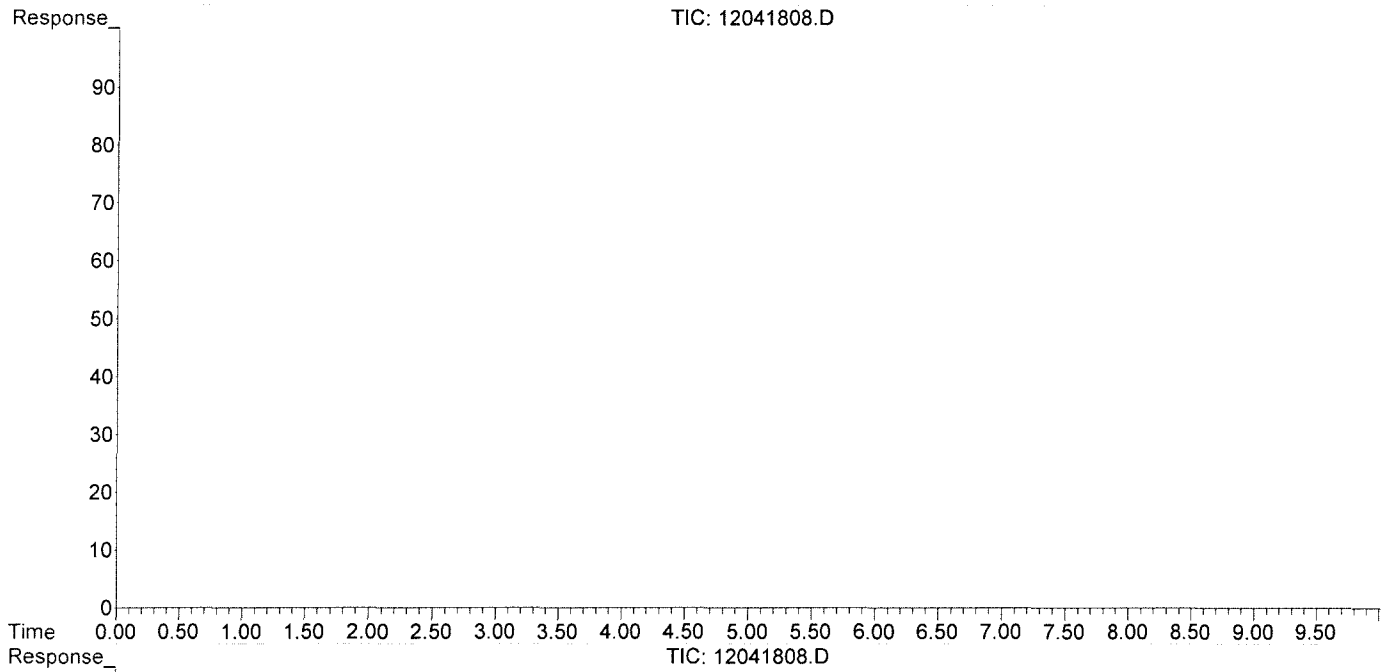
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	0.000	0	N.D.	ppm
2)	Carbon monoxide	0.000	0	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.122	60339	6.652	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	0.000	0	N.D.	ppm
10)	Propane	0.000	0	N.D.	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

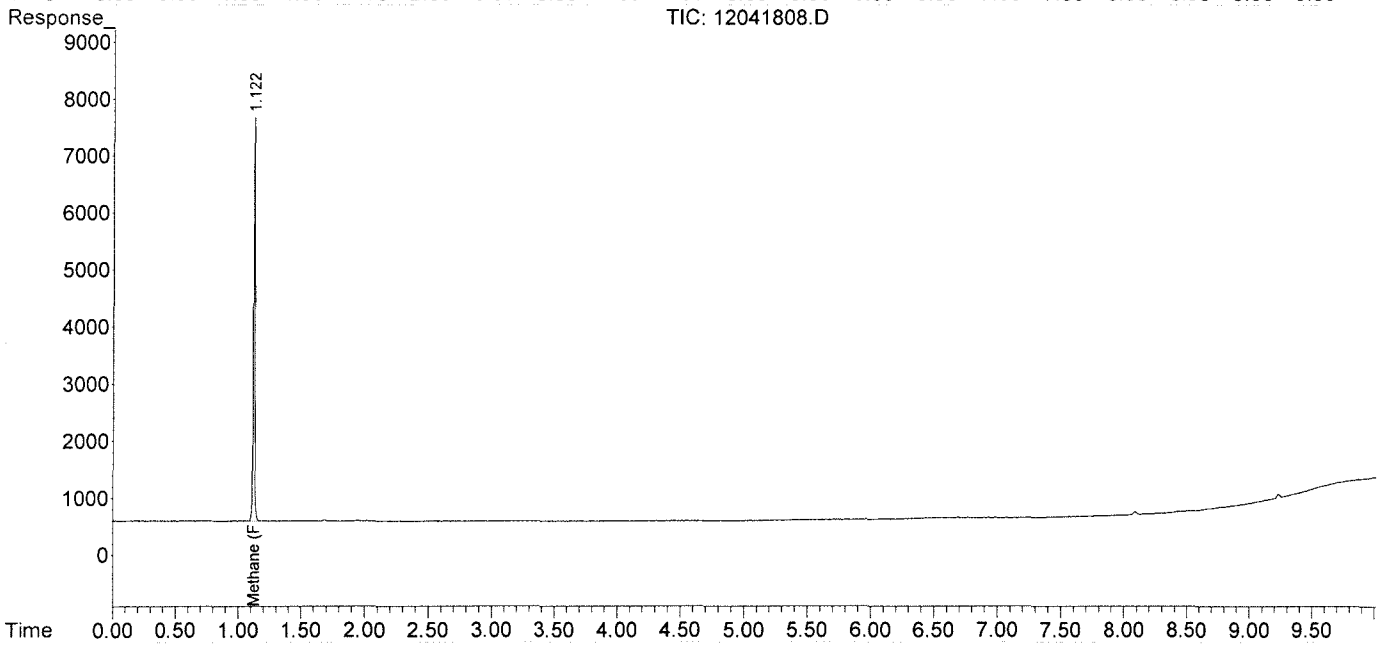
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2018_12\04\
Data File : 12041808.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 04-Dec-2018, 11:13:52
Operator : MR
Sample : P1806583-003 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Dec 05 10:46:11 2018
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_FID\2018_12\04\
Data File : 12041809.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 04-Dec-2018, 11:27:08
Operator : MR
Sample : P1806583-004 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Dec 05 10:46:35 2018
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

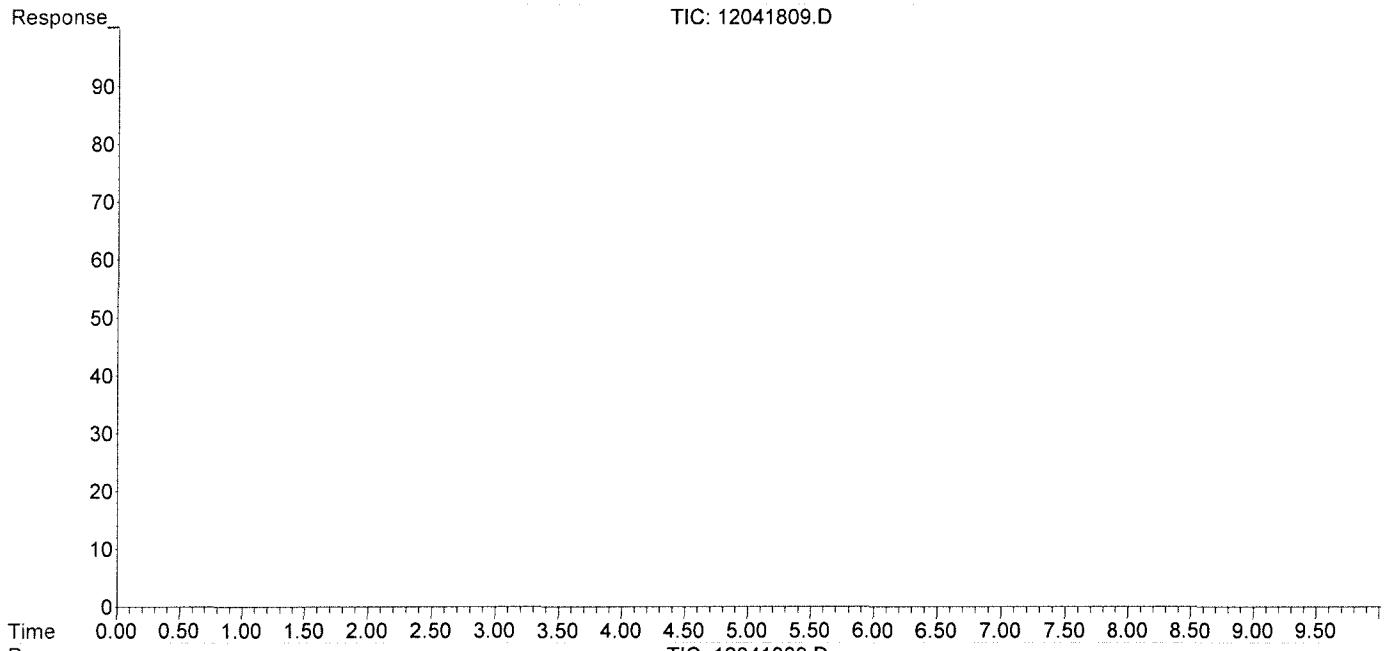
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	0.000	0	N.D.	ppm
2)	Carbon monoxide	0.000	0	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.122	1996	0.220	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	0.000	0	N.D.	ppm
10)	Propane	0.000	0	N.D.	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

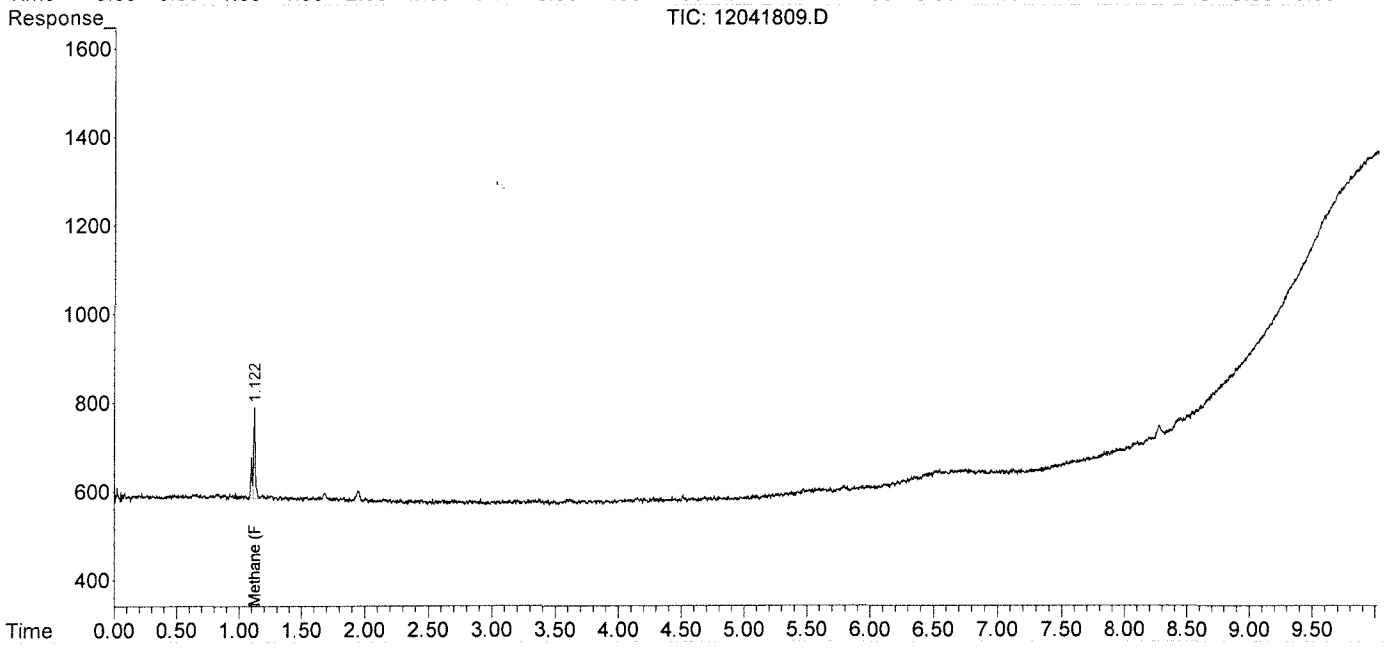
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2018_12\04\
Data File : 12041809.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 04-Dec-2018, 11:27:08
Operator : MR
Sample : P1806583-004 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Dec 05 10:46:35 2018
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_FID\2018_12\04\
Data File : 12041810.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 04-Dec-2018, 11:56:26
Operator : MR
Sample : P1806583-005 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Dec 05 10:46:59 2018
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

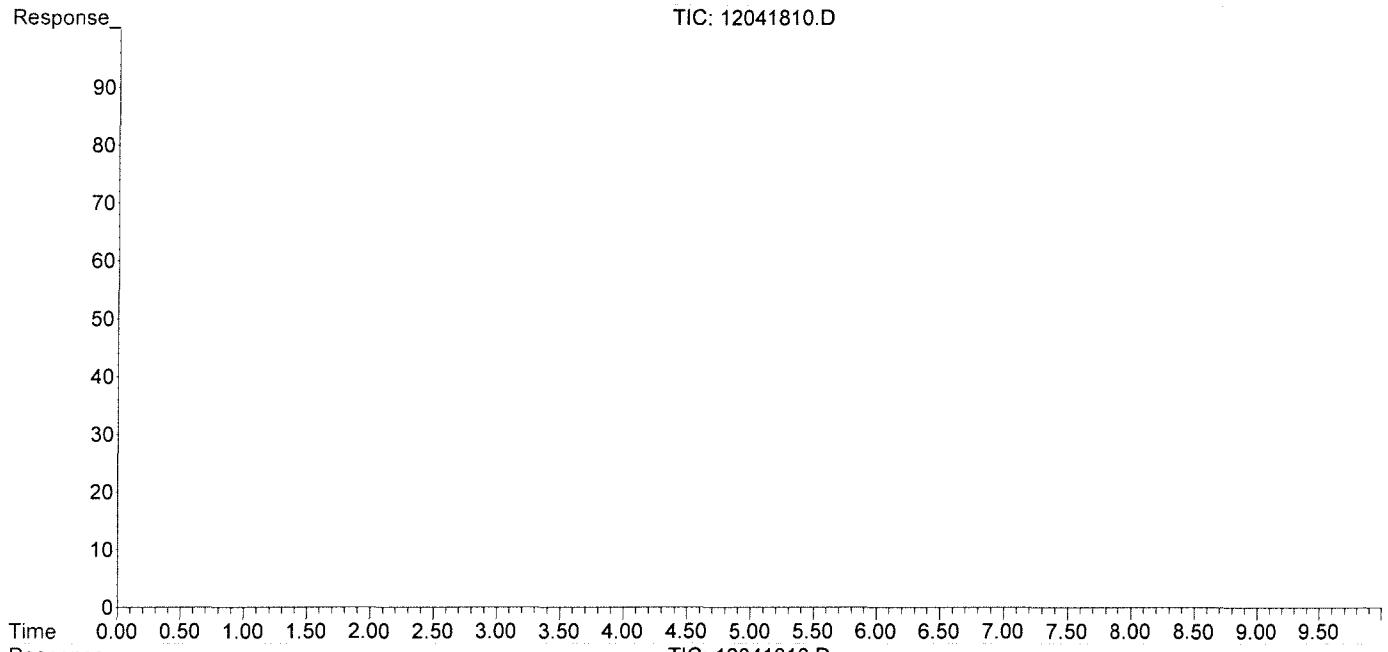
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	0.000	0	N.D.	ppm
2)	Carbon monoxide	0.000	0	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.125	11570	1.276	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	0.000	0	N.D.	ppm
10)	Propane	0.000	0	N.D.	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

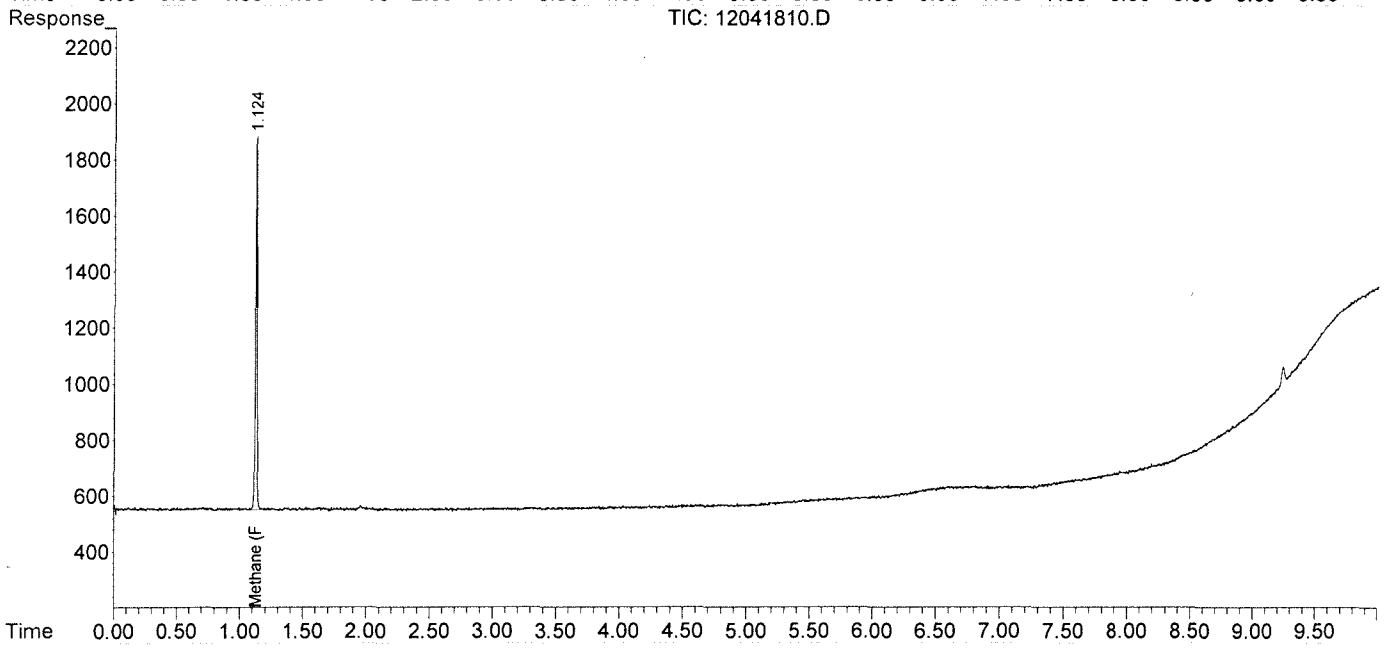
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2018_12\04\
Data File : 12041810.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 04-Dec-2018, 11:56:26
Operator : MR
Sample : P1806583-005 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Dec 05 10:46:59 2018
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_FID\2018_12\04\
Data File : 12041803.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 04-Dec-2018, 10:03:37
Operator : MR
Sample : mcs 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Dec 05 10:33:17 2018
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

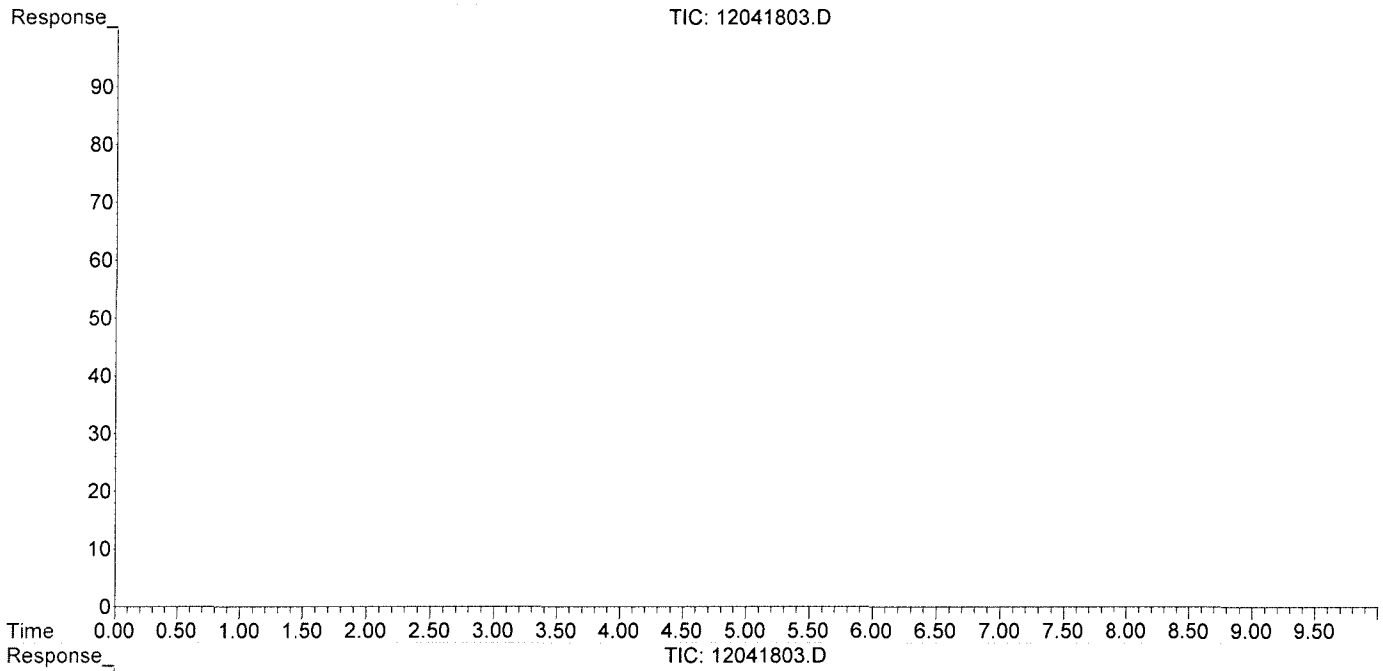
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	0.000	0	N.D.	ppm	
2)	Carbon monoxide	0.000	0	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	
4)	Carbon dioxide	0.000	0	N.D.	ppm	
6)	Methane (FID)	1.124	2239	0.247	ppm	m
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

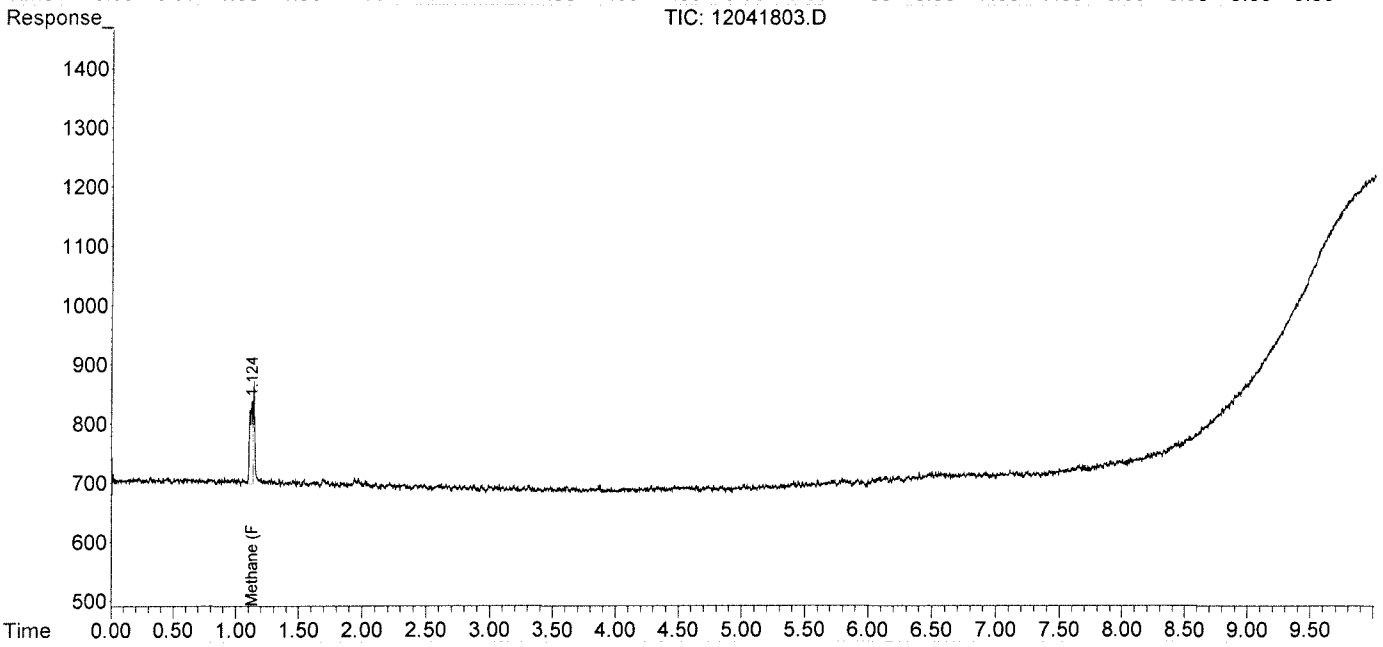
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2018_12\04\
Data File : 12041803.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 04-Dec-2018, 10:03:37
Operator : MR
Sample : mcs 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Dec 05 10:33:17 2018
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

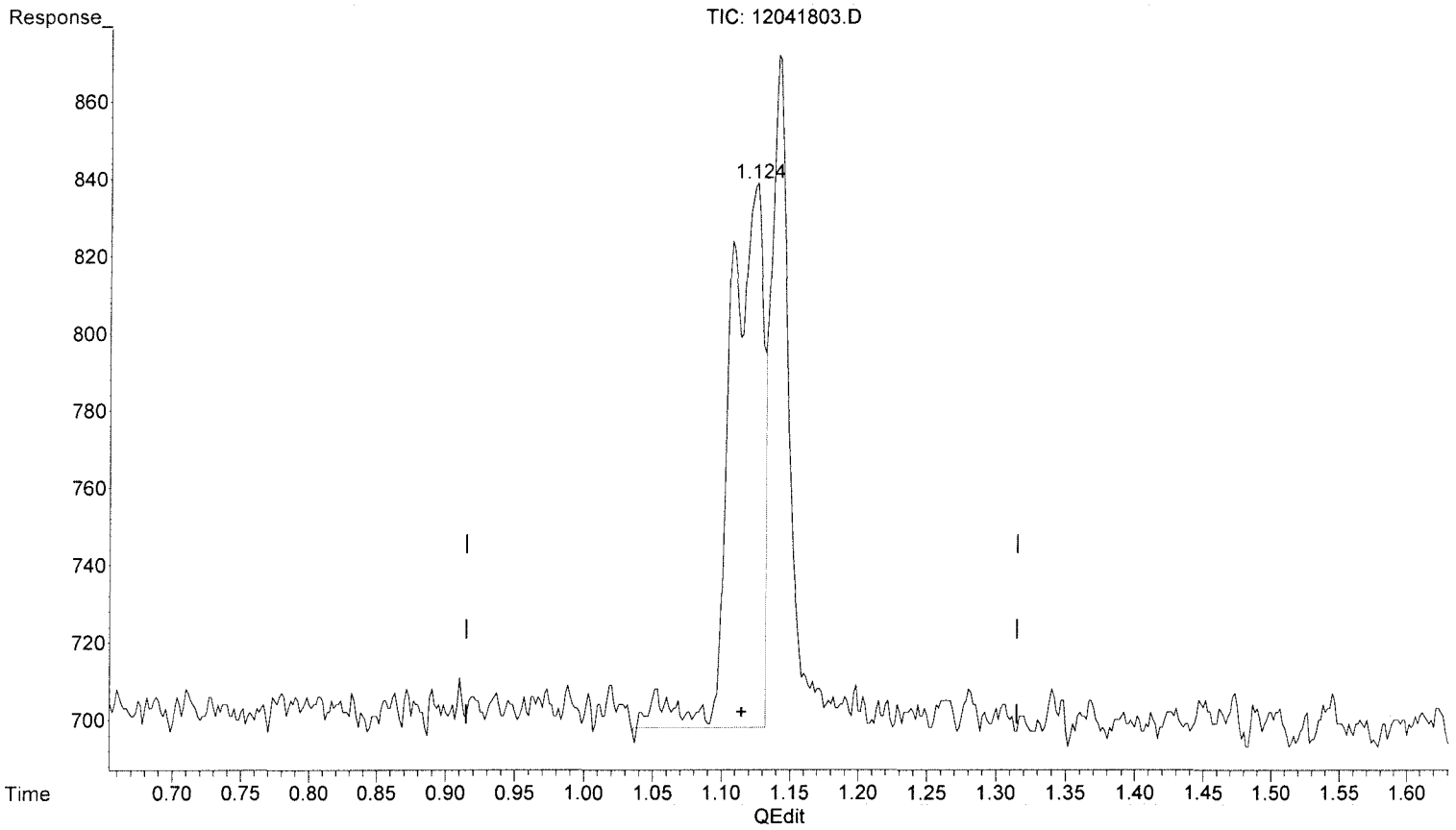




Data Path : J:\GC10\DATA\RSK_FID\2018_12\04\
Data File : 12041803.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 04-Dec-2018, 10:03:37
Operator : MR
Sample : mcs 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Dec 05 10:33:17 2018
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



(6) Methane (FID)

1.124min 0.254 ppm

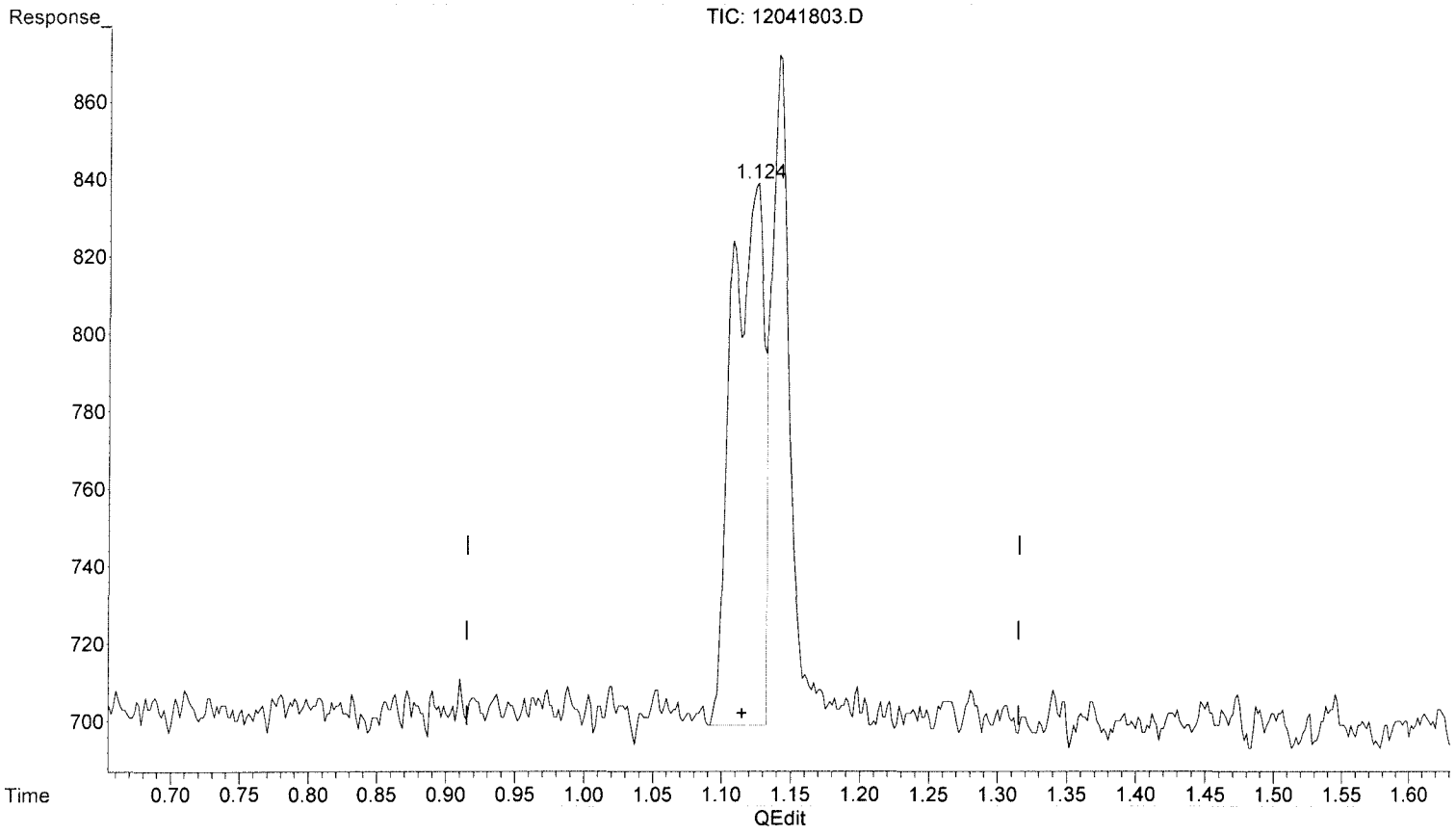
response 2305

(+) = Expected Retention Time

Data Path : J:\GC10\DATA\RSK_FID\2018_12\04\
Data File : 12041803.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 04-Dec-2018, 10:03:37
Operator : MR
Sample : mcs 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Dec 05 10:33:17 2018
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



(6) Methane (FID)

1.124min 0.247 ppm m

response 2239

MR 12/5/18
BLC

MR 12/5/18

(+) = Expected Retention Time

RS091217_R.M Wed Dec 05 10:33:42 2018 Page: 1

Data Path : J:\GC10\DATA\RSK_FID\2018_12\04\
Data File : 12041804.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 04-Dec-2018, 10:16:54
Operator : MR
Sample : fid lcs s30-05241604
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Dec 04 10:36:58 2018
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

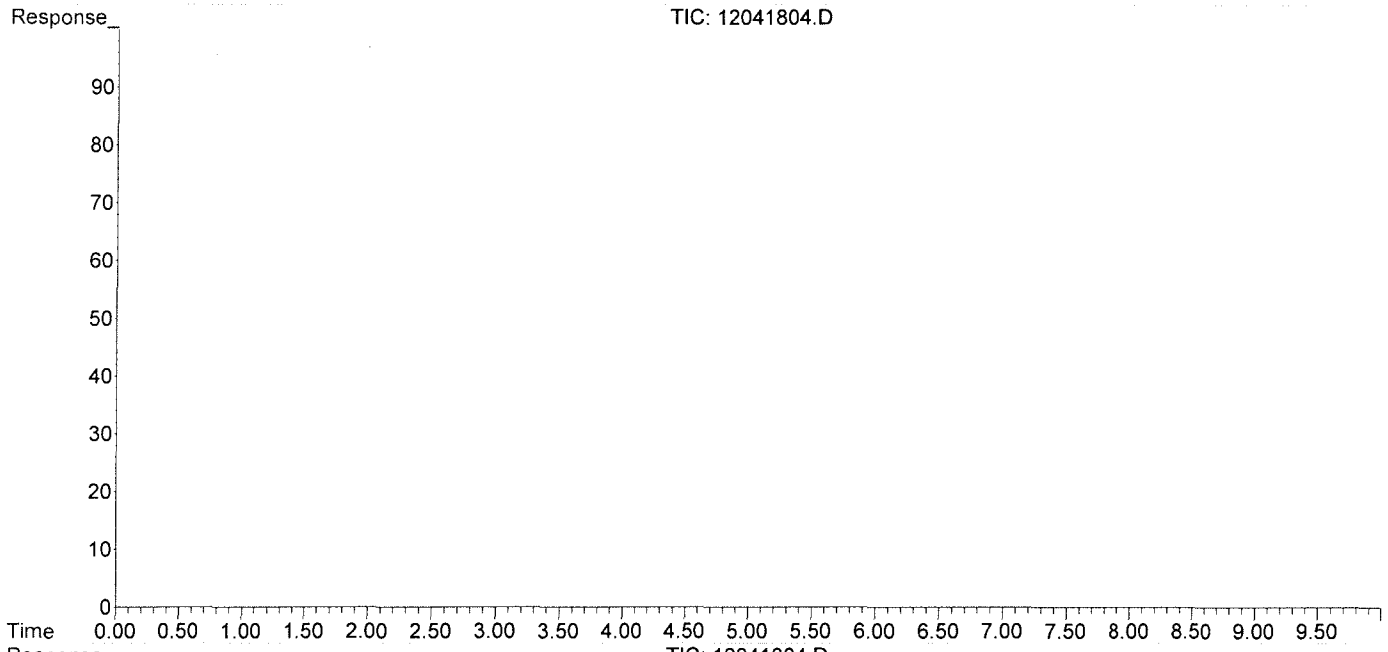
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	0.000	0	N.D.	ppm
2)	Carbon monoxide	0.000	0	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.123	13811	1.523	ppm
7)	Ethylene	1.686	18017	1.077	ppm
8)	Ethane	1.950	22719	1.340	ppm
9)	Propylene	4.334	25182	1.075	ppm
10)	Propane	4.456	35201	1.415	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	6.672	46457	1.745	ppm
13)	n-Butane	6.672	46457	1.745	ppm

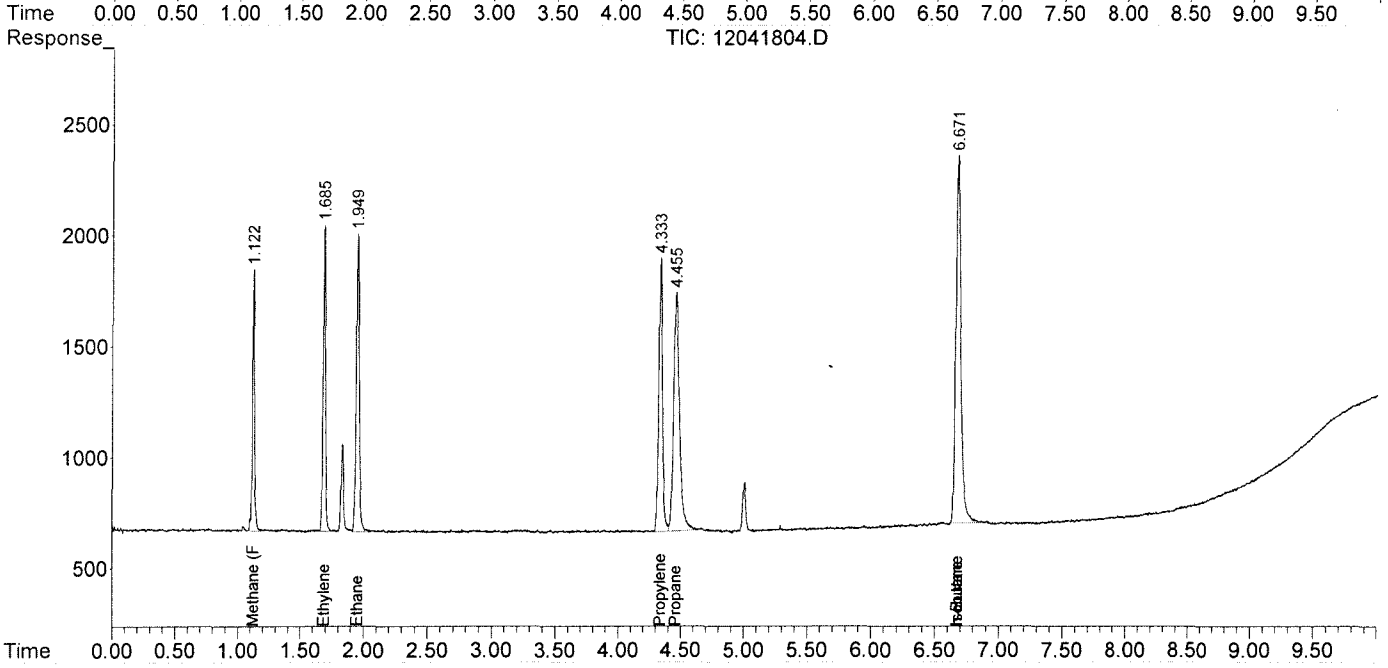
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2018_12\04\
Data File : 12041804.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 04-Dec-2018, 10:16:54
Operator : MR
Sample : fid lcs s30-05241604
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Dec 04 10:36:58 2018
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_FID\2018_12\04\
Data File : 12041805.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 04-Dec-2018, 10:30:54
Operator : MR
Sample : fid lcsd s30-05241604
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Dec 04 10:44:04 2018
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

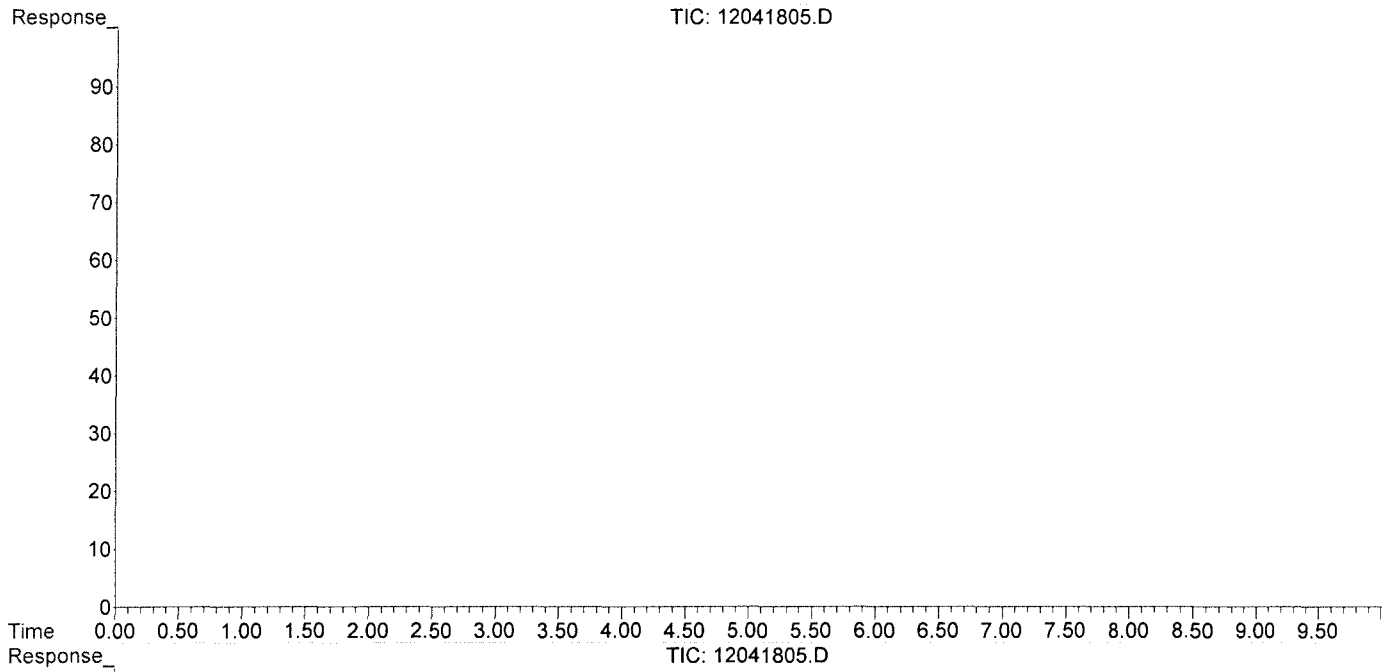
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	0.000	0	N.D.	ppm
2)	Carbon monoxide	0.000	0	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.123	15412	1.699	ppm
7)	Ethylene	1.689	18081	1.080	ppm
8)	Ethane	1.954	22112	1.305	ppm
9)	Propylene	4.338	24180	1.032	ppm
10)	Propane	4.461	34141	1.372	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	6.673	44725	1.680	ppm
13)	n-Butane	6.673	44725	1.680	ppm

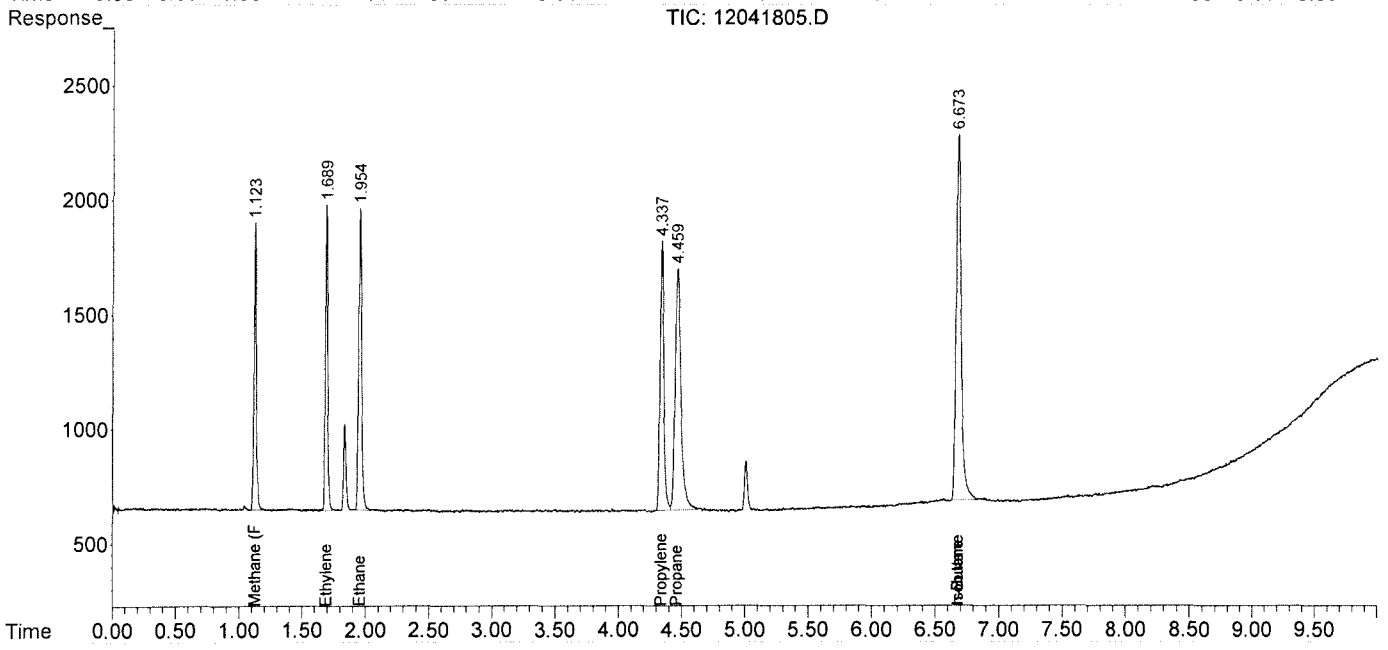
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2018_12\04\
Data File : 12041805.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 04-Dec-2018, 10:30:54
Operator : MR
Sample : fid lcsd s30-05241604
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Dec 04 10:44:04 2018
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Response Factor Report HP5890

Method Path : J:\GC10\METHODS\
Method File : RS091217_R.M
Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
Last Update : Wed Sep 13 11:14:47 2017
Response Via : Initial Calibration

Calibration Files
1 =09121702.D 2 =09121703.D 3 =09121704.D
4 =09121705.D 5 =09121706.D 6 =09121707.D

	Compound	1	2	3	4	5	6	Avg		%RSD
1)	Oxygen/Argon	3.739		1.014			0.001	0.793	E6	189.17
2)	Carbon monoxide	3.739		1.014			0.001	0.594	E6	221.92
3)	Methane (TCD)						2.161	0.951	E2	106.37
4)	Carbon dioxide	2.365	2.569	2.558	2.361	2.459	2.314	2.438	E2	4.44

Signal #2 Calibration Files
1 =09121702.D 2 =09121703.D 3 =09121704.D
4 =09121705.D 5 =09121706.D 6 =09121707.D

	Compound	1	2	3	4	5	6	Avg		%RSD
6)	Methane (FID)		1.180	0.975	0.908	0.870	0.868	0.907	E4	11.66
7)	Ethylene	1.736	1.638	1.780	1.720	1.628	1.670	1.673	E4	3.90
8)	Ethane	1.781	1.676	1.784	1.730	1.692	1.675	1.695	E4	3.83
9)	Propylene	2.505	2.296	2.592	2.480	2.346	2.252	2.343	E4	6.56
10)	Propane	2.439	2.283	2.645	2.555	2.433	2.522	2.488	E4	4.20
11)	Isobutylene							0.652	E1	138.46
12)	Isobutane	6.058	4.793	2.214	1.553	1.353		2.662	E4	86.17
13)	n-Butane	6.058	4.793	2.214	1.553	1.353		2.662	E4	86.17

(#) = Out of Range ### Number of calibration levels exceeded format ###

RS091217_R.M Wed Sep 13 15:11:48 2017

Edit Compounds -- Compound #6 -- Methane (FID)

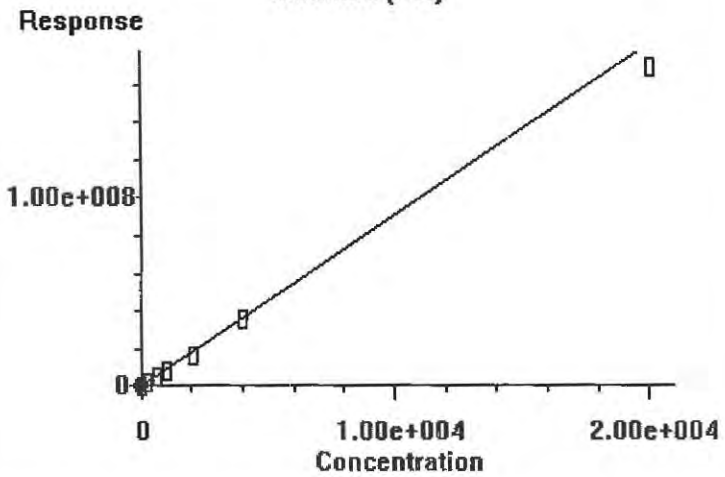
Search by: Ret Time | Name | Index | Find Compound

- Compound Database
- External Standard Compoun
  - Oxygen/Argon
  - Carbon monoxide
  - Methane (TCD)
  - Carbon dioxide
  - Signal #2
  - Methane (FID)
  - Ethylene
  - Ethane
  - Propylene
  - Propane
  - Isobutylene
  - Isobutane
  - n-Butane

Identification | Calibration | User-Defined | Advanced | Reporting

Lvl ID	Concentration	Response
1	0.151000	
2	0.302000	3564.400000
3	1.510000	14725.268625
4	4.530000	41128.575000
5	10.570000	91966.784531
6	200.000000	1735997.497500
7	600.000000	5189848.900000
8	1000.000000	8598533.570000
9	2000.000000	16098209.390000
10	4000.000000	35776839.311362
11	20000.000000	169009160.49199

Methane (FID)



0.000e+000	Quadratic term
9.071e+003	Linear term
0.000e+000	Constant term
11.657%	RF Rel Std Dev

OK | Cancel | Help | Print Calibration Curve | Copy Calibration Curve

Edit Compounds -- Compound #7 -- Ethylene

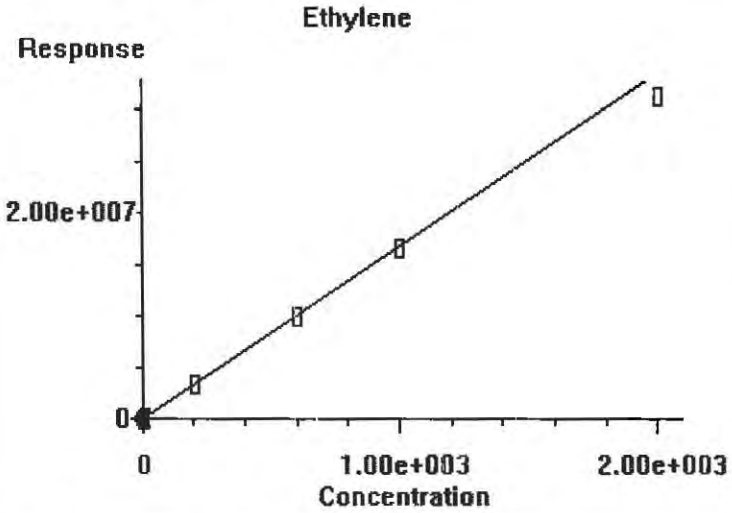
Search by: Ret Time | Name | Index | Find Compound

Compound Database
External Standard Compoun
- Oxygen/Argon
- Carbon monoxide
- Methane (TCD)
- Carbon dioxide
- Signal #2
- Methane (FID)
- Ethylene
- Ethane
- Propylene
- Propane
- Isobutylene
- Isobutane
- n-Butane

Identification | Calibration | User-Defined | Advanced | Reporting

Lvl ID	Concentration	Response
1	0.151000	2621.970000
2	0.302000	4946.731301
3	1.510000	26884.746847
4	4.530000	77902.721497
5	10.570000	172085.529560
6	200.000000	3339702.313219
7	600.000000	10007758.776971
8	1000.000000	16608503.805988
9	2000.000000	31192443.898600
10	4000.000000	

Lvl ID	Concentration	Response
11	20000.000000	



0.000e+000	Quadratic term
1.673e+004	Linear term
0.000e+000	Constant term
3.897%	RF Rel Std Dev

OK | Cancel | Help | Print Calibration Curve | Copy Calibration Curve

Edit Compounds -- Compound #8 -- Ethane

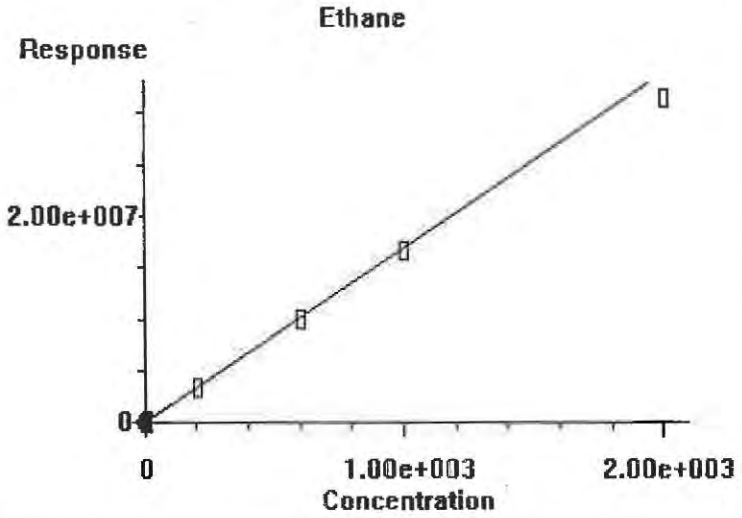
Search by: Ret Time | Name | Index — Find Compound

- Compound Database
  - External Standard Compoun
    - Oxygen/Argon
    - Carbon monoxide
    - Methane (TCD)
    - Carbon dioxide
    - Signal #2
    - Methane (FID)
    - Ethylene
    - Ethane
    - Propylene
    - Propane
    - Isobutylene
    - Isobutane
    - n-Butane

Identification | Calibration | User-Defined | Advanced | Reporting

Lvl ID	Concentration	Response
1	0.151000	2689.928008
2	0.302000	5060.331943
3	1.510000	26943.667500
4	4.530000	78353.525045
5	10.570000	178840.731148
6	200.000000	3350442.319129
7	600.000000	10048964.218029
8	1000.000000	16703164.879012
9	2000.000000	31424217.938900
10	4000.000000	

Lvl ID	Concentration	Response
11	20000.000000	



0.000e+000	Quadratic term
1.695e+004	Linear term
0.000e+000	Constant term
3.831%	RF Rel Std Dev

OK | Cancel | Help | Print Calibration Curve | Copy Calibration Curve

Edit Compounds -- Compound #9 -- Propylene

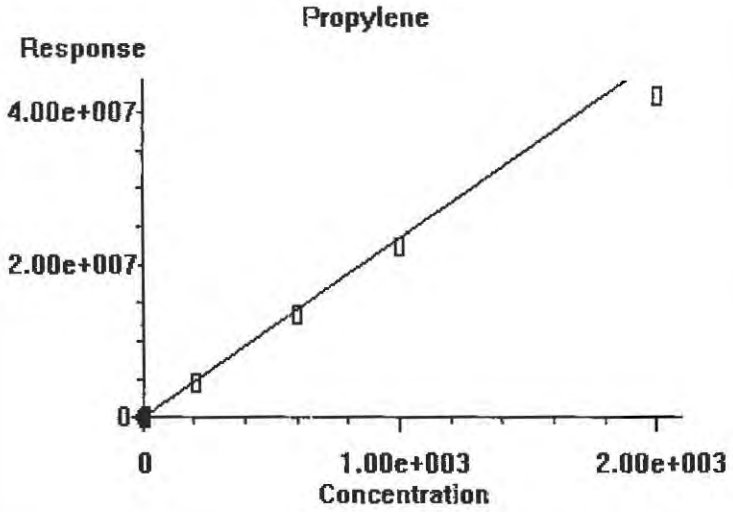
Search by: Ret Time | Name | Index | Find Compound

- Compound Database
- External Standard Compoun
  - Oxygen/Argon
  - Carbon monoxide
  - Methane (TCD)
  - Carbon dioxide
  - Signal #2
  - Methane (FID)
  - Ethylene
  - Ethane
  - Propylene
  - Propane
  - Isobutylene
  - Isobutane
  - n-Butane

Identification | Calibration | User-Defined | Advanced | Reporting

Lvl ID	Concentration	Response
1	0.151000	3782.537646
2	0.302000	6933.285530
3	1.510000	39139.518208
4	4.530000	112341.896872
5	10.570000	248003.903623
6	200.000000	4504060.086084
7	600.000000	13569342.761419
8	1000.000000	22494887.720990
9	2000.000000	42124689.656800
10	4000.000000	

Lvl ID	Concentration	Response
11	20000.000000	



0.000e+000	Quadratic term
2.343e+004	Linear term
0.000e+000	Constant term
6.559%	RF Rel Std Dev

OK | Cancel | Help | Print Calibration Curve | Copy Calibration Curve

Edit Compounds -- Compound #10 -- Propane

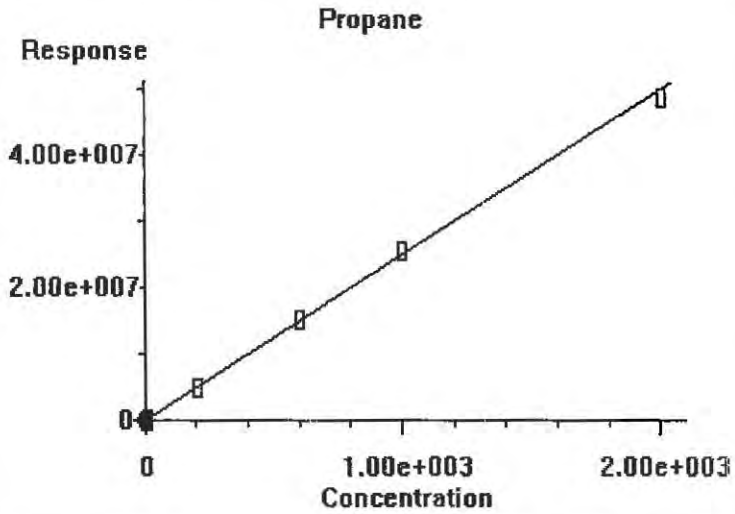
Search by: Ret Time | Name | Index — Find Compound

- Compound Database
- External Standard Compoun
  - Oxygen/Argon
  - Carbon monoxide
  - Methane (TCD)
  - Carbon dioxide
  - Signal #2
  - Methane (FID)
  - Ethylene
  - Ethane
  - Propylene
  - Propane
  - Isobutylene
  - Isobutane
  - n-Butane

Identification | Calibration | User-Defined | Advanced | Reporting

Lvl ID	Concentration	Response
1	0.151000	3682.897354
2	0.302000	6894.237803
3	1.510000	39934.166792
4	4.530000	115723.428128
5	10.570000	257124.432806
6	200.000000	5043035.663316
7	600.000000	15251325.797404
8	1000.000000	25459410.657938
9	2000.000000	48583085.287451
10	4000.000000	

Lvl ID	Concentration	Response
11	20000.000000	



0.000e+000	Quadratic term
2.488e+004	Linear term
0.000e+000	Constant term
4.200%	RF Rel Std Dev

OK | Cancel | Help | Print Calibration Curve | Copy Calibration Curve

Calibration Status Report HP5890

Method Path : J:\GC10\METHODS\
Method File : RS091217_R.M
Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
Last Update : Wed Sep 13 11:14:47 2017
Response Via : Initial Calibration

#	ID	Conc	ISTD Conc	Path\File
1	1	0	0	J:\GC10\DATA\RSK_FID\2017_09\12\09121702.D
2	2	0	0	J:\GC10\DATA\RSK_FID\2017_09\12\09121703.D
3	3	3	0	J:\GC10\DATA\RSK_FID\2017_09\12\09121704.D
4	4	10	0	J:\GC10\DATA\RSK_FID\2017_09\12\09121705.D
5	5	25	0	J:\GC10\DATA\RSK_FID\2017_09\12\09121706.D
6	6	125	0	J:\GC10\DATA\RSK_FID\2017_09\12\09121707.D
7	7	5000	0	J:\GC10\DATA\RSK_FID\2017_09\12\09121708.D
8	8	25000	0	J:\GC10\DATA\RSK_FID\2017_09\12\09121709.D
9	9	2000	0	J:\GC10\DATA\RSK_FID\2017_09\12\09121710.D
10	10	30000	0	J:\GC10\DATA\RSK_FID\2017_09\12\09121711.D
11	11	20000	0	J:\GC10\DATA\RSK_FID\2017_09\12\09121712.D

#	ID	Update Time	Quant Time	Acquisition Time
1	1	Sep 13 11:04 2017	Sep 12 15:03 2017	12-Sep-2017, 10:52
2	2	Sep 13 11:05 2017	Sep 13 11:05 2017	12-Sep-2017, 11:05
3	3	Sep 13 11:06 2017	Sep 13 11:05 2017	12-Sep-2017, 11:45
4	4	Sep 13 11:09 2017	Sep 13 11:06 2017	12-Sep-2017, 12:09
5	5	Sep 13 11:09 2017	Sep 13 11:09 2017	12-Sep-2017, 12:30
6	6	Sep 13 11:10 2017	Sep 13 11:10 2017	12-Sep-2017, 12:47
7	7	Sep 13 11:11 2017	Sep 13 11:10 2017	12-Sep-2017, 13:00
8	8	Sep 13 11:12 2017	Sep 13 11:11 2017	12-Sep-2017, 13:47
9	9	Sep 13 11:12 2017	Sep 13 11:12 2017	12-Sep-2017, 14:07
10	10	Sep 13 11:14 2017	Sep 13 11:13 2017	12-Sep-2017, 14:48
11	11	Sep 13 11:14 2017	Sep 13 11:14 2017	12-Sep-2017, 15:21

RS091217_R.M Wed Sep 13 15:11:22 2017

Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121702.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 10:52
Operator : MC
Sample : 0.151ppm 0.250ml s32-09121702
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 12 11:03:15 2017
Quant Method : I:\GC10\METHODS\RS082417.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Fri Aug 25 09:19:14 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	1.767	373920	0.128	ppm	
2)	Carbon monoxide	1.767	373920	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	
4)	Carbon dioxide	0.000	0	N.D.	ppm	
6)	Methane (FID)	0.000	0	N.D.	ppm	d
7)	Ethylene	1.595	2622	0.156	ppm	
8)	Ethane	1.848	2690	0.156	ppm	
9)	Propylene	4.222	3783	0.154	ppm	
10)	Propane	4.348	3683	0.139	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	6.582f	6058	NoCal	ppm	
13)	n-Butane	6.582f	6058	NoCal	ppm	

(f)=RT Delta > 1/2 Window (m)=manual int.

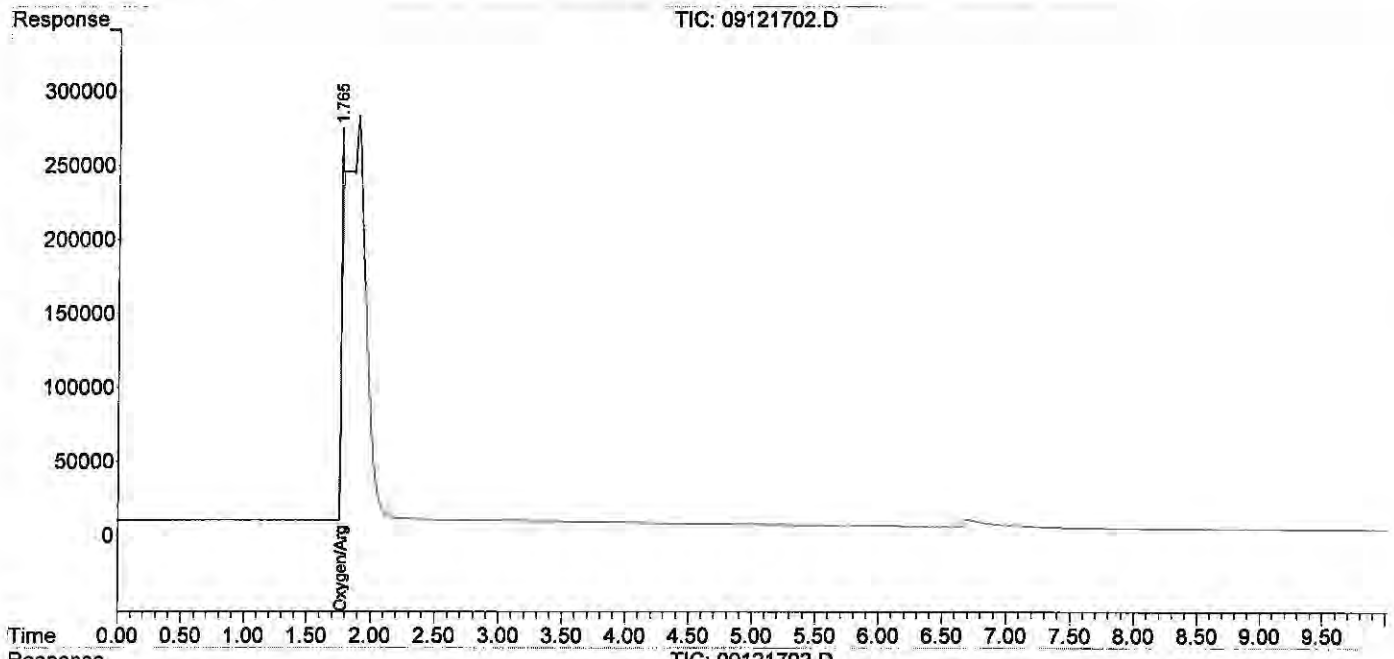
9/13/17

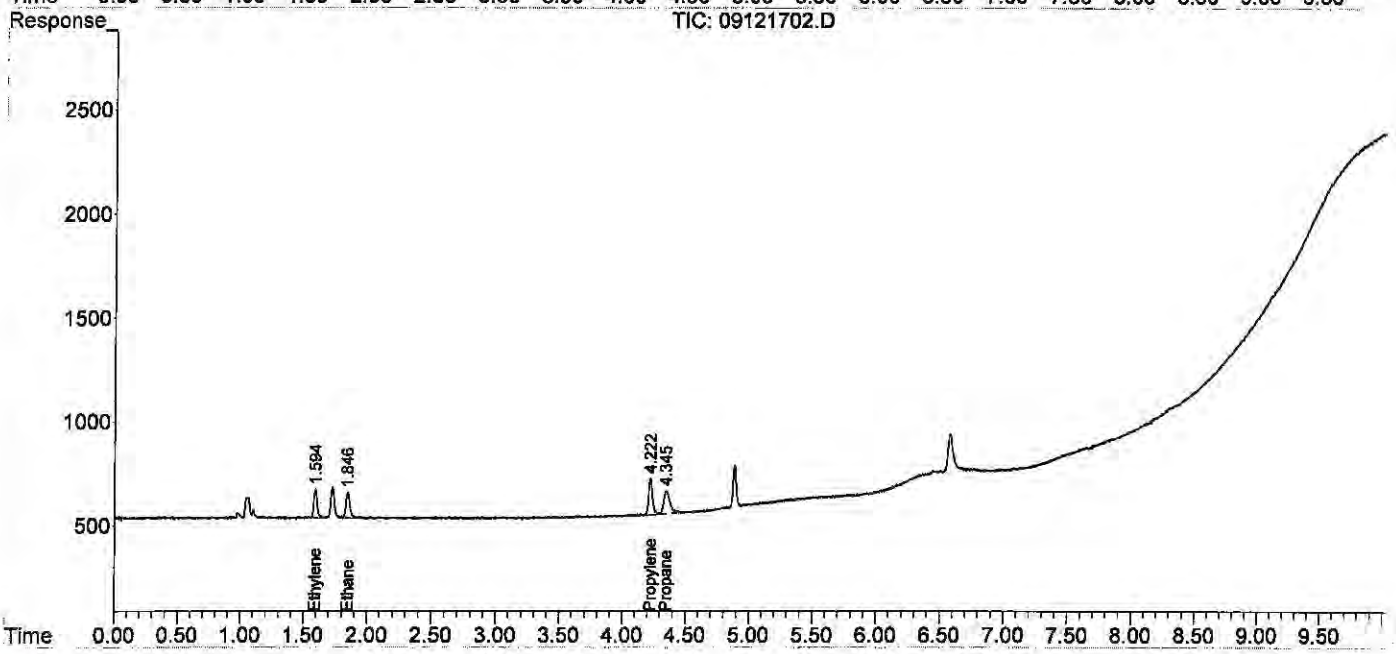
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121702.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 10:52
Operator : MC
Sample : 0.151ppm 0.250ml s32-09121702
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 12 11:03:15 2017
Quant Method : I:\GC10\METHODS\RS082417.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Fri Aug 25 09:19:14 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





RS091217_R.M Wed Sep 13 14:58:18 2017 Page: 2

Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121703.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 11:05
Operator : MC
Sample : 0.302ppm 0.5ml s32-09121702
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:05:03 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:04:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	1.913f	-25181981	N.D.	ppm	
2)	Carbon monoxide	1.913f	-25181981	1.089	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	
4)	Carbon dioxide	0.000	0	N.D.	ppm	
6)	Methane (FID)	1.049	3564	0.391	ppm	m
7)	Ethylene	1.577	4947	0.292	ppm	
8)	Ethane	1.828	5060	0.293	ppm	
9)	Propylene	4.207	6933	0.281	ppm	
10)	Propane	4.337	6894	0.268	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	6.579f	9587	0.158	ppm	
13)	n-Butane	6.579f	9587	0.158	ppm	

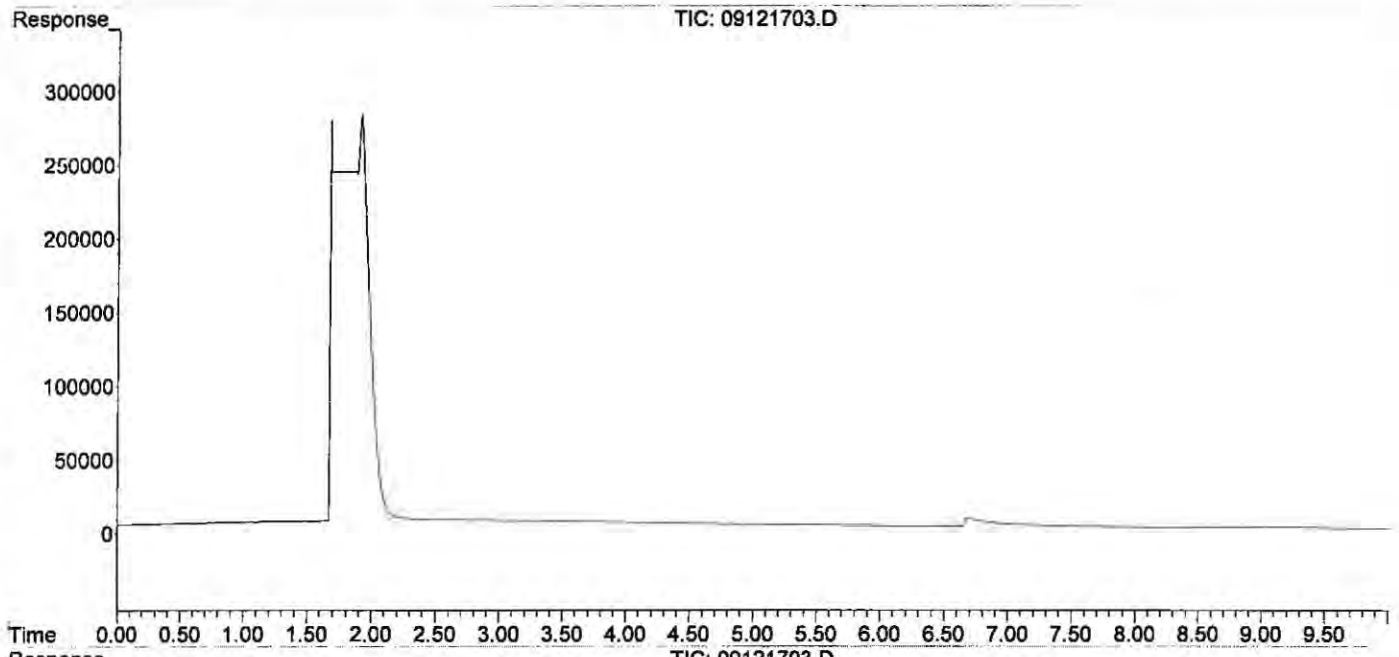
(f)=RT Delta > 1/2 Window (m)=manual int.

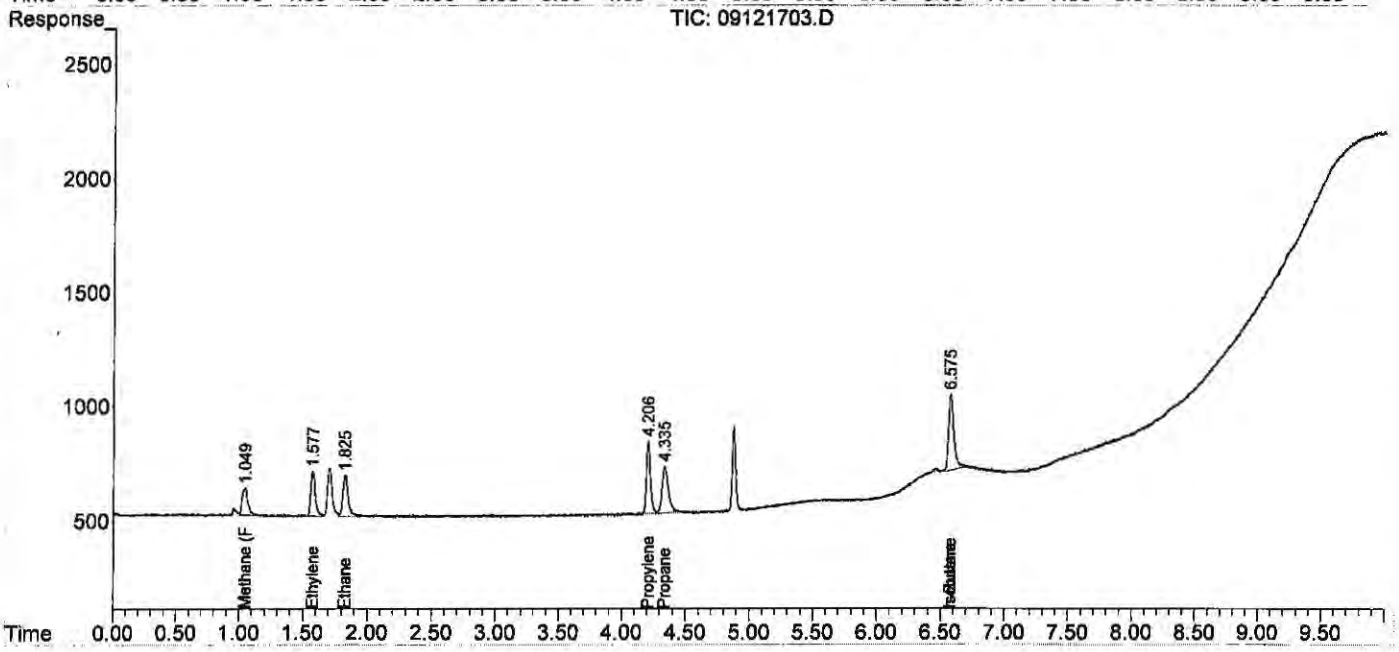
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121703.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 11:05
Operator : MC
Sample : 0.302ppm 0.5ml s32-09121702
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:05:03 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:04:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



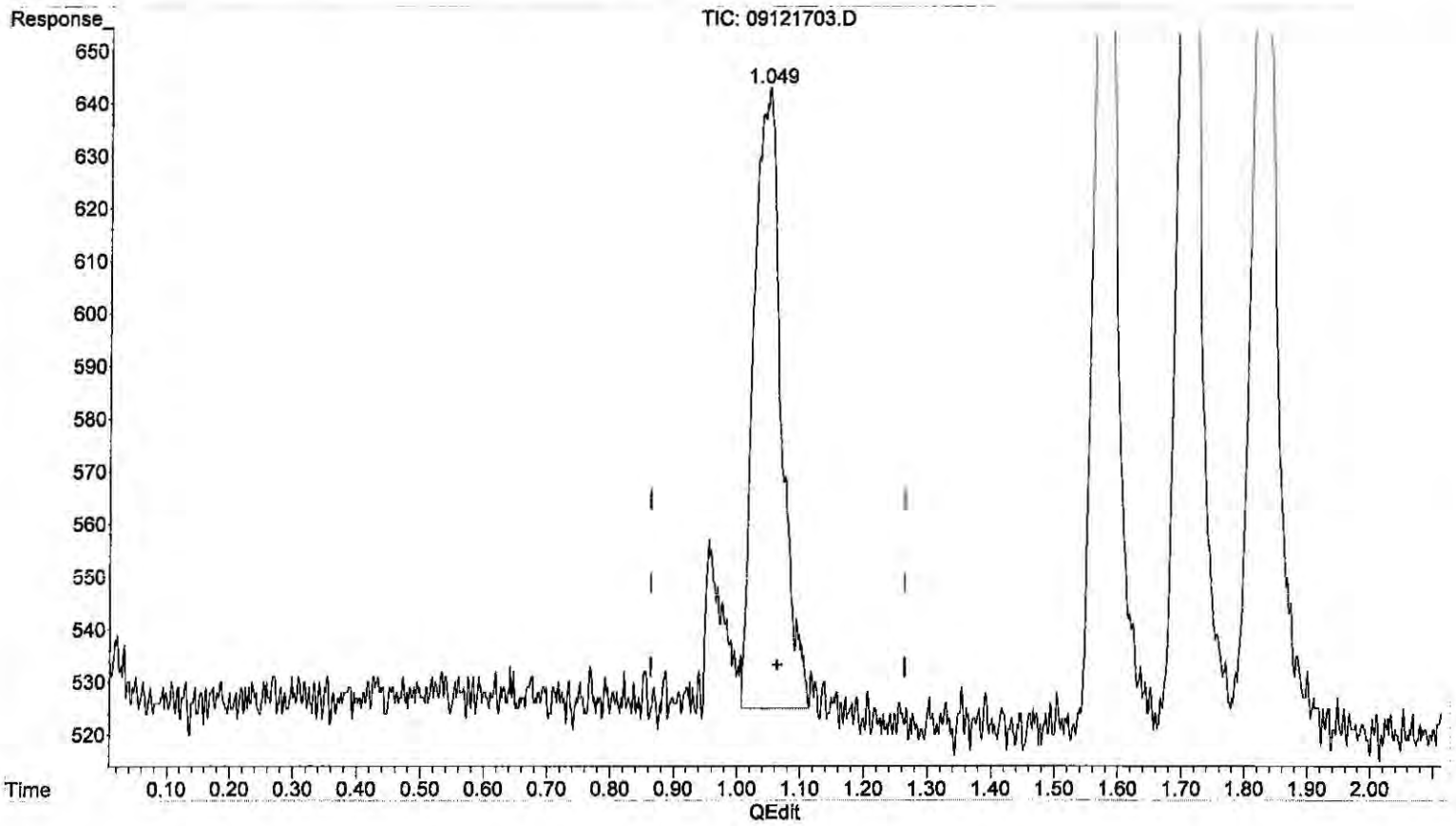


Quantitation Report (Qedit)

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121703.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 11:05
Operator : MC
Sample : 0.302ppm 0.5ml s32-09121702
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:05:03 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:04:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



(6) Methane (FID)

1.049min 0.391 ppm m

response 3564

(+) = Expected Retention Time

RS091217_R.M Wed Sep 13 15:00:03 2017

Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121704.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 11:45
Operator : MC
Sample : 1.51ppm 0.1ml s32-09051701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:05:55 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:04:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

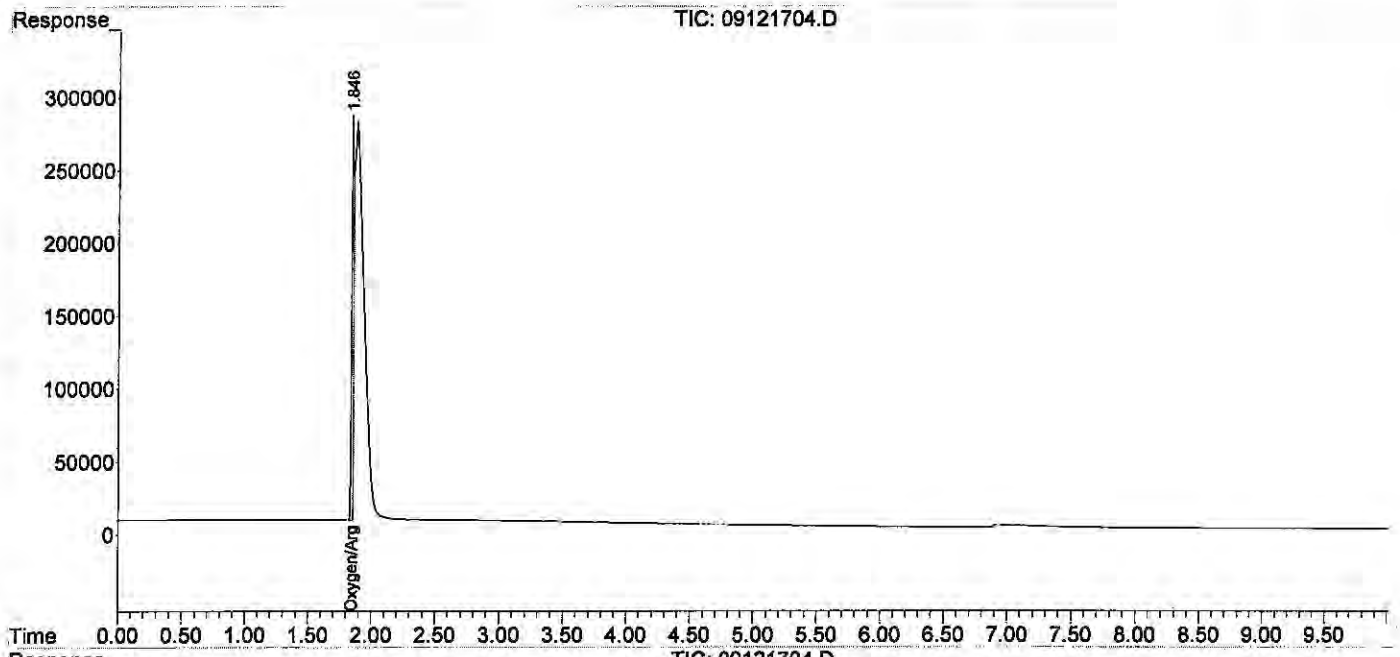
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.847	2536230	1.056	ppm
2)	Carbon monoxide	1.847	2536230	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.064	14725	1.613	ppm
7)	Ethylene	1.598	26885	1.582	ppm
8)	Ethane	1.851	26944	1.555	ppm
9)	Propylene	4.220	39140	1.589	ppm
10)	Propane	4.349	39934	1.596	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	6.578f	55348	1.020	ppm
13)	n-Butane	6.578f	55348	1.020	ppm

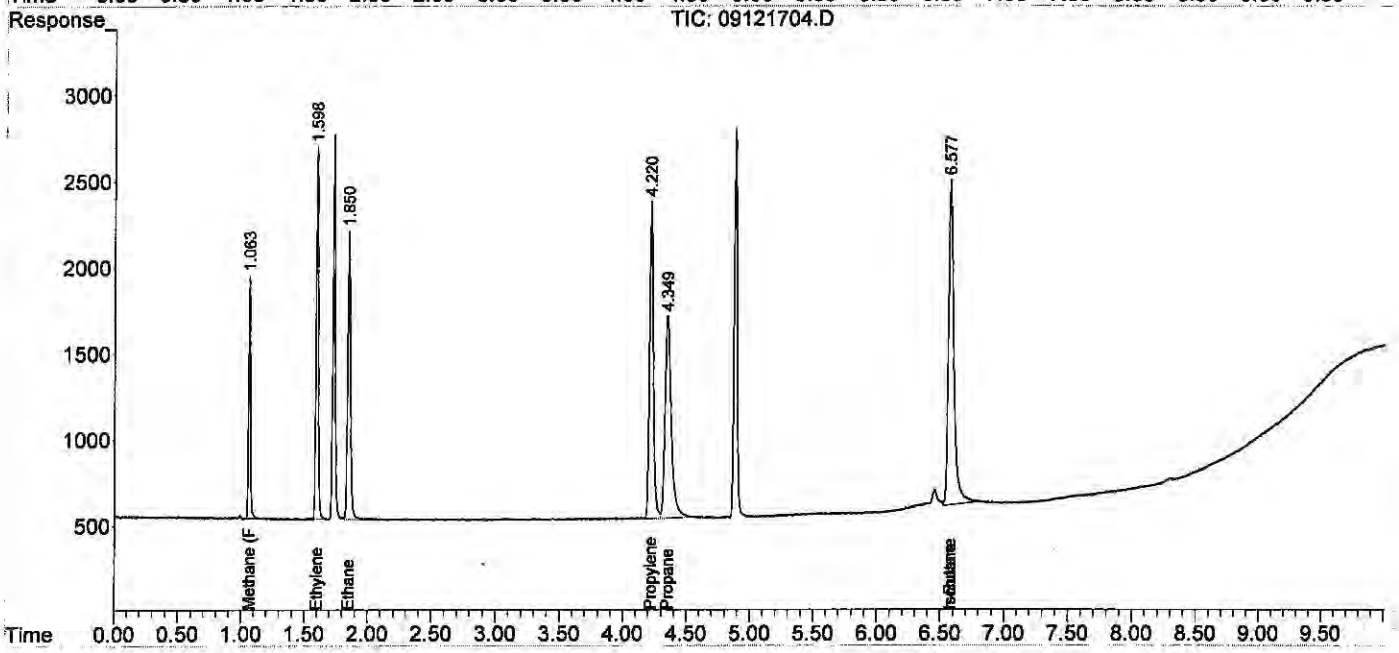
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121704.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 11:45
Operator : MC
Sample : 1.51ppm 0.1ml s32-09051701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:05:55 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:04:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121705.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 12:09
Operator : MC
Sample : 4.53ppm 0.3ml s32-09051701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:06:32 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:04:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.738	-331216	N.D.	ppm
2)	Carbon monoxide	1.738	-331216	0.019	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.052	41129	4.522	ppm
7)	Ethylene	1.586	77903	4.637	ppm
8)	Ethane	1.838	78354	4.558	ppm
9)	Propylene	4.218	112342	4.614	ppm
10)	Propane	4.347	115723	4.680	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	6.580f	155256	3.565	ppm
13)	n-Butane	6.580f	155256	3.565	ppm

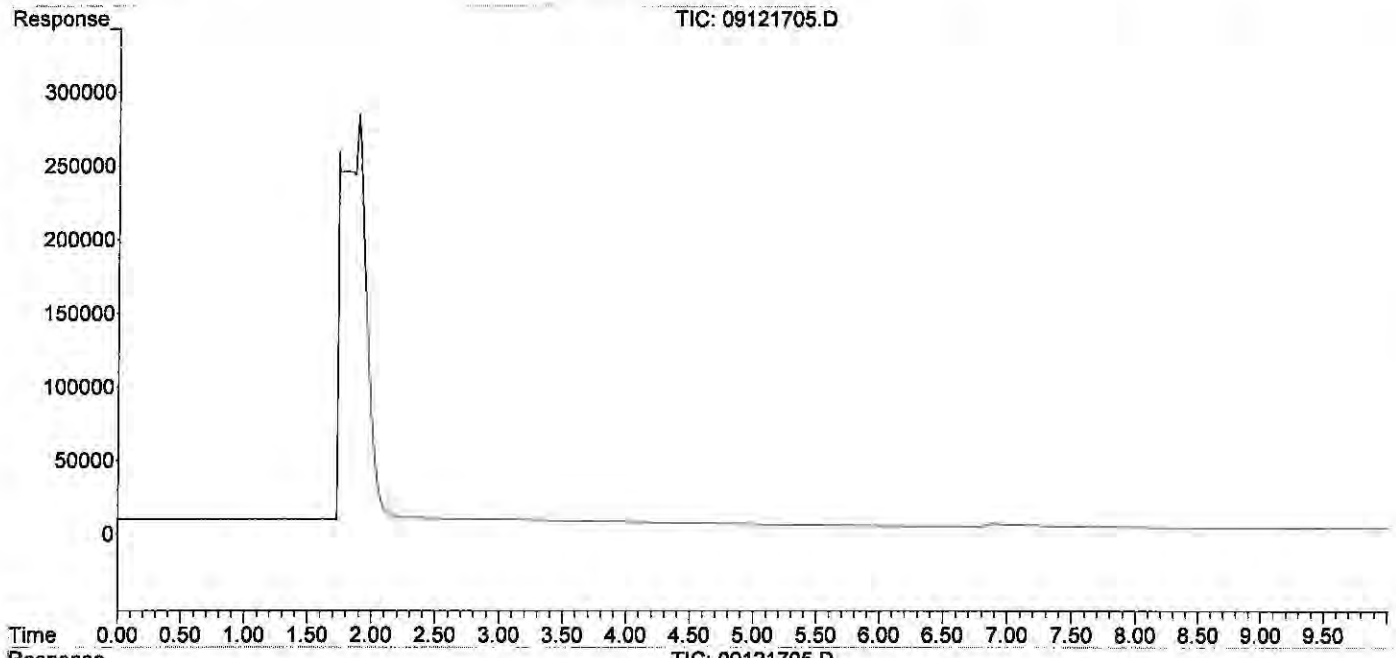
(f)=RT Delta > 1/2 Window (m)=manual int.

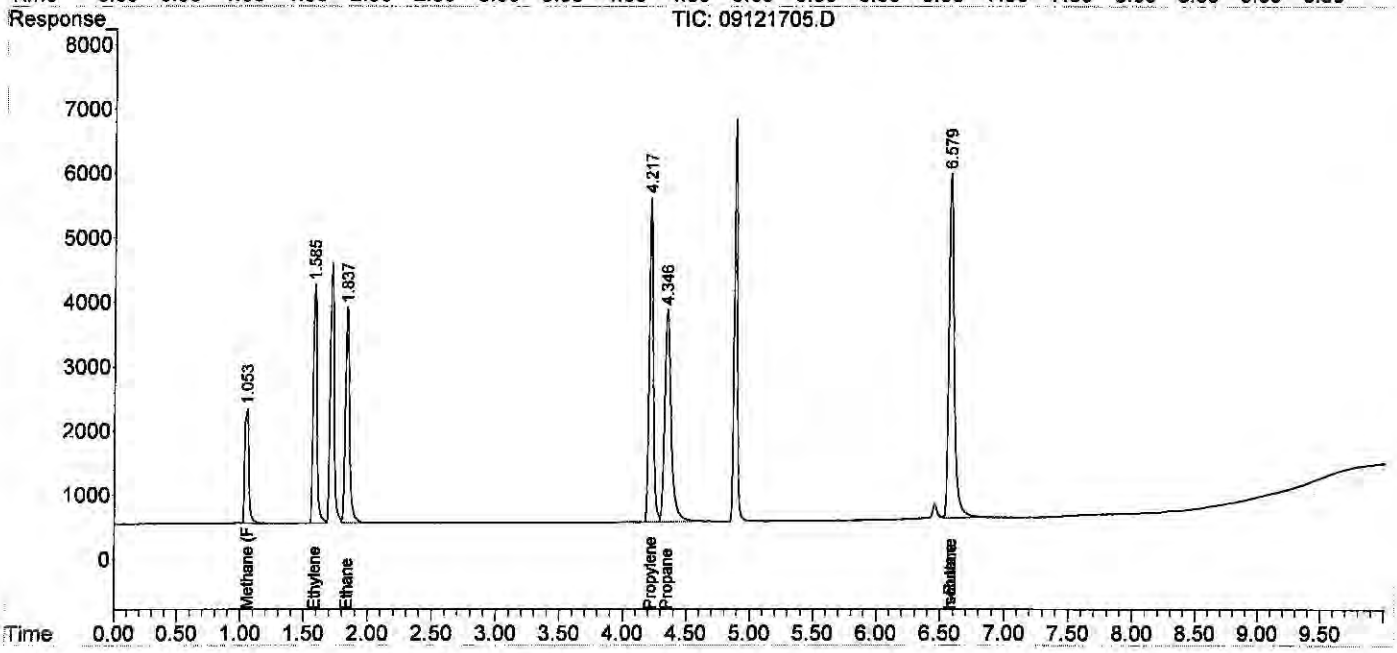
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121705.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 12:09
Operator : MC
Sample : 4.53ppm 0.3ml s32-09051701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:06:32 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:04:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121706.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 12:30
Operator : MC
Sample : 10.57ppm 0.7ml s32-09051701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:09:24 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:04:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.929f	-31871242	N.D.	ppm
2)	Carbon monoxide	1.929f	-31871242	1.818	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.025	91967	10.135	ppm
7)	Ethylene	1.568	172086	10.273	ppm
8)	Ethane	1.822	178841	10.441	ppm
9)	Propylene	4.214	248004	10.236	ppm
10)	Propane	4.344	257124	10.458	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	6.578f	338181	9.254	ppm
13)	n-Butane	6.578f	338181	9.254	ppm

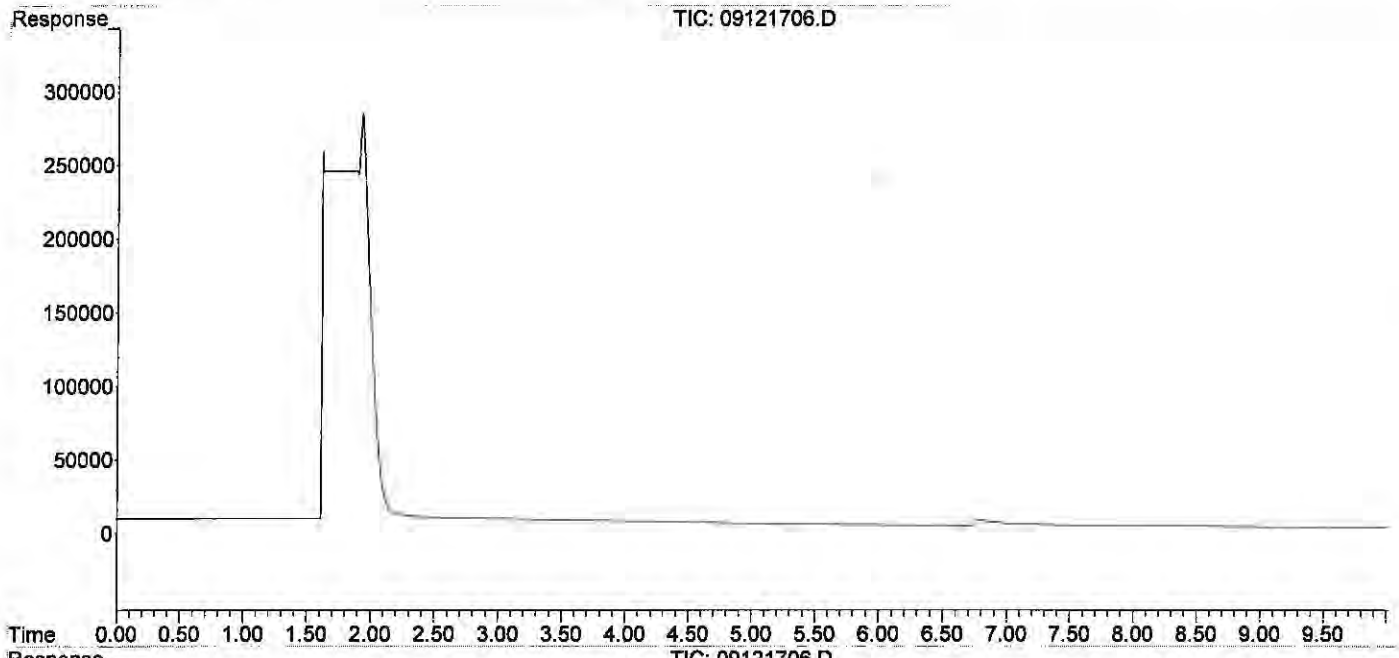
(f)=RT Delta > 1/2 Window (m)=manual int.

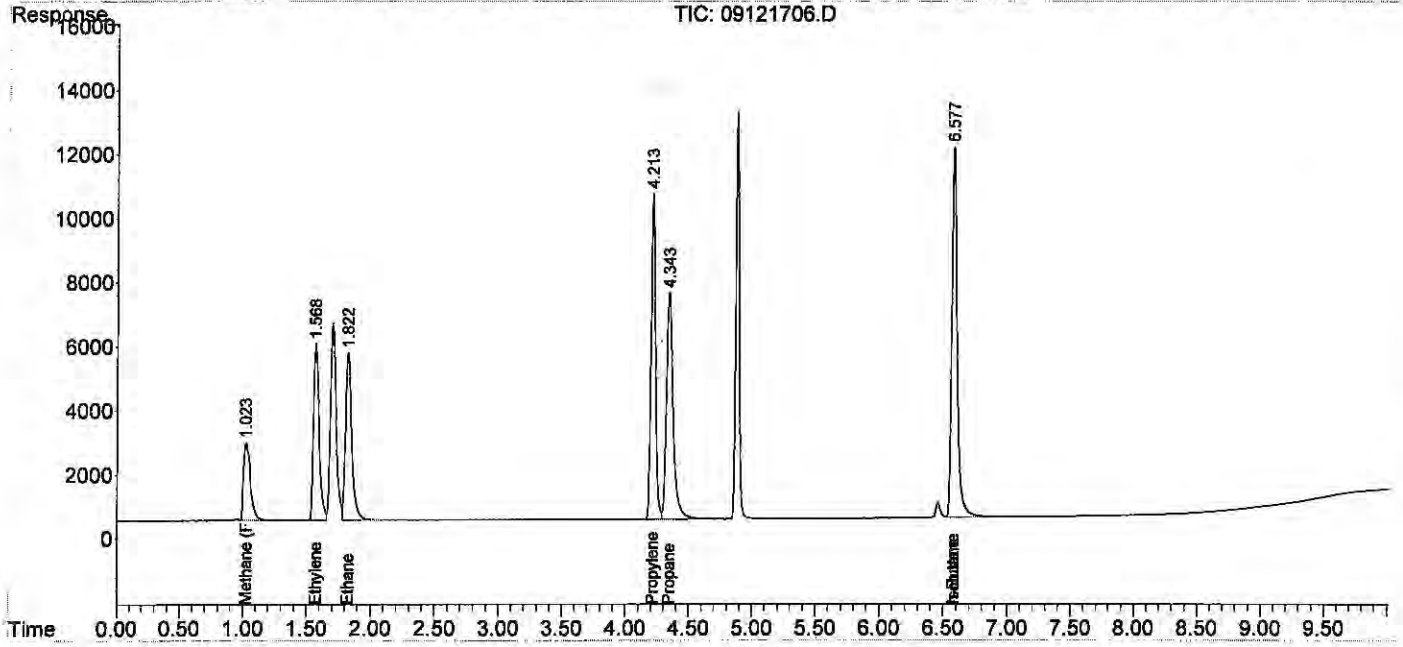
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121706.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 12:30
Operator : MC
Sample : 10.57ppm 0.7ml s32-09051701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:09:24 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:04:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121707.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 12:47
Operator : MC
Sample : 200ppm 0.1ml s32-09121701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:09:59 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:04:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

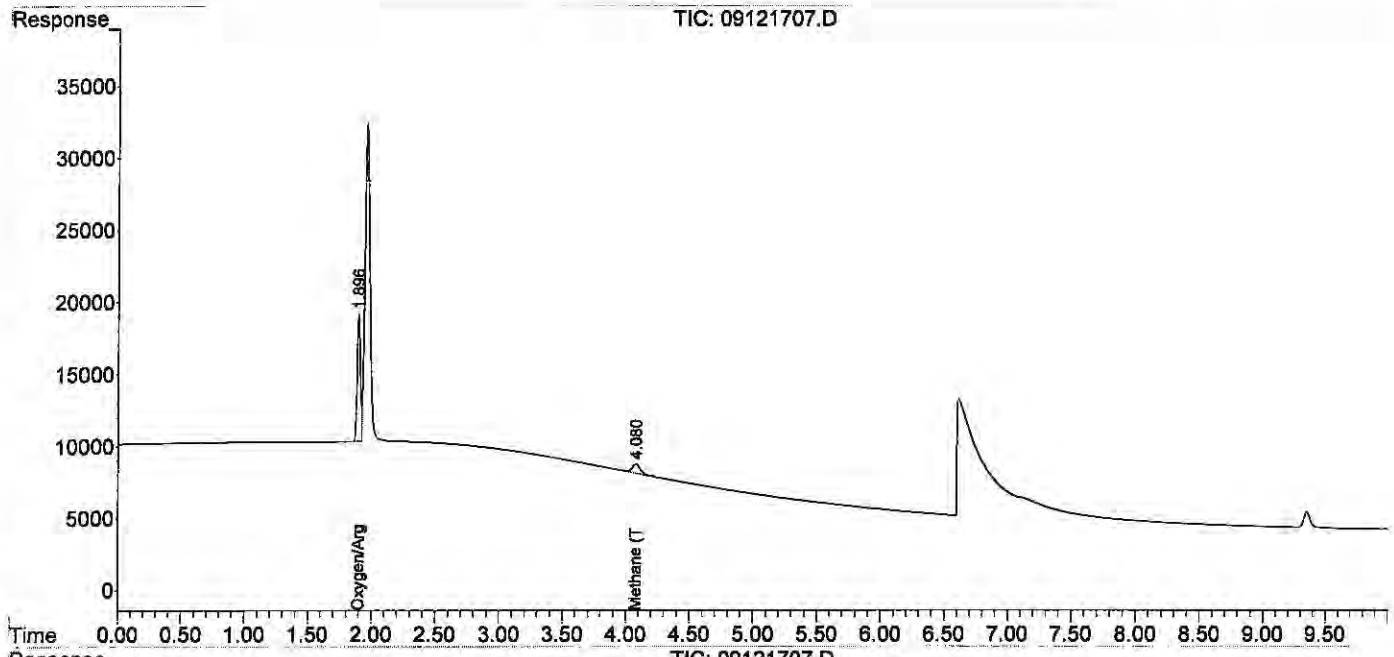
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.897	155286	0.065	ppm
2)	Carbon monoxide	1.897	155286	N.D.	ppm
3)	Methane (TCD)	4.079f	27015	2856.472	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.063	1735997	190.792	ppm
7)	Ethylene	1.597	3339702	198.758	ppm
8)	Ethane	1.849	3350442	194.597	ppm
9)	Propylene	4.201	4504060	185.706	ppm
10)	Propane	4.333	5043036	204.809	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

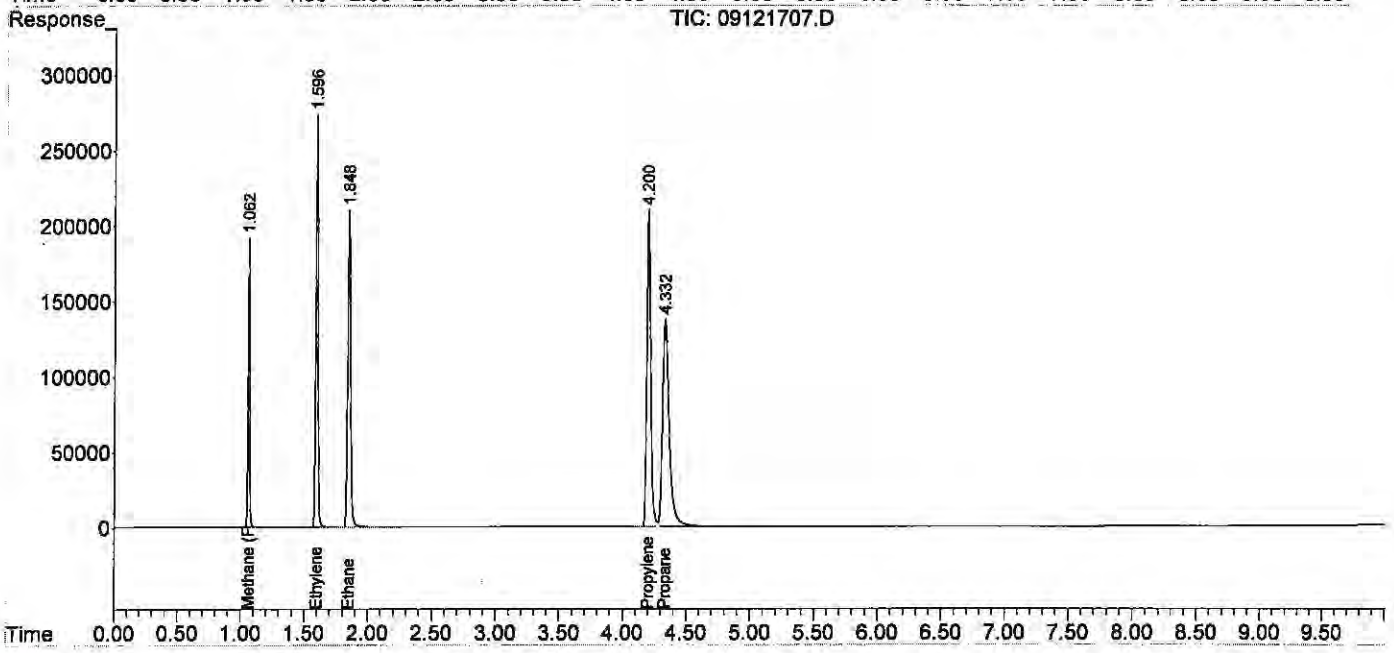
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121707.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 12:47
Operator : MC
Sample : 200ppm 0.1ml s32-09121701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:09:59 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:04:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121708.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 13:00
Operator : MC
Sample : 600ppm 0.3ml s32-09121701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:10:57 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:10:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.884	196022	0.124	ppm
2)	Carbon monoxide	1.884	196022	N.D.	ppm
3)	Methane (TCD)	4.070f	88282	782.730	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.044	5189849	539.759	ppm
7)	Ethylene	1.573	10007759	590.286	ppm
8)	Ethane	1.822	10048964	583.213	ppm
9)	Propylene	4.160	13569343	562.612	ppm
10)	Propane	4.300	15251326	615.171	ppm
11)	Isobutylene	6.143	9815	NoCal	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

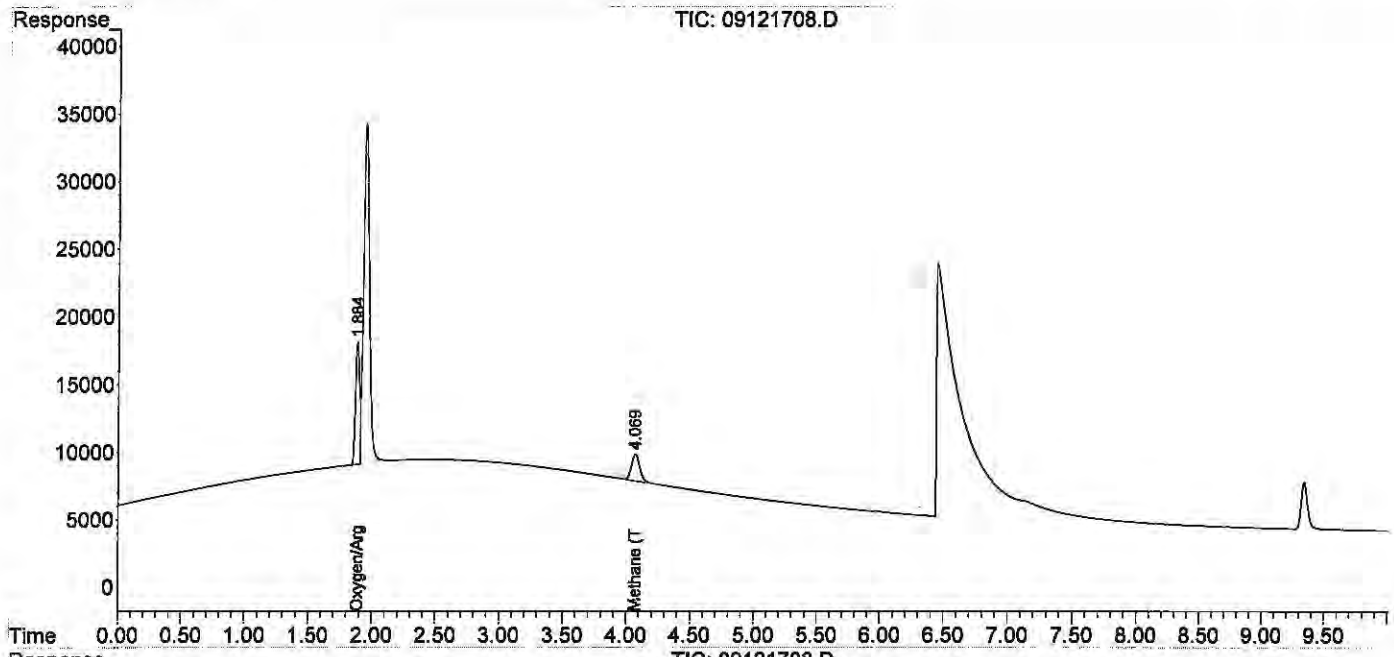
(f)=RT Delta > 1/2 Window (m)=manual int.

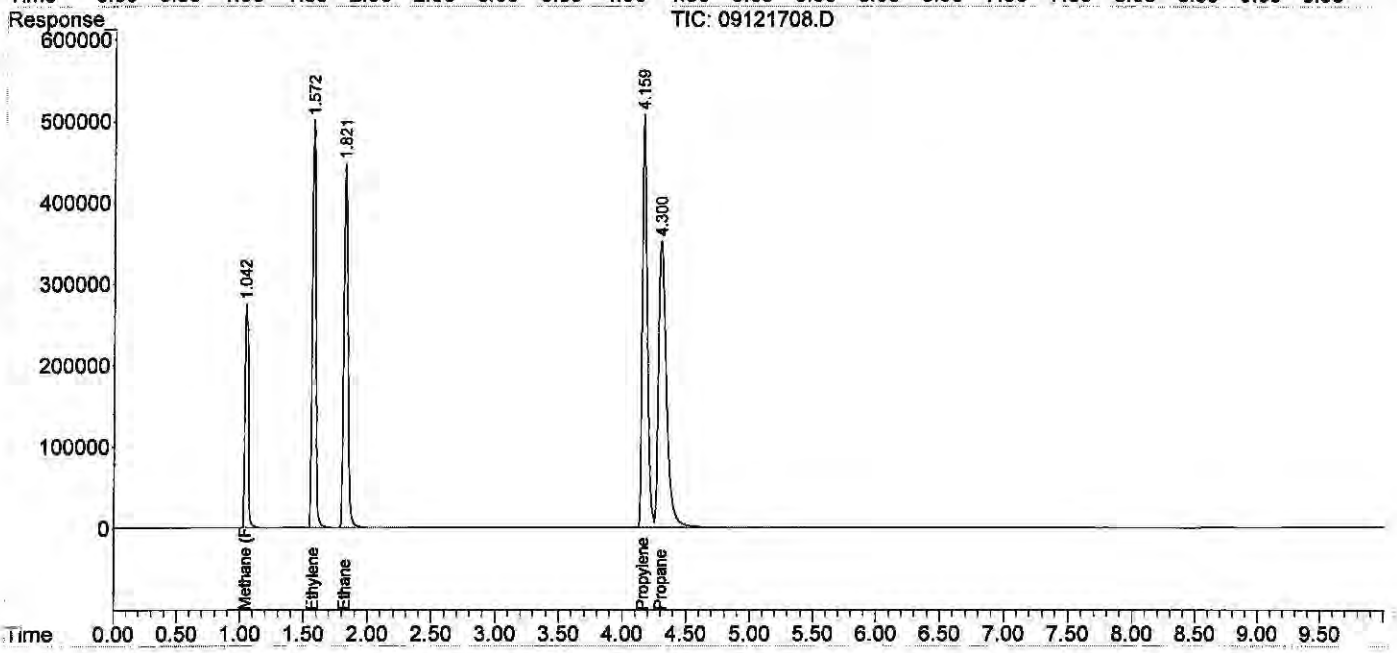
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121708.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 13:00
Operator : MC
Sample : 600ppm 0.3ml s32-09121701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:10:57 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:10:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121709.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 13:47
Operator : MC
Sample : 1000ppm 0.5ml s32-09121701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:11:46 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:11:38 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

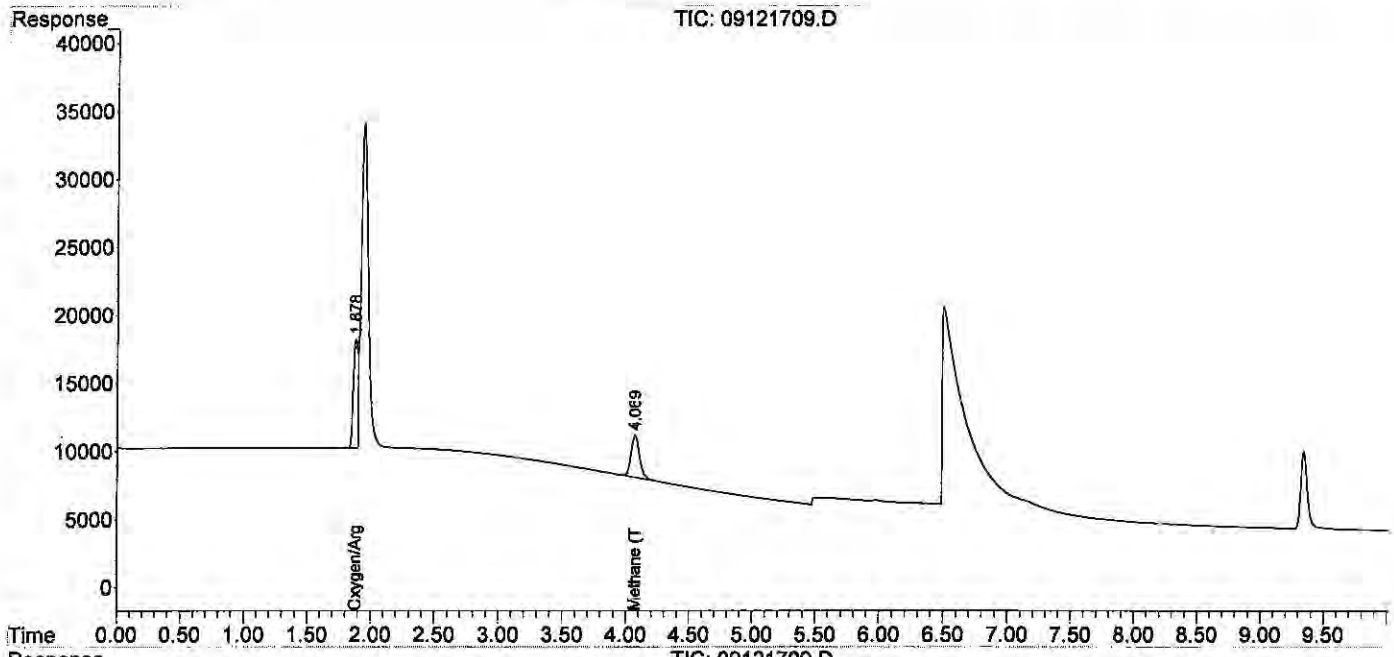
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.879	192611	0.162	ppm
2)	Carbon monoxide	1.879	192611	N.D.	ppm
3)	Methane (TCD)	4.070f	145492	1244.729	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.039	8598534	945.644	ppm
7)	Ethylene	1.576	16608504	981.887	ppm
8)	Ethane	1.827	16709165	973.644	ppm
9)	Propylene	4.161	22494888	941.060	ppm
10)	Propane	4.298	25459411	1023.223	ppm
11)	Isobutylene	6.138	16970	8645.243	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

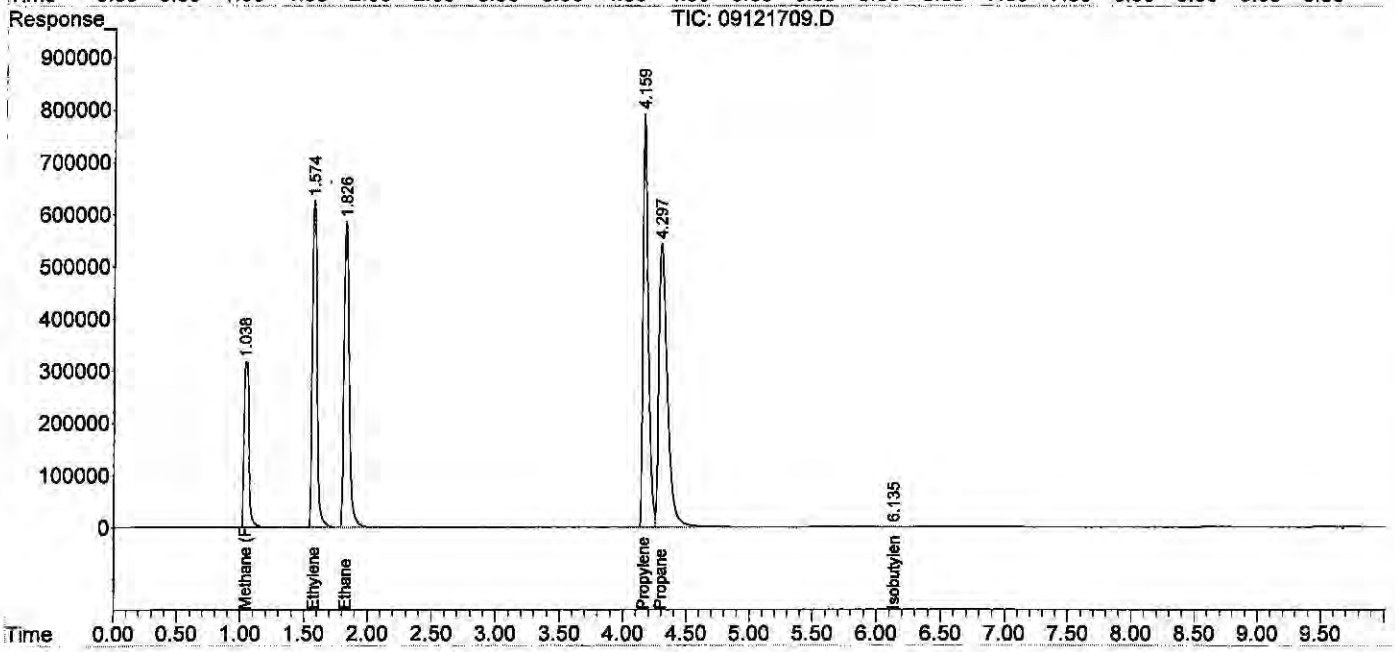
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121709.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 13:47
Operator : MC
Sample : 1000ppm 0.5ml s32-09121701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:11:46 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:11:38 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121710.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 14:07
Operator : MC
Sample : 2000ppm 1ml s32-09121701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:12:33 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:12:25 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

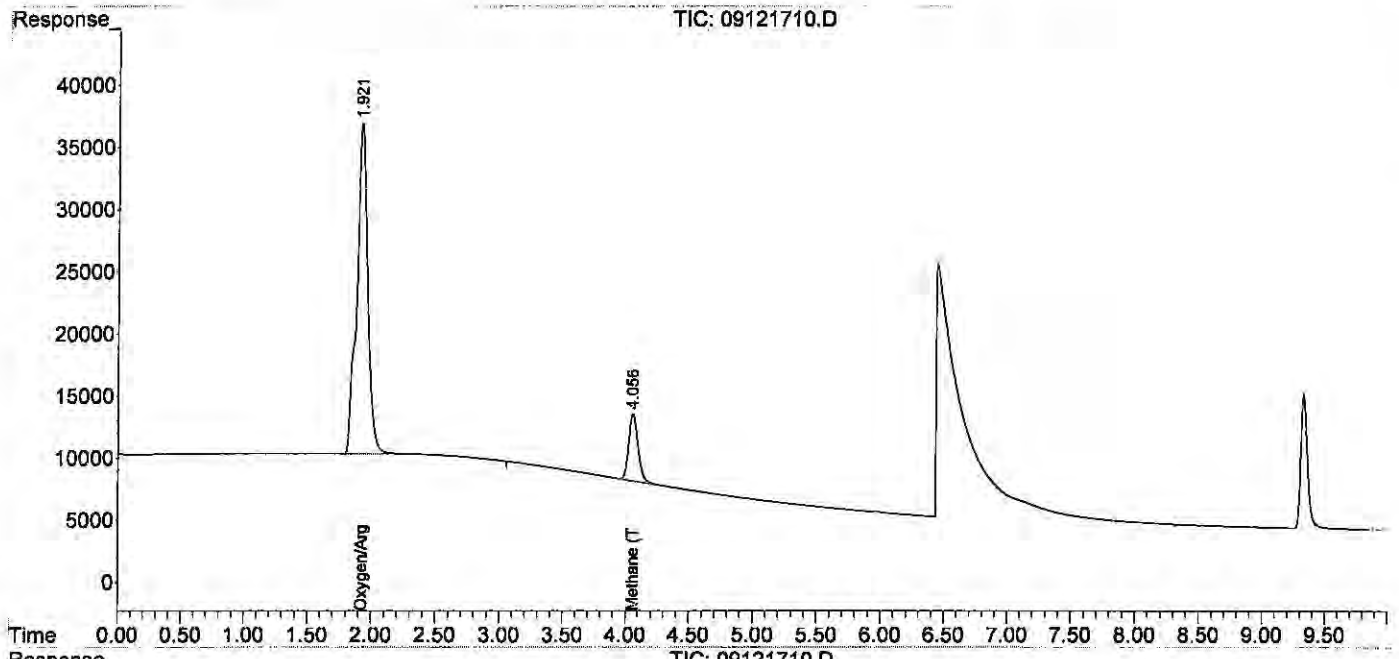
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	1.922f	1578147	1.659	ppm	
2)	Carbon monoxide	1.922f	1578147	N.D.	ppm	
3)	Methane (TCD)	4.057f	281651	3526.607	ppm	
4)	Carbon dioxide	0.000	0	N.D.	ppm	
6)	Methane (FID)	1.016	16098209	1763.622	ppm	
7)	Ethylene	1.552	31192444	1848.268	ppm	
8)	Ethane	1.801	31424218	1837.143	ppm	
9)	Propylene	4.129	42124690	1775.341	ppm	m
10)	Propane	4.269	48583085	1946.921	ppm	
11)	Isobutylene	6.136	33832	25613.603	ppm	
12)	Isobutane	6.576f	3845	0.120	ppm	
13)	n-Butane	6.576f	3845	0.120	ppm	

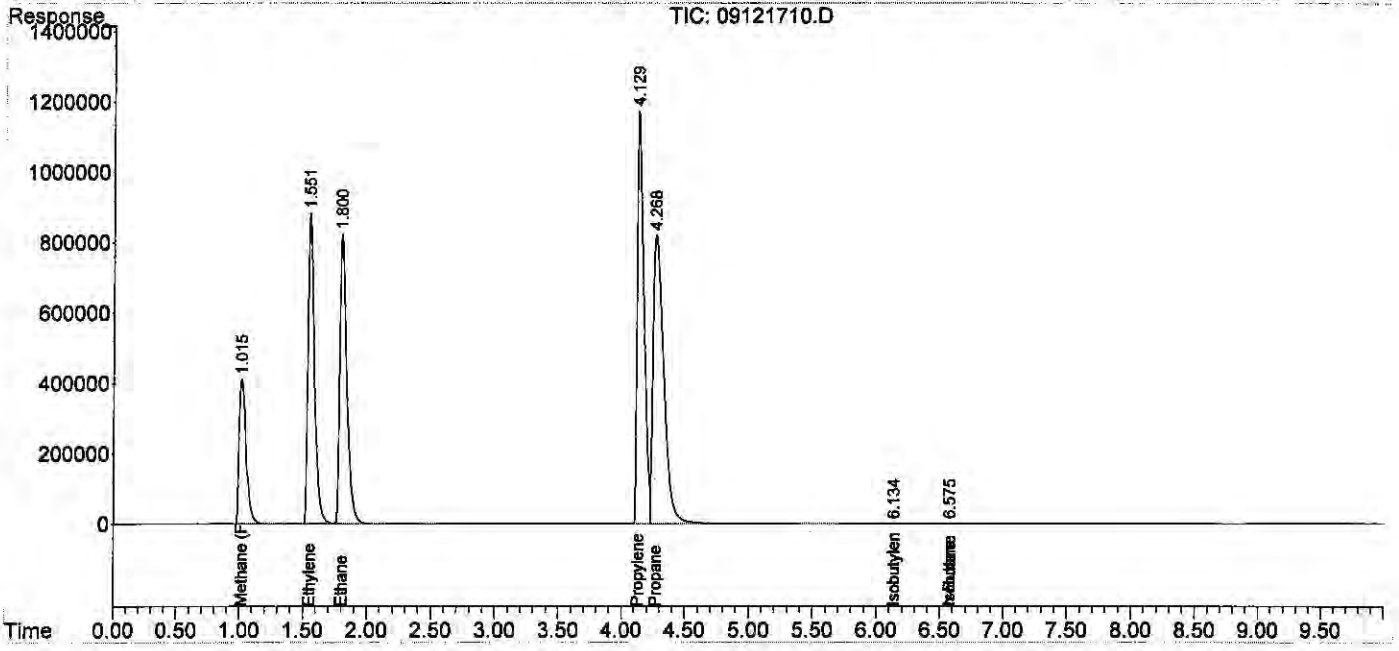
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121710.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 14:07
Operator : MC
Sample : 2000ppm 1ml s32-09121701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:12:33 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:12:25 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



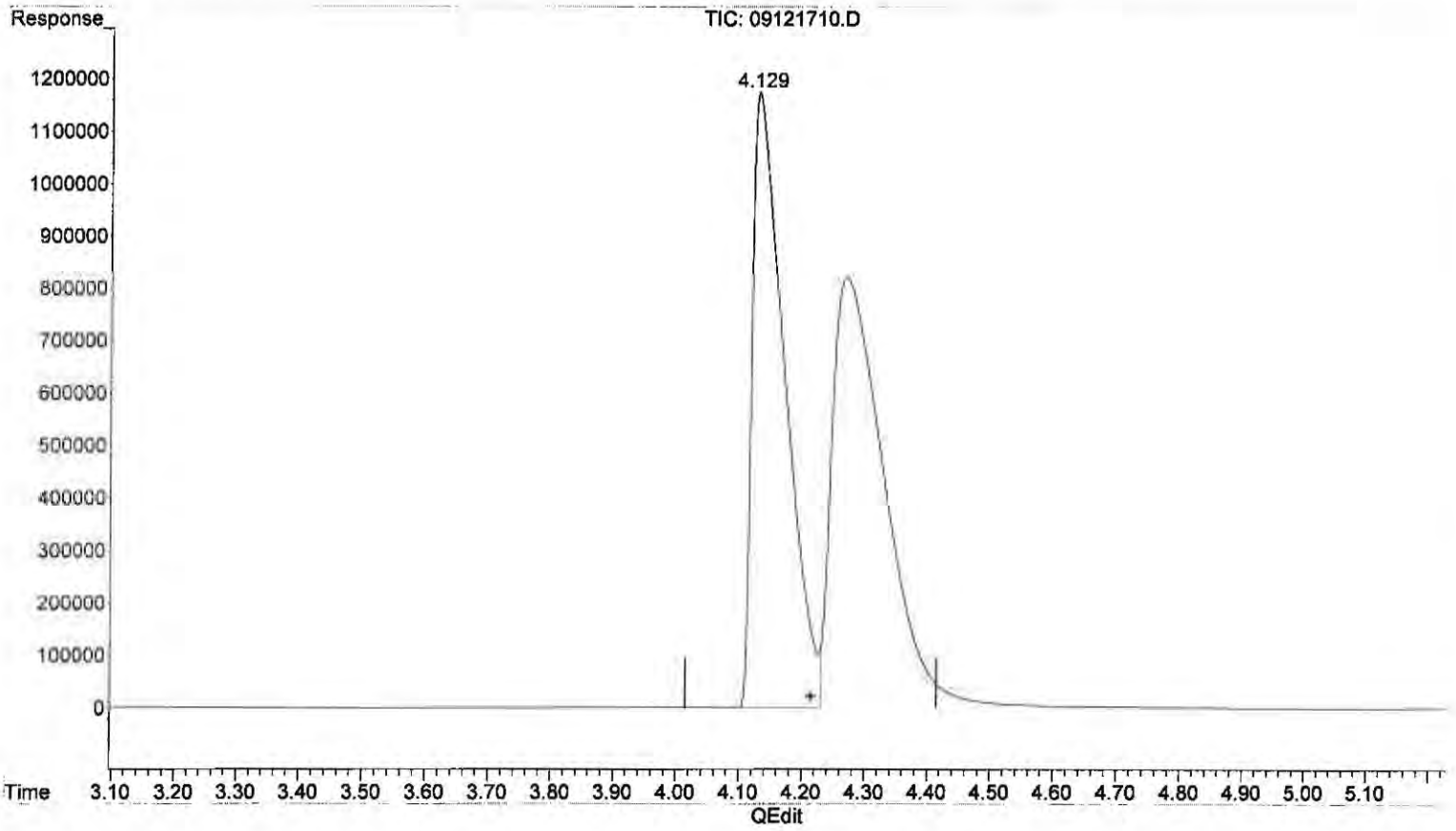


Quantitation Report (Qedit)

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121710.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 14:07
Operator : MC
Sample : 2000ppm 1ml s32-09121701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:12:33 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:12:25 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



(9) Propylene
4.129min 1775.341 ppm m
response 42124690

(+) = Expected Retention Time

Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121711.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 14:48
Operator : MC
Sample : 4000ppm 0.1ml s32-08231701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:13:37 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:13:29 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

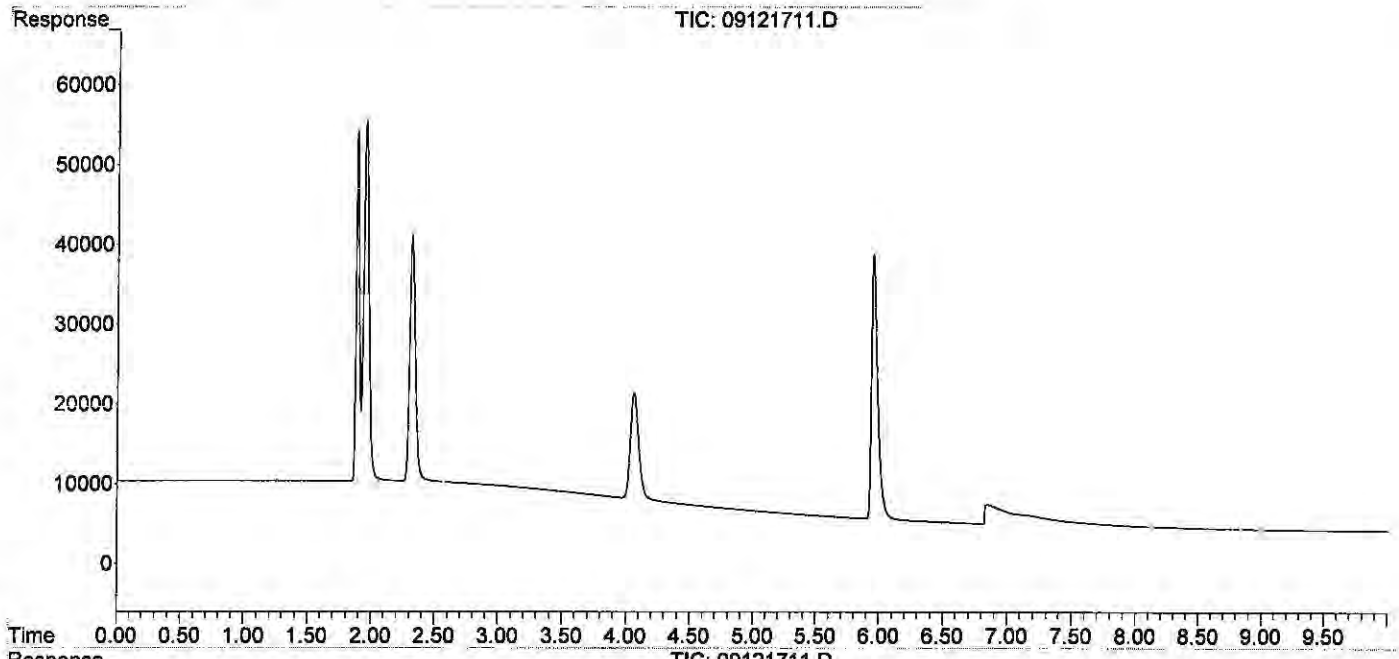
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	0.000	0	N.D.	ppm	d
2)	Carbon monoxide	0.000	0	N.D.	ppm	d
3)	Methane (TCD)	0.000	0	N.D.	ppm	d
4)	Carbon dioxide	0.000	0	N.D.	ppm	d
6)	Methane (FID)	1.059	35776839	3925.122	ppm	
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

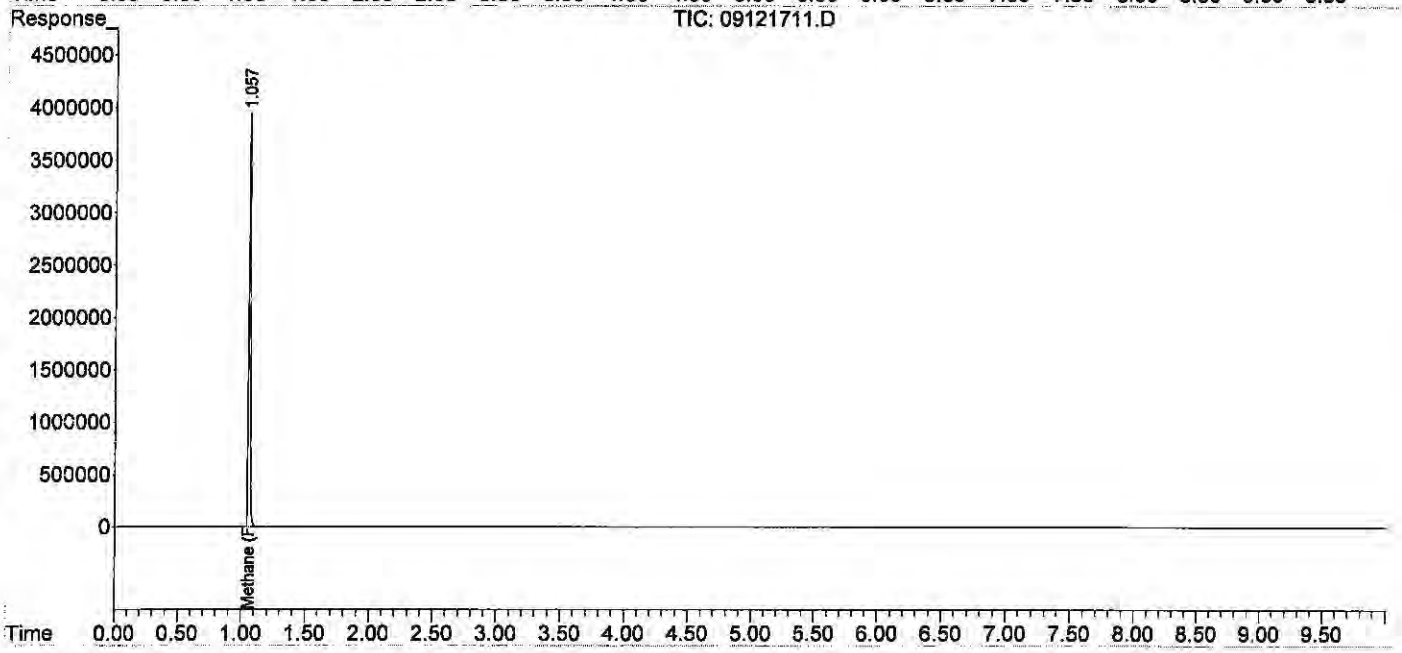
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121711.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 14:48
Operator : MC
Sample : 4000ppm 0.1ml s32-08231701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:13:37 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:13:29 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase :
Signal #1 Info :
Signal #2 Phase:
Signal #2 Info :





Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121712.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 15:21
Operator : MC
Sample : 20000ppm 0.5ml s32-08231701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:14:17 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:13:29 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	0.000	0	N.D.	ppm	d
2)	Carbon monoxide	1.836	3190788	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	d
4)	Carbon dioxide	0.000	0	N.D.	ppm	d
6)	Methane (FID)	1.034	169009160	18492.064	ppm	
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

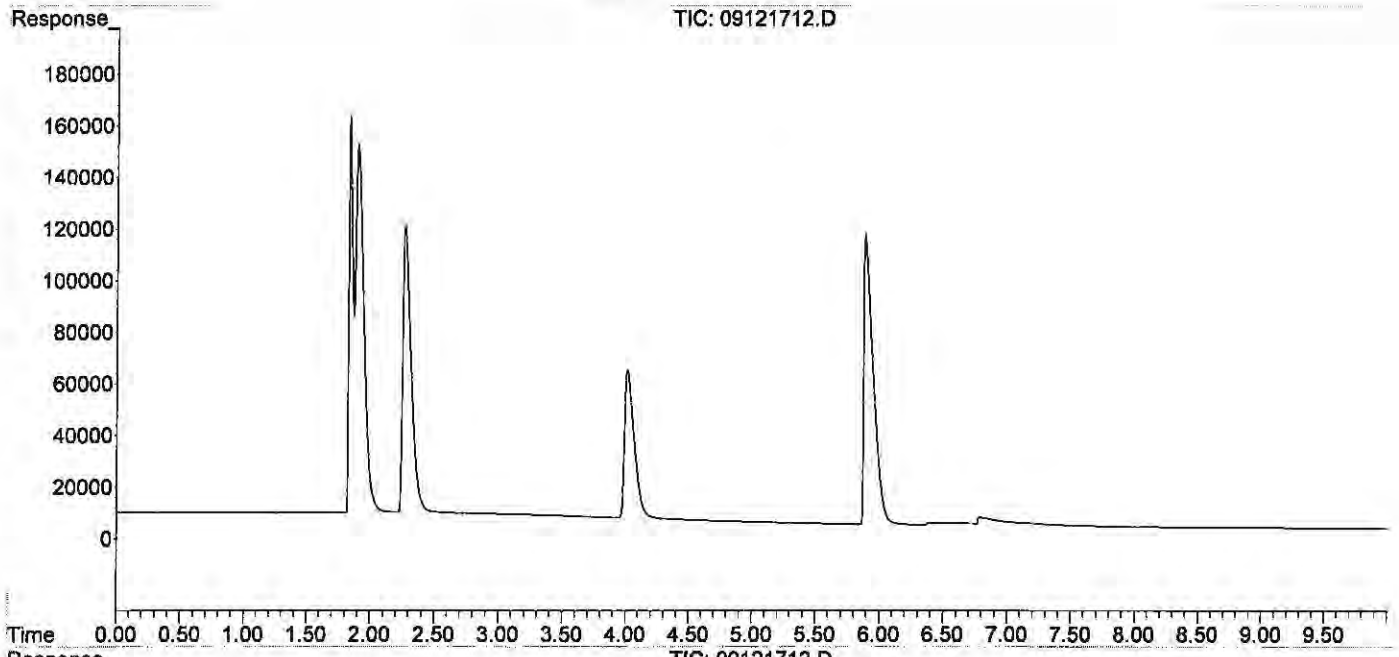
(f)=RT Delta > 1/2 Window (m)=manual int.

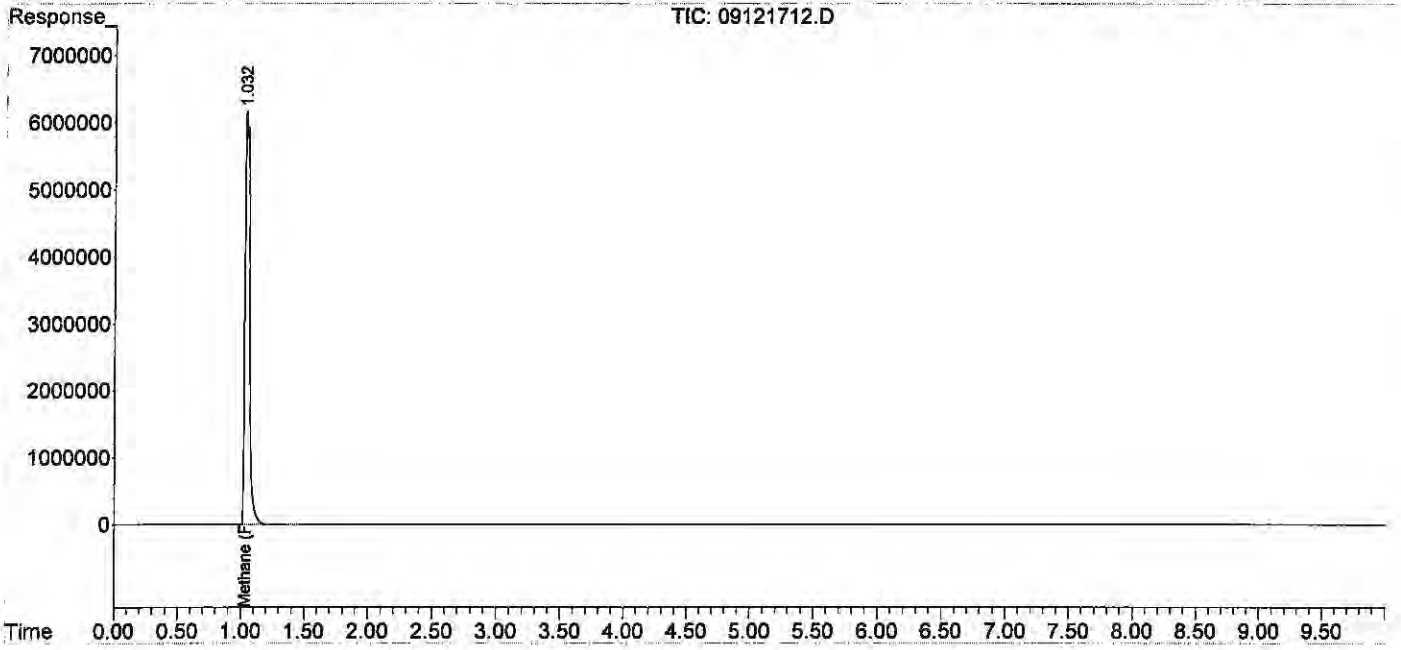
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121712.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 15:21
Operator : MC
Sample : 20000ppm 0.5ml s32-08231701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:14:17 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:13:29 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121715.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 16:15
Operator : MC
Sample : icv s30-05241604
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:15:11 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:13:29 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	1.843	2922459	3.687	ppm	
2)	Carbon monoxide	1.843	2922459	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	actual %D
4)	Carbon dioxide	0.000	0	N.D.	ppm	
6)	Methane (FID)	1.063	13748	1.516	ppm	1.50 101.1
7)	Ethylene	1.598	24153	1.443	ppm	1.50 96.2
8)	Ethane	1.850	24488	1.445	ppm	1.50 96.3
9)	Propylene	4.221	36004	1.537	ppm	1.50 102.5
10)	Propane	4.350	37738	1.517	ppm	1.51 100.5
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	6.579f	48019	1.804	ppm	9/14/2
13)	n-Butane	6.579f	48019	1.804	ppm	

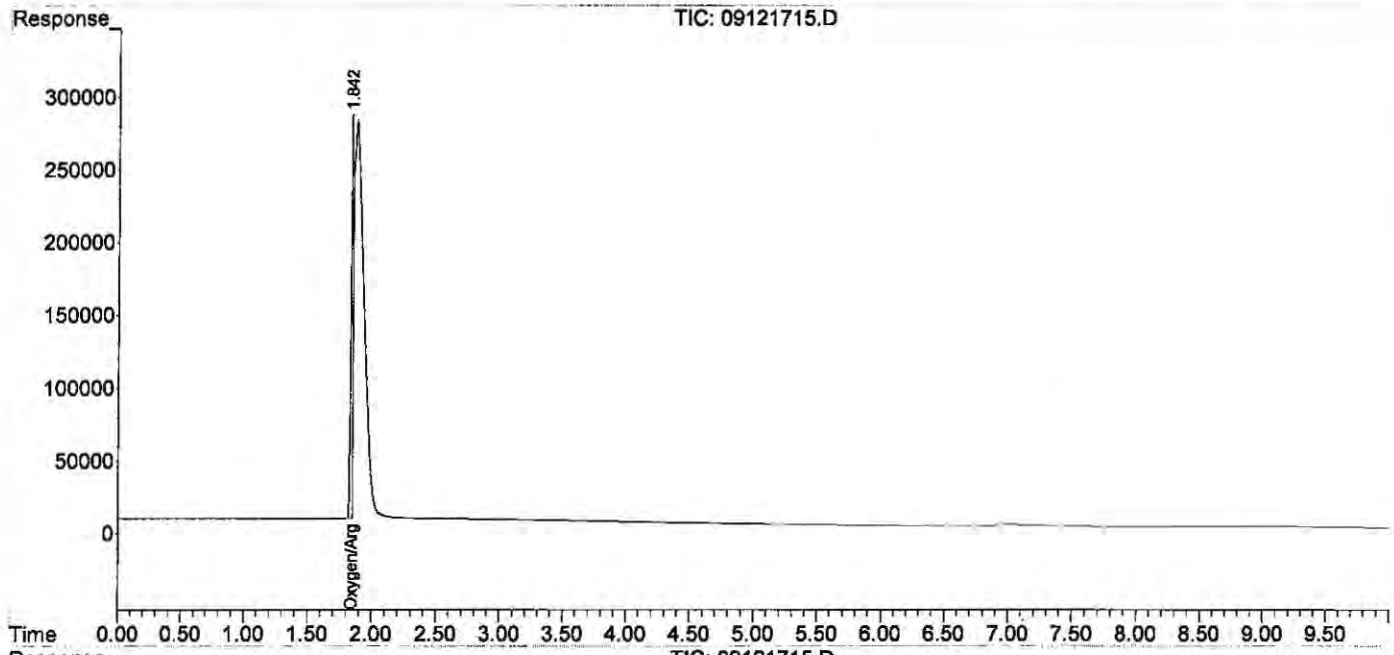
(f)=RT Delta > 1/2 Window (m)=manual int.

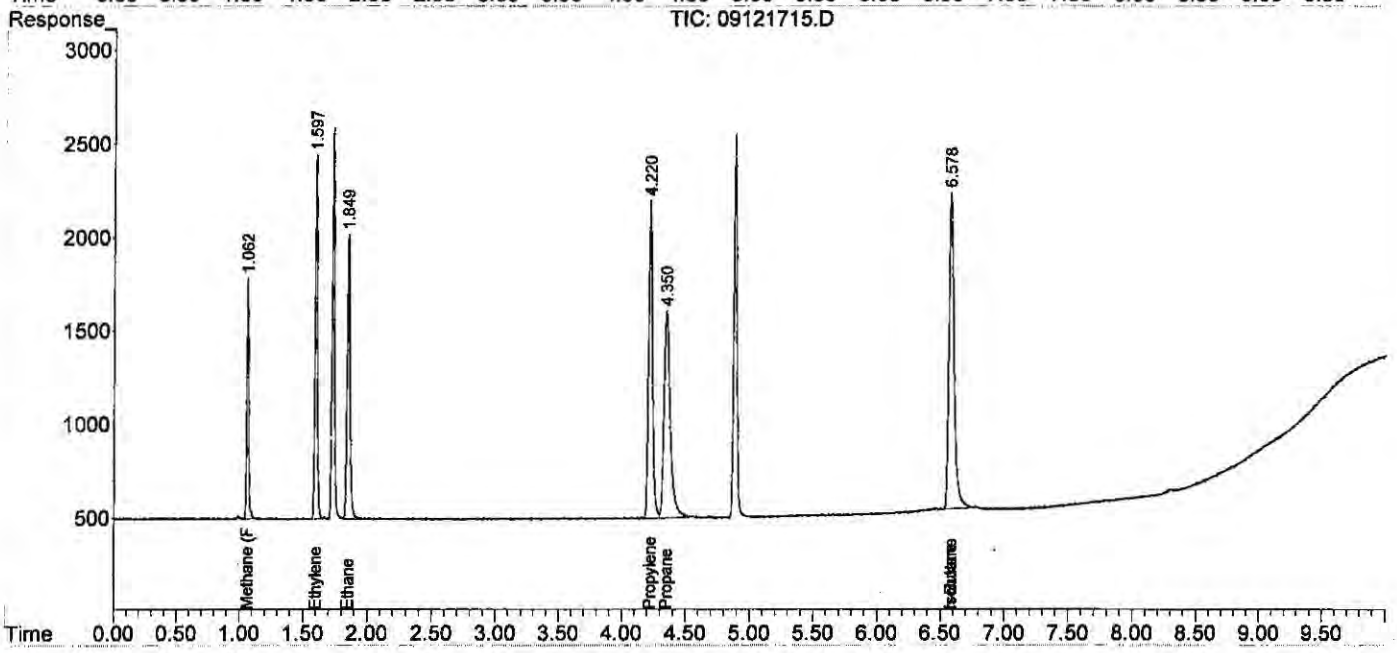
9/14/2017

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121715.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 16:15
Operator : MC
Sample : icv s30-05241604
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:15:11 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:13:29 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





ALS Environmental

Method : RSK175 Headspace Method for Dissolved Hydrocarbon in Water by FID/TCD
Client : ALS Laboratory Group
Service Request: P1806583
Sample Vol. (ml) : 32.00 ml
Analyst : MR
Date Analysis : 12/04/18
Head Space Vol.(ml) : 8.00 ml
Instrument : GC#10
Detector : FID#10, TCD#10
Gas Constant : 24.05684 (20°C)

HEAD SPACE RESULT (ppm)

Sample ID	Inj. Vol.	Methane	Ethylene	Ethane
std s32-07231801	0.100	1.620	1.601	1.573
ACTUAL		1.51	1.51	1.51
%Difference		7.3%	6.0%	4.2%
mcs 0.1ml	0.100	0.247	0.000	0.000
rb 0.1ml	0.100	0.133	0.000	0.000
fid lcs s30-05241604	0.100	1.523	1.077	1.340
fid lcsd s30-05241604	0.100	1.699	1.080	1.305
P1806583-001 0.1ml	0.100	7.958	0.000	0.000
P1806583-002 0.1ml	0.100	8.611	0.000	0.000
P1806583-003 0.1ml	0.100	6.652	0.000	0.000
P1806583-004 0.1ml	0.100	0.220	0.000	0.000
P1806583-005 0.1ml	0.100	1.276	0.000	0.000

FINAL HEAD SPACE RESULT (ppm)

	Methane	Ethylene	Ethane
WWt.	16.04	28.05	30.07
HENRY'S CONSTANT	3.76E+04	1.02E+04	2.63E+04
RL	1.30	1.00	0.60
mcs 0.1ml	2.470	0.000	0.000
fid lcs s30-05241604	15.230	10.770	13.400
fid lcsd s30-05241604	16.990	10.800	13.050
P1806583-001 0.1ml	79.580	0.000	0.000
P1806583-002 0.1ml	86.110	0.000	0.000
P1806583-003 0.1ml	66.520	0.000	0.000
P1806583-004 0.1ml	2.200	0.000	0.000
P1806583-005 0.1ml	12.760	0.000	0.000

std s32-07231801	1.596	1.634	1.597
ACTUAL	1.51	1.51	1.51
%Difference	5.7%	8.2%	5.8%

Data Path : J:\GC10\DATA\RSK_FID\2018_12\04\
Data File : 12041801.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 04-Dec-2018, 09:34:14
Operator : MR
Sample : std s32-07231801
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Dec 04 09:48:07 2018
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	0.000	0	N.D.	ppm
2)	Carbon monoxide	0.000	0	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.120	14692	1.620	ppm
7)	Ethylene	1.684	26789	1.601	ppm
8)	Ethane	1.949	26656	1.573	ppm
9)	Propylene	4.335	37197	1.587	ppm
10)	Propane	4.459	37820	1.520	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	6.673	48007	1.804	ppm
13)	n-Butane	6.673	48007	1.804	ppm

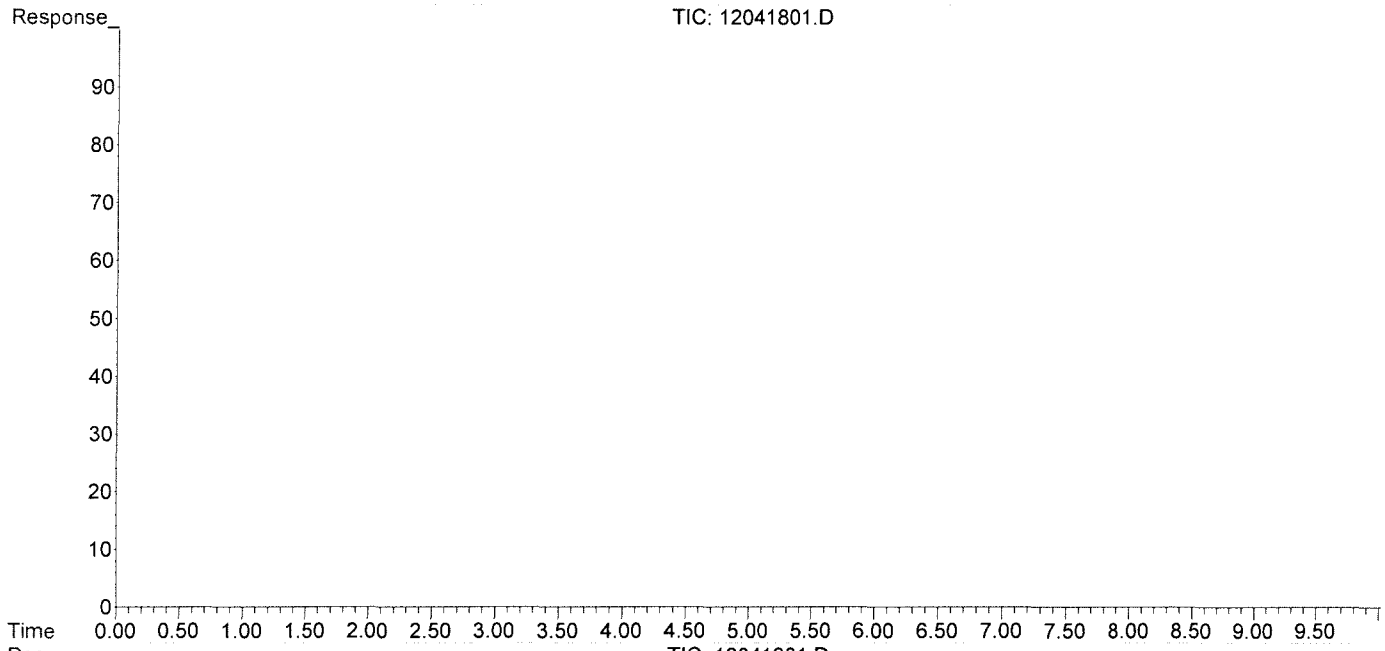
(f)=RT Delta > 1/2 Window (m)=manual int.

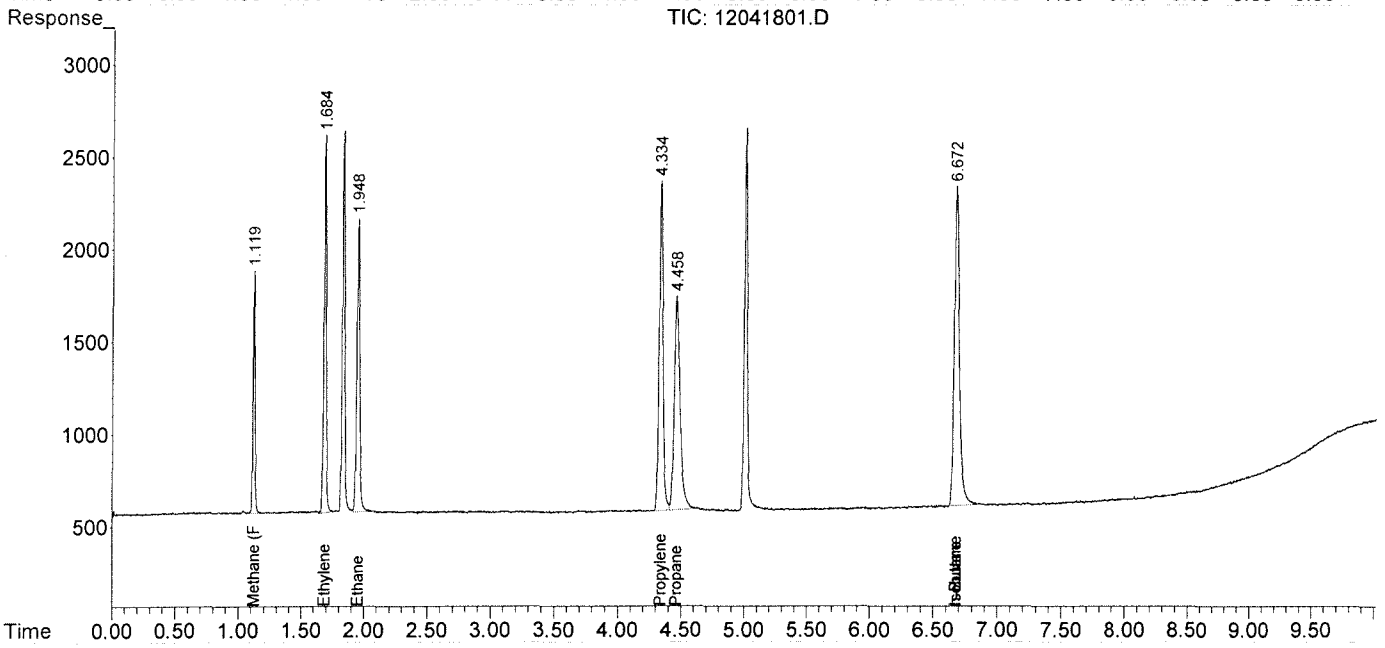
MR 12/5/18

Data Path : J:\GC10\DATA\RSK_FID\2018_12\04\
Data File : 12041801.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 04-Dec-2018, 09:34:14
Operator : MR
Sample : std s32-07231801
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Dec 04 09:48:07 2018
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_FID\2018_12\04\
Data File : 12041814.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 04-Dec-2018, 13:54:56
Operator : MR
Sample : std s32-07231801
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Dec 04 14:35:00 2018
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

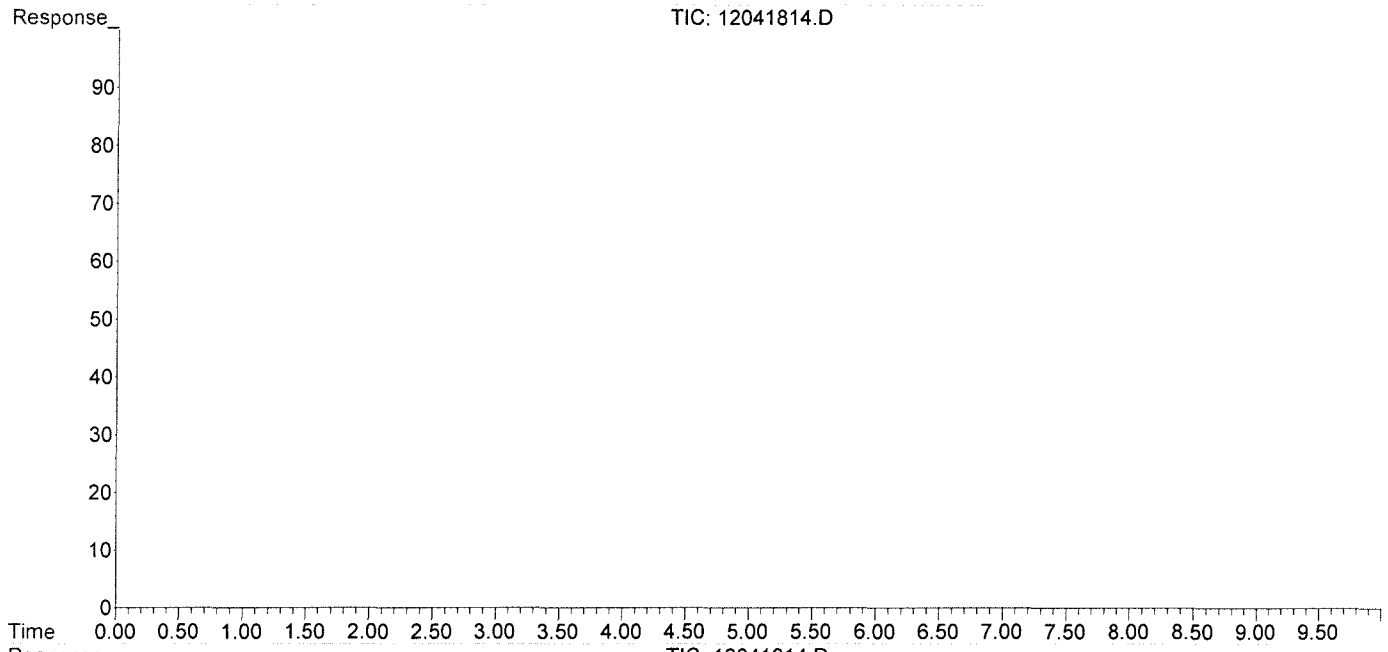
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	0.000	0	N.D.	ppm
2)	Carbon monoxide	0.000	0	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.125	14473	1.596	ppm
7)	Ethylene	1.692	27343	1.634	ppm
8)	Ethane	1.957	27067	1.597	ppm
9)	Propylene	4.336	39361	1.680	ppm
10)	Propane	4.460	40907	1.644	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	6.670	53110	1.995	ppm
13)	n-Butane	6.670	53110	1.995	ppm

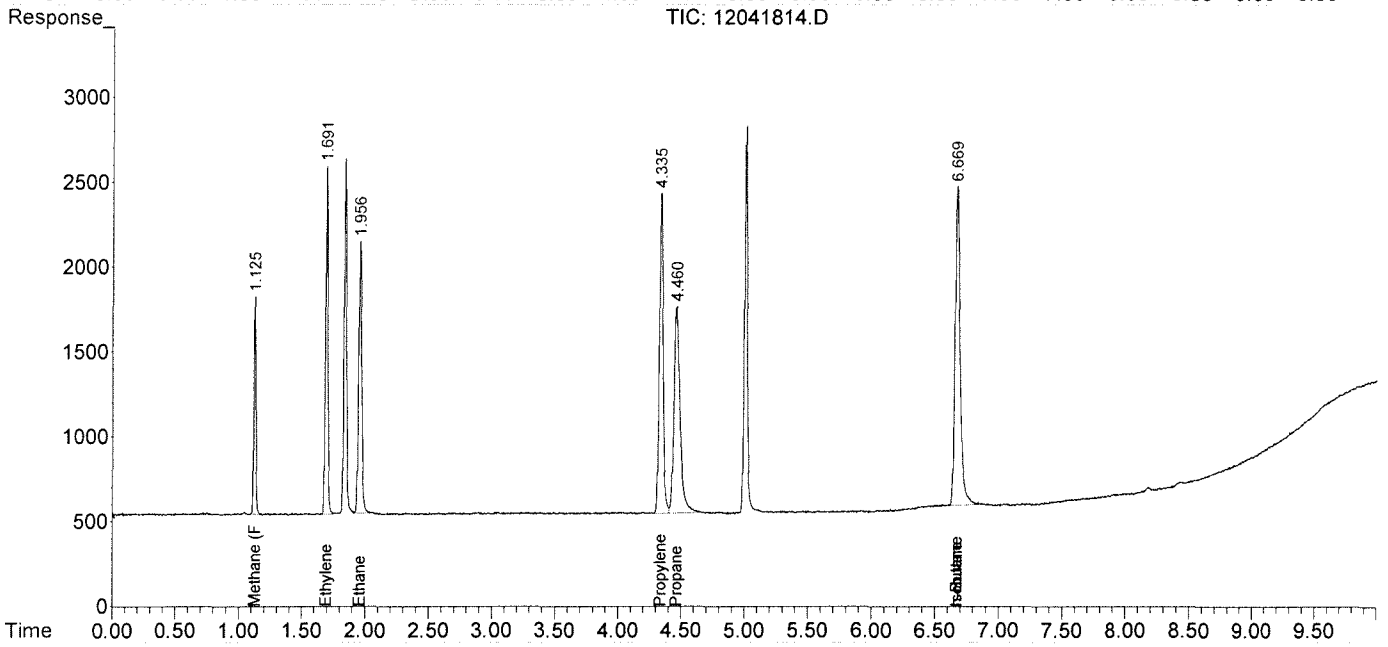
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2018_12\04\
Data File : 12041814.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 04-Dec-2018, 13:54:56
Operator : MR
Sample : std s32-07231801
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Dec 04 14:35:00 2018
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Injection Log

Directory: I:\GC10\DATA\RSK_FID\2017_09\12\

	Date/Time	File Name	Sample ID	Misc Info	Operator	Acquisition Method	Comments
1	12-Sep-17, 08:38:08	09121701.D	test		MC	RSKBOTH.M	
2	12-Sep-17, 10:52:40	09121702.D	0.151ppm 0.250ml s32-09121702		MC	RSKBOTH.M	Curve
3	12-Sep-17, 11:05:49	09121703.D	0.302ppm 0.5ml s32-09121702		MC	RSKBOTH.M	Curve
4	12-Sep-17, 11:45:34	09121704.D	1.51ppm 0.1ml s32-09051701		MC	RSKBOTH.M	Curve
5	12-Sep-17, 12:09:33	09121705.D	4.53ppm 0.3ml s32-09051701		MC	RSKBOTH.M	Curve
6	12-Sep-17, 12:30:23	09121706.D	10.57ppm 0.7ml s32-09051701		MC	RSKBOTH.M	Curve
7	12-Sep-17, 12:47:18	09121707.D	200ppm 0.1ml s32-09121701		MC	RSKBOTH.M	Curve
8	12-Sep-17, 13:00:22	09121708.D	600ppm 0.3ml s32-09121701		MC	RSKBOTH.M	Curve
9	12-Sep-17, 13:47:48	09121709.D	1000ppm 0.5ml s32-09121701		MC	RSKBOTH.M	Curve
10	12-Sep-17, 14:07:58	09121710.D	2000ppm 1ml s32-09121701		MC	RSKBOTH.M	Curve
11	12-Sep-17, 14:48:48	09121711.D	4000ppm 0.1ml s32-08231701		MC	RSKBOTH.M	Curve
12	12-Sep-17, 15:21:51	09121712.D	20000ppm 0.5ml s32-08231701		MC	RSKBOTH.M	Curve
13	12-Sep-17, 15:38:59	09121713.D	mb 0.5ml		MC	RSKBOTH.M	Pass
14	12-Sep-17, 15:55:35	09121714.D	mb 0.1ml		MC	RSKBOTH.M	Pass
15	12-Sep-17, 16:15:26	09121715.D	icv s30-05241604		MC	RSKBOTH.M	Pass

Injection Log

Directory: I:\GC10\DATA\RSK_FID\2018_12\04\

	Date/Time	File Name	Sample ID	Misc Info	Operator	Acquisition Method	Comments
1	04-Dec-18, 09:34:14	12041801.D	std s32-07231801		MR	RSKBOTH.M	pass
2	04-Dec-18, 09:49:42	12041802.D	rb 0.1ml		MR	RSKBOTH.M	pass
3	04-Dec-18, 10:03:37	12041803.D	mcs 0.1ml		MR	RSKBOTH.M	pass
4	04-Dec-18, 10:16:54	12041804.D	fid lcs s30-05241604		MR	RSKBOTH.M	pass
5	04-Dec-18, 10:30:54	12041805.D	fid lcsd s30-05241604		MR	RSKBOTH.M	pass
6	04-Dec-18, 10:45:03	12041806.D	P1806583-001 0.1ml		MR	RSKBOTH.M	
7	04-Dec-18, 11:00:26	12041807.D	P1806583-002 0.1ml		MR	RSKBOTH.M	
8	04-Dec-18, 11:13:52	12041808.D	P1806583-003 0.1ml		MR	RSKBOTH.M	
9	04-Dec-18, 11:27:08	12041809.D	P1806583-004 0.1ml		MR	RSKBOTH.M	
10	04-Dec-18, 11:56:26	12041810.D	P1806583-005 0.1ml		MR	RSKBOTH.M	
11	04-Dec-18, 12:11:55	12041811.D	P1806587-001 0.1ml		MR	RSKBOTH.M	
12	04-Dec-18, 12:29:30	12041812.D	P1806587-002 0.1ml		MR	RSKBOTH.M	
13	04-Dec-18, 13:33:26	12041813.D	P1806587-003 0.1ml		MR	RSKBOTH.M	
14	04-Dec-18, 13:54:56	12041814.D	std s32-07231801		MR	RSKBOTH.M	pass

HS18111440 8260 Raw Data

ALS WO# HS18111440

MSVOA09 -Logbook

Batch: 33625
Date: 11-13-2018
Method: 8260
Comments:

Analyst: Presenta Cabascango
Reviewer: Anjana Poluri
Laboratory: Houston

#	Samp ID	Type	Analyzed	DF	Init Wt/Vol	Final Vol	File ID	Matrix	Status	pH
1	BFB	TUNE	11-13-2018 10:58 am	1.00	50 mL	50 mL	U111301.D	Liquid	Y	NA
	Auto find/purged									
2	VSTD000.25	ICAL1	11-13-2018 11:23 am	1.00	50 mL	50 mL	U111302.D	Liquid	Y	NA
	0.25 uL cal std/250 mL DI									
3	VSTD000.5	ICAL2	11-13-2018 11:47 am	1.00	50 mL	50 mL	U111303.D	Liquid	Y	NA
	0.5 uL cal std/250 mL DI									
4	VSTD001	ICAL3	11-13-2018 12:36 pm	1.00	50 mL	50 mL	U111304.D	Liquid	Y	NA
	1 uL cal std/250 mL DI									
5	VSTD002	ICAL4	11-13-2018 01:01 pm	1.00	50 mL	50 mL	U111305.D	Liquid	Y	NA
	2 uL cal std/250 mL DI									
6	VSTD005	ICAL5	11-13-2018 01:25 pm	1.00	50 mL	50 mL	U111306.D	Liquid	Y	NA
	5 uL cal std/250 mL DI									
7	VSTD020	ICAL6	11-13-2018 01:50 pm	1.00	50 mL	50 mL	U111307.D	Liquid	Y	NA
	4 uL cal std/50 mL DI									
8	VSTD050	ICAL7	11-13-2018 02:15 pm	1.00	50 mL	50 mL	U111308.D	Liquid	Y	NA
	10 uL cal std/50 mL DI									
9	VSTD100	ICAL8	11-13-2018 02:39 pm	1.00	50 mL	50 mL	U111309.D	Liquid	Y	NA
	20 uL cal std/50 mL DI									
10	VSTD150	ICAL9	11-13-2018 03:04 pm	1.00	50 mL	50 mL	U111310.D	Liquid	Y	NA
	30 uL cal std/50 mL DI									
11	VSTD200	ICAL	11-13-2018 03:28 pm	1.00	50 mL	50 mL	U111311.D	Liquid	Y	NA
	40 uL cal std/50 mL DI									
12	BLANK	SAMP	11-13-2018 03:53 pm	1.00	50 mL	50 mL	U111312.D	Liquid	Y	NA
	Cleanup blk									
13	VSTD050	ICV	11-13-2018 04:18 pm	1.00	50 mL	50 mL	U111313.D	Liquid	Y	NA
	10 uL ICV std/50 mL DI									
14	BFB	TUNE	11-13-2018 05:07 pm	1.00	50 mL	50 mL	V111301.D	Liquid	Y	NA
	Auto find/purged									
15	VSTD050	CCV	11-13-2018 05:32 pm	1.00	50 mL	50 mL	V111302.D	Liquid	Y	NA
	10 uL cal std/50 mL DI									
16	VSTD050	CCV	11-13-2018 05:56 pm	1.00	50 mL	50 mL	V111303.D	Liquid	Y	NA
	10 uL cal std/50 mL DI									
17	VLCSW-181113	LCS	11-13-2018 06:21 pm	1.00	50 mL	50 mL	V111304.D	Liquid	Y	NA
	4 uL cal std/50 mL DI									
18	BLANK	SAMP	11-13-2018 06:46 pm	1.00	50 mL	50 mL	V111305.D	Liquid	Y	NA
19	VBLKW-181113	MBLK	11-13-2018 07:10 pm	1.00	50 mL	50 mL	V111306.D	Liquid	Y	NA
20	HS18110428-01	SAMP	11-13-2018 07:35 pm	1.00	50 mL	50 mL	V111307.D	Liquid	Y	<2
21	HS18110496-01	SAMP	11-13-2018 08:00 pm	1.00	50 mL	50 mL	V111308.D	Liquid	Y	<2
22	HS18110428-02	SAMP	11-13-2018 08:25 pm	1.00	50 mL	50 mL	V111309.D	Liquid	Y	<2
23	HS18110428-03	SAMP	11-13-2018 08:49 pm	1.00	50 mL	50 mL	V111310.D	Liquid	Y	<2
24	HS18110428-04	SAMP	11-13-2018 09:14 pm	1.00	50 mL	50 mL	V111311.D	Liquid	Y	<2
25	HS18110496-04	SAMP	11-13-2018 09:39 pm	1.00	50 mL	50 mL	V111312.D	Liquid	Y	<2
26	HS18110496-05	SAMP	11-13-2018 10:04 pm	1.00	50 mL	50 mL	V111313.D	Liquid	Y	<2
27	HS18110496-06	SAMP	11-13-2018 10:28 pm	1.00	50 mL	50 mL	V111314.D	Liquid	Y	<2
28	HS18110428-08	SAMP	11-13-2018 10:53 pm	1.00	50 mL	50 mL	V111315.D	Liquid	Y	<2
29	HS18110428-09	SAMP	11-13-2018 11:18 pm	1.00	50 mL	50 mL	V111316.D	Liquid	Y	<2
30	HS18110496-04MS	MS	11-13-2018 11:43 pm	1.00	50 mL	50 mL	V111317.D	Liquid	Y	<2
	8 uL cal std/40 mL Sample									
31	HS18110496-04MSD	MSD	11-14-2018 12:07 am	1.00	50 mL	50 mL	V111318.D	Liquid	Y	<2
	8 uL cal std/40 mL Sample									

MSVOA09 -Logbook

#	Samp ID	Type	Analyzed	DF	Init Wt/Vol	Final Vol	File ID	Matrix	Status	pH
32	HS18110650-09	SAMP	11-14-2018 12:32 am	1.00	50 mL	50 mL	V111319.D	Liquid	Y	<2
33	HS18110428-05	SAMP	11-14-2018 12:57 am	5.00	10 mL	50 mL	V111320.D	Liquid	Y	<2
34	HS18110428-05	SAMP	11-14-2018 01:22 am	25.00	2 mL	50 mL	V111321.D	Liquid	Y	<2
35	HS18110428-06	SAMP	11-14-2018 01:46 am	5.00	10 mL	50 mL	V111322.D	Liquid	Y	<2
36	HS18110428-06	SAMP	11-14-2018 02:11 am	25.00	2 mL	50 mL	V111323.D	Liquid	Y	<2
37	HS18110428-07	SAMP	11-14-2018 02:36 am	100.0(	500 µL	50 mL	V111324.D	Liquid	Y	<2
38	HS18110428-07	SAMP	11-14-2018 03:01 am	10.00	5 mL	50 mL	V111325.D	Liquid	Y	<2
39	HS18110650-05	SAMP	11-14-2018 03:25 am	1.00	50 mL	50 mL	V111326.D	Liquid	Y	<2
40	HS18110650-06	SAMP	11-14-2018 03:50 am	1.00	50 mL	50 mL	V111327.D	Liquid	Y	<2
41	VSTD050-END	CCV	11-14-2018 04:15 am	1.00	50 mL	50 mL	V111328.D	Liquid	Y	NA

10 uL cal std/50 mL DI

Chemical	Value
SURR SPK ID	30502-51-03
IS ID	30502-51-03
ICV STD ID	30603-41-01
LCS/MS ID	30502-51-01/02
CAL STD ID	30502-51-01/02
BFB ID	30502-51-03

FORM 3
WATER VOLATILE METHOD SPIKE RECOVERY

Lab Name: ALS LABORATORY GROUP Contract:

Lab Code: ALS-HS Case No.: SAS No.: SDG No.: HS18111440

Matrix Spike - Sample No.: VICV050

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE AMOUNT ()	% REC #	QC. LIMITS REC.
cis-1,3-Dichloropropene	50.00	53.22	106	80-120
trans-1,3-Dichloroprope	50.00	47.39	95	80-120
1,3-Dichlorobenzene	50.00	45.55	91	80-120
2,2-Dichloropropane	50.00	51.21	102	80-120
1,1-Dichloropropene	50.00	46.61	93	80-120
Dibromomethane	50.00	47.16	94	80-120
1,2-Dibromoethane	50.00	48.42	97	80-120
trans-1,2-Dichloroethen	50.00	46.36	93	80-120
1,1,1,2-Tetrachloroetha	50.00	49.98	100	80-120
1,1,1-Trichloroethane	50.00	48.15	96	80-120
1,1,2,2-Tetrachloroetha	50.00	45.96	92	80-120
Freon TF	50.00	46.03	92	80-120
1,1,2-Trichloroethane	50.00	45.83	92	80-120
1,1-Dichloroethane	50.00	45.57	91	80-120
1,1-Dichloroethene	50.00	45.66	91	80-120
Trichlorofluoromethane	50.00	46.76	94	80-120
1,2,3-Trichlorobenzene	50.00	48.30	97	80-120
Toluene	50.00	46.16	92	80-120
1,2,4-Trichlorobenzene	50.00	47.47	95	80-120
1,2,4-Trimethylbenzene	50.00	47.71	95	80-120
Tetrachloroethene	50.00	45.53	91	80-120
Trichloroethene	50.00	46.38	93	80-120
1,2-Dichlorobenzene	50.00	44.93	90	80-120
1,2-Dichloroethane	50.00	45.18	90	80-120
1,2-Dichloropropane	50.00	47.27	94	80-120
1,3,5-Trimethylbenzene	50.00	47.70	95	80-120
1,3-Dichloropropane	50.00	46.16	92	80-120
1,4-Dichlorobenzene	50.00	48.32	97	80-120

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

COMMENTS: _____

_____

FORM III VOA

FORM 3
WATER VOLATILE METHOD SPIKE RECOVERY

Lab Name: ALS LABORATORY GROUP Contract:

Lab Code: ALS-HS Case No.: SAS No.: SDG No.: HS18111440

Matrix Spike - Sample No.: VICV050

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE AMOUNT ()	% REC #	QC. LIMITS REC.
2-Butanone	100.00	92.32	92	80-120
2-Chlorotoluene	50.00	45.71	91	80-120
2-Hexanone	100.00	99.26	99	80-120
4-Chlorotoluene	50.00	46.84	94	80-120
tert-Butylbenzene	50.00	47.82	96	80-120
4-Methyl-2-Pentanone	100.00	96.36	96	80-120
Acetone	100.00	95.46	95	80-120
Benzene	50.00	46.32	93	80-120
Bromobenzene	50.00	46.19	92	80-120
Bromochloromethane	50.00	50.90	102	80-120
Bromodichloromethane	50.00	48.53	97	80-120
Bromoform	50.00	47.71	95	80-120
Bromomethane	50.00	50.93	102	80-120
Carbon Disulfide	100.00	98.32	98	80-120
Carbon Tetrachloride	50.00	49.39	99	80-120
Chlorobenzene	50.00	45.35	91	80-120
Chloroethane	50.00	44.97	90	80-120
Chloroform	50.00	45.67	91	80-120
Chloromethane	50.00	46.70	93	80-120
cis-1,2-Dichloroethene	50.00	45.95	92	80-120
Dibromochloromethane	50.00	52.11	104	80-120
Dichlorodifluoromethane	50.00	47.87	96	80-120
Ethylbenzene	50.00	46.81	94	80-120
Hexachlorobutadiene	50.00	55.07	110	80-120
Isopropylbenzene	50.00	47.92	96	80-120
m,p-Xylenes	100.00	94.65	95	80-120
Methylene Chloride	50.00	48.07	96	80-120
n-Butylbenzene	50.00	49.50	99	80-120

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

COMMENTS: _____

_____

FORM III VOA

FORM 3
WATER VOLATILE METHOD SPIKE RECOVERY

Lab Name: ALS LABORATORY GROUP Contract:

Lab Code: ALS-HS Case No.: SAS No.: SDG No.: HS18111440

Matrix Spike - Sample No.: VICV050

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE AMOUNT ()	% REC #	QC. LIMITS REC.
n-Propylbenzene	50.00	47.57	95	80-120
Naphthalene	50.00	51.20	102	80-120
o-Xylene	50.00	47.39	95	80-120
sec-Butylbenzene	50.00	48.40	97	80-120
Styrene	50.00	49.81	100	80-120
Vinyl Chloride	50.00	47.66	95	80-120
1,2,3-Trichloropropane	50.00	49.28	98	80-120
p-Isopropyltoluene	50.00	49.15	98	80-120
1,2-Dibromo-3-Chloropro	50.00	47.82	96	80-120

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

COMMENTS: _____

_____

FORM III VOA

FORM 5
VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: ALS LABORATORY GROUP Contract:

Lab Code: ALS-HS Case No.: SAS No.: SDG No.: HS18111440

Lab File ID: U111301 BFB Injection Date: 11/13/18

Instrument ID: VOA9 BFB Injection Time: 1058

GC Column: DB624 ID: 0.25 (mm) Heated Purge: (Y/N) N

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	20.9
75	30.0 - 60.0% of mass 95	53.3
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	7.1
173	Less than 2.0% of mass 174	0.6 (1.0)1
174	Greater than 50.0% of mass 95	67.7
175	5.0 - 9.0% of mass 174	5.2 (7.7)1
176	95.0 - 101.0% of mass 174	64.6 (95.4)1
177	5.0 - 9.0% of mass 176	4.8 (7.4)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VSTD000.25	VSTD000.25	U111302	11/13/18	1123
02	VSTD000.5	VSTD000.5	U111303	11/13/18	1147
03	VSTD001	VSTD001	U111304	11/13/18	1236
04	VSTD002	VSTD002	U111305	11/13/18	1301
05	VSTD005	VSTD005	U111306	11/13/18	1325
06	VSTD020	VSTD020	U111307	11/13/18	1350
07	VSTD050	VSTD050	U111308	11/13/18	1415
08	VSTD100	VSTD100	U111309	11/13/18	1439
09	VSTD150	VSTD150	U111310	11/13/18	1504
10	VSTD200	VSTD200	U111311	11/13/18	1528
11	VICV050	VICV050	U111313	11/13/18	1618
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

FORM V VOA

FORM 6
VOLATILE INITIAL CALIBRATION DATA

Lab Name: ALS LABORATORY GROUP Contract:

Lab Code: ALS-HS Case No.: SAS No.: SDG No.: HS18111440

Instrument ID: VOA9 Calibration Date(s): 11/13/18 11/13/18

Column: DB624 ID: 0.18 (mm) Calibration Time(s): 1123 1528

LAB FILE ID: RF0.25: U111302 RF0.5: U111303 RF1: U111304
RF2: U111305 RF5: U111306 RF20: U111307

COMPOUND	RF0.25	RF0.5	RF1	RF2	RF5	RF20
cis-1,3-Dichloropropene		0.514	0.452	0.424	0.458	0.523
trans-1,3-Dichloropropene		3218	5482	10881	30108	147063
1,3-Dichlorobenzene		2.016	1.635	1.560	1.502	1.485
2,2-Dichloropropane		0.895	0.675	0.644	0.597	0.645
1,1-Dichloropropene		0.589	0.484	0.455	0.407	0.432
Dibromomethane		0.272	0.224	0.217	0.212	0.216
1,2-Dibromoethane		0.438	0.364	0.337	0.365	0.365
trans-1,2-Dichloroethene		0.776	0.676	0.607	0.562	0.575
1,1,1,2-Tetrachloroethane		0.357	0.286	0.272	0.294	0.309
1,1,1-Trichloroethane		1.047	0.838	0.848	0.741	0.818
1,1,2,2-Tetrachloroethane		1.478	1.172	1.145	1.215	1.150
Freon TF		0.612	0.528	0.532	0.409	0.460
1,1,2-Trichloroethane		0.411	0.336	0.304	0.314	0.307
1,1-Dichloroethane		1.465	1.215	1.128	1.077	1.065
1,1-Dichloroethene		0.736	0.626	0.565	0.474	0.526
Trichlorofluoromethane		1.241	1.099	1.043	0.817	0.913
1,2,3-Trichlorobenzene		1.196	0.776	0.891	0.911	0.922
Toluene		2.078	1.628	1.576	1.529	1.532
1,2,4-Trichlorobenzene		1.260	0.914	0.912	0.902	0.924
1,2,4-Trimethylbenzene		3.320	2.638	2.610	2.690	2.770
Tetrachloroethene		0.336	0.285	0.263	0.234	0.246
Trichloroethene		0.440	0.361	0.330	0.306	0.325
1,2-Dichlorobenzene		2.072	1.662	1.534	1.584	1.503
1,2-Dichloroethane		0.688	0.543	0.533	0.514	0.502
1,2-Dichloropropane		0.420	0.368	0.338	0.340	0.346
1,3,5-Trimethylbenzene		3.173	2.583	2.523	2.530	2.676
1,3-Dichloropropane		0.875	0.710	0.656	0.685	0.660
1,4-Dichlorobenzene		7995	11659	22453	55298	228900
2-Butanone		0.438	0.357	0.328	0.355	0.335
2-Chlorotoluene		3.108	2.512	2.344	2.371	2.366
2-Hexanone		0.309	0.250	0.264	0.296	0.296
4-Chlorotoluene		3.515	2.726	2.736	2.786	2.768
tert-Butylbenzene		2.788	2.149	2.208	2.094	2.254
4-Methyl-2-Pentanone		0.448	0.409	0.382	0.418	0.418
Acetone		5795	7657	12023	24249	87797
Benzene		1.791	1.472	1.332	1.296	1.322
Bromobenzene		1.057	0.812	0.769	0.798	0.781
Bromochloromethane		0.288	0.289	0.307	0.306	0.304
Bromodichloromethane		0.499	0.390	0.373	0.378	0.400
Bromoform		1478	2470	4530	13391	60993
Bromomethane		2224	4167	7606	17760	65394
Carbon Disulfide		2.186	1.775	1.666	1.469	1.640
Carbon Tetrachloride		0.413	0.348	0.330	0.290	0.344
Chlorobenzene		1.390	1.114	0.980	0.979	0.984

FORM VI VOA

FORM 6
VOLATILE INITIAL CALIBRATION DATA

Lab Name: ALS LABORATORY GROUP Contract:

Lab Code: ALS-HS Case No.: SAS No.: SDG No.: HS1811144

Instrument ID: VOA9 Calibration Date(s): 11/13/18 11/13/18

Column: DB624 ID: 0.18 (mm) Calibration Time(s): 1123 1528

LAB FILE ID: RF0.25: U111302 RF0.5: U111303 RF1: U111304
RF2: U111305 RF5: U111306 RF20: U111307

COMPOUND	RF0.25	RF0.5	RF1	RF2	RF5	RF20
Chloroethane		0.691	0.561	0.547	0.455	0.484
Chloroform		1.493	1.230	1.118	1.087	1.079
Chloromethane		4145	6506	12000	26431	114171
cis-1,2-Dichloroethene		0.890	0.758	0.706	0.655	0.674
Dibromochloromethane		0.340	0.262	0.256	0.287	0.314
Dichlorodifluoromethane		4116	6358	12615	24157	119108
Ethylbenzene		0.660	0.543	0.490	0.475	0.502
Hexachlorobutadiene		2273	2210	4667	8782	45235
Isopropylbenzene		1.845	1.478	1.459	1.431	1.486
m,p-Xylenes		0.830	0.625	0.602	0.602	0.634
Methylene Chloride		5188	7766	13586	29126	113894
n-Butylbenzene		11934	17894	36189	79206	381141
n-Propylbenzene		4.808	3.945	3.820	3.699	3.871
Naphthalene		2.957	2.577	2.535	2.887	3.092
o-Xylene		0.725	0.632	0.608	0.619	0.643
sec-Butylbenzene		4.052	3.193	3.096	2.852	3.218
Styrene		1.201	0.990	1.012	1.047	1.097
Vinyl Chloride		4801	7374	13465	29718	136290
1,2,3-Trichloropropane		1.381	1.095	1.101	1.220	1.204
p-Isopropyltoluene		3.227	2.386	2.598	2.465	2.727
1,2-Dibromo-3-Chloropropane		479	955	1762	5351	24969
1,2-Dichloroethane-d4		8937	11059	18531	38984	138453
Dibromofluoromethane		5664	7705	12925	27004	102630
Toluene-d8		23871	30489	51591	112942	412445
4-Bromofluorobenzene		8554	10512	18827	41214	154498

FORM VI VOA

FORM 6
VOLATILE INITIAL CALIBRATION DATA

Lab Name: ALS LABORATORY GROUP Contract:

Lab Code: ALS-HS Case No.: SAS No.: SDG No.: HS1811144

Instrument ID: VOA9 Calibration Date(s): 11/13/18 11/13/18

Column: DB624 ID: 0.18 (mm) Calibration Time(s): 1123 1528

LAB FILE ID: RF50: U111308 RF100: U111309 RF150: U111310
RF200: U111311

COMPOUND	RF50	RF100	RF150	RF200
cis-1,3-Dichloropropene	0.547	0.595	0.608	0.588
trans-1,3-Dichloropropene	407060	912116	1439550	1983766
1,3-Dichlorobenzene	1.441	1.512	1.522	1.494
2,2-Dichloropropane	0.668	0.740	0.784	0.738
1,1-Dichloropropene	0.414	0.457	0.468	0.451
Dibromomethane	0.214	0.221	0.220	0.212
1,2-Dibromoethane	0.363	0.366	0.360	0.353
trans-1,2-Dichloroethene	0.578	0.598	0.615	0.580
1,1,1,2-Tetrachloroethane	0.320	0.333	0.335	0.332
1,1,1-Trichloroethane	0.837	0.918	0.956	0.902
1,1,2,2-Tetrachloroethane	1.122	1.135	1.138	1.104
Freon TF	0.433	0.506	0.529	0.498
1,1,2-Trichloroethane	0.296	0.302	0.299	0.291
1,1-Dichloroethane	1.077	1.100	1.127	1.057
1,1-Dichloroethene	0.507	0.543	0.568	0.534
Trichlorofluoromethane	0.888	0.996	1.035	0.964
1,2,3-Trichlorobenzene	0.895	0.964	0.981	0.959
Toluene	1.480	1.511	1.507	1.445
1,2,4-Trichlorobenzene	0.918	0.997	1.018	1.004
1,2,4-Trimethylbenzene	2.646	2.808	2.798	2.714
Tetrachloroethene	0.231	0.253	0.257	0.253
Trichloroethene	0.310	0.331	0.336	0.327
1,2-Dichlorobenzene	1.470	1.530	1.529	1.486
1,2-Dichloroethane	0.482	0.494	0.487	0.468
1,2-Dichloropropane	0.339	0.355	0.356	0.342
1,3,5-Trimethylbenzene	2.552	2.731	2.750	2.658
1,3-Dichloropropane	0.642	0.647	0.644	0.623
1,4-Dichlorobenzene	576011	1240019	1907496	2606334
2-Butanone	0.340	0.348	0.343	0.318
2-Chlorotoluene	2.278	2.377	2.372	2.306
2-Hexanone	0.297	0.307	0.305	0.292
4-Chlorotoluene	2.640	2.769	2.781	2.705
tert-Butylbenzene	2.136	2.334	2.363	2.278
4-Methyl-2-Pentanone	0.416	0.431	0.421	0.410
Acetone	201617	430350	636098	869596
Benzene	1.290	1.330	1.333	1.271
Bromobenzene	0.757	0.802	0.810	0.796
Bromochloromethane	0.308	0.299	0.285	0.266
Bromodichloromethane	0.406	0.432	0.438	0.424
Bromoform	170886	383125	610635	844522
Bromomethane	154362	367005	609177	
Carbon Disulfide	1.661	1.759	1.826	1.705
Carbon Tetrachloride	0.337	0.388	0.405	0.392
Chlorobenzene	0.950	0.978	0.966	0.946

FORM 6
VOLATILE INITIAL CALIBRATION DATA

Lab Name: ALS LABORATORY GROUP Contract:

Lab Code: ALS-HS Case No.: SAS No.: SDG No.: HS1811144

Instrument ID: VOA9 Calibration Date(s): 11/13/18 11/13/18

Column: DB624 ID: 0.18 (mm) Calibration Time(s): 1123 1528

LAB FILE ID: RF50: U111308 RF100: U111309 RF150: U111310
RF200: U111311

COMPOUND	RF50	RF100	RF150	RF200
Chloroethane	0.482	0.493	0.509	0.472
Chloroform	1.082	1.104	1.121	1.047
Chloromethane	285521	595590	963160	1334230
cis-1,2-Dichloroethene	0.664	0.681	0.694	0.654
Dibromochloromethane	0.333	0.351	0.354	0.351
Dichlorodifluoromethane	293949	680233	1086406	1483355
Ethylbenzene	0.492	0.514	0.517	0.504
Hexachlorobutadiene	110558	270039	426795	
Isopropylbenzene	1.427	1.543	1.535	1.471
m,p-Xylenes	0.609	0.638	0.632	0.615
Methylene Chloride	276248	577262	911224	1246871
n-Butylbenzene	954951	2203969	3347969	
n-Propylbenzene	3.668	3.966	3.962	3.771
Naphthalene	3.062	3.229	3.212	3.095
o-Xylene	0.629	0.652	0.649	0.635
sec-Butylbenzene	3.062	3.389	3.420	3.284
Styrene	1.100	1.130	1.117	1.082
Vinyl Chloride	335638	744825	1189386	1622522
1,2,3-Trichloropropane	1.240	1.296	1.309	1.275
p-Isopropyltoluene	2.627	2.886	2.907	2.820
1,2-Dibromo-3-Chloropropane	66581	149236	234820	321770
1,2-Dichloroethane-d4	335901	696595	1062364	1441844
Dibromofluoromethane	255826	526814	809097	1112100
Toluene-d8	1045096	2142731	3238162	4386438
4-Bromofluorobenzene	396604	823996	1261578	1723103

FORM VI VOA

FORM 6
VOLATILE INITIAL CALIBRATION DATA

Lab Name: ALS LABORATORY GROUP Contract:

Lab Code: ALS-HS Case No.: SAS No.: SDG No.: HS1811144

Instrument ID: VOA9 Calibration Date(s): 11/13/18 11/13/18

Column: DB624 ID: 0.18 (mm) Calibration Time(s): 1123 1528

COMPOUND	CURVE	COEFFICENTS A0	A1	A2	%RSD OR R^2	MAX %RSD OR R^2
cis-1,3-Dichloropropene	AVRG		0.52317106		12.886	20.000
trans-1,3-Dichloropropene	LINR	2.955e-002	1.87475164		0.9992282	0.9900000
1,3-Dichlorobenzene	AVRG		1.57423339		11.066	20.000
2,2-Dichloropropane	AVRG		0.70955952		12.773	20.000
1,1-Dichloropropene	AVRG		0.46178698		11.618	20.000
Dibromomethane	AVRG		0.22310340		8.428	20.000
1,2-Dibromoethane	AVRG		0.36809182		7.515	20.000
trans-1,2-Dichloroethene	AVRG		0.61854084		10.984	20.000
1,1,1,2-Tetrachloroethane	AVRG		0.31538401		8.665	20.000
1,1,1-Trichloroethane	AVRG		0.87828248		10.125	20.000
1,1,2,2-Tetrachloroethane	AVRG		1.18433615		9.680	20.000
Freon TF	AVRG		0.50088227		12.161	20.000
1,1,2-Trichloroethane	AVRG		0.31787570		11.701	20.000
1,1-Dichloroethane	AVRG		1.14578561		11.273	20.000
1,1-Dichloroethene	AVRG		0.56438078		13.689	20.000
Trichlorofluoromethane	AVRG		0.99961564		12.536	20.000
1,2,3-Trichlorobenzene	AVRG		0.94398267		11.868	20.000
Toluene	AVRG		1.58742783		12.041	20.000
1,2,4-Trichlorobenzene	AVRG		0.98325969		11.514	20.000
1,2,4-Trimethylbenzene	AVRG		2.77717297		7.772	20.000
Tetrachloroethene	AVRG		0.26191977		12.290	20.000
Trichloroethene	AVRG		0.34069901		11.908	20.000
1,2-Dichlorobenzene	AVRG		1.59672308		11.731	20.000
1,2-Dichloroethane	AVRG		0.52321079		12.632	20.000
1,2-Dichloropropane	AVRG		0.35598971		7.249	20.000
1,3,5-Trimethylbenzene	AVRG		2.68643867		7.489	20.000
1,3-Dichloropropane	AVRG		0.68254990		11.227	20.000
1,4-Dichlorobenzene	LINR	-8.51e-004	0.64997268		0.9997856	0.9900000
2-Butanone	AVRG		0.35147036		9.867	20.000
2-Chlorotoluene	AVRG		2.44838115		10.438	20.000
2-Hexanone	AVRG		0.29065206		6.972	20.000
4-Chlorotoluene	AVRG		2.82514687		9.297	20.000
tert-Butylbenzene	AVRG		2.28952823		9.083	20.000
4-Methyl-2-Pentanone	AVRG		0.41710960		4.264	20.000
Acetone	LINR	-8.86e-002	4.54997798		0.9976530	0.9900000
Benzene	AVRG		1.38203708		11.842	20.000
Bromobenzene	AVRG		0.82019754		11.060	20.000
Bromochloromethane	AVRG		0.29476503		4.761	20.000
Bromodichloromethane	AVRG		0.41544996		9.300	20.000
Bromoform	2ORDR	2.367e-002	4.32863402	-0.1428982	0.9996117	0.9900000
Bromomethane	LINR	3.806e-002	2.31863844		0.9951529	0.9900000
Carbon Disulfide	AVRG		1.74293069		11.174	20.000
Carbon Tetrachloride	AVRG		0.36075188		11.334	20.000
Chlorobenzene	AVRG		1.03196120		13.892	20.000

FORM VI VOA

FORM 6
VOLATILE INITIAL CALIBRATION DATA

Lab Name: ALS LABORATORY GROUP Contract:

Lab Code: ALS-HS Case No.: SAS No.: SDG No.: HS1811144

Instrument ID: VOA9 Calibration Date(s): 11/13/18 11/13/18

Column: DB624 ID: 0.18 (mm) Calibration Time(s): 1123 1528

COMPOUND	CURVE	COEFFICENTS A0	A1	A2	%RSD OR R^2	MAX %RSD OR R^2
Chloroethane	AVRG		0.52169853		13.844	20.000
Chloroform	AVRG		1.15119170		11.977	20.000
Chloromethane	LINR	4.59e-003	1.49116761		0.9990790	0.9900000
cis-1,2-Dichloroethene	AVRG		0.70849189		10.610	20.000
Dibromochloromethane	AVRG		0.31638584		12.330	20.000
Dichlorodifluoromethane	LINR	2.002e-002	1.32602499		0.9979384	0.9900000
Ethylbenzene	AVRG		0.52179627		10.571	20.000
Hexachlorobutadiene	2ORDR	5.037e-003	3.37955533	-0.5103543	0.9988978	0.9900000
Isopropylbenzene	AVRG		1.51953048		8.449	20.000
m,p-Xylenes	AVRG		0.64297054		11.093	20.000
Methylene Chloride	LINR	-1.4e-002	1.58950727		0.9987446	0.9900000
n-Butylbenzene	2ORDR	7.523e-003	0.38680994	-2.96e-003	0.9992256	0.9900000
n-Propylbenzene	AVRG		3.94550864		8.657	20.000
Naphthalene	AVRG		2.96078148		8.567	20.000
o-Xylene	AVRG		0.64354428		5.210	20.000
sec-Butylbenzene	AVRG		3.28524136		10.228	20.000
Styrene	AVRG		1.08640200		5.880	20.000
Vinyl Chloride	LINR	1.016e-002	1.21438330		0.9982930	0.9900000
1,2,3-Trichloropropane	AVRG		1.23587941		7.613	20.000
p-Isopropyltoluene	AVRG		2.73812048		9.374	20.000
1,2-Dibromo-3-Chloropropane	2ORDR	2.08e-002	5.38876079	-0.2033476	0.9995316	0.9900000
1,2-Dichloroethane-d4	LINR	-3.55e-002	1.36996396		0.9980055	0.9900000
Dibromofluoromethane	LINR	-2.51e-002	1.78351549		0.9987270	0.9900000
Toluene-d8	LINR	-3.42e-002	0.80924260		0.9991601	0.9900000
4-Bromofluorobenzene	LINR	-2.13e-002	2.06564990		0.9996344	0.9900000

FORM VI VOA

Data File: \\NAHSTWS005\Target\chem\voa9.i\U181113.b\U111301.D

Date : 13-NOV-2018 10:58

Client ID: BFB

Instrument: VOA9.i

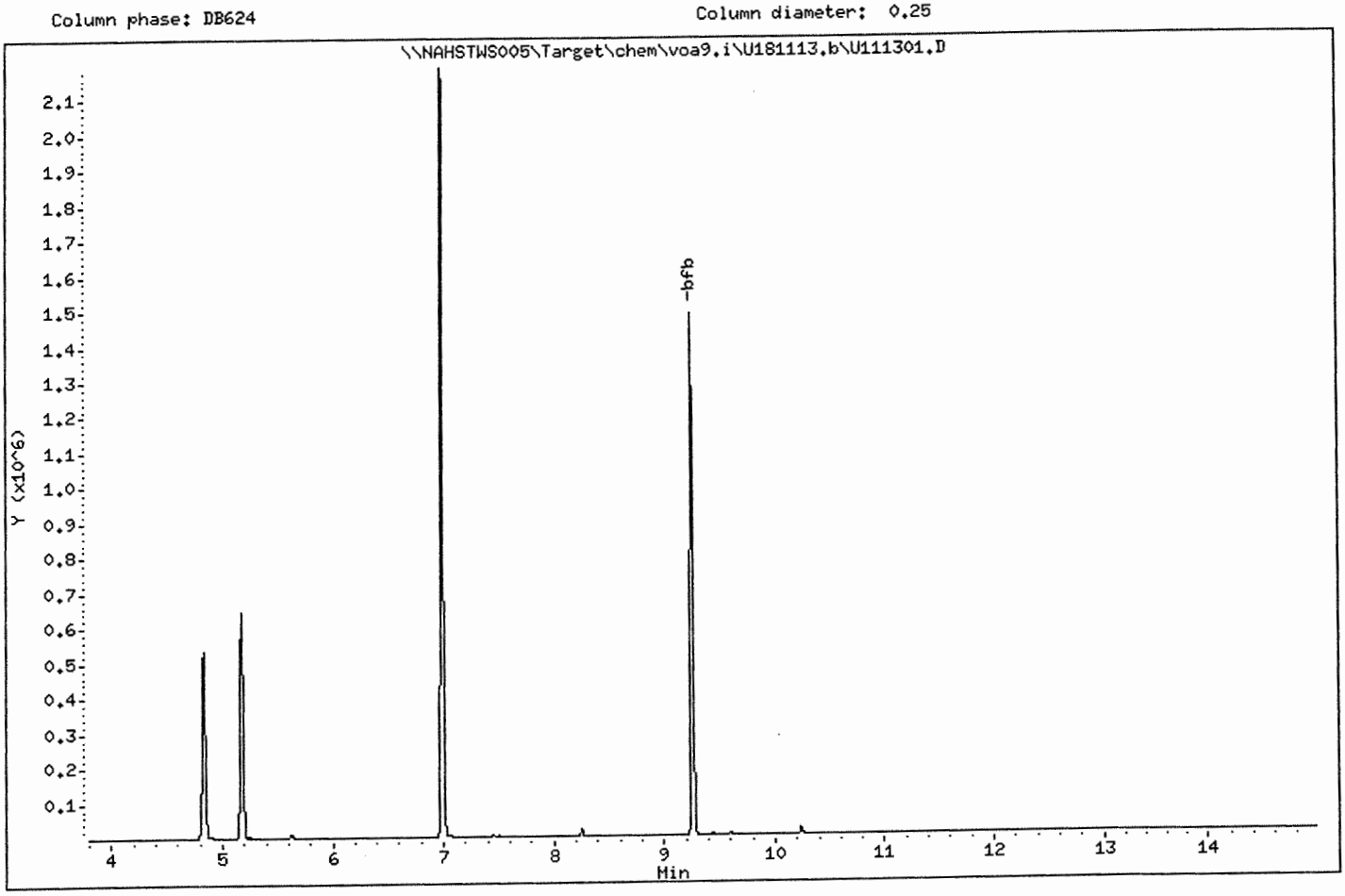
Sample Info: BFB;BFB;3;;BFB

Volume Injected (uL): 2.0

Operator: PC

Column phase: DB624

Column diameter: 0.25



Data File: \\NAHSTWS005\Target\chem\voa9.i\U181113.b\U111301.D

Date : 13-NOV-2018 10:58

Client ID: BFB

Instrument: VOA9.i

Sample Info: BFB;BFB;3;;BFB

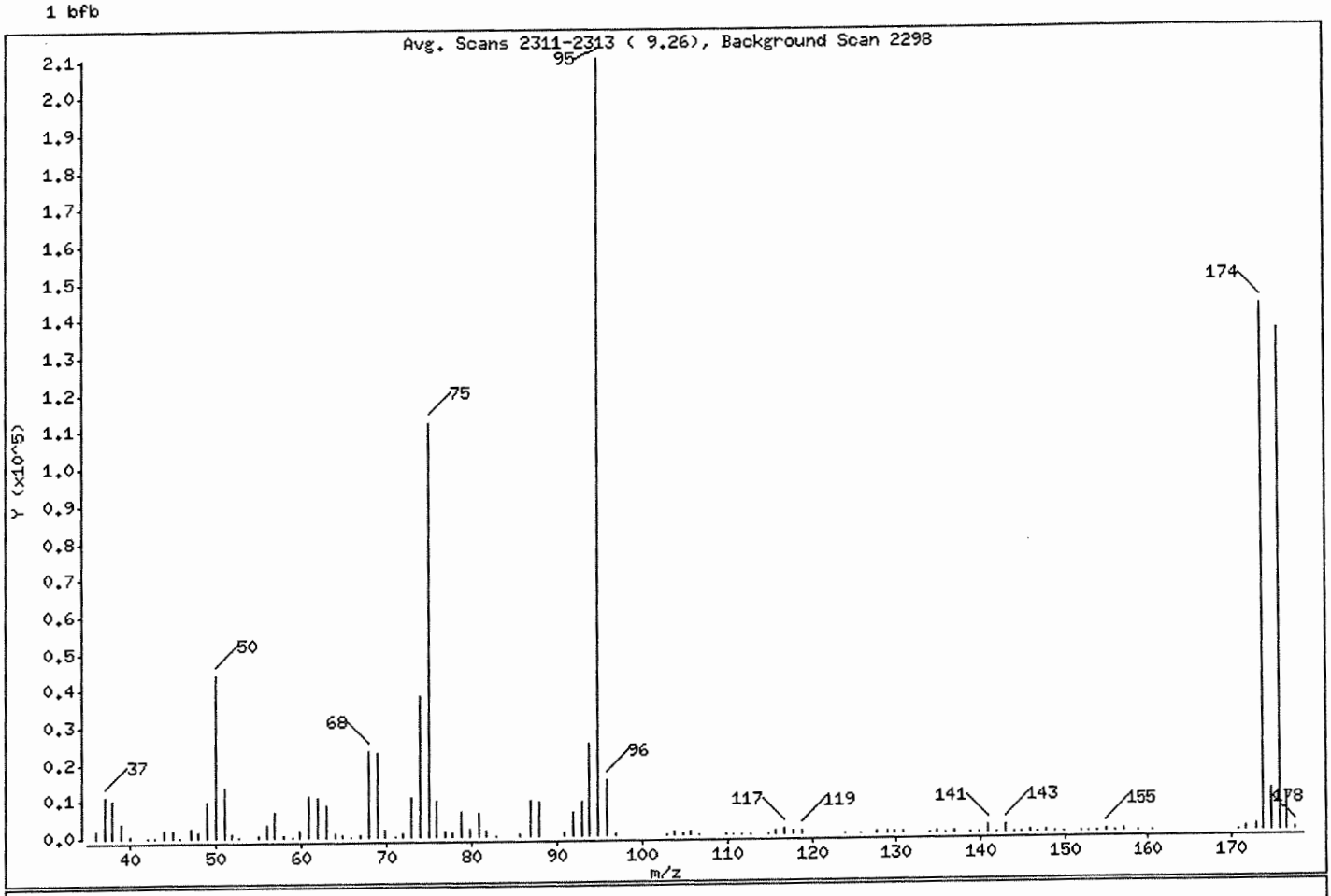
Volume Injected (uL): 2.0

Operator: PC

Column phase: DB624

Column diameter: 0.25

1 bfb



m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
95	Base Peak, 100% relative abundance	100.00
50	15.00 - 40.00% of mass 95	20.93
75	30.00 - 60.00% of mass 95	53.26
96	5.00 - 9.00% of mass 95	7.05
173	Less than 2.00% of mass 174	0.64 (0.95)
174	Greater than 50.00% of mass 95	67.71
175	5.00 - 9.00% of mass 174	5.22 (7.70)
176	95.00 - 101.00% of mass 174	64.61 (95.42)
177	5.00 - 9.00% of mass 176	4.79 (7.41)

Data File: \\NAHSTWS005\Target\chem\voa9.i\U181113.b\U111301.D

Date : 13-NOV-2018 10:58

Client ID: BFB

Instrument: VOA9.i

Sample Info: BFB;BFB;3;;BFB

Volume Injected (uL): 2.0

Operator: PC

Column phase: DB624

Column diameter: 0.25

Data File: U111301.D

Spectrum: Avg. Scans 2311-2313 (9.26), Background Scan 2298

Location of Maximum: 94.95

Number of points: 108

m/z	Y	m/z	Y	m/z	Y	m/z	Y
36.00	2069	65.90	90	102.90	106	142.80	1933
37.00	11082	66.90	610	103.80	947	143.90	71
38.00	10274	67.90	23360	104.80	338	144.70	179
39.00	3978	69.00	22944	105.80	973	145.70	325
40.00	381	69.90	1893	106.80	216	146.60	113
42.00	60	71.00	66	109.80	116	147.70	442
42.90	178	71.90	1065	110.70	166	148.60	101
43.90	1871	72.90	10562	111.80	126	149.70	180
45.00	2116	73.90	38432	112.70	189	151.80	82
45.90	123	75.00	112016	114.80	219	152.70	121
47.00	2495	75.90	9870	115.70	740	153.70	104
48.00	1426	76.90	1360	116.70	1240	154.70	552
49.00	9563	77.80	949	117.80	730	155.80	58
50.00	44016	78.80	6592	118.80	907	156.70	431
51.00	13714	79.80	1796	123.80	120	158.70	192
51.90	746	80.80	6503	125.70	57	160.60	164
52.70	59	81.80	1400	127.70	639	170.70	72
55.00	590	82.90	197	128.90	349	171.70	746
56.00	3508	85.70	252	129.70	626	172.80	1355
57.00	6688	86.90	9661	130.80	249	173.70	142400
57.90	351	87.90	8961	133.90	56	174.70	10971
58.90	116	90.80	826	134.70	394	175.70	135872
59.90	2009	91.90	6125	135.70	82	176.70	10067
60.90	11206	92.90	9048	136.70	337	177.70	296
62.00	10418	93.90	25168	138.70	60		
63.00	8677	94.90	210304	139.60	79		
63.90	848	95.90	14829	140.70	1870		
64.90	610	96.90	545	141.80	179		

Data File: \\NAHSTWS005\Target\chem\voa9.i\U181113.b\U111302.D Page 1
Report Date: 24-Jan-2019 18:55

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa9.i\U181113.b\U111302.D
Lab Smp Id: VSTD000.25 Client Smp ID: VSTD000.25
Inj Date : 13-NOV-2018 11:23
Operator : PC Inst ID: VOA9.i
Smp Info : VSTD000.25;VSTD000.25;1;1;
Misc Info : 180315V9;WATER;0;1;
Comment :
Method : \\NAHSTWS005\Target\chem\voa9.i\U181113.b\8260C.m
Meth Date : 24-Jan-2019 18:55 VOA9.i Quant Type: ISTD
Cal Date : 13-NOV-2018 11:23 Cal File: U111302.D
Als bottle: 2 Calibration Sample, Level: 1
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: LHAAP.sub
Target Version: 4.14
Processing Host: NAHSTW7087

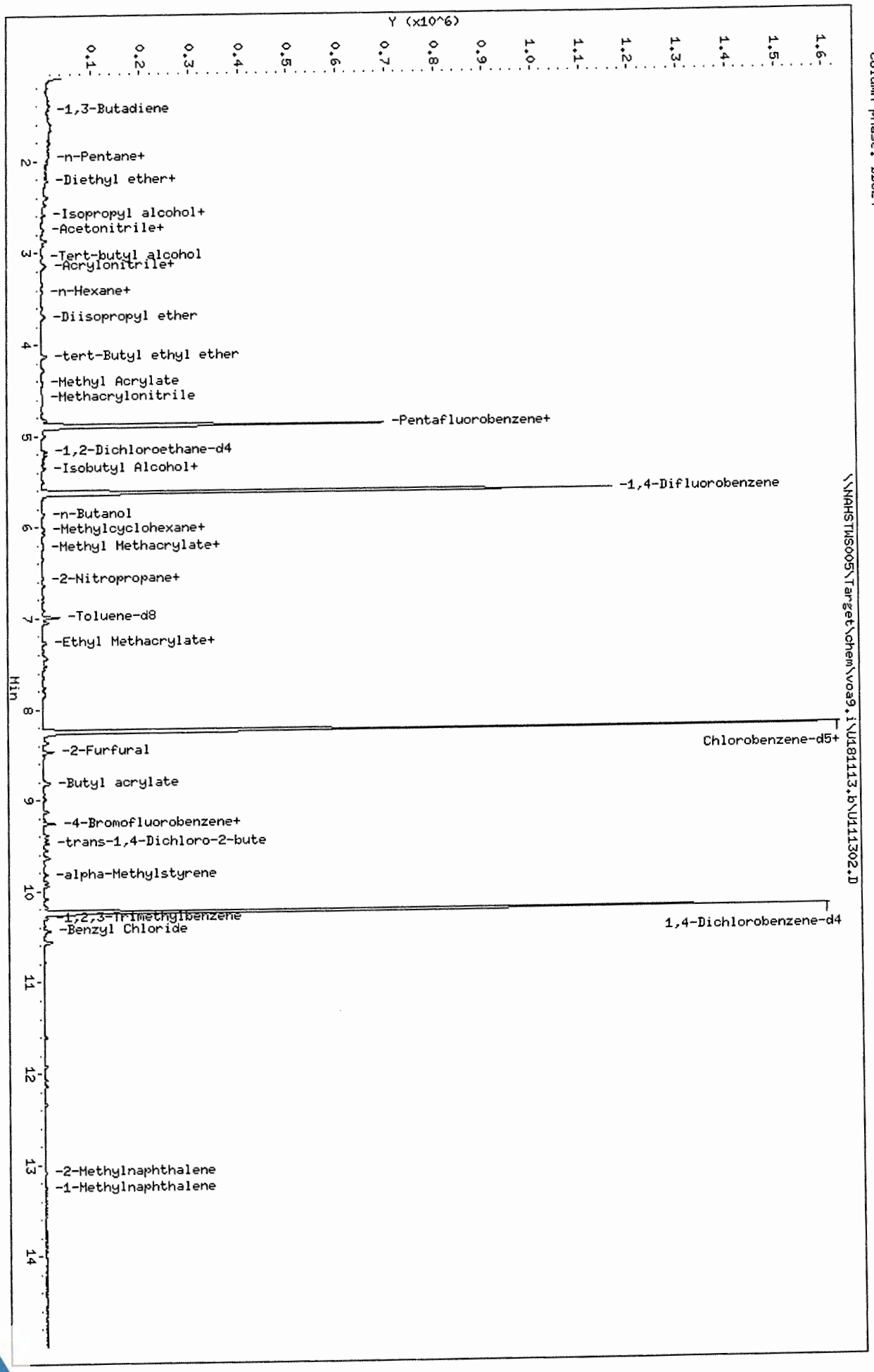
Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)	
* 1 Pentafluorobenzene	168	4.894	4.894	(1.000)	421654	50.0000		
* 36 1,4-Difluorobenzene	114	5.625	5.625	(1.000)	823585	50.0000		
* 47 Chlorobenzene-d5	117	8.249	8.249	(1.000)	757808	50.0000		
* 70 1,4-Dichlorobenzene-d4	152	10.236	10.236	(1.000)	346489	50.0000		
$ 30 Dibromofluoromethane	113	4.830	4.830	(0.987)	4873	0.25000		(a)
$ 35 1,2-Dichloroethane-d4	65	5.171	5.171	(1.057)	7659	0.25000		(a)
$ 48 Toluene-d8	98	6.989	6.989	(0.847)	19596	0.25000		(a)
$ 69 4-Bromofluorobenzene	95	9.257	9.257	(1.122)	7125	0.25000		(a)

QC Flag Legend

a - Target compound detected but, quantitated amount
Below Limit Of Quantitation(BLOQ).



Data File: \\NAHSTWS005\Target\chem\voa9.i\U181113.b\U111302.D
Date : 13-NOV-2018 11:23
Client ID: VSTD000.25
Sample Info: VSTD000.25;VSTD000.25;1;1;
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA9.i
Operator: PC
Column diameter: 0.18

Data File: \\NAHSTWS005\Target\chem\voa9.i\U181113.b\U111303.D Page 1
Report Date: 24-Jan-2019 18:55

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa9.i\U181113.b\U111303.D
Lab Smp Id: VSTD000.5 Client Smp ID: VSTD000.5
Inj Date : 13-NOV-2018 11:47
Operator : PC Inst ID: VOA9.i
Smp Info : VSTD000.5;VSTD000.5;1;2;
Misc Info : 180315V9;WATER;0;1;
Comment :
Method : \\NAHSTWS005\Target\chem\voa9.i\U181113.b\8260C.m
Meth Date : 24-Jan-2019 18:55 VOA9.i Quant Type: ISTD
Cal Date : 13-NOV-2018 11:23 Cal File: U111302.D
Als bottle: 3 Calibration Sample, Level: 2
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: LHAAP.sub
Target Version: 4.14
Processing Host: NAHSTW7087

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Cpnd Variable		Local Compound Variable

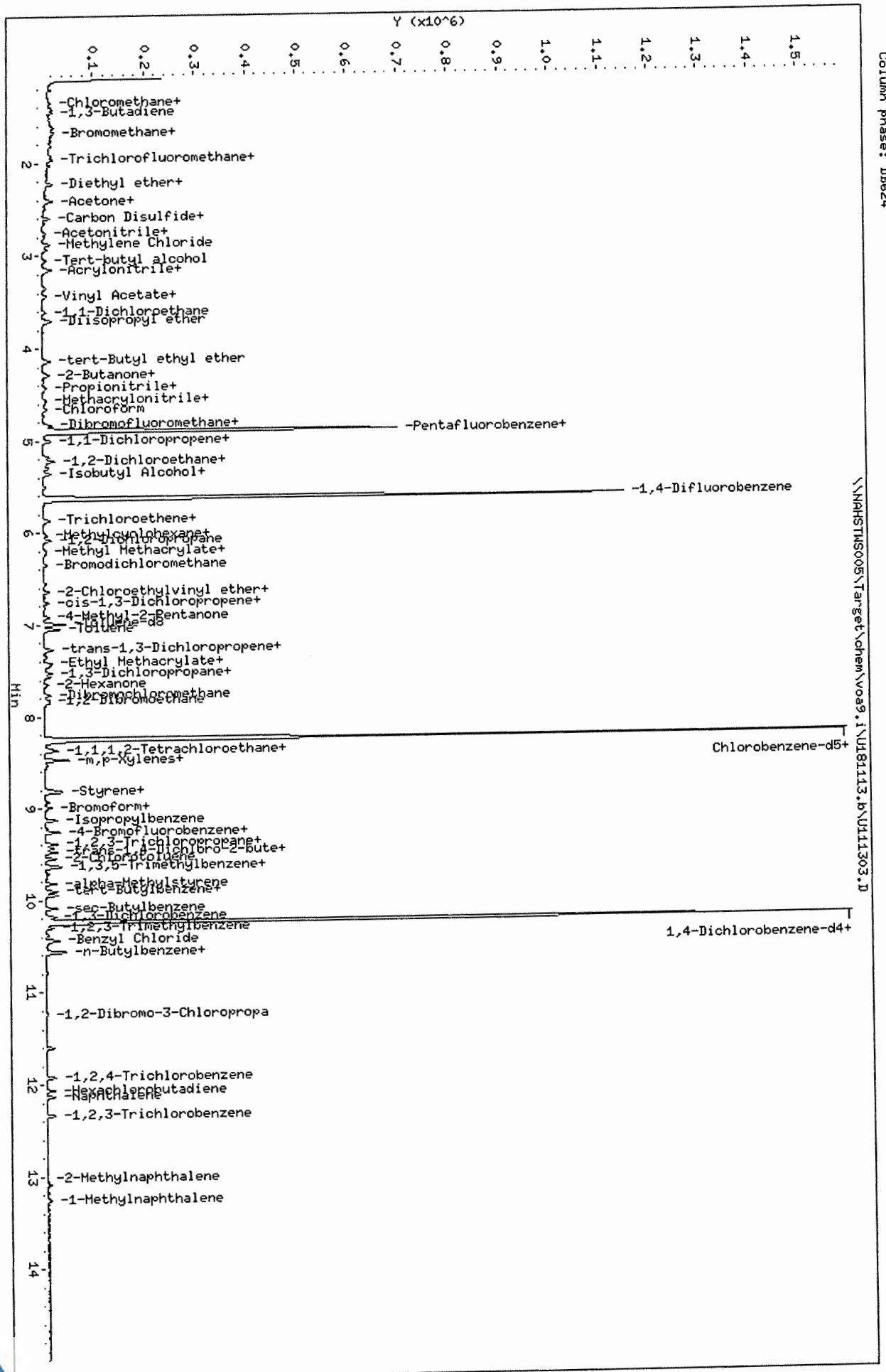
Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
* 1 Pentafluorobenzene	168	4.898	4.898	(1.000)	421285	50.0000	
* 36 1,4-Difluorobenzene	114	5.629	5.629	(1.000)	817288	50.0000	
* 47 Chlorobenzene-d5	117	8.249	8.249	(1.000)	753573	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	10.236	10.236	(1.000)	345123	50.0000	
$ 30 Dibromofluoromethane	113	4.834	4.834	(0.987)	5664	0.50000	(a)
$ 35 1,2-Dichloroethane-d4	65	5.179	5.179	(1.057)	8937	0.50000	(a)
$ 48 Toluene-d8	98	6.990	6.990	(0.847)	23871	0.50000	(a)
$ 69 4-Bromofluorobenzene	95	9.257	9.257	(1.122)	8554	0.50000	0.10(a)
60 1,1,1,2-Tetrachloroethane	131	8.350	8.350	(1.012)	2690	0.50000	0.56(a)
31 1,1,1-Trichloroethane	97	4.830	4.830	(0.986)	4410	0.50000	0.59(a)
68 1,1,2,2-Tetrachloroethane	83	9.392	9.392	(0.918)	5102	0.50000	0.62(aM)
138 Freon TF	101	2.409	2.409	(0.492)	2580	0.50000	0.61(a)
53 1,1,2-Trichloroethane	83	7.421	7.421	(0.900)	3095	0.50000	0.64(a)
22 1,1-Dichloroethane	63	3.608	3.608	(0.737)	6173	0.50000	0.63(a)
11 1,1-Dichloroethene	96	2.409	2.409	(0.492)	3102	0.50000	0.65(a)
32 1,1-Dichloropropene	75	5.006	5.006	(0.889)	4812	0.50000	0.63(a)
93 1,2,3-Trichlorobenzene	180	12.339	12.339	(1.205)	4127	0.50000	0.63(a)
71 1,2,3-Trichloropropane	75	9.426	9.426	(0.921)	4767	0.50000	0.55(a)
90 1,2,4-Trichlorobenzene	180	11.927	11.927	(1.165)	4348	0.50000	0.64(a)
79 1,2,4-Trimethylbenzene	105	9.943	9.943	(0.971)	11460	0.50000	0.59(a)
89 1,2-Dibromo-3-Chloropropane	155	11.237	11.237	(1.098)	479	0.50000	1.41(aM)
57 1,2-Dibromoethane	107	7.852	7.852	(0.952)	3298	0.50000	0.59(a)

Data File: \\NAHSTWS005\Target\chem\voa9.i\U181113.b\U111303.D Page 2
Report Date: 24-Jan-2019 18:55

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
88	1,2-Dichlorobenzene	146	10.573	10.573	(1.033)	7152	0.50000	0.64(a)
33	1,2-Dichloroethane	62	5.258	5.258	(0.934)	5619	0.50000	0.65(aM)
42	1,2-Dichloropropane	63	6.082	6.082	(1.081)	3429	0.50000	0.58(a)
75	1,3,5-Trimethylbenzene	105	9.625	9.625	(0.940)	10952	0.50000	0.59(a)
83	1,3-Dichlorobenzene	146	10.180	10.180	(0.995)	6957	0.50000	0.64(a)
54	1,3-Dichloropropane	76	7.567	7.567	(0.917)	6595	0.50000	0.64(a)
84	1,4-Dichlorobenzene	146	10.258	10.258	(1.002)	7995	0.50000	0.71(a)
26	2,2-Dichloropropane	77	4.279	4.279	(0.874)	3772	0.50000	0.63(a)
24	2-Butanone	43	4.354	4.354	(0.889)	3689	1.00000	1.24(a)
76	2-Chlorotoluene	91	9.546	9.546	(0.933)	10726	0.50000	0.63(a)
52	2-Hexanone	43	7.649	7.649	(0.927)	4658	1.00000	1.06(a)
77	4-Chlorotoluene	91	9.640	9.640	(0.942)	12130	0.50000	0.62(a)
82	p-Isopropyltoluene	119	10.213	10.213	(0.998)	11138	0.50000	0.58(a)
45	4-Methyl-2-Pentanone	43	6.915	6.915	(0.838)	6749	1.00000	1.07(a)
10	Acetone	43	2.487	2.487	(0.508)	5795	1.00000	(a)
37	Benzene	78	5.220	5.220	(0.927)	14635	0.50000	0.64(a)
74	Bromobenzene	156	9.381	9.381	(0.917)	3648	0.50000	0.64(a)
29	Bromochloromethane	128	4.560	4.560	(0.931)	1212	0.50000	0.48(a)
39	Bromodichloromethane	83	6.348	6.348	(1.128)	4075	0.50000	0.60(aM)
66	Bromoform	173	8.988	8.988	(1.090)	1478	0.50000	1.60(Ta)
6	Bromomethane	94	1.678	1.678	(0.343)	2224	0.50000	2.51(a)
19	Carbon Disulfide	76	2.596	2.596	(0.530)	18415	1.00000	1.25(a)
34	Carbon Tetrachloride	117	4.995	4.995	(0.887)	3377	0.50000	0.57(a)
59	Chlorobenzene	112	8.275	8.275	(1.003)	10477	0.50000	0.67(a)
7	Chloroethane	64	1.760	1.760	(0.359)	2912	0.50000	0.66(aM)
28	Chloroform	83	4.662	4.662	(0.952)	6289	0.50000	0.64(a)
3	Chloromethane	50	1.348	1.348	(0.275)	4145	0.50000	0.96(a)
27	cis-1,2-Dichloroethene	96	4.294	4.294	(0.877)	3748	0.50000	0.62(a)
46	cis-1,3-Dichloropropene	75	6.761	6.761	(1.201)	4205	0.50000	0.49(a)
55	Dibromochloromethane	129	7.758	7.758	(0.940)	2561	0.50000	0.53(a)
44	Dibromomethane	93	6.191	6.191	(1.100)	2223	0.50000	0.60(aM)
2	Dichlorodifluoromethane	85	1.213	1.213	(0.248)	4116	0.50000	1.64(a)
61	Ethylbenzene	106	8.373	8.373	(1.015)	4972	0.50000	0.63(a)
91	Hexachlorobutadiene	225	12.065	12.065	(1.179)	2273	0.50000	1.36(a)
67	Isopropylbenzene	105	9.126	9.126	(1.106)	13902	0.50000	0.60(a)
62	m,p-Xylenes	106	8.474	8.474	(1.027)	12504	1.00000	1.29(a)
17	Methylene Chloride	84	2.877	2.877	(0.587)	5188	0.50000	0.27(a)
87	n-Butylbenzene	91	10.558	10.558	(1.031)	11934	0.50000	1.04(a)
73	n-Propylbenzene	91	9.475	9.475	(0.926)	16592	0.50000	0.60(a)
92	Naphthalene	128	12.133	12.133	(1.185)	10205	0.50000	0.49(a)
63	o-Xylene	106	8.811	8.811	(1.068)	5464	0.50000	0.56(aH)
81	sec-Butylbenzene	105	10.086	10.086	(0.985)	13984	0.50000	0.61(a)
64	Styrene	104	8.826	8.826	(1.070)	9048	0.50000	0.55(a)
78	tert-Butylbenzene	119	9.902	9.902	(0.967)	9624	0.50000	0.60(a)
56	Tetrachloroethene	164	7.526	7.526	(0.912)	2536	0.50000	0.64(a)
50	Toluene	91	7.049	7.049	(0.855)	15656	0.50000	0.65(a)
20	trans-1,2-Dichloroethene	96	3.143	3.143	(0.642)	3270	0.50000	0.62(a)
51	trans-1,3-Dichloropropene	75	7.263	7.263	(1.290)	3218	0.50000	1.84(a)
38	Trichloroethene	130	5.865	5.865	(1.042)	3600	0.50000	0.64(a)
8	Trichlorofluoromethane	101	1.963	1.963	(0.401)	5229	0.50000	0.62(a)
5	Vinyl Chloride	62	1.426	1.426	(0.291)	4801	0.50000	1.20(a)

QC Flag Legend

T - Target compound detected outside RT window.
a - Target compound detected but, quantitated amount
Below Limit Of Quantitation(BLOQ).
M - Compound response manually integrated.
H - Operator selected an alternate compound hit.



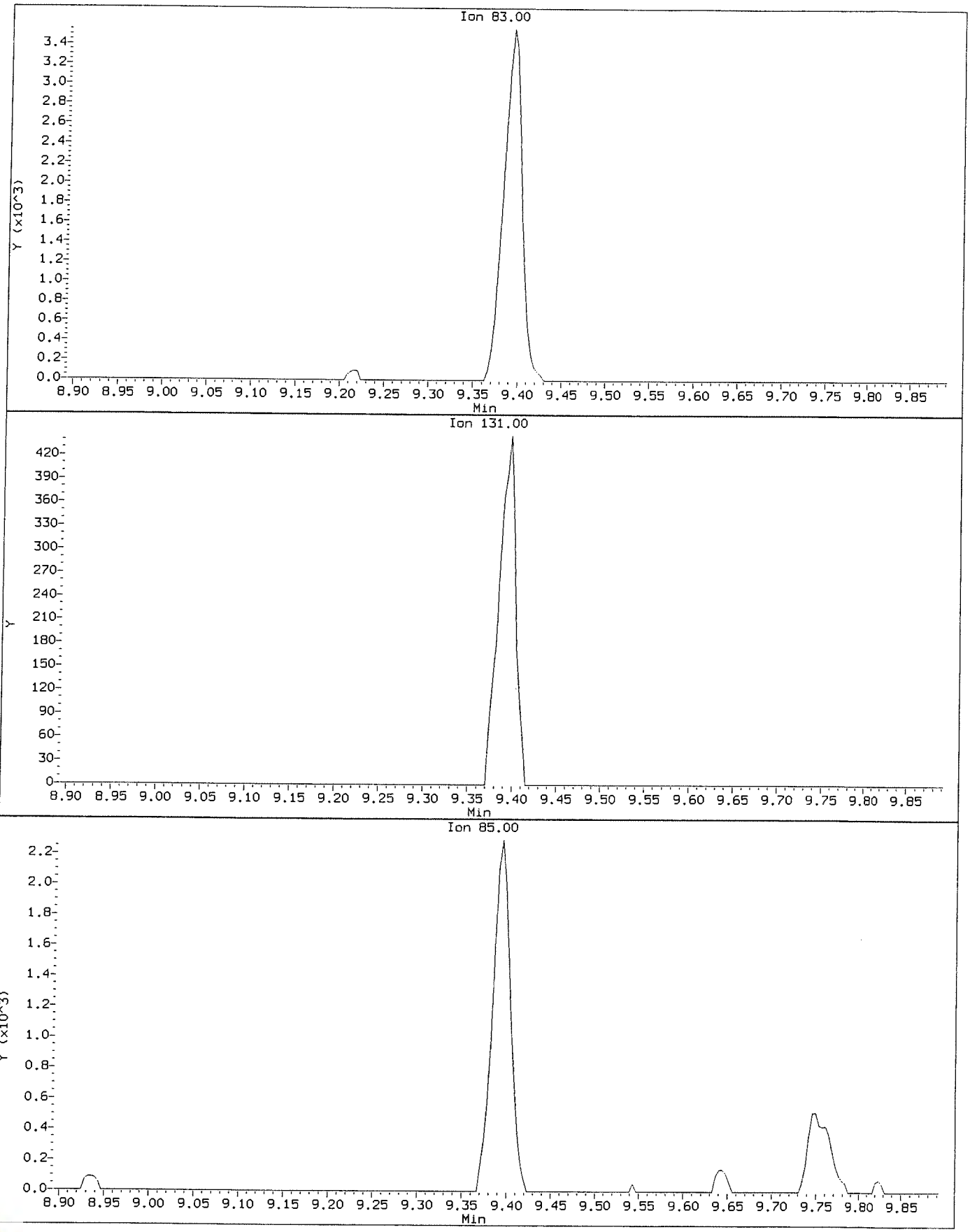
Data File: \\NAHSTWS005\Target\chem\voa9.i\U181113.b\U111303.D
Date : 13-NOV-2018 11:47
Client ID: VSTD000.5
Sample Info: VSTD000.5;VSTD000.5;1;2;
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA9.i
Operator: PC
Column diameter: 0.18

\\NAHSTWS005\Target\chem\voa9.i\U181113.b\U111303.D

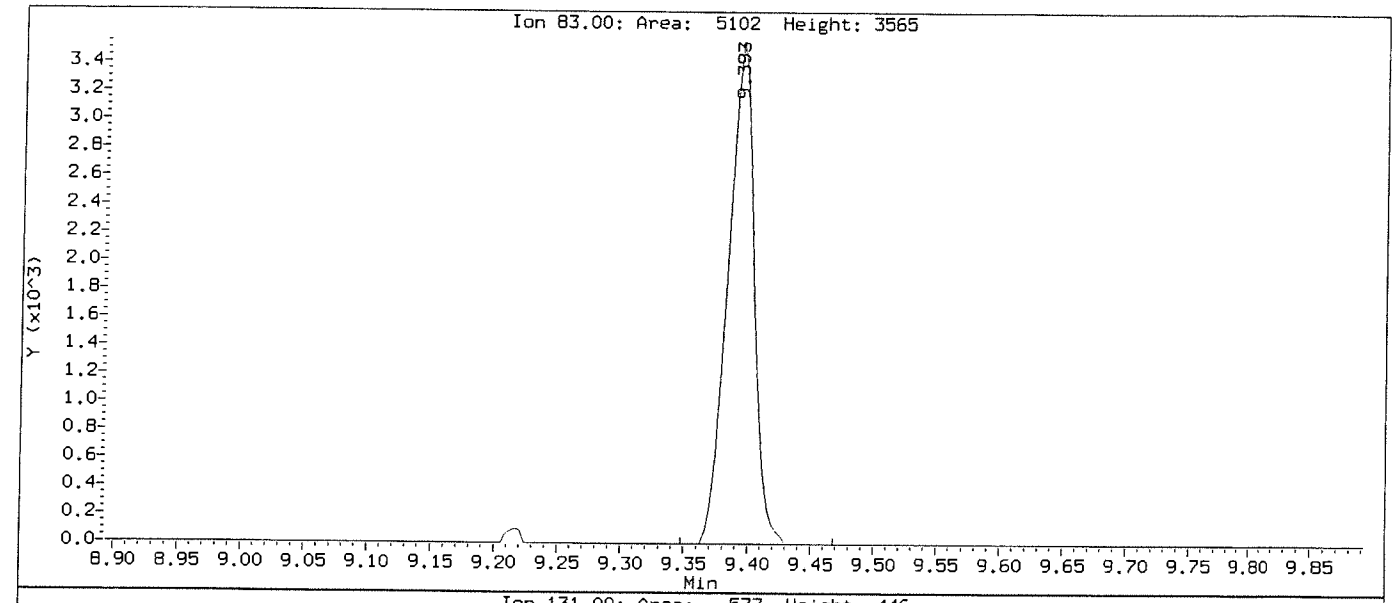
Data File: \\NAHSTWS005\Target\chem\voa9.i\U181113.b\Before\U111303.D
Injection Date: 13-NOV-2018 11:47
Instrument: VOA9.i
Client Sample ID: VSTD000.5

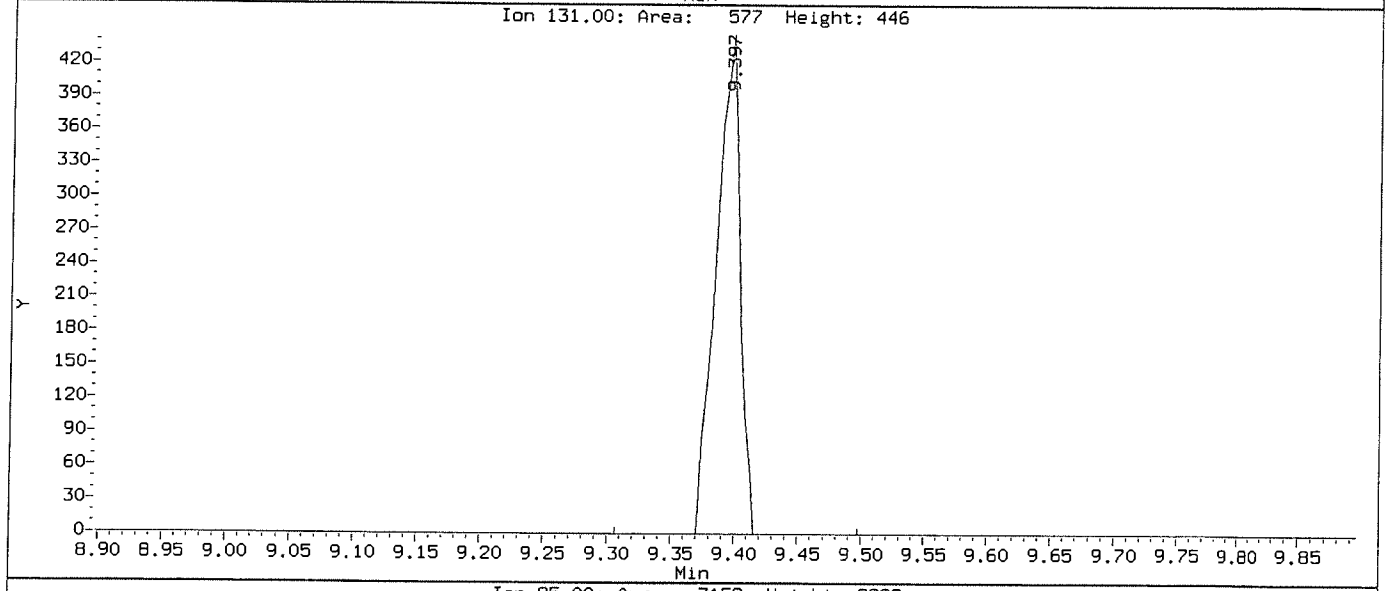
Compound: 1,1,2,2-Tetrachloroethane
CAS Number: 79-34-5

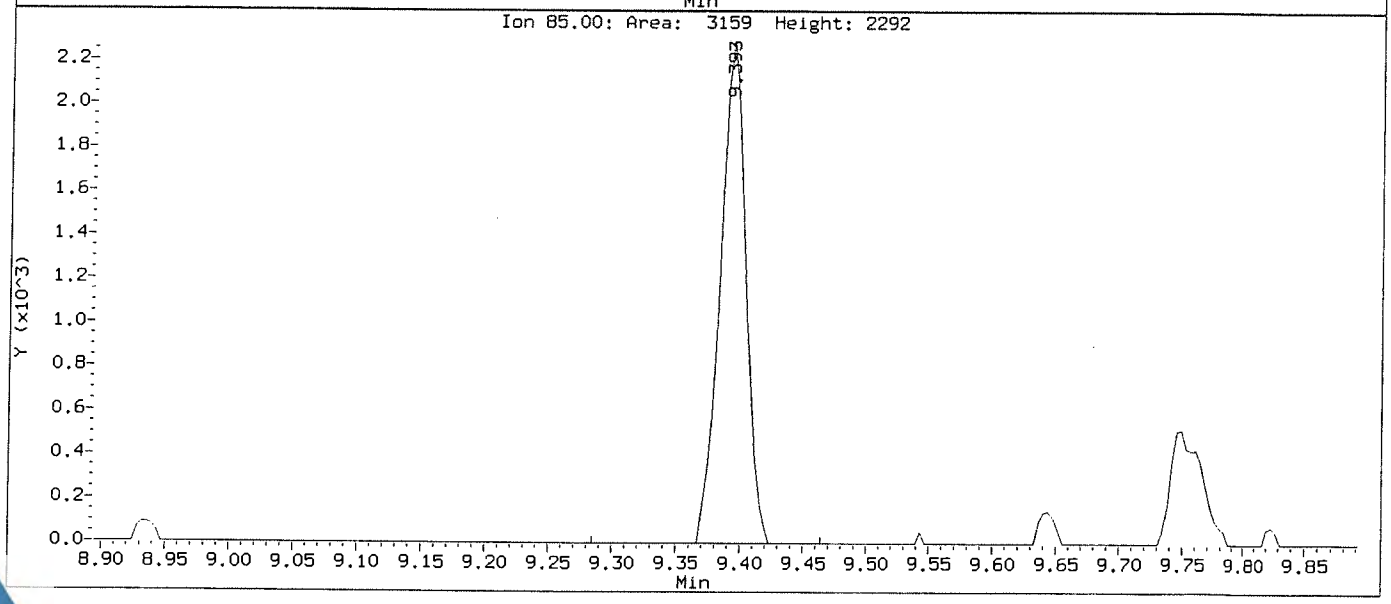


Data File: \\NAHSTWS005\Target\chem\voa9.i\U181113.b\U111303.D
Injection Date: 13-NOV-2018 11:47
Instrument: VOA9.i
Client Sample ID: VSTD000.5

Compound: 1,1,2,2-Tetrachloroethane
CAS Number: 79-34-5

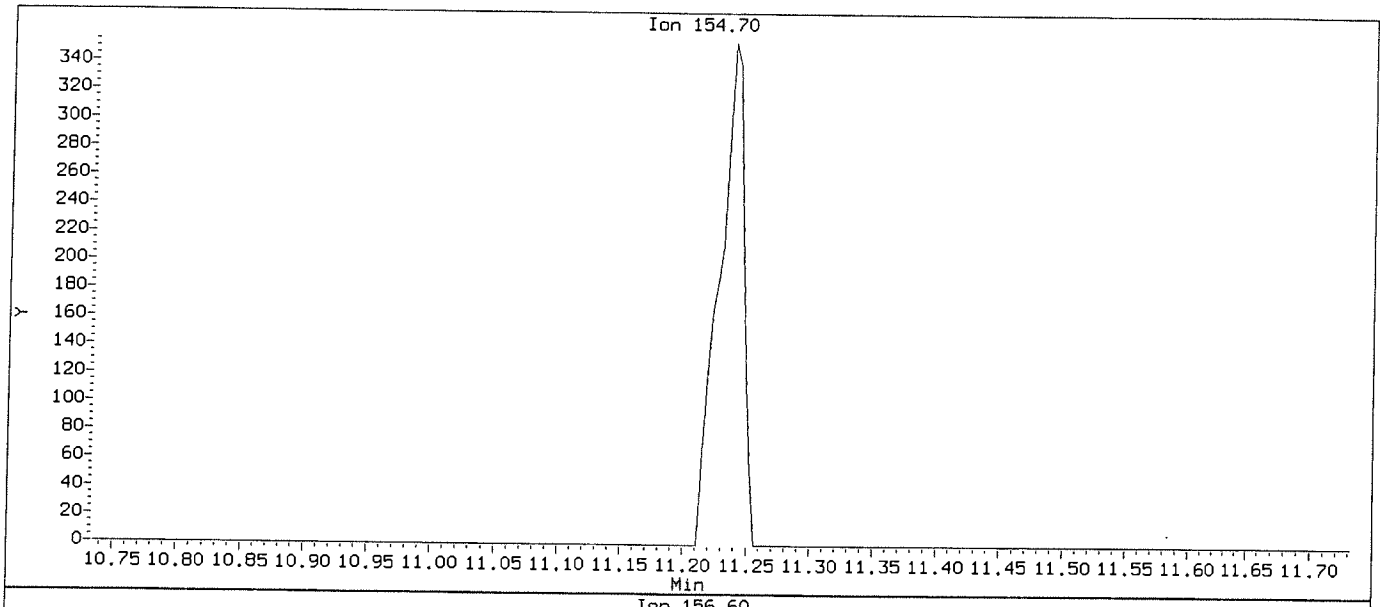


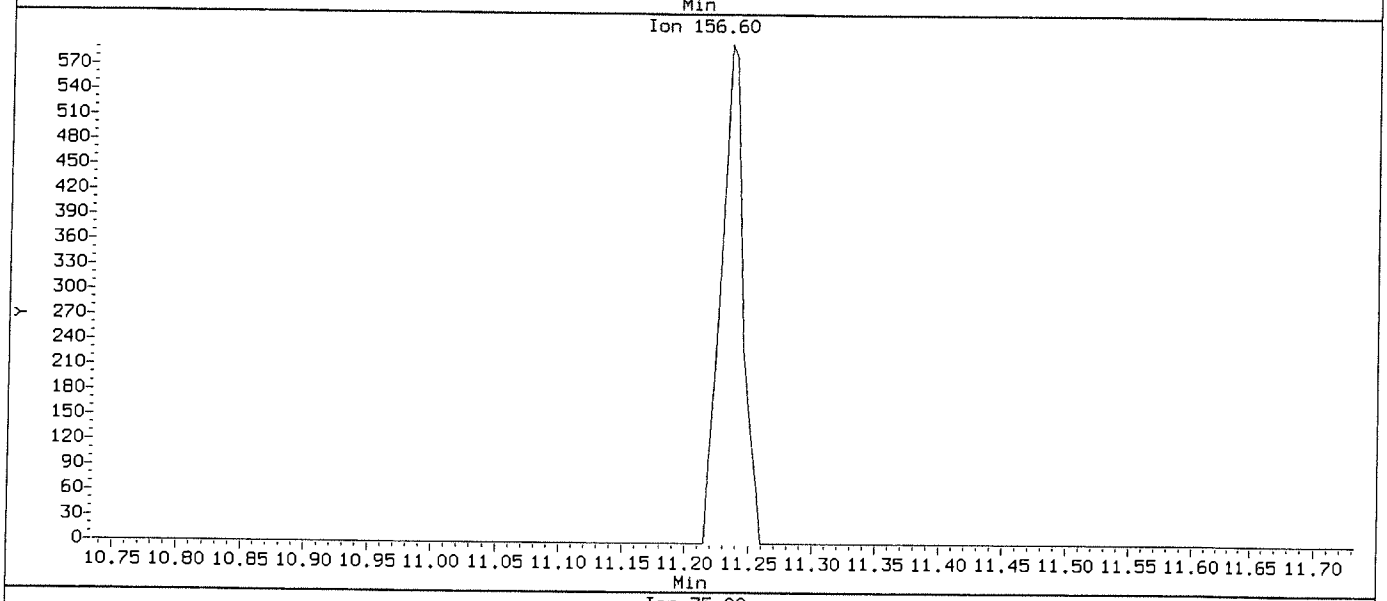


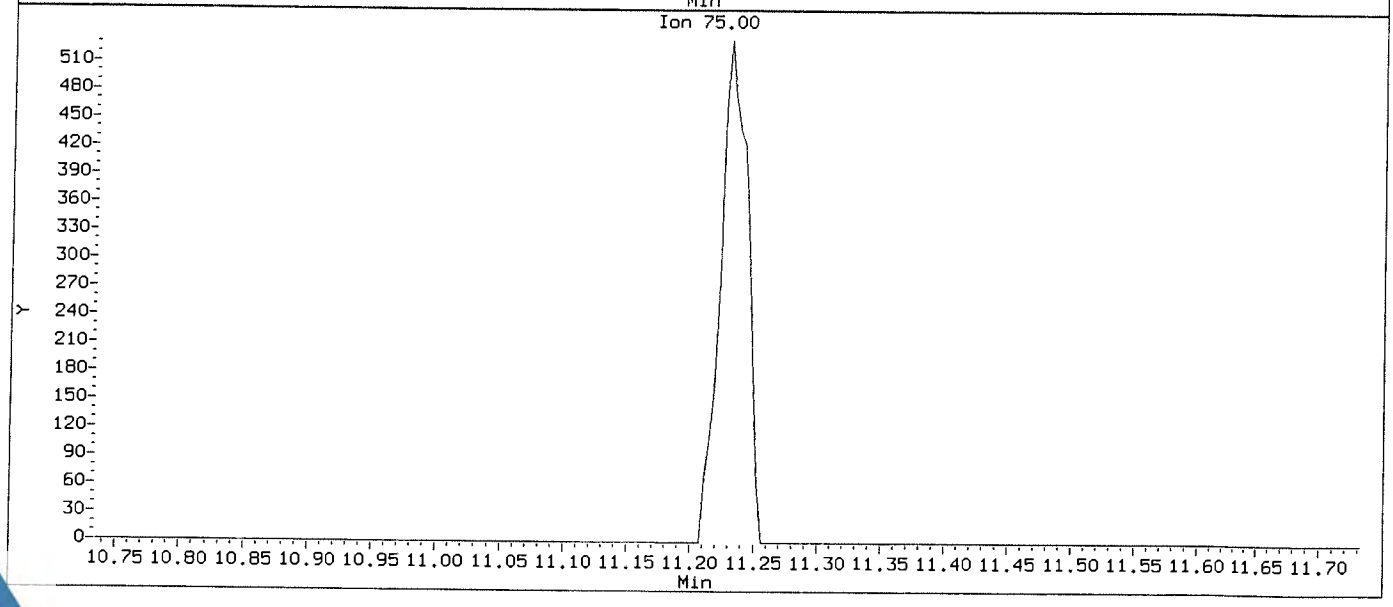


Data File: \\NAHSTWS005\Target\chem\voa9.i\U181113.b\Before\U111303.D
Injection Date: 13-NOV-2018 11:47
Instrument: VOA9.i
Client Sample ID: VSTD000.5

Compound: 1,2-Dibromo-3-Chloropropane
CAS Number: 96-12-8

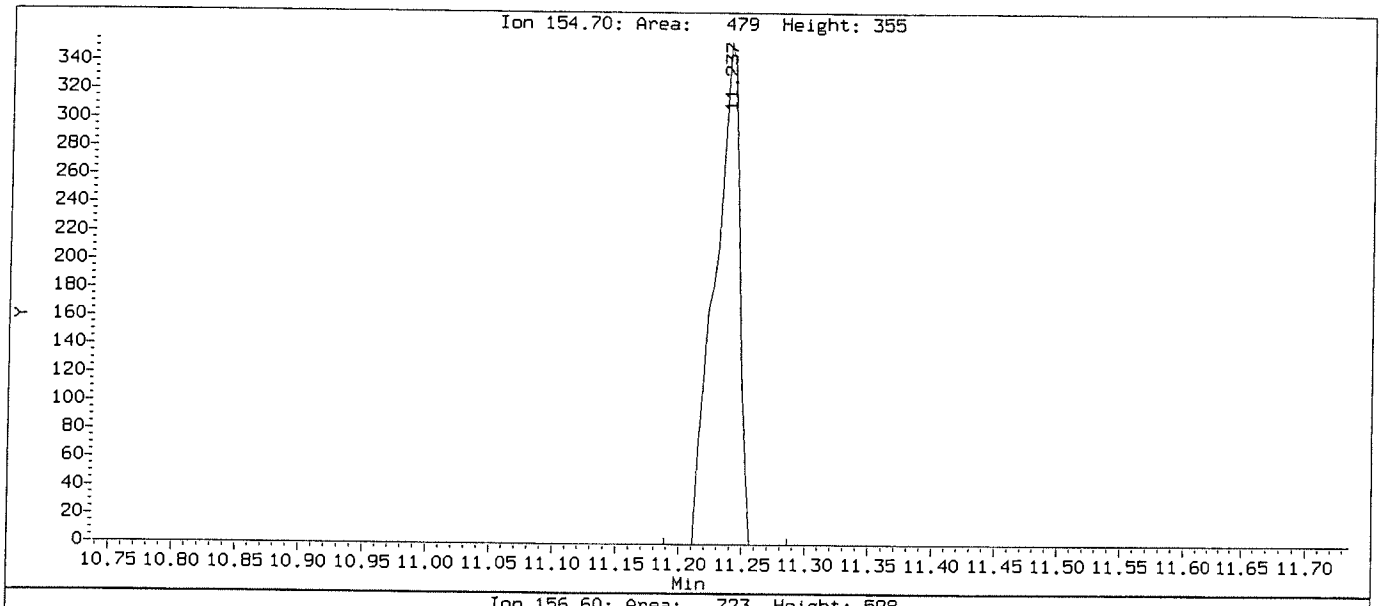


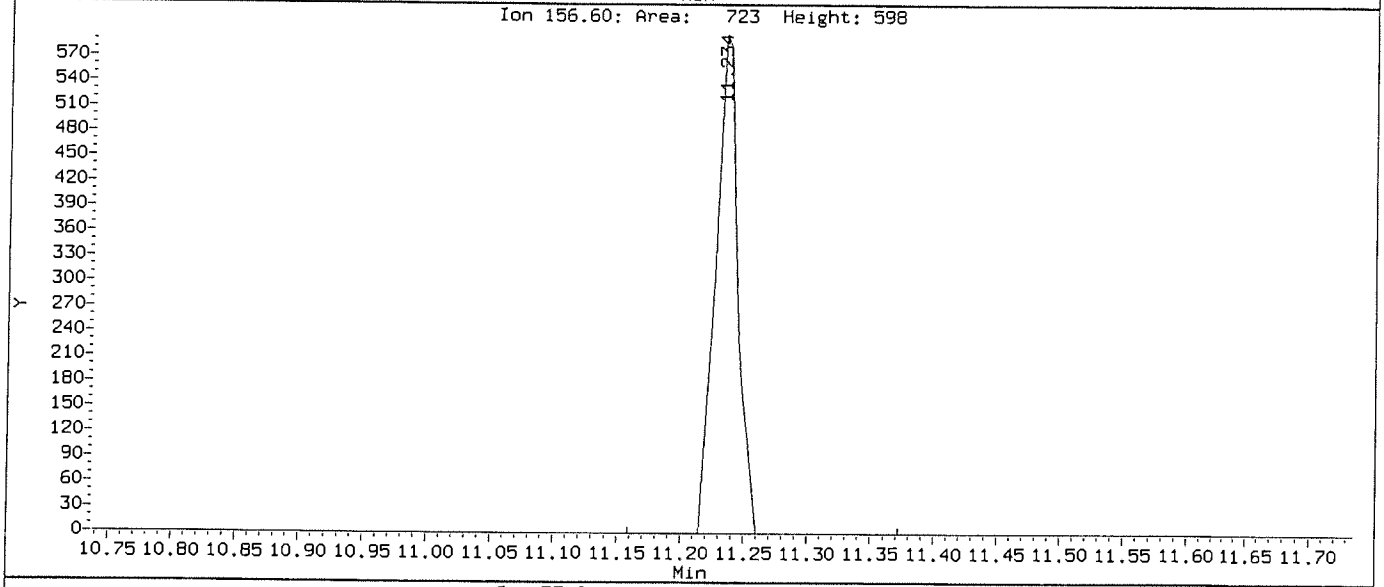


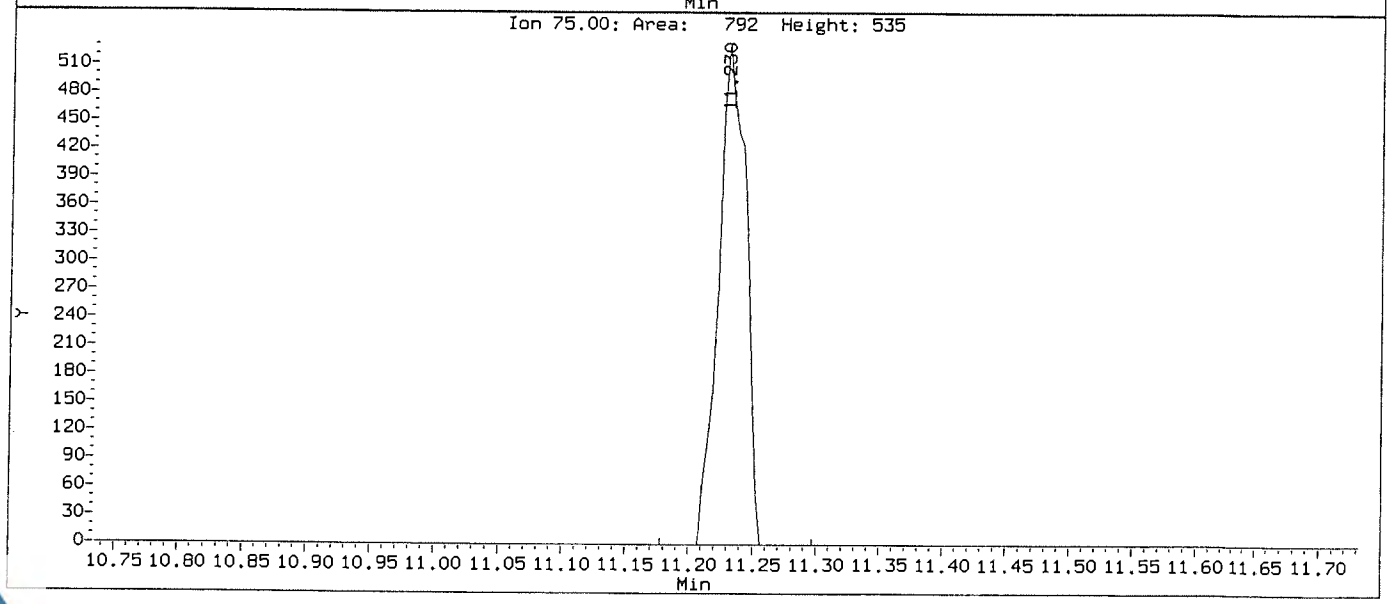


Data File: \\NAHSTWS005\Target\chem\voa9.i\U181113.b\U111303.D
Injection Date: 13-NOV-2018 11:47
Instrument: VOA9.i
Client Sample ID: VSTD000.5

Compound: 1,2-Dibromo-3-Chloropropane
CAS Number: 96-12-8

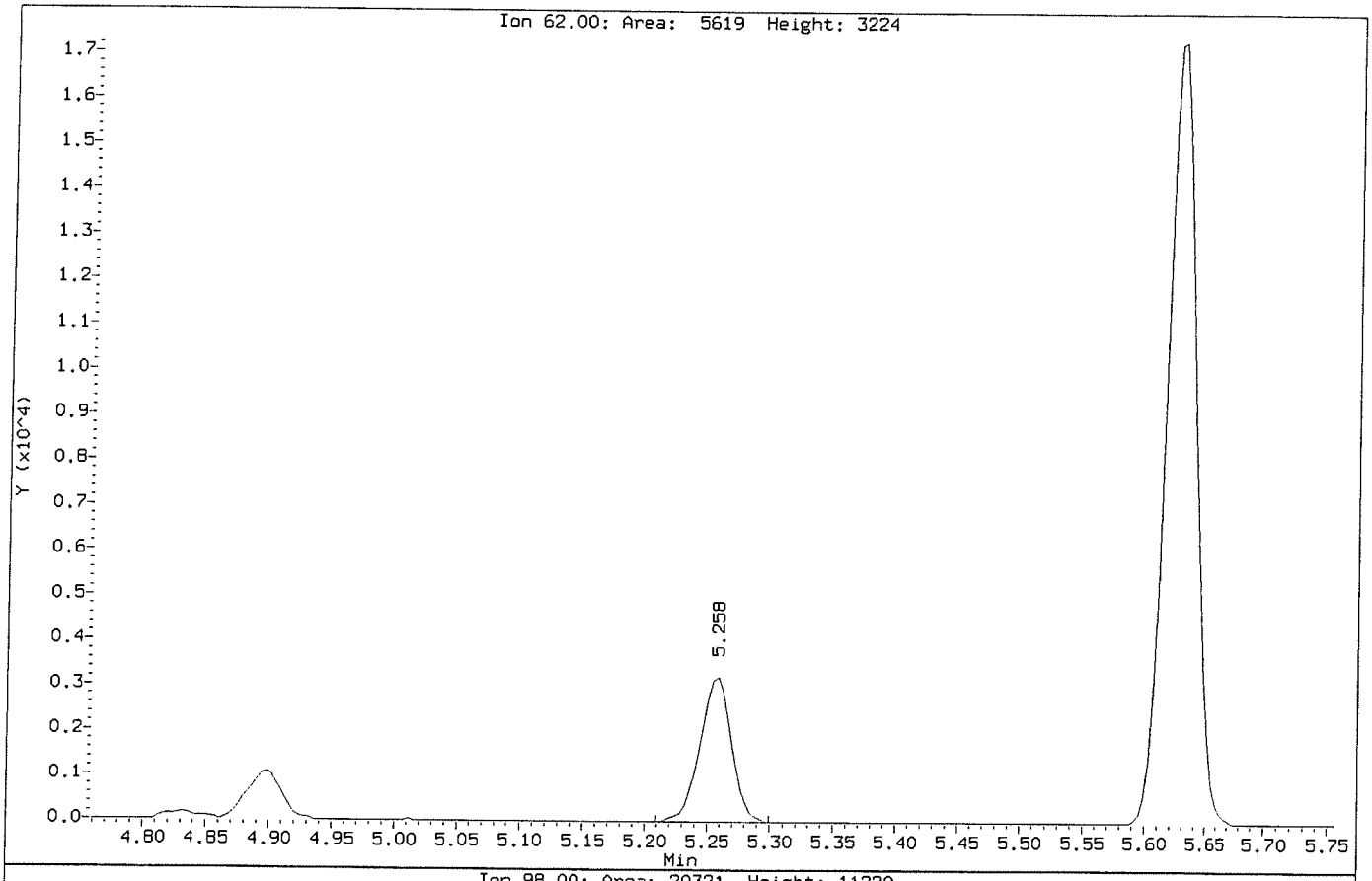


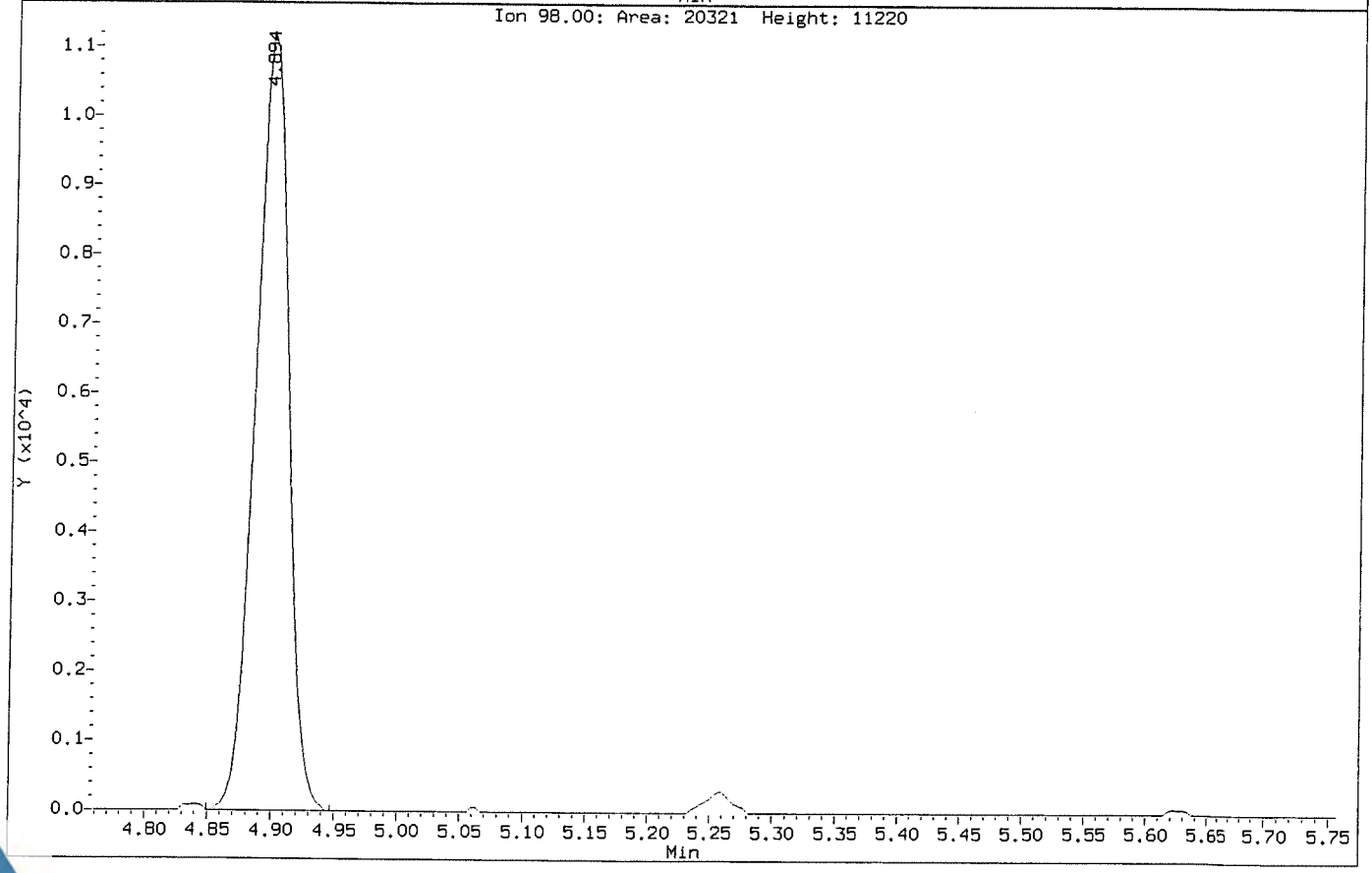




Data File: \\NAHSTWS005\Target\chem\voa9.i\U181113.b\Before\U111303.D
Injection Date: 13-NOV-2018 11:47
Instrument: VOA9.i
Client Sample ID: VSTD000.5

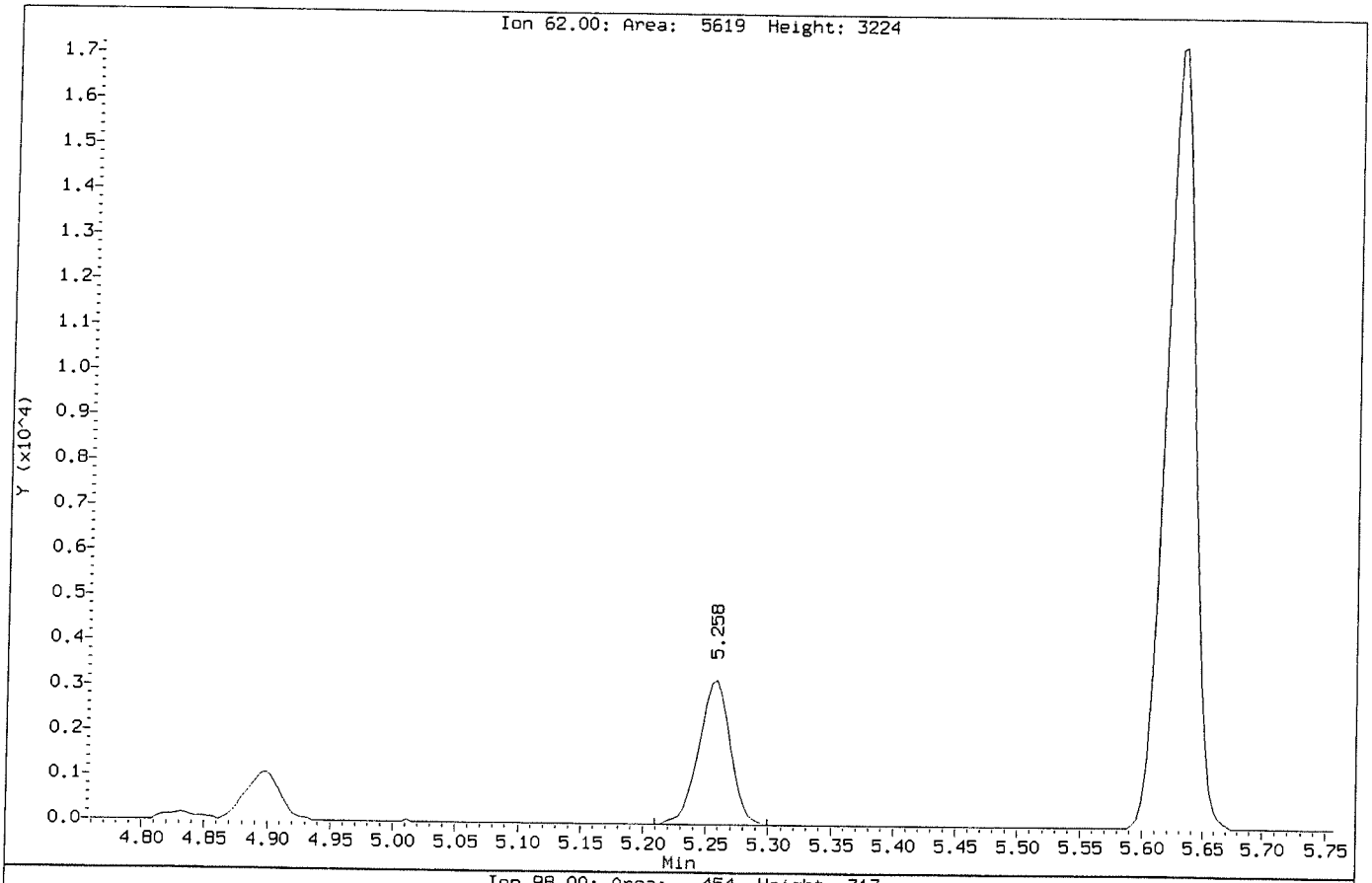
Compound: 1,2-Dichloroethane
CAS Number: 107-06-2

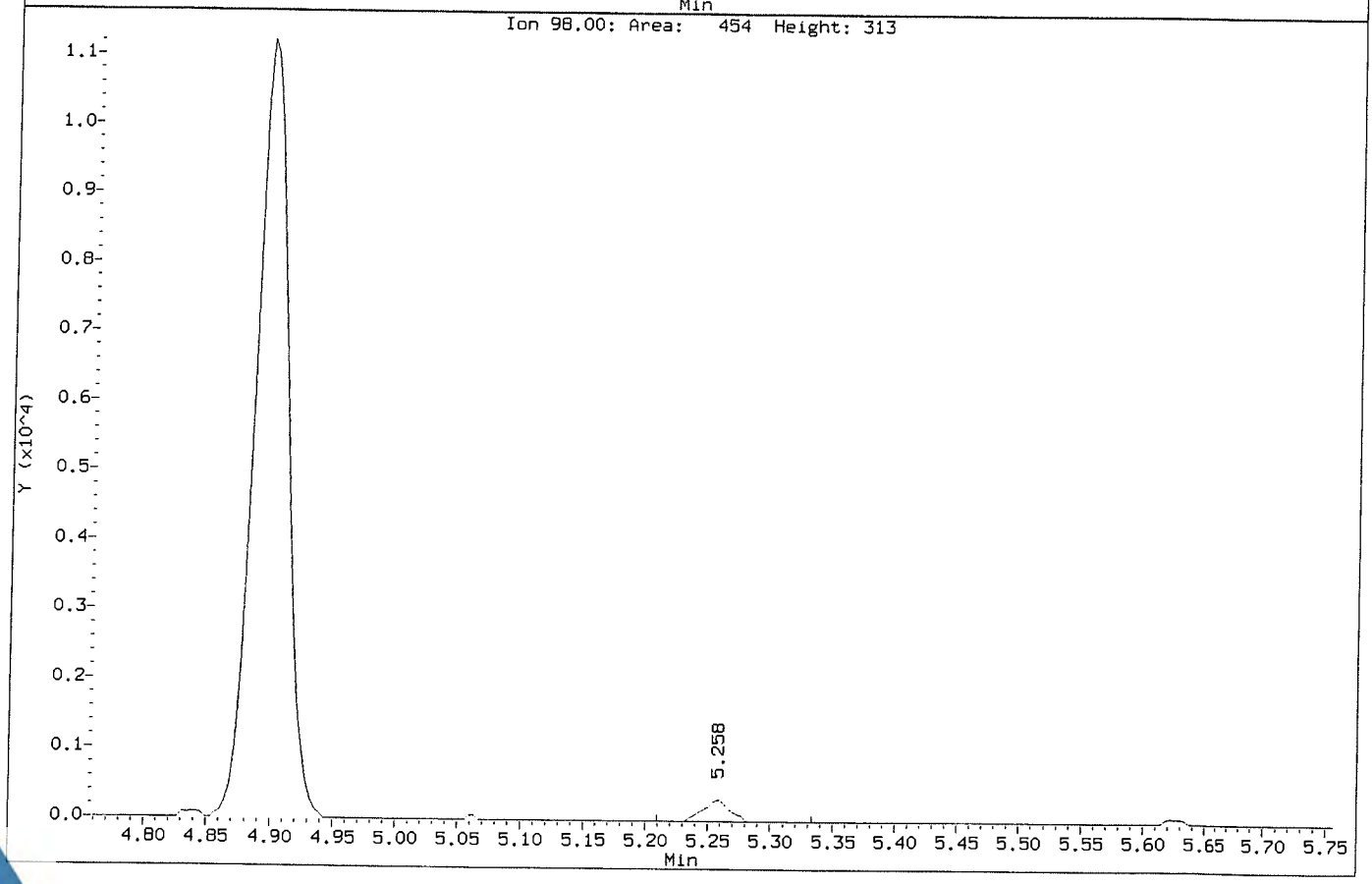




Data File: \\NAHSTWS005\Target\chem\voa9.i\U181113.b\U111303.D
Injection Date: 13-NOV-2018 11:47
Instrument: VOA9.i
Client Sample ID: VSTD000.5

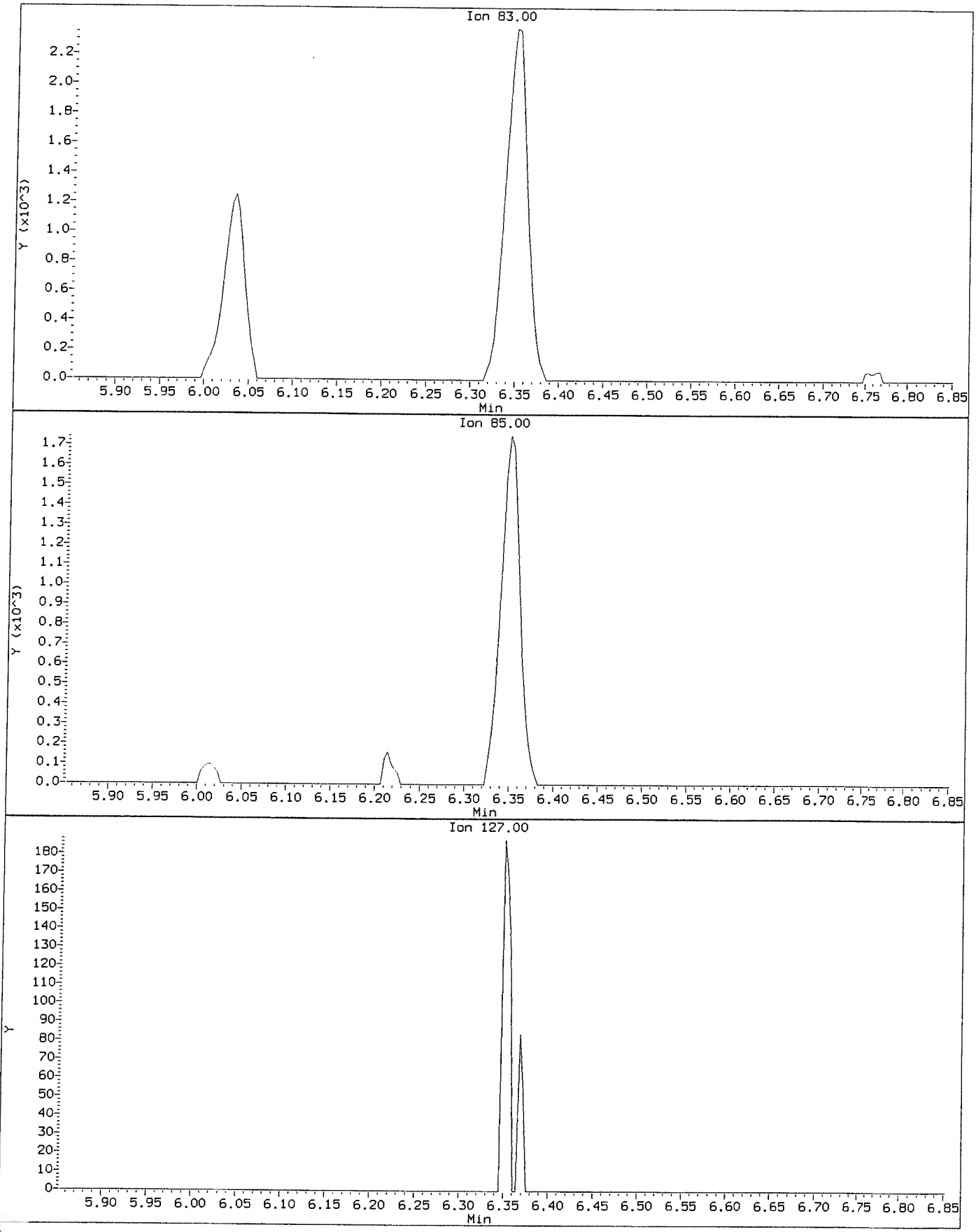
Compound: 1,2-Dichloroethane
CAS Number: 107-06-2





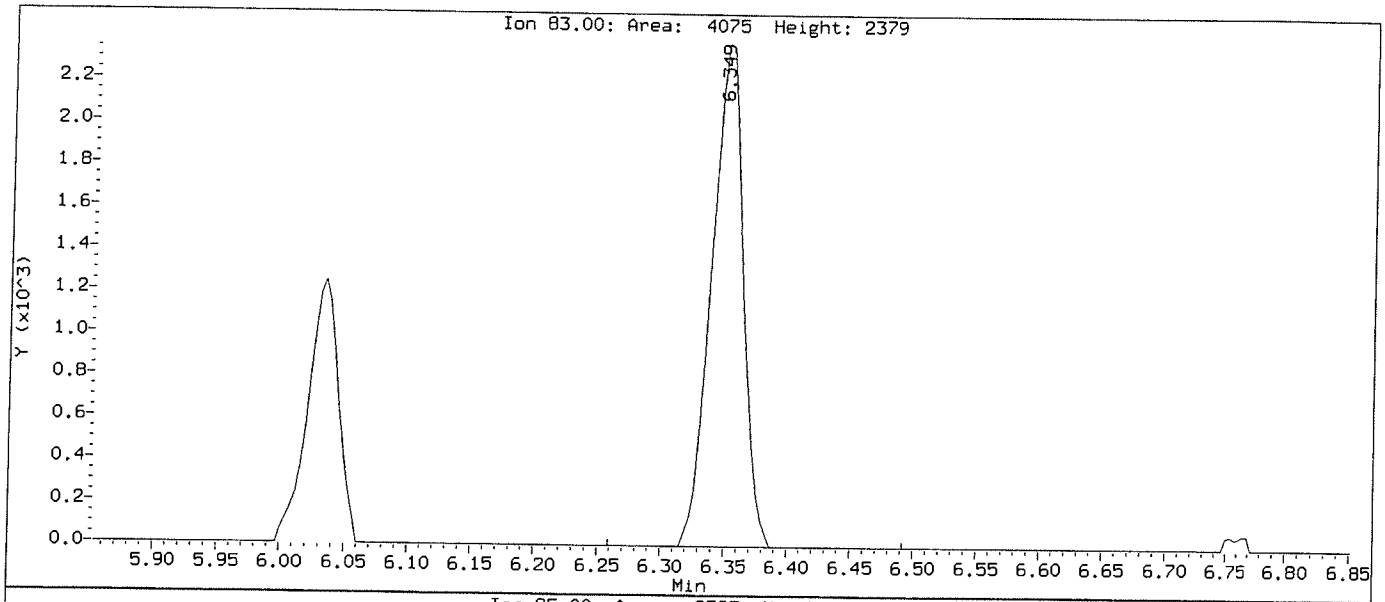
Data File: \\NAHSTWS005\Target\chem\voa9.i\U181113.b\Before\U111303.D
Injection Date: 13-NOV-2018 11:47
Instrument: VOA9.i
Client Sample ID: VSTD000.5

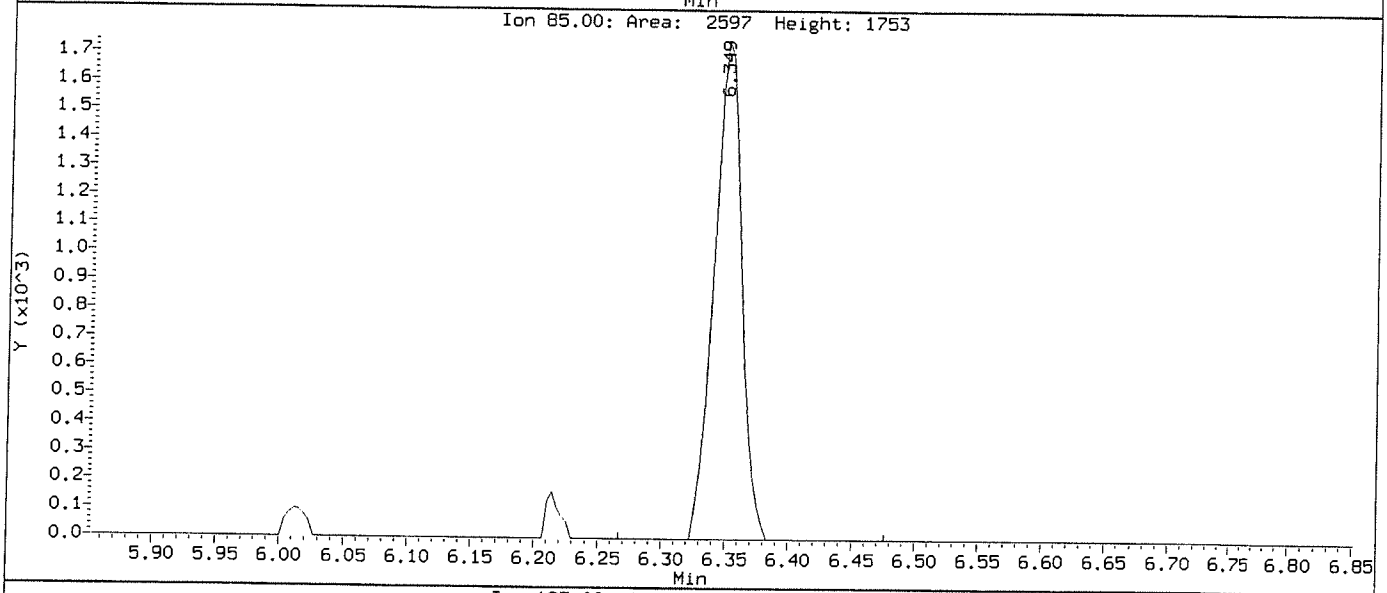
Compound: Bromodichloromethane
CAS Number: 75-27-4

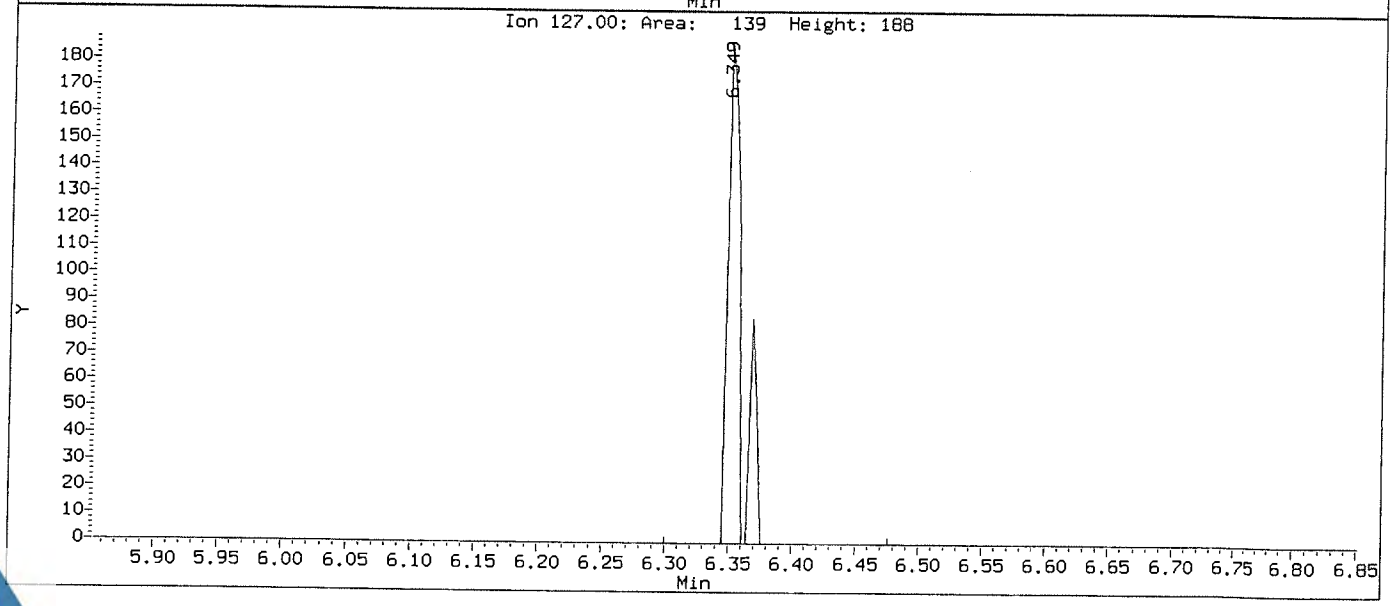


Data File: \\NAHSTWS005\Target\chem\voa9.i\U181113.b\U111303.D
Injection Date: 13-NOV-2018 11:47
Instrument: VOA9.i
Client Sample ID: VSTD000.5

Compound: Bromodichloromethane
CAS Number: 75-27-4

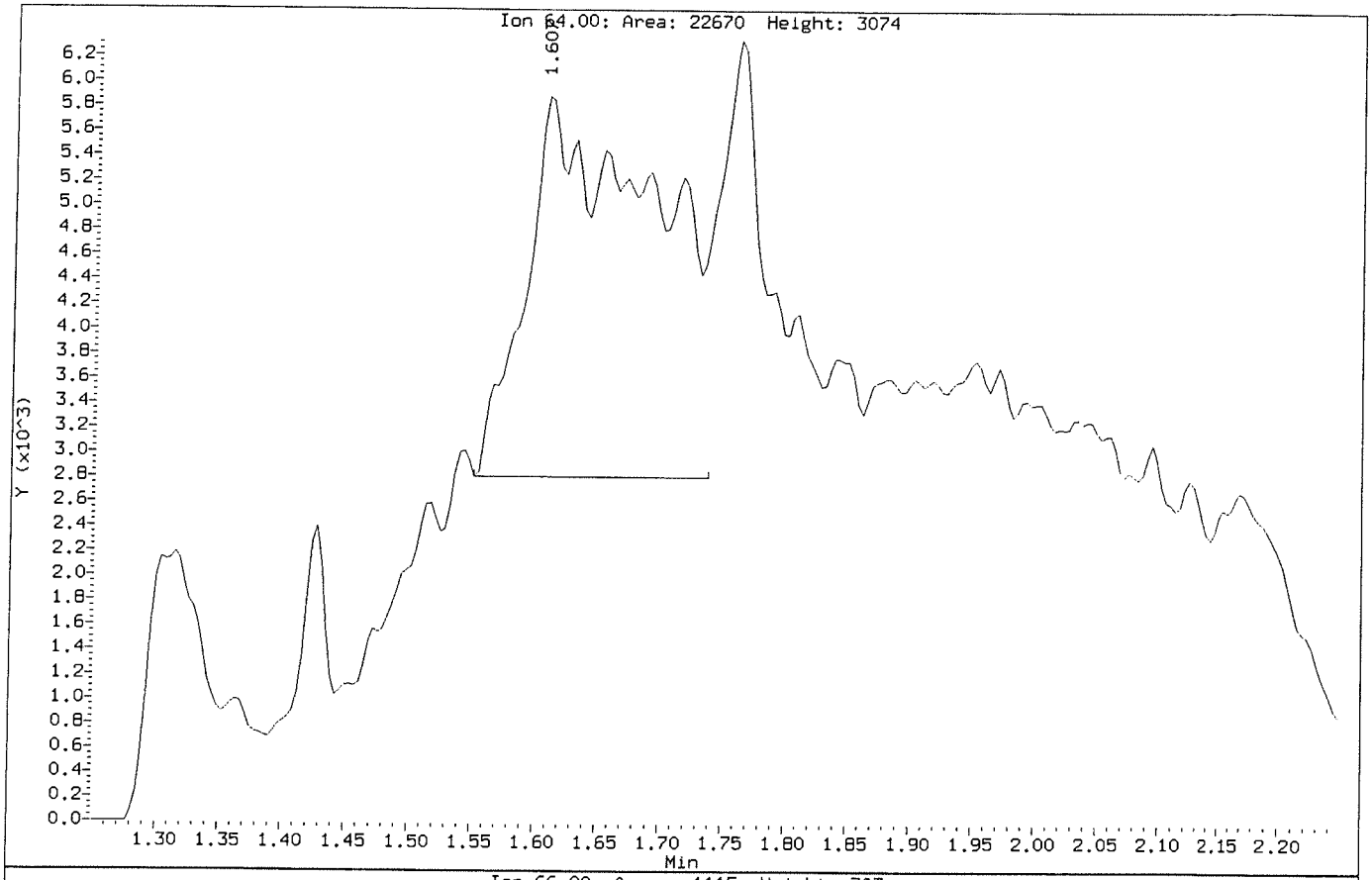


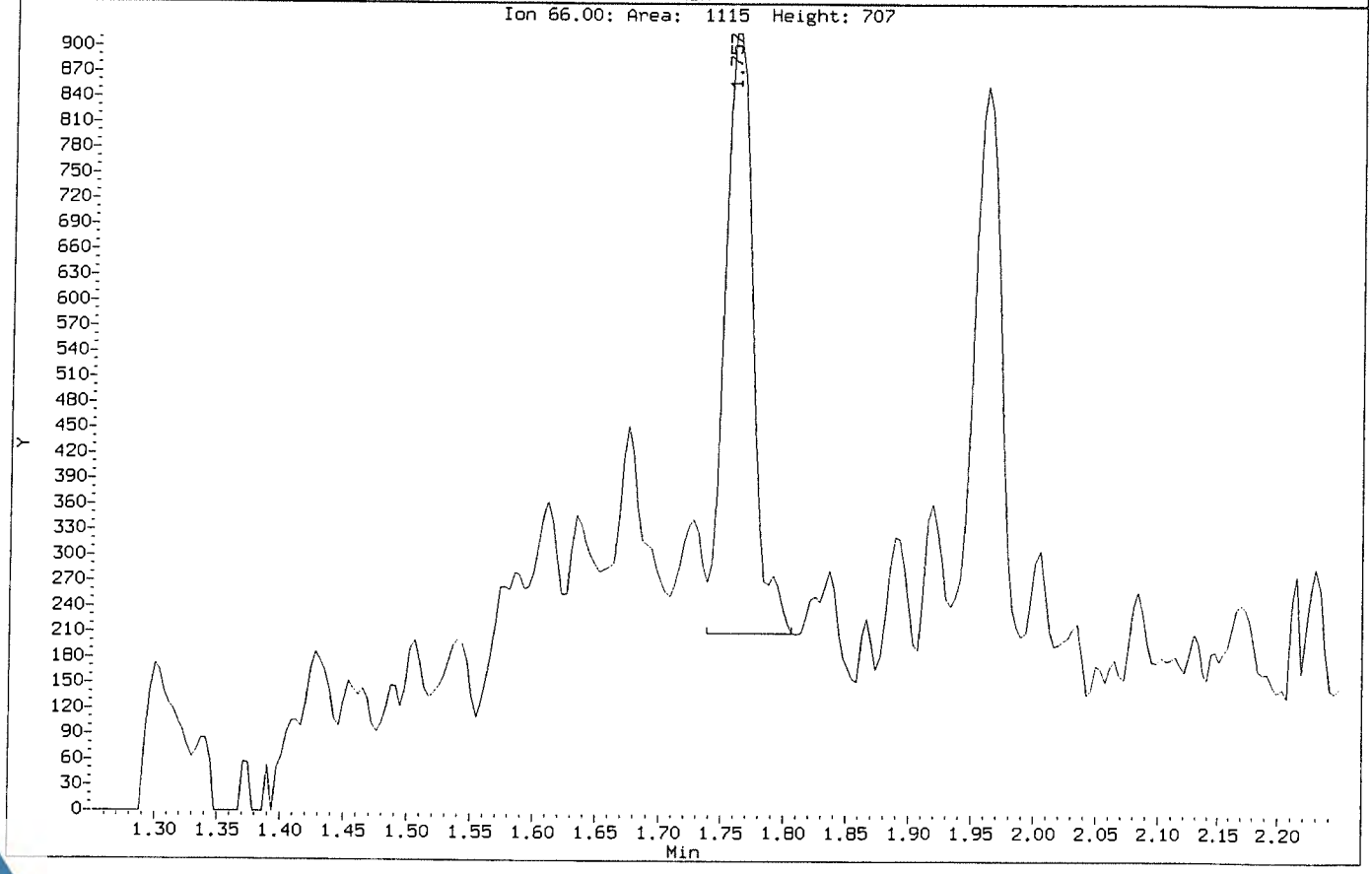




Data File: \\NAHSTWS005\Target\chem\voa9.i\U181113.b\Before\U111303.D
Injection Date: 13-NOV-2018 11:47
Instrument: VOA9.i
Client Sample ID: VSTD000.5

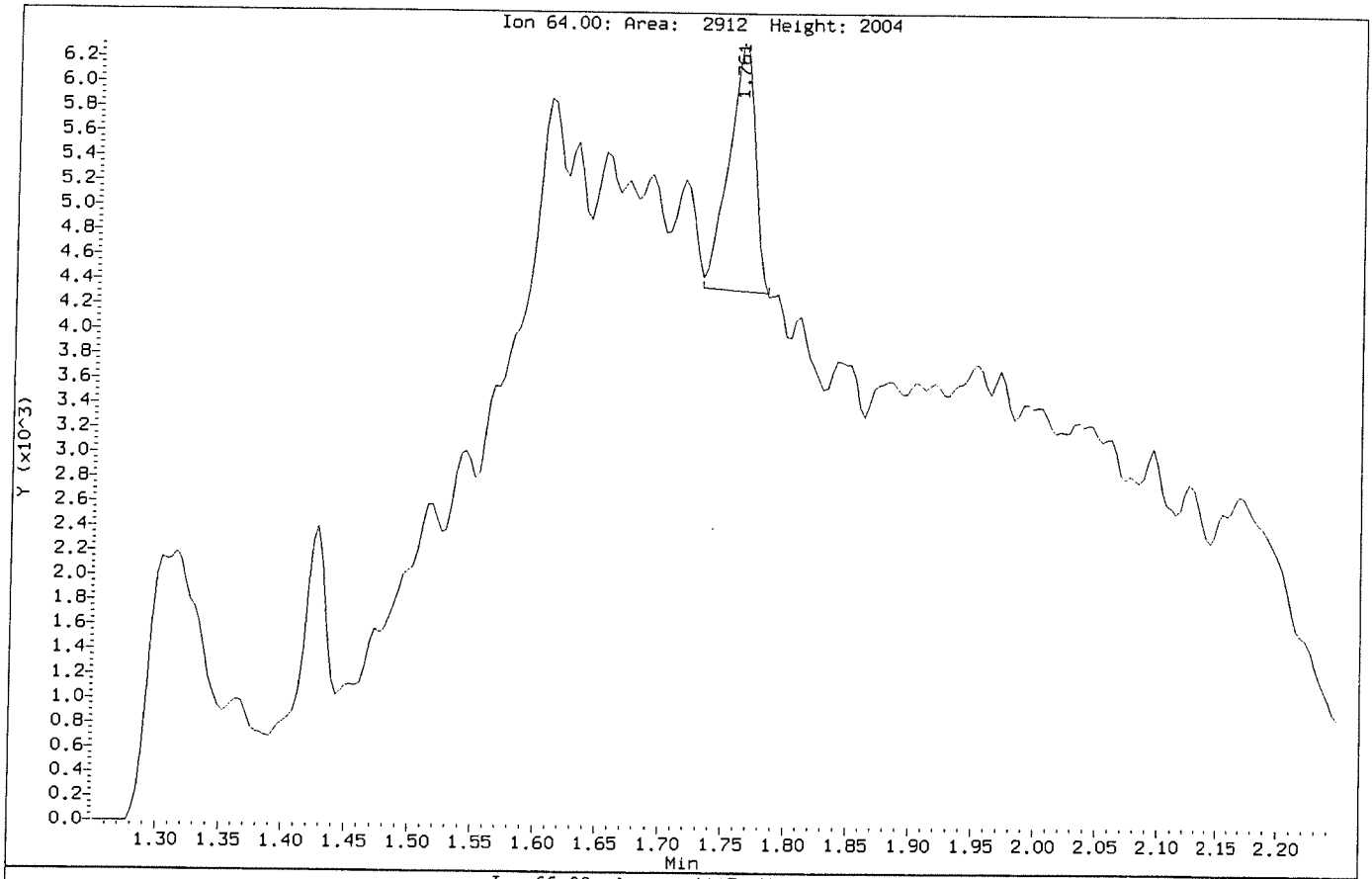
Compound: Chloroethane
CAS Number: 75-00-3

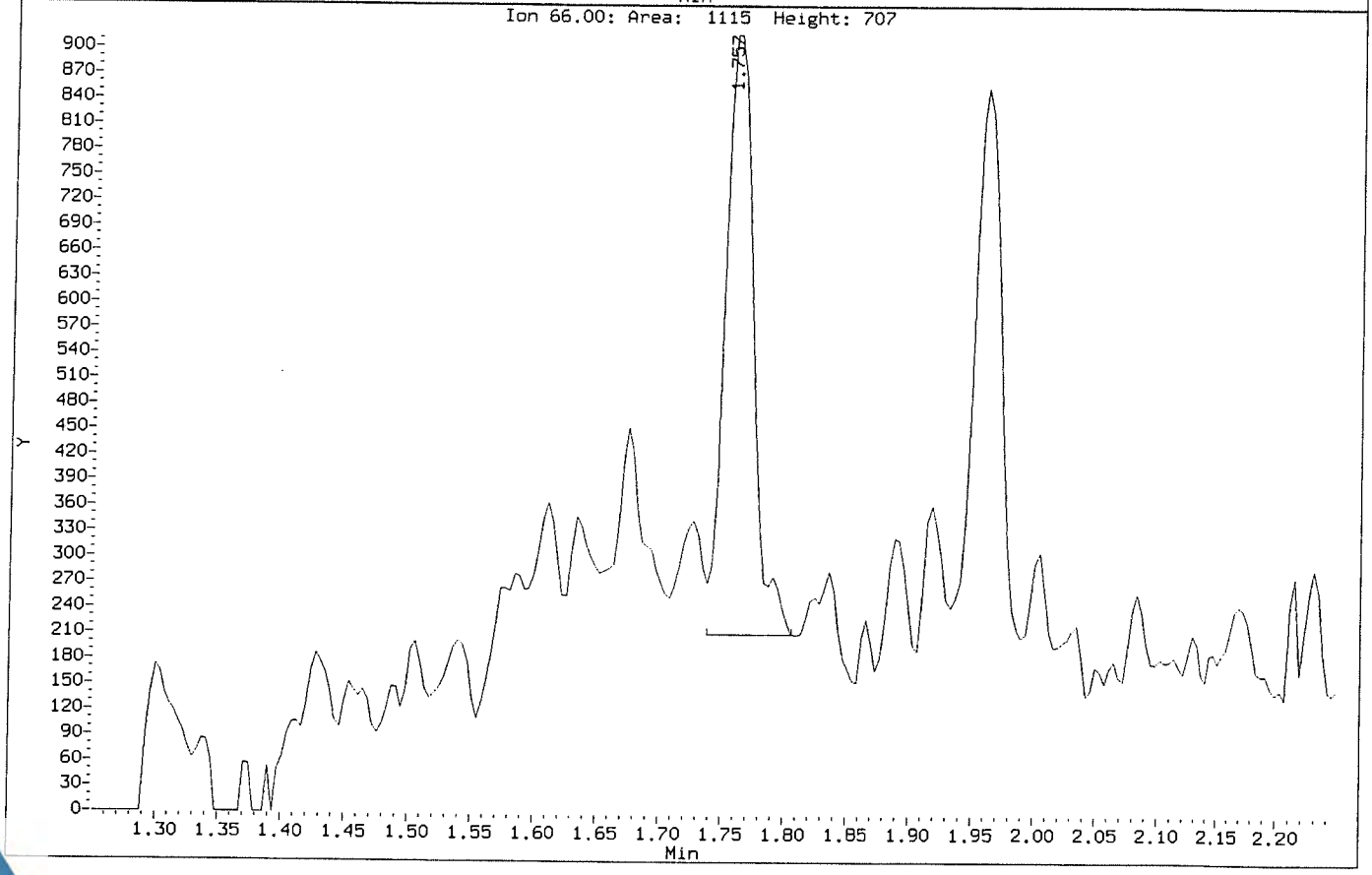




Data File: \\NAHSTWS005\Target\chem\voa9.i\U181113.b\U111303.D
Injection Date: 13-NOV-2018 11:47
Instrument: VOA9.i
Client Sample ID: VSTD000.5

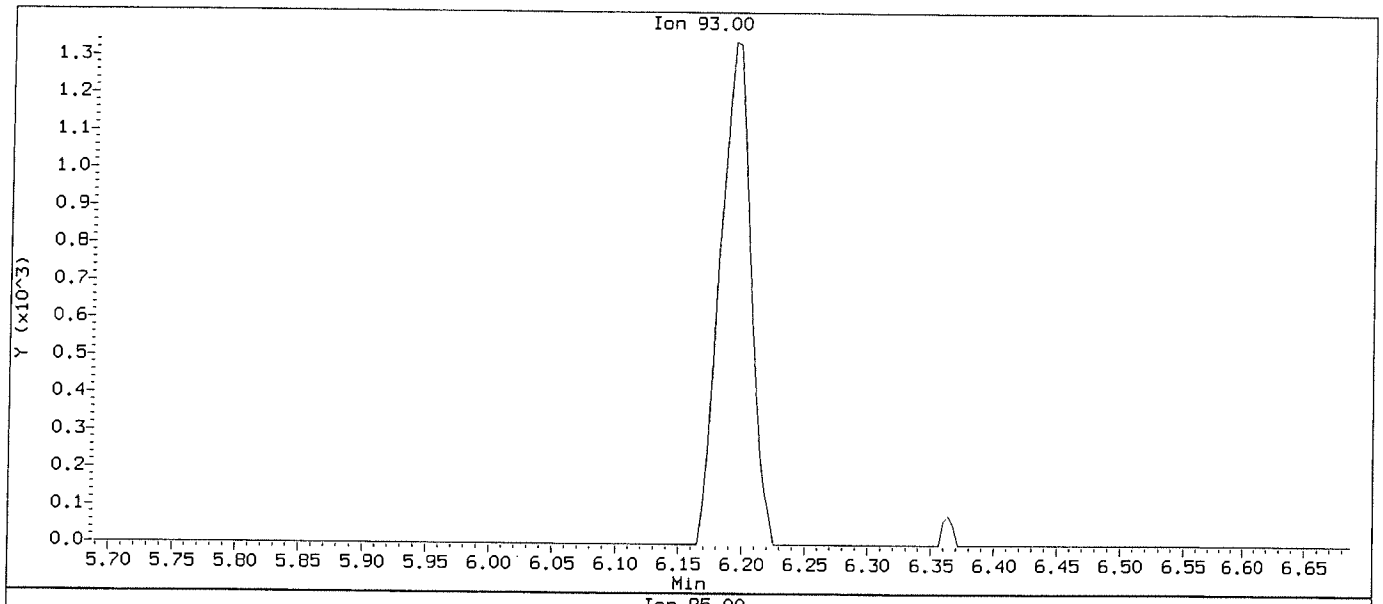
Compound: Chloroethane
CAS Number: 75-00-3

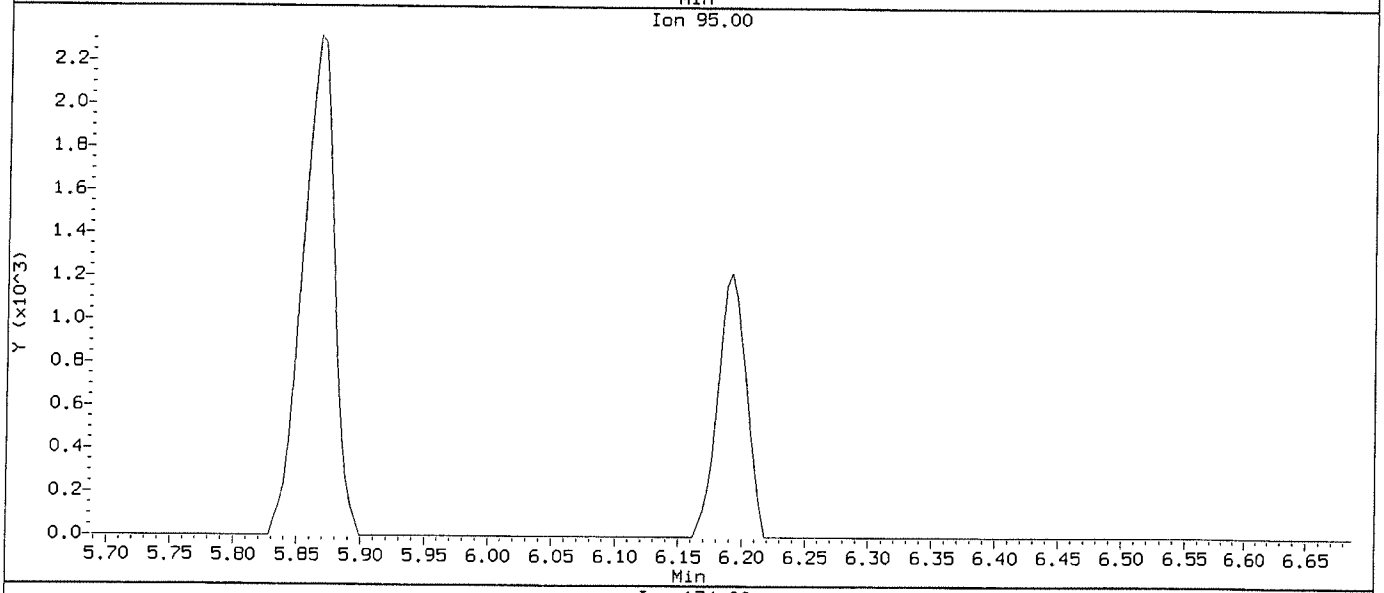


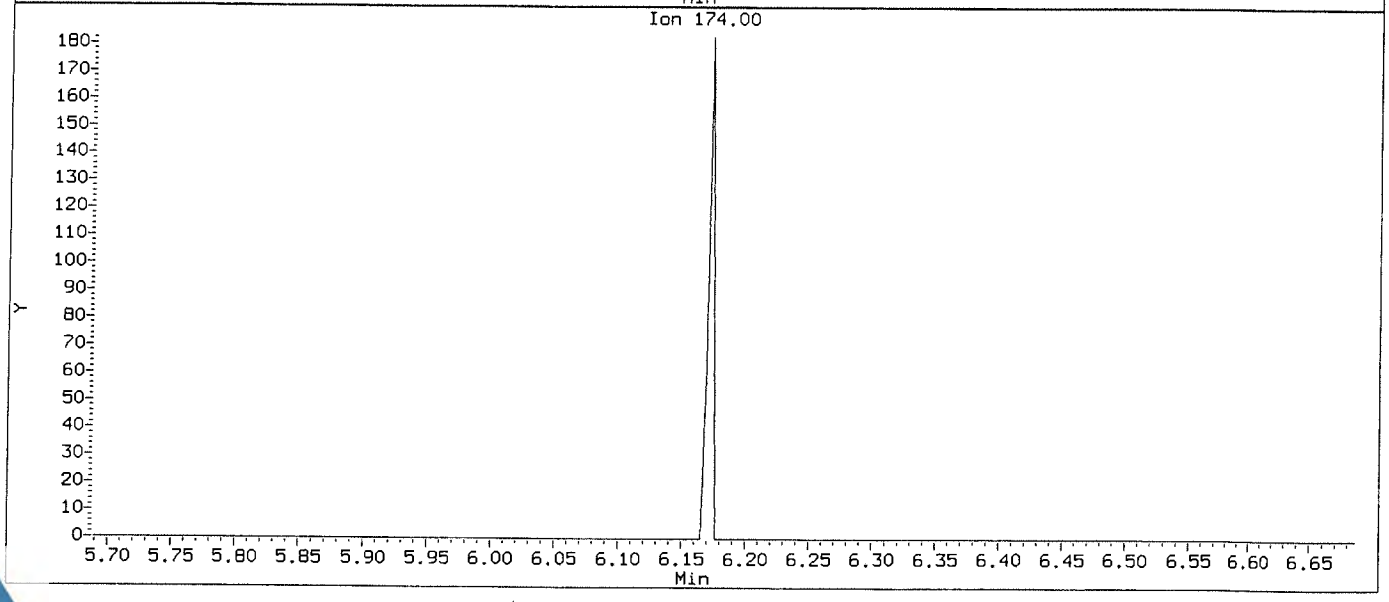


Data File: \\NAHSTWS005\Target\chem\voa9.i\U181113.b\Before\U111303.D
Injection Date: 13-NOV-2018 11:47
Instrument: VOA9.i
Client Sample ID: VSTD000.5

Compound: Dibromomethane
CAS Number: 74-95-3

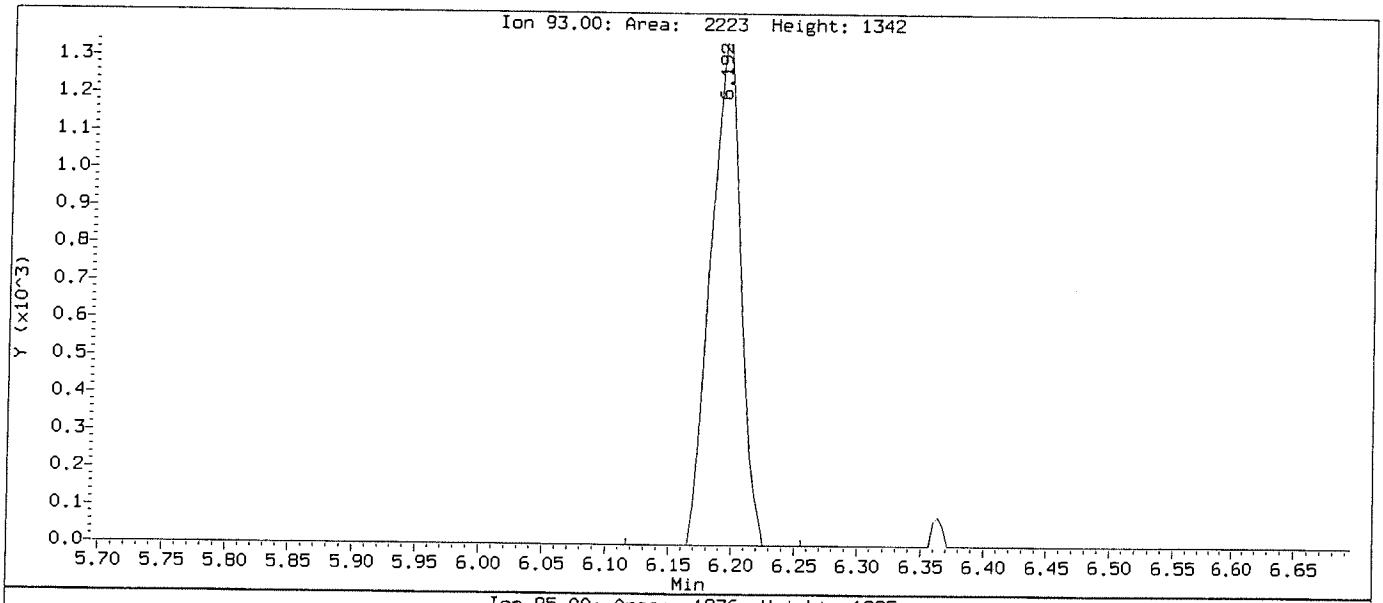


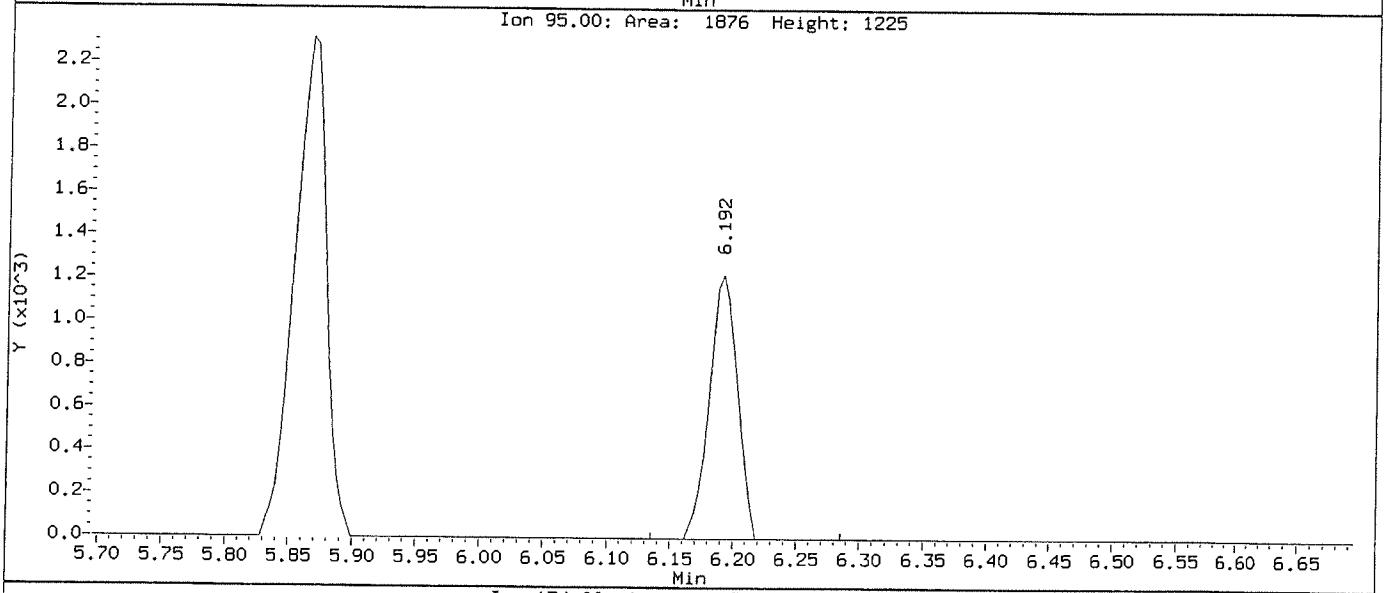


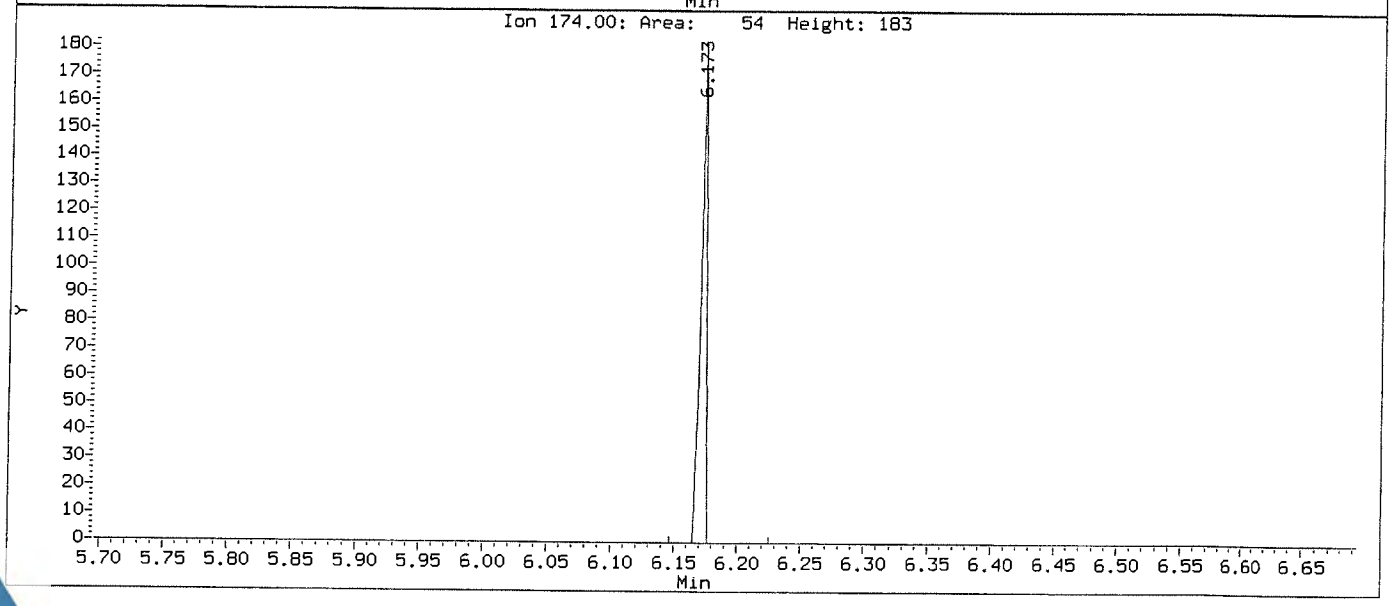


Data File: \\NAHSTWS005\Target\chem\voa9.i\U181113.b\U111303.D
Injection Date: 13-NOV-2018 11:47
Instrument: VOA9.i
Client Sample ID: VSTD000.5

Compound: Dibromomethane
CAS Number: 74-95-3

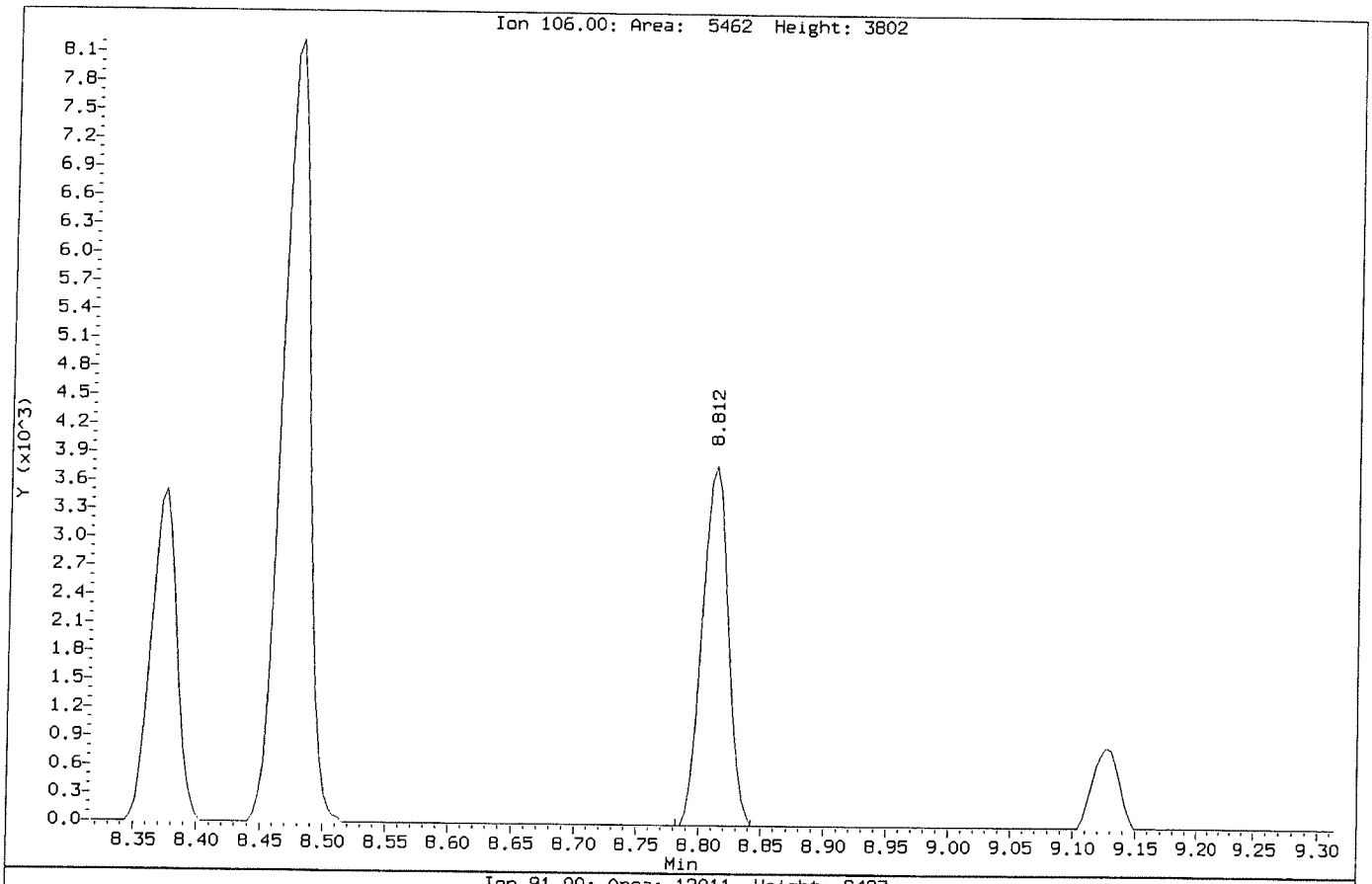


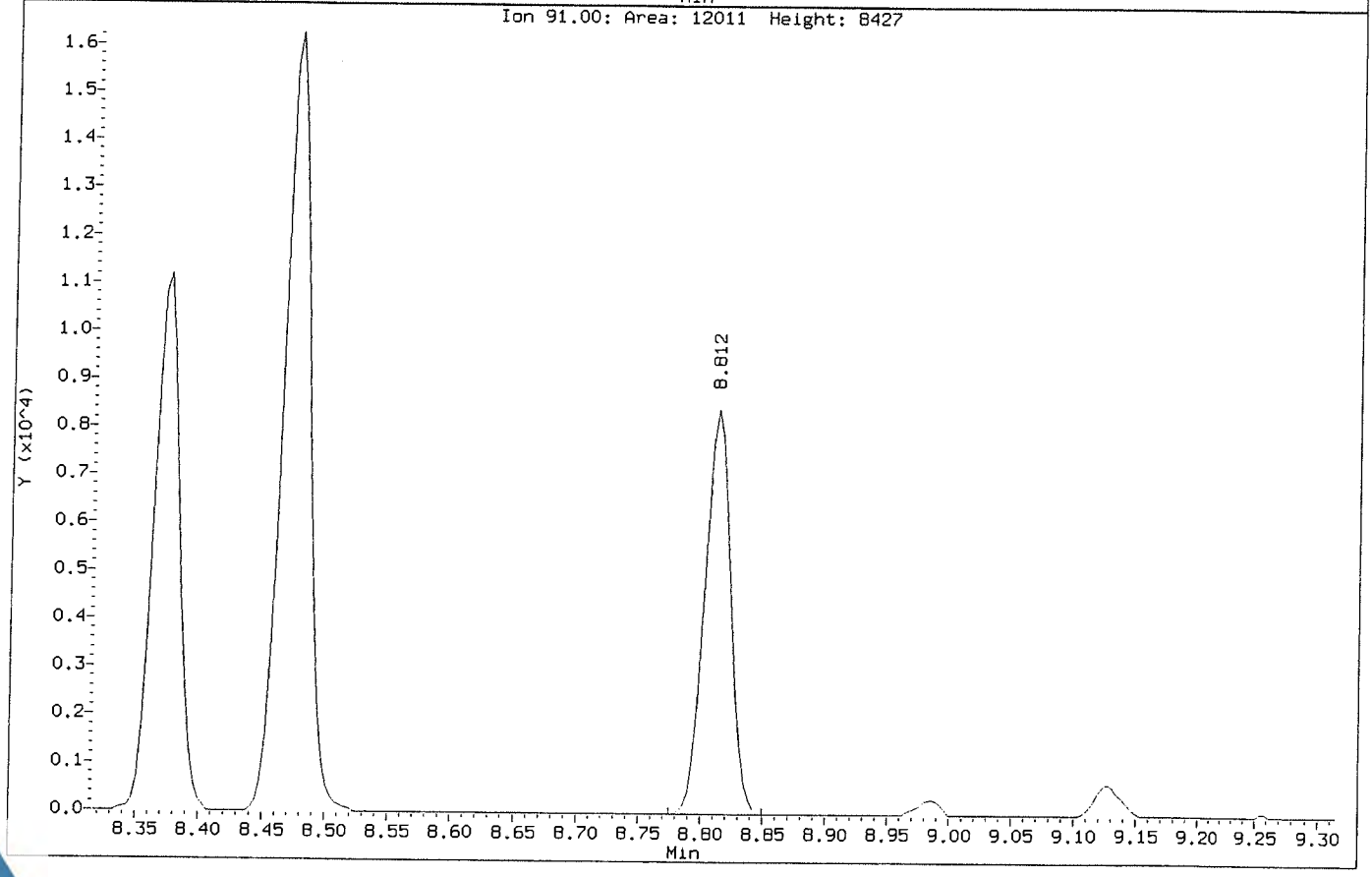




Data File: \\NAHSTWS005\Target\chem\voa9.i\U181113.b\Before\U111303.D
Injection Date: 13-NOV-2018 11:47
Instrument: VOA9.i
Client Sample ID: VSTD000.5

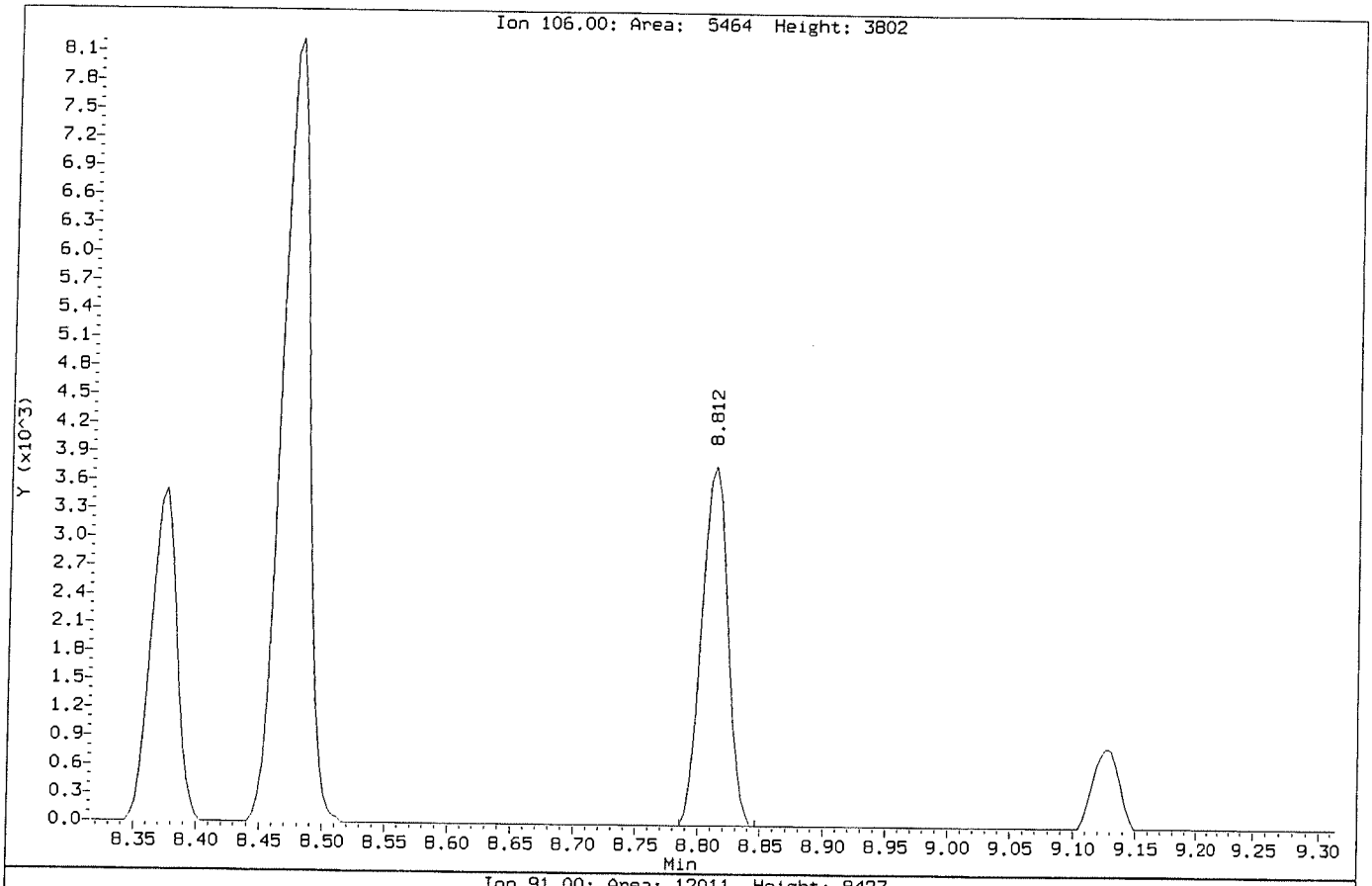
Compound: o-Xylene
CAS Number: 95-47-6

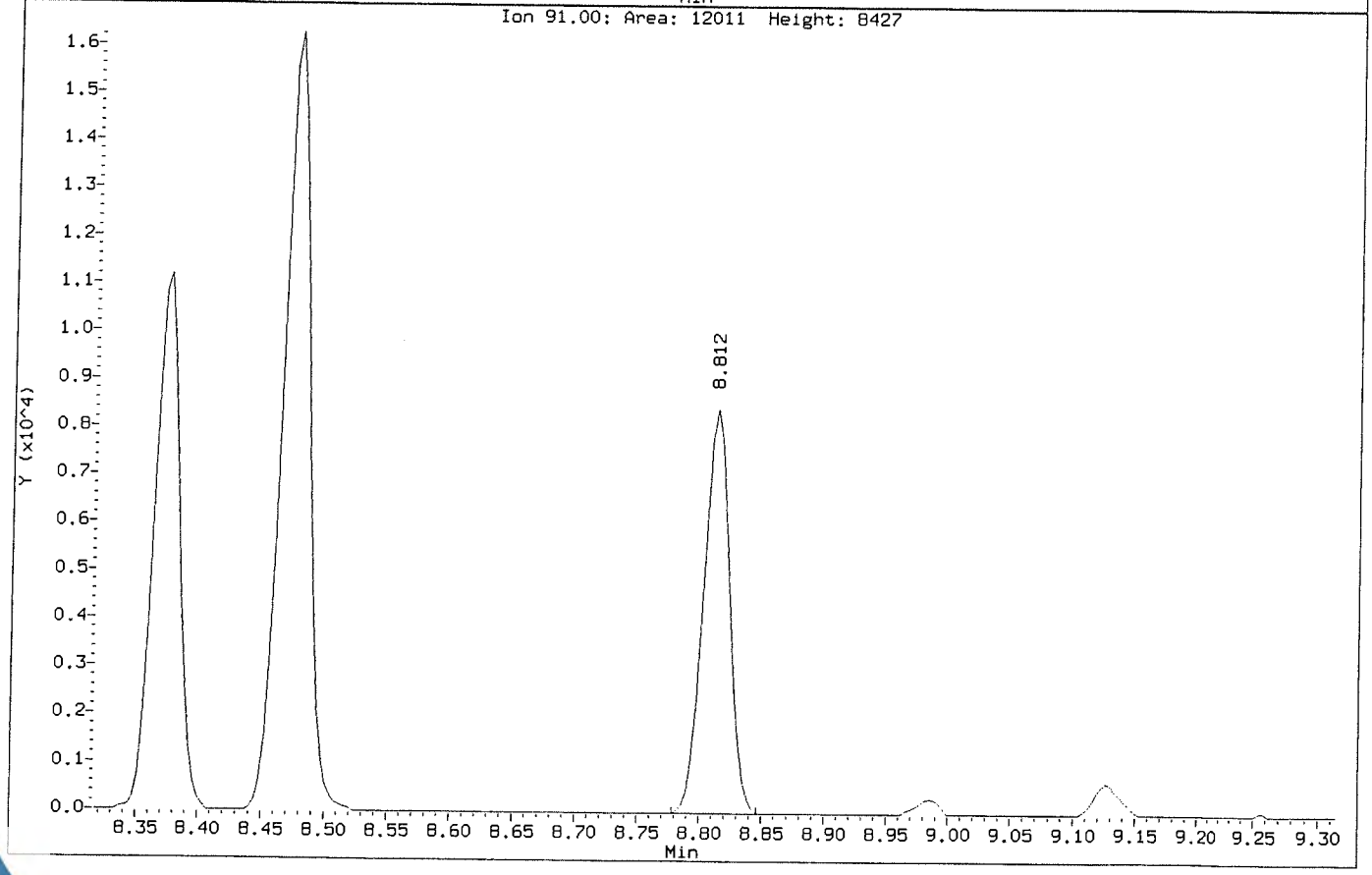




Data File: \\NAHSTWS005\Target\chem\voa9.i\U181113.b\U111303.D
Injection Date: 13-NOV-2018 11:47
Instrument: VOA9.i
Client Sample ID: VSTD000.5

Compound: o-Xylene
CAS Number: 95-47-6





Data File: \\NAHSTWS005\Target\chem\voa9.i\U181113.b\U111304.D Page 1
Report Date: 24-Jan-2019 18:55

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa9.i\U181113.b\U111304.D
Lab Smp Id: VSTD001 Client Smp ID: VSTD001
Inj Date : 13-NOV-2018 12:36
Operator : PC Inst ID: VOA9.i
Smp Info : VSTD001;VSTD001;1;3;
Misc Info : 180315V9;WATER;0;1;
Comment :
Method : \\NAHSTWS005\Target\chem\voa9.i\U181113.b\8260C.m
Meth Date : 24-Jan-2019 18:55 VOA9.i Quant Type: ISTD
Cal Date : 13-NOV-2018 11:47 Cal File: U111303.D
Als bottle: 5 Calibration Sample, Level: 3
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: LHAAP.sub
Target Version: 4.14
Processing Host: NAHSTW7087

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Cpnd Variable		Local Compound Variable

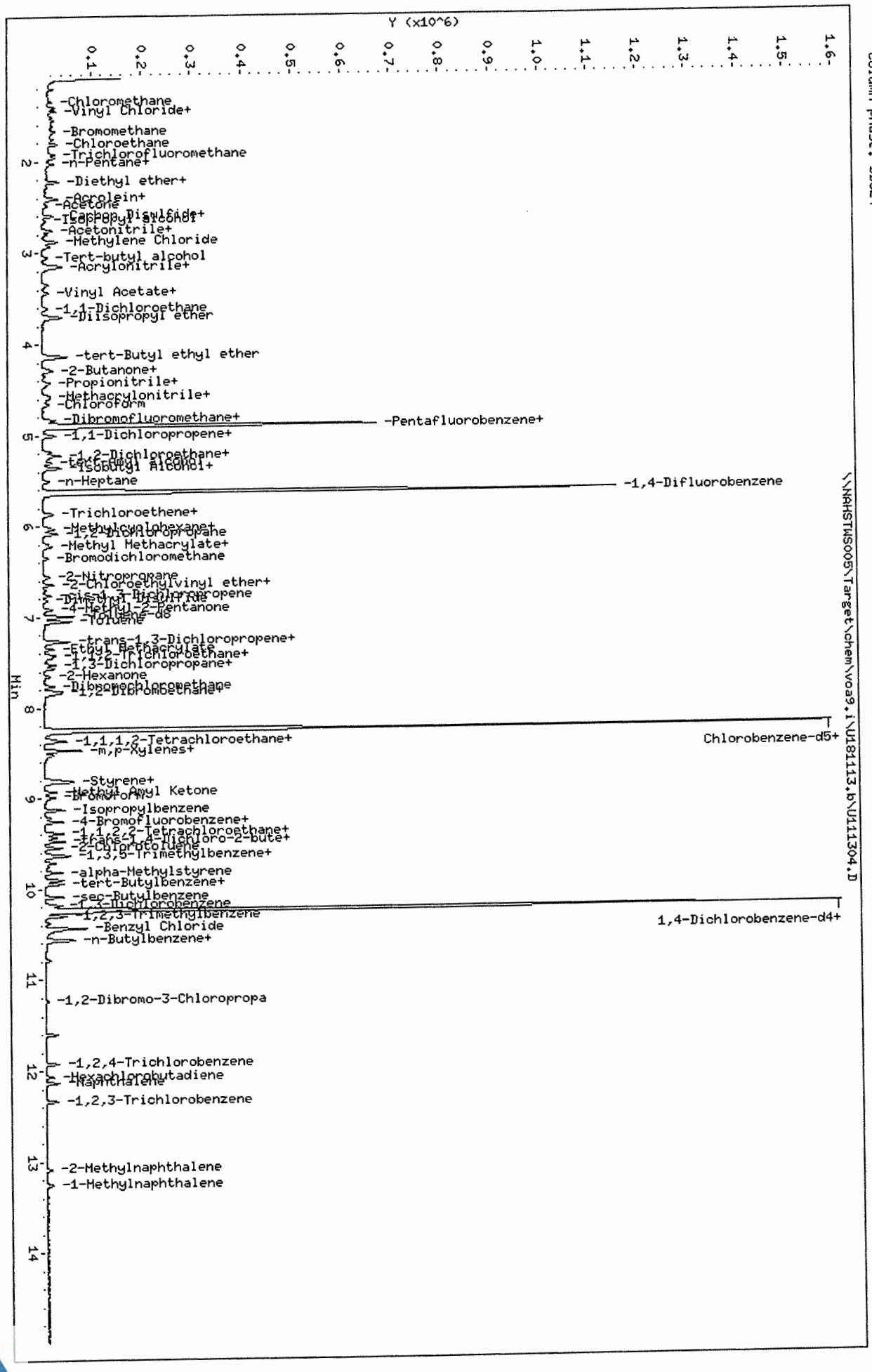
Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	ON-COL (ug/l)
* 1 Pentafluorobenzene	168	4.898	4.898	(1.000)	405565	50.0000	
* 36 1,4-Difluorobenzene	114	5.625	5.625	(1.000)	804218	50.0000	
* 47 Chlorobenzene-d5	117	8.249	8.249	(1.000)	748347	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	10.236	10.236	(1.000)	345100	50.0000	
$ 30 Dibromofluoromethane	113	4.834	4.834	(0.987)	7705	1.00000	0.43(a)
$ 35 1,2-Dichloroethane-d4	65	5.179	5.179	(1.057)	11059	1.00000	0.09(a)
$ 48 Toluene-d8	98	6.989	6.989	(0.847)	30489	1.00000	(a)
$ 69 4-Bromofluorobenzene	95	9.257	9.257	(1.122)	10512	1.00000	0.38(a)
60 1,1,1,2-Tetrachloroethane	131	8.350	8.350	(1.012)	4277	1.00000	0.90(a)
31 1,1,1-Trichloroethane	97	4.826	4.826	(0.985)	6795	1.00000	0.95(a)
68 1,1,2,2-Tetrachloroethane	83	9.392	9.392	(0.918)	8088	1.00000	0.98(a)
138 Freon TF	101	2.405	2.405	(0.491)	4282	1.00000	1.05(a)
53 1,1,2-Trichloroethane	83	7.421	7.421	(0.900)	5034	1.00000	1.05(a)
22 1,1-Dichloroethane	63	3.608	3.608	(0.737)	9857	1.00000	1.06(a)
11 1,1-Dichloroethene	96	2.405	2.405	(0.491)	5079	1.00000	1.10(a)
32 1,1-Dichloropropene	75	5.006	5.006	(0.890)	7778	1.00000	1.04(a)
93 1,2,3-Trichlorobenzene	180	12.339	12.339	(1.205)	5356	1.00000	0.82(a)
71 1,2,3-Trichloropropane	75	9.426	9.426	(0.921)	7560	1.00000	0.88(a)
90 1,2,4-Trichlorobenzene	180	11.926	11.926	(1.165)	6307	1.00000	0.92(a)
79 1,2,4-Trimethylbenzene	105	9.943	9.943	(0.971)	18207	1.00000	0.94(a)
89 1,2-Dibromo-3-Chloropropane	155	11.237	11.237	(1.098)	955	1.00000	1.78(a)
57 1,2-Dibromoethane	107	7.852	7.852	(0.952)	5452	1.00000	0.98(a)

Data File: \\NAHSTWS005\Target\chem\voa9.i\U181113.b\U111304.D Page 2
Report Date: 24-Jan-2019 18:55

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
88 1,2-Dichlorobenzene	146	10.569	10.569	(1.033)	11469	1.00000	1.04(a)
33 1,2-Dichloroethane	62	5.254	5.254	(0.934)	8729	1.00000	1.03(a)
42 1,2-Dichloropropane	63	6.082	6.082	(1.081)	5924	1.00000	1.03(a)
75 1,3,5-Trimethylbenzene	105	9.625	9.625	(0.940)	17829	1.00000	0.96(a)
83 1,3-Dichlorobenzene	146	10.180	10.180	(0.995)	11288	1.00000	1.03(a)
54 1,3-Dichloropropane	76	7.563	7.563	(0.917)	10633	1.00000	1.04(a)
84 1,4-Dichlorobenzene	146	10.255	10.255	(1.002)	11659	1.00000	1.05(a)
26 2,2-Dichloropropane	77	4.275	4.275	(0.873)	5473	1.00000	0.95(a)
24 2-Butanone	43	4.343	4.343	(0.887)	5794	2.00000	2.03(a)
76 2-Chlorotoluene	91	9.546	9.546	(0.933)	17337	1.00000	1.02(a)
52 2-Hexanone	43	7.653	7.653	(0.928)	7477	2.00000	1.71(a)
77 4-Chlorotoluene	91	9.640	9.640	(0.942)	18812	1.00000	0.96(a)
82 p-Isopropyltoluene	119	10.210	10.210	(0.997)	16467	1.00000	0.87(a)
45 4-Methyl-2-Pentanone	43	6.914	6.914	(0.838)	12236	2.00000	1.96(a)
10 Acetone	43	2.484	2.484	(0.507)	7657	2.00000	(a)
37 Benzene	78	5.220	5.220	(0.928)	23677	1.00000	1.06(a)
74 Bromobenzene	156	9.385	9.385	(0.917)	5602	1.00000	0.98(a)
29 Bromochloromethane	128	4.557	4.557	(0.930)	2347	1.00000	0.98(aM)
39 Bromodichloromethane	83	6.348	6.348	(1.129)	6268	1.00000	0.93(aM)
66 Bromoform	173	8.984	8.984	(1.089)	2470	1.00000	1.89(Ta)
6 Bromomethane	94	1.674	1.674	(0.342)	4167	1.00000	3.09(a)
19 Carbon Disulfide	76	2.592	2.592	(0.529)	28789	2.00000	2.03(a)
34 Carbon Tetrachloride	117	4.999	4.999	(0.889)	5592	1.00000	0.96(a)
59 Chlorobenzene	112	8.275	8.275	(1.003)	16679	1.00000	1.07(a)
7 Chloroethane	64	1.756	1.756	(0.359)	4550	1.00000	1.07(aM)
28 Chloroform	83	4.658	4.658	(0.951)	9975	1.00000	1.06(a)
3 Chloromethane	50	1.344	1.344	(0.274)	6506	1.00000	1.42(a)
27 cis-1,2-Dichloroethene	96	4.290	4.290	(0.876)	6147	1.00000	1.06(a)
46 cis-1,3-Dichloropropene	75	6.757	6.757	(1.201)	7263	1.00000	0.86(a)
55 Dibromochloromethane	129	7.758	7.758	(0.940)	3914	1.00000	0.82(a)
44 Dibromomethane	93	6.191	6.191	(1.101)	3612	1.00000	1.00(aM)
2 Dichlorodifluoromethane	85	1.209	1.209	(0.247)	6358	1.00000	2.04(a)
61 Ethylbenzene	106	8.373	8.373	(1.015)	8122	1.00000	1.03(a)
91 Hexachlorobutadiene	225	12.065	12.065	(1.179)	2210	1.00000	1.33(a)
67 Isopropylbenzene	105	9.126	9.126	(1.106)	22125	1.00000	0.97(a)
62 m,p-Xylenes	106	8.474	8.474	(1.027)	18714	2.00000	1.94(a)
17 Methylene Chloride	84	2.877	2.877	(0.587)	7766	1.00000	0.81(a)
87 n-Butylbenzene	91	10.558	10.558	(1.031)	17894	1.00000	1.37(a)
73 n-Propylbenzene	91	9.475	9.475	(0.926)	27227	1.00000	0.99(a)
92 Naphthalene	128	12.133	12.133	(1.185)	17787	1.00000	0.87(a)
63 o-Xylene	106	8.811	8.811	(1.068)	9461	1.00000	0.98(aH)
81 sec-Butylbenzene	105	10.086	10.086	(0.985)	22039	1.00000	0.97(a)
64 Styrene	104	8.826	8.826	(1.070)	14819	1.00000	0.91(a)
78 tert-Butylbenzene	119	9.902	9.902	(0.967)	14832	1.00000	0.93(a)
56 Tetrachloroethene	164	7.525	7.525	(0.912)	4264	1.00000	1.08(a)
50 Toluene	91	7.049	7.049	(0.855)	24363	1.00000	1.02(a)
20 trans-1,2-Dichloroethene	96	3.147	3.147	(0.643)	5480	1.00000	1.09(a)
51 trans-1,3-Dichloropropene	75	7.263	7.263	(1.291)	5482	1.00000	2.11(a)
38 Trichloroethene	130	5.861	5.861	(1.042)	5801	1.00000	1.05(a)
8 Trichlorofluoromethane	101	1.959	1.959	(0.400)	8913	1.00000	1.09(a)
5 Vinyl Chloride	62	1.423	1.423	(0.291)	7374	1.00000	1.61(a)

QC Flag Legend

T - Target compound detected outside RT window.
a - Target compound detected but, quantitated amount
Below Limit Of Quantitation(BLOQ).
M - Compound response manually integrated.
H - Operator selected an alternate compound hit.



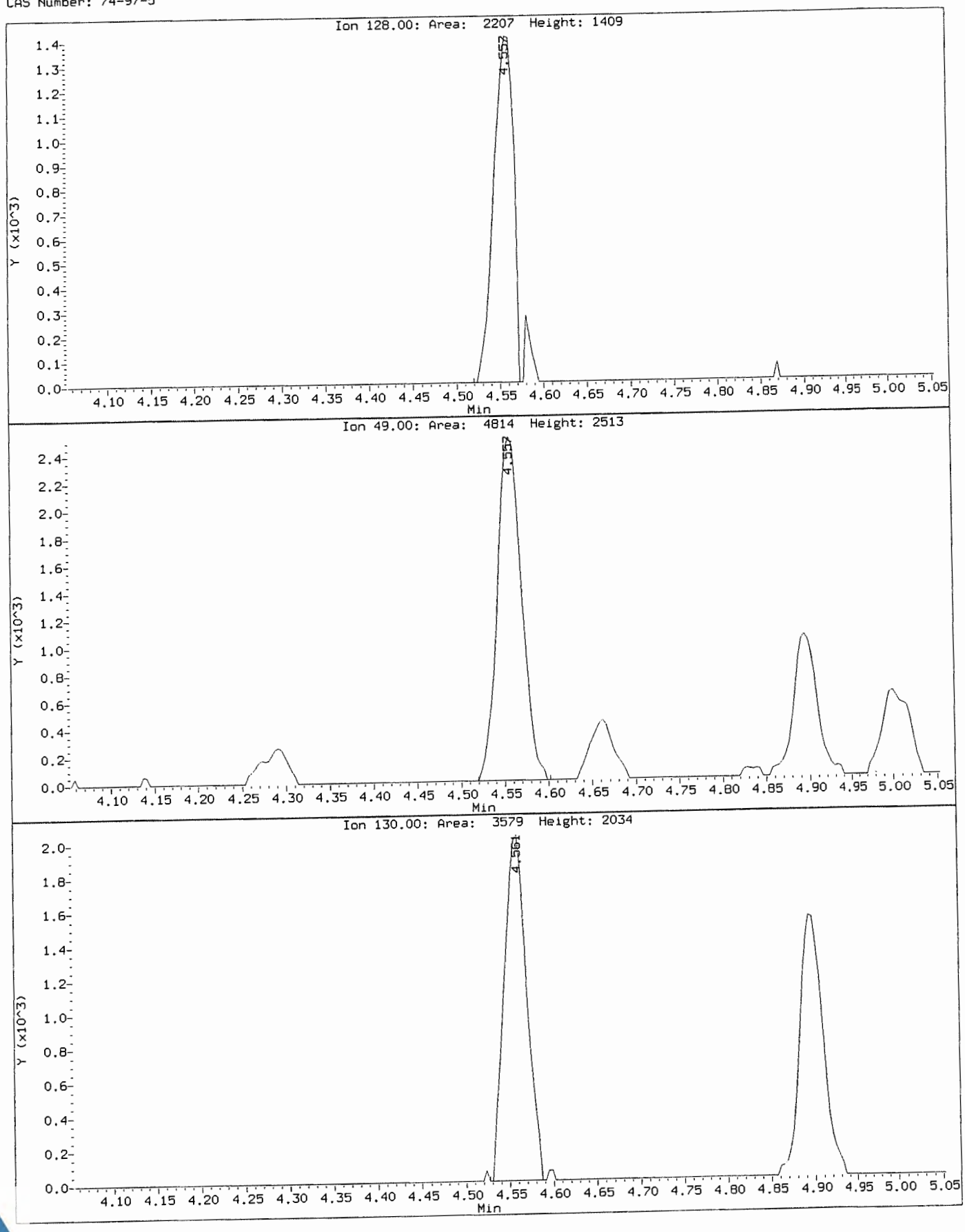
Data File: \\NAHSTWS005\Target\chem\voa9.i\U181113.b\U111304.D
Date : 13-NOV-2018 12:36
Client ID: VSTD001
Sample Info: VSTD001;VSTD001;1;3;
Purge Volume: 5.0
Column phase: DB624

\\NAHSTWS005\Target\chem\voa9.i\U181113.b\U111304.D

Instrument: VOA9.i
Operator: PC
Column diameter: 0.18

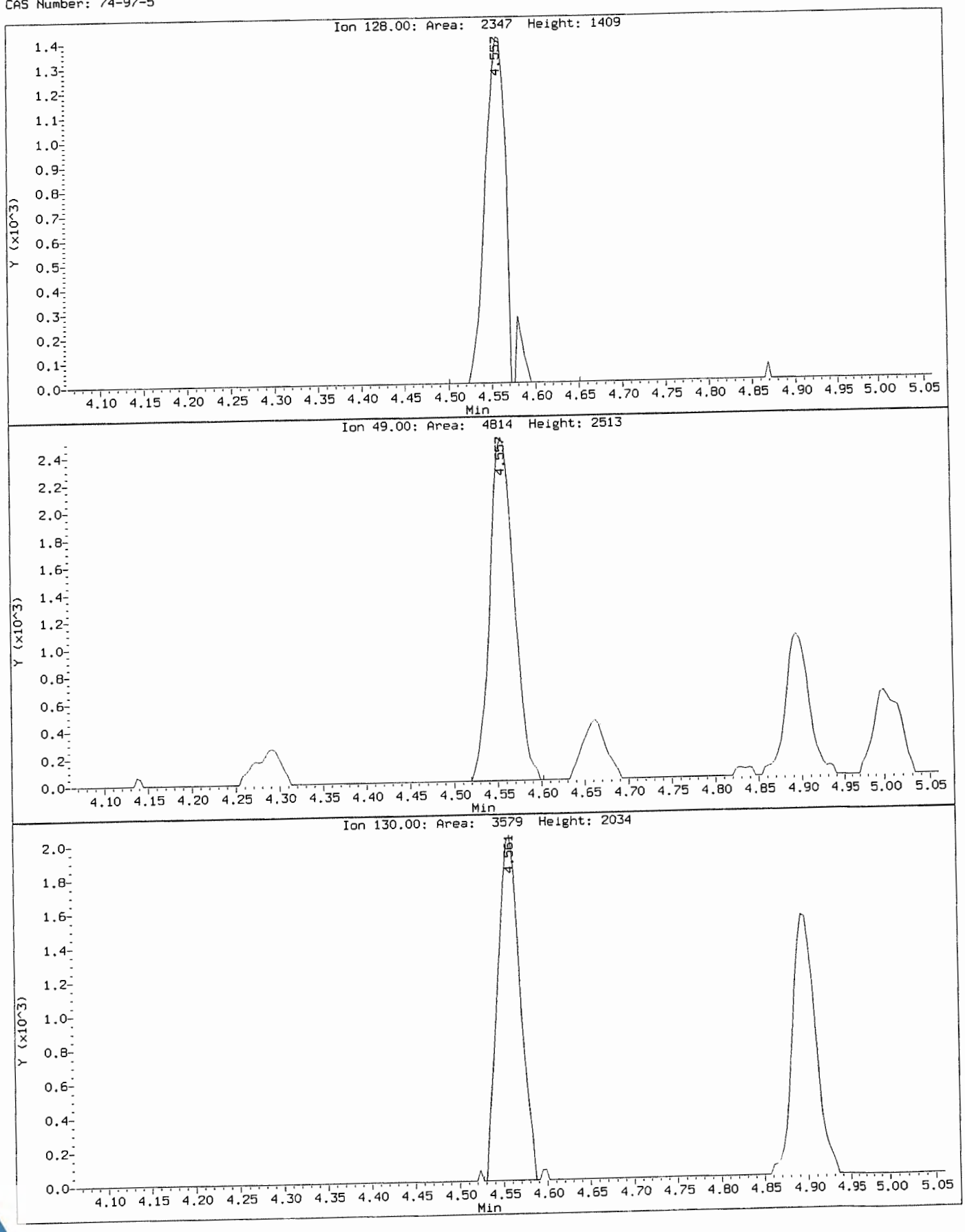
Data File: \\NAHSTWS005\Target\chem\voa9.i\U181113.b\Before\U111304.D
Injection Date: 13-NOV-2018 12:36
Instrument: VOA9.i
Client Sample ID: VSTD001

Compound: Bromochloromethane
CAS Number: 74-97-5



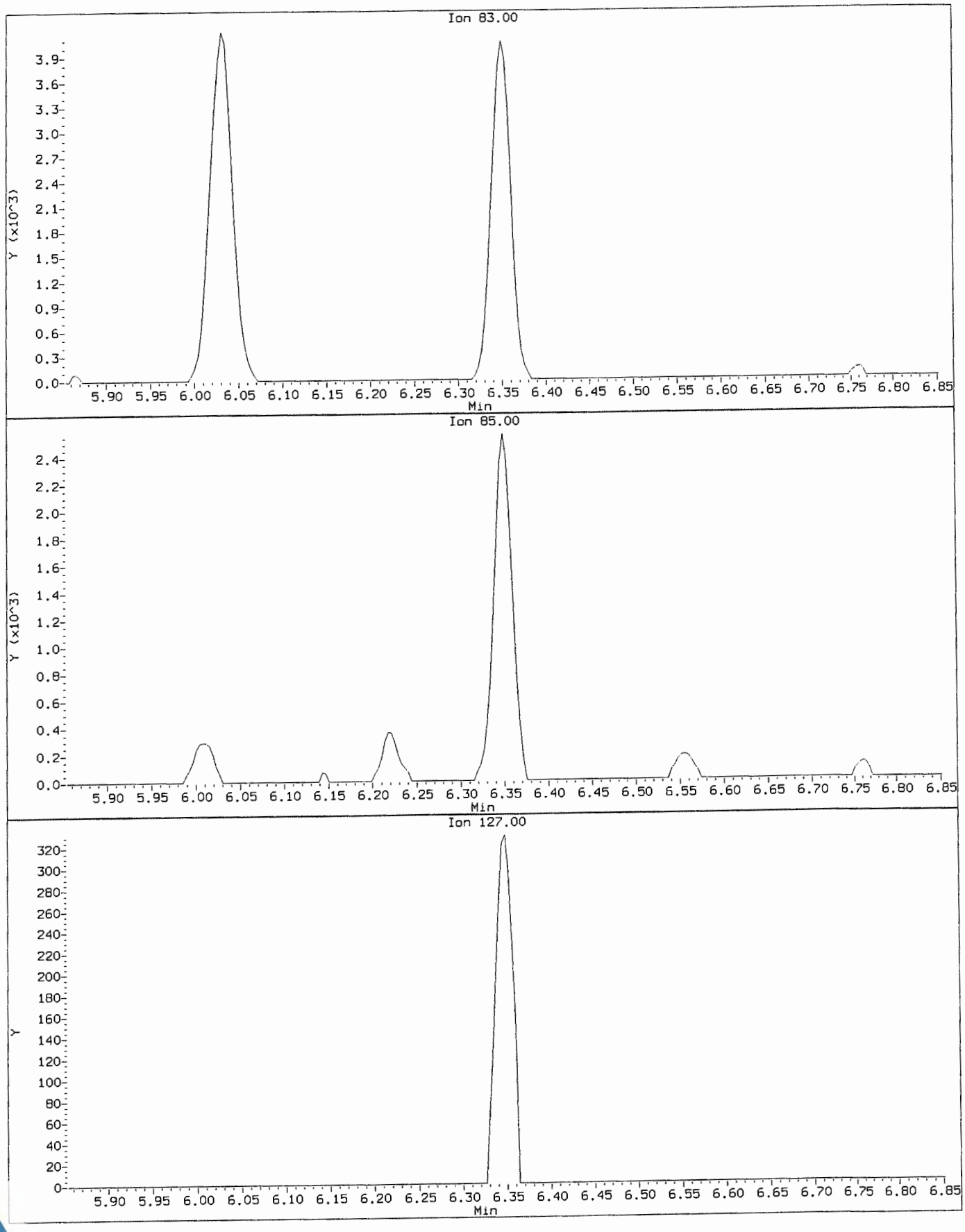
Data File: \\NAHSTWS005\Target\chem\voa9.i\U181113.b\U111304.D
Injection Date: 13-NOV-2018 12:36
Instrument: VOA9.i
Client Sample ID: VSTD001

Compound: Bromochloromethane
CAS Number: 74-97-5



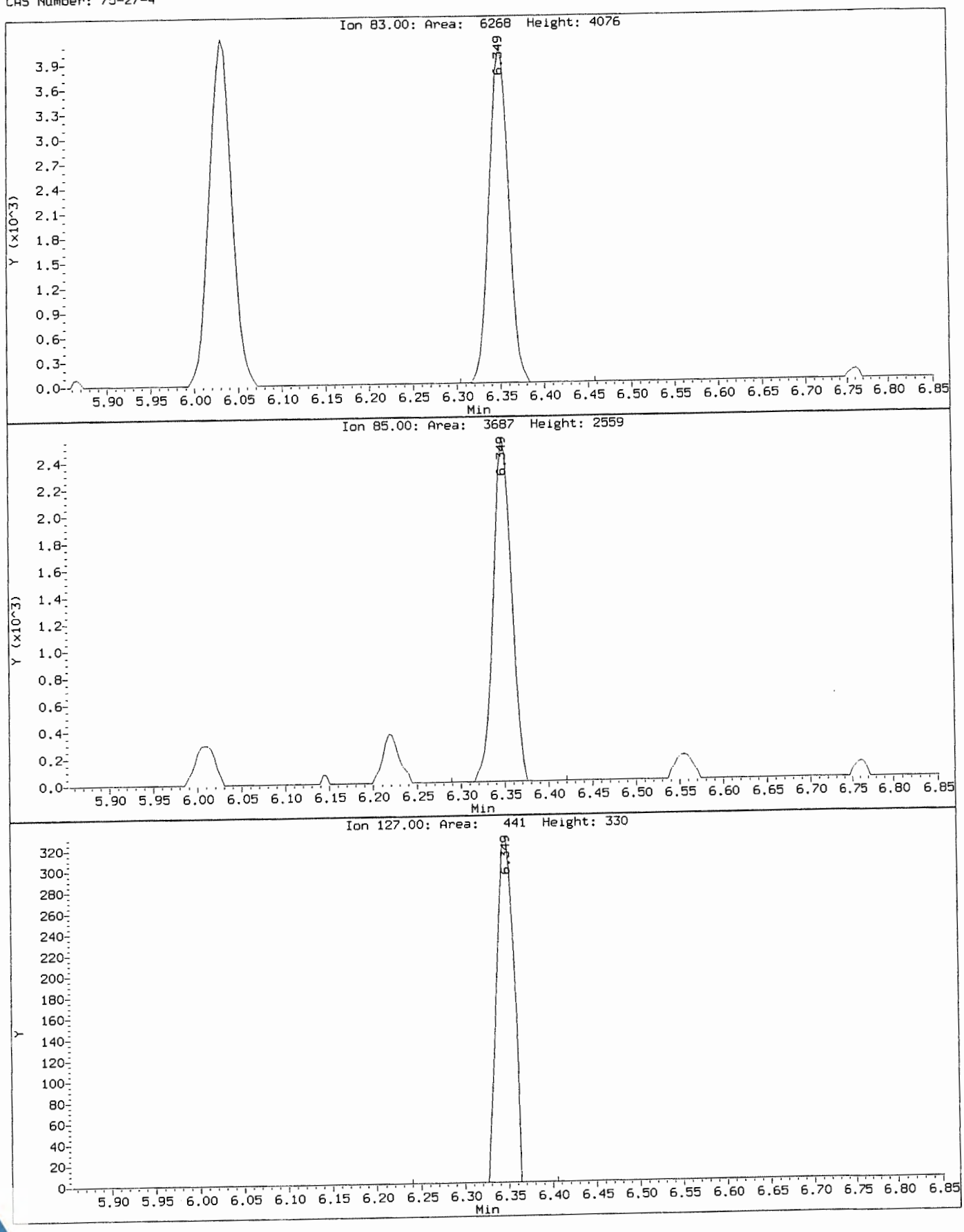
Data File: \\NAHSTWS005\Target\chem\voa9.i\U181113.b\Before\U111304.D
Injection Date: 13-NOV-2018 12:36
Instrument: VOA9.i
Client Sample ID: VSTD001

Compound: Bromodichloromethane
CAS Number: 75-27-4



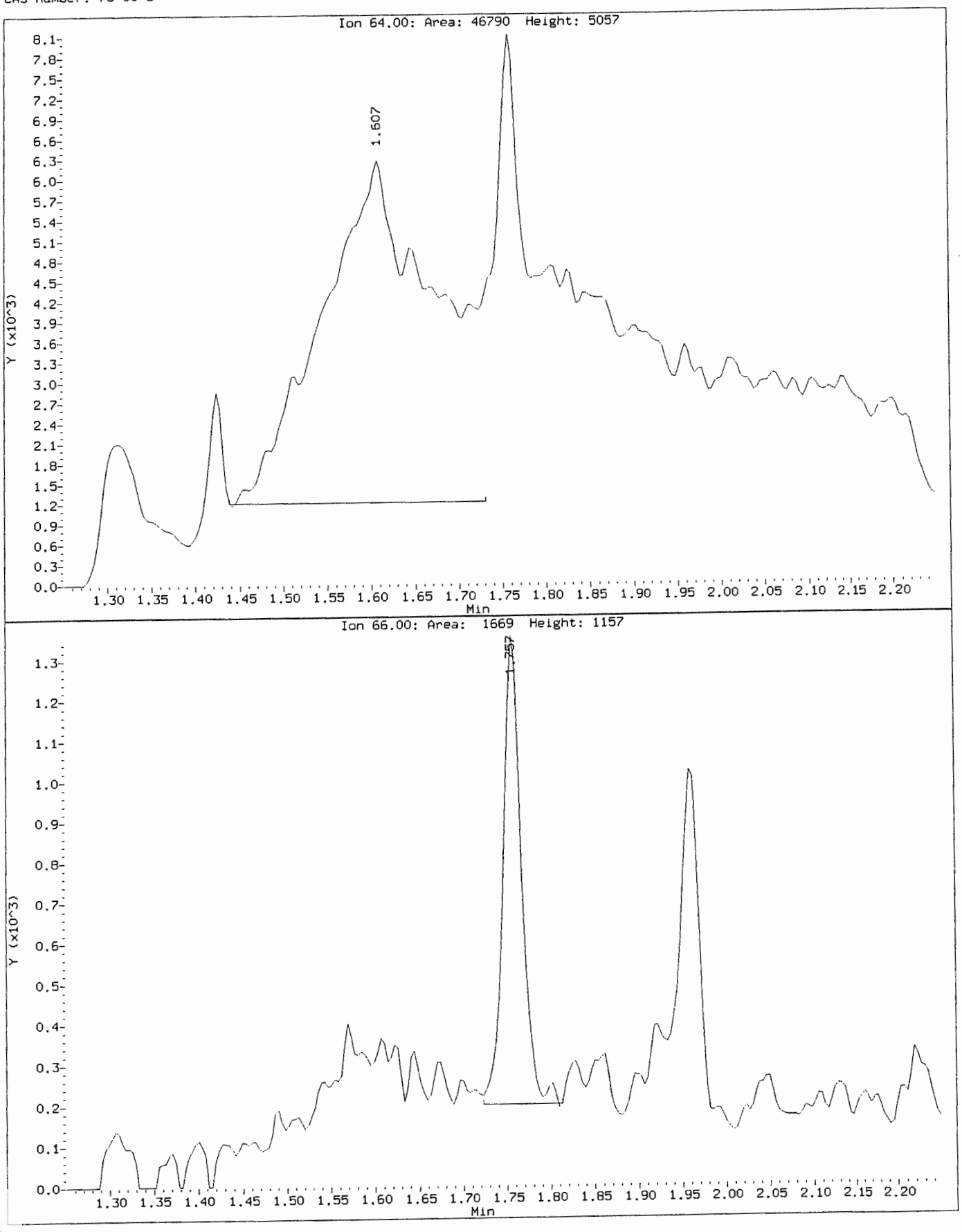
Data File: \\NAHSTWS005\Target\chem\voa9.i\U181113.b\U111304.D
Injection Date: 13-NOV-2018 12:36
Instrument: VOA9.i
Client Sample ID: VSTD001

Compound: Bromodichloromethane
CAS Number: 75-27-4



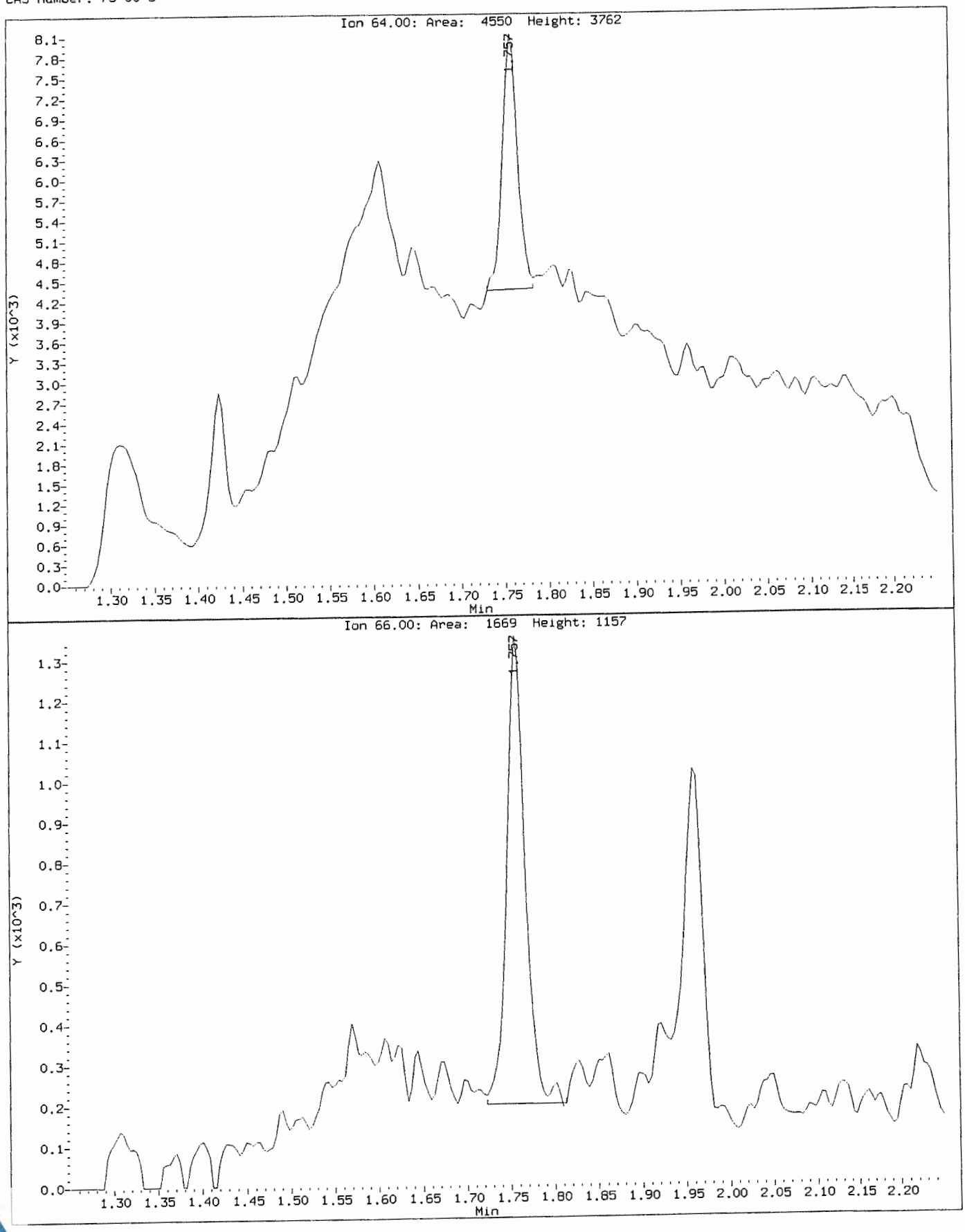
Data File: \\NAHSTWS005\Target\chem\voa9.i\U181113.b\Before\U111304.D
Injection Date: 13-NOV-2018 12:36
Instrument: VOA9.i
Client Sample ID: VSTD001

Compound: Chloroethane
CAS Number: 75-00-3



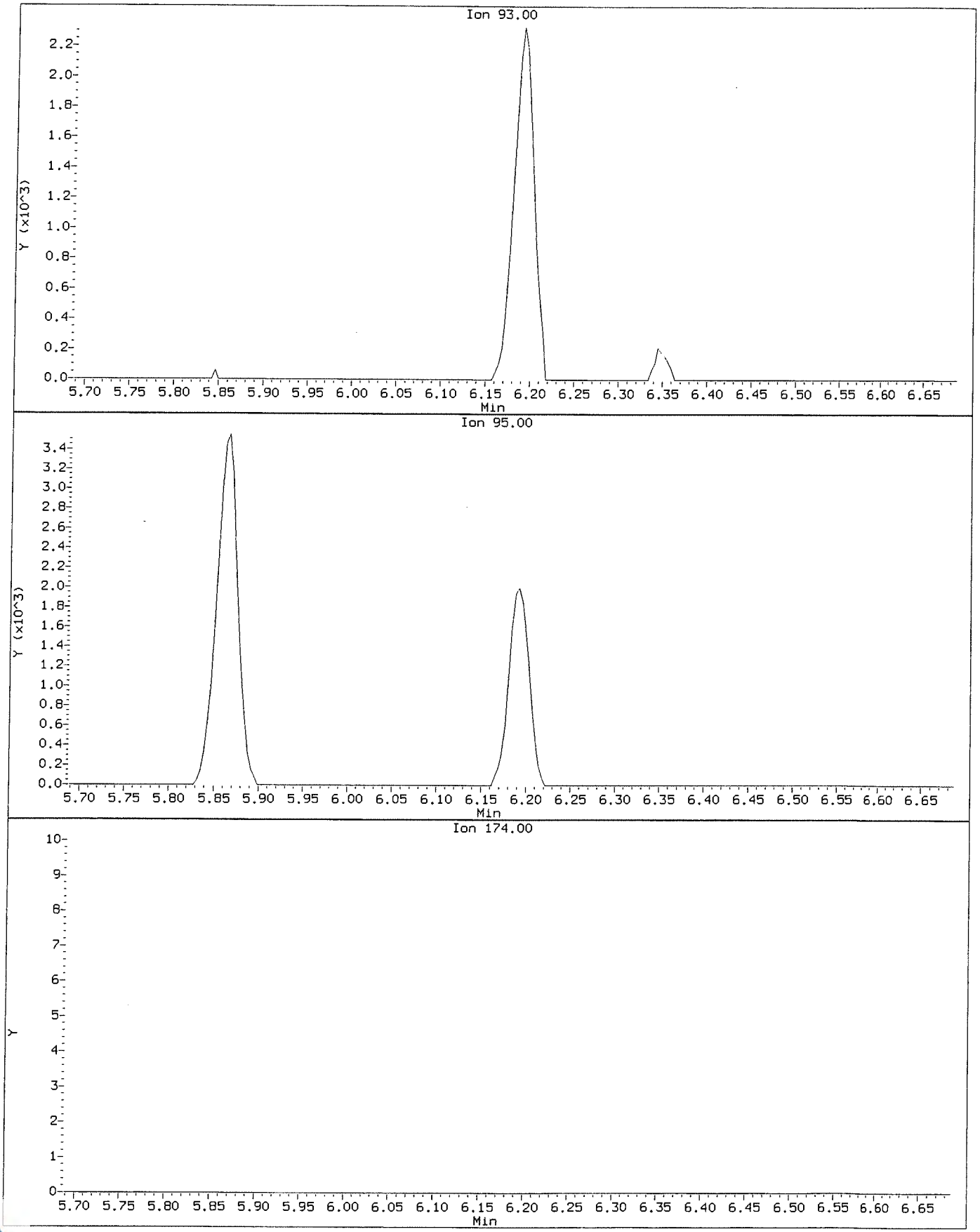
Data File: \\NAHSTWS005\Target\chem\voa9.i\U181113.b\U111304.D
Injection Date: 13-NOV-2018 12:36
Instrument: VOA9.i
Client Sample ID: VSTD001

Compound: Chloroethane
CAS Number: 75-00-3



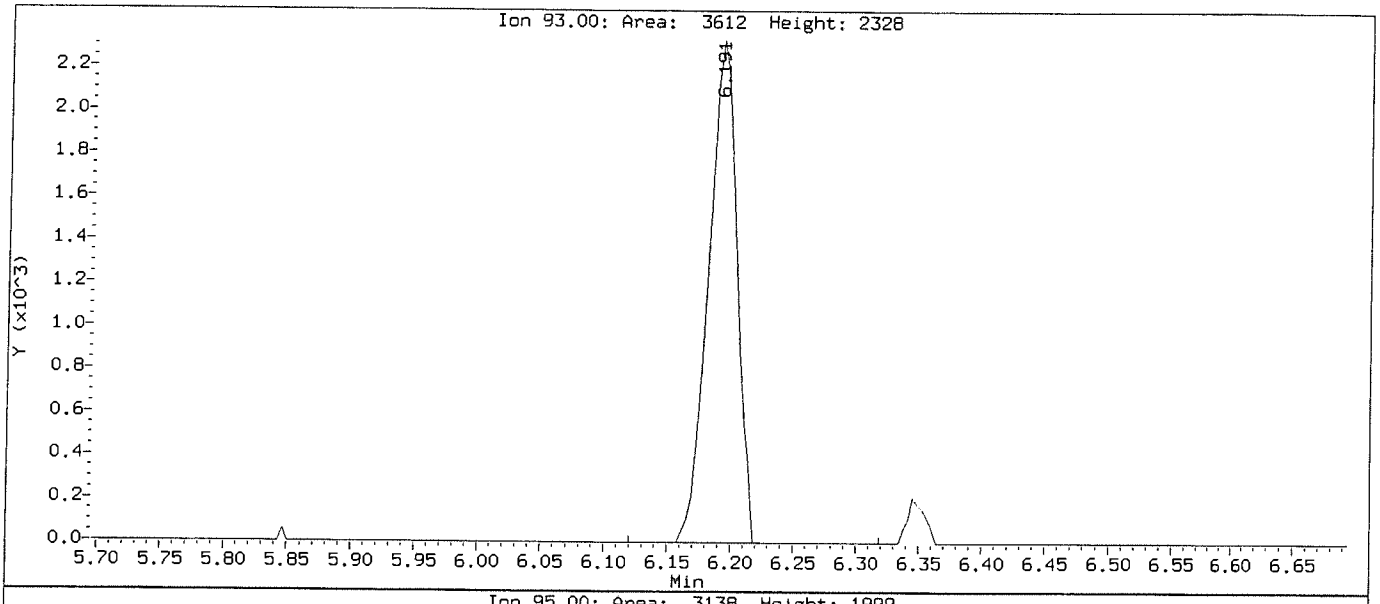
Data File: \\NAHSTWS005\Target\chem\voa9.i\U181113.b\Before\U111304.D
Injection Date: 13-NOV-2018 12:36
Instrument: VOA9.i
Client Sample ID: VSTD001

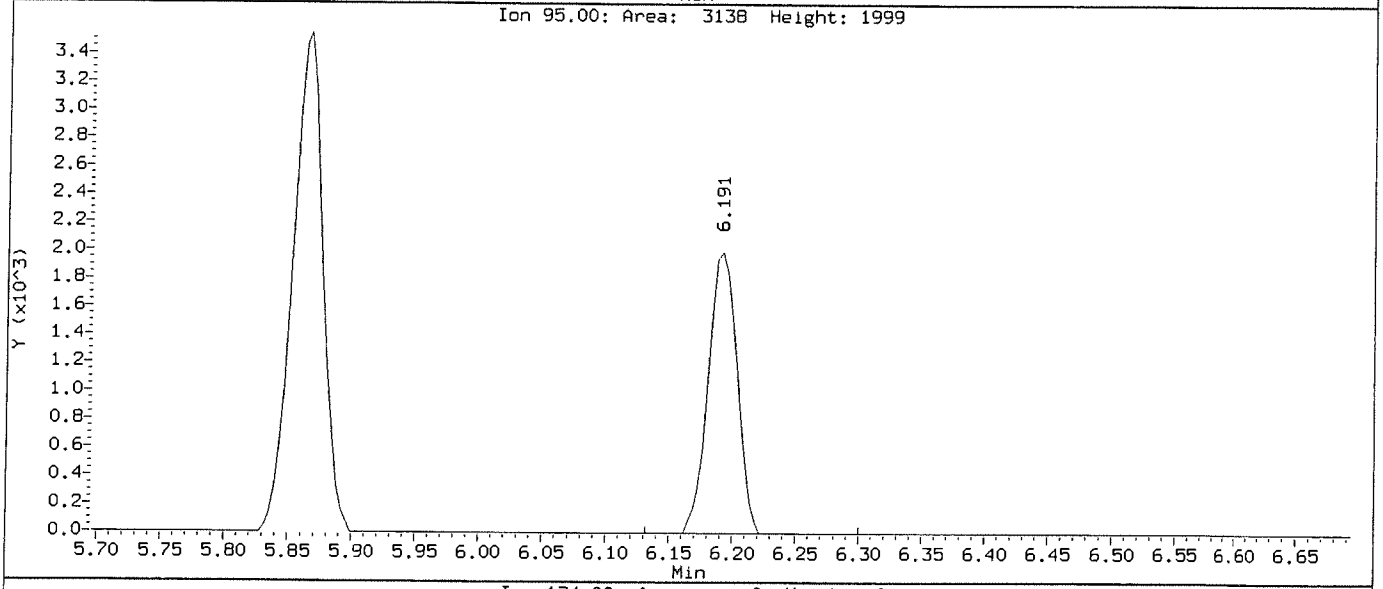
Compound: Dibromomethane
CAS Number: 74-95-3

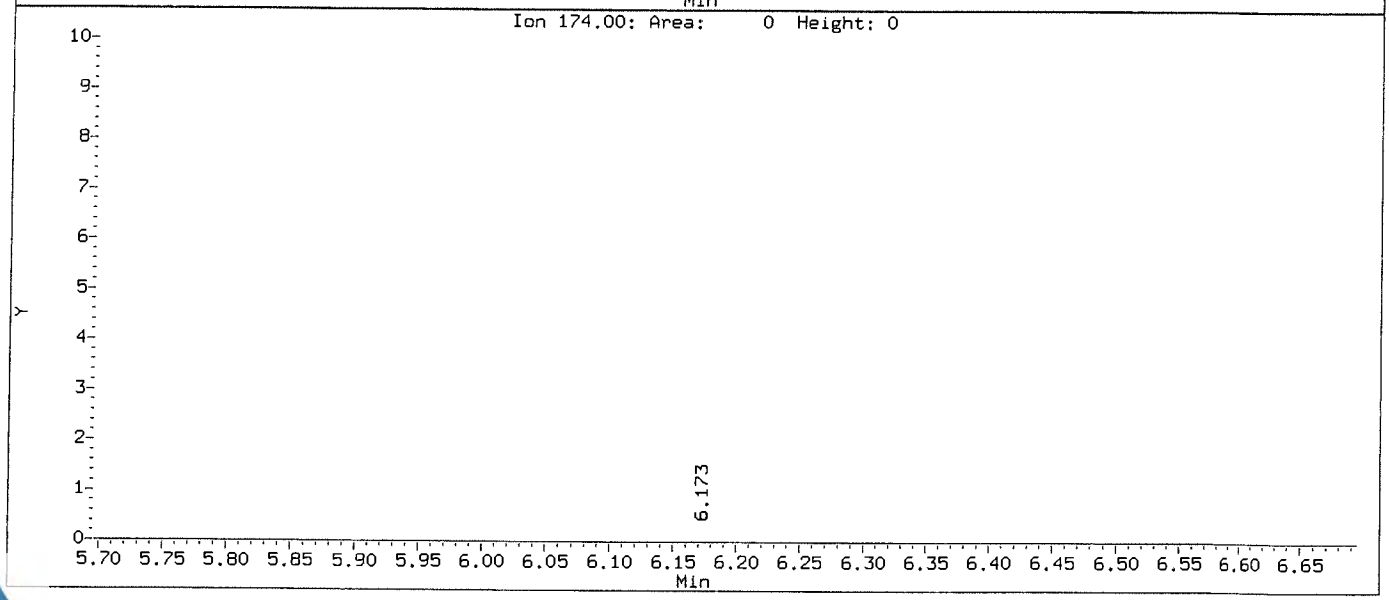


Data File: \\NAHSTWS005\Target\chem\voa9.i\U181113.b\U111304.D
Injection Date: 13-NOV-2018 12:36
Instrument: VOA9.i
Client Sample ID: VSTD001

Compound: Dibromomethane
CAS Number: 74-95-3

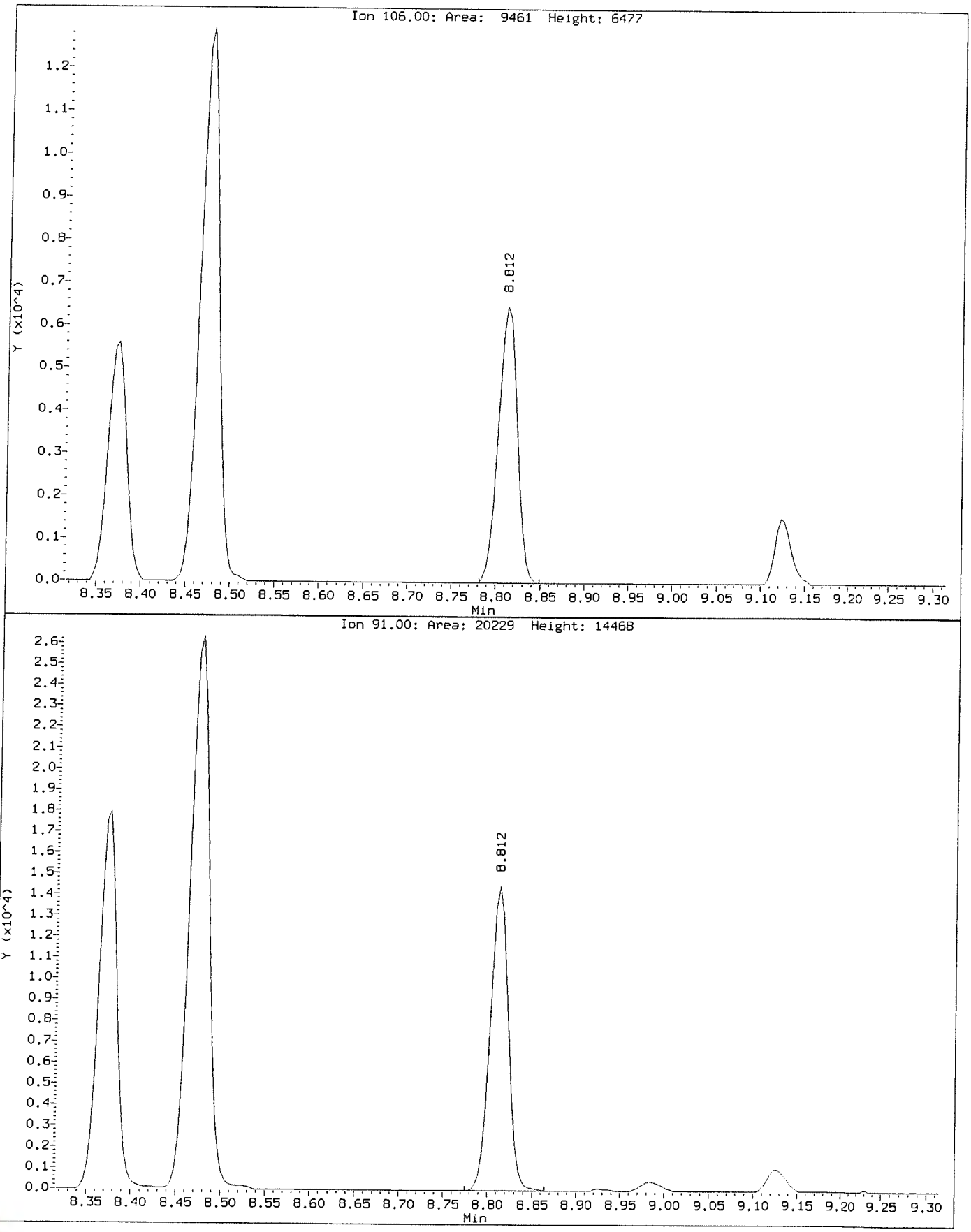






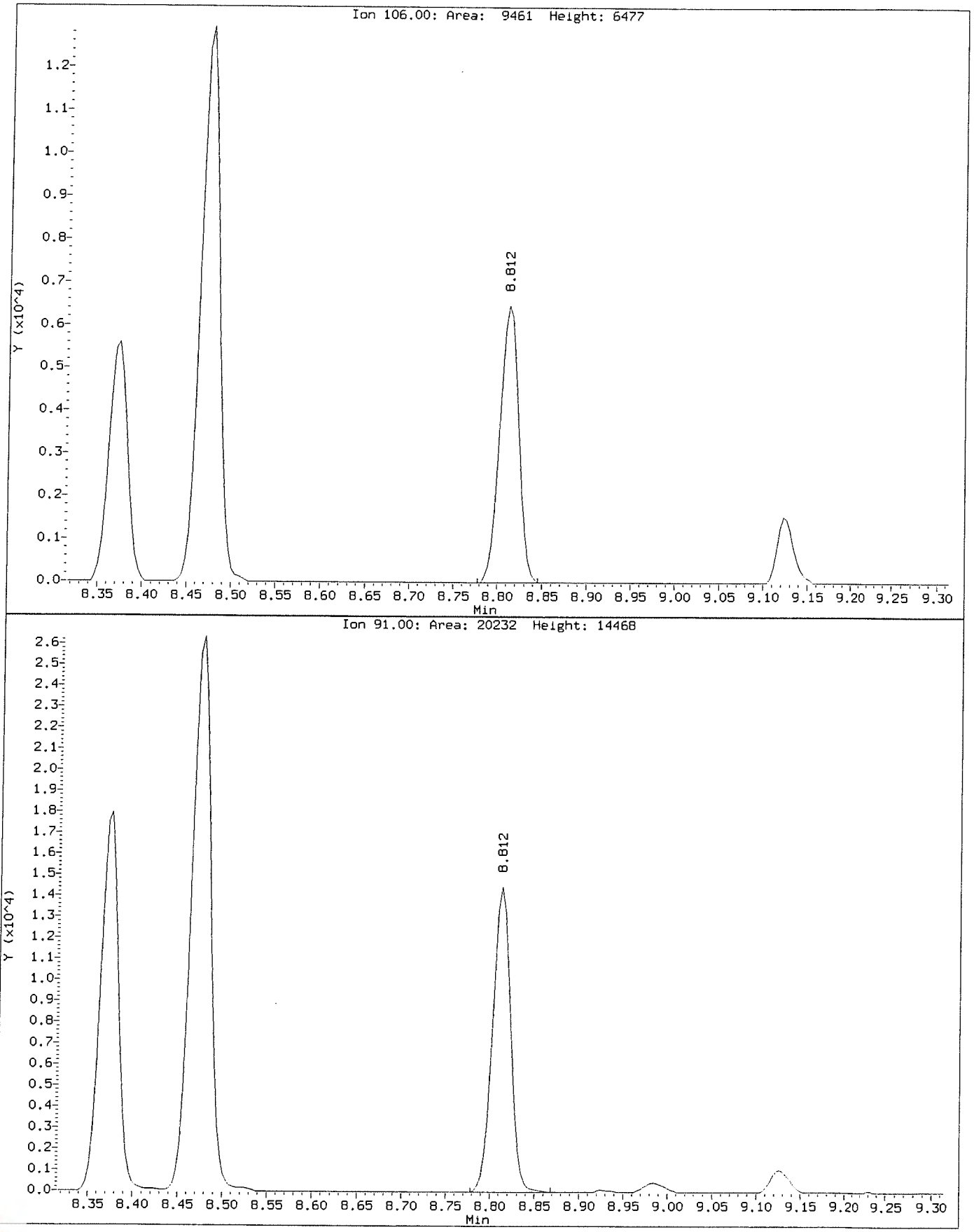
Data File: \\NAHSTWS005\Target\chem\voa9.i\U181113.b\Before\U111304.D
Injection Date: 13-NOV-2018 12:36
Instrument: VOA9.i
Client Sample ID: VSTD001

Compound: o-Xylene
CAS Number: 95-47-6



Data File: \\NAHSTWS005\Target\chem\voa9.i\U181113.b\U111304.D
Injection Date: 13-NOV-2018 12:36
Instrument: VOA9.i
Client Sample ID: VSTD001

Compound: o-Xylene
CAS Number: 95-47-6



Data File: \\NAHSTWS005\Target\chem\voa9.i\U181113.b\U111305.D Page 1
Report Date: 24-Jan-2019 18:55

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa9.i\U181113.b\U111305.D
Lab Smp Id: VSTD002 Client Smp ID: VSTD002
Inj Date : 13-NOV-2018 13:01
Operator : PC Inst ID: VOA9.i
Smp Info : VSTD002;VSTD002;1;4;
Misc Info : 180315V9;WATER;0;1;
Comment :
Method : \\NAHSTWS005\Target\chem\voa9.i\U181113.b\8260C.m
Meth Date : 24-Jan-2019 18:55 VOA9.i Quant Type: ISTD
Cal Date : 13-NOV-2018 12:36 Cal File: U111304.D
Als bottle: 6 Calibration Sample, Level: 4
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: LHAAP.sub
Target Version: 4.14
Processing Host: NAHSTW7087

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Cpnd Variable		Local Compound Variable

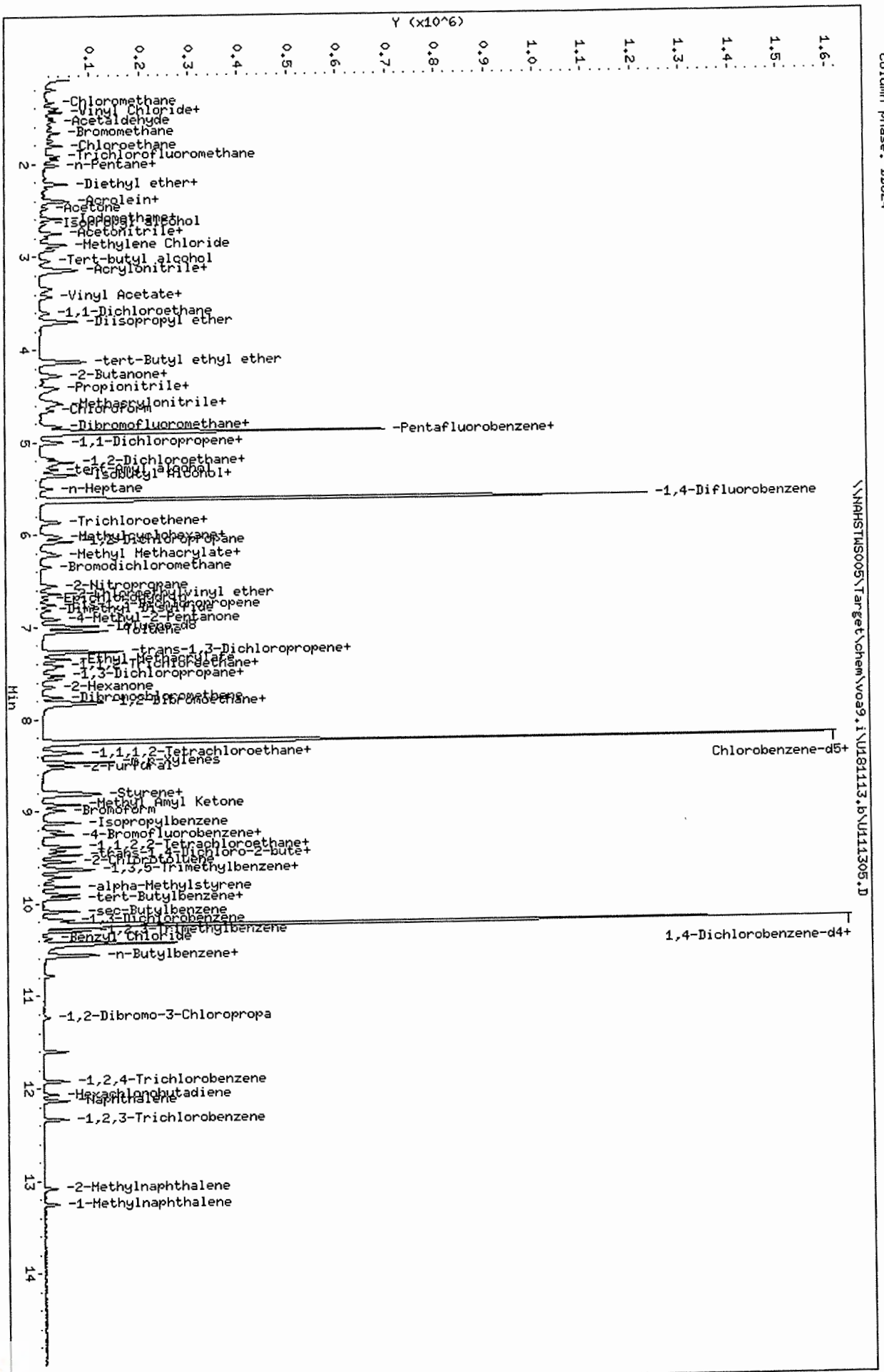
Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	ON-COL (ug/l)
* 1 Pentafluorobenzene	168	4.894	4.894	(1.000)	414744	50.0000	
* 36 1,4-Difluorobenzene	114	5.625	5.625	(1.000)	809284	50.0000	
* 47 Chlorobenzene-d5	117	8.249	8.249	(1.000)	755385	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	10.236	10.236	(1.000)	352080	50.0000	
$ 30 Dibromofluoromethane	113	4.830	4.830	(0.987)	12925	2.00000	1.52(a)
$ 35 1,2-Dichloroethane-d4	65	5.175	5.175	(1.057)	18531	2.00000	1.28(a)
$ 48 Toluene-d8	98	6.990	6.990	(0.847)	51591	2.00000	1.05(a)
$ 69 4-Bromofluorobenzene	95	9.257	9.257	(1.122)	18827	2.00000	1.50(a)
60 1,1,1,2-Tetrachloroethane	131	8.350	8.350	(1.012)	8223	2.00000	1.72(a)
31 1,1,1-Trichloroethane	97	4.827	4.827	(0.986)	14071	2.00000	1.93(a)
68 1,1,2,2-Tetrachloroethane	83	9.392	9.392	(0.918)	16127	2.00000	1.93(a)
138 Freon TF	101	2.401	2.401	(0.491)	8834	2.00000	2.12(a)
53 1,1,2-Trichloroethane	83	7.421	7.421	(0.900)	9196	2.00000	1.91(a)
22 1,1-Dichloroethane	63	3.604	3.604	(0.737)	18719	2.00000	1.96(a)
11 1,1-Dichloroethene	96	2.397	2.397	(0.490)	9368	2.00000	2.00(a)
32 1,1-Dichloropropene	75	5.003	5.003	(0.889)	14736	2.00000	1.97(a)
93 1,2,3-Trichlorobenzene	180	12.335	12.335	(1.205)	12553	2.00000	1.88(a)
71 1,2,3-Trichloropropane	75	9.426	9.426	(0.921)	15506	2.00000	1.78(a)
90 1,2,4-Trichlorobenzene	180	11.927	11.927	(1.165)	12849	2.00000	1.85(a)
79 1,2,4-Trimethylbenzene	105	9.943	9.943	(0.971)	36765	2.00000	1.88(a)
89 1,2-Dibromo-3-Chloropropane	155	11.233	11.233	(1.097)	1762	2.00000	2.38(a)
57 1,2-Dibromoethane	107	7.852	7.852	(0.952)	10196	2.00000	1.83(a)

Data File: \\NAHSTWS005\Target\chem\voa9.i\U181113.b\U111305.D Page 2
Report Date: 24-Jan-2019 18:55

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
88	1,2-Dichlorobenzene	146	10.573	10.573	(1.033)	21603	2.00000	1.92(a)
33	1,2-Dichloroethane	62	5.250	5.250	(0.933)	17243	2.00000	2.03(a)
42	1,2-Dichloropropane	63	6.082	6.082	(1.081)	10957	2.00000	1.90(a)
75	1,3,5-Trimethylbenzene	105	9.625	9.625	(0.940)	35537	2.00000	1.87(a)
83	1,3-Dichlorobenzene	146	10.180	10.180	(0.995)	21971	2.00000	1.98(a)
54	1,3-Dichloropropane	76	7.563	7.563	(0.917)	19816	2.00000	1.92(a)
84	1,4-Dichlorobenzene	146	10.255	10.255	(1.002)	22453	2.00000	2.02(a)
26	2,2-Dichloropropane	77	4.275	4.275	(0.874)	10687	2.00000	1.81(a)
24	2-Butanone	43	4.343	4.343	(0.887)	10886	4.00000	3.73(a)
76	2-Chlorotoluene	91	9.546	9.546	(0.933)	33012	2.00000	1.91(a)
52	2-Hexanone	43	7.649	7.649	(0.927)	15967	4.00000	3.63(a)
77	4-Chlorotoluene	91	9.640	9.640	(0.942)	38540	2.00000	1.93(a)
82	p-Isopropyltoluene	119	10.210	10.210	(0.997)	36591	2.00000	1.89(a)
45	4-Methyl-2-Pentanone	43	6.915	6.915	(0.838)	23062	4.00000	3.65(a)
10	Acetone	43	2.480	2.480	(0.507)	12023	4.00000	2.16(a)
37	Benzene	78	5.216	5.216	(0.927)	43114	2.00000	1.92(a)
74	Bromobenzene	156	9.381	9.381	(0.917)	10831	2.00000	1.87(a)
29	Bromochloromethane	128	4.553	4.553	(0.930)	5091	2.00000	2.08(a)
39	Bromodichloromethane	83	6.348	6.348	(1.129)	12072	2.00000	1.79(a)
66	Bromoform	173	8.984	8.984	(1.089)	4530	2.00000	2.48(Ta)
6	Bromomethane	94	1.670	1.670	(0.341)	7606	2.00000	4.02(a)
19	Carbon Disulfide	76	2.589	2.589	(0.529)	55277	4.00000	3.82(a)
34	Carbon Tetrachloride	117	4.995	4.995	(0.888)	10688	2.00000	1.83(a)
59	Chlorobenzene	112	8.275	8.275	(1.003)	29617	2.00000	1.89(a)
7	Chloroethane	64	1.749	1.749	(0.357)	9074	2.00000	2.09(aM)
28	Chloroform	83	4.658	4.658	(0.952)	18550	2.00000	1.94(a)
3	Chloromethane	50	1.336	1.336	(0.273)	12000	2.00000	2.38(a)
27	cis-1,2-Dichloroethene	96	4.283	4.283	(0.875)	11719	2.00000	1.99(a)
46	cis-1,3-Dichloropropene	75	6.757	6.757	(1.201)	13722	2.00000	1.62(a)
55	Dibromochloromethane	129	7.758	7.758	(0.940)	7733	2.00000	1.61(a)
44	Dibromomethane	93	6.191	6.191	(1.101)	7013	2.00000	1.94(aM)
2	Dichlorodifluoromethane	85	1.202	1.202	(0.246)	12615	2.00000	3.01(a)
61	Ethylbenzene	106	8.373	8.373	(1.015)	14817	2.00000	1.87(a)
91	Hexachlorobutadiene	225	12.065	12.065	(1.179)	4667	2.00000	2.48(a)
67	Isopropylbenzene	105	9.126	9.126	(1.106)	44094	2.00000	1.92(a)
62	m,p-Xylenes	106	8.474	8.474	(1.027)	36359	4.00000	3.74(a)
17	Methylene Chloride	84	2.870	2.870	(0.586)	13586	2.00000	1.90(a)
87	n-Butylbenzene	91	10.558	10.558	(1.031)	36189	2.00000	2.36(a)
73	n-Propylbenzene	91	9.475	9.475	(0.926)	53805	2.00000	1.93(a)
92	Naphthalene	128	12.133	12.133	(1.185)	35700	2.00000	1.71(a)
63	o-Xylene	106	8.811	8.811	(1.068)	18379	2.00000	1.89(aH)
81	sec-Butylbenzene	105	10.086	10.086	(0.985)	43610	2.00000	1.88(a)
64	Styrene	104	8.826	8.826	(1.070)	30570	2.00000	1.86(a)
78	tert-Butylbenzene	119	9.902	9.902	(0.967)	31095	2.00000	1.92(a)
56	Tetrachloroethene	164	7.526	7.526	(0.912)	7936	2.00000	2.00(a)
50	Toluene	91	7.046	7.046	(0.854)	47615	2.00000	1.98(a)
20	trans-1,2-Dichloroethene	96	3.143	3.143	(0.642)	10067	2.00000	1.96(a)
51	trans-1,3-Dichloropropene	75	7.263	7.263	(1.291)	10881	2.00000	2.73(a)
38	Trichloroethene	130	5.861	5.861	(1.042)	10685	2.00000	1.93(a)
8	Trichlorofluoromethane	101	1.951	1.951	(0.399)	17301	2.00000	2.08(a)
5	Vinyl Chloride	62	1.415	1.415	(0.289)	13465	2.00000	2.47(a)

QC Flag Legend

T - Target compound detected outside RT window.
a - Target compound detected but, quantitated amount
Below Limit Of Quantitation(BLOQ).
M - Compound response manually integrated.
H - Operator selected an alternate compound hit.



Data File: \\NAHSTWS005\Target\chem\voa9.i\U181113.b\U111305.D
Date : 13-NOV-2018 13:01
Client ID: VSTD002
Sample Info: VSTD002;VSTD002;1;4;
Purge Volume: 5.0
Column phase: DB624

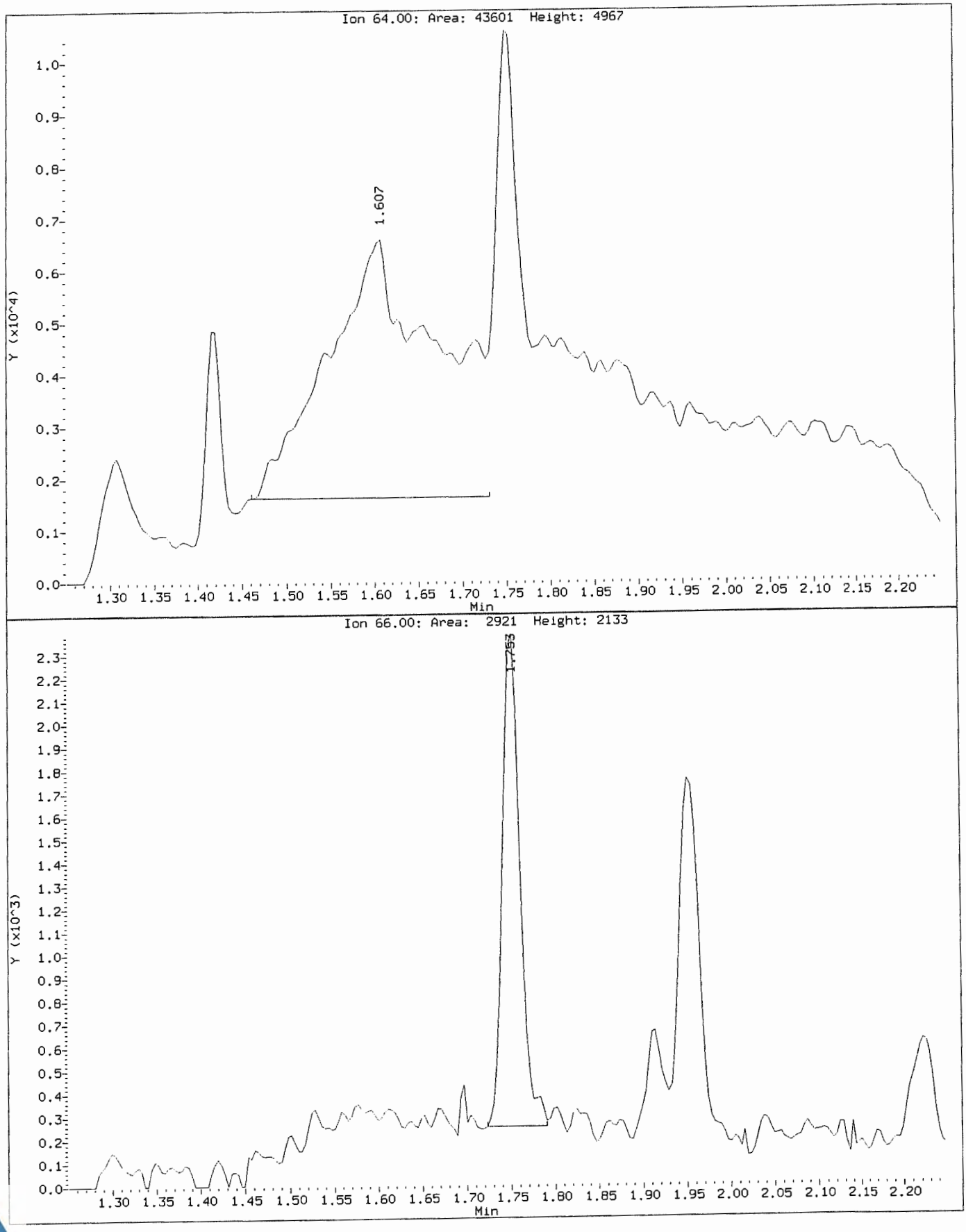
\\NAHSTWS005\Target\chem\voa9.i\U181113.b\U111305.D

Instrument: VOA9.i

Operator: PC
Column diameter: 0.18

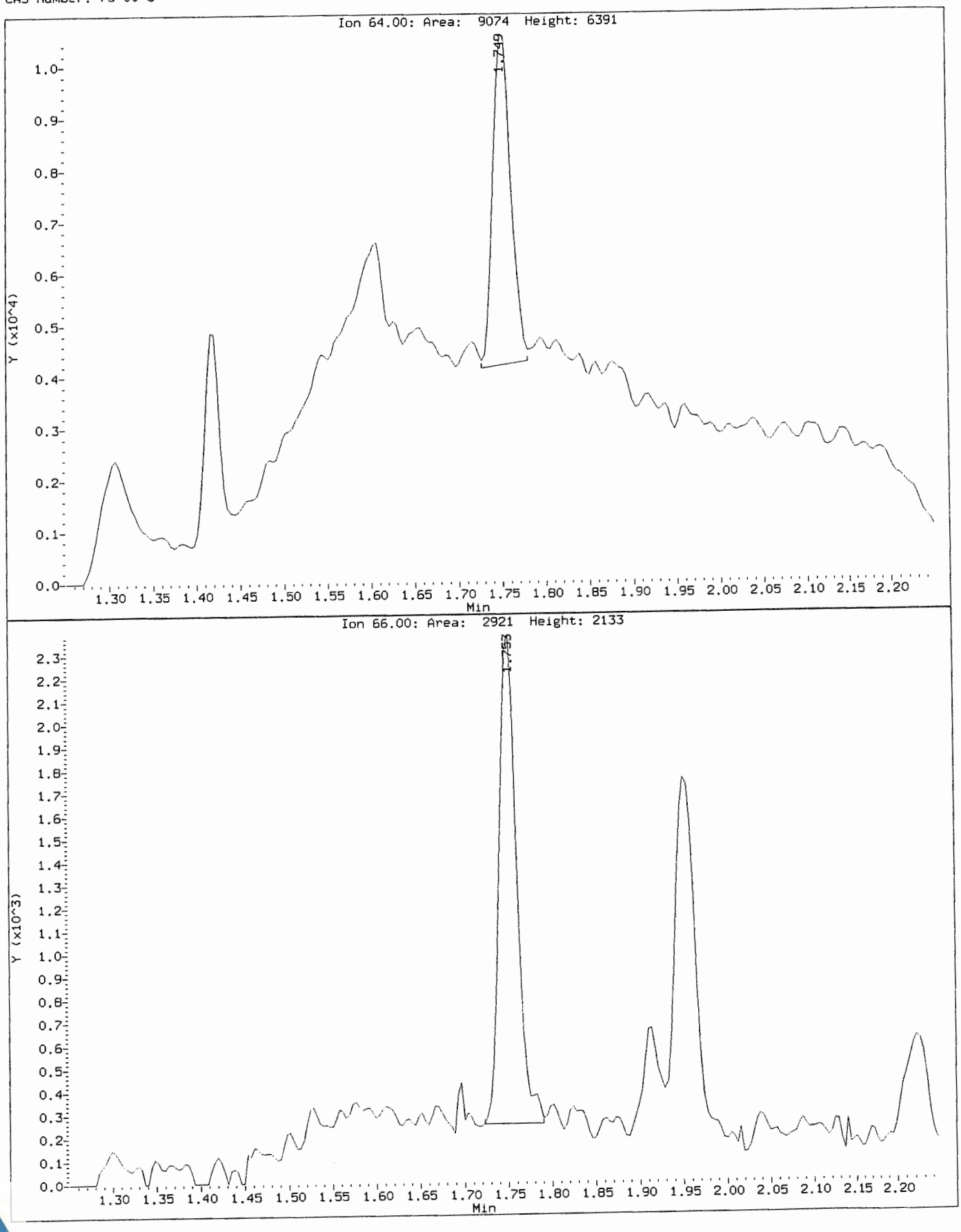
Data File: \\NAHSTWS005\Target\chem\voa9.i\U181113.b\Before\U111305.D
Injection Date: 13-NOV-2018 13:01
Instrument: VOA9.i
Client Sample ID: VSTD002

Compound: Chloroethane
CAS Number: 75-00-3



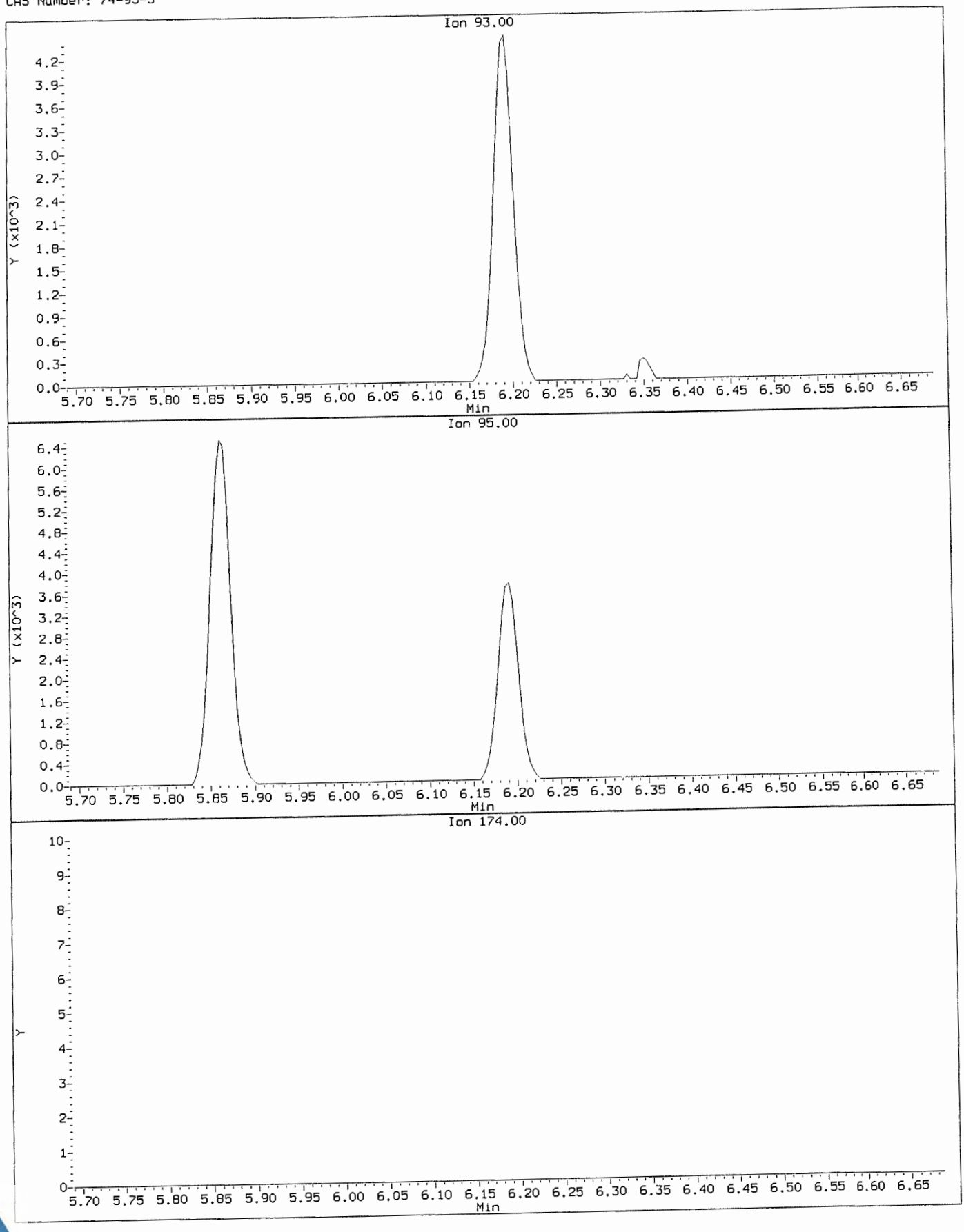
Data File: \\NAHSTWS005\Target\chem\voa9.i\U181113.b\U111305.D
Injection Date: 13-NOV-2018 13:01
Instrument: VOA9.i
Client Sample ID: VSTD002

Compound: Chloroethane
CAS Number: 75-00-3



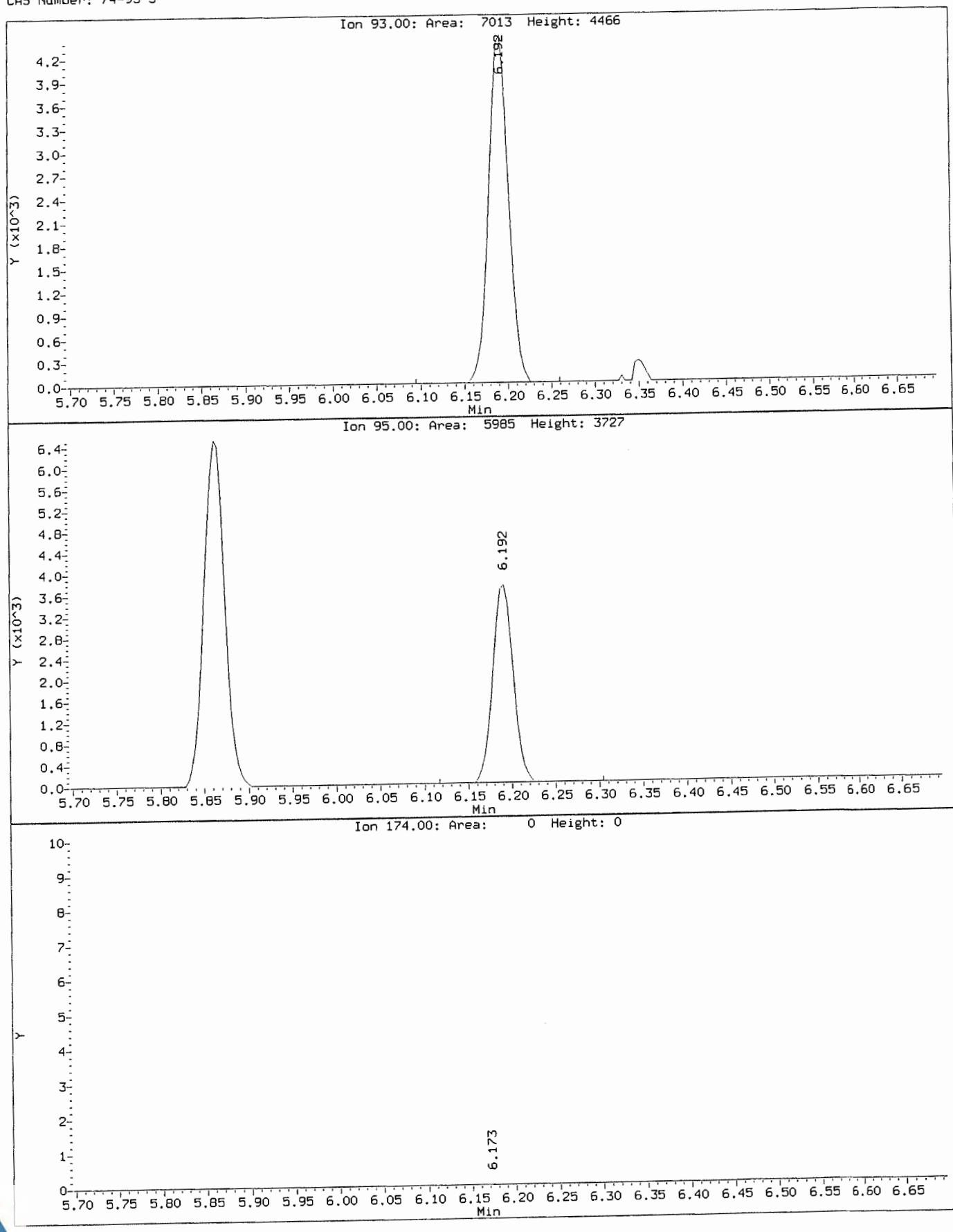
Data File: \\NAHSTWS005\Target\chem\voa9.i\U181113.b\Before\U111305.D
Injection Date: 13-NOV-2018 13:01
Instrument: VOA9.i
Client Sample ID: VSTD002

Compound: Dibromomethane
CAS Number: 74-95-3



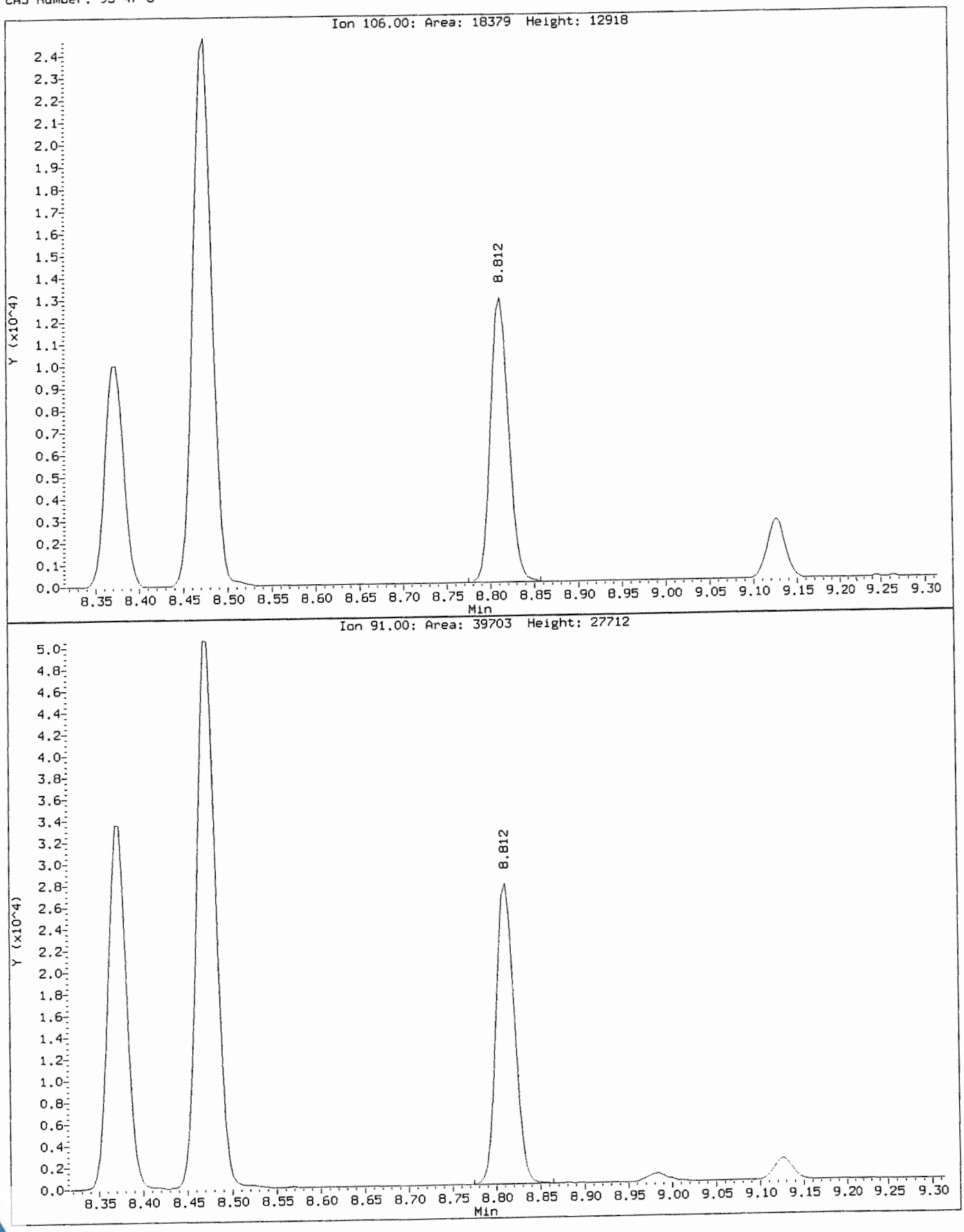
Data File: \\NAHSTWS005\Target\chem\voa9.i\U181113.b\U111305.D
Injection Date: 13-NOV-2018 13:01
Instrument: VOA9.i
Client Sample ID: VSTD002

Compound: Dibromomethane
CAS Number: 74-95-3



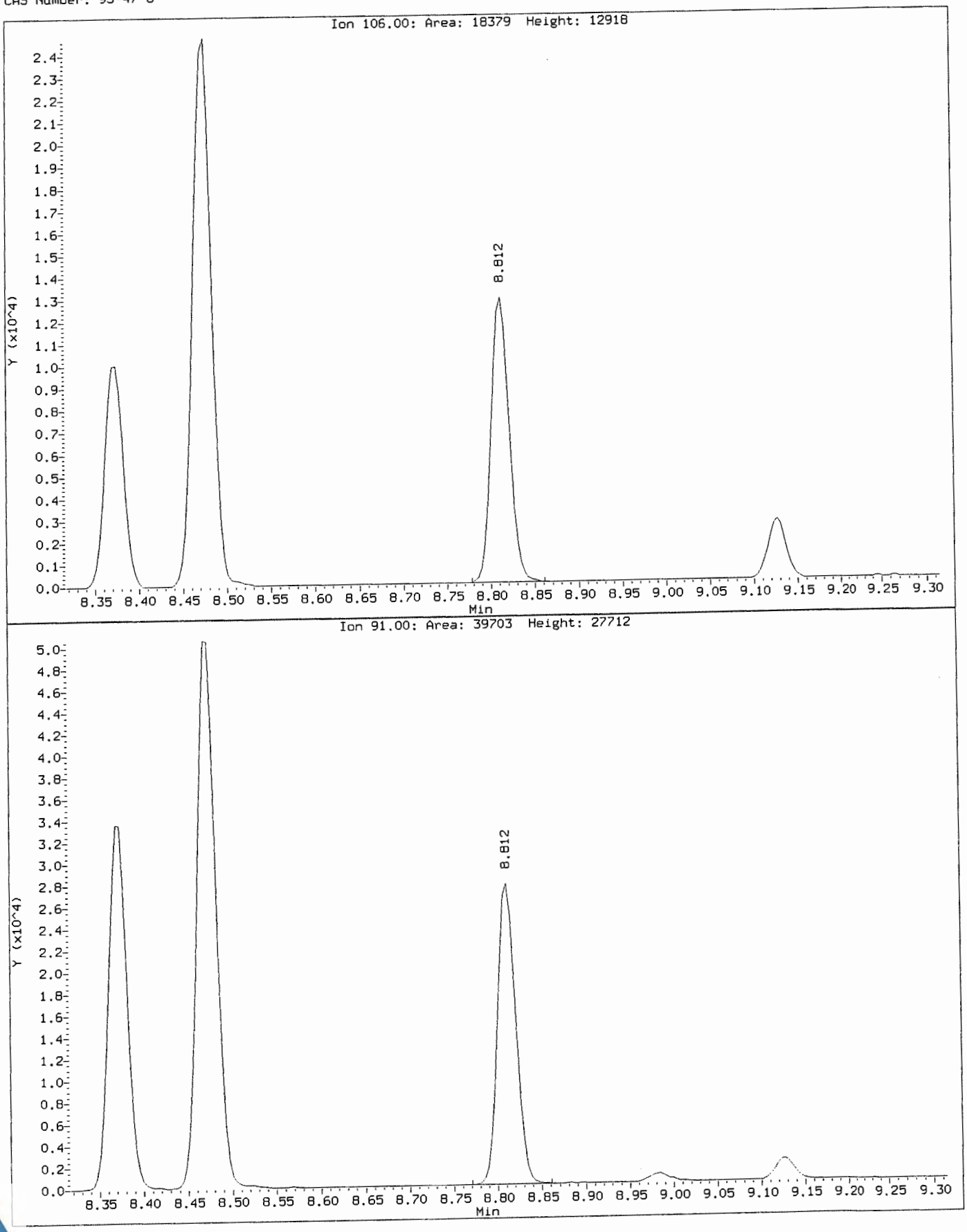
Data File: \\NAHSTWS005\Target\chem\voa9.i\U181113.b\Before\U111305.D
Injection Date: 13-NOV-2018 13:01
Instrument: VOA9.i
Client Sample ID: VSTD002

Compound: o-Xylene
CAS Number: 95-47-6



Data File: \\NAHSTWS005\Target\chem\voa9.i\U181113.b\U111305.D
Injection Date: 13-NOV-2018 13:01
Instrument: VOA9.i
Client Sample ID: VSTD002

Compound: o-Xylene
CAS Number: 95-47-6



Data File: \\NAHSTWS005\Target\chem\voa9.i\U181113.b\U111306.D Page 1
Report Date: 24-Jan-2019 18:55

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa9.i\U181113.b\U111306.D
Lab Smp Id: VSTD005 Client Smp ID: VSTD005
Inj Date : 13-NOV-2018 13:25
Operator : PC Inst ID: VOA9.i
Smp Info : VSTD005;VSTD005;1;5;
Misc Info : 180315V9;WATER;0;1;
Comment :
Method : \\NAHSTWS005\Target\chem\voa9.i\U181113.b\8260C.m
Meth Date : 24-Jan-2019 18:55 VOA9.i Quant Type: ISTD
Cal Date : 13-NOV-2018 13:01 Cal File: U111305.D
Als bottle: 7 Calibration Sample, Level: 5
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: LHAAP.sub
Target Version: 4.14
Processing Host: NAHSTW7087

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Cpnd Variable		Local Compound Variable

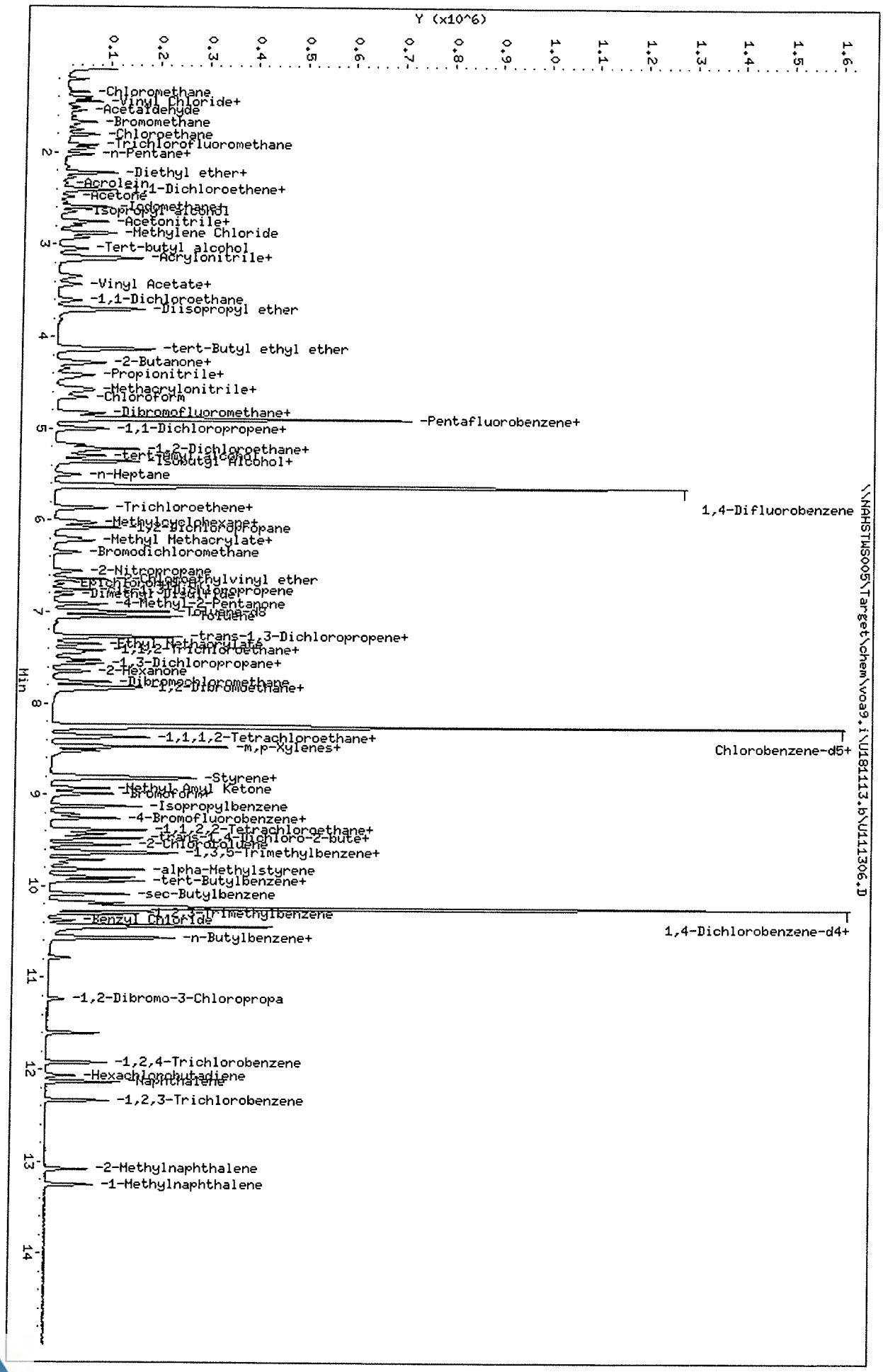
Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
* 1 Pentafluorobenzene	168	4.894	4.894	(1.000)	422530	50.0000	
* 36 1,4-Difluorobenzene	114	5.625	5.625	(1.000)	813180	50.0000	
* 47 Chlorobenzene-d5	117	8.249	8.249	(1.000)	744948	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	10.236	10.236	(1.000)	348698	50.0000	
$ 30 Dibromofluoromethane	113	4.830	4.830	(0.987)	27004	5.00000	4.44(a)
$ 35 1,2-Dichloroethane-d4	65	5.175	5.175	(1.057)	38984	5.00000	4.54(a)
$ 48 Toluene-d8	98	6.990	6.990	(0.847)	112942	5.00000	4.42(a)
$ 69 4-Bromofluorobenzene	95	9.257	9.257	(1.122)	41214	5.00000	4.64(a)
60 1,1,1,2-Tetrachloroethane	131	8.350	8.350	(1.012)	21915	5.00000	4.66(a)
31 1,1,1-Trichloroethane	97	4.827	4.827	(0.986)	31327	5.00000	4.22(a)
68 1,1,2,2-Tetrachloroethane	83	9.392	9.392	(0.918)	42360	5.00000	5.12
138 Freon TF	101	2.405	2.405	(0.491)	17279	5.00000	4.08(a)
53 1,1,2-Trichloroethane	83	7.421	7.421	(0.900)	23401	5.00000	4.94(a)
22 1,1-Dichloroethane	63	3.604	3.604	(0.737)	45506	5.00000	4.69(a)
11 1,1-Dichloroethene	96	2.401	2.401	(0.491)	20013	5.00000	4.19(a)
32 1,1-Dichloropropene	75	5.006	5.006	(0.890)	33087	5.00000	4.40(a)
93 1,2,3-Trichlorobenzene	180	12.335	12.335	(1.205)	31782	5.00000	4.82(a)
71 1,2,3-Trichloropropane	75	9.426	9.426	(0.921)	42556	5.00000	4.93(a)
90 1,2,4-Trichlorobenzene	180	11.927	11.927	(1.165)	31441	5.00000	4.58(a)
79 1,2,4-Trimethylbenzene	105	9.943	9.943	(0.971)	93787	5.00000	4.84(a)
89 1,2-Dibromo-3-Chloropropane	155	11.233	11.233	(1.097)	5351	5.00000	5.17
57 1,2-Dibromoethane	107	7.852	7.852	(0.952)	27191	5.00000	4.95(a)

Data File: \\NAHSTWS005\Target\chem\voa9.i\U181113.b\U111306.D Page 2
Report Date: 24-Jan-2019 18:55

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
88	1,2-Dichlorobenzene	146	10.573	10.573	(1.033)	55248	5.00000	4.96(a)
33	1,2-Dichloroethane	62	5.254	5.254	(0.934)	41764	5.00000	4.90(a)
42	1,2-Dichloropropane	63	6.082	6.082	(1.081)	27675	5.00000	4.78(a)
75	1,3,5-Trimethylbenzene	105	9.625	9.625	(0.940)	88227	5.00000	4.70(a)
83	1,3-Dichlorobenzene	146	10.180	10.180	(0.995)	52374	5.00000	4.77(a)
54	1,3-Dichloropropane	76	7.563	7.563	(0.917)	51002	5.00000	5.01
84	1,4-Dichlorobenzene	146	10.255	10.255	(1.002)	55298	5.00000	5.11
26	2,2-Dichloropropane	77	4.275	4.275	(0.874)	25227	5.00000	4.20(a)
24	2-Butanone	43	4.343	4.343	(0.887)	30016	10.0000	10.10
76	2-Chlorotoluene	91	9.546	9.546	(0.933)	82685	5.00000	4.84(a)
52	2-Hexanone	43	7.653	7.653	(0.928)	44101	10.0000	10.18
77	4-Chlorotoluene	91	9.640	9.640	(0.942)	97151	5.00000	4.93(a)
82	p-Isopropyltoluene	119	10.210	10.210	(0.997)	85956	5.00000	4.50(a)
45	4-Methyl-2-Pentanone	43	6.915	6.915	(0.838)	62316	10.0000	10.02
10	Acetone	43	2.484	2.484	(0.508)	24249	10.0000	8.62
37	Benzene	78	5.220	5.220	(0.928)	105397	5.00000	4.68(a)
74	Bromobenzene	156	9.381	9.381	(0.917)	27842	5.00000	4.86(a)
29	Bromochloromethane	128	4.557	4.557	(0.931)	12948	5.00000	5.19
39	Bromodichloromethane	83	6.349	6.349	(1.129)	30775	5.00000	4.55(a)
66	Bromoform	173	8.984	8.984	(1.089)	13391	5.00000	5.07(T)
6	Bromomethane	94	1.674	1.674	(0.342)	17760	5.00000	6.77
19	Carbon Disulfide	76	2.592	2.592	(0.530)	124164	10.0000	8.43
34	Carbon Tetrachloride	117	4.995	4.995	(0.888)	23569	5.00000	4.01(a)
59	Chlorobenzene	112	8.275	8.275	(1.003)	72938	5.00000	4.74(a)
7	Chloroethane	64	1.756	1.756	(0.359)	19233	5.00000	4.36(aMH)
28	Chloroform	83	4.658	4.658	(0.952)	45918	5.00000	4.72(a)
3	Chloromethane	50	1.340	1.340	(0.274)	26431	5.00000	4.89(a)
27	cis-1,2-Dichloroethene	96	4.290	4.290	(0.877)	27696	5.00000	4.62(a)
46	cis-1,3-Dichloropropene	75	6.761	6.761	(1.202)	37232	5.00000	4.37(a)
55	Dibromochloromethane	129	7.758	7.758	(0.940)	21374	5.00000	4.53(a)
44	Dibromomethane	93	6.191	6.191	(1.101)	17227	5.00000	4.74(aM)
2	Dichlorodifluoromethane	85	1.205	1.205	(0.246)	24157	5.00000	4.79(a)
61	Ethylbenzene	106	8.373	8.373	(1.015)	35416	5.00000	4.55(a)
91	Hexachlorobutadiene	225	12.065	12.065	(1.179)	8782	5.00000	4.49(a)
67	Isopropylbenzene	105	9.126	9.126	(1.106)	106616	5.00000	4.70(a)
62	m,p-Xylenes	106	8.474	8.474	(1.027)	89708	10.0000	9.36
17	Methylene Chloride	84	2.873	2.873	(0.587)	29126	5.00000	4.77(a)
87	n-Butylbenzene	91	10.558	10.558	(1.031)	79206	5.00000	4.76(a)
73	n-Propylbenzene	91	9.475	9.475	(0.926)	128990	5.00000	4.68(a)
92	Naphthalene	128	12.133	12.133	(1.185)	100680	5.00000	4.87(a)
63	o-Xylene	106	8.811	8.811	(1.068)	46119	5.00000	4.81(aH)
81	sec-Butylbenzene	105	10.086	10.086	(0.985)	99437	5.00000	4.34(a)
64	Styrene	104	8.826	8.826	(1.070)	78010	5.00000	4.81(a)
78	tert-Butylbenzene	119	9.902	9.902	(0.967)	73015	5.00000	4.57(a)
56	Tetrachloroethene	164	7.526	7.526	(0.912)	17447	5.00000	4.47(a)
50	Toluene	91	7.050	7.050	(0.855)	113936	5.00000	4.81(a)
20	trans-1,2-Dichloroethene	96	3.143	3.143	(0.642)	23739	5.00000	4.54(a)
51	trans-1,3-Dichloropropene	75	7.259	7.259	(1.291)	30108	5.00000	4.94(a)
38	Trichloroethene	130	5.861	5.861	(1.042)	24849	5.00000	4.48(a)
8	Trichlorofluoromethane	101	1.955	1.955	(0.400)	34539	5.00000	4.08(a)
5	Vinyl Chloride	62	1.419	1.419	(0.290)	29718	5.00000	4.77(a)

QC Flag Legend

T - Target compound detected outside RT window.
a - Target compound detected but, quantitated amount
Below Limit Of Quantitation(BLOQ).
M - Compound response manually integrated.
H - Operator selected an alternate compound hit.

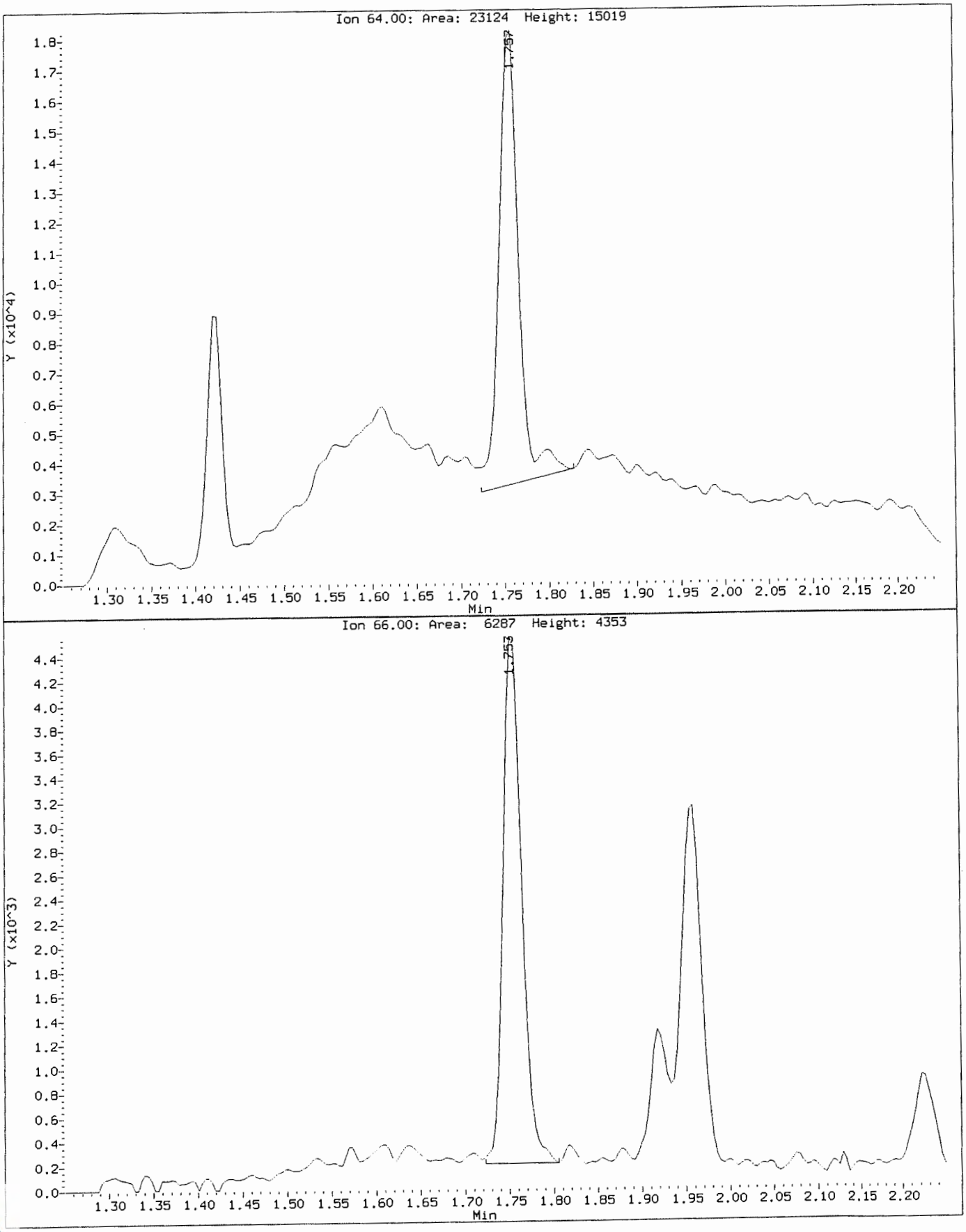


Data File: \\NAHSTWS005\Target\chem\voa9.i\U181113.b\U111306.D
Date : 13-NOV-2018 13:25
Client ID: VSTD005
Sample Info: VSTD005;VSTD005;1;5;
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA9.i
Operator: PC
Column diameter: 0.18

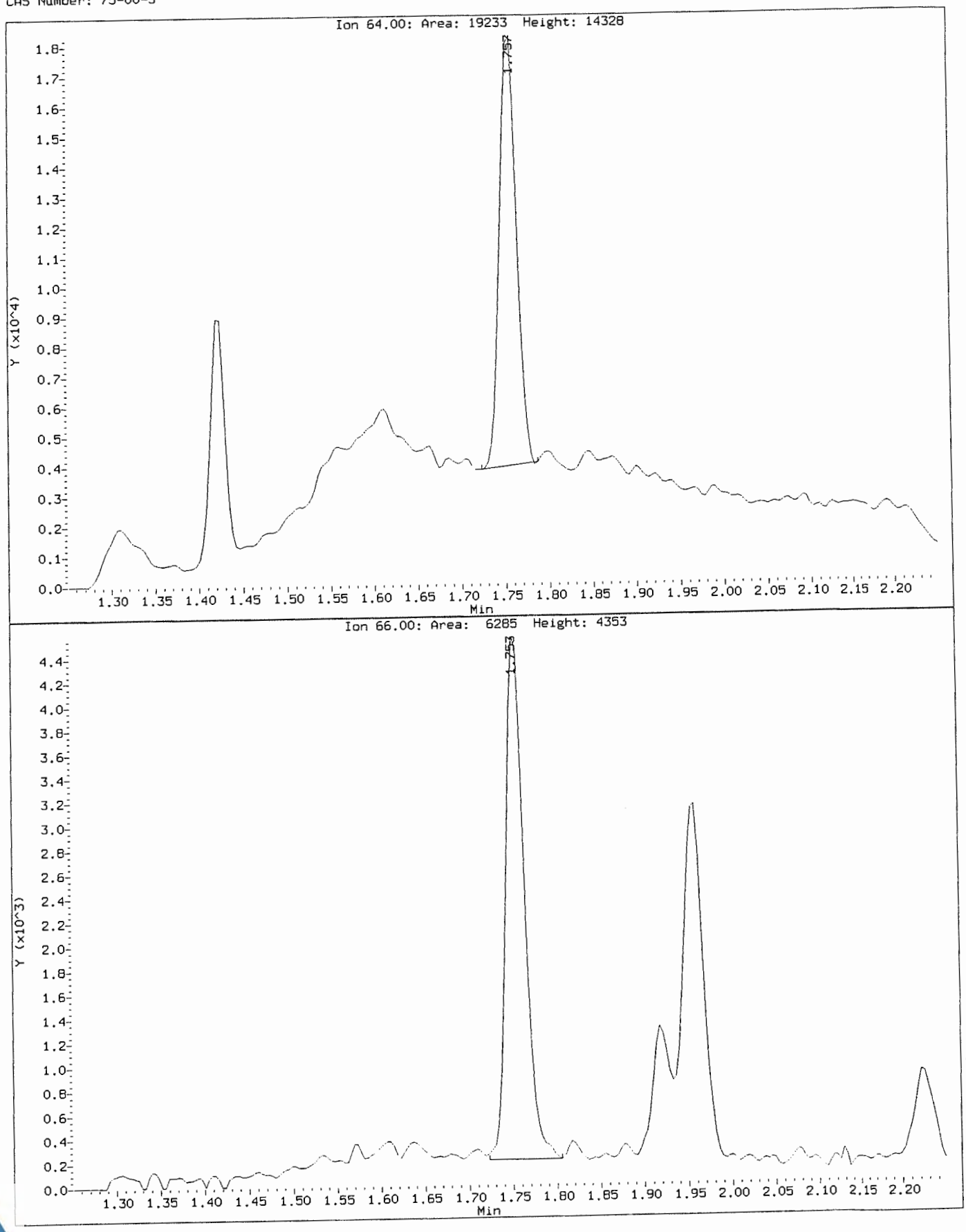
Data File: \\NAHSTWS005\Target\chem\voa9.i\U181113.b\Before\U111306.D
Injection Date: 13-NOV-2018 13:25
Instrument: VOA9.i
Client Sample ID: VSTD005

Compound: Chloroethane
CAS Number: 75-00-3



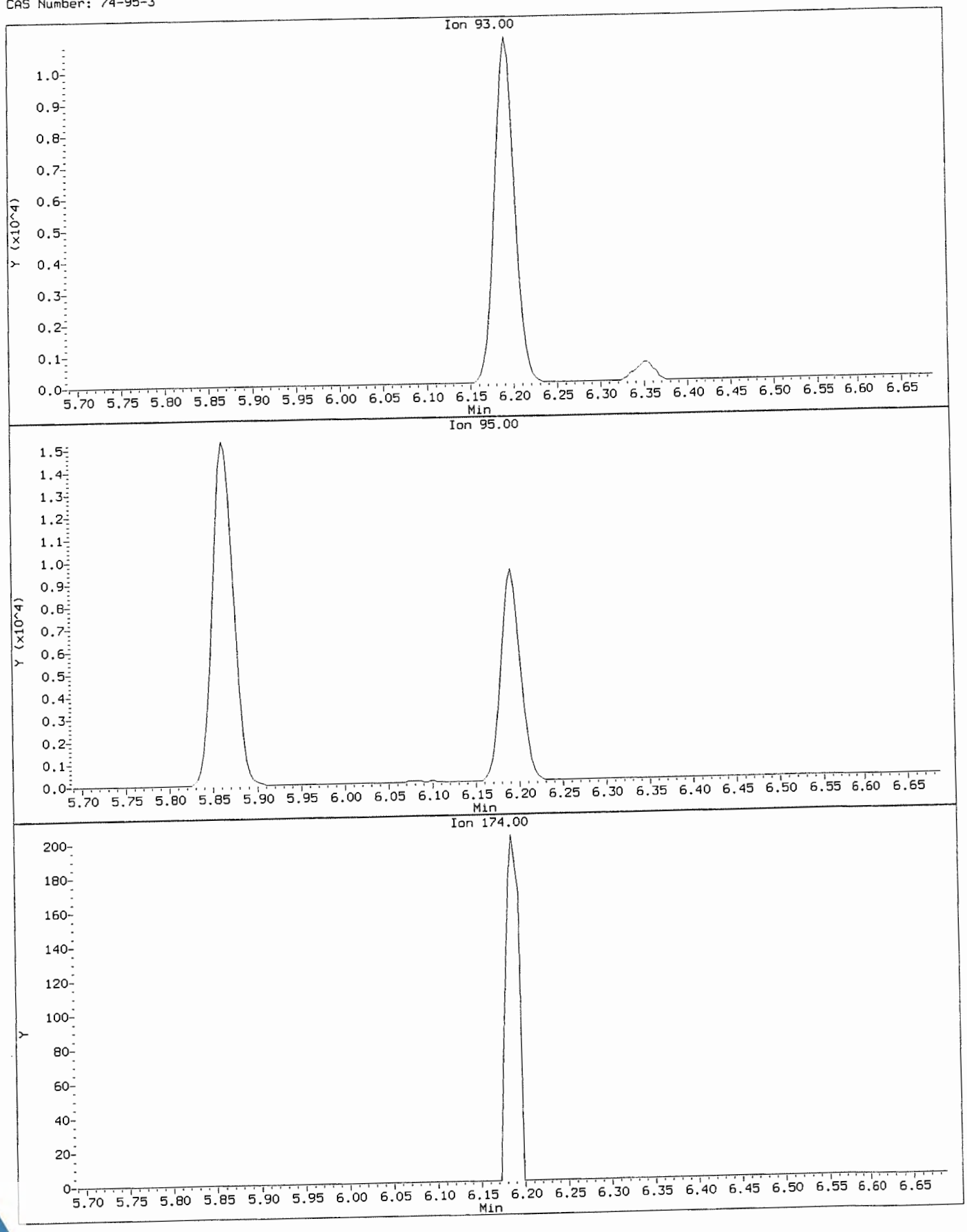
Data File: \\NAHSTWS005\Target\chem\voa9.i\U181113.b\U111306.D
Injection Date: 13-NOV-2018 13:25
Instrument: VOA9.i
Client Sample ID: VSTD005

Compound: Chloroethane
CAS Number: 75-00-3



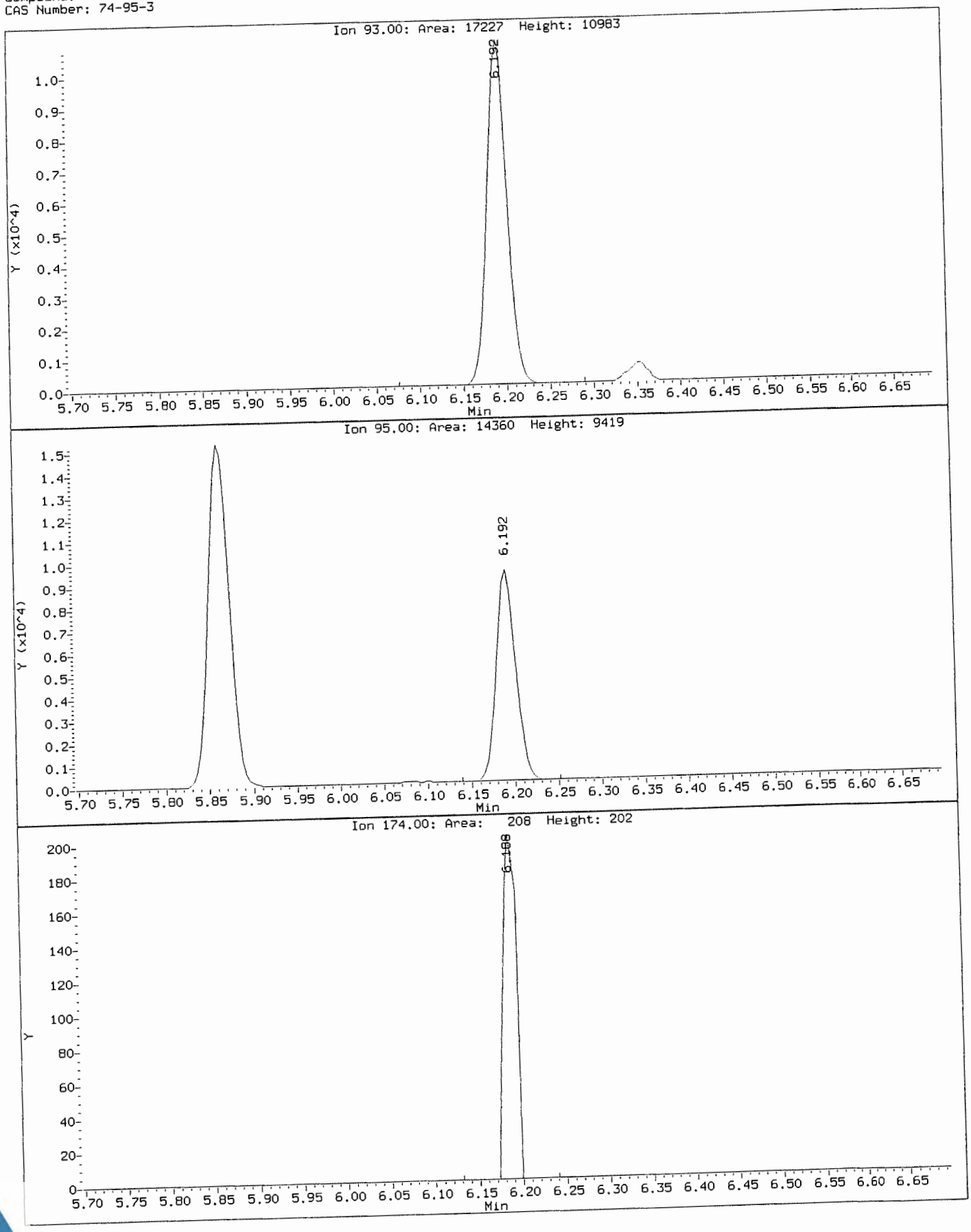
Data File: \\NAHSTWS005\Target\chem\voa9.i\U181113.b\Before\U111306.D
Injection Date: 13-NOV-2018 13:25
Instrument: VOA9.i
Client Sample ID: VSTD005

Compound: Dibromomethane
CAS Number: 74-95-3



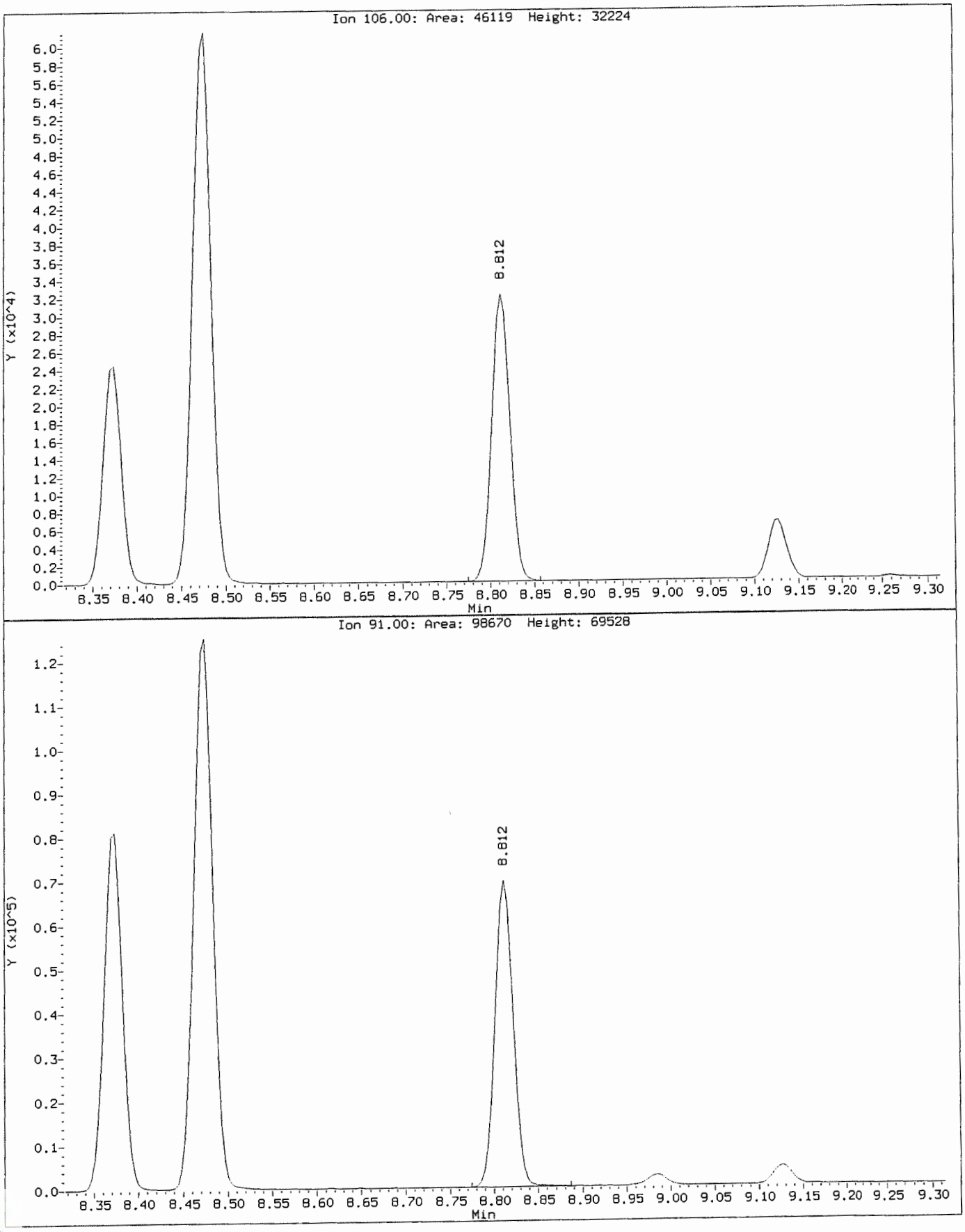
Data File: \\NAHSTWS005\Target\chem\voa9.i\U181113.b\U111306.D
Injection Date: 13-NOV-2018 13:25
Instrument: VOA9.i
Client Sample ID: VSTD005

Compound: Dibromomethane
CAS Number: 74-95-3



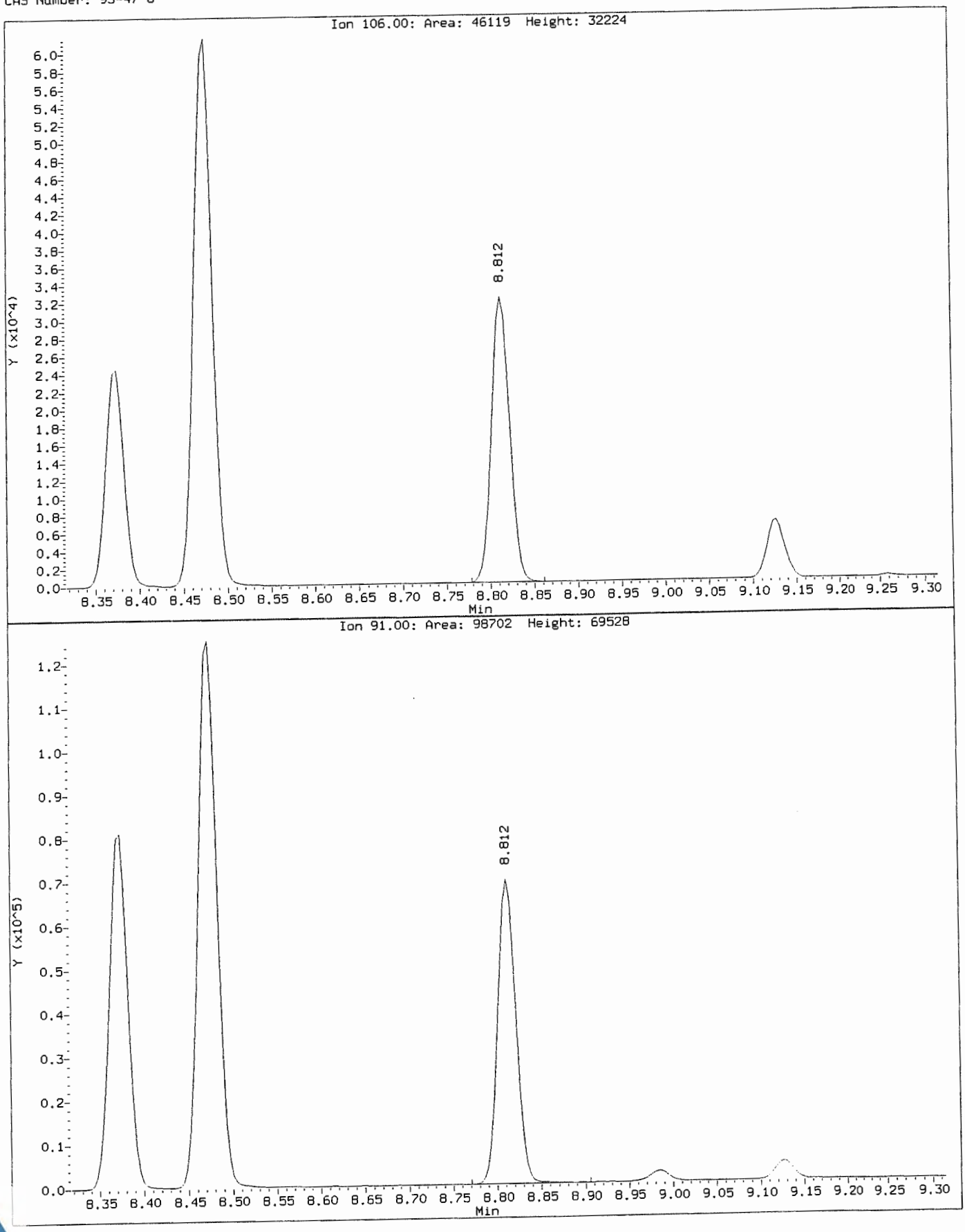
Data File: \\NAHSTWS005\Target\chem\voa9.i\U181113.b\Before\U111306.D
Injection Date: 13-NOV-2018 13:25
Instrument: VOA9.i
Client Sample ID: VSTD005

Compound: o-Xylene
CAS Number: 95-47-6



Data File: \\NAHSTWS005\Target\chem\voa9.i\U181113.b\U111306.D
Injection Date: 13-NOV-2018 13:25
Instrument: VOA9.i
Client Sample ID: VSTD005

Compound: o-Xylene
CAS Number: 95-47-6



Data File: \\NAHSTWS005\Target\chem\voa9.i\U181113.b\U111307.D Page 1
Report Date: 24-Jan-2019 18:55

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa9.i\U181113.b\U111307.D
Lab Smp Id: VSTD020 Client Smp ID: VSTD020
Inj Date : 13-NOV-2018 13:50
Operator : PC Inst ID: VOA9.i
Smp Info : VSTD020;VSTD020;1;6;
Misc Info : 180315V9;WATER;0;1;
Comment :
Method : \\NAHSTWS005\Target\chem\voa9.i\U181113.b\8260C.m
Meth Date : 24-Jan-2019 18:55 VOA9.i Quant Type: ISTD
Cal Date : 13-NOV-2018 13:25 Cal File: U111306.D
Als bottle: 8 Calibration Sample, Level: 6
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: LHAAP.sub
Target Version: 4.14
Processing Host: NAHSTW7087

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Cpnd Variable		Local Compound Variable

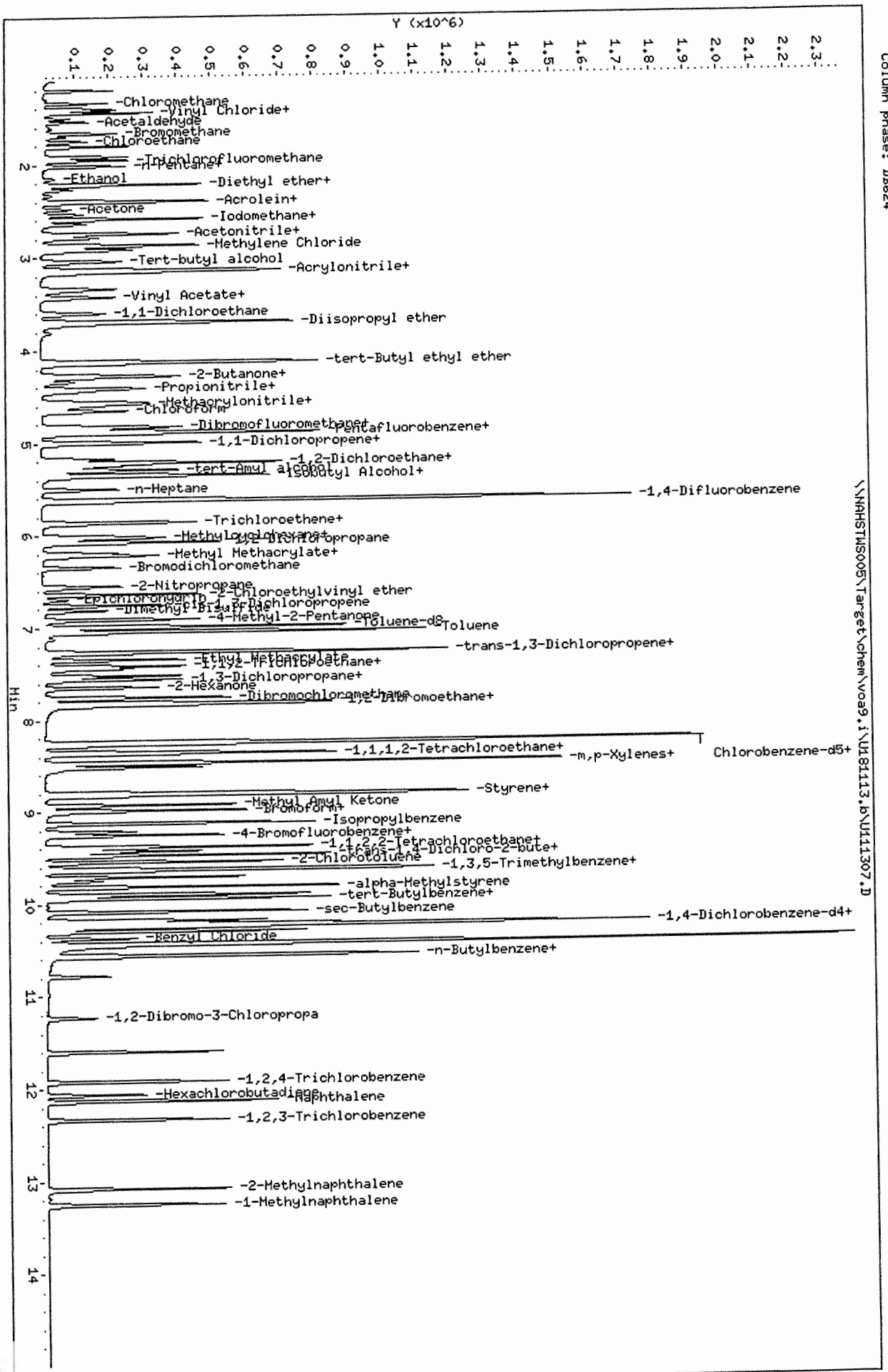
Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
* 1 Pentafluorobenzene	168	4.894	4.894	(1.000)	441430	50.0000	
* 36 1,4-Difluorobenzene	114	5.625	5.625	(1.000)	825527	50.0000	
* 47 Chlorobenzene-d5	117	8.249	8.249	(1.000)	767763	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	10.236	10.236	(1.000)	370767	50.0000	
$ 30 Dibromofluoromethane	113	4.826	4.826	(0.986)	102630	20.0000	19.47
$ 35 1,2-Dichloroethane-d4	65	5.175	5.175	(1.057)	138453	20.0000	19.70
$ 48 Toluene-d8	98	6.989	6.989	(0.847)	412445	20.0000	20.02
$ 69 4-Bromofluorobenzene	95	9.257	9.257	(1.122)	154498	20.0000	19.71
60 1,1,1,2-Tetrachloroethane	131	8.350	8.350	(1.012)	94836	20.0000	19.58
31 1,1,1-Trichloroethane	97	4.826	4.826	(0.986)	144369	20.0000	18.61
68 1,1,2,2-Tetrachloroethane	83	9.392	9.392	(0.918)	170546	20.0000	19.41
138 Freon TF	101	2.397	2.397	(0.490)	81210	20.0000	18.36
53 1,1,2-Trichloroethane	83	7.420	7.420	(0.900)	94236	20.0000	19.30
22 1,1-Dichloroethane	63	3.601	3.601	(0.736)	188042	20.0000	18.58
11 1,1-Dichloroethene	96	2.397	2.397	(0.490)	92859	20.0000	18.63
32 1,1-Dichloropropene	75	5.003	5.003	(0.889)	142695	20.0000	18.71
93 1,2,3-Trichlorobenzene	180	12.335	12.335	(1.205)	136668	20.0000	19.52
71 1,2,3-Trichloropropane	75	9.426	9.426	(0.921)	178640	20.0000	19.49
90 1,2,4-Trichlorobenzene	180	11.926	11.926	(1.165)	137085	20.0000	18.80
79 1,2,4-Trimethylbenzene	105	9.943	9.943	(0.971)	410829	20.0000	19.94
89 1,2-Dibromo-3-Chloropropane	155	11.233	11.233	(1.097)	24969	20.0000	19.13
57 1,2-Dibromoethane	107	7.852	7.852	(0.952)	112223	20.0000	19.85

Data File: \\NAHSTWS005\Target\chem\voa9.i\U181113.b\U111307.D Page 2
Report Date: 24-Jan-2019 18:55

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
88	1,2-Dichlorobenzene	146	10.573	10.573	(1.033)	222900	20.0000	18.82
33	1,2-Dichloroethane	62	5.250	5.250	(0.933)	165626	20.0000	19.17
42	1,2-Dichloropropane	63	6.082	6.082	(1.081)	114197	20.0000	19.42
75	1,3,5-Trimethylbenzene	105	9.625	9.625	(0.940)	396843	20.0000	19.92
83	1,3-Dichlorobenzene	146	10.179	10.179	(0.995)	220218	20.0000	18.86
54	1,3-Dichloropropane	76	7.563	7.563	(0.917)	202833	20.0000	19.35
84	1,4-Dichlorobenzene	146	10.254	10.254	(1.002)	228900	20.0000	20.02
26	2,2-Dichloropropane	77	4.272	4.272	(0.873)	113941	20.0000	18.18
24	2-Butanone	43	4.335	4.335	(0.886)	118404	40.0000	38.15
76	2-Chlorotoluene	91	9.546	9.546	(0.933)	350860	20.0000	19.32
52	2-Hexanone	43	7.649	7.649	(0.927)	181765	40.0000	40.72
77	4-Chlorotoluene	91	9.640	9.640	(0.942)	410588	20.0000	19.59
82	p-Isopropyltoluene	119	10.209	10.209	(0.997)	404381	20.0000	19.91
45	4-Methyl-2-Pentanone	43	6.914	6.914	(0.838)	257102	40.0000	40.14
10	Acetone	43	2.476	2.476	(0.506)	87797	40.0000	40.81
37	Benzene	78	5.216	5.216	(0.927)	436595	20.0000	19.13
74	Bromobenzene	156	9.381	9.381	(0.917)	115775	20.0000	19.03
29	Bromochloromethane	128	4.553	4.553	(0.930)	53724	20.0000	20.64
39	Bromodichloromethane	83	6.348	6.348	(1.129)	132026	20.0000	19.24
66	Bromoform	173	8.984	8.984	(1.089)	60993	20.0000	18.33(T)
6	Bromomethane	94	1.666	1.666	(0.341)	65394	20.0000	19.07
19	Carbon Disulfide	76	2.585	2.585	(0.528)	579343	40.0000	37.64
34	Carbon Tetrachloride	117	4.995	4.995	(0.888)	113726	20.0000	19.09
59	Chlorobenzene	112	8.275	8.275	(1.003)	302097	20.0000	19.06
7	Chloroethane	64	1.749	1.749	(0.357)	85496	20.0000	18.56(M)
28	Chloroform	83	4.654	4.654	(0.951)	190532	20.0000	18.74
3	Chloromethane	50	1.336	1.336	(0.273)	114171	20.0000	19.51
27	cis-1,2-Dichloroethene	96	4.283	4.283	(0.875)	119044	20.0000	19.03
46	cis-1,3-Dichloropropene	75	6.757	6.757	(1.201)	172818	20.0000	20.00
55	Dibromochloromethane	129	7.758	7.758	(0.940)	96570	20.0000	19.87
44	Dibromomethane	93	6.191	6.191	(1.101)	71419	20.0000	19.38
2	Dichlorodifluoromethane	85	1.201	1.201	(0.246)	119108	20.0000	18.89
61	Ethylbenzene	106	8.369	8.369	(1.015)	154131	20.0000	19.23
91	Hexachlorobutadiene	225	12.065	12.065	(1.179)	45235	20.0000	20.48
67	Isopropylbenzene	105	9.126	9.126	(1.106)	456275	20.0000	19.55
62	m,p-Xylenes	106	8.474	8.474	(1.027)	389423	40.0000	39.44
17	Methylene Chloride	84	2.866	2.866	(0.586)	113894	20.0000	19.80
87	n-Butylbenzene	91	10.558	10.558	(1.031)	381141	20.0000	20.10
73	n-Propylbenzene	91	9.475	9.475	(0.926)	574080	20.0000	19.62
92	Naphthalene	128	12.133	12.133	(1.185)	458615	20.0000	20.88
63	o-Xylene	106	8.811	8.811	(1.068)	197393	20.0000	19.97(H)
81	sec-Butylbenzene	105	10.086	10.086	(0.985)	477299	20.0000	19.59
64	Styrene	104	8.826	8.826	(1.070)	337037	20.0000	20.20
78	tert-Butylbenzene	119	9.902	9.902	(0.967)	334318	20.0000	19.69
56	Tetrachloroethene	164	7.525	7.525	(0.912)	75404	20.0000	18.74
50	Toluene	91	7.046	7.046	(0.854)	470397	20.0000	19.29
20	trans-1,2-Dichloroethene	96	3.139	3.139	(0.642)	101477	20.0000	18.58
51	trans-1,3-Dichloropropene	75	7.259	7.259	(1.291)	147063	20.0000	18.17
38	Trichloroethene	130	5.861	5.861	(1.042)	107204	20.0000	19.05
8	Trichlorofluoromethane	101	1.951	1.951	(0.399)	161290	20.0000	18.27
5	Vinyl Chloride	62	1.415	1.415	(0.289)	136290	20.0000	19.25

QC Flag Legend

T - Target compound detected outside RT window.
M - Compound response manually integrated.
H - Operator selected an alternate compound hit.

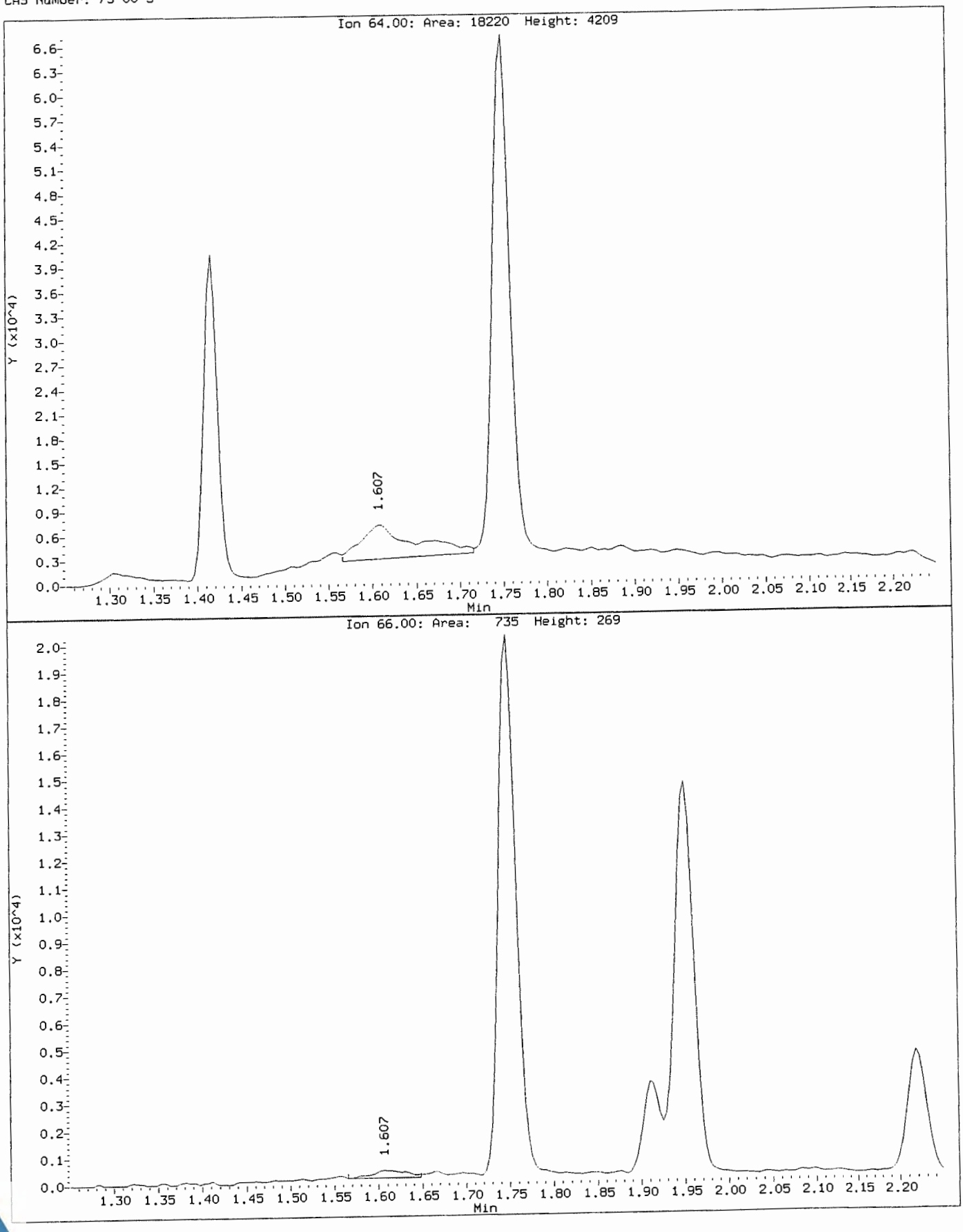


Data File: \\NAHSTWS005\Target\chem\voa9.i\U181113.b\U111307.D
Date : 13-NOV-2018 13:50
Client ID: VSTD020
Sample Info: VSTD020;VSTD020;1;6;
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA9.i
Operator: PC
Column diameter: 0.18

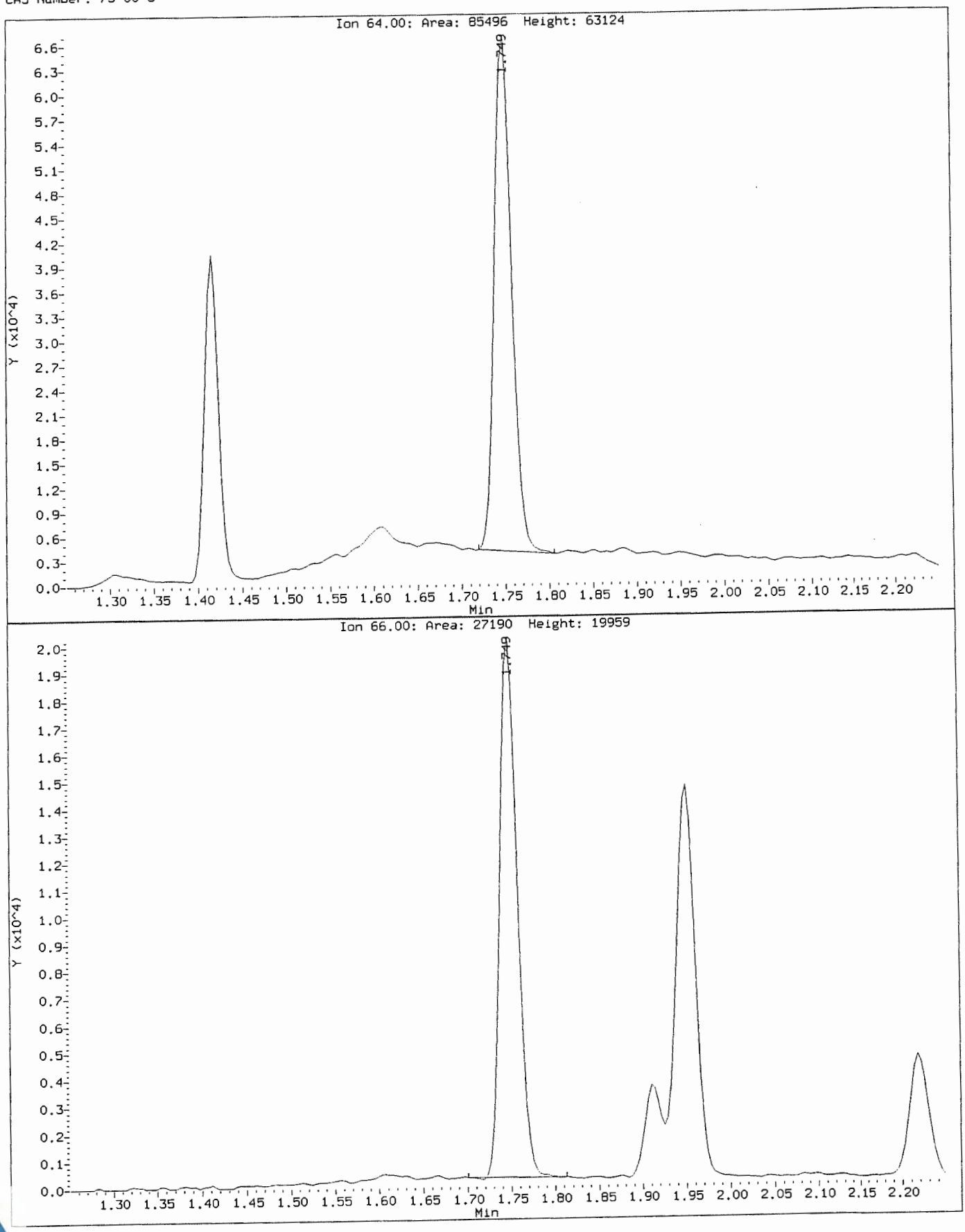
Data File: \\NAHSTWS005\Target\chem\voa9.i\U181113.b\Before\U111307.D
Injection Date: 13-NOV-2018 13:50
Instrument: VOA9.i
Client Sample ID: VSTD020

Compound: Chloroethane
CAS Number: 75-00-3



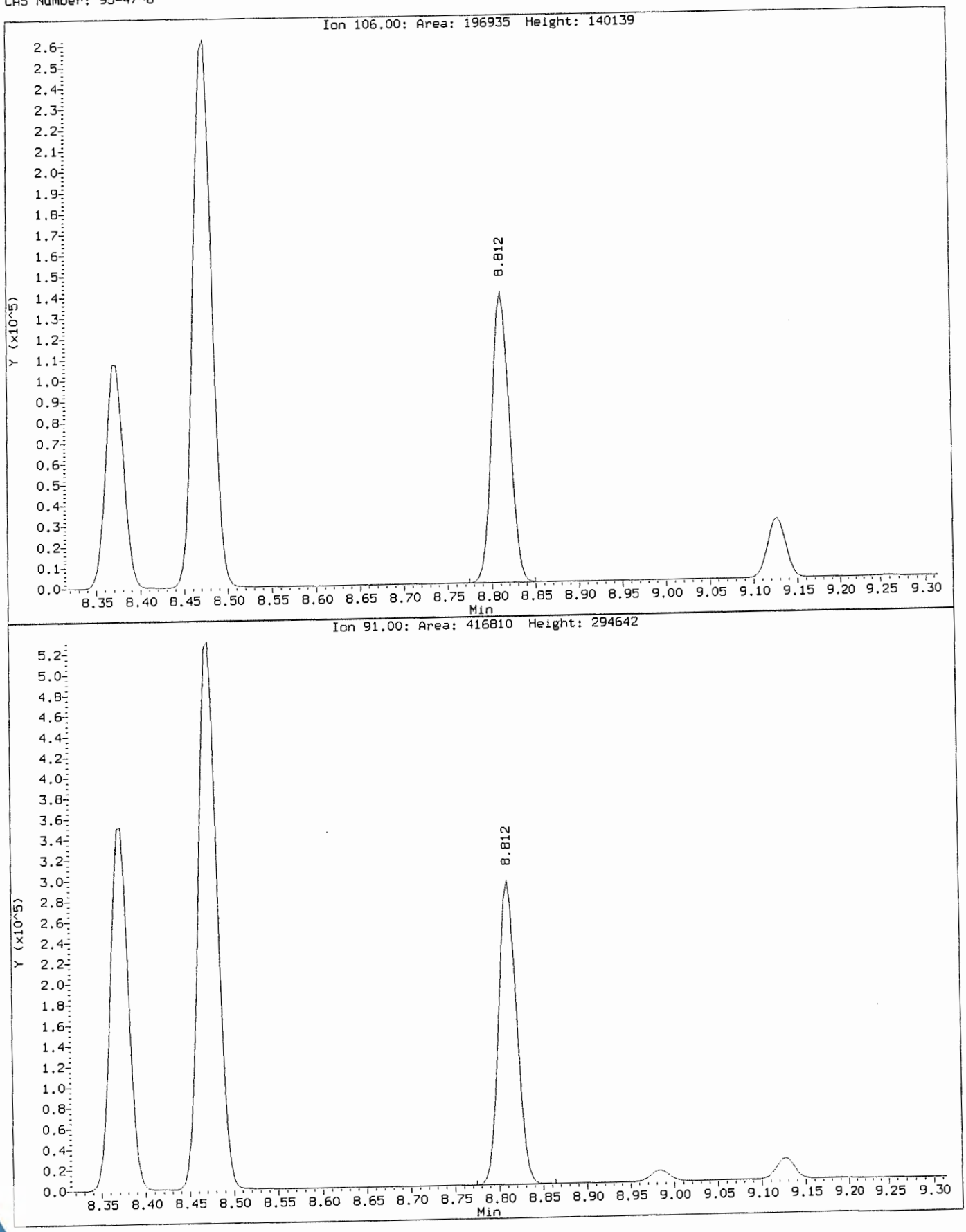
Data File: \\NAHSTWS005\Target\chem\voa9.i\U181113.b\U111307.D
Injection Date: 13-NOV-2018 13:50
Instrument: VOA9.i
Client Sample ID: VSTD020

Compound: Chloroethane
CAS Number: 75-00-3



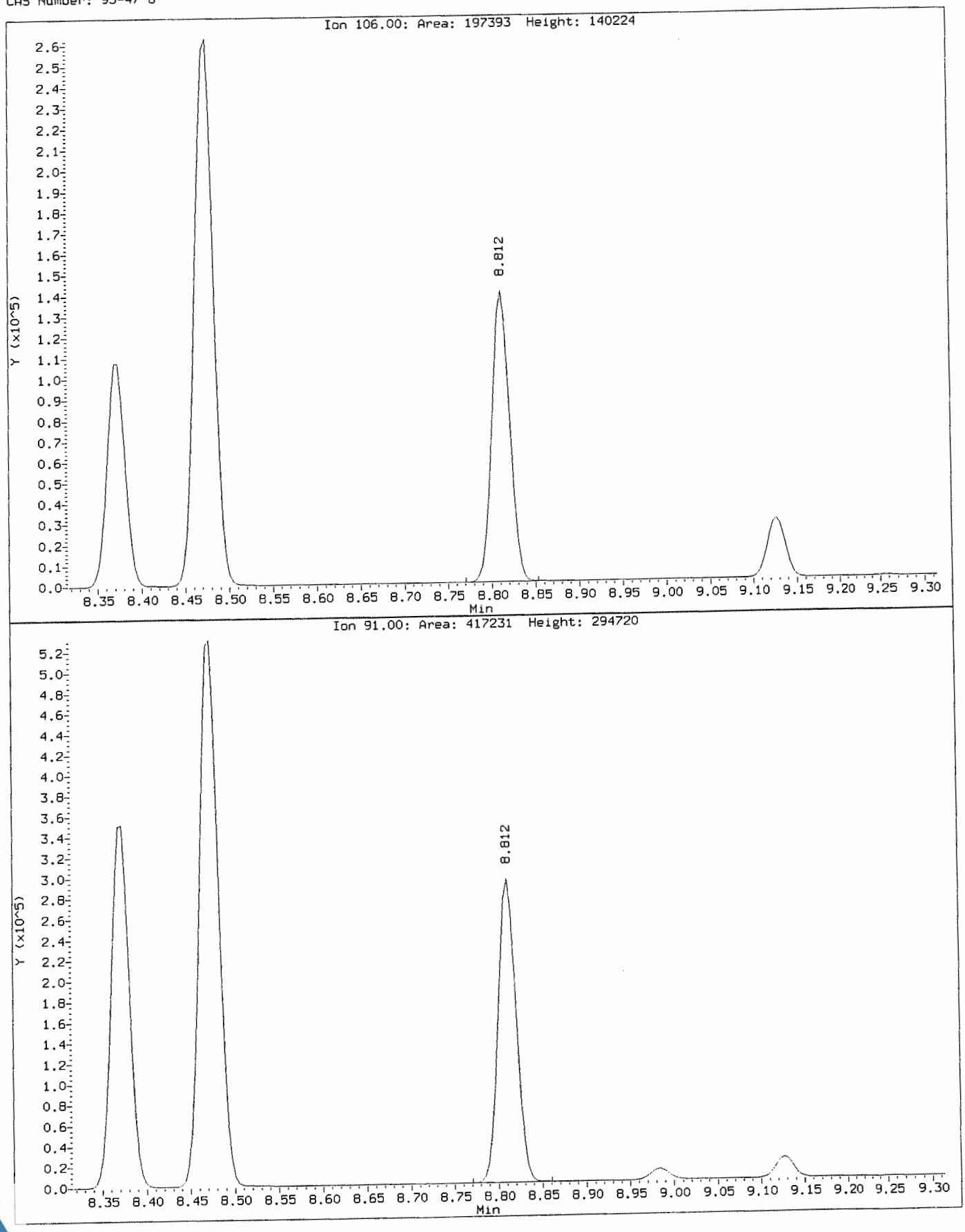
Data File: \\NAHSTWS005\Target\chem\voa9.i\U181113.b\Before\U111307.D
Injection Date: 13-NOV-2018 13:50
Instrument: VOA9.i
Client Sample ID: VSTD020

Compound: o-Xylene
CAS Number: 95-47-6



Data File: \\NAHSTWS005\Target\chem\voa9.i\U181113.b\U111307.D
Injection Date: 13-NOV-2018 13:50
Instrument: VOA9.i
Client Sample ID: VSTD020

Compound: o-Xylene
CAS Number: 95-47-6



Data File: \\NAHSTWS005\Target\chem\voa9.i\U181113.b\U111308.D Page 1
Report Date: 24-Jan-2019 18:55

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa9.i\U181113.b\U111308.D
Lab Smp Id: VSTD050 Client Smp ID: VSTD050
Inj Date : 13-NOV-2018 14:15
Operator : PC Inst ID: VOA9.i
Smp Info : VSTD050;VSTD050;1;7;
Misc Info : 180315V9;WATER;0;1;
Comment :
Method : \\NAHSTWS005\Target\chem\voa9.i\U181113.b\8260C.m
Meth Date : 24-Jan-2019 18:55 VOA9.i Quant Type: ISTD
Cal Date : 13-NOV-2018 13:50 Cal File: U111307.D
Als bottle: 9 Calibration Sample, Level: 7
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: LHAAP.sub
Target Version: 4.14
Processing Host: NAHSTW7087

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Cpnd Variable		Local Compound Variable

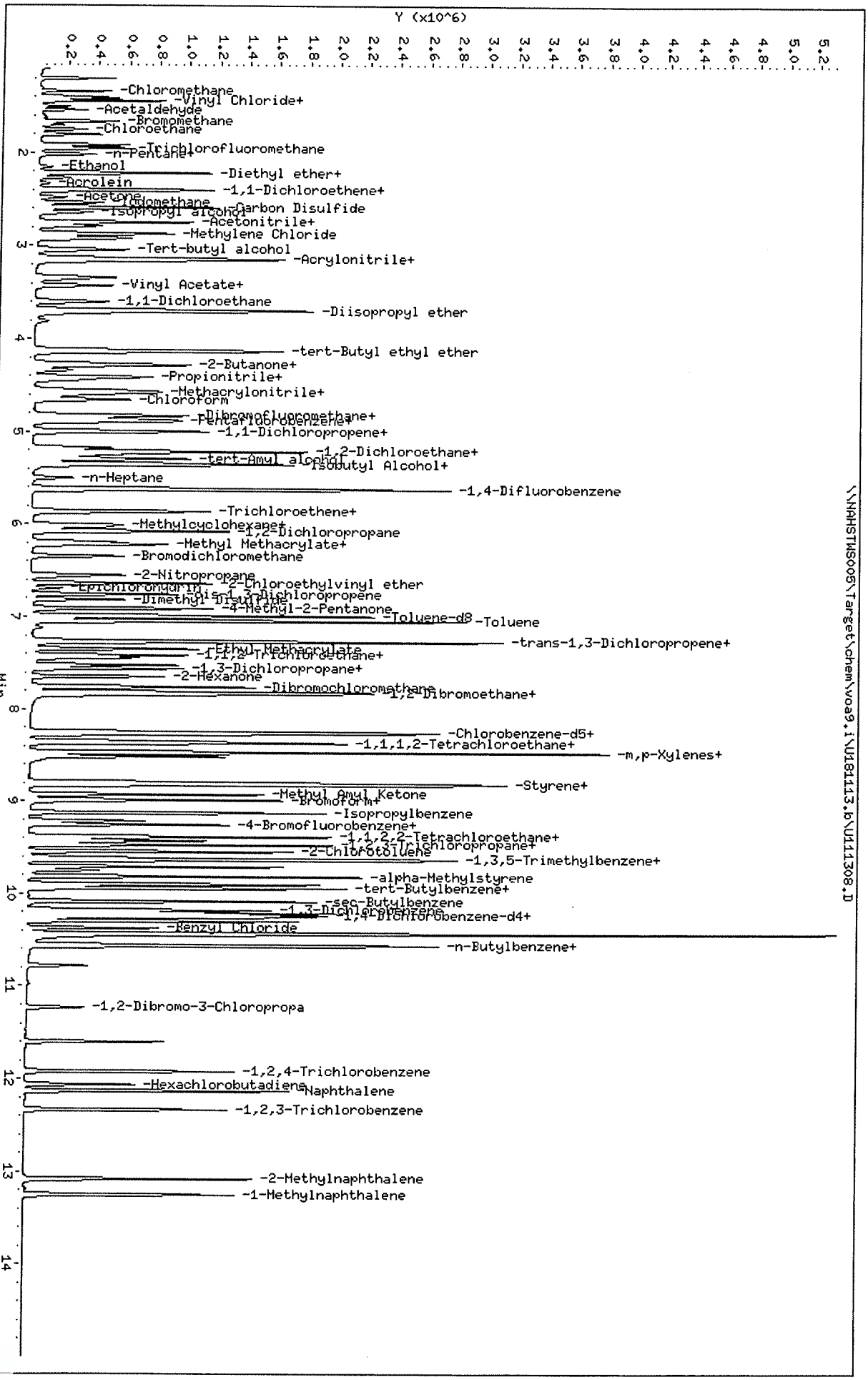
Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
* 1 Pentafluorobenzene	168	4.894	4.894	(1.000)	442076	50.0000	
* 36 1,4-Difluorobenzene	114	5.625	5.625	(1.000)	849587	50.0000	
* 47 Chlorobenzene-d5	117	8.249	8.249	(1.000)	790877	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	10.236	10.236	(1.000)	387587	50.0000	
$ 30 Dibromofluoromethane	113	4.830	4.830	(0.987)	255826	50.0000	50.35
$ 35 1,2-Dichloroethane-d4	65	5.175	5.175	(1.057)	335901	50.0000	50.27
$ 48 Toluene-d8	98	6.989	6.989	(0.847)	1045096	50.0000	51.75
$ 69 4-Bromofluorobenzene	95	9.257	9.257	(1.122)	396604	50.0000	50.72
60 1,1,1,2-Tetrachloroethane	131	8.350	8.350	(1.012)	253286	50.0000	50.77
31 1,1,1-Trichloroethane	97	4.826	4.826	(0.986)	369959	50.0000	47.64
68 1,1,2,2-Tetrachloroethane	83	9.392	9.392	(0.918)	434682	50.0000	47.34
138 Freon TF	101	2.401	2.401	(0.491)	191531	50.0000	43.24
53 1,1,2-Trichloroethane	83	7.420	7.420	(0.900)	234031	50.0000	46.54
22 1,1-Dichloroethane	63	3.604	3.604	(0.737)	476032	50.0000	46.99
11 1,1-Dichloroethene	96	2.397	2.397	(0.490)	224107	50.0000	44.91
32 1,1-Dichloropropene	75	5.003	5.003	(0.889)	351415	50.0000	44.78
93 1,2,3-Trichlorobenzene	180	12.335	12.335	(1.205)	346843	50.0000	47.39
71 1,2,3-Trichloropropane	75	9.430	9.430	(0.921)	480640	50.0000	50.17
90 1,2,4-Trichlorobenzene	180	11.926	11.926	(1.165)	355891	50.0000	46.69
79 1,2,4-Trimethylbenzene	105	9.943	9.943	(0.971)	1025451	50.0000	47.63
89 1,2-Dibromo-3-Chloropropane	155	11.233	11.233	(1.097)	66581	50.0000	47.02
57 1,2-Dibromoethane	107	7.852	7.852	(0.952)	287318	50.0000	49.34

Data File: \\NAHSTWS005\Target\chem\voa9.i\U181113.b\U111308.D Page 2
Report Date: 24-Jan-2019 18:55

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
88	1,2-Dichlorobenzene	146	10.573	10.573	(1.033)	569575	50.0000	46.01
33	1,2-Dichloroethane	62	5.254	5.254	(0.934)	409387	50.0000	46.04
42	1,2-Dichloropropane	63	6.082	6.082	(1.081)	288083	50.0000	47.62
75	1,3,5-Trimethylbenzene	105	9.625	9.625	(0.940)	989153	50.0000	47.49
83	1,3-Dichlorobenzene	146	10.180	10.180	(0.995)	558678	50.0000	45.78
54	1,3-Dichloropropane	76	7.563	7.563	(0.917)	507685	50.0000	47.02
84	1,4-Dichlorobenzene	146	10.258	10.258	(1.002)	576011	50.0000	48.25
26	2,2-Dichloropropane	77	4.275	4.275	(0.874)	295338	50.0000	47.07
24	2-Butanone	43	4.339	4.339	(0.887)	300842	100.000	96.81
76	2-Chlorotoluene	91	9.550	9.550	(0.933)	883069	50.0000	46.52
52	2-Hexanone	43	7.649	7.649	(0.927)	469848	100.000	102.19
77	4-Chlorotoluene	91	9.640	9.640	(0.942)	1023060	50.0000	46.71
82	p-Isopropyltoluene	119	10.210	10.210	(0.997)	1018309	50.0000	47.97
45	4-Methyl-2-Pentanone	43	6.914	6.914	(0.838)	657858	100.000	99.71
10	Acetone	43	2.480	2.480	(0.507)	201617	100.000	99.32
37	Benzene	78	5.216	5.216	(0.927)	1096105	50.0000	46.67
74	Bromobenzene	156	9.385	9.385	(0.917)	293372	50.0000	46.14
29	Bromochloromethane	128	4.553	4.553	(0.930)	136269	50.0000	52.28
39	Bromodichloromethane	83	6.348	6.348	(1.129)	344674	50.0000	48.82
66	Bromoform	173	8.984	8.984	(1.089)	170886	50.0000	47.61(T)
6	Bromomethane	94	1.666	1.666	(0.341)	154362	50.0000	42.38
19	Carbon Disulfide	76	2.588	2.588	(0.529)	1468777	100.000	95.31
34	Carbon Tetrachloride	117	4.995	4.995	(0.888)	286167	50.0000	46.68
59	Chlorobenzene	112	8.275	8.275	(1.003)	750956	50.0000	46.00
7	Chloroethane	64	1.749	1.749	(0.357)	213028	50.0000	46.18(M)
28	Chloroform	83	4.658	4.658	(0.952)	478555	50.0000	47.01
3	Chloromethane	50	1.340	1.340	(0.274)	285521	50.0000	48.38
27	cis-1,2-Dichloroethene	96	4.287	4.287	(0.876)	293496	50.0000	46.85
46	cis-1,3-Dichloropropene	75	6.757	6.757	(1.201)	464679	50.0000	52.27
55	Dibromochloromethane	129	7.758	7.758	(0.940)	263139	50.0000	52.58
44	Dibromomethane	93	6.191	6.191	(1.101)	181664	50.0000	47.92
2	Dichlorodifluoromethane	85	1.205	1.205	(0.246)	293949	50.0000	45.08
61	Ethylbenzene	106	8.373	8.373	(1.015)	388724	50.0000	47.09
91	Hexachlorobutadiene	225	12.065	12.065	(1.179)	110558	50.0000	46.37
67	Isopropylbenzene	105	9.126	9.126	(1.106)	1128288	50.0000	46.94
62	m,p-Xylenes	106	8.474	8.474	(1.027)	962791	100.000	94.66
17	Methylene Chloride	84	2.870	2.870	(0.586)	276248	50.0000	48.96
87	n-Butylbenzene	91	10.558	10.558	(1.031)	954951	50.0000	47.12
73	n-Propylbenzene	91	9.475	9.475	(0.926)	1421540	50.0000	46.47
92	Naphthalene	128	12.133	12.133	(1.185)	1186850	50.0000	51.71
63	o-Xylene	106	8.811	8.811	(1.068)	497517	50.0000	48.87(H)
81	sec-Butylbenzene	105	10.086	10.086	(0.985)	1186653	50.0000	46.59
64	Styrene	104	8.826	8.826	(1.070)	870320	50.0000	50.64
78	tert-Butylbenzene	119	9.902	9.902	(0.967)	827990	50.0000	46.65
56	Tetrachloroethene	164	7.525	7.525	(0.912)	182495	50.0000	44.04
50	Toluene	91	7.049	7.049	(0.855)	1170933	50.0000	46.63
20	trans-1,2-Dichloroethene	96	3.139	3.139	(0.642)	255498	50.0000	46.71
51	trans-1,3-Dichloropropene	75	7.263	7.263	(1.291)	407060	50.0000	46.38
38	Trichloroethene	130	5.861	5.861	(1.042)	263822	50.0000	45.57
8	Trichlorofluoromethane	101	1.951	1.951	(0.399)	392628	50.0000	44.42
5	Vinyl Chloride	62	1.419	1.419	(0.290)	335638	50.0000	46.60

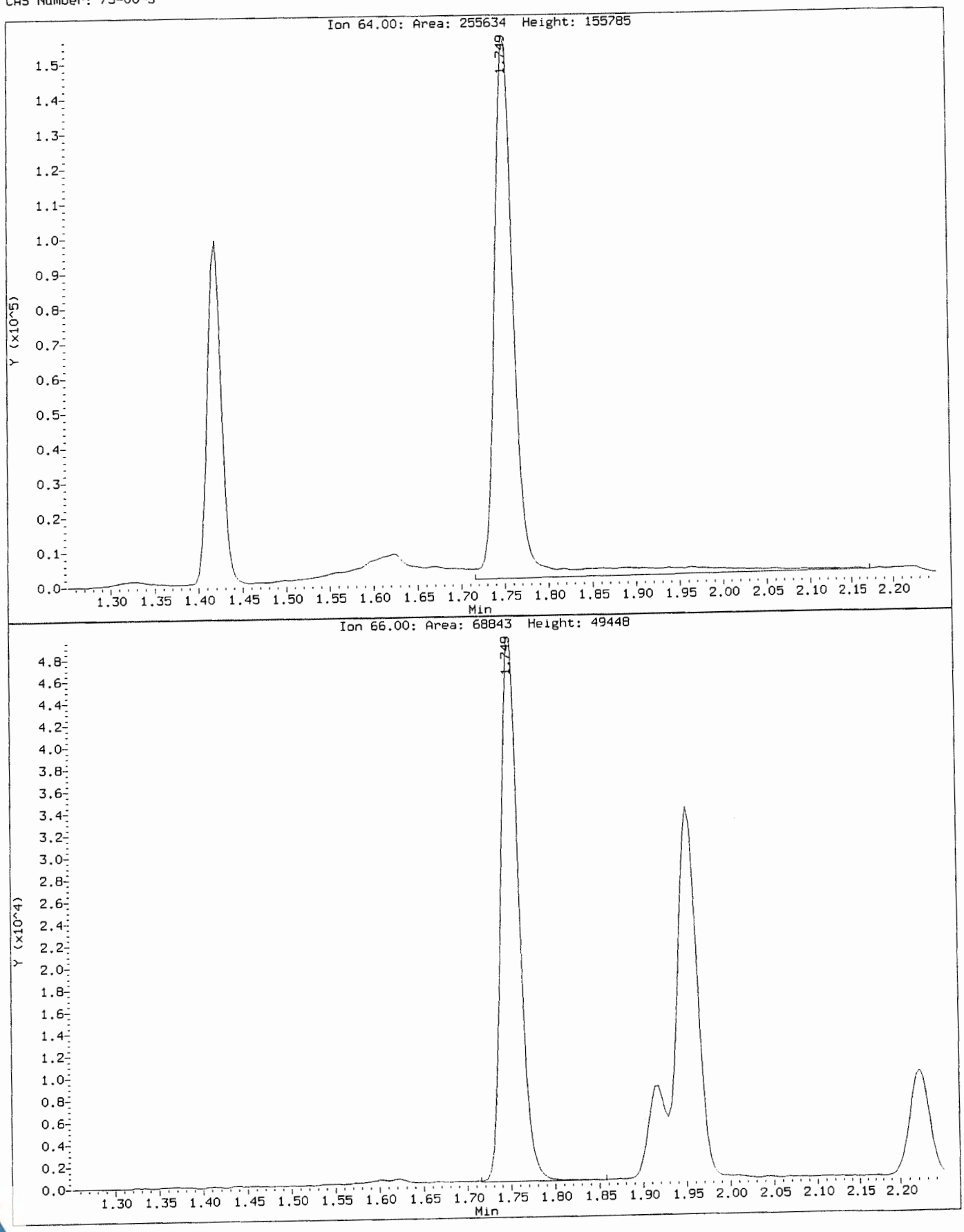
QC Flag Legend

T - Target compound detected outside RT window.
M - Compound response manually integrated.
H - Operator selected an alternate compound hit.


Y (x10^6)
0.2 0.4 0.6 0.8 1.0 1.2 1.4 1.6 1.8 2.0 2.2 2.4 2.6 2.8 3.0 3.2 3.4 3.6 3.8 4.0 4.2 4.4 4.6 4.8 5.0 5.2
Min
1 2 3 4 5 6 7 8 9 10 11 12 13 14
-Chloromethane
-Vinyl Chloride+
-Acetaldehyde
-Bromomethane
-Chloroethane
-Trichlorofluoromethane
-n-Pentane+
-Ethanol
-Diethyl ether+
-Acrolein
-1,1-Dichloroethene+
-Acetone
-Iodomethane
-Carbon Disulfide
-Isopropyl alcohol
-Acetonitrile+
-Methylene Chloride
-Tert-butyl alcohol
-Acrylonitrile+
-Vinyl Acetate+
-1,1-Dichloroethane
-Diisopropyl ether
-tert-Butyl ethyl ether
-2-Butanone+
-Propionitrile+
-Methacrylonitrile+
-Chloroform
-Dibromofluoromethane+
-Pentafluorobenzene+
-1,1-Dichloropropene+
-1,2-Dichloroethane+
-tert-Amyl alcohol
Isobutyl Alcohol+
-n-Heptane
-1,4-Difluorobenzene
-Trichloroethene+
-Methylcyclohexane+
-1,2-Dichloropropane
-Methyl Methacrylate+
-Bromodichloromethane
-2-Nitropropane
-2-Chloroethylvinyl ether
-Epichlorohydrin
-cis-1,3-Dichloropropene
-Dimethyl disulfide
-4-Methyl-2-Pentanone
-Toluene-d8
-Toluene
-trans-1,3-Dichloropropene+
-Ethyl Methacrylate
-1,1,2-Trichloroethane+
-1,3-Dichloropropane+
-2-Hexanone
-Dibromochloromethane
-1,2-Dibromoethane+
-Chlorobenzene-d5+
-1,1,1,2-Tetrachloroethane+
-m,p-Xylenes+
-Styrene+
-Methyl Amyl Ketone
-Bromoform+
-Isopropylbenzene
-4-Bromofluorobenzene+
-1,1,2,2-Tetrachloroethane+
-1,2,3-Trichloropropane+
-2-Chlorotoluene
-1,3,5-Trimethylbenzene+
-alpha-Methylstyrene
-tert-Butylbenzene+
-sec-Butylbenzene
-1,3-Dichlorobenzene
-1,4-Dichlorobenzene-d4+
-Benzyl Chloride
-n-Butylbenzene+
-1,2-Dibromo-3-Chloropropa
-1,2,4-Trichlorobenzene
-Hexachlorobutadiene
-Naphthalene
-1,2,3-Trichlorobenzene
-2-Methylnaphthalene
-1-Methylnaphthalene
Data File: \\NAHSTWS005\Target\chem\voa9.i\U181113.b\U111308.D
Date : 13-NOV-2018 14:15
Client ID: VSTD050
Sample Info: VSTD050;VSTD050;1;7;
Purge Volume: 5.0
Column phase: DB624
\\NAHSTWS005\Target\chem\voa9.i\U181113.b\U111308.D
Instrument: VOA9.i
Operator: PC
Column diameter: 0.18
Page 4

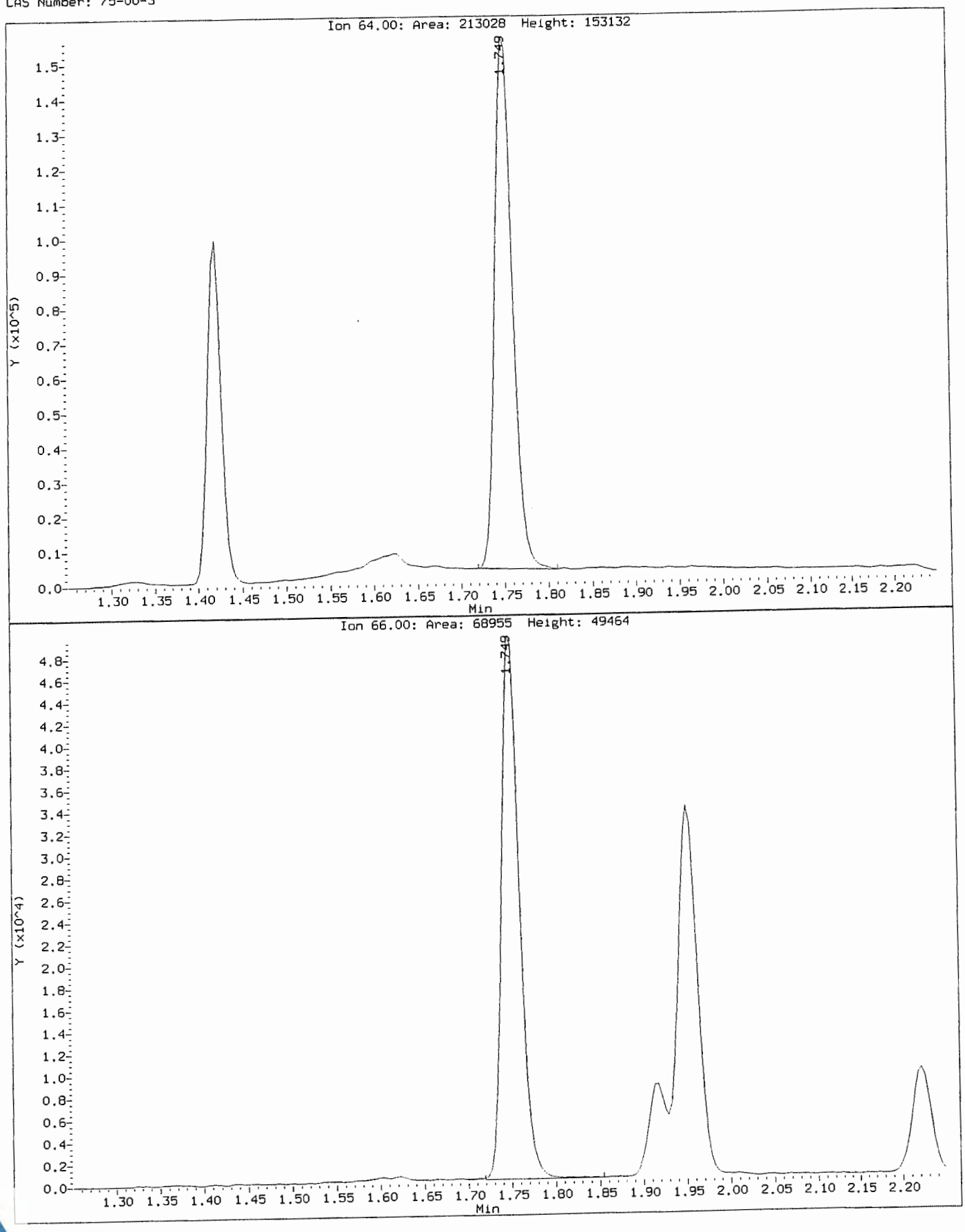
Data File: \\NAHSTWS005\Target\chem\voa9.i\U181113.b\Before\U111308.D
Injection Date: 13-NOV-2018 14:15
Instrument: VOA9.i
Client Sample ID: VSTD050

Compound: Chloroethane
CAS Number: 75-00-3



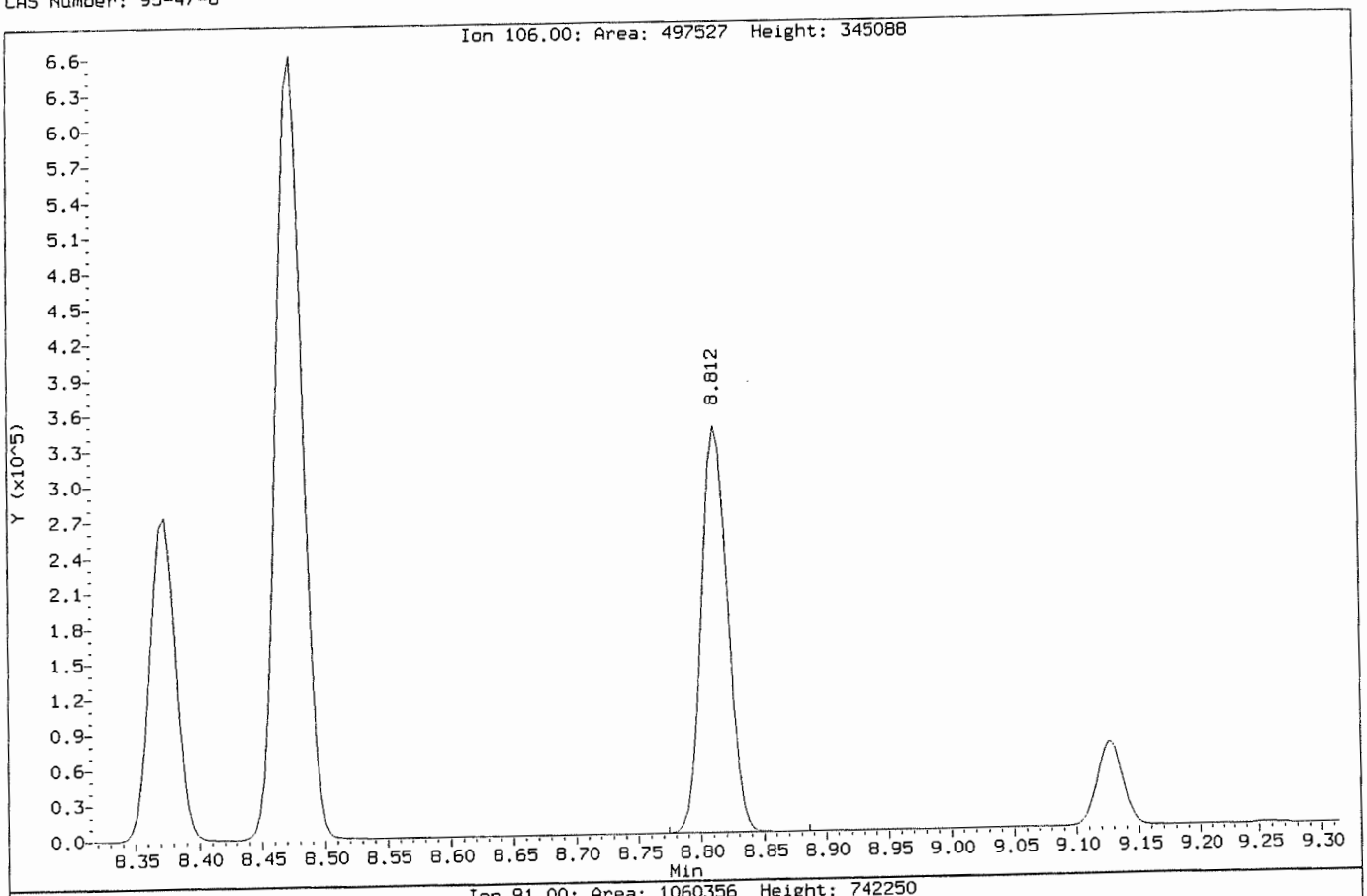
Data File: \\NAHSTWS005\Target\chem\voa9.i\U181113.b\U111308.D
Injection Date: 13-NOV-2018 14:15
Instrument: VOA9.i
Client Sample ID: VSTD050

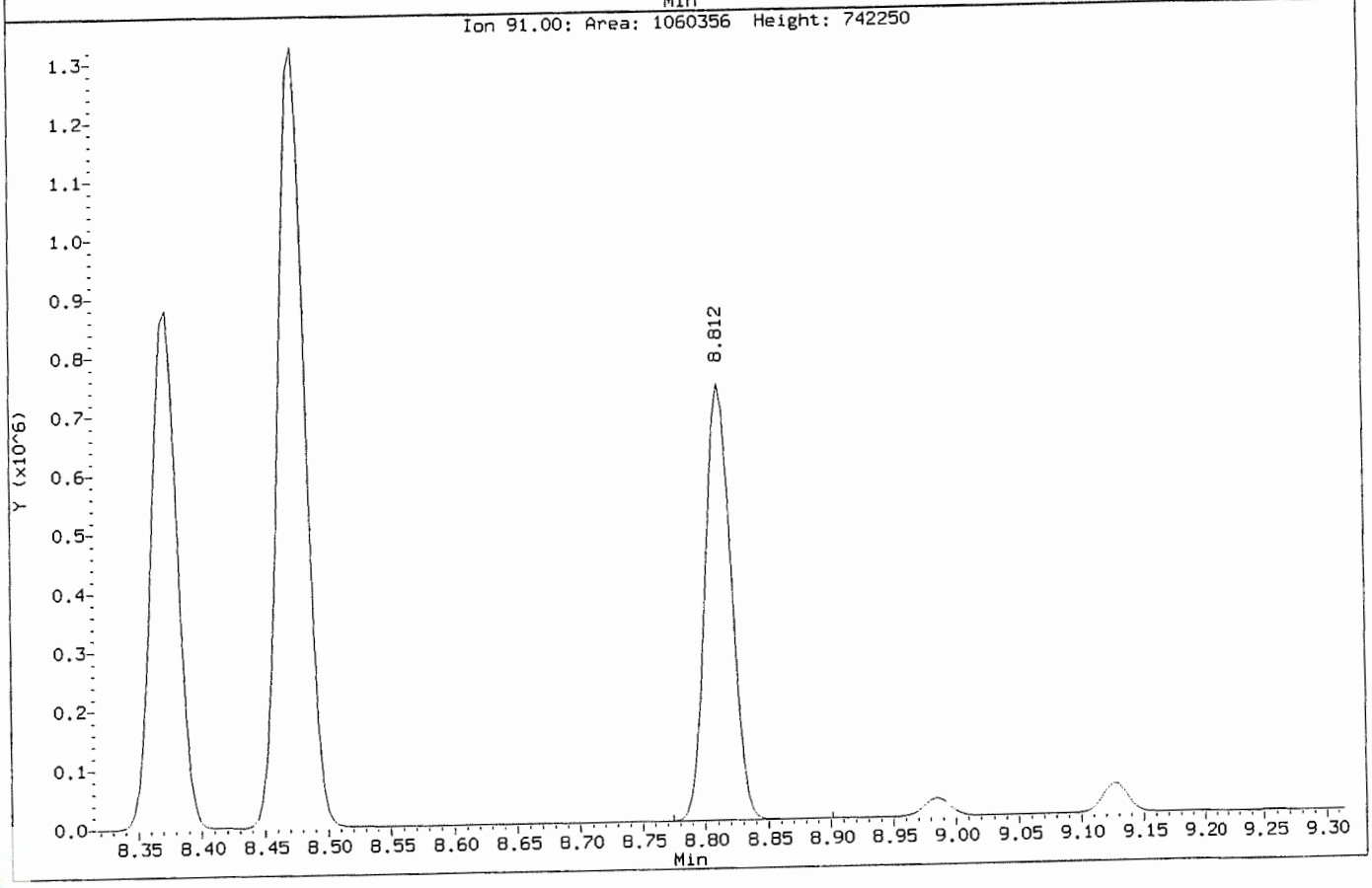
Compound: Chloroethane
CAS Number: 75-00-3



Data File: \\NAHSTWS005\Target\chem\voa9.i\U181113.b\Before\U111308.D
Injection Date: 13-NOV-2018 14:15
Instrument: VOA9.i
Client Sample ID: VSTD050

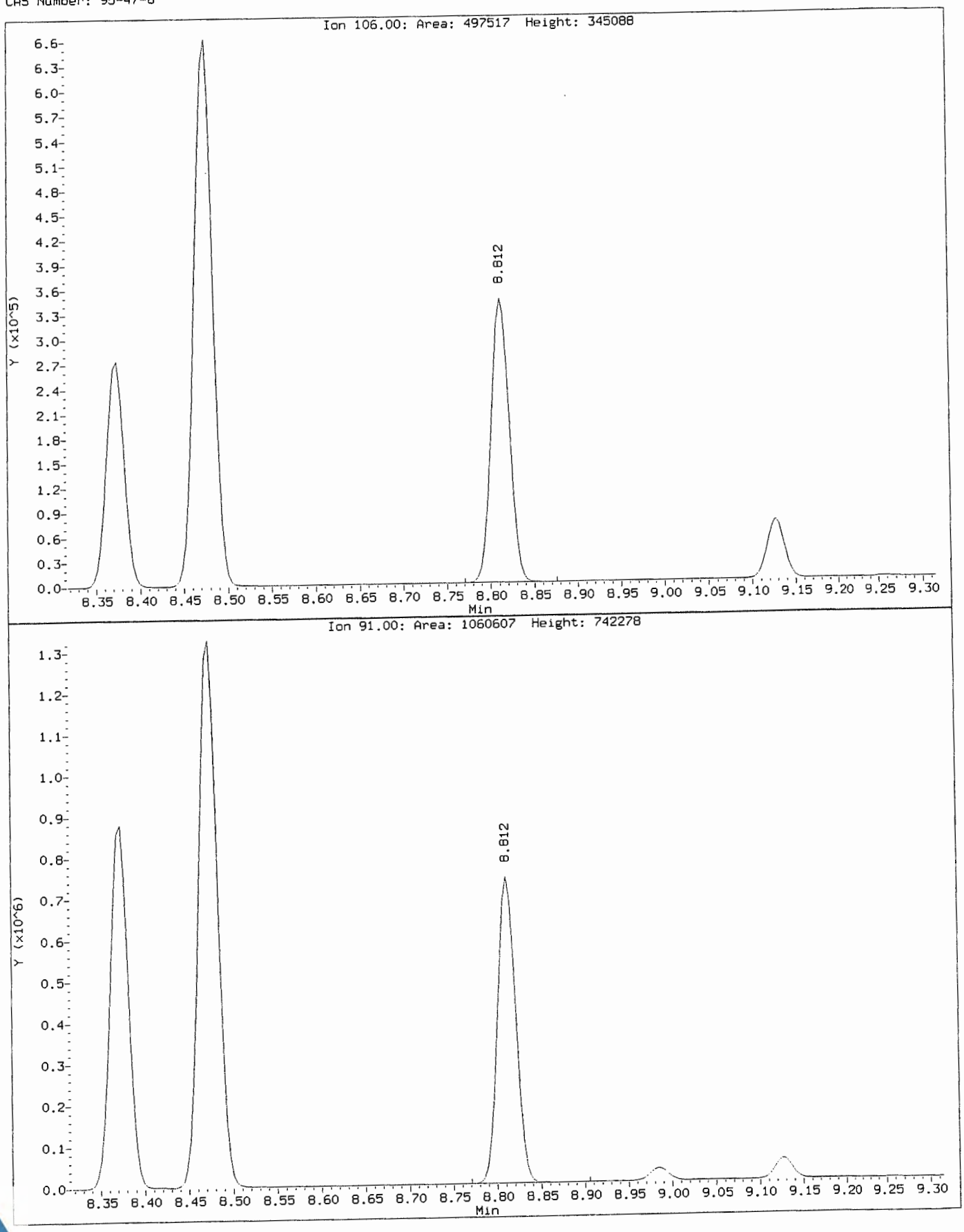
Compound: o-Xylene
CAS Number: 95-47-6





Data File: \\NAHSTWS005\Target\chem\voa9.i\U181113.b\U111308.D
Injection Date: 13-NOV-2018 14:15
Instrument: VOA9.i
Client Sample ID: VSTD050

Compound: o-Xylene
CAS Number: 95-47-6



Data File: \\NAHSTWS005\Target\chem\voa9.i\U181113.b\U111309.D Page 1
Report Date: 24-Jan-2019 18:55

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa9.i\U181113.b\U111309.D
Lab Smp Id: VSTD100 Client Smp ID: VSTD100
Inj Date : 13-NOV-2018 14:39
Operator : PC Inst ID: VOA9.i
Smp Info : VSTD100;VSTD100;1;8;
Misc Info : 180315V9;WATER;0;1;
Comment :
Method : \\NAHSTWS005\Target\chem\voa9.i\U181113.b\8260C.m
Meth Date : 24-Jan-2019 18:55 VOA9.i Quant Type: ISTD
Cal Date : 13-NOV-2018 14:15 Cal File: U111308.D
Als bottle: 10 Calibration Sample, Level: 8
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: LHAAP.sub
Target Version: 4.14
Processing Host: NAHSTW7087

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Cpnd Variable		Local Compound Variable

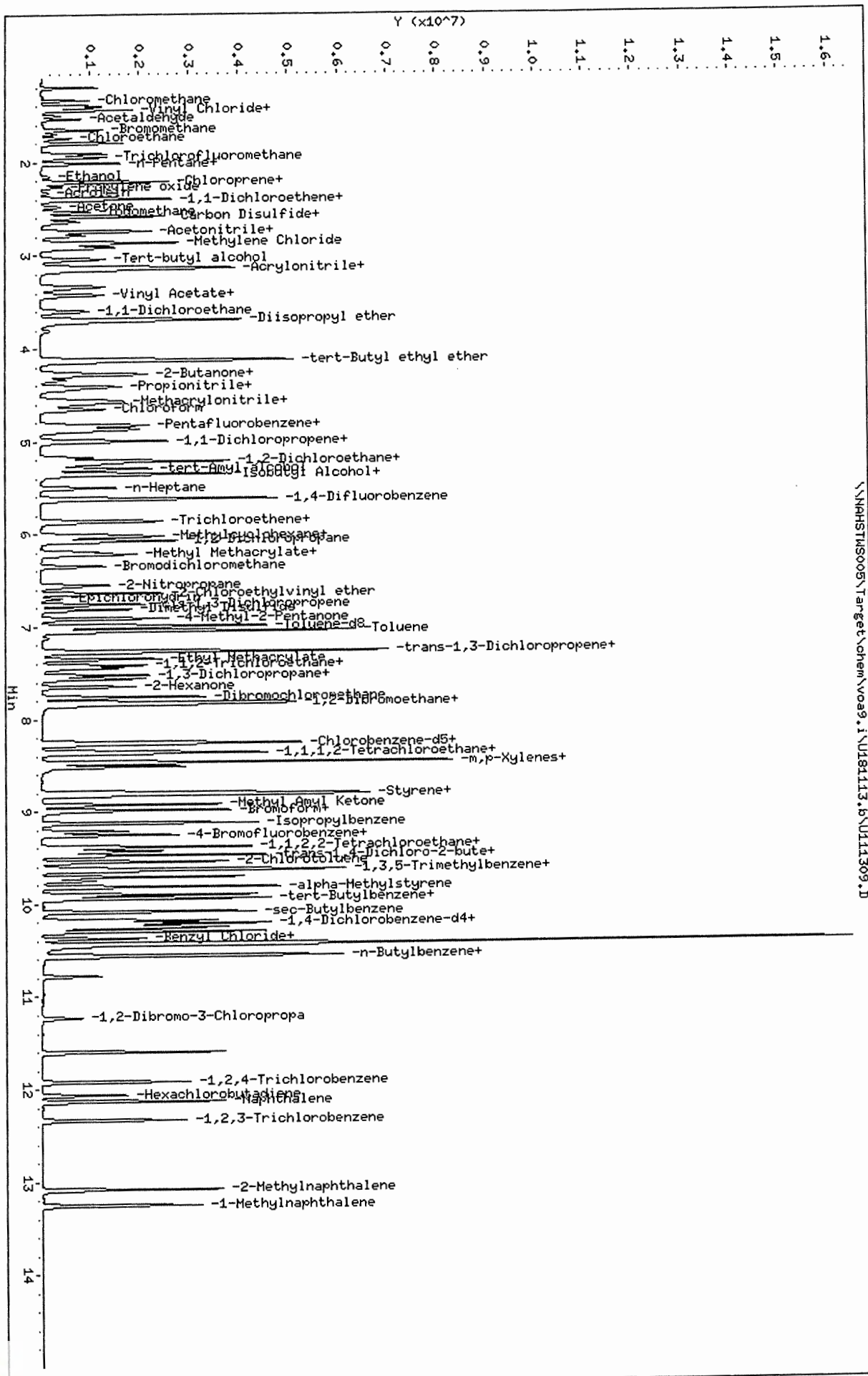
Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
* 1 Pentafluorobenzene	168	4.890	4.890	(1.000)	450542	50.0000	
* 36 1,4-Difluorobenzene	114	5.625	5.625	(1.000)	856582	50.0000	
* 47 Chlorobenzene-d5	117	8.249	8.249	(1.000)	821336	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	10.236	10.236	(1.000)	399019	50.0000	
$ 30 Dibromofluoromethane	113	4.827	4.827	(0.987)	526814	100.000	103.01
$ 35 1,2-Dichloroethane-d4	65	5.171	5.171	(1.057)	696595	100.000	104.13
$ 48 Toluene-d8	98	6.990	6.990	(0.847)	2142731	100.000	103.85
$ 69 4-Bromofluorobenzene	95	9.258	9.258	(1.122)	823996	100.000	102.55
60 1,1,1,2-Tetrachloroethane	131	8.350	8.350	(1.012)	547424	100.000	105.66
31 1,1,1-Trichloroethane	97	4.823	4.823	(0.986)	826811	100.000	104.47
68 1,1,2,2-Tetrachloroethane	83	9.392	9.392	(0.918)	905540	100.000	95.80
138 Freon TF	101	2.394	2.394	(0.490)	456374	100.000	101.11
53 1,1,2-Trichloroethane	83	7.421	7.421	(0.900)	496464	100.000	95.07
22 1,1-Dichloroethane	63	3.597	3.597	(0.736)	991209	100.000	96.00
11 1,1-Dichloroethene	96	2.394	2.394	(0.490)	489401	100.000	96.23
32 1,1-Dichloropropene	75	4.999	4.999	(0.889)	782616	100.000	98.92
93 1,2,3-Trichlorobenzene	180	12.339	12.339	(1.205)	769767	100.000	102.18
71 1,2,3-Trichloropropane	75	9.430	9.430	(0.921)	1033869	100.000	104.82
90 1,2,4-Trichlorobenzene	180	11.927	11.927	(1.165)	795857	100.000	101.42
79 1,2,4-Trimethylbenzene	105	9.944	9.944	(0.971)	2240667	100.000	101.09
89 1,2-Dibromo-3-Chloropropane	155	11.237	11.237	(1.098)	149236	100.000	100.38
57 1,2-Dibromoethane	107	7.852	7.852	(0.952)	601967	100.000	99.55

Data File: \\NAHSTWS005\Target\chem\voa9.i\U181113.b\U111309.D Page 2
Report Date: 24-Jan-2019 18:55

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
88 1,2-Dichlorobenzene	146	10.573	10.573	(1.033)	1221135	100.000	95.83
33 1,2-Dichloroethane	62	5.250	5.250	(0.933)	845716	100.000	94.35
42 1,2-Dichloropropane	63	6.079	6.079	(1.081)	607568	100.000	99.62
75 1,3,5-Trimethylbenzene	105	9.629	9.629	(0.941)	2179527	100.000	101.66
83 1,3-Dichlorobenzene	146	10.180	10.180	(0.995)	1206946	100.000	96.07
54 1,3-Dichloropropane	76	7.563	7.563	(0.917)	1063077	100.000	94.81
84 1,4-Dichlorobenzene	146	10.258	10.258	(1.002)	1240019	100.000	100.95
26 2,2-Dichloropropane	77	4.268	4.268	(0.873)	666488	100.000	104.24
24 2-Butanone	43	4.332	4.332	(0.886)	626648	200.000	197.86
76 2-Chlorotoluene	91	9.550	9.550	(0.933)	1897282	100.000	97.10
52 2-Hexanone	43	7.649	7.649	(0.927)	1009723	200.000	211.48(A)
77 4-Chlorotoluene	91	9.640	9.640	(0.942)	2209785	100.000	98.01
82 p-Isopropyltoluene	119	10.213	10.213	(0.998)	2303162	100.000	105.40
45 4-Methyl-2-Pentanone	43	6.915	6.915	(0.838)	1416197	200.000	206.69(A)
10 Acetone	43	2.476	2.476	(0.506)	430350	200.000	212.87(A)
37 Benzene	78	5.216	5.216	(0.927)	2279526	100.000	96.27
74 Bromobenzene	156	9.385	9.385	(0.917)	640019	100.000	97.78
29 Bromochloromethane	128	4.549	4.549	(0.930)	269321	100.000	101.39
39 Bromodichloromethane	83	6.345	6.345	(1.128)	740758	100.000	104.07
66 Bromoform	173	8.984	8.984	(1.089)	383125	100.000	100.58
6 Bromomethane	94	1.655	1.655	(0.339)	367005	100.000	96.33
19 Carbon Disulfide	76	2.581	2.581	(0.528)	3169516	200.000	201.81(A)
34 Carbon Tetrachloride	117	4.991	4.991	(0.887)	664499	100.000	107.51
59 Chlorobenzene	112	8.275	8.275	(1.003)	1606902	100.000	94.79
7 Chloroethane	64	1.741	1.741	(0.356)	444513	100.000	94.55(M)
28 Chloroform	83	4.654	4.654	(0.952)	994934	100.000	95.91
3 Chloromethane	50	1.333	1.333	(0.273)	595590	100.000	98.79
27 cis-1,2-Dichloroethene	96	4.283	4.283	(0.876)	613605	100.000	96.11
46 cis-1,3-Dichloropropene	75	6.757	6.757	(1.201)	1019257	100.000	113.72
55 Dibromochloromethane	129	7.758	7.758	(0.940)	576245	100.000	110.87
44 Dibromomethane	93	6.187	6.187	(1.100)	378115	100.000	98.92
2 Dichlorodifluoromethane	85	1.198	1.198	(0.245)	680233	100.000	101.10
61 Ethylbenzene	106	8.373	8.373	(1.015)	844002	100.000	98.46
91 Hexachlorobutadiene	225	12.065	12.065	(1.179)	270039	100.000	102.92
67 Isopropylbenzene	105	9.126	9.126	(1.106)	2535018	100.000	101.55
62 m,p-Xylenes	106	8.474	8.474	(1.027)	2096282	200.000	198.47
17 Methylene Chloride	84	2.866	2.866	(0.586)	577262	100.000	101.12
87 n-Butylbenzene	91	10.558	10.558	(1.031)	2203969	100.000	102.68
73 n-Propylbenzene	91	9.479	9.479	(0.926)	3164922	100.000	100.51
92 Naphthalene	128	12.133	12.133	(1.185)	2576616	100.000	109.04
63 o-Xylene	106	8.811	8.811	(1.068)	1070218	100.000	101.23(H)
81 sec-Butylbenzene	105	10.090	10.090	(0.986)	2704732	100.000	103.16
64 Styrene	104	8.826	8.826	(1.070)	1856392	100.000	104.02
78 tert-Butylbenzene	119	9.902	9.902	(0.967)	1862977	100.000	101.96
56 Tetrachloroethene	164	7.526	7.526	(0.912)	415217	100.000	96.50
50 Toluene	91	7.046	7.046	(0.854)	2482746	100.000	95.21
20 trans-1,2-Dichloroethene	96	3.136	3.136	(0.641)	538852	100.000	96.67
51 trans-1,3-Dichloropropene	75	7.259	7.259	(1.291)	912116	100.000	101.29
38 Trichloroethene	130	5.861	5.861	(1.042)	566649	100.000	97.08
8 Trichlorofluoromethane	101	1.944	1.944	(0.398)	897271	100.000	99.61
5 Vinyl Chloride	62	1.411	1.411	(0.289)	744825	100.000	100.88

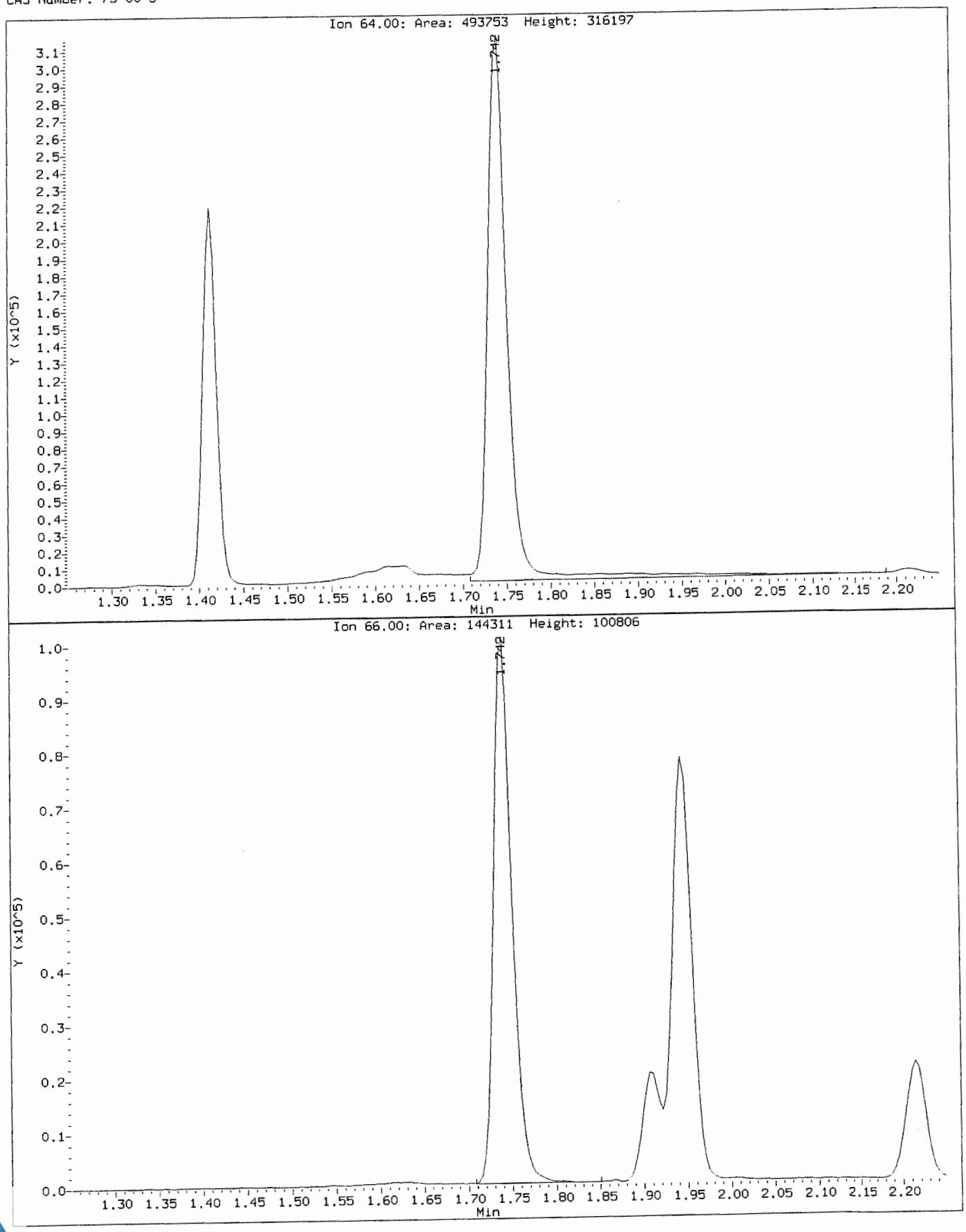
QC Flag Legend

A - Target compound detected but, quantitated amount exceeded maximum amount.
M - Compound response manually integrated.
H - Operator selected an alternate compound hit.


Data File: \\NAHSTWS005\Target\chem\voa9.i\U181113.b\U111309.D
Date : 13-NOV-2018 14:39
Client ID: VSTD100
Sample Info: VSTD100;VSTD100;1.0;
Purge Volume: 5.0
Column phase: DB624
Instrument: VOA9.i
Operator: PC
Column diameter: 0.18
\\NAHSTWS005\Target\chem\voa9.i\U181113.b\U111309.D
Y (x10^7)
Min
-Chloromethane
-Vinyl Chloride+
-Acetaldehyde
-Bromomethane
-Chloroethane
-Trichlorofluoromethane
-n-Pentane+
-Ethanol
-Propylene oxide
-Acrolein
-1,1-Dichloroethene+
-Acetone
-Iodomethane
-Carbon Disulfide+
-Acetonitrile+
-Methylene Chloride
-Tert-butyl alcohol
-Acrylonitrile+
-Vinyl Acetate+
-1,1-Dichloroethane
-Diisopropyl ether
-tert-Butyl ethyl ether
-2-Butanone+
-Propionitrile+
-Methacrylonitrile+
-Chloroform
-Pentafluorobenzene+
-1,1-Dichloropropene+
-1,2-Dichloroethane+
-tert-Amyl methyl ether
-Isobutyl Alcohol+
-n-Heptane
-1,4-Difluorobenzene
-Trichloroethene+
-Methylcyclohexane+
-1,2-Dichloropropane
-Methyl Methacrylate+
-Bromodichloromethane
-2-Nitropropane
-2-Chloroethylvinyl ether
-Epichlorohydrin
-1,3-Dichloropropene
-Dimethyl Disulfide
-4-Methyl-2-Pentanone
-Toluene-d8
-Toluene
-trans-1,3-Dichloropropene+
-Ethyl Methacrylate
-1,1,2-Trichloroethane+
-1,3-Dichloropropane+
-2-Hexanone
-Dibromochloromethane
-1,2-Dibromoethane+
-Chlorobenzene-d5+
-1,1,1,2-Tetrachloroethane+
-m,p-Xylenes+
-Styrene+
-Methyl Amyl Ketone
-Bromoform+
-Isopropylbenzene
-4-Bromofluorobenzene+
-1,1,2,2-Tetrachloroethane+
-trans-1,4-Dichloro-2-bute+
-2-Chlorotoluene
-1,3,5-Trimethylbenzene+
-alpha-Methylstyrene
-tert-Butylbenzene+
-sec-Butylbenzene
-1,4-Dichlorobenzene-d4+
-Benzyl Chloride+
-n-Butylbenzene+
-1,2-Dibromo-3-Chloropropa
-1,2,4-Trichlorobenzene
-Hexachlorobutadiene
-Naphthalene
-1,2,3-Trichlorobenzene
-2-Methylnaphthalene
-1-Methylnaphthalene

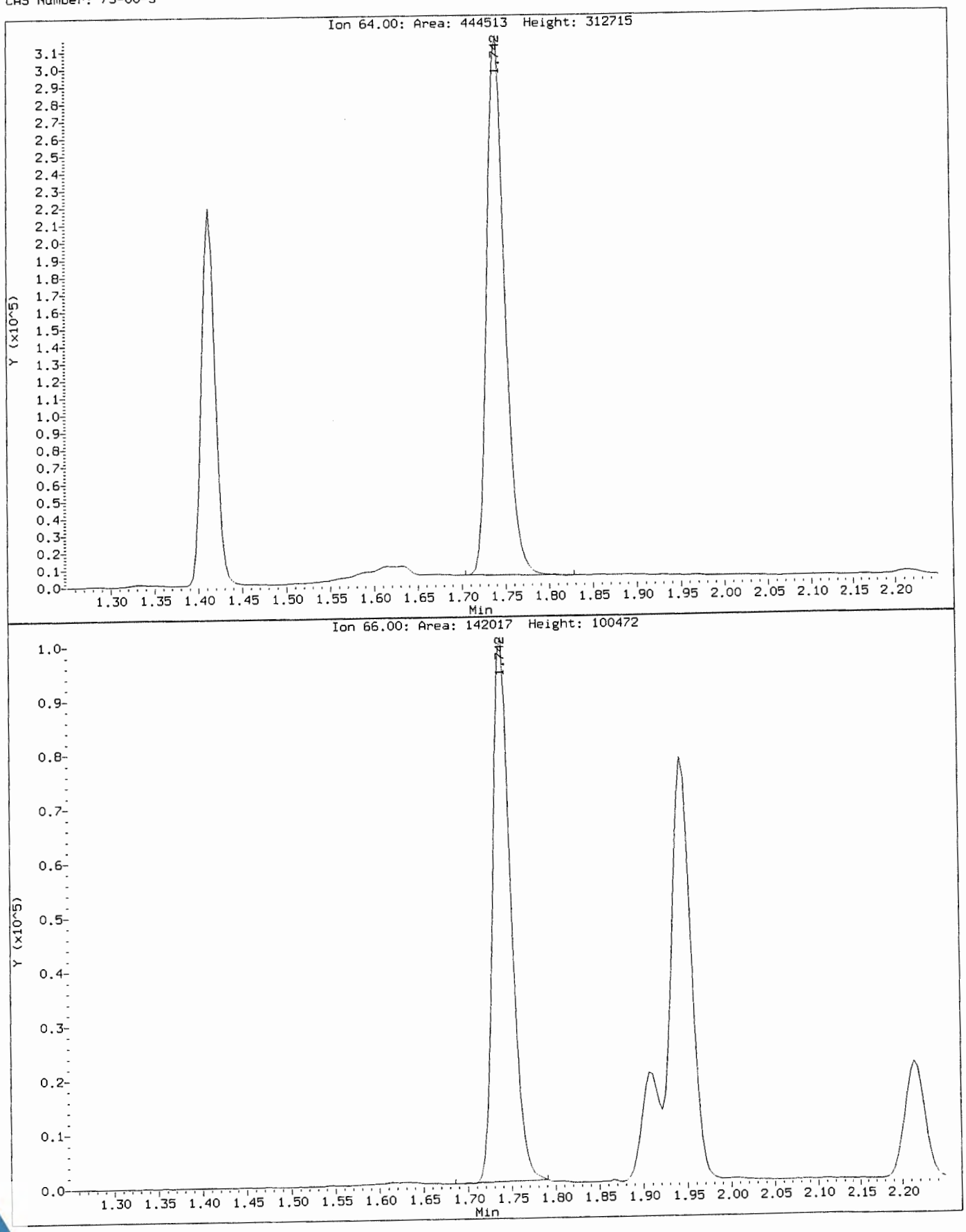
Data File: \\NAHSTWS005\Target\chem\voa9.i\U181113.b\Before\U111309.D
Injection Date: 13-NOV-2018 14:39
Instrument: VOA9.i
Client Sample ID: VSTD100

Compound: Chloroethane
CAS Number: 75-00-3



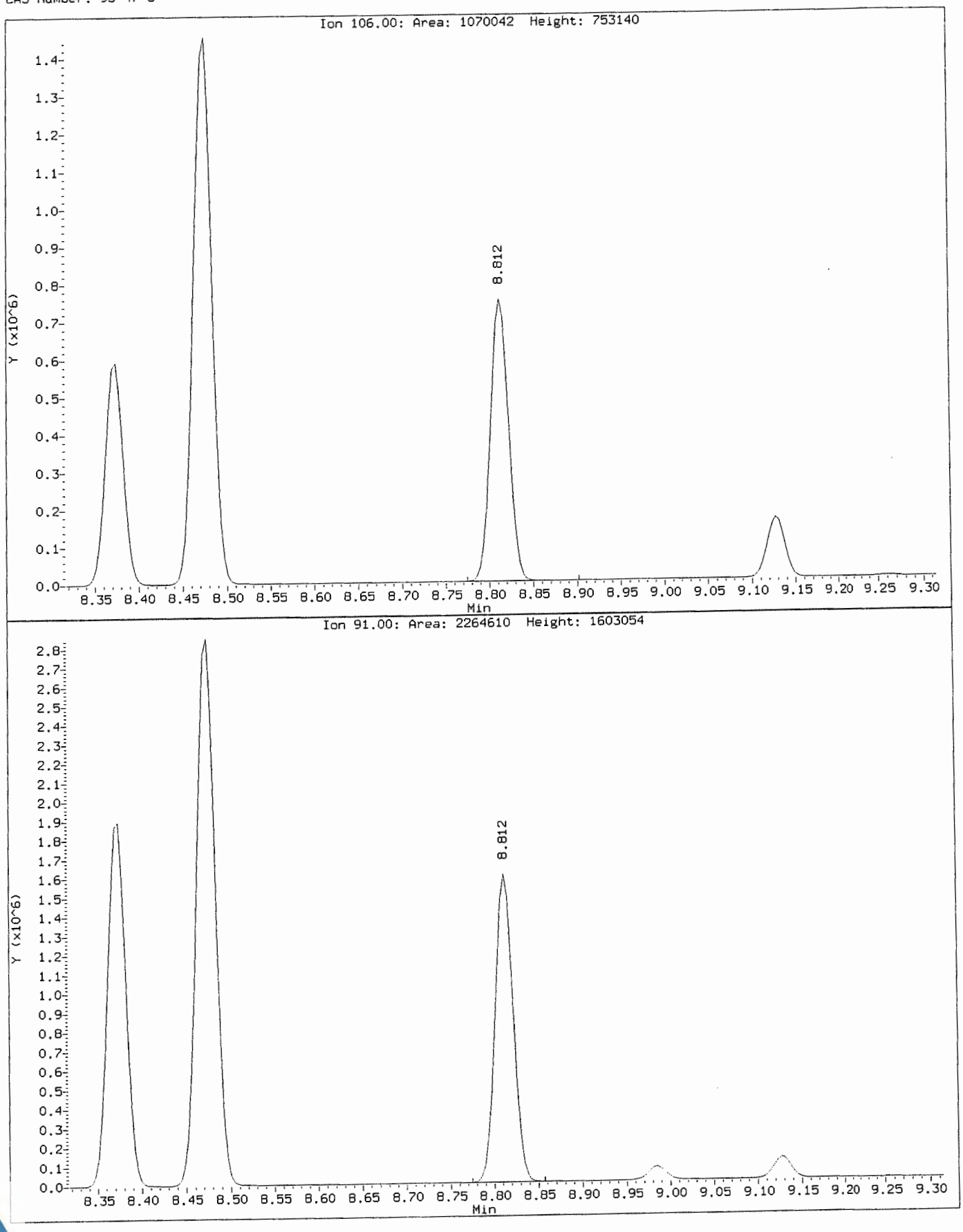
Data File: \\NAHSTWS005\Target\chem\voa9.i\U181113.b\U111309.D
Injection Date: 13-NOV-2018 14:39
Instrument: VOA9.i
Client Sample ID: VSTD100

Compound: Chloroethane
CAS Number: 75-00-3



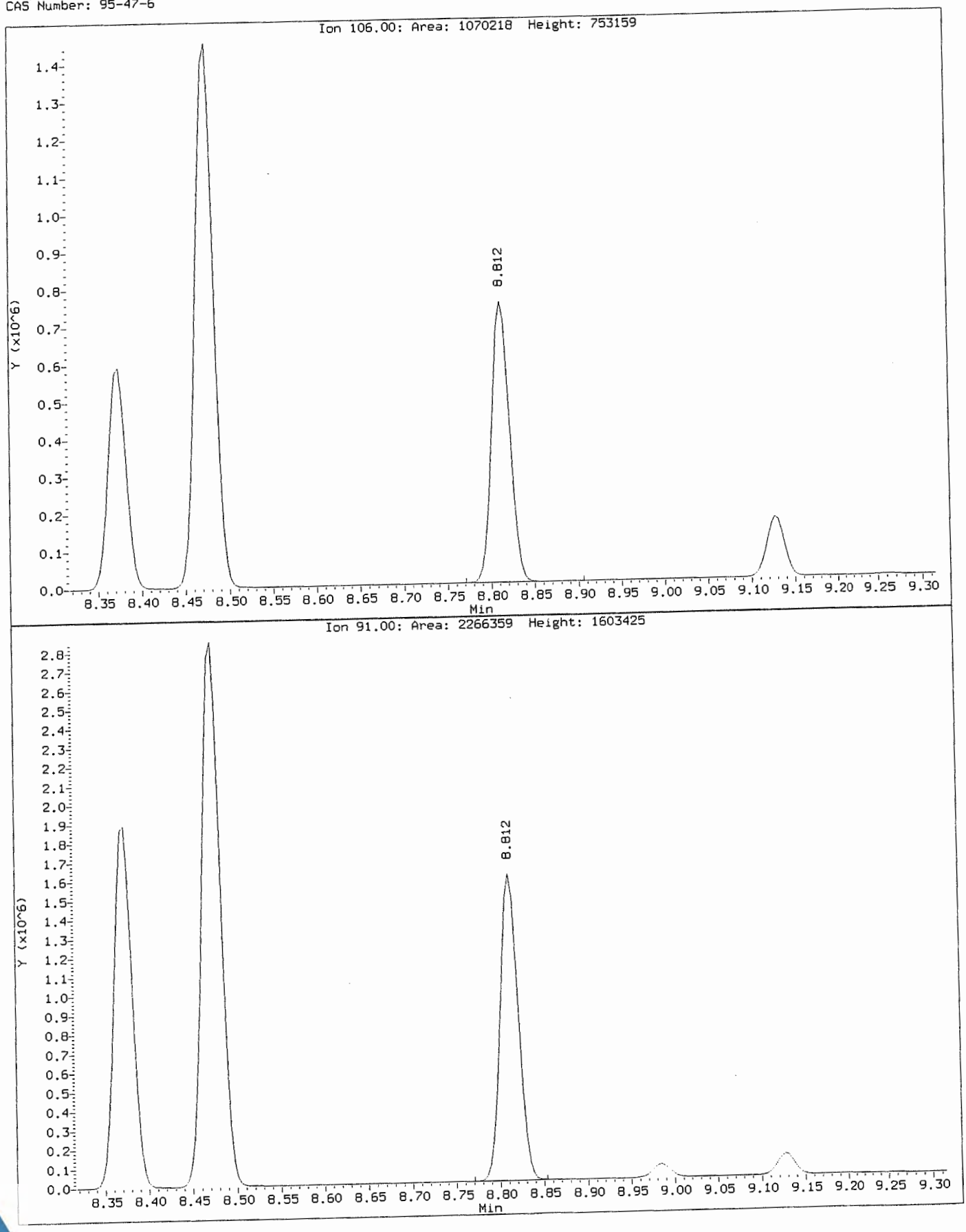
Data File: \\NAHSTWS005\Target\chem\voa9.i\U181113.b\Before\U111309.D
Injection Date: 13-NOV-2018 14:39
Instrument: VOA9.i
Client Sample ID: VSTD100

Compound: o-Xylene
CAS Number: 95-47-6



Data File: \\NAHSTWS005\Target\chem\voa9.i\U181113.b\U111309.D
Injection Date: 13-NOV-2018 14:39
Instrument: VOA9.i
Client Sample ID: VSTD100

Compound: o-Xylene
CAS Number: 95-47-6



Data File: \\NAHSTWS005\Target\chem\voa9.i\U181113.b\U111310.D
Report Date: 24-Jan-2019 18:55

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa9.i\U181113.b\U111310.D
Lab Smp Id: VSTD150 Client Smp ID: VSTD150
Inj Date : 13-NOV-2018 15:04
Operator : PC Inst ID: VOA9.i
Smp Info : VSTD150;VSTD150;1;9;
Misc Info : 180315V9;WATER;0;1;
Comment :
Method : \\NAHSTWS005\Target\chem\voa9.i\U181113.b\8260C.m
Meth Date : 24-Jan-2019 18:55 VOA9.i Quant Type: ISTD
Cal Date : 13-NOV-2018 14:39 Cal File: U111309.D
Als bottle: 11 Calibration Sample, Level: 9
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: LHAAP.sub
Target Version: 4.14
Processing Host: NAHSTW7087

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Cpnd Variable		Local Compound Variable

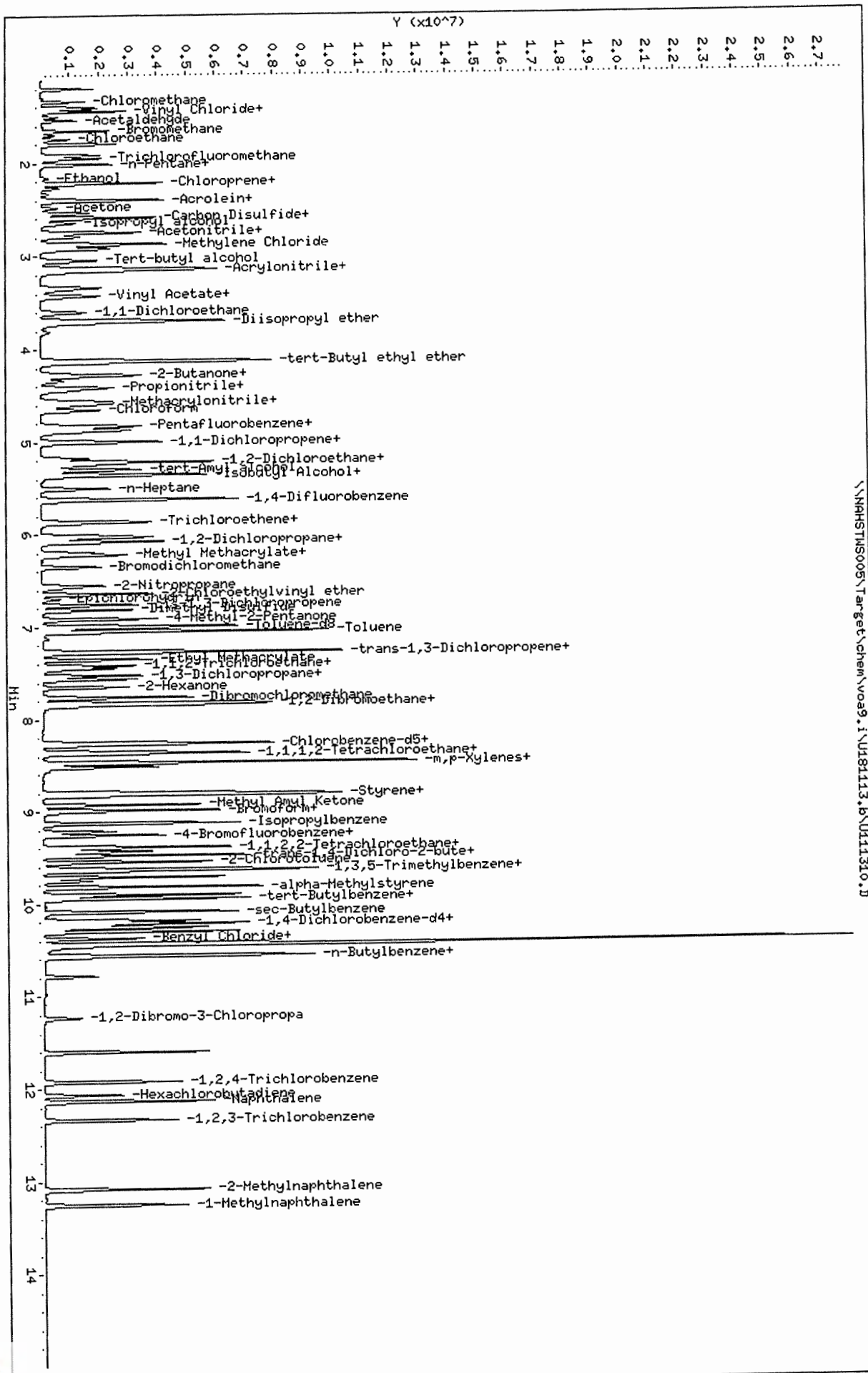
Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
* 1 Pentafluorobenzene	168	4.894	4.894	(1.000)	463456	50.0000	
* 36 1,4-Difluorobenzene	114	5.625	5.625	(1.000)	890799	50.0000	
* 47 Chlorobenzene-d5	117	8.249	8.249	(1.000)	854800	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	10.236	10.236	(1.000)	408174	50.0000	
$ 30 Dibromofluoromethane	113	4.827	4.827	(0.986)	809097	150.000	154.42
$ 35 1,2-Dichloroethane-d4	65	5.175	5.175	(1.057)	1062364	150.000	155.24
$ 48 Toluene-d8	98	6.990	6.990	(0.847)	3238162	150.000	151.57
$ 69 4-Bromofluorobenzene	95	9.258	9.258	(1.122)	1261578	150.000	151.36
60 1,1,1,2-Tetrachloroethane	131	8.350	8.350	(1.012)	858465	150.000	159.21
31 1,1,1-Trichloroethane	97	4.827	4.827	(0.986)	1329534	150.000	163.31
68 1,1,2,2-Tetrachloroethane	83	9.392	9.392	(0.918)	1394090	150.000	144.19
138 Freon TF	101	2.397	2.397	(0.490)	735007	150.000	158.31
53 1,1,2-Trichloroethane	83	7.421	7.421	(0.900)	767365	150.000	141.20
22 1,1-Dichloroethane	63	3.601	3.601	(0.736)	1566973	150.000	147.54
11 1,1-Dichloroethene	96	2.394	2.394	(0.489)	789917	150.000	150.99
32 1,1-Dichloropropene	75	5.003	5.003	(0.889)	1250083	150.000	151.94
93 1,2,3-Trichlorobenzene	180	12.335	12.335	(1.205)	1201294	150.000	155.88
71 1,2,3-Trichloropropane	75	9.430	9.430	(0.921)	1603390	150.000	158.92
90 1,2,4-Trichlorobenzene	180	11.927	11.927	(1.165)	1246599	150.000	155.30
79 1,2,4-Trimethylbenzene	105	9.944	9.944	(0.971)	3425922	150.000	151.11
89 1,2-Dibromo-3-Chloropropane	155	11.233	11.233	(1.097)	234820	150.000	152.68
57 1,2-Dibromoethane	107	7.852	7.852	(0.952)	923726	150.000	146.78

Data File: \\NAHSTWS005\Target\chem\voa9.i\U181113.b\U111310.D Page 2
Report Date: 24-Jan-2019 18:55

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
88 1,2-Dichlorobenzene	146	10.573	10.573	(1.033)	1872904	150.000	143.68
33 1,2-Dichloroethane	62	5.250	5.250	(0.933)	1302354	150.000	139.71
42 1,2-Dichloropropane	63	6.082	6.082	(1.081)	950163	150.000	149.81
75 1,3,5-Trimethylbenzene	105	9.629	9.629	(0.941)	3367895	150.000	153.56
83 1,3-Dichlorobenzene	146	10.180	10.180	(0.995)	1864119	150.000	145.05
54 1,3-Dichloropropane	76	7.563	7.563	(0.917)	1651259	150.000	141.50
84 1,4-Dichlorobenzene	146	10.258	10.258	(1.002)	1907496	150.000	151.83
26 2,2-Dichloropropane	77	4.272	4.272	(0.873)	1089497	150.000	165.65
24 2-Butanone	43	4.336	4.336	(0.886)	955107	300.000	293.17(A)
76 2-Chlorotoluene	91	9.550	9.550	(0.933)	2905161	150.000	145.35
52 2-Hexanone	43	7.653	7.653	(0.928)	1563288	300.000	314.60(A)
77 4-Chlorotoluene	91	9.640	9.640	(0.942)	3405553	150.000	147.66
82 p-Isopropyltoluene	119	10.213	10.213	(0.998)	3559913	150.000	159.26
45 4-Methyl-2-Pentanone	43	6.915	6.915	(0.838)	2161270	300.000	303.08(A)
10 Acetone	43	2.480	2.480	(0.507)	636098	300.000	307.81(A)
37 Benzene	78	5.216	5.216	(0.927)	3563563	150.000	144.72
74 Bromobenzene	156	9.385	9.385	(0.917)	991935	150.000	148.14
29 Bromochloromethane	128	4.553	4.553	(0.930)	396590	150.000	145.15
39 Bromodichloromethane	83	6.349	6.349	(1.129)	1169536	150.000	158.01
66 Bromoform	173	8.984	8.984	(1.089)	610635	150.000	152.14
6 Bromomethane	94	1.655	1.655	(0.338)	609177	150.000	154.28
19 Carbon Disulfide	76	2.585	2.585	(0.528)	5076235	300.000	314.21(A)
34 Carbon Tetrachloride	117	4.995	4.995	(0.888)	1081499	150.000	168.27
59 Chlorobenzene	112	8.275	8.275	(1.003)	2477986	150.000	140.45
7 Chloroethane	64	1.741	1.741	(0.356)	708077	150.000	146.42(M)
28 Chloroform	83	4.654	4.654	(0.951)	1558200	150.000	146.02
3 Chloromethane	50	1.337	1.337	(0.273)	963160	150.000	155.17
27 cis-1,2-Dichloroethene	96	4.283	4.283	(0.875)	965405	150.000	147.00
46 cis-1,3-Dichloropropene	75	6.757	6.757	(1.201)	1623779	150.000	174.21
55 Dibromochloromethane	129	7.758	7.758	(0.940)	908238	150.000	167.91
44 Dibromomethane	93	6.191	6.191	(1.101)	587501	150.000	147.80
2 Dichlorodifluoromethane	85	1.202	1.202	(0.246)	1086406	150.000	156.42
61 Ethylbenzene	106	8.373	8.373	(1.015)	1325471	150.000	148.58
91 Hexachlorobutadiene	225	12.065	12.065	(1.179)	426795	150.000	149.03
67 Isopropylbenzene	105	9.126	9.126	(1.106)	3937489	150.000	151.57
62 m,p-Xylenes	106	8.474	8.474	(1.027)	3241074	300.000	294.85(A)
17 Methylene Chloride	84	2.866	2.866	(0.586)	911224	150.000	155.55
87 n-Butylbenzene	91	10.558	10.558	(1.031)	3347969	150.000	149.04
73 n-Propylbenzene	91	9.479	9.479	(0.926)	4851775	150.000	150.63
92 Naphthalene	128	12.133	12.133	(1.185)	3933835	150.000	162.75
63 o-Xylene	106	8.811	8.811	(1.068)	1663910	150.000	151.23(H)
81 sec-Butylbenzene	105	10.090	10.090	(0.986)	4188144	150.000	156.16
64 Styrene	104	8.826	8.826	(1.070)	2865534	150.000	154.28
78 tert-Butylbenzene	119	9.902	9.902	(0.967)	2893337	150.000	154.80
56 Tetrachloroethene	164	7.526	7.526	(0.912)	658457	150.000	147.04
50 Toluene	91	7.050	7.050	(0.855)	3865080	150.000	142.41
20 trans-1,2-Dichloroethene	96	3.140	3.140	(0.642)	855722	150.000	149.25
51 trans-1,3-Dichloropropene	75	7.259	7.259	(1.291)	1439550	150.000	152.95
38 Trichloroethene	130	5.861	5.861	(1.042)	898620	150.000	148.04
8 Trichlorofluoromethane	101	1.948	1.948	(0.398)	1438631	150.000	155.26
5 Vinyl Chloride	62	1.415	1.415	(0.289)	1189386	150.000	156.33

QC Flag Legend

A - Target compound detected but, quantitated amount exceeded maximum amount.
M - Compound response manually integrated.
H - Operator selected an alternate compound hit.



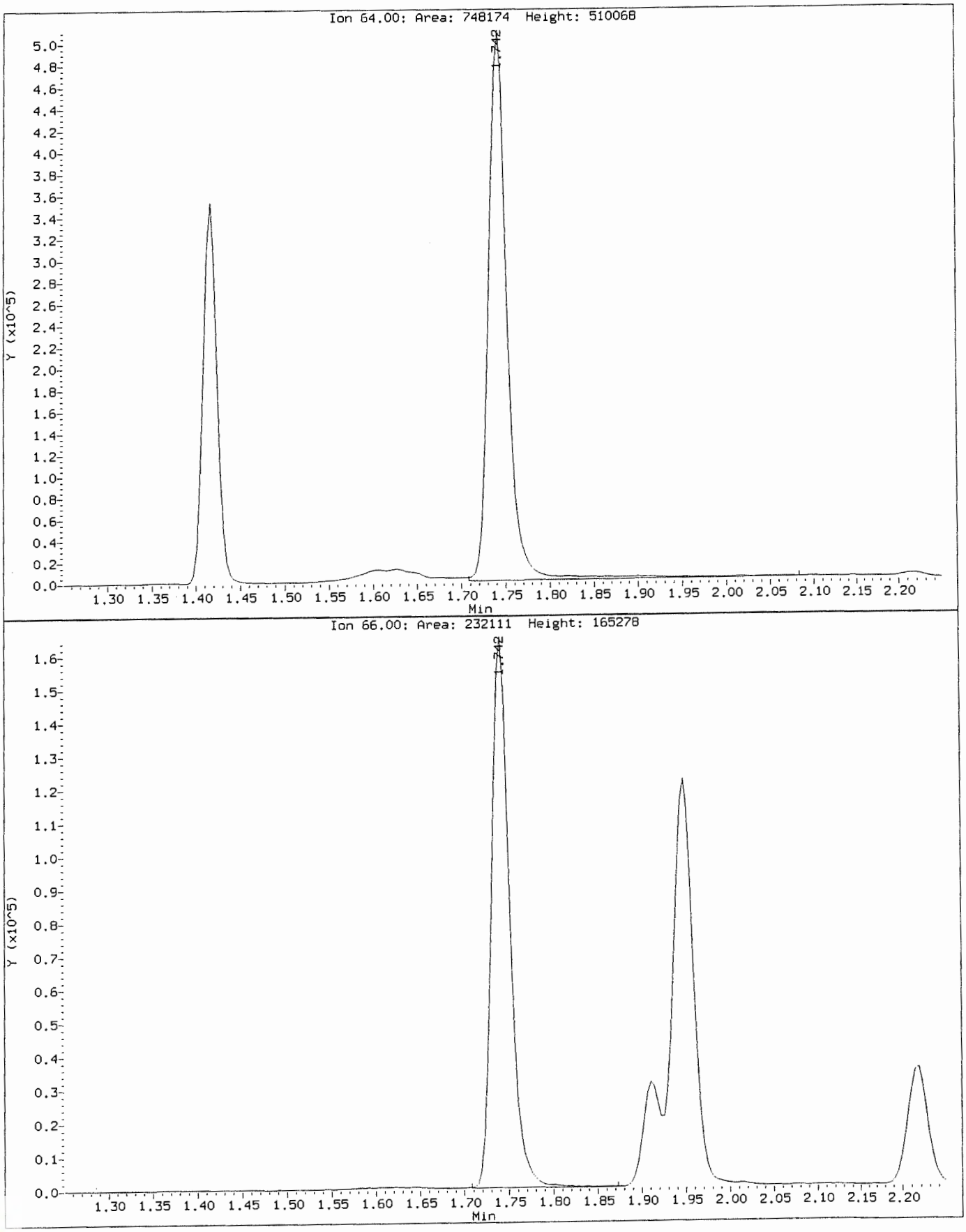
Data File: \\NAHSTWS005\Target\chem\voa9.i\U181113.b\U111310.D
Date : 13-NOV-2018 15:04
Client ID: VSTD150
Sample Info: VSTD150;VSTD150;1;9;
Purge Volume: 5.0
Column phase: DB624

\\NAHSTWS005\Target\chem\voa9.i\U181113.b\U111310.D

Instrument: VOA9.i
Operator: PC
Column diameter: 0.18

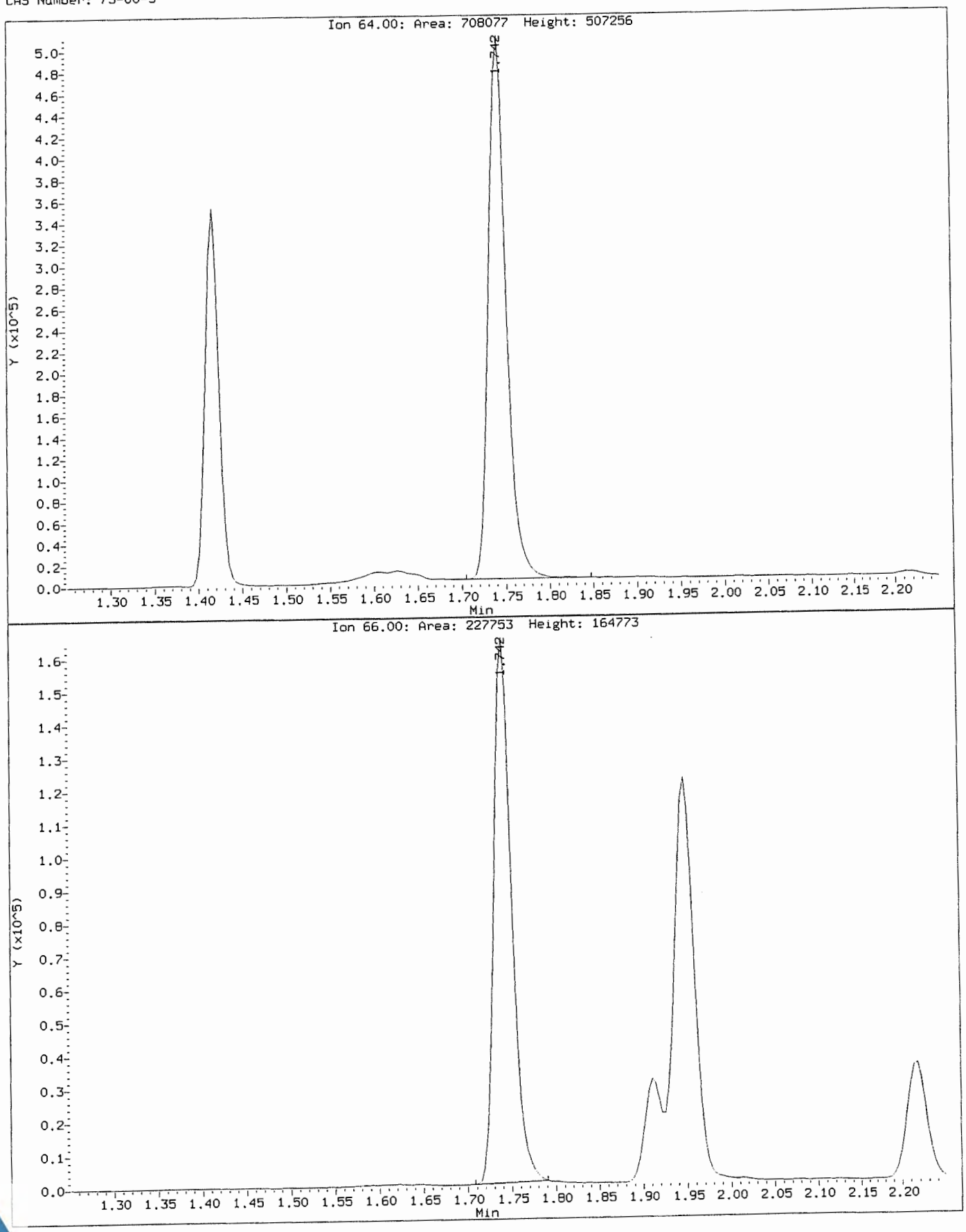
Data File: \\NAHSTWS005\Target\chem\voa9.i\U181113.b\Before\U111310.D
Injection Date: 13-NOV-2018 15:04
Instrument: VOA9.i
Client Sample ID: VSTD150

Compound: Chloroethane
CAS Number: 75-00-3



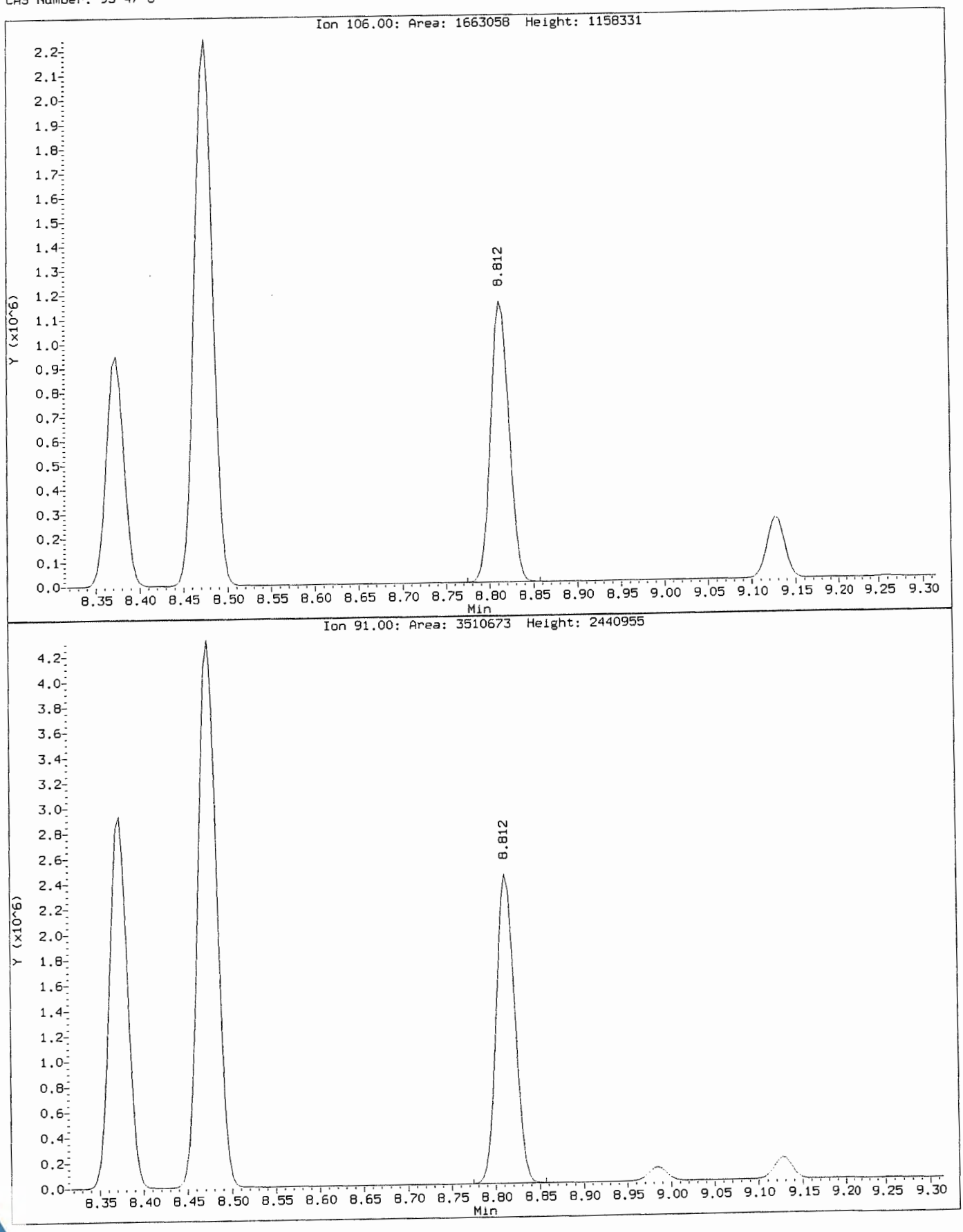
Data File: \\NAHSTWS005\Target\chem\voa9.i\U181113.b\U111310.D
Injection Date: 13-NOV-2018 15:04
Instrument: VOA9.i
Client Sample ID: VSTD150

Compound: Chloroethane
CAS Number: 75-00-3



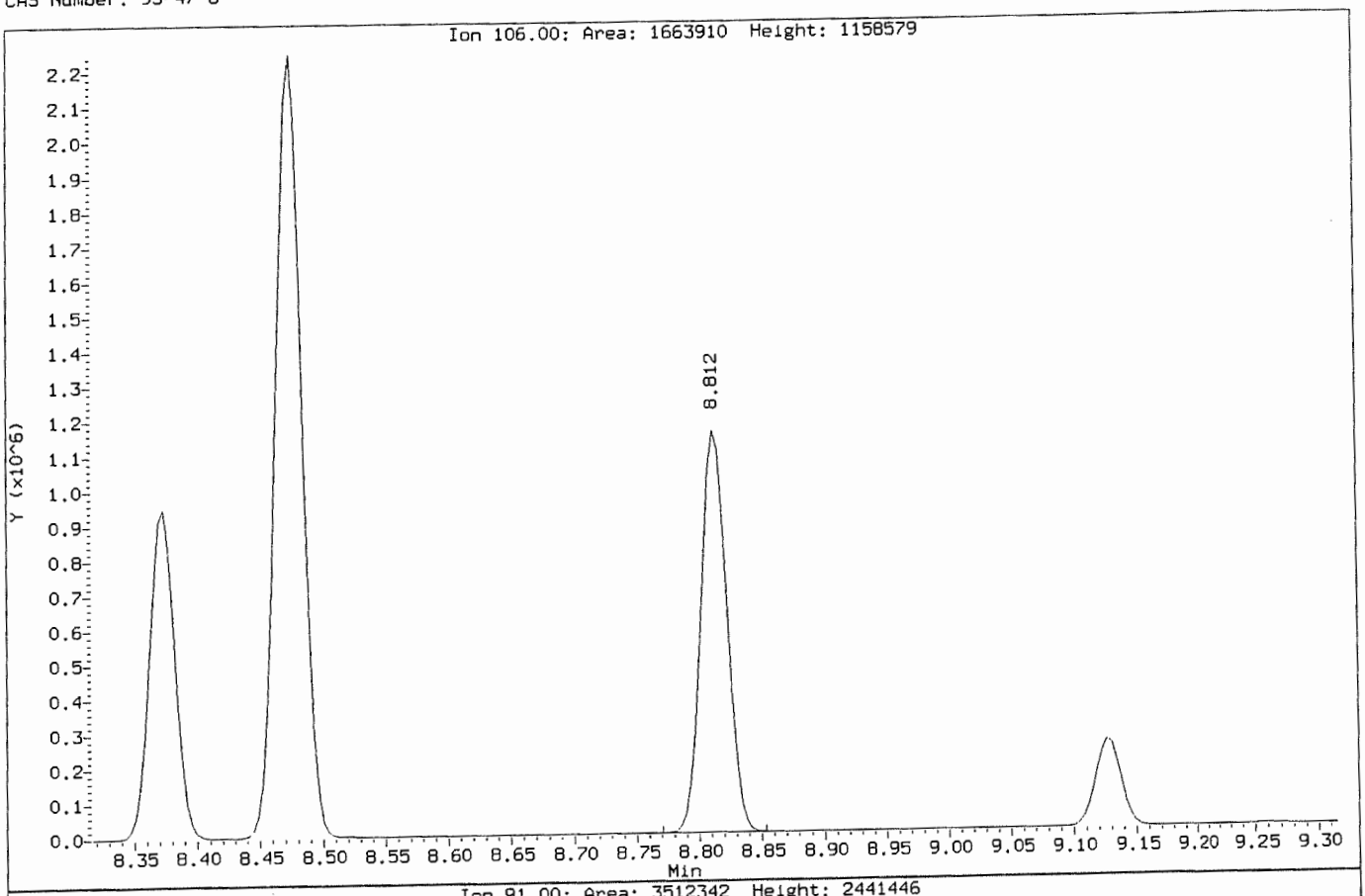
Data File: \\NAHSTWS005\Target\chem\voa9.i\U181113.b\Before\U111310.D
Injection Date: 13-NOV-2018 15:04
Instrument: VOA9.i
Client Sample ID: VSTD150

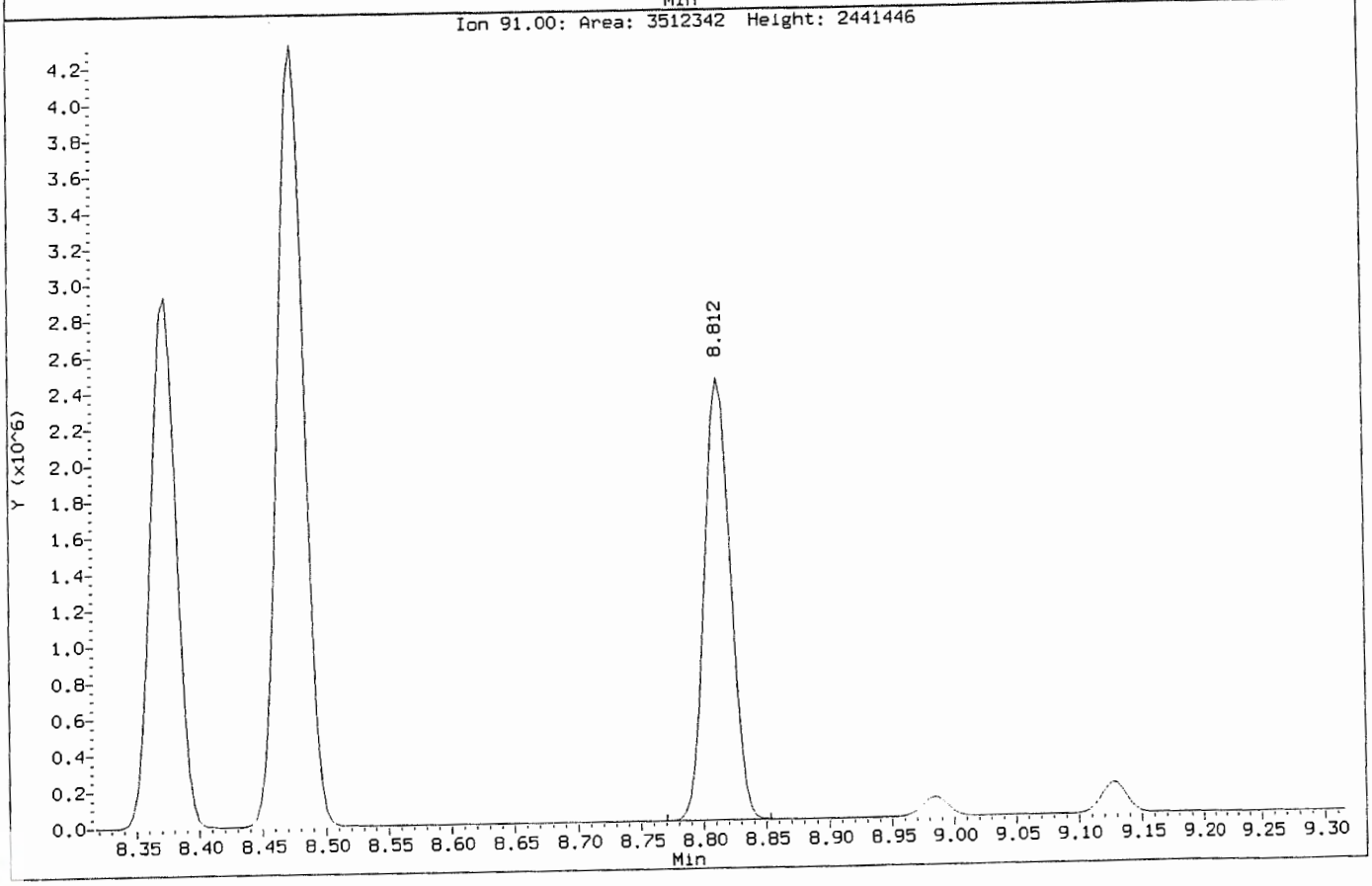
Compound: o-Xylene
CAS Number: 95-47-6



Data File: \\NAHSTWS005\Target\chem\voa9.i\U181113.b\U111310.D
Injection Date: 13-NOV-2018 15:04
Instrument: VOA9.i
Client Sample ID: VSTD150

Compound: o-Xylene
CAS Number: 95-47-6





Data File: \\NAHSTWS005\Target\chem\voa9.i\U181113.b\U111311.D Page 1
Report Date: 24-Jan-2019 18:55

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa9.i\U181113.b\U111311.D
Lab Smp Id: VSTD200 Client Smp ID: VSTD200
Inj Date : 13-NOV-2018 15:28
Operator : PC Inst ID: VOA9.i
Smp Info : VSTD200;VSTD200;1;10;
Misc Info : 180315V9;WATER;0;1;
Comment :
Method : \\NAHSTWS005\Target\chem\voa9.i\U181113.b\8260C.m
Meth Date : 24-Jan-2019 18:55 VOA9.i Quant Type: ISTD
Cal Date : 13-NOV-2018 15:04 Cal File: U111310.D
Als bottle: 12 Calibration Sample, Level: 10
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: LHAAP.sub
Target Version: 4.14
Processing Host: NAHSTW7087

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

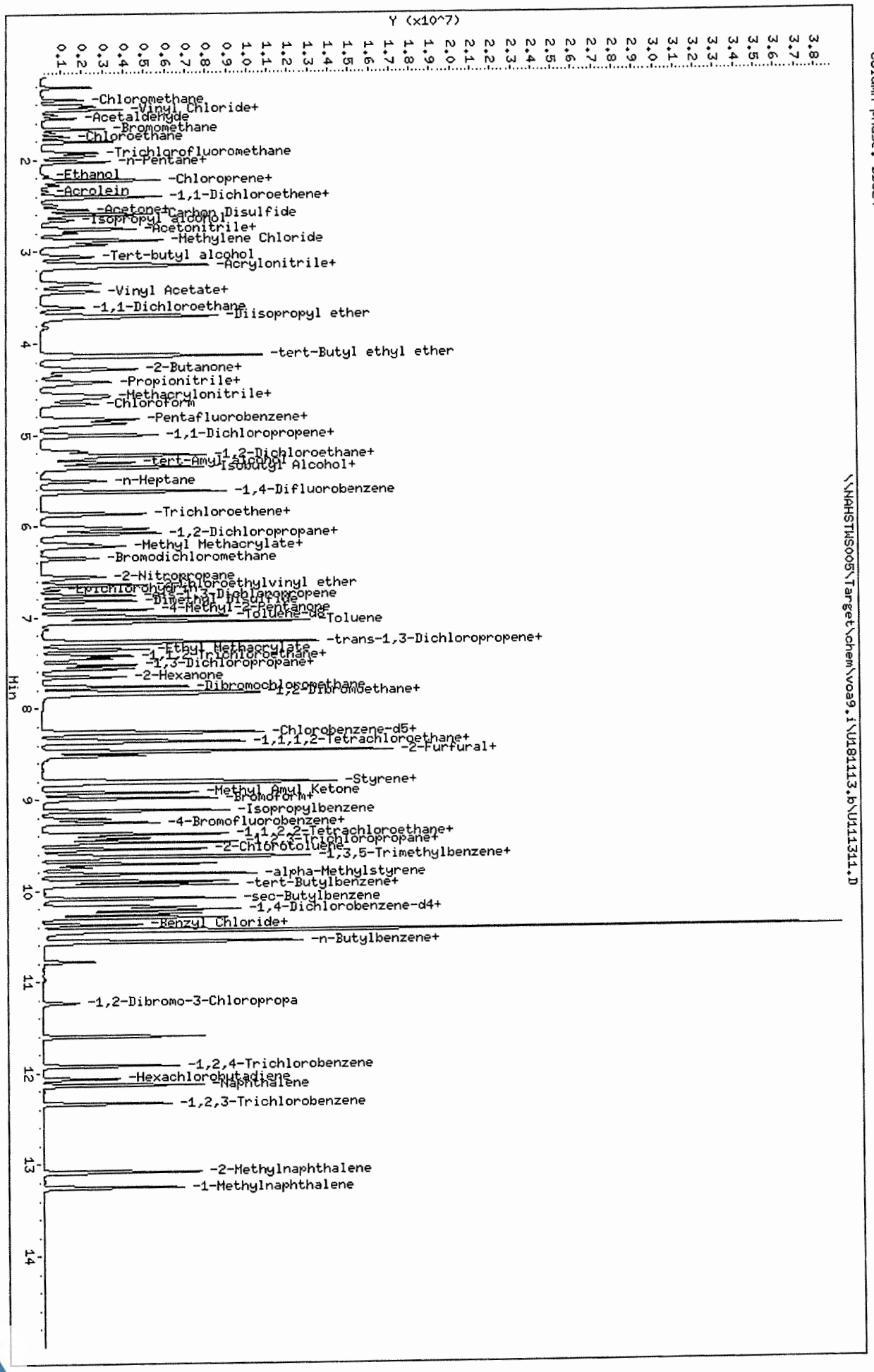
Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
* 1 Pentafluorobenzene	168	4.898	4.898	(1.000)	505644	50.0000	
* 36 1,4-Difluorobenzene	114	5.629	5.629	(1.000)	946062	50.0000	
* 47 Chlorobenzene-d5	117	8.253	8.253	(1.000)	896349	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	10.239	10.239	(1.000)	426550	50.0000	
$ 30 Dibromofluoromethane	113	4.834	4.834	(0.987)	1112100	200.000	194.87
$ 35 1,2-Dichloroethane-d4	65	5.179	5.179	(1.057)	1441844	200.000	193.54
$ 48 Toluene-d8	98	6.993	6.993	(0.847)	4386438	200.000	196.29
$ 69 4-Bromofluorobenzene	95	9.261	9.261	(1.122)	1723103	200.000	197.48
60 1,1,1,2-Tetrachloroethane	131	8.350	8.350	(1.012)	1191494	200.000	210.73(A)
31 1,1,1-Trichloroethane	97	4.830	4.830	(0.986)	1824622	200.000	205.42(A)
68 1,1,2,2-Tetrachloroethane	83	9.392	9.392	(0.917)	1884161	200.000	186.48
138 Freon TF	101	2.405	2.405	(0.491)	1007022	200.000	198.80
53 1,1,2-Trichloroethane	83	7.424	7.424	(0.900)	1043779	200.000	183.16
22 1,1-Dichloroethane	63	3.608	3.608	(0.737)	2138732	200.000	184.57
11 1,1-Dichloroethene	96	2.405	2.405	(0.491)	1081090	200.000	189.41
32 1,1-Dichloropropene	75	5.010	5.010	(0.890)	1707700	200.000	195.44
93 1,2,3-Trichlorobenzene	180	12.339	12.339	(1.205)	1636643	200.000	203.23(A)
71 1,2,3-Trichloropropane	75	9.434	9.434	(0.921)	2176006	200.000	206.38(A)
90 1,2,4-Trichlorobenzene	180	11.926	11.926	(1.165)	1712716	200.000	204.18(A)
79 1,2,4-Trimethylbenzene	105	9.943	9.943	(0.971)	4631542	200.000	195.48
89 1,2-Dibromo-3-Chloropropane	155	11.237	11.237	(1.097)	321770	200.000	198.50
57 1,2-Dibromoethane	107	7.855	7.855	(0.952)	1265930	200.000	191.84

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
88	1,2-Dichlorobenzene	146	10.573	10.573	(1.033)	2535364	200.000	186.12
33	1,2-Dichloroethane	62	5.257	5.257	(0.934)	1770998	200.000	178.89
42	1,2-Dichloropropane	63	6.086	6.086	(1.081)	1294674	200.000	192.20
75	1,3,5-Trimethylbenzene	105	9.628	9.628	(0.940)	4535917	200.000	197.91
83	1,3-Dichlorobenzene	146	10.183	10.183	(0.995)	2548608	200.000	189.77
54	1,3-Dichloropropane	76	7.567	7.567	(0.917)	2235193	200.000	182.67
84	1,4-Dichlorobenzene	146	10.258	10.258	(1.002)	2606334	200.000	198.53
26	2,2-Dichloropropane	77	4.279	4.279	(0.874)	1492829	200.000	208.03(A)
24	2-Butanone	43	4.343	4.343	(0.887)	1287268	400.000	362.16(A)
76	2-Chlorotoluene	91	9.550	9.550	(0.933)	3934986	200.000	188.39
52	2-Hexanone	43	7.653	7.653	(0.927)	2091584	400.000	401.41(A)
77	4-Chlorotoluene	91	9.643	9.643	(0.942)	4615489	200.000	191.50
82	p-Isopropyltoluene	119	10.213	10.213	(0.997)	4810748	200.000	205.94(A)
45	4-Methyl-2-Pentanone	43	6.918	6.918	(0.838)	2944165	400.000	393.73(A)
10	Acetone	43	2.491	2.491	(0.509)	869596	400.000	386.81(A)
37	Benzene	78	5.224	5.224	(0.928)	4810692	200.000	183.96(M)
74	Bromobenzene	156	9.385	9.385	(0.917)	1358088	200.000	194.09
29	Bromochloromethane	128	4.560	4.560	(0.931)	537789	200.000	180.41
39	Bromodichloromethane	83	6.352	6.352	(1.129)	1603888	200.000	204.03(A)
66	Bromoform	173	8.987	8.987	(1.089)	844522	200.000	198.75
6	Bromomethane	94	1.662	1.662	(0.340)	794649	200.000	184.09
19	Carbon Disulfide	76	2.596	2.596	(0.530)	6896612	400.000	391.27(A)
34	Carbon Tetrachloride	117	4.999	4.999	(0.888)	1483776	200.000	217.37(A)
59	Chlorobenzene	112	8.279	8.279	(1.003)	3391468	200.000	183.32
7	Chloroethane	64	1.749	1.749	(0.357)	955282	200.000	181.06(M)
28	Chloroform	83	4.661	4.661	(0.952)	2117243	200.000	181.86
3	Chloromethane	50	1.344	1.344	(0.274)	1334230	200.000	196.96
27	cis-1,2-Dichloroethene	96	4.290	4.290	(0.876)	1322041	200.000	184.51
46	cis-1,3-Dichloropropene	75	6.761	6.761	(1.201)	2224591	200.000	224.72(A)
55	Dibromochloromethane	129	7.762	7.762	(0.940)	1258930	200.000	221.96(A)
44	Dibromomethane	93	6.195	6.195	(1.101)	803081	200.000	190.24
2	Dichlorodifluoromethane	85	1.213	1.213	(0.248)	1483355	200.000	195.50
61	Ethylbenzene	106	8.373	8.373	(1.015)	1806514	200.000	193.12(M)
91	Hexachlorobutadiene	225	12.065	12.065	(1.178)	582613	200.000	183.44
67	Isopropylbenzene	105	9.130	9.130	(1.106)	5274717	200.000	193.63
62	m,p-Xylenes	106	8.474	8.474	(1.027)	4413064	400.000	382.86(AM)
17	Methylene Chloride	84	2.877	2.877	(0.587)	1246871	200.000	195.27
87	n-Butylbenzene	91	10.558	10.558	(1.031)	4531778	200.000	189.12
73	n-Propylbenzene	91	9.478	9.478	(0.926)	6433909	200.000	191.14
92	Naphthalene	128	12.136	12.136	(1.185)	5280797	200.000	209.07(A)
63	o-Xylene	106	8.815	8.815	(1.068)	2277275	200.000	197.39(MH)
81	sec-Butylbenzene	105	10.090	10.090	(0.985)	5603961	200.000	199.95
64	Styrene	104	8.826	8.826	(1.069)	3881020	200.000	199.27
78	tert-Butylbenzene	119	9.906	9.906	(0.967)	3887715	200.000	199.04
56	Tetrachloroethene	164	7.525	7.525	(0.912)	907758	200.000	193.32
50	Toluene	91	7.049	7.049	(0.854)	5182031	200.000	182.09
20	trans-1,2-Dichloroethene	96	3.147	3.147	(0.643)	1173691	200.000	187.63
51	trans-1,3-Dichloropropene	75	7.263	7.263	(1.290)	1983766	200.000	198.03
38	Trichloroethene	130	5.865	5.865	(1.042)	1238549	200.000	192.12
8	Trichlorofluoromethane	101	1.955	1.955	(0.399)	1950000	200.000	192.89
5	Vinyl Chloride	62	1.426	1.426	(0.291)	1622522	200.000	195.34

QC Flag Legend

A - Target compound detected but, quantitated amount exceeded maximum amount.
M - Compound response manually integrated.
H - Operator selected an alternate compound hit.



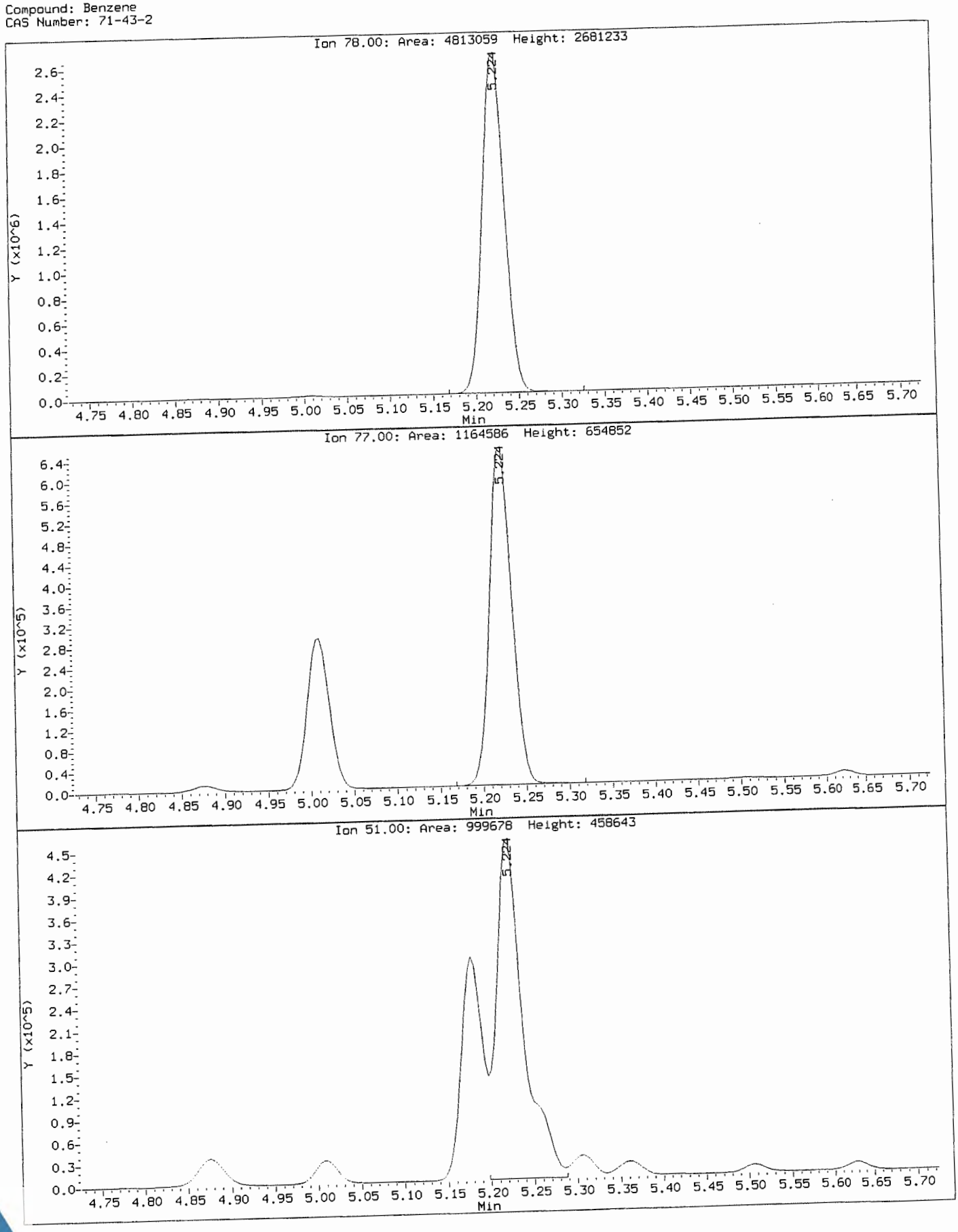
Data File: \\NAHSTWS005\Target\chem\voa9.i\U181113.b\U111311.D
Date : 13-NOV-2018 15:28
Client ID: VSTD200
Sample Info: VSTD200;VSTD200;1;10;
Purge Volume: 5.0
Column phase: DB624

\\NAHSTWS005\Target\chem\voa9.i\U181113.b\U111311.D

Instrument: VOA9.i
Operator: PC
Column diameter: 0.18

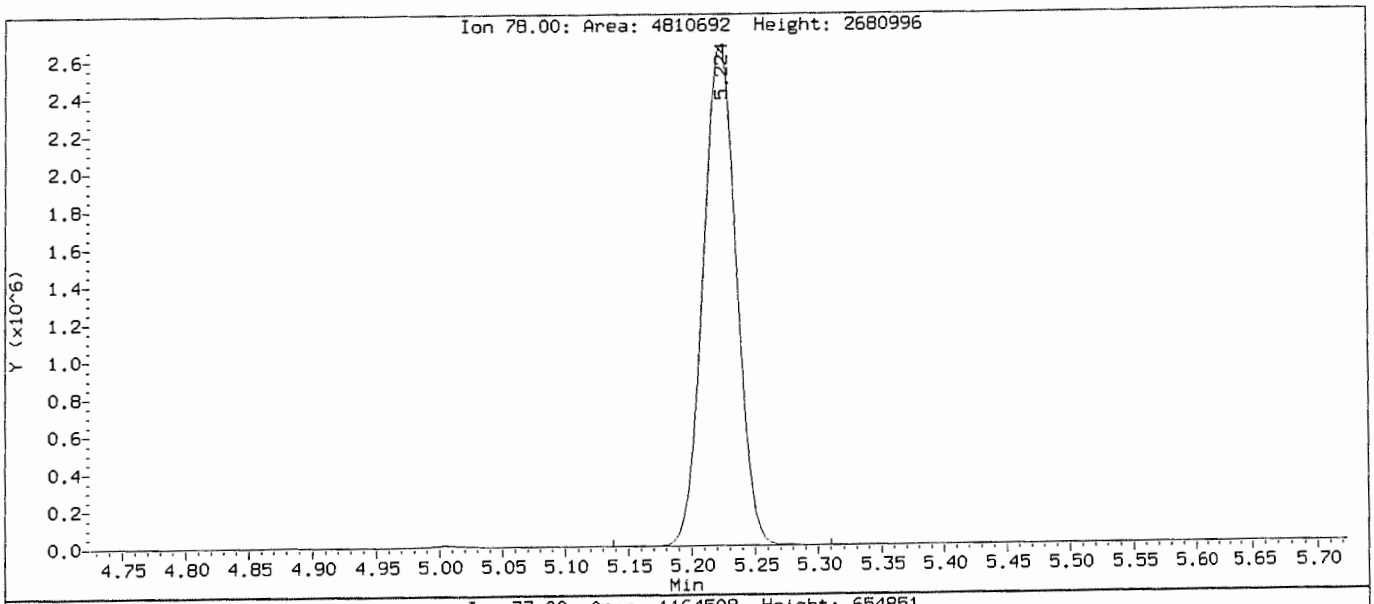
Data File: \\NAHSTWS005\Target\chem\voa9.i\U181113.b\Before\U111311.D
Injection Date: 13-NOV-2018 15:28
Instrument: VOA9.i
Client Sample ID: VSTD200

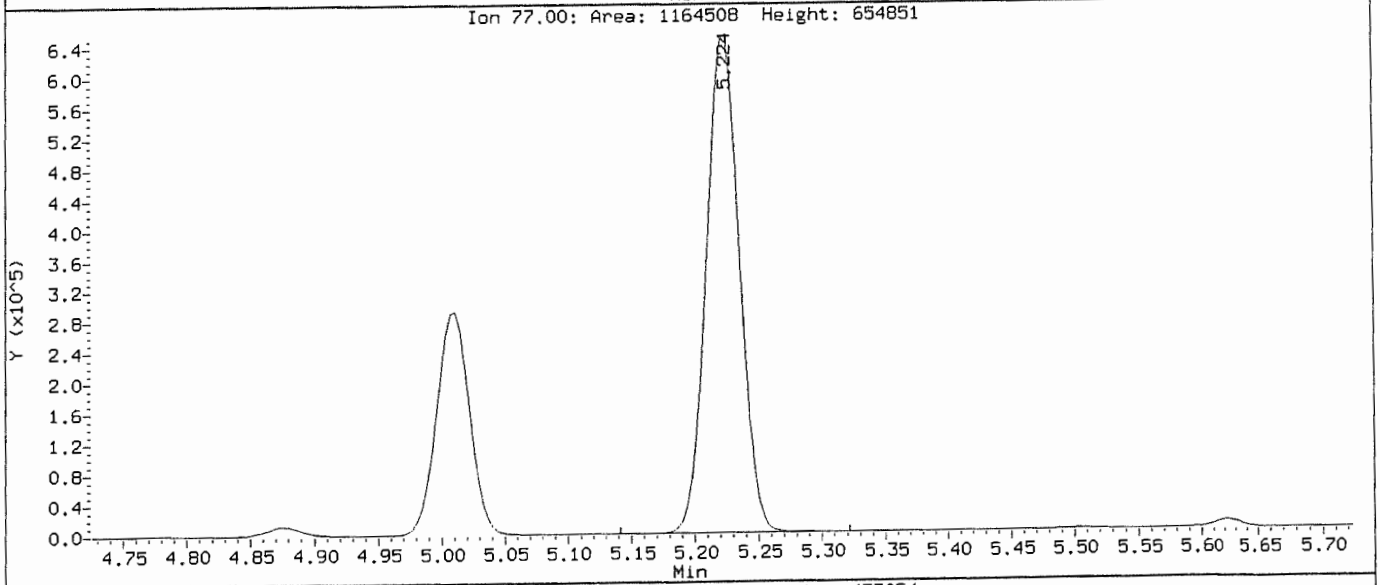
Compound: Benzene
CAS Number: 71-43-2

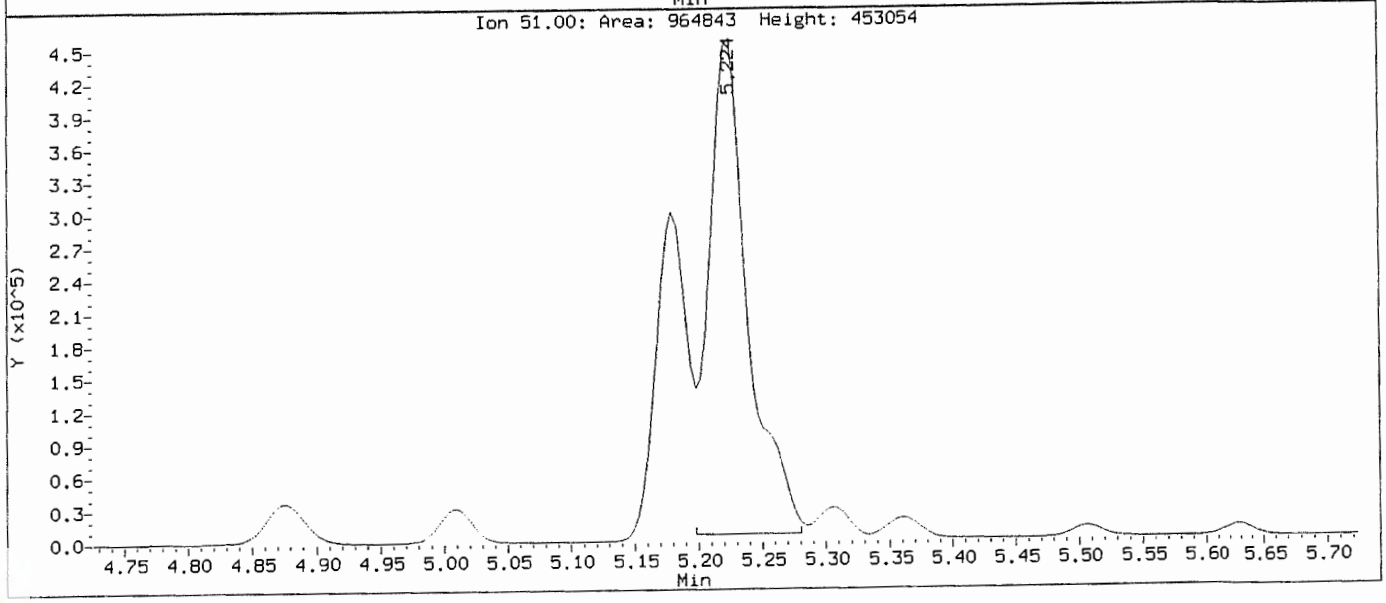


Data File: \\NAHSTWS005\Target\chem\voa9.i\U181113.b\U111311.D
Injection Date: 13-NOV-2018 15:28
Instrument: VOA9.i
Client Sample ID: VSTD200

Compound: Benzene
CAS Number: 71-43-2

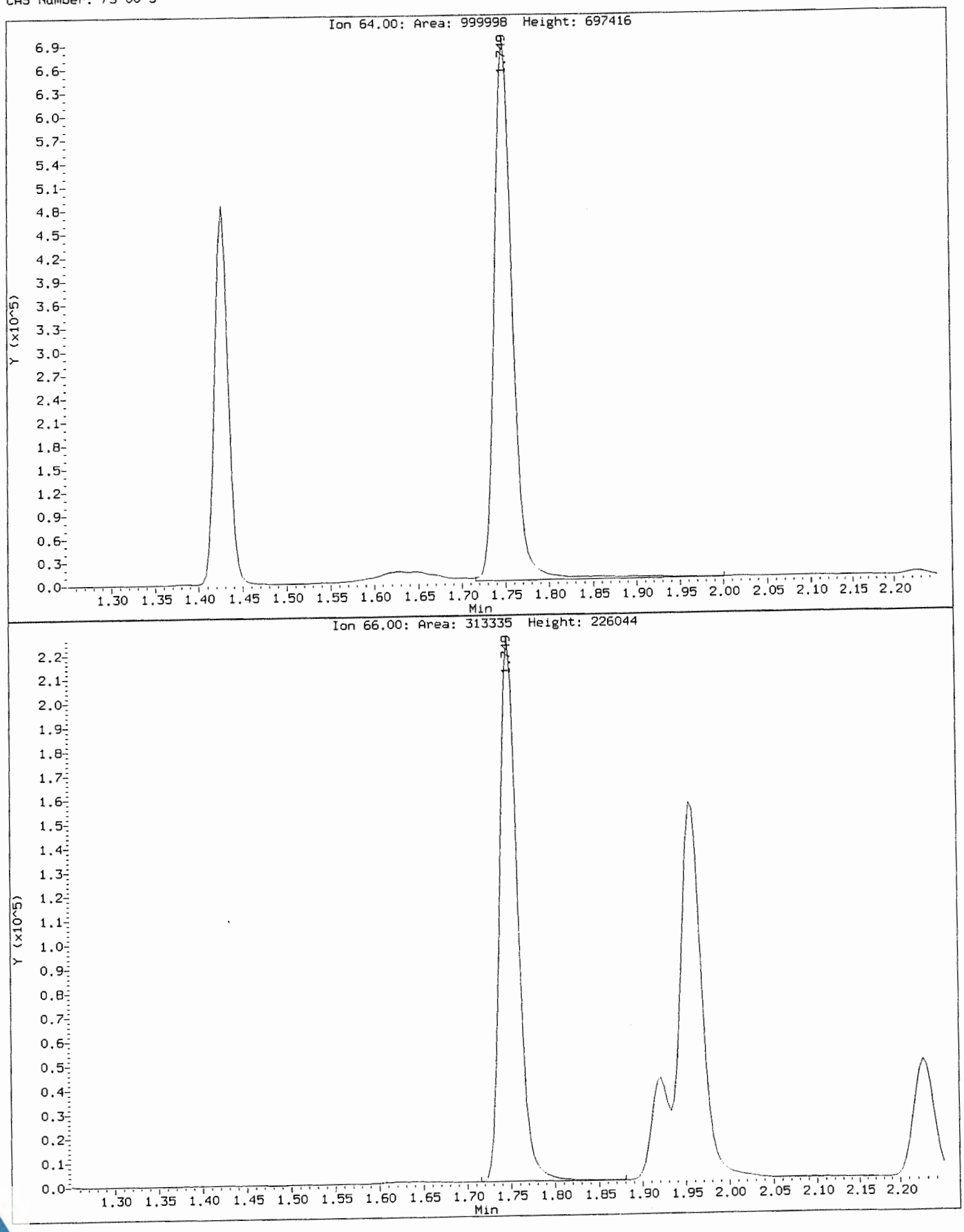






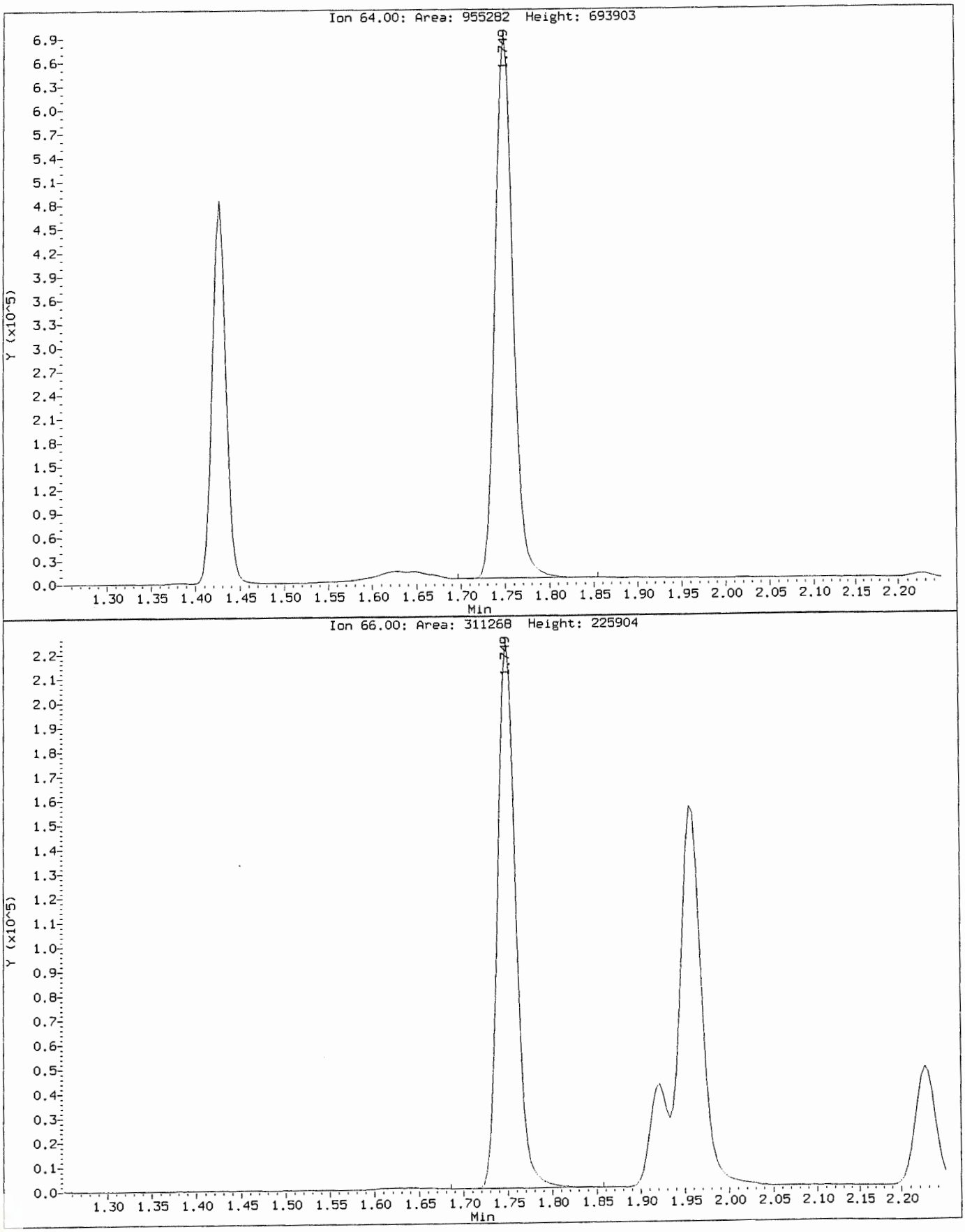
Data File: \\NAHSTWS005\Target\chem\voa9.i\U181113.b\Before\U111311.D
Injection Date: 13-NOV-2018 15:28
Instrument: VOA9.i
Client Sample ID: VSTD200

Compound: Chloroethane
CAS Number: 75-00-3



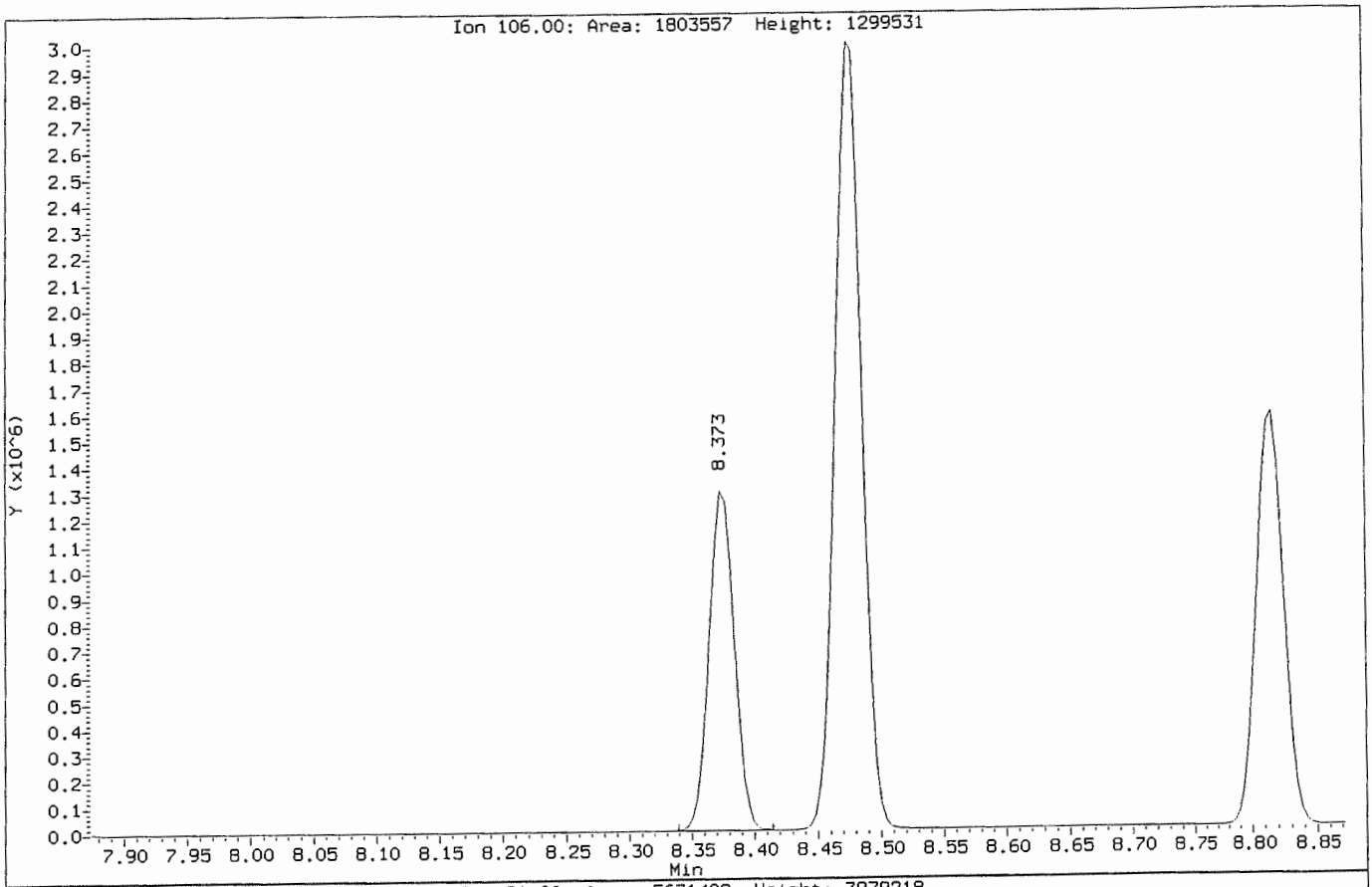
Data File: \\NAHSTWS005\Target\chem\voa9.i\U181113.b\U111311.D
Injection Date: 13-NOV-2018 15:28
Instrument: VOA9.i
Client Sample ID: VSTD200

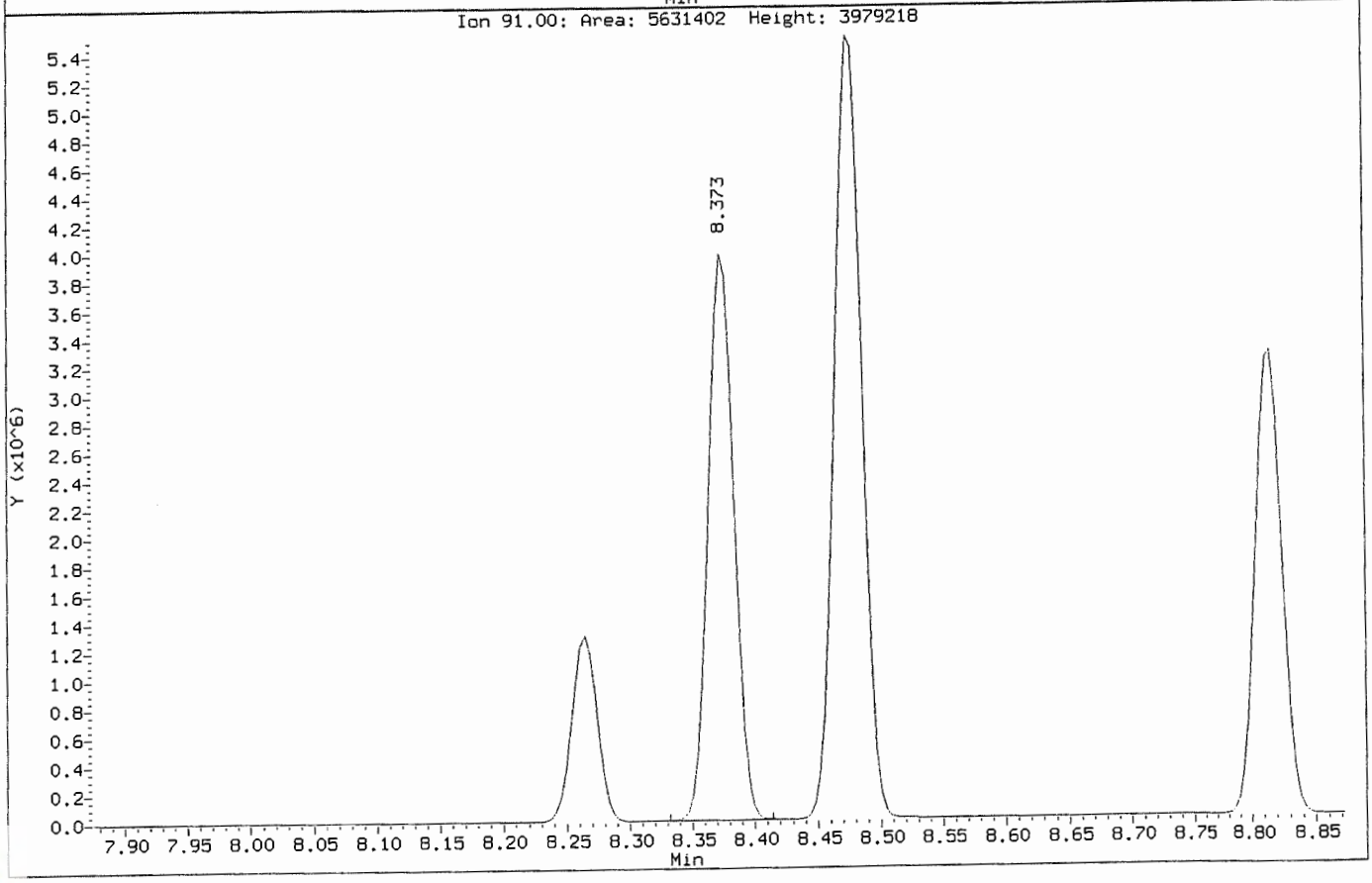
Compound: Chloroethane
CAS Number: 75-00-3



Data File: \\NAHSTWS005\Target\chem\voa9.i\U181113.b\Before\U111311.D
Injection Date: 13-NOV-2018 15:28
Instrument: VOA9.i
Client Sample ID: VSTD200

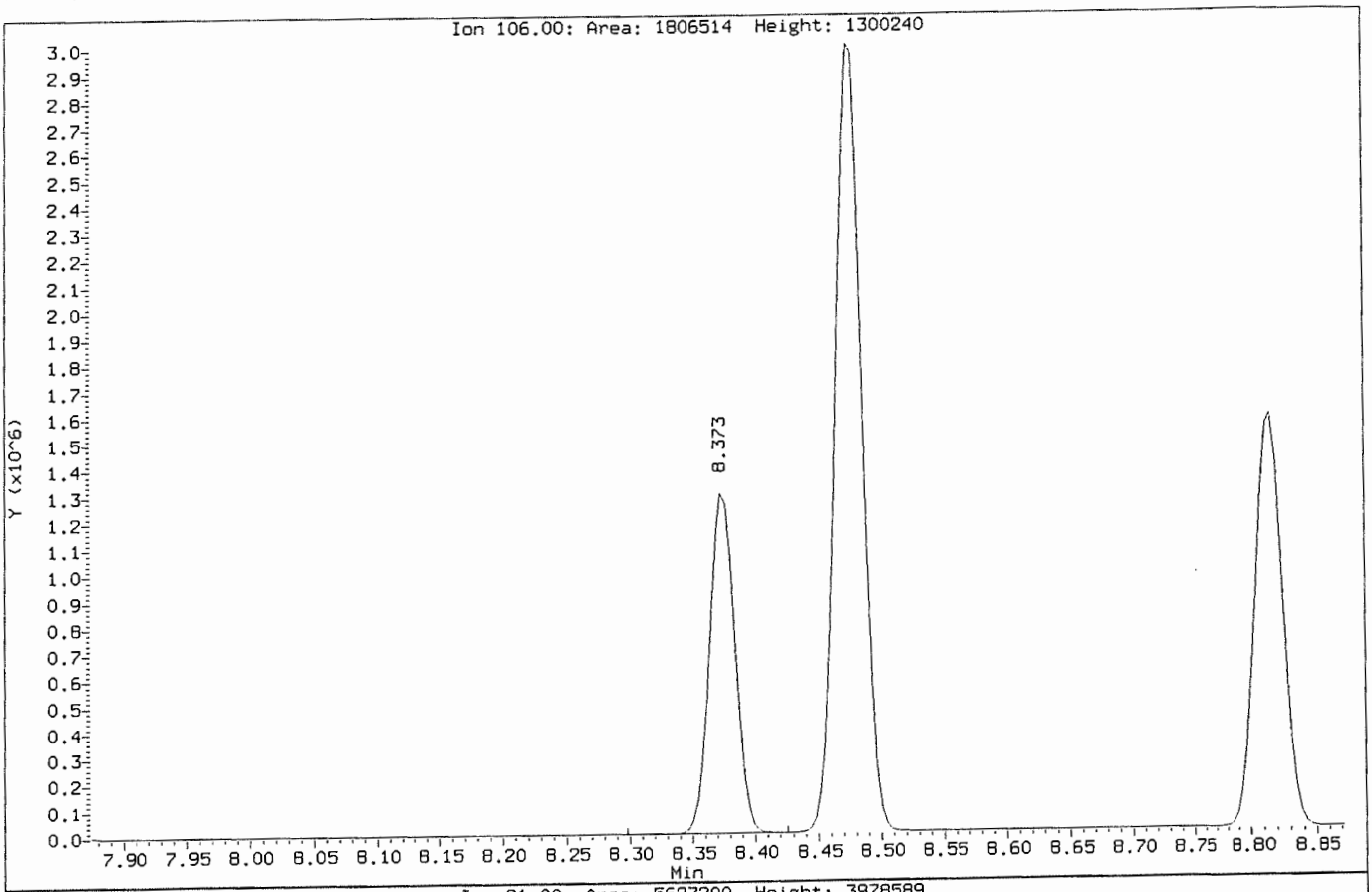
Compound: Ethylbenzene
CAS Number: 100-41-4

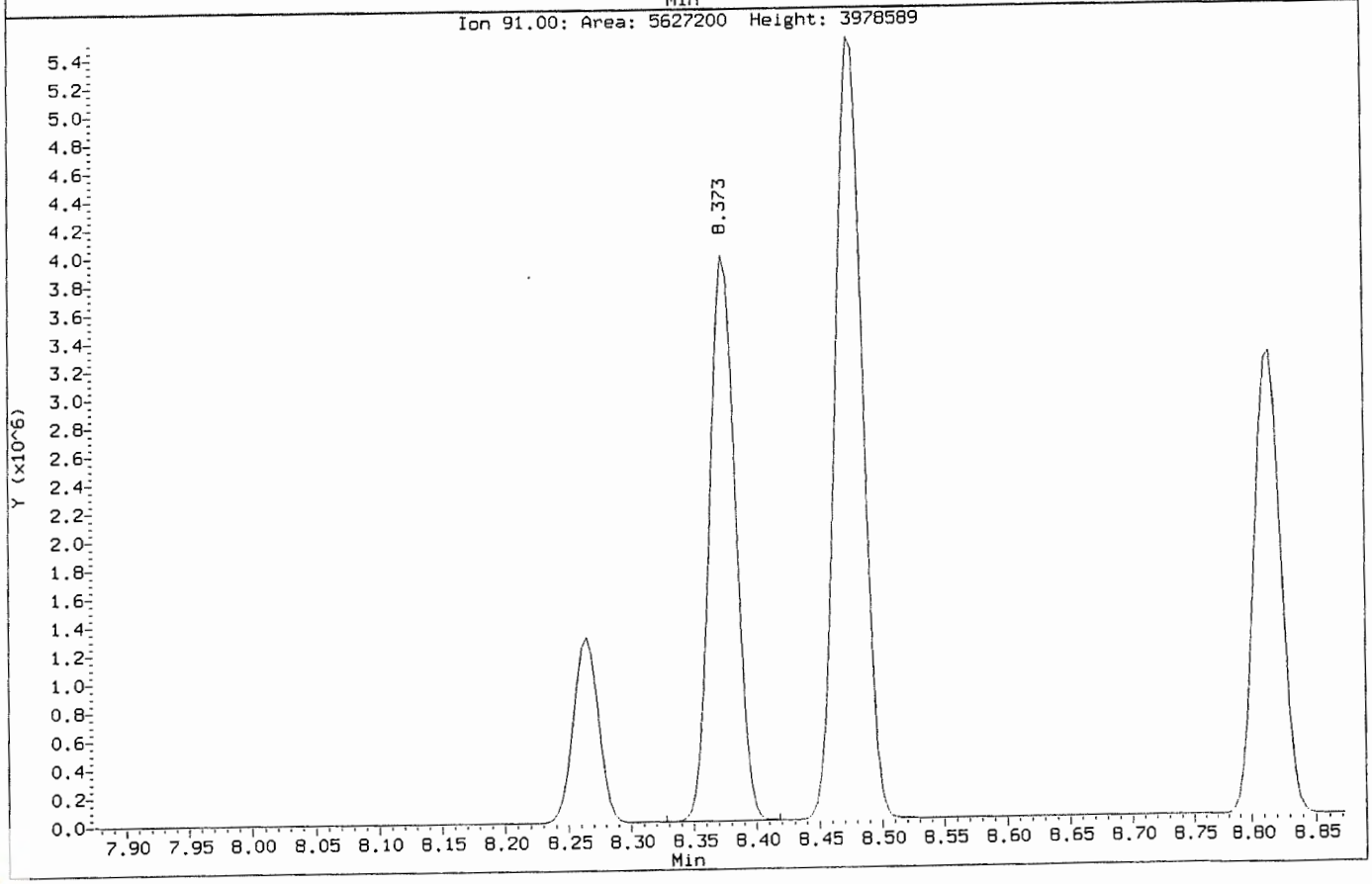




Data File: \\NAHSTWS005\Target\chem\voa9.i\U181113.b\U111311.D
Injection Date: 13-NOV-2018 15:28
Instrument: VOA9.i
Client Sample ID: VSTD200

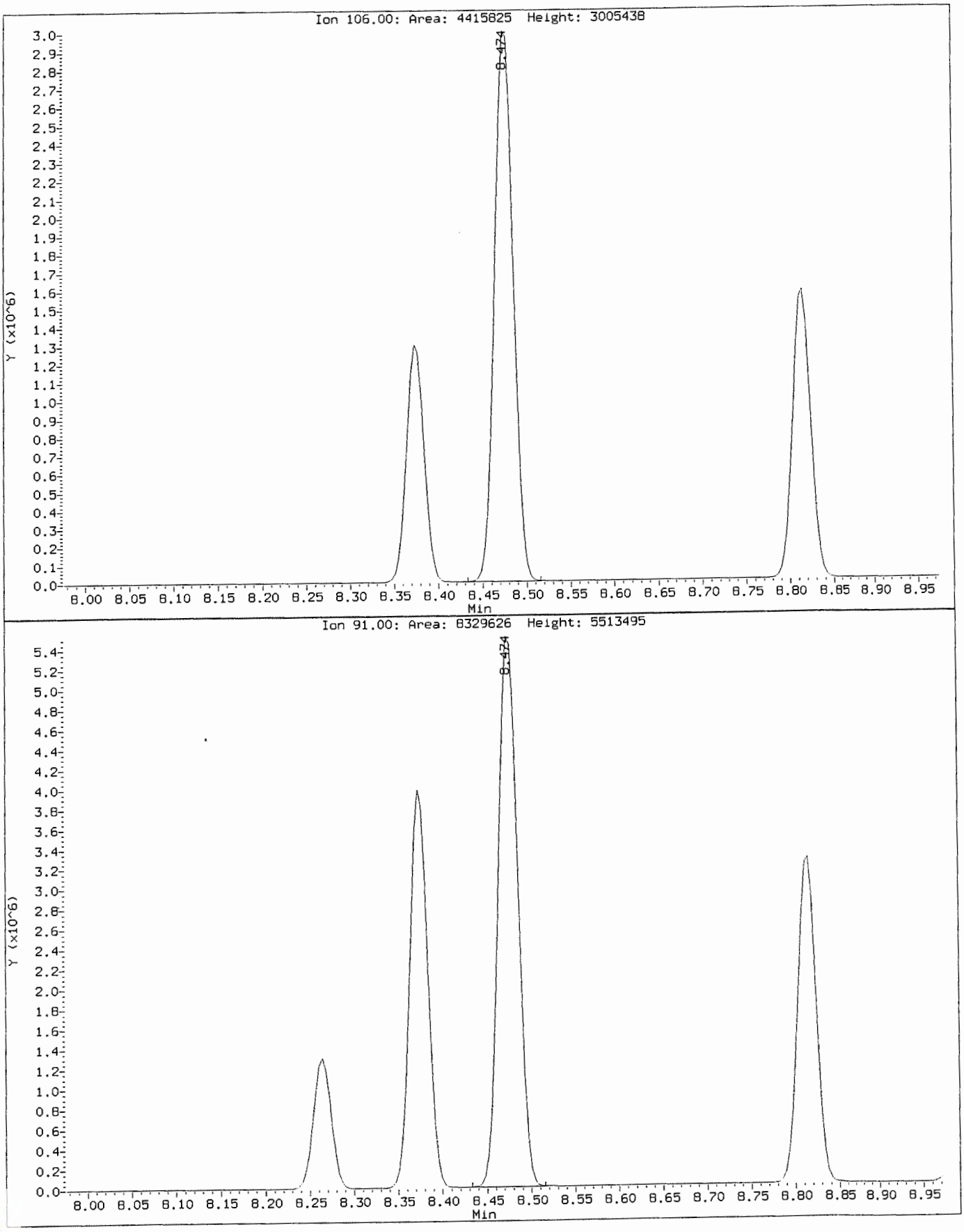
Compound: Ethylbenzene
CAS Number: 100-41-4





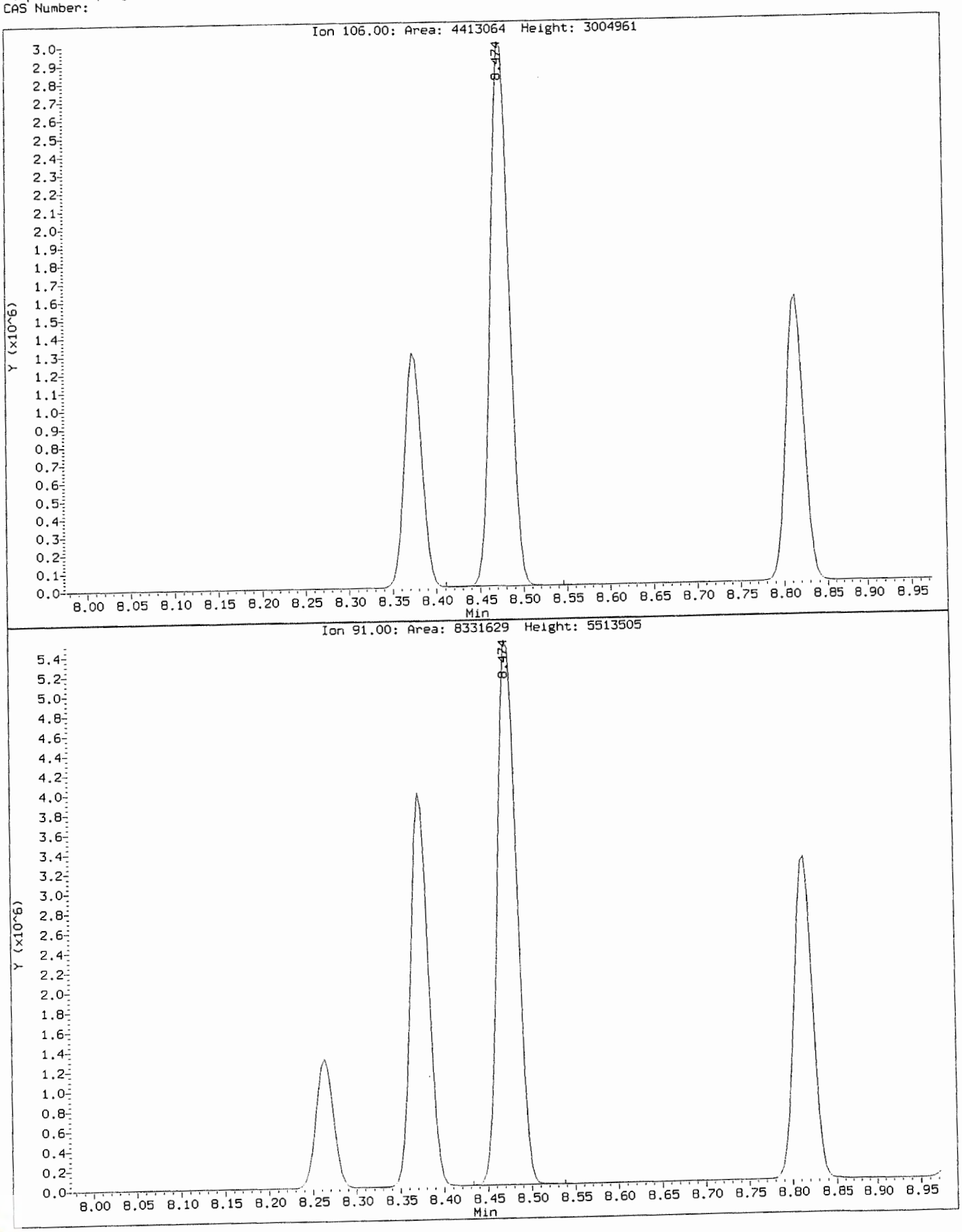
Data File: \\NAHSTWS005\Target\chem\voa9.i\U181113.b\Before\U111311.D
Injection Date: 13-NOV-2018 15:28
Instrument: VOA9.i
Client Sample ID: VSTD200

Compound: m,p-Xylenes
CAS Number:



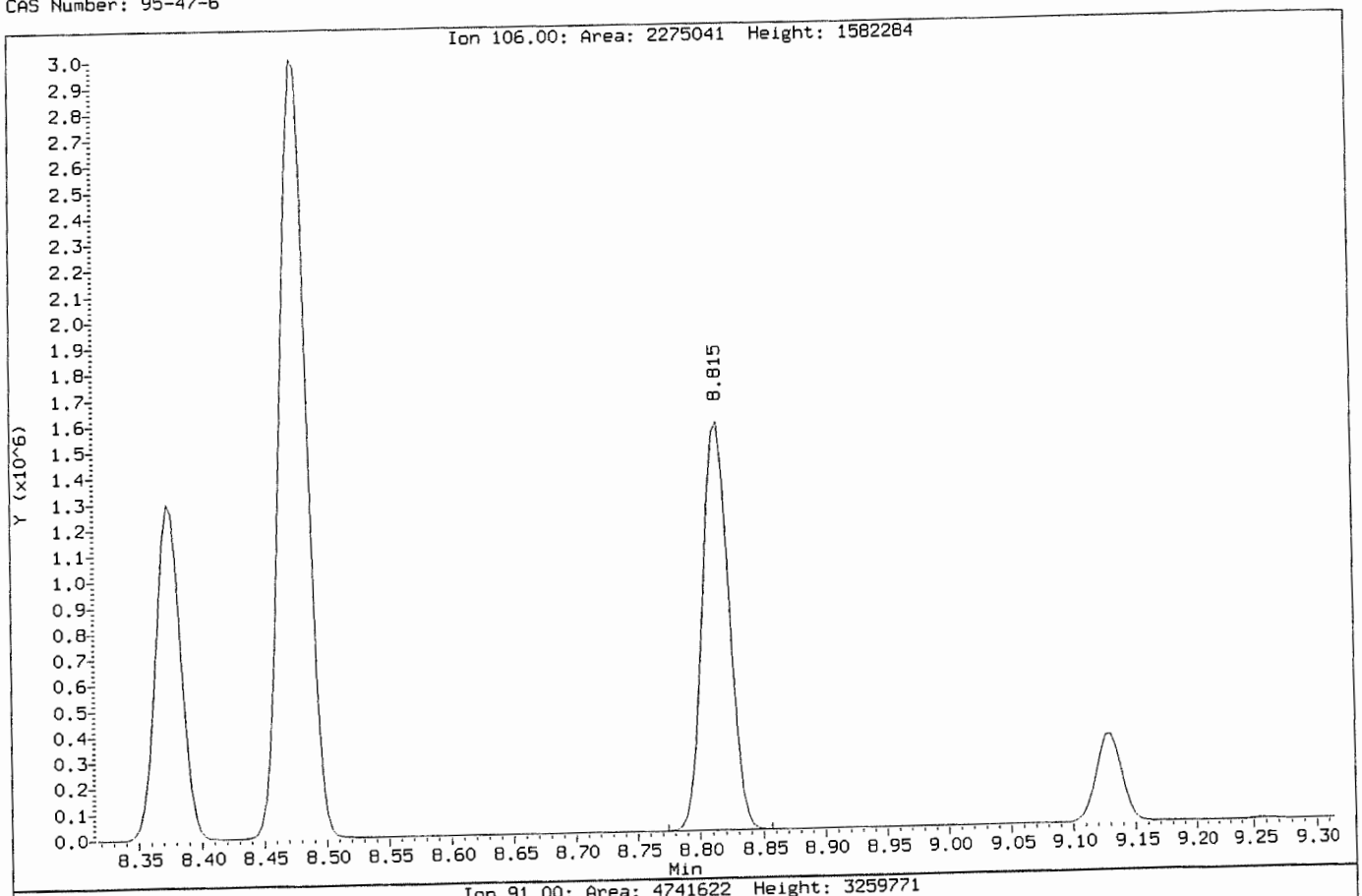
Data File: \\NAHSTWS005\Target\chem\voa9.i\U181113.b\U111311.D
Injection Date: 13-NOV-2018 15:28
Instrument: VOA9.i
Client Sample ID: VSTD200

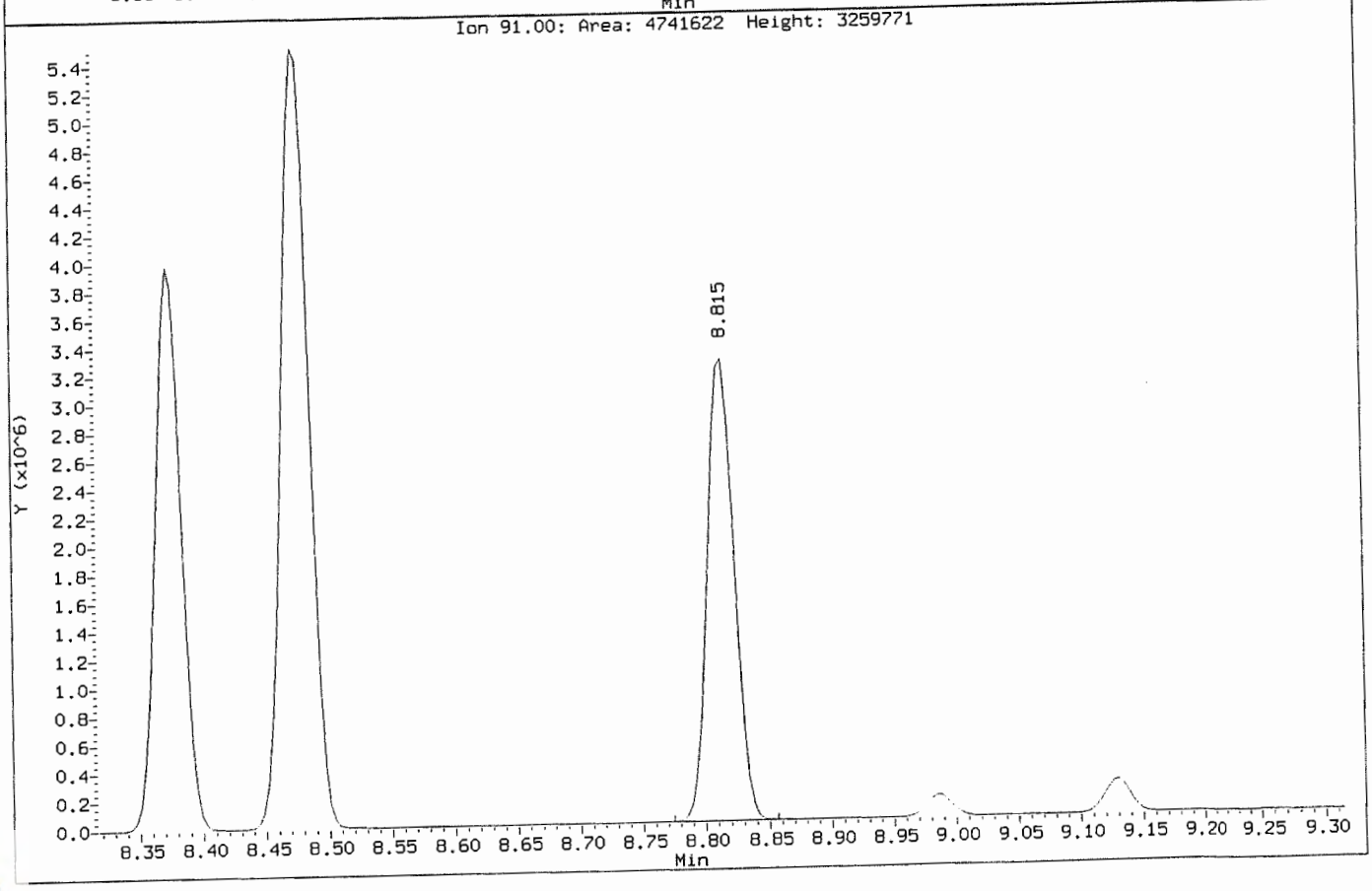
Compound: m,p-Xylenes
CAS Number:



Data File: \\NAHSTWS005\Target\chem\voa9.i\U181113.b\Before\U111311.D
Injection Date: 13-NOV-2018 15:28
Instrument: VOA9.i
Client Sample ID: VSTD200

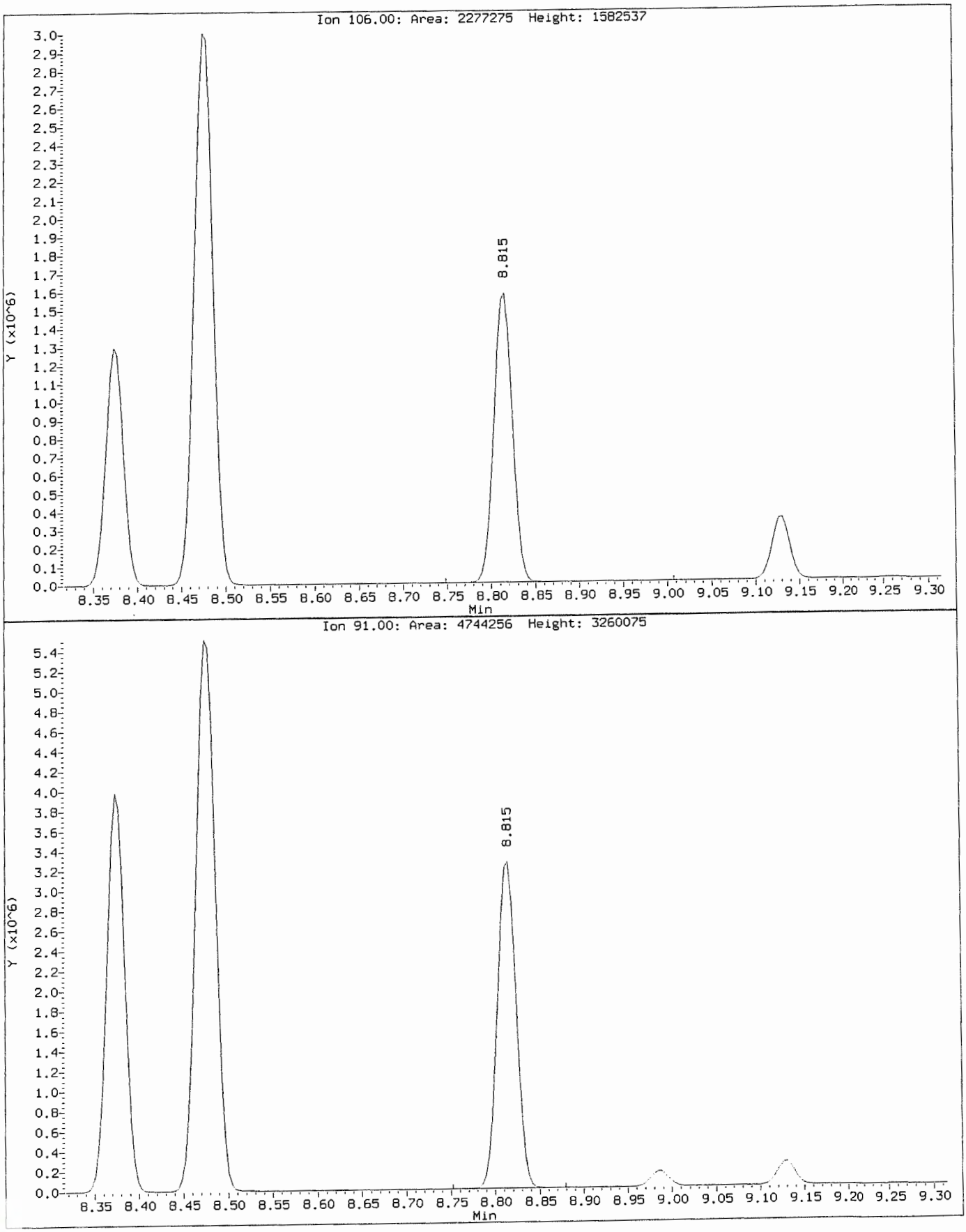
Compound: o-Xylene
CAS Number: 95-47-6





Data File: \\NAHSTWS005\Target\chem\voa9.i\U181113.b\U111311.D
Injection Date: 13-NOV-2018 15:28
Instrument: VOA9.i
Client Sample ID: VSTD200

Compound: o-Xylene
CAS Number: 95-47-6



Data File: \\NAHSTWS005\Target\chem\voa9.i\U181113.b\U111313.D Page 1
Report Date: 24-Jan-2019 18:55

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa9.i\U181113.b\U111313.D
Lab Smp Id: VICV050 Client Smp ID: VICV050
Inj Date : 13-NOV-2018 16:18
Operator : PC Inst ID: VOA9.i
Smp Info : VICV050;VICV050;2;;ICV
Misc Info : 180315V9;WATER;0;1;
Comment :
Method : \\NAHSTWS005\Target\chem\voa9.i\U181113.b\8260C.m
Meth Date : 24-Jan-2019 18:55 VOA9.i Quant Type: ISTD
Cal Date : 13-NOV-2018 15:28 Cal File: U111311.D
Als bottle: 14 QC Sample: METHSPIKE
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: LHAAP.sub
Target Version: 4.14
Processing Host: NAHSTW7087

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Cpnd Variable		Local Compound Variable

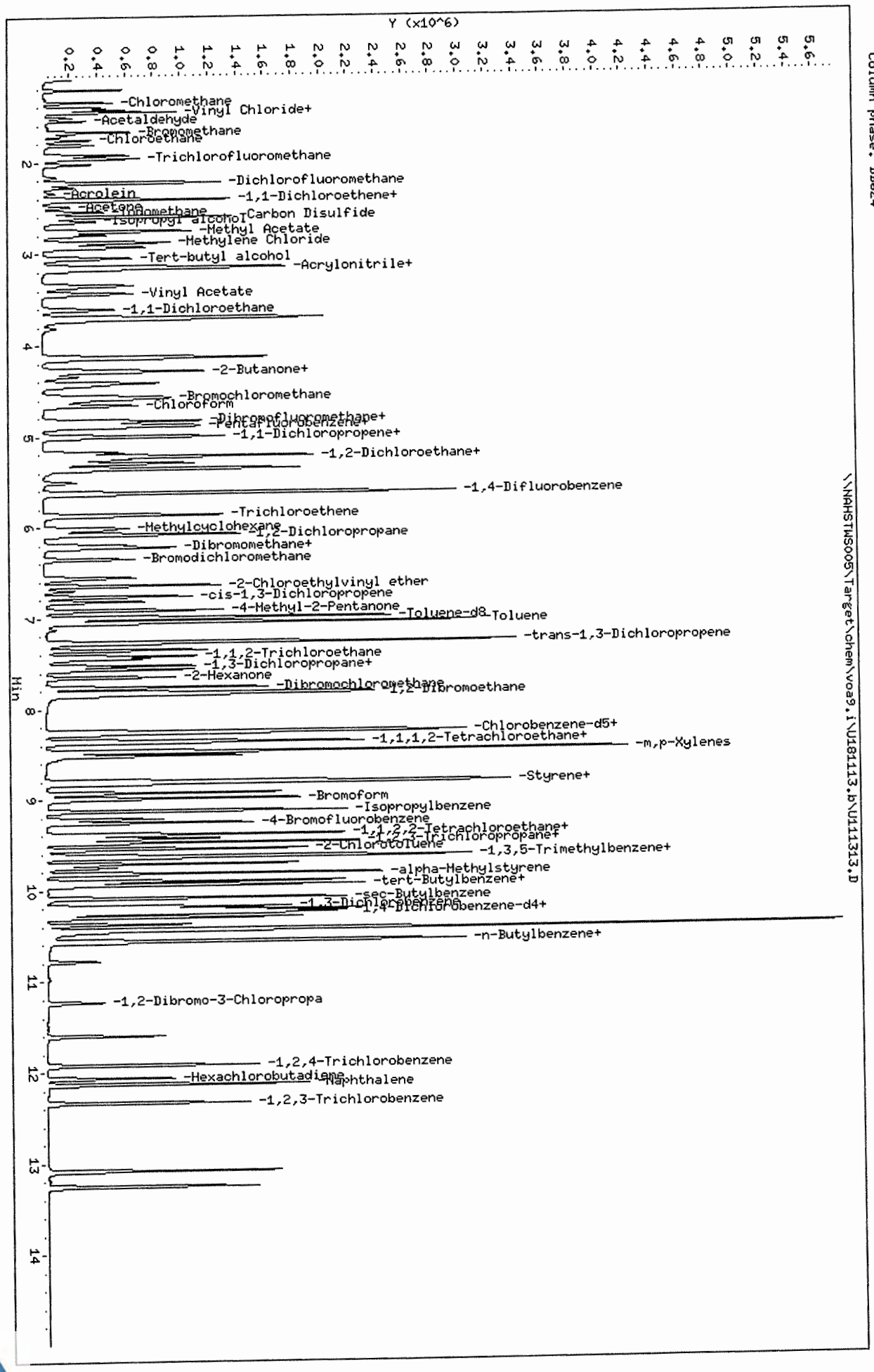
	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	CONCENTRATIONS FINAL (ug/l)
*	1 Pentafluorobenzene	168	4.898	4.898	(1.000)	492069	50.0000	
*	36 1,4-Difluorobenzene	114	5.629	5.629	(1.000)	927951	50.0000	
*	47 Chlorobenzene-d5	117	8.253	8.253	(1.000)	869612	50.0000	
*	70 1,4-Dichlorobenzene-d4	152	10.236	10.239	(1.000)	424507	50.0000	
$	30 Dibromofluoromethane	113	4.834	4.834	(0.987)	285495	50.4842	50.48
$	35 1,2-Dichloroethane-d4	65	5.179	5.179	(1.057)	379384	51.0366	51.03
$	48 Toluene-d8	98	6.990	6.993	(0.847)	1145021	51.5678	51.56
$	69 4-Bromofluorobenzene	95	9.258	9.261	(1.122)	441801	51.4072	51.40
	60 1,1,1,2-Tetrachloroethane	131	8.350	8.350	(1.012)	274179	49.9849	49.98
	31 1,1,1-Trichloroethane	97	4.830	4.830	(0.986)	416232	48.1554	48.15
	68 1,1,2,2-Tetrachloroethane	83	9.392	9.392	(0.918)	462139	45.9603	45.96
	138 Freon TF	101	2.409	2.405	(0.492)	226905	46.0312	46.03
	53 1,1,2-Trichloroethane	83	7.421	7.424	(0.899)	253396	45.8339	45.83
	22 1,1-Dichloroethane	63	3.608	3.608	(0.737)	513902	45.5744	45.57
	11 1,1-Dichloroethene	96	2.405	2.405	(0.491)	253613	45.6608	45.66
	32 1,1-Dichloropropene	75	5.006	5.010	(0.889)	399473	46.6112	46.61
	93 1,2,3-Trichlorobenzene	180	12.335	12.339	(1.205)	387107	48.3006	48.30
	71 1,2,3-Trichloropropane	75	9.430	9.434	(0.921)	517101	49.2816	49.28
	90 1,2,4-Trichlorobenzene	180	11.923	11.926	(1.165)	396308	47.4733	47.47
	79 1,2,4-Trimethylbenzene	105	9.944	9.943	(0.971)	1125014	47.7134	47.71
	89 1,2-Dibromo-3-Chloropropane	155	11.233	11.237	(1.097)	74206	47.8284	47.82
	57 1,2-Dibromoethane	107	7.852	7.855	(0.951)	310006	48.4238	48.42

Data File: \\NAHSTWS005\Target\chem\voa9.i\U181113.b\U111313.D Page 2
Report Date: 24-Jan-2019 18:55

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
88	1,2-Dichlorobenzene	146	10.573	10.573	(1.033)	609149	44.9344	44.93
33	1,2-Dichloroethane	62	5.254	5.257	(0.933)	438739	45.1829	45.18
42	1,2-Dichloropropane	63	6.082	6.086	(1.081)	312363	47.2789	47.27
75	1,3,5-Trimethylbenzene	105	9.629	9.628	(0.941)	1087962	47.7004	47.70
83	1,3-Dichlorobenzene	146	10.180	10.183	(0.995)	608880	45.5562	45.55
54	1,3-Dichloropropane	76	7.567	7.567	(0.917)	548032	46.1653	46.16
84	1,4-Dichlorobenzene	146	10.258	10.258	(1.002)	631760	48.3226	48.32
26	2,2-Dichloropropane	77	4.279	4.279	(0.874)	357603	51.2102	51.21
24	2-Butanone	43	4.343	4.343	(0.887)	319364	92.3297	92.32
76	2-Chlorotoluene	91	9.550	9.550	(0.933)	950278	45.7148	45.71
52	2-Hexanone	43	7.653	7.653	(0.927)	501801	99.2665	99.26
77	4-Chlorotoluene	91	9.640	9.643	(0.942)	1123555	46.8423	46.84
82	p-Isopropyltoluene	119	10.213	10.213	(0.998)	1142647	49.1524	49.15
45	4-Methyl-2-Pentanone	43	6.915	6.918	(0.838)	699041	96.3600	96.36
10	Acetone	43	2.487	2.491	(0.508)	216067	95.4641	95.46
37	Benzene	78	5.220	5.224	(0.927)	1188078	46.3202	46.32
74	Bromobenzene	156	9.385	9.385	(0.917)	321699	46.1973	46.19
29	Bromochloromethane	128	4.557	4.560	(0.930)	147658	50.9008	50.90
39	Bromodichloromethane	83	6.349	6.352	(1.128)	374186	48.5304	48.53
66	Bromoform	173	8.984	8.987	(1.089)	188320	47.7183	47.71(T)
6	Bromomethane	94	1.670	1.662	(0.341)	208101	50.9317	50.93
19	Carbon Disulfide	76	2.596	2.596	(0.530)	1686616	98.3287	98.32
34	Carbon Tetrachloride	117	4.999	4.999	(0.888)	330709	49.3949	49.39
59	Chlorobenzene	112	8.275	8.279	(1.003)	813973	45.3514	45.35
7	Chloroethane	64	1.756	1.749	(0.359)	230904	44.9734	44.97(M)
28	Chloroform	83	4.662	4.661	(0.952)	517425	45.6713	45.67
3	Chloromethane	50	1.344	1.344	(0.274)	306744	46.7074	46.70
27	cis-1,2-Dichloroethene	96	4.290	4.290	(0.876)	320390	45.9503	45.95
46	cis-1,3-Dichloropropene	75	6.761	6.761	(1.201)	516764	53.2223	53.22
55	Dibromochloromethane	129	7.758	7.762	(0.940)	286771	52.1150	52.11
44	Dibromomethane	93	6.191	6.195	(1.100)	195311	47.1700	47.16
2	Dichlorodifluoromethane	85	1.209	1.213	(0.247)	347869	47.8726	47.87
61	Ethylbenzene	106	8.373	8.373	(1.015)	424849	46.8143	46.81
91	Hexachlorobutadiene	225	12.065	12.065	(1.179)	145238	55.0778	55.07
67	Isopropylbenzene	105	9.126	9.130	(1.106)	1266469	47.9214	47.92
62	m,p-Xylenes	106	8.474	8.474	(1.027)	1058456	94.6512	94.65
17	Methylene Chloride	84	2.877	2.877	(0.587)	301983	48.0719	48.07
87	n-Butylbenzene	91	10.558	10.558	(1.031)	1100279	49.5091	49.50
73	n-Propylbenzene	91	9.475	9.478	(0.926)	1593592	47.5729	47.57
92	Naphthalene	128	12.133	12.136	(1.185)	1287047	51.2004	51.20
63	o-Xylene	106	8.811	8.815	(1.068)	530431	47.3909	47.39(H)
81	sec-Butylbenzene	105	10.086	10.090	(0.985)	1350043	48.4022	48.40
64	Styrene	104	8.826	8.826	(1.069)	941191	49.8117	49.81
78	tert-Butylbenzene	119	9.902	9.906	(0.967)	929608	47.8232	47.82
56	Tetrachloroethene	164	7.526	7.525	(0.912)	207441	45.5377	45.53
50	Toluene	91	7.050	7.049	(0.854)	1274589	46.1658	46.16
20	trans-1,2-Dichloroethene	96	3.147	3.147	(0.643)	282235	46.3646	46.36
51	trans-1,3-Dichloropropene	75	7.263	7.263	(1.290)	454600	47.3993	47.39
38	Trichloroethene	130	5.865	5.865	(1.042)	293292	46.3847	46.38
8	Trichlorofluoromethane	101	1.959	1.955	(0.400)	460052	46.7647	46.76
5	Vinyl Chloride	62	1.423	1.426	(0.291)	382169	47.6661	47.66

QC Flag Legend

T - Target compound detected outside RT window.
M - Compound response manually integrated.
H - Operator selected an alternate compound hit.



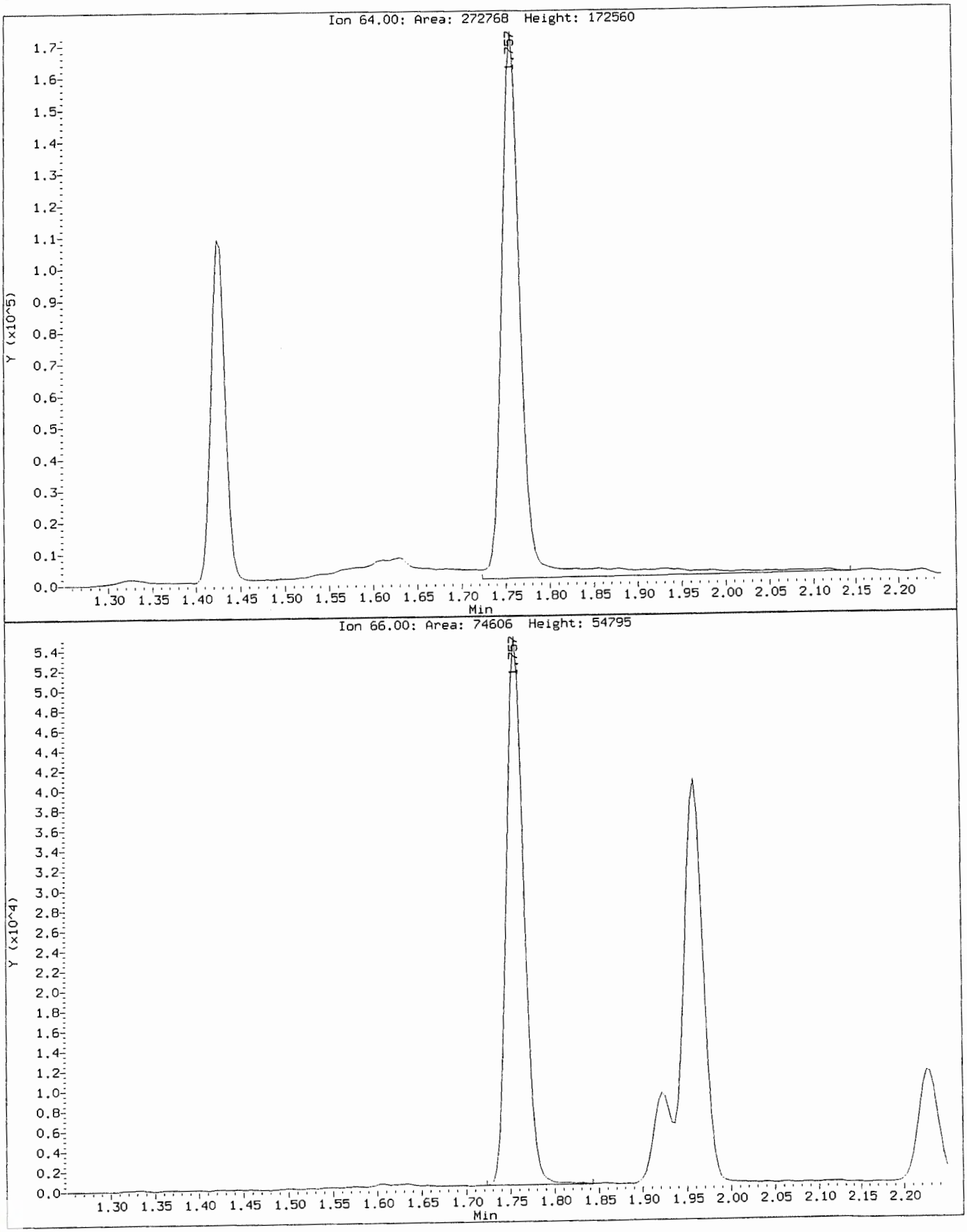
Data File: \\NAHSTWS005\Target\chem\voa9.i\U181113.b\U111313.D
Date : 13-NOV-2018 16:18
Client ID: VICV050
Sample Info: VICV050;VICV050;2;;ICV
Purge Volume: 5.0
Column phase: DB624

\\NAHSTWS005\Target\chem\voa9.i\U181113.b\U111313.D

Instrument: VOA9.i
Operator: PC
Column diameter: 0.18

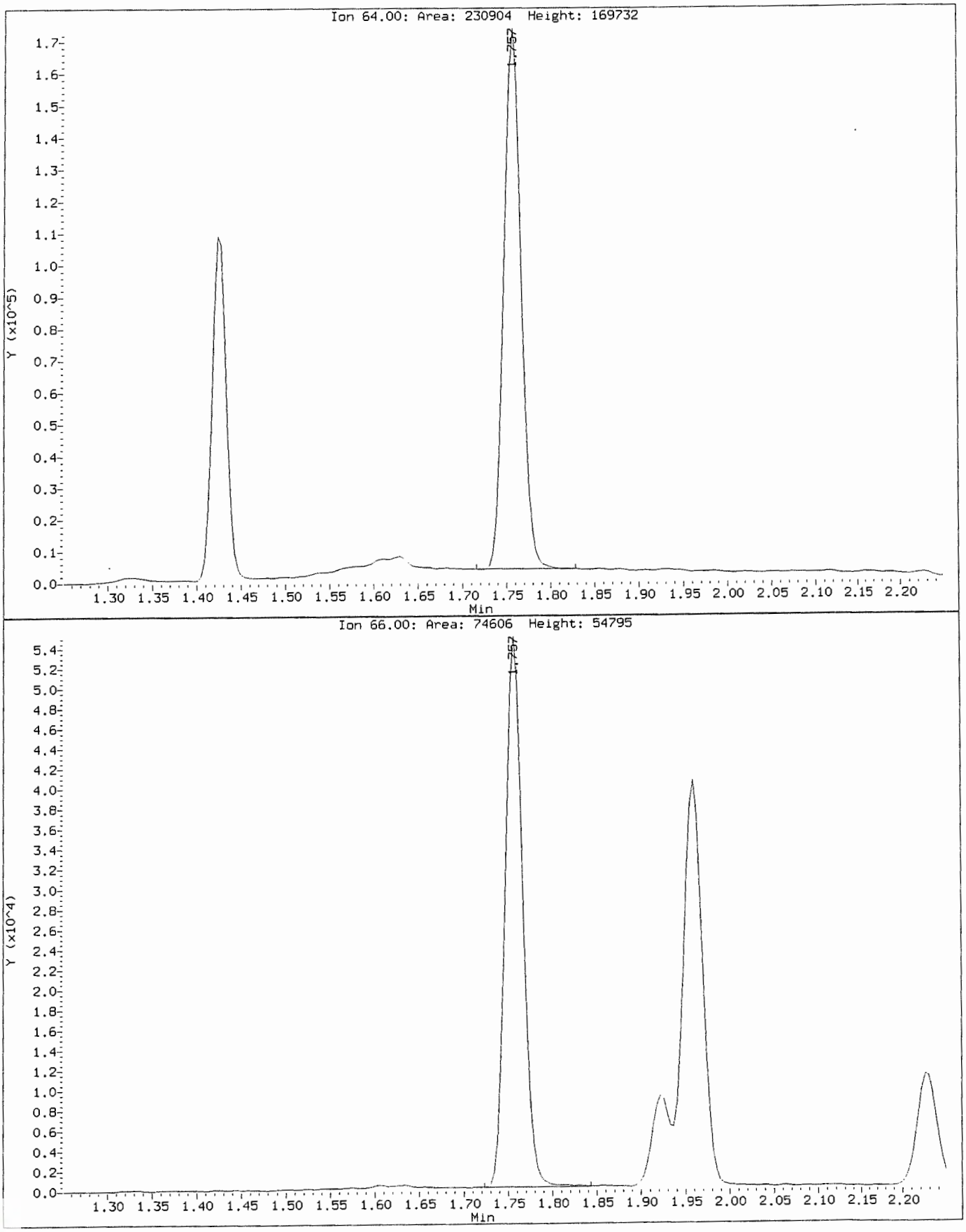
Data File: \\NAHSTWS005\Target\chem\voa9.i\U181113.b\Before\U111313.D
Injection Date: 13-NOV-2018 16:18
Instrument: VOA9.i
Client Sample ID: VICV050

Compound: Chloroethane
CAS Number: 75-00-3



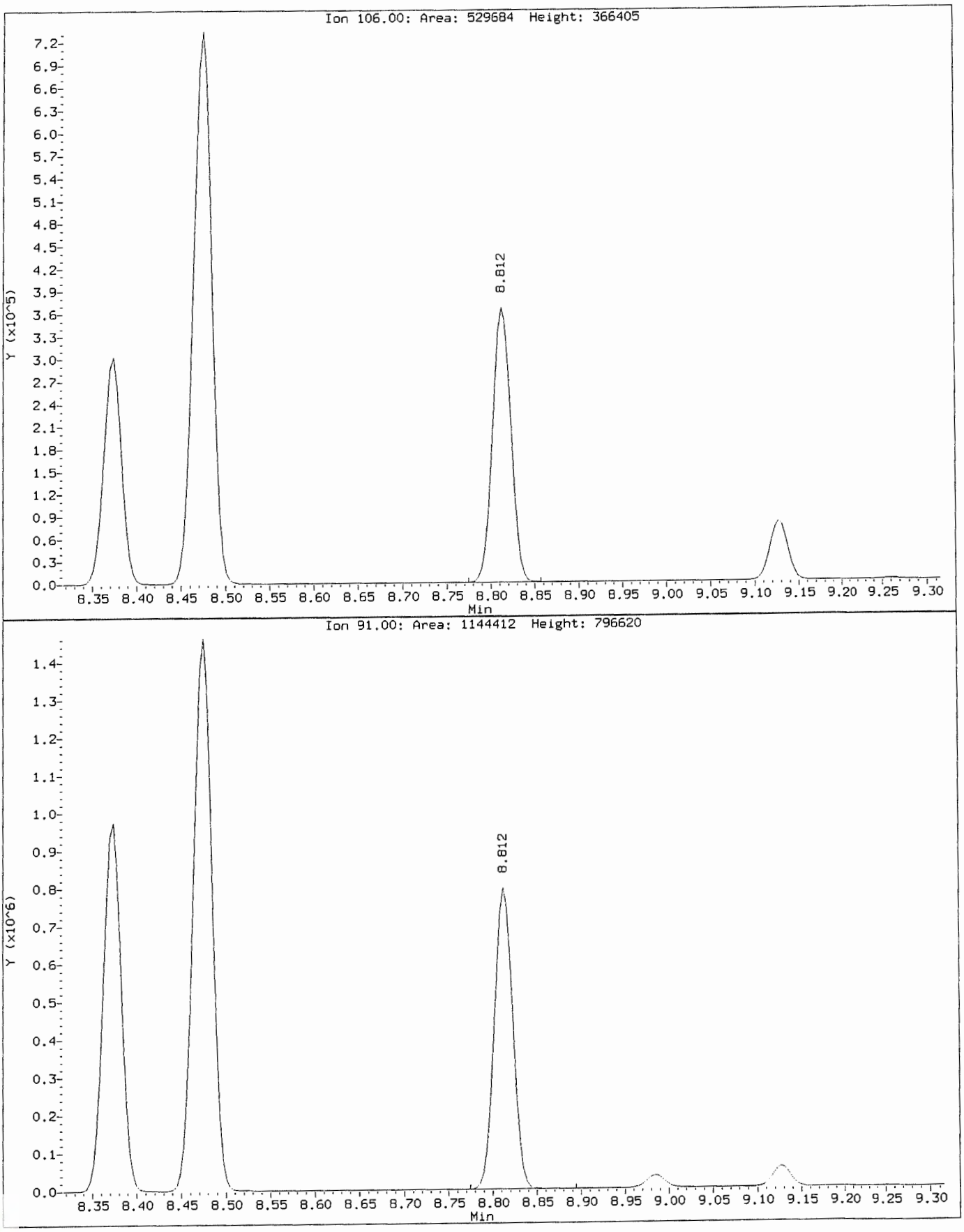
Data File: \\NAHSTWS005\Target\chem\voa9.i\U181113.b\U111313.D
Injection Date: 13-NOV-2018 16:18
Instrument: VOA9.i
Client Sample ID: VICV050

Compound: Chloroethane
CAS Number: 75-00-3



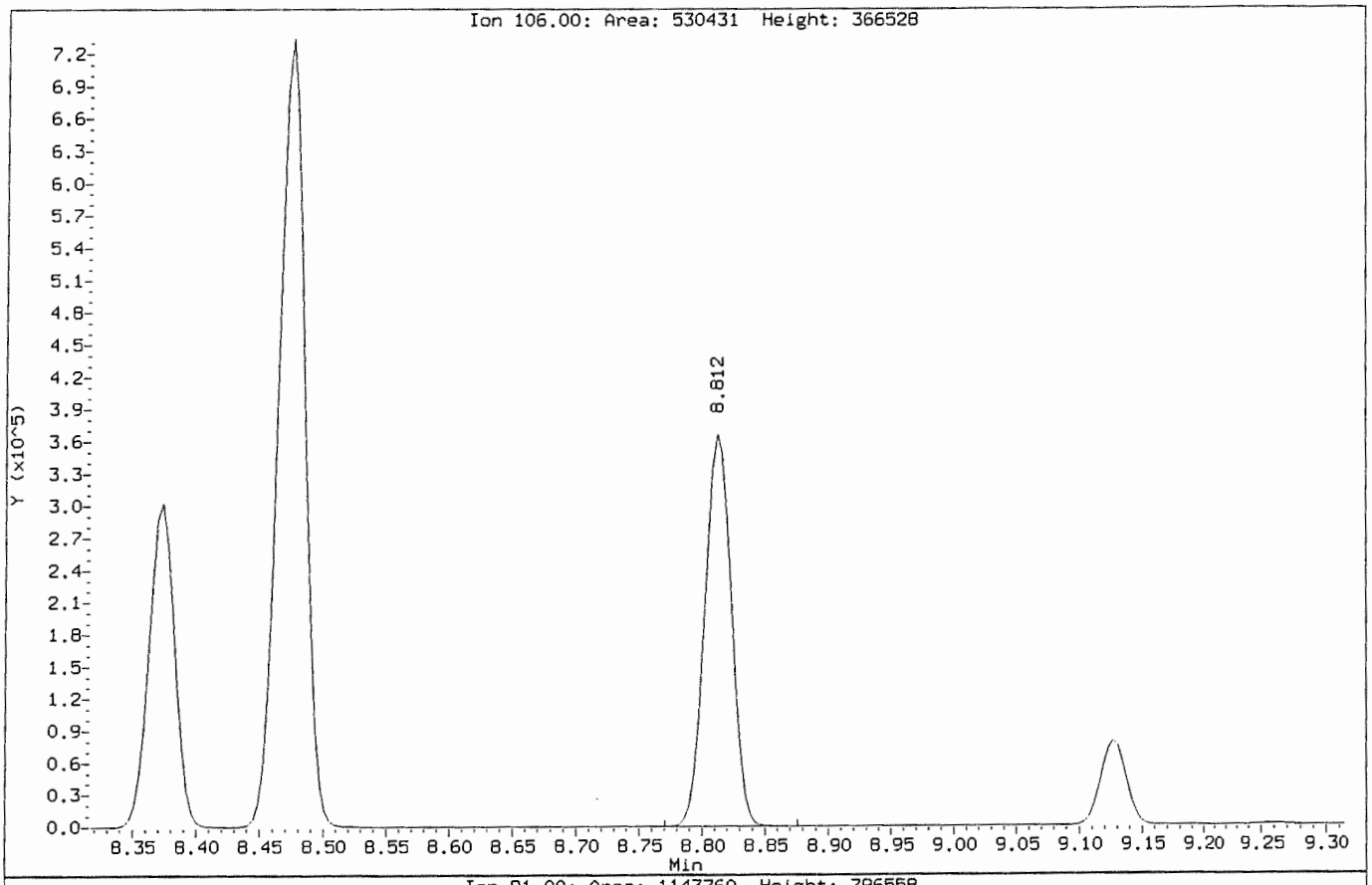
Data File: \\NAHSTWS005\Target\chem\voa9.i\U181113.b\Before\U111313.D
Injection Date: 13-NOV-2018 16:18
Instrument: VOA9.i
Client Sample ID: VICV050

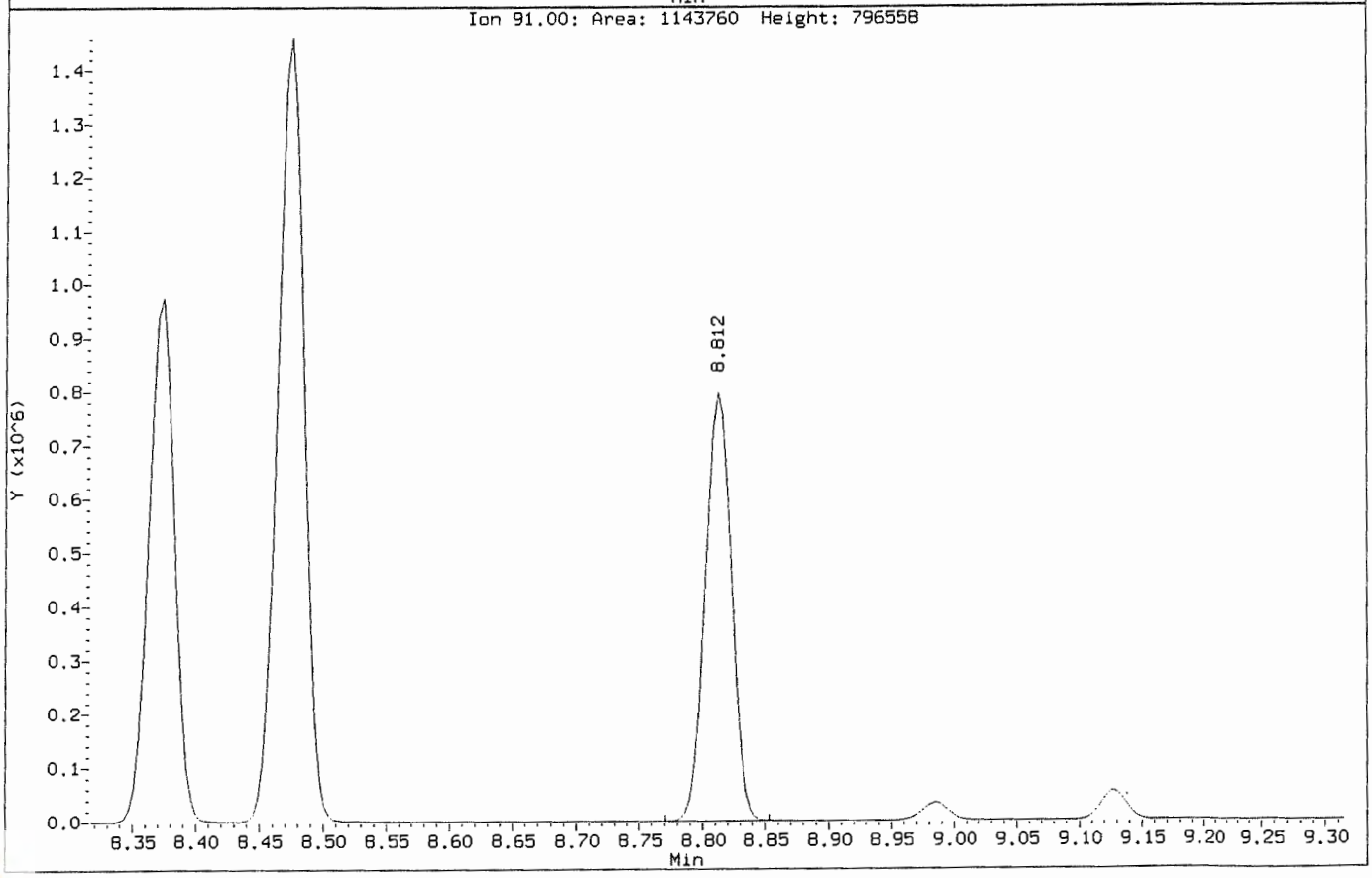
Compound: o-Xylene
CAS Number: 95-47-6



Data File: \\NAHSTWS005\Target\chem\voa9.i\U181113.b\U111313.D
Injection Date: 13-NOV-2018 16:18
Instrument: VOA9.i
Client Sample ID: VICV050

Compound: o-Xylene
CAS Number: 95-47-6





MSVOA09 -Logbook

Batch: 33997
Date: 12-03-2018
Method: 8260
Comments:

Analyst: Presenta Cabascango
Reviewer:
Laboratory: Houston

#	Samp ID	Type	Analyzed	DF	Init Wt/Vol	Final Vol	File ID	Matrix	Status	pH
1	BFB	TUNE	12-03-2018 09:57 am	1.00	50 mL	50 mL	U120301.D	Liquid	Y	NA
	Auto find/purged									
2	VSTD050	CCV	12-03-2018 10:22 am	1.00	50 mL	50 mL	U120302.D	Liquid	Y	NA
	10 uL cal std/50 mL DI									
3	VLCSW-181203	LCS	12-03-2018 10:46 am	1.00	50 mL	50 mL	U120303.D	Liquid	Y	NA
	4 uL cal std/50 mL DI									
4	BLANK	SAMP	12-03-2018 11:11 am	1.00	50 mL	50 mL	U120304.D	Liquid	Y	NA
5	VBLKW-181203	MBLK	12-03-2018 11:36 am	1.00	50 mL	50 mL	U120305.D	Liquid	Y	NA
6	HS18111440-06	SAMP	12-03-2018 12:01 pm	1.00	50 mL	50 mL	U120306.D	Liquid	Y	<2
7	HS18111440-01	SAMP	12-03-2018 12:25 pm	1.00	50 mL	50 mL	U120307.D	Liquid	Y	<2
8	HS18111440-04	SAMP	12-03-2018 12:50 pm	1.00	50 mL	50 mL	U120308.D	Liquid	Y	<2
9	HS18111440-05	SAMP	12-03-2018 01:15 pm	1.00	50 mL	50 mL	U120309.D	Liquid	Y	<2
10	HS18111440-02	SAMP	12-03-2018 01:40 pm	1.00	50 mL	50 mL	U120310.D	Liquid	Y	<2
11	HS18111440-03	SAMP	12-03-2018 02:04 pm	1.00	50 mL	50 mL	U120311.D	Liquid	Y	<2
12	HS18111440-01MS	MS	12-03-2018 02:29 pm	1.00	50 mL	50 mL	U120312.D	Liquid	Y	<2
	3.5 uL cal std/43 mL Sample									
13	HS18111440-01MSD	MSD	12-03-2018 02:54 pm	1.00	50 mL	50 mL	U120313.D	Liquid	Y	<2
	3.5 uL cal std/43 mL Sample									
14	HS18111440-05DL	SAMP	12-03-2018 03:19 pm	10.00	5 mL	50 mL	U120314.D	Liquid	Y	<2
15	HS18111440-02DL	SAMP	12-03-2018 03:44 pm	25.00	2 mL	50 mL	U120315.D	Liquid	Y	<2
16	HS18111440-03D	SAMP	12-03-2018 04:08 pm	25.00	2 mL	50 mL	U120316.D	Liquid	Y	<2
17	HS18111319-14	SAMP	12-03-2018 04:33 pm	5.00	10 mL	50 mL	U120317.D	Liquid	Y	<2
18	HS18111242-15	SAMP	12-03-2018 04:58 pm	10.00	5 mL	50 mL	U120318.D	Liquid	Y	<2
19	HS18111319-22	SAMP	12-03-2018 05:23 pm	5.00	10 mL	50 mL	U120319.D	Liquid	Y	<2
20	HS18111319-21	SAMP	12-03-2018 05:47 pm	1.00	50 mL	50 mL	U120320.D	Liquid	Y	<2
21	HS18111319-23	SAMP	12-03-2018 06:12 pm	1.00	50 mL	50 mL	U120321.D	Liquid	Y	<2
22	HS18111437-01	SAMP	12-03-2018 06:37 pm	1.00	50 mL	50 mL	U120322.D	Liquid	Y	<2
23	HS18111437-02	SAMP	12-03-2018 07:02 pm	1.00	50 mL	50 mL	U120323.D	Liquid	Y	<2
24	HS18111437-03	SAMP	12-03-2018 07:27 pm	1.00	50 mL	50 mL	U120324.D	Liquid	Y	<2
25	HS18111475-01	SAMP	12-03-2018 07:51 pm	1.00	50 mL	50 mL	U120325.D	Liquid	Y	<2
26	HS18111475-02	SAMP	12-03-2018 08:16 pm	1.00	50 mL	50 mL	U120326.D	Liquid	Y	<2
27	HS18111475-03	SAMP	12-03-2018 08:41 pm	1.00	50 mL	50 mL	U120327.D	Liquid	Y	<2
28	VSTD050-END	CCV	12-03-2018 09:06 pm	1.00	50 mL	50 mL	U120328.D	Liquid	Y	NA
	10 uL cal std/50 mL DI									

Chemical	Value
SURR SPK ID	30502-52-03
IS ID	30502-52-04
ICV STD ID	30603-43-01
LCS/MS ID	30603-43-01
CAL STD ID	30502-54-01/02
BFB ID	30502-52-03

FORM 2
WATER VOLATILE SYSTEM MONITORING COMPOUND RECOVERY

Lab Name: ALS LABORATORY GROUP Contract:

Lab Code: ALS-HS Case No.: SAS No.: SDG No.: HS18111440

	CLIENT SAMPLE NO.	SMC1 (DCE)#	SMC2 #	SMC3 (TOL)#	OTHER #	TOT OUT
01	VLCSW-181203	89	89	106	104	0
02	VBLKW-181203	92	88	106	97	0
03	HS18111440-0	93	90	106	97	0
04	HS18111440-0	94	89	105	98	0
05	HS18111440-0	94	90	105	96	0
06	HS18111440-0	94	89	105	97	0
07	HS18111440-0	93	88	105	98	0
08	HS18111440-0	93	89	104	98	0
09	HS18111440-0	91	90	106	101	0
10	HS18111440-0	90	89	107	102	0
11	HS18111440-0	93	89	107	97	0
12	HS18111440-0	94	89	106	97	0
13	HS18111440-0	94	88	105	97	0
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						
26						
27						
28						

		QC LIMITS
SMC1 (DCE)	= 1,2-Dichloroethane-d4	(0-130)
SMC2	= Dibromofluoromethane	(0-130)
SMC3 (TOL)	= Toluene-d8	(0-130)
OTHER	= 4-Bromofluorobenzene	(0-130)

Column to be used to flag recovery values

* Values outside of contract required QC limits

D System Monitoring Compound diluted out

FORM 4
VOLATILE METHOD BLANK SUMMARY

CLIENT SAMPLE NO.

VBLKW-181203

Lab Name: ALS LABORATORY GROUP Contract:

Lab Code: ALS-HS Case No.: SAS No.: SDG No.: HS18111440

Lab File ID: U120305 Lab Sample ID: VBLKW-181203

Date Analyzed: 12/03/18 Time Analyzed: 1136

GC Column: DB624 ID: 0.18 (mm) Heated Purge: (Y/N) N

Instrument ID: VOA9

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01	VLCSW-181203	VLCSW-181203	U120303	1046
02	HS18111440-0	HS18111440-06	U120306	1201
03	HS18111440-0	HS18111440-01	U120307	1225
04	HS18111440-0	HS18111440-04	U120308	1250
05	HS18111440-0	HS18111440-05	U120309	1315
06	HS18111440-0	HS18111440-02	U120310	1340
07	HS18111440-0	HS18111440-03	U120311	1404
08	HS18111440-0	HS18111440-01M	U120312	1429
09	HS18111440-0	HS18111440-01M	U120313	1454
10	HS18111440-0	HS18111440-05D	U120314	1519
11	HS18111440-0	HS18111440-02D	U120315	1544
12	HS18111440-0	HS18111440-03D	U120316	1608
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				
30				

COMMENTS:

FORM 5
VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: ALS LABORATORY GROUP Contract:

Lab Code: ALS-HS Case No.: SAS No.: SDG No.: HS18111440

Lab File ID: U120301 BFB Injection Date: 12/03/18

Instrument ID: VOA9 BFB Injection Time: 0957

GC Column: DB624 ID: 0.25 (mm) Heated Purge: (Y/N) N

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	19.8
75	30.0 - 60.0% of mass 95	50.4
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	7.2
173	Less than 2.0% of mass 174	0.5 (0.7)1
174	Greater than 50.0% of mass 95	65.8
175	5.0 - 9.0% of mass 174	5.2 (7.9)1
176	95.0 - 101.0% of mass 174	63.3 (96.2)1
177	5.0 - 9.0% of mass 176	4.5 (7.1)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VSTD050	VSTD050	U120302	12/03/18	1022
02	VLCSW-181203	VLCSW-181203	U120303	12/03/18	1046
03	VBLKW-181203	VBLKW-181203	U120305	12/03/18	1136
04	HS18111440-0	HS18111440-06	U120306	12/03/18	1201
05	HS18111440-0	HS18111440-01	U120307	12/03/18	1225
06	HS18111440-0	HS18111440-04	U120308	12/03/18	1250
07	HS18111440-0	HS18111440-05	U120309	12/03/18	1315
08	HS18111440-0	HS18111440-02	U120310	12/03/18	1340
09	HS18111440-0	HS18111440-03	U120311	12/03/18	1404
10	HS18111440-0	HS18111440-01M	U120312	12/03/18	1429
11	HS18111440-0	HS18111440-01M	U120313	12/03/18	1454
12	HS18111440-0	HS18111440-05D	U120314	12/03/18	1519
13	HS18111440-0	HS18111440-02D	U120315	12/03/18	1544
14	HS18111440-0	HS18111440-03D	U120316	12/03/18	1608
15	VSTD050-END	VSTD050-END	U120328	12/03/18	2106
16					
17					
18					
19					
20					
21					
22					

FORM V VOA

FORM 7B
VOLATILE CALIBRATION VERIFICATION SUMMARY

Lab Name: ALS LABORATORY GROUP Contract:

Lab Code: ALS-HS Case No.: SAS No.: SDG No.: HS18111440

Instrument ID: VOA9 Calibration Date: 12/03/18 Time: 1022

Lab File ID: U120302 Init. Calib. Date(s): 11/13/18 11/13/18

Init. Calib. Times: 1123 1528

GC Column: DB624 ID: 0.18 (mm)

COMPOUND	RRF or AMOUNT	RRF50.000 or AMOUNT	CCAL RRF50.000	MIN RRF	%D or %DRIFT	MAX %D or %DRIFT	CURV TYPE
cis-1,3-Dichloropropene	0.5230000	0.6194506	0.6194506	0.2	-18.44	20.00	AVRG
trans-1,3-Dichloropropene	51.420236	50.000000	0.5327924	0.1	-2.84	20.00	LINR
1,3-Dichlorobenzene	1.5740000	1.4703342	1.4703342	0.6	6.59	20.00	AVRG
2,2-Dichloropropane	0.7100000	0.7053988	0.7053988	0.1	0.65	20.00	AVRG
1,1-Dichloropropene	0.4620000	0.4478110	0.4478110	0.1	3.07	20.00	AVRG
Dibromomethane	0.2230000	0.2304791	0.2304791	0.1	-3.35	20.00	AVRG
1,2-Dibromoethane	0.3680000	0.3944978	0.3944978	0.1	-7.20	20.00	AVRG
trans-1,2-Dichloroethene	0.6180000	0.5879190	0.5879190	0.1	4.87	20.00	AVRG
1,1,1,2-Tetrachloroethane	0.3150000	0.3395590	0.3395590	0.1	-7.80	20.00	AVRG
1,1,1-Trichloroethane	0.8780000	0.7868054	0.7868054	0.1	10.39	20.00	AVRG
1,1,2,2-Tetrachloroethane	1.1840000	1.2310152	1.2310152	0.3	-3.97	20.00	AVRG
Freon TF	0.5010000	0.4077504	0.4077504	0.1	18.61	20.00	AVRG
1,1,2-Trichloroethane	0.3180000	0.3370549	0.3370549	0.1	-5.99	20.00	AVRG
1,1-Dichloroethane	1.1460000	1.1161657	1.1161657	0.2	2.60	20.00	AVRG
1,1-Dichloroethene	0.5640000	0.5137455	0.5137455	0.1	8.91	20.00	AVRG
Trichlorofluoromethane	1.0000000	0.8396263	0.8396263	0.1	16.04	20.00	AVRG
1,2,3-Trichlorobenzene	0.9440000	0.8900098	0.8900098	0.1	5.72	20.00	AVRG
Toluene	1.5870000	1.6068067	1.6068067	0.4	-1.25	20.00	AVRG
1,2,4-Trichlorobenzene	0.9830000	0.9007144	0.9007144	0.2	8.37	20.00	AVRG
1,2,4-Trimethylbenzene	2.7770000	2.6181414	2.6181414	0.1	5.72	20.00	AVRG
Tetrachloroethene	0.2620000	0.2386661	0.2386661	0.2	8.91	20.00	AVRG
Trichloroethene	0.3410000	0.3303131	0.3303131	0.2	3.13	20.00	AVRG
1,2-Dichlorobenzene	1.5970000	1.5026116	1.5026116	0.4	5.91	20.00	AVRG
1,2-Dichloroethane	0.5230000	0.5212016	0.5212016	0.1	0.34	20.00	AVRG
1,2-Dichloropropane	0.3560000	0.3886007	0.3886007	0.1	-9.16	20.00	AVRG
1,3,5-Trimethylbenzene	2.6860000	2.4969332	2.4969332	0.1	7.04	20.00	AVRG
1,3-Dichloropropane	0.6820000	0.7236465	0.7236465	0.1	-6.11	20.00	AVRG
1,4-Dichlorobenzene	49.532334	50.000000	1.5254445	0.4	0.94	20.00	LINR
2-Butanone	0.3510000	0.3560549	0.3560549	0.1	-1.44	20.00	AVRG
2-Chlorotoluene	2.4480000	2.3167071	2.3167071	0.1	5.36	20.00	AVRG
2-Hexanone	0.2910000	0.3318504	0.3318504	0.1	-14.04	20.00	AVRG
4-Chlorotoluene	2.8250000	2.7611195	2.7611195	0.1	2.26	20.00	AVRG
tert-Butylbenzene	2.2890000	1.9901586	1.9901586	0.1	13.06	20.00	AVRG
4-Methyl-2-Pentanone	0.4170000	0.4707709	0.4707709	0.1	-12.89	20.00	AVRG
Acetone	109.76096	100.00000	0.2509713	0.1	-9.76	20.00	LINR
Benzene	1.3820000	1.4376043	1.4376043	0.5	-4.02	20.00	AVRG
Bromobenzene	0.8200000	0.8250387	0.8250387	0.1	-0.61	20.00	AVRG
Bromochloromethane	0.2950000	0.3091002	0.3091002	0.1	-4.78	20.00	AVRG
Bromodichloromethane	0.4160000	0.4355406	0.4355406	0.2	-4.70	20.00	AVRG
Bromoform	49.765116	50.000000	0.2261539	0.1	0.47	20.00	2RDR
Bromomethane	51.229443	50.000000	0.4254787	0.1	-2.46	20.00	LINR
Carbon Disulfide	1.7430000	1.7321636	1.7321636	0.1	0.62	20.00	AVRG

FORM 7B
VOLATILE CALIBRATION VERIFICATION SUMMARY

Lab Name: ALS LABORATORY GROUP Contract:

Lab Code: ALS-HS Case No.: SAS No.: SDG No.: HS1811144

Instrument ID: VOA9 Calibration Date: 12/03/18 Time: 1022

Lab File ID: U120302 Init. Calib. Date(s): 11/13/18 11/13/18

Init. Calib. Times: 1123 1528

GC Column: DB624 ID: 0.18 (mm)

COMPOUND	RRF or AMOUNT	RRF50.000 or AMOUNT	CCAL RRF50.000	MIN RRF	%D or %DRIFT	MAX %D or %DRIFT	CURV TYPE
Carbon Tetrachloride	0.3610000	0.3407071	0.3407071	0.1	5.62	20.00	AVRG
Chlorobenzene	1.0320000	1.0292177	1.0292177	0.5	0.27	20.00	AVRG
Chloroethane	0.5220000	0.5547833	0.5547833	0.1	-6.28	20.00	AVRG
Chloroform	1.1510000	1.0831595	1.0831595	0.2	5.89	20.00	AVRG
Chloromethane	54.168101	50.000000	0.7234409	0.1	-8.34	20.00	LINR
cis-1,2-Dichloroethene	0.7080000	0.6820038	0.6820038	0.1	3.67	20.00	AVRG
Dibromochloromethane	0.3160000	0.3562079	0.3562079	0.1	-12.72	20.00	AVRG
Dichlorodifluoromethane	42.362995	50.000000	0.6238518	0.1	15.27	20.00	LINR
Ethylbenzene	0.5220000	0.5085484	0.5085484	0.1	2.58	20.00	AVRG
Hexachlorobutadiene	48.154780	50.000000	0.2967884	0.1	3.69	20.00	2RDR
Isopropylbenzene	1.5190000	1.3975384	1.3975384	0.1	8.00	20.00	AVRG
m,p-Xylenes	0.6430000	0.6311931	0.6311931	0.1	1.84	20.00	AVRG
Methylene Chloride	52.135857	50.000000	0.6648348	0.1	-4.27	20.00	LINR
n-Butylbenzene	44.380508	50.000000	2.3163602	0.5	11.24	20.00	2RDR
n-Propylbenzene	3.9460000	3.6277913	3.6277913	0.1	8.06	20.00	AVRG
Naphthalene	2.9610000	3.1595997	3.1595997	0.2	-6.71	20.00	AVRG
o-Xylene	0.6430000	0.6561578	0.6561578	0.3	-2.05	20.00	AVRG
sec-Butylbenzene	3.2850000	2.8638438	2.8638438	0.1	12.82	20.00	AVRG
Styrene	1.0860000	1.1694991	1.1694991	0.3	-7.69	20.00	AVRG
Vinyl Chloride	49.805362	50.000000	0.8118897	0.1	0.39	20.00	LINR
1,2,3-Trichloropropane	1.2360000	1.3588509	1.3588509	0.1	-9.94	20.00	AVRG
p-Isopropyltoluene	2.7380000	2.4712279	2.4712279	0.1	9.74	20.00	AVRG
1,2-Dibromo-3-Chloropropane	48.905803	50.000000	0.1788579	0.05	2.19	20.00	2RDR
1,2-Dichloroethane-d4	43.932829	50.000000	0.6672897	0.1	12.13	20.00	LINR
Dibromofluoromethane	44.824918	50.000000	0.5167313	0.1	10.35	20.00	LINR
Toluene-d8	53.191766	50.000000	1.3568386	0.1	-6.38	20.00	LINR
4-Bromofluorobenzene	51.894479	50.000000	0.5127617	0.1	-3.79	20.00	LINR

FORM 7B
VOLATILE CALIBRATION VERIFICATION SUMMARY

Lab Name: ALS LABORATORY GROUP Contract:

Lab Code: ALS-HS Case No.: SAS No.: SDG No.: HS18111440

Instrument ID: VOA9 Calibration Date: 12/03/18 Time: 2106

Lab File ID: U120328 Init. Calib. Date(s): 11/13/18 11/13/18

Init. Calib. Times: 1123 1528

GC Column: DB624 ID: 0.18 (mm)

COMPOUND	RRF or AMOUNT	RRF50.000 or AMOUNT	CCAL RRF50.000	MIN RRF	%D or %DRIFT	MAX %D or %DRIFT	CURV TYPE
cis-1,3-Dichloropropene	0.5230000	0.6147193	0.6147193	0.2	-17.54	50.00	AVRG
trans-1,3-Dichloropropene	50.393203	50.000000	0.5218360	0.1	-0.79	50.00	LINR
1,3-Dichlorobenzene	1.5740000	1.6302666	1.6302666	0.6	-3.57	50.00	AVRG
2,2-Dichloropropane	0.7100000	0.6399457	0.6399457	0.1	9.87	50.00	AVRG
1,1-Dichloropropene	0.4620000	0.5011914	0.5011914	0.1	-8.48	50.00	AVRG
Dibromomethane	0.2230000	0.2387934	0.2387934	0.1	-7.08	50.00	AVRG
1,2-Dibromoethane	0.3680000	0.4103944	0.4103944	0.1	-11.52	50.00	AVRG
trans-1,2-Dichloroethene	0.6180000	0.6343250	0.6343250	0.1	-2.64	50.00	AVRG
1,1,1,2-Tetrachloroethane	0.3150000	0.3497560	0.3497560	0.1	-11.03	50.00	AVRG
1,1,1-Trichloroethane	0.8780000	0.8729053	0.8729053	0.1	0.58	50.00	AVRG
1,1,2,2-Tetrachloroethane	1.1840000	1.2916178	1.2916178	0.3	-9.09	50.00	AVRG
Freon TF	0.5010000	0.4983205	0.4983205	0.1	0.53	50.00	AVRG
1,1,2-Trichloroethane	0.3180000	0.3494591	0.3494591	0.1	-9.89	50.00	AVRG
1,1-Dichloroethane	1.1460000	1.1880665	1.1880665	0.2	-3.67	50.00	AVRG
1,1-Dichloroethene	0.5640000	0.5630325	0.5630325	0.1	0.17	50.00	AVRG
Trichlorofluoromethane	1.0000000	0.9803184	0.9803184	0.1	1.97	50.00	AVRG
1,2,3-Trichlorobenzene	0.9440000	1.0136272	1.0136272	0.1	-7.38	50.00	AVRG
Toluene	1.5870000	1.7390129	1.7390129	0.4	-9.58	50.00	AVRG
1,2,4-Trichlorobenzene	0.9830000	1.0335282	1.0335282	0.2	-5.14	50.00	AVRG
1,2,4-Trimethylbenzene	2.7770000	3.0611243	3.0611243	0.1	-10.23	50.00	AVRG
Tetrachloroethene	0.2620000	0.2669775	0.2669775	0.2	-1.90	50.00	AVRG
Trichloroethene	0.3410000	0.3554159	0.3554159	0.2	-4.23	50.00	AVRG
1,2-Dichlorobenzene	1.5970000	1.6529410	1.6529410	0.4	-3.50	50.00	AVRG
1,2-Dichloroethane	0.5230000	0.5403373	0.5403373	0.1	-3.31	50.00	AVRG
1,2-Dichloropropane	0.3560000	0.4076558	0.4076558	0.1	-14.51	50.00	AVRG
1,3,5-Trimethylbenzene	2.6860000	2.9736256	2.9736256	0.1	-10.71	50.00	AVRG
1,3-Dichloropropane	0.6820000	0.7505206	0.7505206	0.1	-10.05	50.00	AVRG
1,4-Dichlorobenzene	54.381448	50.000000	1.6746543	0.4	-8.76	50.00	LINR
2-Butanone	0.3510000	0.3809086	0.3809086	0.1	-8.52	50.00	AVRG
2-Chlorotoluene	2.4480000	2.6304316	2.6304316	0.1	-7.45	50.00	AVRG
2-Hexanone	0.2910000	0.3473272	0.3473272	0.1	-19.36	50.00	AVRG
4-Chlorotoluene	2.8250000	3.0983206	3.0983206	0.1	-9.68	50.00	AVRG
tert-Butylbenzene	2.2890000	2.5124764	2.5124764	0.1	-9.76	50.00	AVRG
4-Methyl-2-Pentanone	0.4170000	0.4952299	0.4952299	0.1	-18.76	50.00	AVRG
Acetone	116.89149	100.00000	0.2666429	0.1	-16.89	50.00	LINR
Benzene	1.3820000	1.5305657	1.5305657	0.5	-10.75	50.00	AVRG
Bromobenzene	0.8200000	0.8667385	0.8667385	0.1	-5.70	50.00	AVRG
Bromochloromethane	0.2950000	0.3270672	0.3270672	0.1	-10.87	50.00	AVRG
Bromodichloromethane	0.4160000	0.4497060	0.4497060	0.2	-8.10	50.00	AVRG
Bromoform	49.975160	50.000000	0.2271391	0.1	0.05	50.00	2RDR
Bromomethane	54.456645	50.000000	0.4533158	0.1	-8.91	50.00	LINR
Carbon Disulfide	1.7430000	1.8499520	1.8499520	0.1	-6.14	50.00	AVRG

FORM 7B
VOLATILE CALIBRATION VERIFICATION SUMMARY

Lab Name: ALS LABORATORY GROUP Contract:

Lab Code: ALS-HS Case No.: SAS No.: SDG No.: HS1811144

Instrument ID: VOA9 Calibration Date: 12/03/18 Time: 2106

Lab File ID: U120328 Init. Calib. Date(s): 11/13/18 11/13/18

Init. Calib. Times: 1123 1528

GC Column: DB624 ID: 0.18 (mm)

COMPOUND	RRF or AMOUNT	RRF50.000 or AMOUNT	CCAL RRF50.000	MIN RRF	%D or %DRIFT	MAX %D or %DRIFT	CURV TYPE
Carbon Tetrachloride	0.3610000	0.3813346	0.3813346	0.1	-5.63	50.00	AVRG
Chlorobenzene	1.0320000	1.0914631	1.0914631	0.5	-5.76	50.00	AVRG
Chloroethane	0.5220000	0.6052153	0.6052153	0.1	-15.94	50.00	AVRG
Chloroform	1.1510000	1.1570180	1.1570180	0.2	-0.52	50.00	AVRG
Chloromethane	58.041861	50.000000	0.7753970	0.1	-16.08	50.00	LINR
cis-1,2-Dichloroethene	0.7080000	0.7251365	0.7251365	0.1	-2.42	50.00	AVRG
Dibromochloromethane	0.3160000	0.3632674	0.3632674	0.1	-14.96	50.00	AVRG
Dichlorodifluoromethane	48.328053	50.000000	0.7138208	0.1	3.34	50.00	LINR
Ethylbenzene	0.5220000	0.5640236	0.5640236	0.1	-8.05	50.00	AVRG
Hexachlorobutadiene	55.589566	50.000000	0.3455130	0.1	-11.18	50.00	2RDR
Isopropylbenzene	1.5190000	1.6769252	1.6769252	0.1	-10.40	50.00	AVRG
m,p-Xylenes	0.6430000	0.7065919	0.7065919	0.1	-9.89	50.00	AVRG
Methylene Chloride	55.525063	50.000000	0.7074796	0.1	-11.05	50.00	LINR
n-Butylbenzene	55.078118	50.000000	2.8924759	0.5	-10.16	50.00	2RDR
n-Propylbenzene	3.9460000	4.3749359	4.3749359	0.1	-10.87	50.00	AVRG
Naphthalene	2.9610000	3.4617716	3.4617716	0.2	-16.91	50.00	AVRG
o-Xylene	0.6430000	0.7195516	0.7195516	0.3	-11.90	50.00	AVRG
sec-Butylbenzene	3.2850000	3.6351622	3.6351622	0.1	-10.66	50.00	AVRG
Styrene	1.0860000	1.2498771	1.2498771	0.3	-15.09	50.00	AVRG
Vinyl Chloride	56.346430	50.000000	0.9196163	0.1	-12.69	50.00	LINR
1,2,3-Trichloropropane	1.2360000	1.4035396	1.4035396	0.1	-13.55	50.00	AVRG
p-Isopropyltoluene	2.7380000	3.0783646	3.0783646	0.1	-12.43	50.00	AVRG
1,2-Dibromo-3-Chloropropane	50.720259	50.000000	0.1856860	0.05	-1.44	50.00	2RDR
1,2-Dichloroethane-d4	45.314997	50.000000	0.6874679	0.1	9.37	50.00	LINR
Dibromofluoromethane	45.358631	50.000000	0.5227162	0.1	9.28	50.00	LINR
Toluene-d8	52.965529	50.000000	1.3512473	0.1	-5.93	50.00	LINR
4-Bromofluorobenzene	51.789323	50.000000	0.5117436	0.1	-3.58	50.00	LINR

FORM VII VOA

FORM 8
VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ALS LABORATORY GROUP Contract:

Lab Code: ALS-HS Case No.: SAS No.: SDG No.: HS18111440

Lab File ID (Standard): U120302 Date Analyzed: 12/03/18

Instrument ID: VOA9 Time Analyzed: 1022

GC Column: DB624 ID: 0.18 (mm) Heated Purge: (Y/N) N

		IS1(DCB) AREA #	RT #	IS2(CBZ) AREA #	RT #	IS3(DFB) AREA #	RT #
	12 HOUR STD	360314	10.24	743591	8.25	806329	5.63
	UPPER LIMIT	720628	10.74	1487182	8.75	1612658	6.13
	LOWER LIMIT	180157	9.74	371796	7.75	403165	5.13
	CLIENT SAMPLE NO.						
01	VLCSW-181203	361118	10.24	741393	8.25	819209	5.63
02	VBLKW-181203	322686	10.24	711657	8.25	783765	5.63
03	HS18111440-0	326616	10.24	717390	8.25	787192	5.63
04	HS18111440-0	319004	10.24	697849	8.25	762954	5.63
05	HS18111440-0	326256	10.24	714431	8.25	772735	5.63
06	HS18111440-0	311309	10.24	698059	8.25	760861	5.63
07	HS18111440-0	321268	10.24	702879	8.25	770584	5.63
08	HS18111440-0	322055	10.24	703803	8.25	770860	5.63
09	HS18111440-0	348124	10.24	723094	8.25	781317	5.63
10	HS18111440-0	350060	10.24	724374	8.25	785333	5.63
11	HS18111440-0	313259	10.24	690475	8.25	769121	5.63
12	HS18111440-0	317843	10.24	700244	8.25	774448	5.63
13	HS18111440-0	312192	10.24	695621	8.25	761942	5.63
14							
15							
16							
17							
18							
19							
20							

IS1 (DCB) = 1,4-Dichlorobenzene-d4
IS2 (CBZ) = Chlorobenzene-d5
IS3 (DFB) = 1,4-Difluorobenzene

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = - 50% of internal standard area
RT UPPER LIMIT = + 0.50 minutes of internal standard RT
RT LOWER LIMIT = - 0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits.

FORM VIII VOA

FORM 8
VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ALS LABORATORY GROUP Contract:

Lab Code: ALS-HS Case No.: SAS No.: SDG No.: HS18111440

Lab File ID (Standard): U120302 Date Analyzed: 12/03/18

Instrument ID: VOA9 Time Analyzed: 1022

GC Column: DB624 ID: 0.18 (mm) Heated Purge: (Y/N) N

		IS4 AREA #	RT #	AREA #	RT #	AREA #	RT #
	12 HOUR STD	455823	4.89				
	UPPER LIMIT	911646	5.39				
	LOWER LIMIT	227912	4.39				
	CLIENT SAMPLE NO.						
01	VLCSW-181203	457981	4.89				
02	VBLKW-181203	438509	4.90				
03	HS18111440-0	439215	4.90				
04	HS18111440-0	424893	4.89				
05	HS18111440-0	428447	4.90				
06	HS18111440-0	421076	4.89				
07	HS18111440-0	430430	4.89				
08	HS18111440-0	431112	4.89				
09	HS18111440-0	441437	4.89				
10	HS18111440-0	442017	4.90				
11	HS18111440-0	425999	4.90				
12	HS18111440-0	428957	4.90				
13	HS18111440-0	423114	4.89				
14							
15							
16							
17							
18							
19							
20							

IS4 = Pentafluorobenzene

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = - 50% of internal standard area
RT UPPER LIMIT = + 0.50 minutes of internal standard RT
RT LOWER LIMIT = - 0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits.

Data File: \\NAHSTWS005\Target\chem\voa9.i\U181203.b\U120301.D

Date : 03-DEC-2018 09:57

Client ID: BFB

Instrument: VOA9.i

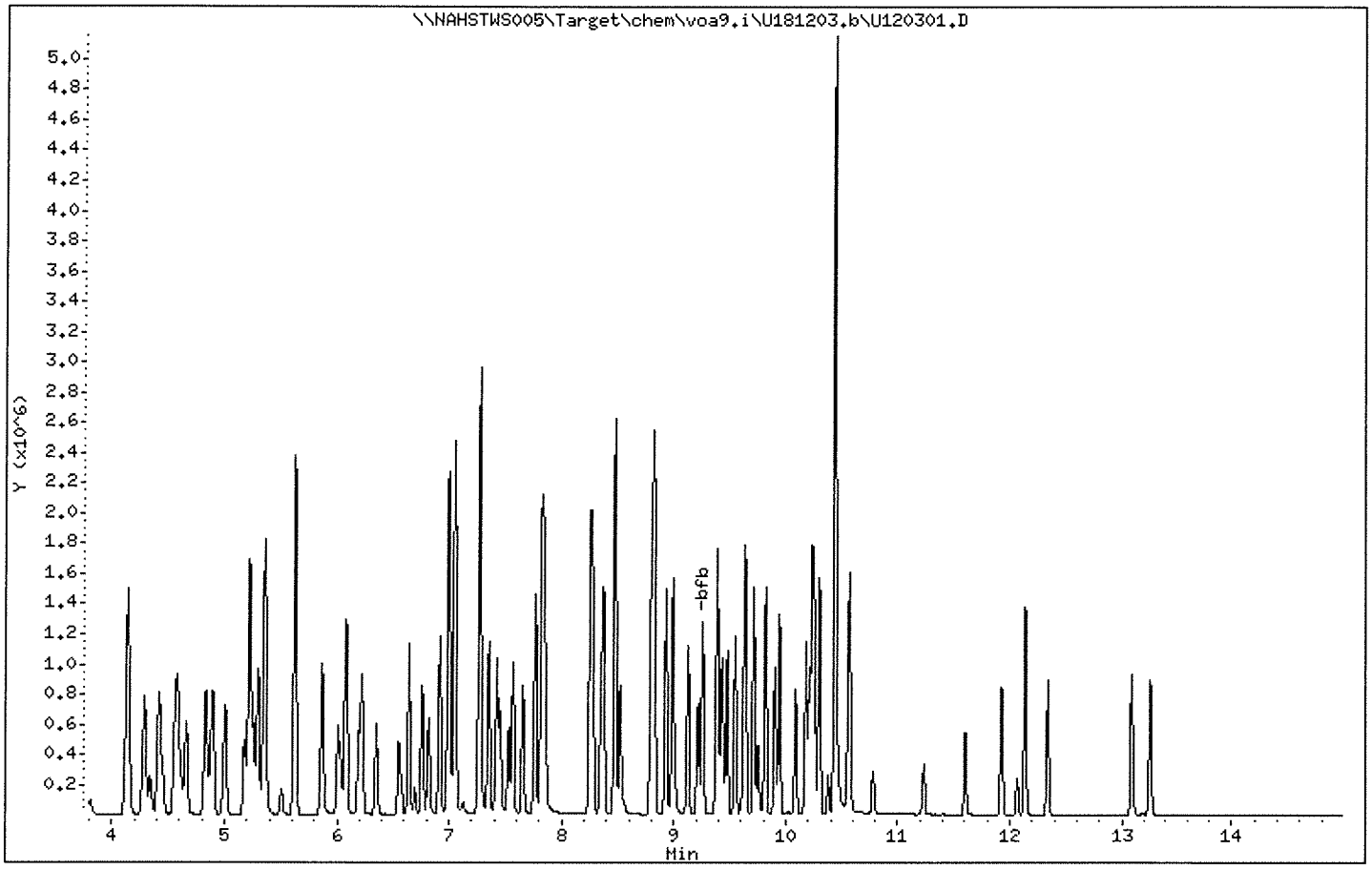
Sample Info: BFB;BFB;3;;BFB

Volume Injected (uL): 2.0

Operator: PC

Column phase: DB624

Column diameter: 0.25



Data File: \\NAHSTWS005\Target\chem\voa9.i\U181203.b\U120301.D Page 3

Date : 03-DEC-2018 09:57

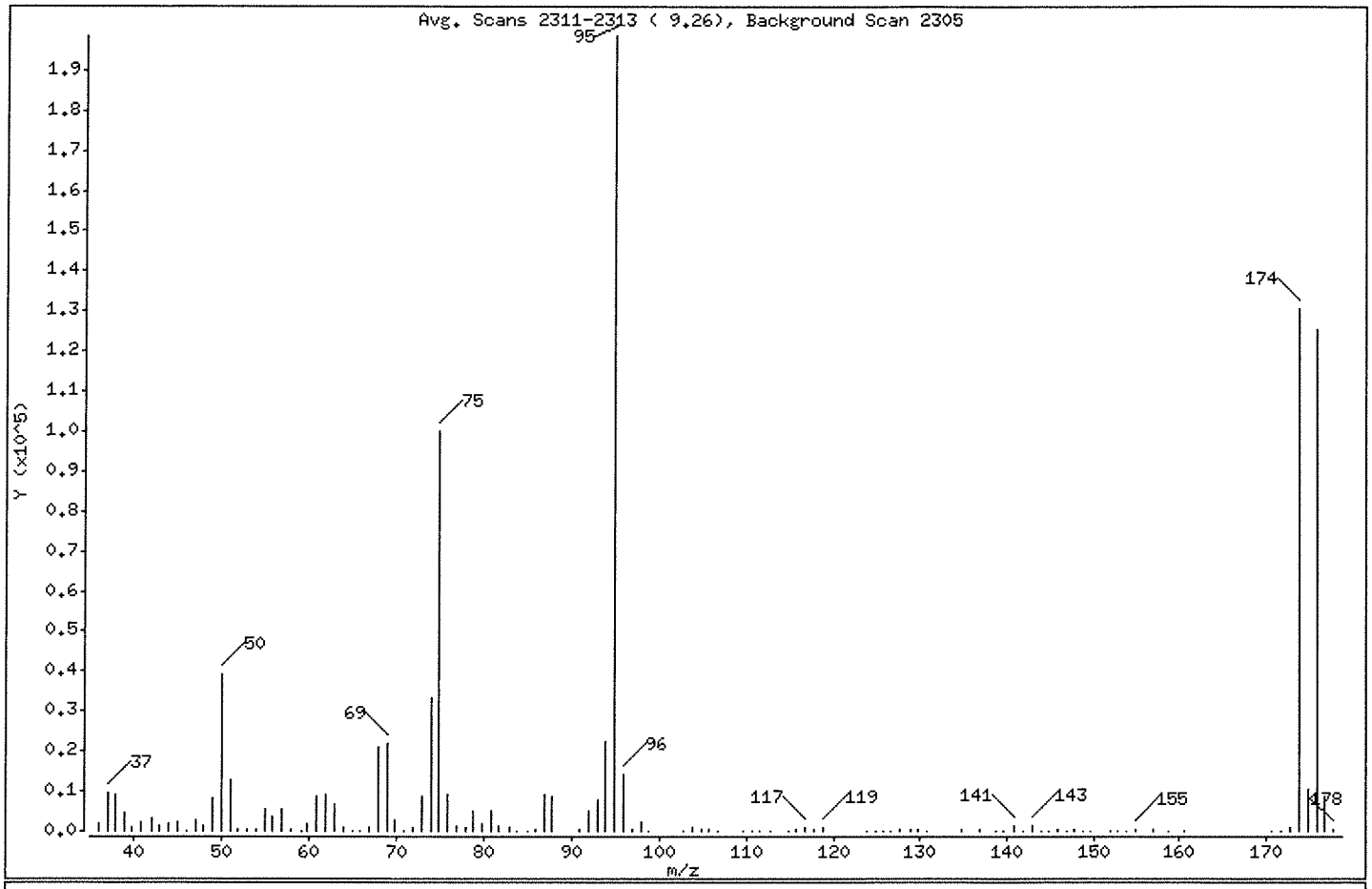
Client ID: BFB Instrument: VOA9.i

Sample Info: BFB;BFB;3;;BFB

Volume Injected (uL): 2.0 Operator: PC

Column phase: DB624 Column diameter: 0.25

1 bfb



m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
95	Base Peak, 100% relative abundance	100.00
50	15.00 - 40.00% of mass 95	19.82
75	30.00 - 60.00% of mass 95	50.44
96	5.00 - 9.00% of mass 95	7.18
173	Less than 2.00% of mass 174	0.49 (0.74)
174	Greater than 50.00% of mass 95	65.78
175	5.00 - 9.00% of mass 174	5.21 (7.92)
176	95.00 - 101.00% of mass 174	63.26 (96.17)
177	5.00 - 9.00% of mass 176	4.47 (7.07)

Data File: \\NAHSTWS005\Target\chem\voa9.i\U181203.b\U120301.D

Date : 03-DEC-2018 09:57

Client ID: BFB

Instrument: VOA9.i

Sample Info: BFB;BFB;3;;BFB

Volume Injected (uL): 2.0

Operator: PC

Column phase: DB624

Column diameter: 0.25

Data File: U120301.D

Spectrum: Avg. Scans 2311-2313 (9.26), Background Scan 2305

Location of Maximum: 94.90

Number of points: 113

m/z	Y	m/z	Y	m/z	Y	m/z	Y
36.00	2009	65.00	225	95.90	14249	139.50	94
37.00	9401	65.90	134	96.90	630	140.70	1339
38.00	8974	66.90	983	97.90	2197	141.70	172
39.00	4771	67.90	20960	98.80	222	142.80	1399
39.90	924	68.90	22080	102.80	78	143.80	82
40.90	2080	69.90	2755	103.80	745	144.80	129
42.00	3407	70.80	193	104.80	246	145.70	250
43.00	1162	71.90	1073	105.70	590	146.80	131
43.90	1702	72.90	8716	106.80	179	147.70	446
45.00	2068	73.90	33208	109.70	94	148.70	100
46.00	206	74.90	100168	110.70	92	149.60	131
47.00	2776	75.90	8946	111.60	85	151.70	71
47.90	1286	76.90	1268	112.70	104	152.60	88
49.00	8157	77.90	870	114.80	167	153.70	69
50.00	39368	78.80	4971	115.70	441	154.70	350
51.00	12592	79.90	1655	116.80	976	156.70	290
51.90	592	80.80	4966	117.80	590	158.70	170
53.00	317	81.80	1195	118.80	806	160.60	208
53.90	583	82.90	690	123.80	95	170.50	68
55.00	5588	83.80	59	124.80	61	171.60	154
55.90	3548	85.00	60	125.70	108	172.70	965
56.90	5508	85.80	295	126.60	79	173.70	130640
57.90	441	86.90	9173	127.70	597	174.70	10342
59.10	184	87.80	8783	128.80	304	175.70	125632
59.90	1923	90.80	565	129.60	528	176.70	8883
60.90	8621	91.90	4939	130.70	227	177.70	239
62.00	9251	92.90	7652	134.60	234		
63.00	6755	93.90	22216	136.70	243		
63.90	702	94.90	198592	138.60	71		

Data File: \\NAHSTWS005\Target\chem\voa9.i\U181203.b\U120302.D Page 1
Report Date: 25-Jan-2019 19:24

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa9.i\U181203.b\U120302.D
Lab Smp Id: VSTD050 Client Smp ID: VSTD050
Inj Date : 03-DEC-2018 10:22
Operator : PC Inst ID: VOA9.i
Smp Info : VSTD050;VSTD050;2;;
Misc Info : 180315V9;WATER;0;1;
Comment :
Method : \\NAHSTWS005\Target\chem\voa9.i\U181203.b\8260C.m
Meth Date : 25-Jan-2019 19:24 VOA9.i Quant Type: ISTD
Cal Date : 13-NOV-2018 14:15 Cal File: U111308.D
Als bottle: 2 Continuing Calibration Sample
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: LHAAP.sub
Target Version: 4.14
Processing Host: NAHSTW7087

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Cpnd Variable		Local Compound Variable

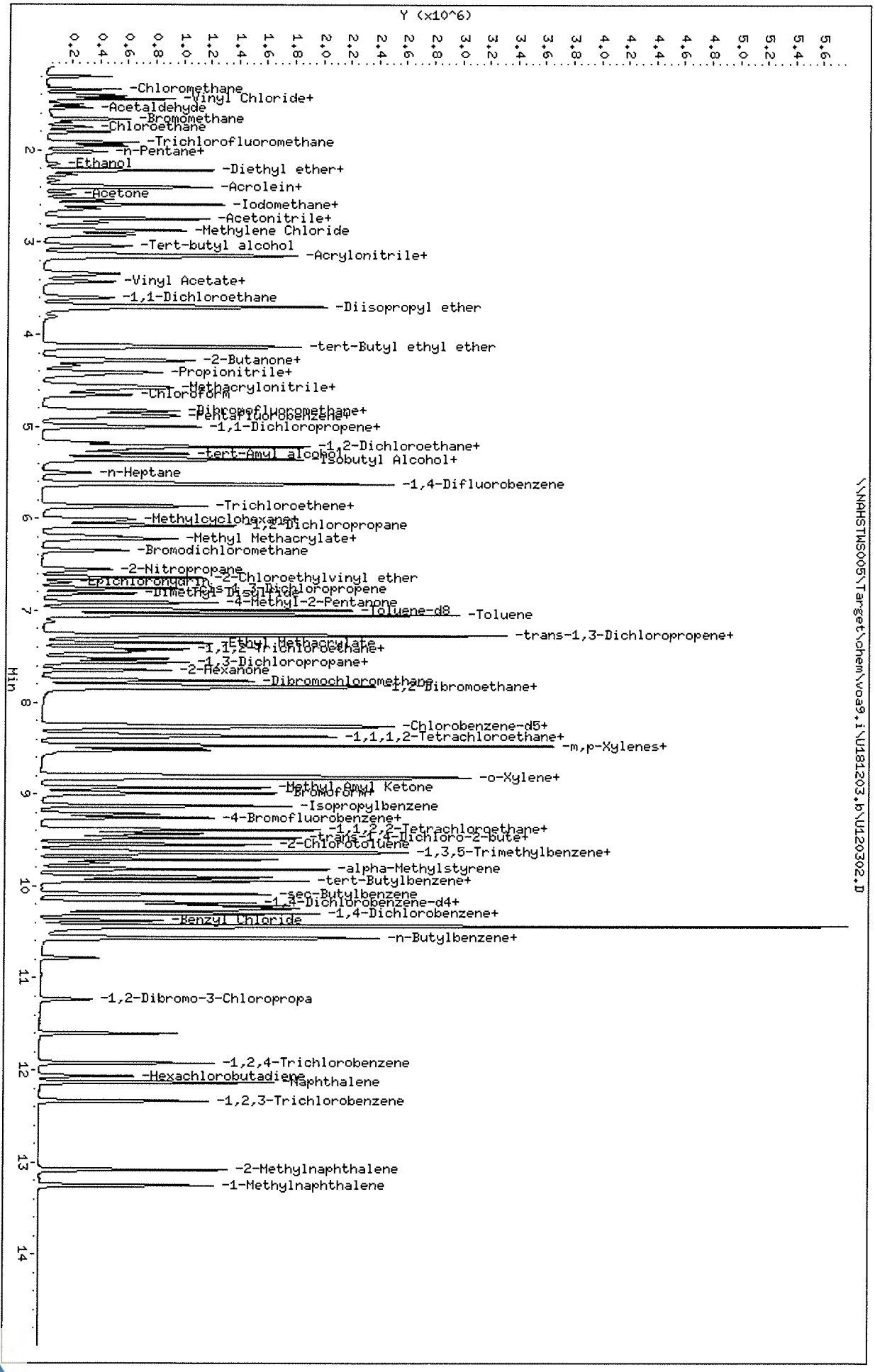
Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	ON-COL (ug/l)
* 1 Pentafluorobenzene	168	4.894	4.894	(1.000)	455823	50.0000	
* 36 1,4-Difluorobenzene	114	5.625	5.625	(1.000)	806329	50.0000	
* 47 Chlorobenzene-d5	117	8.249	8.249	(1.000)	743591	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	10.236	10.236	(1.000)	360314	50.0000	
$ 30 Dibromofluoromethane	113	4.826	4.826	(0.986)	235538	50.0000	44.82
$ 35 1,2-Dichloroethane-d4	65	5.175	5.175	(1.057)	304166	50.0000	43.93
$ 48 Toluene-d8	98	6.989	6.989	(0.847)	1008933	50.0000	53.19
$ 69 4-Bromofluorobenzene	95	9.257	9.257	(1.122)	381285	50.0000	51.89
60 1,1,1,2-Tetrachloroethane	131	8.350	8.350	(1.012)	252493	50.0000	53.83
31 1,1,1-Trichloroethane	97	4.826	4.826	(0.986)	358644	50.0000	44.79
68 1,1,2,2-Tetrachloroethane	83	9.392	9.392	(0.918)	443552	50.0000	51.97
138 Freon TF	101	2.401	2.401	(0.491)	185862	50.0000	40.70
53 1,1,2-Trichloroethane	83	7.420	7.420	(0.900)	250631	50.0000	53.01
22 1,1-Dichloroethane	63	3.601	3.601	(0.736)	508774	50.0000	48.70
11 1,1-Dichloroethene	96	2.397	2.397	(0.490)	234177	50.0000	45.51
32 1,1-Dichloropropene	75	5.003	5.003	(0.889)	361083	50.0000	48.48
93 1,2,3-Trichlorobenzene	180	12.335	12.335	(1.205)	320683	50.0000	47.14
71 1,2,3-Trichloropropane	75	9.426	9.426	(0.921)	489613	50.0000	54.97
90 1,2,4-Trichlorobenzene	180	11.923	11.923	(1.165)	324540	50.0000	45.80
79 1,2,4-Trimethylbenzene	105	9.943	9.943	(0.971)	943353	50.0000	47.13
89 1,2-Dibromo-3-Chloropropane	155	11.233	11.233	(1.097)	64445	50.0000	48.90
57 1,2-Dibromoethane	107	7.852	7.852	(0.952)	293345	50.0000	53.58

Data File: \\NAHSTWS005\Target\chem\voa9.i\U181203.b\U120302.D Page 2
Report Date: 25-Jan-2019 19:24

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	ON-COL (ug/l)
88	1,2-Dichlorobenzene	146	10.569	10.569	(1.033)	541412	50.0000	47.05
33	1,2-Dichloroethane	62	5.250	5.250	(0.933)	420260	50.0000	49.80
42	1,2-Dichloropropane	63	6.078	6.078	(1.081)	313340	50.0000	54.58
75	1,3,5-Trimethylbenzene	105	9.625	9.625	(0.940)	899680	50.0000	46.47
83	1,3-Dichlorobenzene	146	10.180	10.180	(0.995)	529782	50.0000	46.70
54	1,3-Dichloropropane	76	7.563	7.563	(0.917)	538097	50.0000	53.01
84	1,4-Dichlorobenzene	146	10.255	10.255	(1.002)	549639	50.0000	49.53
26	2,2-Dichloropropane	77	4.272	4.272	(0.873)	321537	50.0000	49.70
24	2-Butanone	43	4.335	4.335	(0.886)	324596	100.000	101.30
76	2-Chlorotoluene	91	9.546	9.546	(0.933)	834742	50.0000	47.31
52	2-Hexanone	43	7.649	7.649	(0.927)	493522	100.000	114.17
77	4-Chlorotoluene	91	9.640	9.640	(0.942)	994870	50.0000	48.86
82	p-Isopropyltoluene	119	10.210	10.210	(0.997)	890418	50.0000	45.12
45	4-Methyl-2-Pentanone	43	6.914	6.914	(0.838)	700122	100.000	112.86
10	Acetone	43	2.476	2.476	(0.506)	228797	100.000	109.76
37	Benzene	78	5.216	5.216	(0.927)	1159182	50.0000	52.00
74	Bromobenzene	156	9.381	9.381	(0.917)	297273	50.0000	50.29
29	Bromochloromethane	128	4.553	4.553	(0.930)	140895	50.0000	52.43
39	Bromodichloromethane	83	6.348	6.348	(1.129)	351189	50.0000	52.41
66	Bromoform	173	8.984	8.984	(1.089)	168166	50.0000	49.76(T)
6	Bromomethane	94	1.663	1.663	(0.340)	193943	50.0000	51.22
19	Carbon Disulfide	76	2.588	2.588	(0.529)	1579120	100.000	99.38
34	Carbon Tetrachloride	117	4.995	4.995	(0.888)	274722	50.0000	47.22
59	Chlorobenzene	112	8.275	8.275	(1.003)	765317	50.0000	49.86
7	Chloroethane	64	1.749	1.749	(0.357)	252883	50.0000	53.17
28	Chloroform	83	4.654	4.654	(0.951)	493729	50.0000	47.04
3	Chloromethane	50	1.336	1.336	(0.273)	329761	50.0000	54.16
27	cis-1,2-Dichloroethene	96	4.283	4.283	(0.875)	310873	50.0000	48.13
46	cis-1,3-Dichloropropene	75	6.757	6.757	(1.201)	499481	50.0000	59.20
55	Dibromochloromethane	129	7.758	7.758	(0.940)	264873	50.0000	56.29
44	Dibromomethane	93	6.187	6.187	(1.100)	185842	50.0000	51.65
2	Dichlorodifluoromethane	85	1.201	1.201	(0.246)	284366	50.0000	42.36
61	Ethylbenzene	106	8.369	8.369	(1.015)	378152	50.0000	48.73
91	Hexachlorobutadiene	225	12.065	12.065	(1.179)	106937	50.0000	48.15
67	Isopropylbenzene	105	9.126	9.126	(1.106)	1039197	50.0000	45.98
62	m,p-Xylenes	106	8.474	8.474	(1.027)	938699	100.000	98.16
17	Methylene Chloride	84	2.870	2.870	(0.586)	303047	50.0000	52.13
87	n-Butylbenzene	91	10.558	10.558	(1.031)	834617	50.0000	44.38
73	n-Propylbenzene	91	9.475	9.475	(0.926)	1307144	50.0000	45.97
92	Naphthalene	128	12.133	12.133	(1.185)	1138448	50.0000	53.35
63	o-Xylene	106	8.811	8.811	(1.068)	487913	50.0000	50.98
81	sec-Butylbenzene	105	10.086	10.086	(0.985)	1031883	50.0000	43.58
64	Styrene	104	8.826	8.826	(1.070)	869629	50.0000	53.82
78	tert-Butylbenzene	119	9.902	9.902	(0.967)	717082	50.0000	43.46
56	Tetrachloroethene	164	7.522	7.522	(0.912)	177470	50.0000	45.56
50	Toluene	91	7.046	7.046	(0.854)	1194807	50.0000	50.61
20	trans-1,2-Dichloroethene	96	3.139	3.139	(0.642)	267987	50.0000	47.52
51	trans-1,3-Dichloropropene	75	7.259	7.259	(1.291)	429606	50.0000	51.42
38	Trichloroethene	130	5.861	5.861	(1.042)	266341	50.0000	48.47
8	Trichlorofluoromethane	101	1.951	1.951	(0.399)	382721	50.0000	41.99
5	Vinyl Chloride	62	1.415	1.415	(0.289)	370078	50.0000	49.80

QC Flag Legend

T - Target compound detected outside RT window.



Data File: \\NAHSTWS005\Target\chem\voa9.i\U181203.b\U120302.D
Date : 03-DEC-2018 10:22
Client ID: VSTD050
Sample Info: VSTD050;VSTD050;2;;
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA9.i
Operator: PC
Column diameter: 0.18

Data File: \\NAHSTWS005\Target\chem\voa9.i\U181203.b\U120303.D Page 1
Report Date: 25-Jan-2019 19:24

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa9.i\U181203.b\U120303.D
Lab Smp Id: VLCSW-181203 Client Smp ID: VLCSW-181203
Inj Date : 03-DEC-2018 10:46
Operator : PC Inst ID: VOA9.i
Smp Info : VLCSW-181203;VLCSW-181203;3;;LCS
Misc Info : 180315V9;WATER;0;1;
Comment :
Method : \\NAHSTWS005\Target\chem\voa9.i\U181203.b\8260C.m
Meth Date : 25-Jan-2019 19:24 VOA9.i Quant Type: ISTD
Cal Date : 13-NOV-2018 14:15 Cal File: U111308.D
Als bottle: 3 QC Sample: LCS
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: LHAAP.sub
Target Version: 4.14
Processing Host: NAHSTW7087

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Cpnd Variable		Local Compound Variable

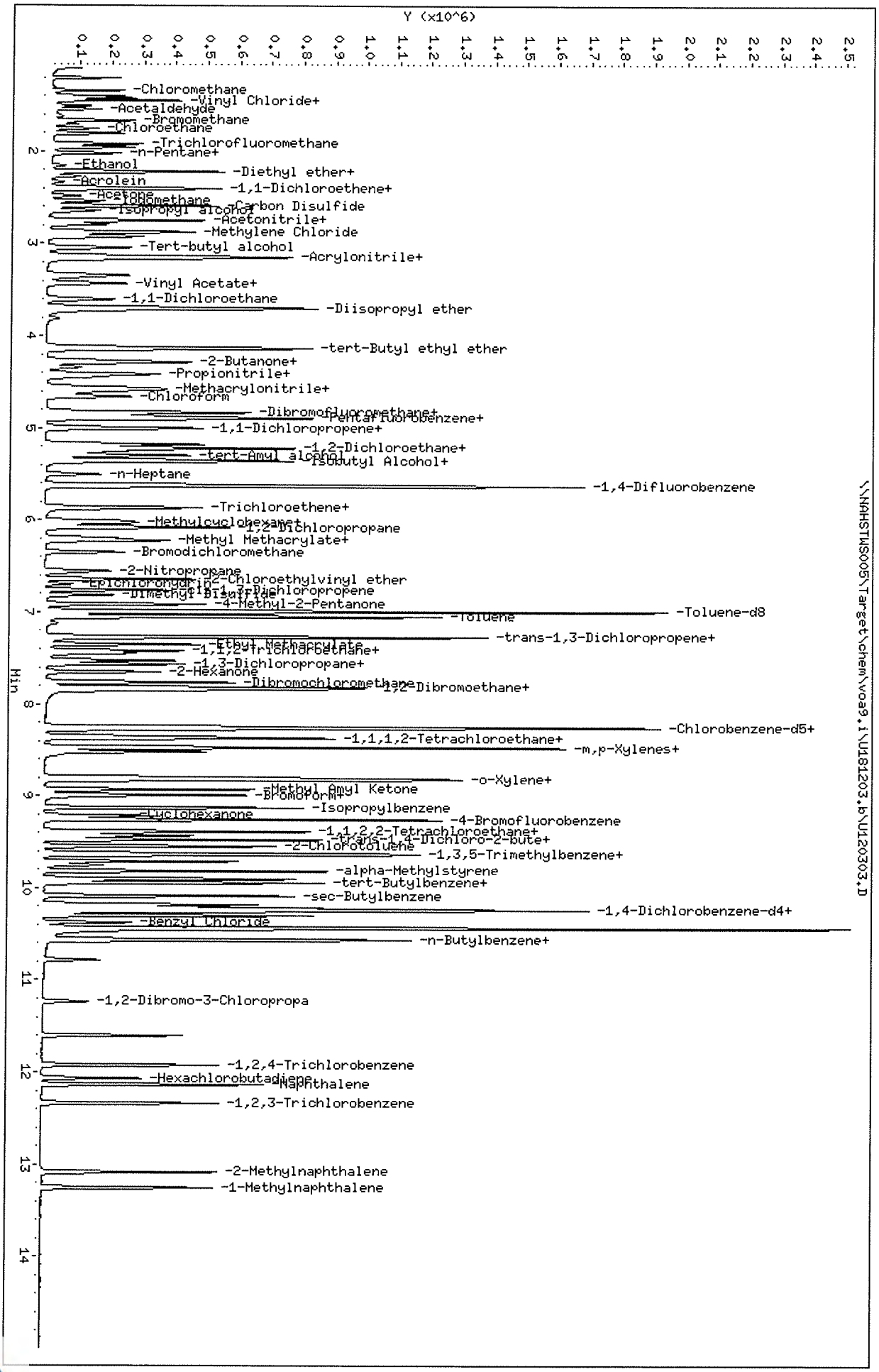
	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
*	1 Pentafluorobenzene	168	4.894	4.894	(1.000)	457981	50.0000	
*	36 1,4-Difluorobenzene	114	5.625	5.625	(1.000)	819209	50.0000	
*	47 Chlorobenzene-d5	117	8.249	8.249	(1.000)	741393	50.0000	
*	70 1,4-Dichlorobenzene-d4	152	10.236	10.236	(1.000)	361118	50.0000	
$	30 Dibromofluoromethane	113	4.830	4.826	(0.987)	235796	44.6580	44.65
$	35 1,2-Dichloroethane-d4	65	5.175	5.175	(1.057)	309153	44.4633	44.46
$	48 Toluene-d8	98	6.989	6.989	(0.847)	1006658	53.2304	53.23
$	69 4-Bromofluorobenzene	95	9.257	9.257	(1.122)	380610	51.9575	51.95
	60 1,1,1,2-Tetrachloroethane	131	8.350	8.350	(1.012)	99941	21.3710	21.37
	31 1,1,1-Trichloroethane	97	4.826	4.826	(0.986)	150919	18.7600	18.75
	68 1,1,2,2-Tetrachloroethane	83	9.392	9.392	(0.918)	182134	21.2930	21.29
	138 Freon TF	101	2.401	2.401	(0.491)	84493	18.4165	18.41
	53 1,1,2-Trichloroethane	83	7.420	7.420	(0.900)	101305	21.4929	21.49
	22 1,1-Dichloroethane	63	3.604	3.601	(0.737)	209864	19.9966	19.99
	11 1,1-Dichloroethene	96	2.401	2.397	(0.491)	101515	19.6372	19.63
	32 1,1-Dichloropropene	75	5.006	5.003	(0.890)	155955	20.6126	20.61
	93 1,2,3-Trichlorobenzene	180	12.335	12.335	(1.205)	146453	21.4810	21.48
	71 1,2,3-Trichloropropane	75	9.426	9.426	(0.921)	193391	21.6661	21.66
	90 1,2,4-Trichlorobenzene	180	11.926	11.923	(1.165)	148398	20.8968	20.89
	79 1,2,4-Trimethylbenzene	105	9.943	9.943	(0.971)	433699	21.6225	21.62
	89 1,2-Dibromo-3-Chloropropane	155	11.233	11.233	(1.097)	25052	19.6829	19.68
	57 1,2-Dibromoethane	107	7.852	7.852	(0.952)	119399	21.8759	21.87

Data File: \\NAHSTWS005\Target\chem\voa9.i\U181203.b\U120303.D Page 2
Report Date: 25-Jan-2019 19:24

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	CONCENTRATIONS FINAL (ug/l)
88	1,2-Dichlorobenzene	146	10.569	10.569	(1.033)	233719	20.2668	20.26
33	1,2-Dichloroethane	62	5.254	5.250	(0.934)	174524	20.3589	20.35
42	1,2-Dichloropropane	63	6.082	6.078	(1.081)	128019	21.9489	21.94
75	1,3,5-Trimethylbenzene	105	9.625	9.625	(0.940)	411090	21.1876	21.18
83	1,3-Dichlorobenzene	146	10.180	10.180	(0.995)	232169	20.4200	20.42
54	1,3-Dichloropropane	76	7.563	7.563	(0.917)	220046	21.7421	21.74
84	1,4-Dichlorobenzene	146	10.258	10.255	(1.002)	244260	21.9395	21.93
26	2,2-Dichloropropane	77	4.275	4.272	(0.874)	129891	19.9854	19.98
24	2-Butanone	43	4.339	4.335	(0.887)	133309	41.4089	41.40
76	2-Chlorotoluene	91	9.546	9.546	(0.933)	371057	20.9837	20.98
52	2-Hexanone	43	7.649	7.649	(0.927)	200519	46.5268	46.52
77	4-Chlorotoluene	91	9.640	9.640	(0.942)	439605	21.5448	21.54
82	p-Isopropyltoluene	119	10.210	10.210	(0.997)	422111	21.3449	21.34
45	4-Methyl-2-Pentanone	43	6.914	6.914	(0.838)	286266	46.2851	46.28
10	Acetone	43	2.480	2.476	(0.507)	97269	43.8873	43.88
37	Benzene	78	5.216	5.216	(0.927)	483206	21.3386	21.33
74	Bromobenzene	156	9.381	9.381	(0.917)	122631	20.7015	20.70
29	Bromochloromethane	128	4.553	4.553	(0.930)	56021	20.7490	20.74
39	Bromodichloromethane	83	6.348	6.348	(1.129)	140285	20.6095	20.60
66	Bromoform	173	8.984	8.984	(1.089)	62560	19.3957	19.39
6	Bromomethane	94	1.666	1.663	(0.341)	84236	23.2261	23.22
19	Carbon Disulfide	76	2.588	2.588	(0.529)	654299	40.9844	40.98
34	Carbon Tetrachloride	117	4.995	4.995	(0.888)	116408	19.6947	19.69
59	Chlorobenzene	112	8.275	8.275	(1.003)	322055	21.0469	21.04
7	Chloroethane	64	1.752	1.749	(0.358)	95056	19.8922	19.89(M)
28	Chloroform	83	4.658	4.654	(0.952)	202611	19.2149	19.21
3	Chloromethane	50	1.340	1.336	(0.274)	141310	23.2345	23.23
27	cis-1,2-Dichloroethene	96	4.287	4.283	(0.876)	128913	19.8648	19.86
46	cis-1,3-Dichloropropene	75	6.757	6.757	(1.201)	190270	22.1974	22.19
55	Dibromochloromethane	129	7.758	7.758	(0.940)	102475	21.8435	21.84
44	Dibromomethane	93	6.191	6.187	(1.101)	76012	20.7946	20.79
2	Dichlorodifluoromethane	85	1.205	1.201	(0.246)	123023	18.8107	18.81
61	Ethylbenzene	106	8.369	8.369	(1.015)	163147	21.0900	21.08
91	Hexachlorobutadiene	225	12.065	12.065	(1.179)	48700	22.5759	22.57
67	Isopropylbenzene	105	9.126	9.126	(1.106)	476722	21.1581	21.15
62	m,p-Xylenes	106	8.474	8.474	(1.027)	408723	42.8677	42.86
17	Methylene Chloride	84	2.870	2.870	(0.586)	127340	21.3957	21.39
87	n-Butylbenzene	91	10.558	10.558	(1.031)	401755	21.7096	21.70
73	n-Propylbenzene	91	9.475	9.475	(0.926)	606283	21.2762	21.27
92	Naphthalene	128	12.133	12.133	(1.185)	472813	22.1108	22.11
63	o-Xylene	106	8.811	8.811	(1.068)	208680	21.8723	21.87
81	sec-Butylbenzene	105	10.086	10.086	(0.985)	490259	20.6623	20.66
64	Styrene	104	8.826	8.826	(1.070)	362738	22.5177	22.51
78	tert-Butylbenzene	119	9.902	9.902	(0.967)	339490	20.5306	20.53
56	Tetrachloroethene	164	7.525	7.522	(0.912)	78149	20.1223	20.12
50	Toluene	91	7.049	7.046	(0.855)	506817	21.5317	21.53
20	trans-1,2-Dichloroethene	96	3.143	3.139	(0.642)	112550	19.8655	19.86
51	trans-1,3-Dichloropropene	75	7.263	7.259	(1.291)	163570	20.1940	20.19
38	Trichloroethene	130	5.861	5.861	(1.042)	112527	20.1586	20.15
8	Trichlorofluoromethane	101	1.955	1.951	(0.400)	169407	18.5021	18.50
5	Vinyl Chloride	62	1.419	1.415	(0.290)	159166	21.6103	21.61

QC Flag Legend

M - Compound response manually integrated.

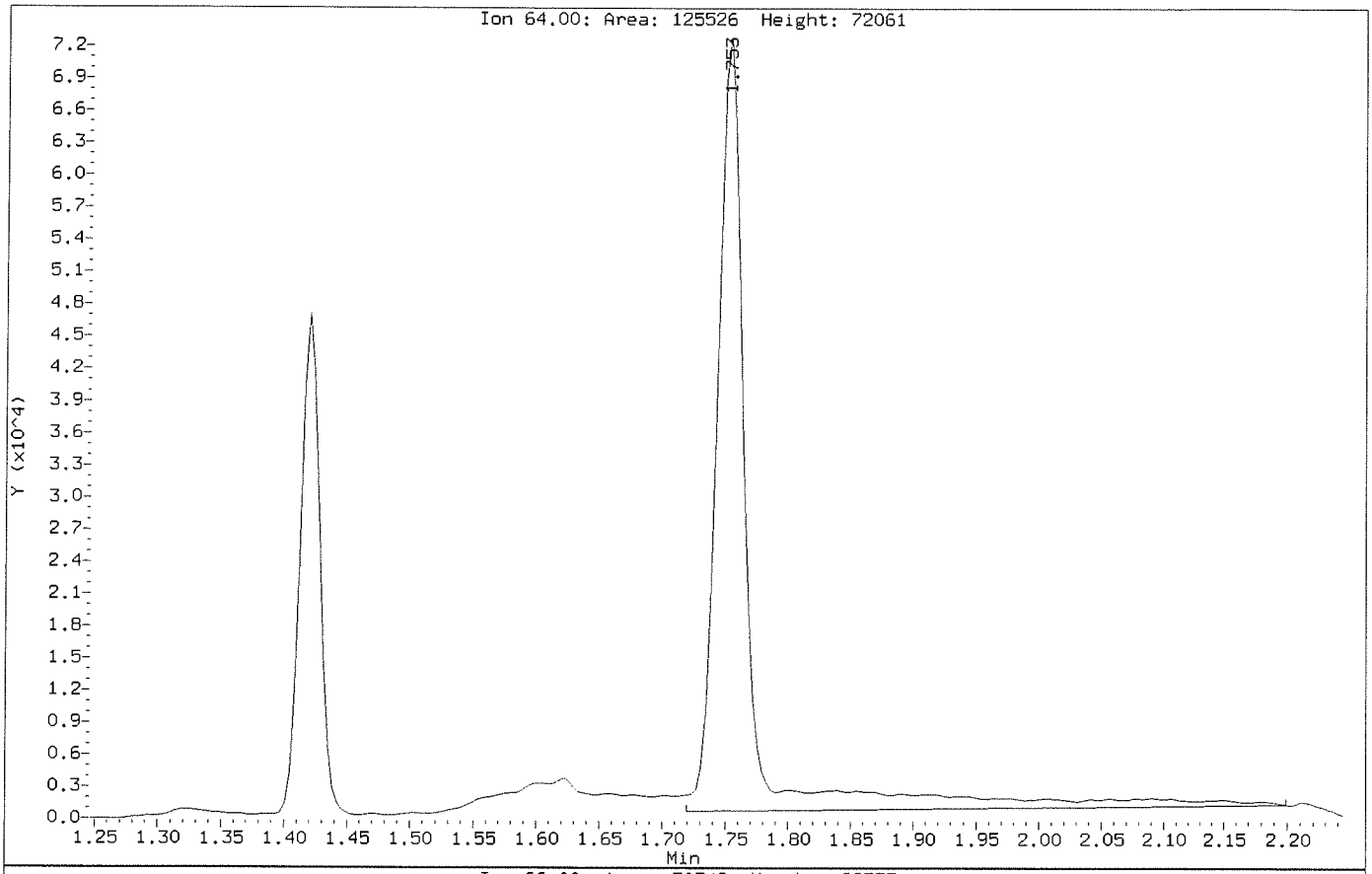


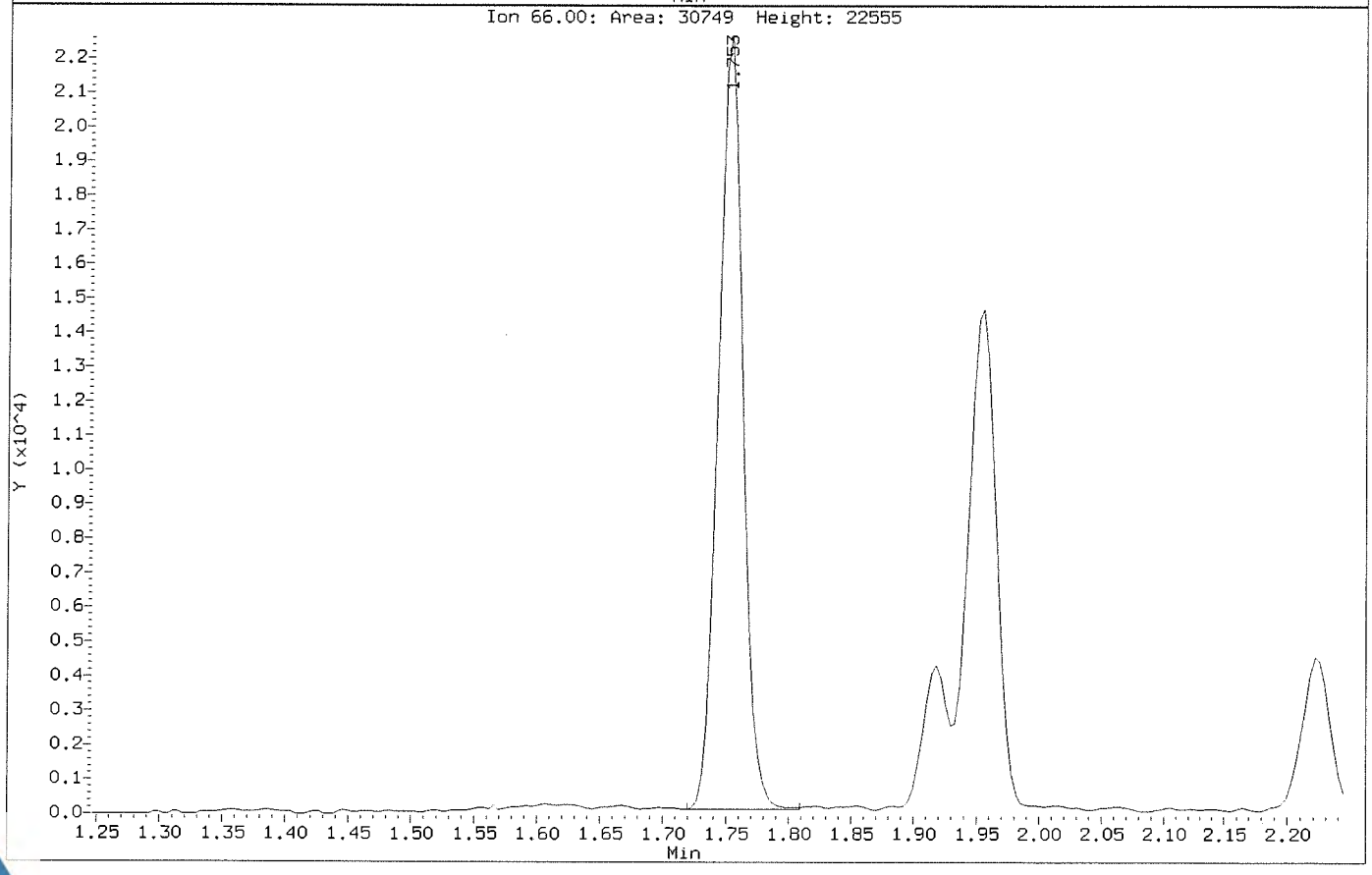
Data File: \\NAHSTWS005\Target\chem\voa9.i\U181203.b\U120303.D
Date : 03-DEC-2018 10:46
Client ID: VLCSW-181203
Sample Info: VLCSW-181203;VLCSW-181203;3;;LCS
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA9.i
Operator: PC
Column diameter: 0.18

Data File: \\NAHSTWS005\Target\chem\voa9.i\U181203.b\Before\U120303.D
Injection Date: 03-DEC-2018 10:46
Instrument: VOA9.i
Client Sample ID: VLCSW-181203

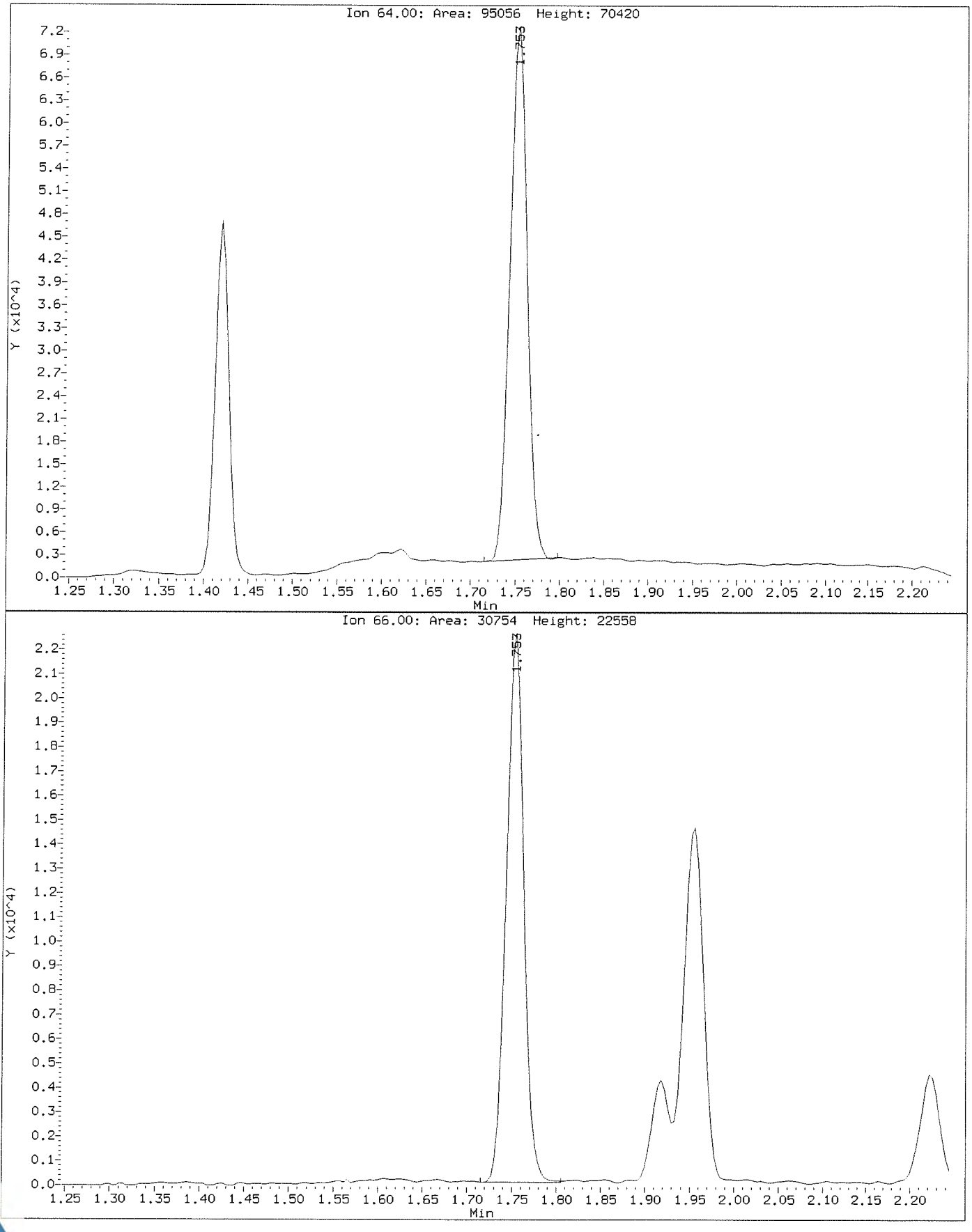
Compound: Chloroethane
CAS Number: 75-00-3





Data File: \\NAHSTWS005\Target\chem\voa9.i\U181203.b\U120303.D
Injection Date: 03-DEC-2018 10:46
Instrument: VOA9.i
Client Sample ID: VLCSW-181203

Compound: Chloroethane
CAS Number: 75-00-3



Data File: \\NAHSTWS005\Target\chem\voa9.i\U181203.b\U120305.D Page 1
Report Date: 25-Jan-2019 19:24

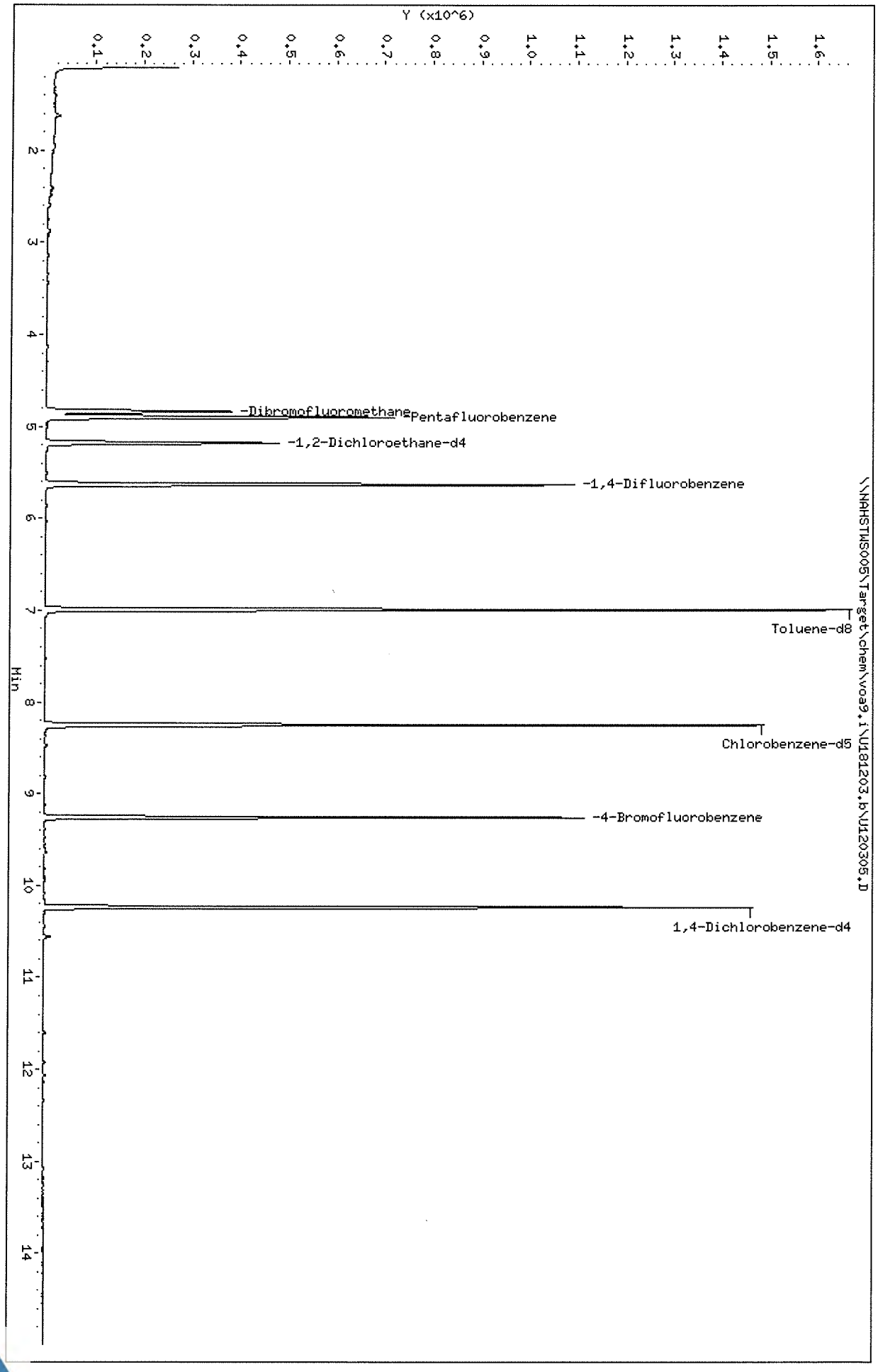
ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa9.i\U181203.b\U120305.D
Lab Smp Id: VBLKW-181203 Client Smp ID: VBLKW-181203
Inj Date : 03-DEC-2018 11:36
Operator : PC Inst ID: VOA9.i
Smp Info : VBLKW-181203;VBLKW-181203;3;;BLANK
Misc Info : 180315V9;WATER;0;1;
Comment :
Method : \\NAHSTWS005\Target\chem\voa9.i\U181203.b\8260C.m
Meth Date : 25-Jan-2019 19:24 VOA9.i Quant Type: ISTD
Cal Date : 13-NOV-2018 14:15 Cal File: U111308.D
Als bottle: 5 QC Sample: BLANK
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: LHAAP.sub
Target Version: 4.14
Processing Host: NAHSTW7087

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	CONCENTRATIONS FINAL (ug/l)
* 1 Pentafluorobenzene	168	4.898	4.894	(1.000)	438509	50.0000	
* 36 1,4-Difluorobenzene	114	5.629	5.625	(1.000)	783765	50.0000	
* 47 Chlorobenzene-d5	117	8.249	8.249	(1.000)	711657	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	10.236	10.236	(1.000)	322686	50.0000	
$ 30 Dibromofluoromethane	113	4.834	4.826	(0.987)	222555	44.0041	44.00
$ 35 1,2-Dichloroethane-d4	65	5.179	5.175	(1.057)	306137	46.0454	46.04
$ 48 Toluene-d8	98	6.990	6.989	(0.847)	959938	52.8696	52.86
$ 69 4-Bromofluorobenzene	95	9.258	9.257	(1.122)	341183	48.4509	48.45



Data File: \\NAHSTWS005\Target\chem\voa9.i\U181203.b\U120305.D
Date : 03-DEC-2018 11:36
Client ID: VBLKW-181203
Sample Info: VBLKW-181203;VBLKW-181203;3;;BLANK
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA9.i
Operator: PC
Column diameter: 0.18

Data File: \\NAHSTWS005\Target\chem\voa9.i\U181203.b\U120306.D Page 1
Report Date: 25-Jan-2019 19:24

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa9.i\U181203.b\U120306.D
Lab Smp Id: HS18111440-06 Client Smp ID: HS18111440-06
Inj Date : 03-DEC-2018 12:01
Operator : PC Inst ID: VOA9.i
Smp Info : HS18111440-06;HS18111440-06;;;
Misc Info : 180315V9;WATER;0;1;
Comment :
Method : \\NAHSTWS005\Target\chem\voa9.i\U181203.b\8260C.m
Meth Date : 25-Jan-2019 19:24 VOA9.i Quant Type: ISTD
Cal Date : 13-NOV-2018 14:15 Cal File: U111308.D
Als bottle: 6
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: LHAAP.sub
Target Version: 4.14
Processing Host: NAHSTW7087

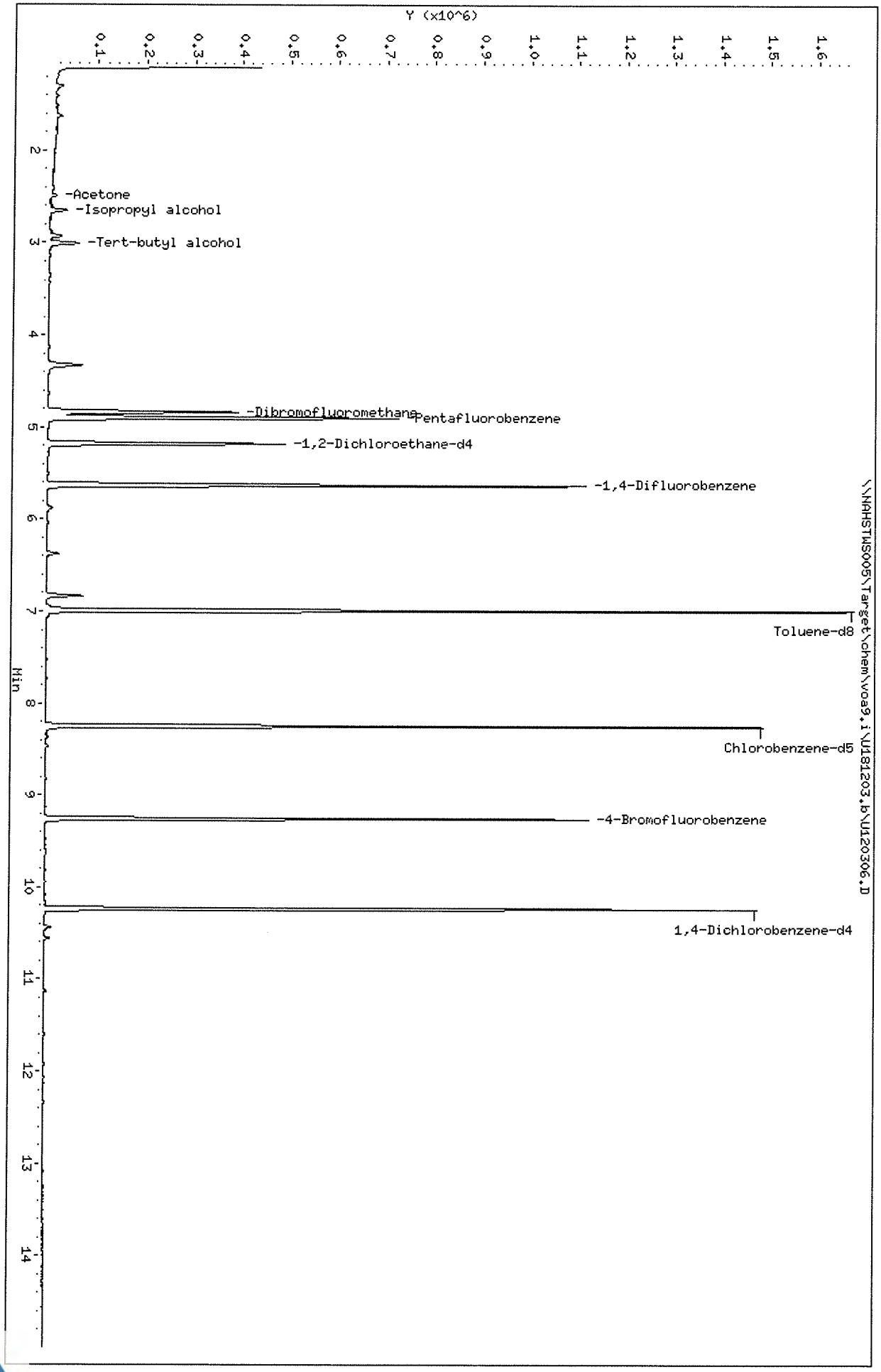
Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
* 1 Pentafluorobenzene	168	4.898	4.894	(1.000)	439215	50.0000	
* 36 1,4-Difluorobenzene	114	5.629	5.625	(1.000)	787192	50.0000	
* 47 Chlorobenzene-d5	117	8.253	8.249	(1.000)	717390	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	10.236	10.236	(1.000)	326616	50.0000	
$ 30 Dibromofluoromethane	113	4.834	4.826	(0.987)	227066	44.8472	44.84
$ 35 1,2-Dichloroethane-d4	65	5.179	5.175	(1.057)	309830	46.5445	46.54
$ 48 Toluene-d8	98	6.989	6.989	(0.847)	969495	52.9725	52.97
$ 69 4-Bromofluorobenzene	95	9.257	9.257	(1.122)	345398	48.6621	48.66
10 Acetone	43	2.491	2.476	(0.509)	13800	2.71751	2.71(a)

QC Flag Legend

a - Target compound detected but, quantitated amount
Below Limit Of Quantitation(BLOQ).



Data File: \\NAHSTWS005\Target\chem\voa9.i\U181203.b\U120306.D
Date : 03-DEC-2018 12:01
Client ID: HS18111440-06
Sample Info: HS18111440-06;HS18111440-06;;;
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA9.i
Operator: PC
Column diameter: 0.18

Data File: \\NAHSTWS005\Target\chem\voa9.i\U181203.b\U120306.D

Date : 03-DEC-2018 12:01

Client ID: HS18111440-06

Instrument: VOA9.i

Sample Info: HS18111440-06;HS18111440-06;;;

Purge Volume: 5.0

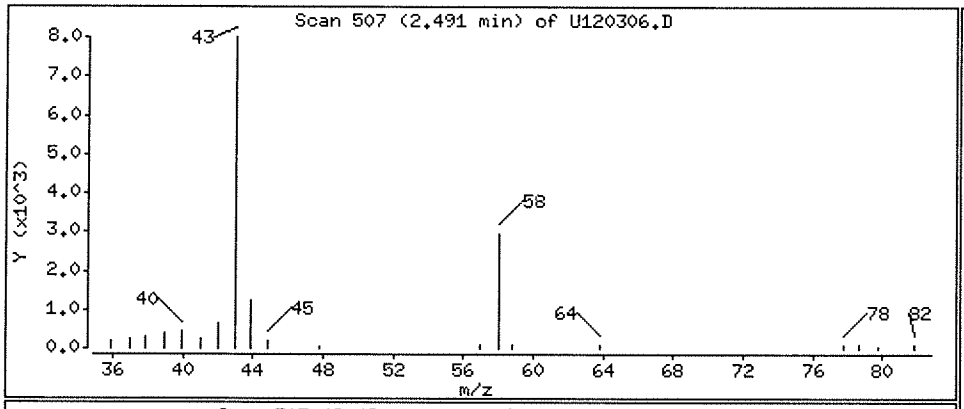
Operator: PC

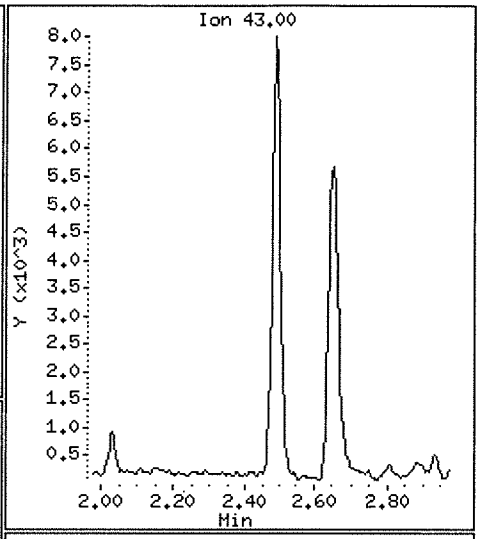
Column phase: DB624

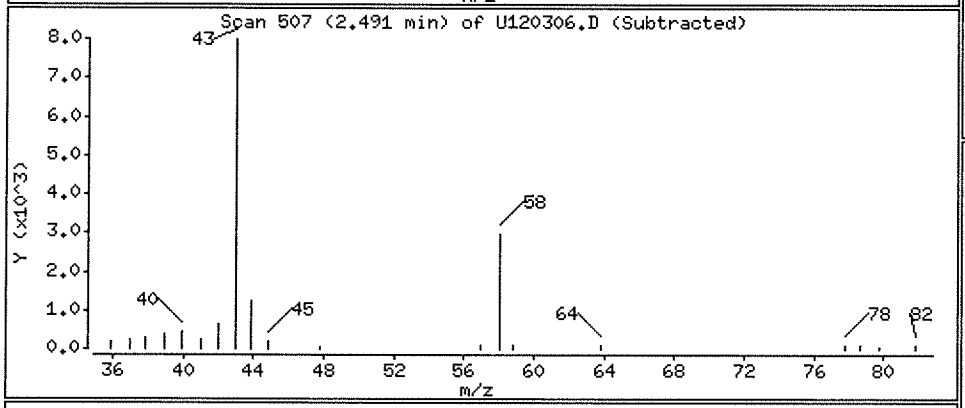
Column diameter: 0.18

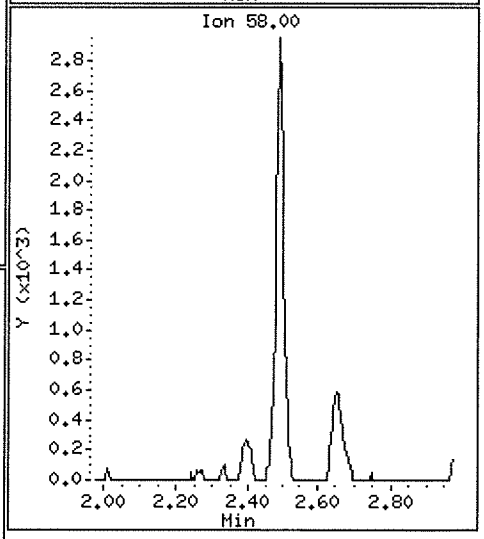
10 Acetone

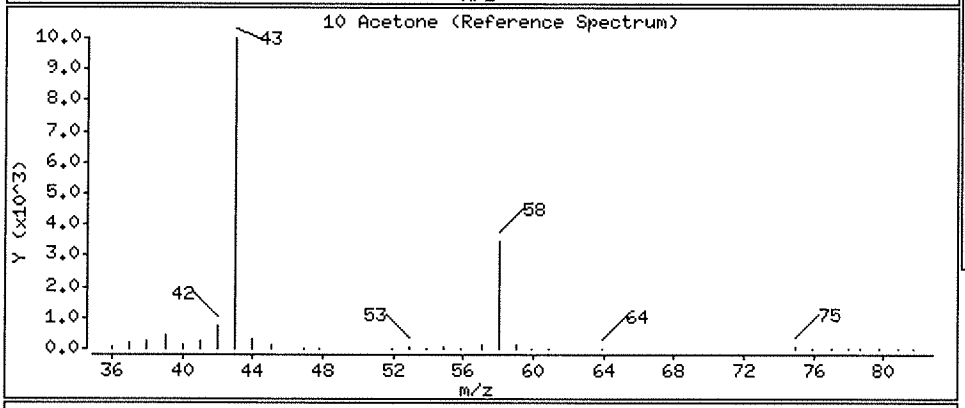
Concentration: 2.71 ug/l

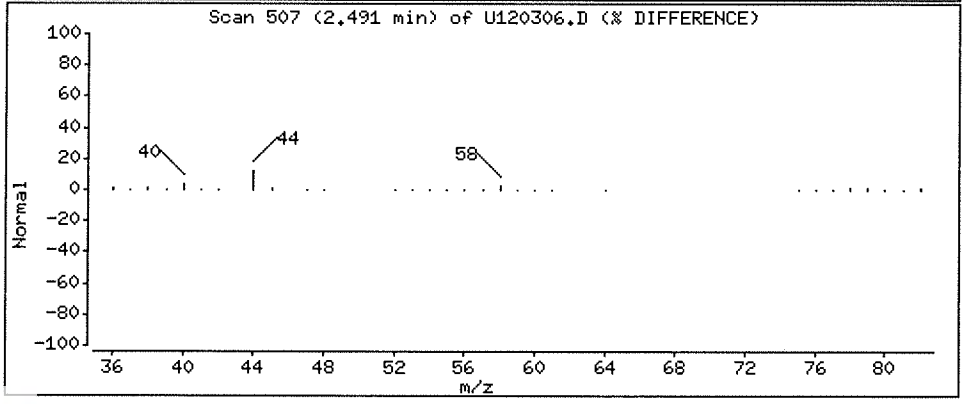












Data File: \\NAHSTWS005\Target\chem\voa9.i\U181203.b\U120307.D Page 1
Report Date: 25-Jan-2019 19:24

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa9.i\U181203.b\U120307.D
Lab Smp Id: HS18111440-01 Client Smp ID: HS18111440-01
Inj Date : 03-DEC-2018 12:25
Operator : PC Inst ID: VOA9.i
Smp Info : HS18111440-01;HS18111440-01;;;
Misc Info : 180315V9;WATER;0;1;
Comment :
Method : \\NAHSTWS005\Target\chem\voa9.i\U181203.b\8260C.m
Meth Date : 25-Jan-2019 19:24 VOA9.i Quant Type: ISTD
Cal Date : 13-NOV-2018 14:15 Cal File: U111308.D
Als bottle: 7
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: LHAAP.sub
Target Version: 4.14
Processing Host: NAHSTW7087

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Cpnd Variable		Local Compound Variable

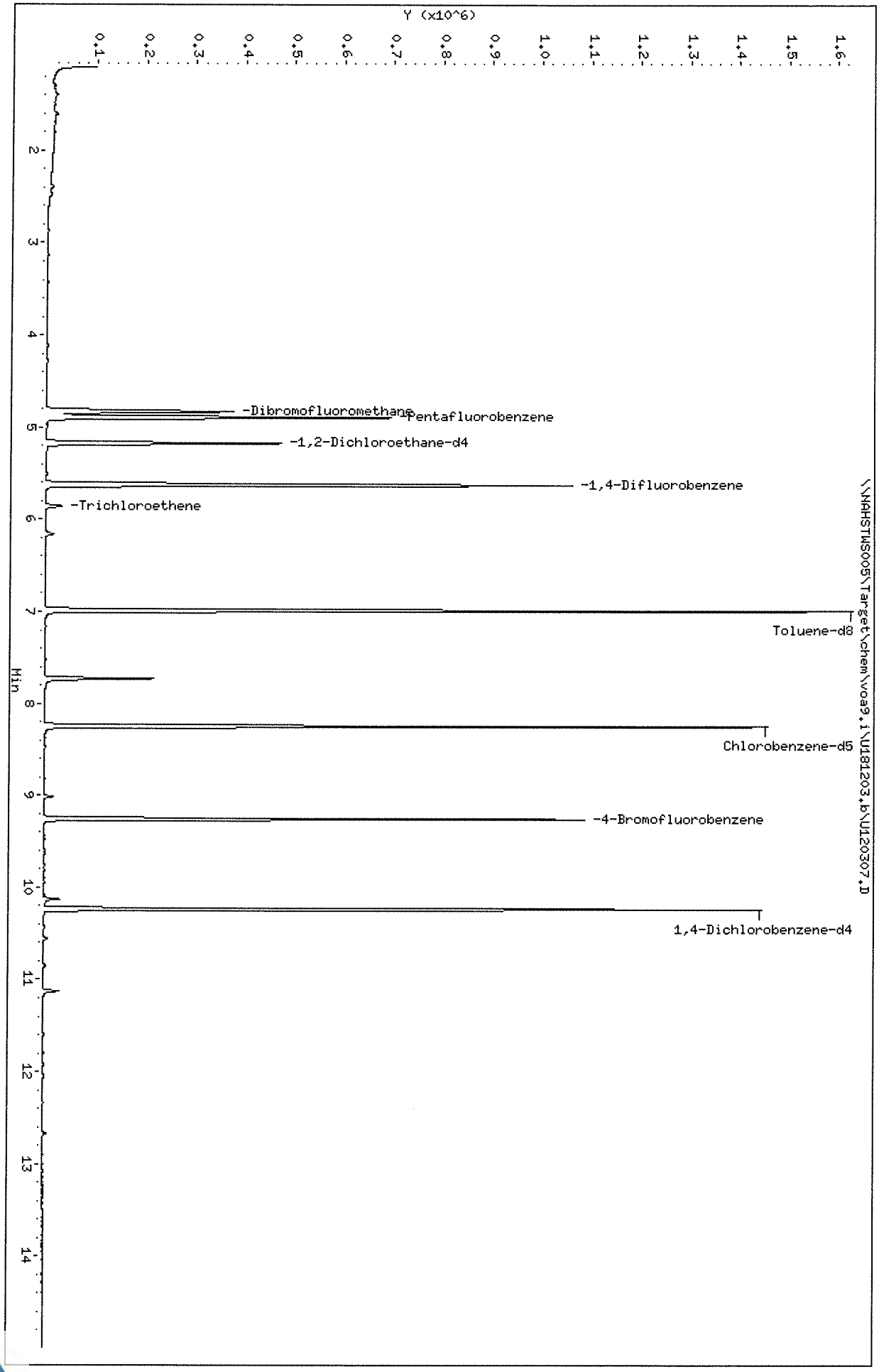
Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
* 1 Pentafluorobenzene	168	4.894	4.894	(1.000)	424893	50.0000	
* 36 1,4-Difluorobenzene	114	5.625	5.625	(1.000)	762954	50.0000	
* 47 Chlorobenzene-d5	117	8.249	8.249	(1.000)	697849	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	10.236	10.236	(1.000)	319004	50.0000	
$ 30 Dibromofluoromethane	113	4.826	4.826	(0.986)	218322	44.5660	44.56
$ 35 1,2-Dichloroethane-d4	65	5.171	5.175	(1.057)	302783	47.0372	47.03
$ 48 Toluene-d8	98	6.989	6.989	(0.847)	933841	52.4364	52.43
$ 69 4-Bromofluorobenzene	95	9.257	9.257	(1.122)	337567	48.8955	48.89
38 Trichloroethene	130	5.861	5.861	(1.042)	9742	1.87391	1.87(a)

QC Flag Legend

a - Target compound detected but, quantitated amount
Below Limit Of Quantitation(BLOQ).

Data File: \\NAHSTWS005\Target\chem\voa9.i\U181203.b\U120307.D
Date : 03-DEC-2018 12:25
Client ID: HS18111440-01
Sample Info: HS18111440-01;HS18111440-01;;;
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA9.i
Operator: PC
Column diameter: 0.18



Data File: \\NAHSTWS005\Target\chem\voa9.i\U181203.b\U120307.D

Date : 03-DEC-2018 12:25

Client ID: HS18111440-01

Instrument: VOA9.i

Sample Info: HS18111440-01;HS18111440-01;;;

Purge Volume: 5.0

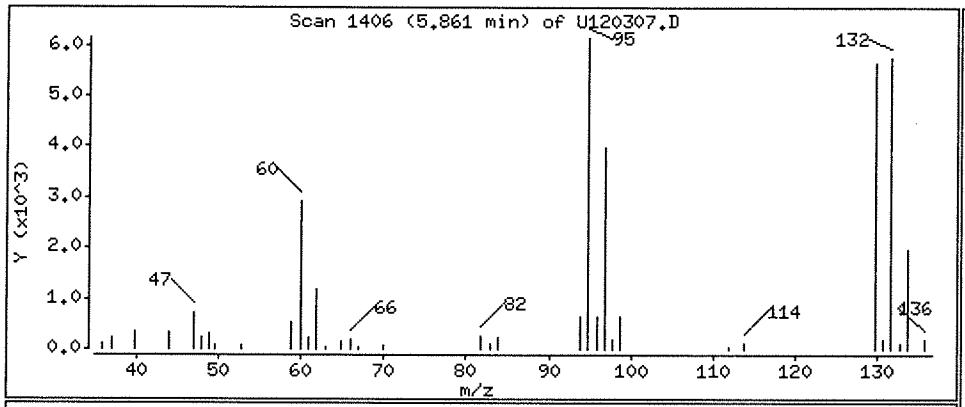
Operator: PC

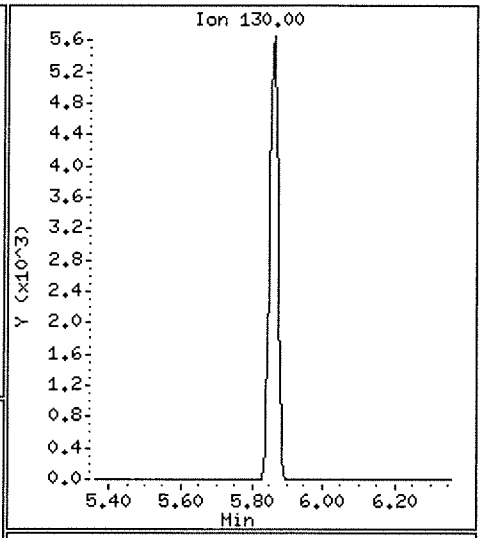
Column phase: DB624

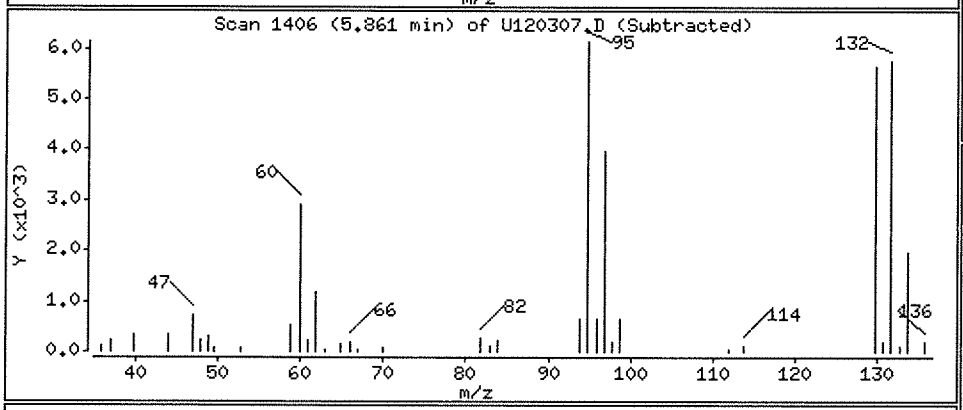
Column diameter: 0.18

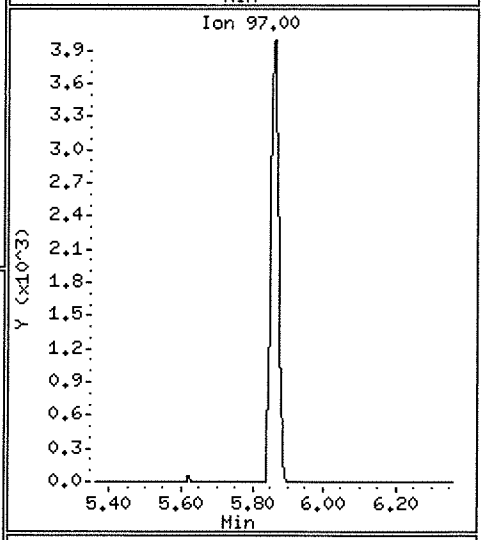
38 Trichloroethene

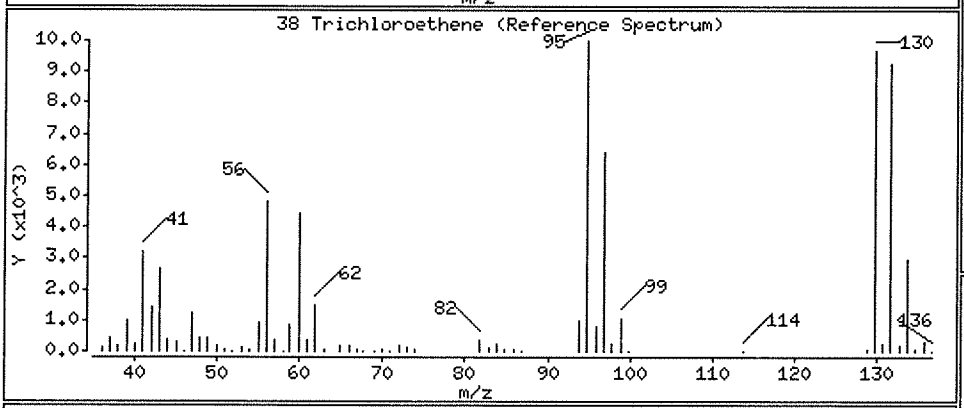
Concentration: 1.87 ug/l

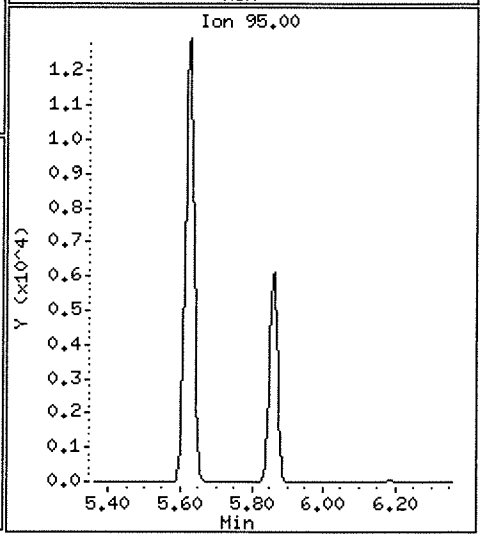


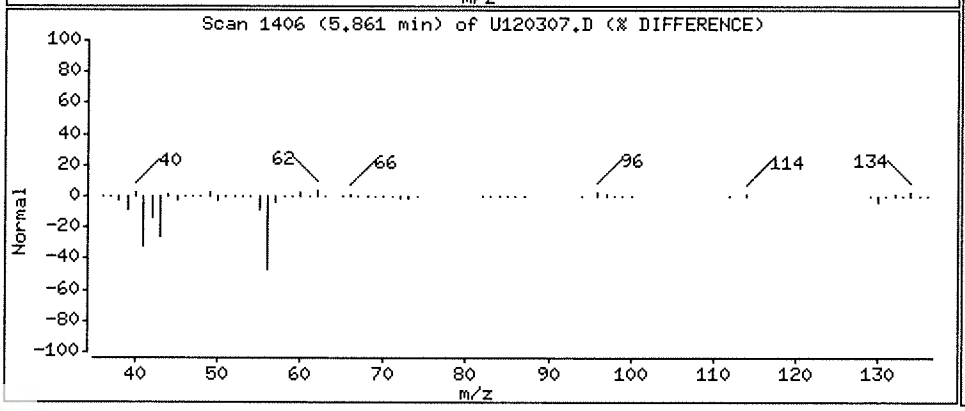












Data File: \\NAHSTWS005\Target\chem\voa9.i\U181203.b\U120308.D Page 1
Report Date: 25-Jan-2019 19:24

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa9.i\U181203.b\U120308.D
Lab Smp Id: HS18111440-04 Client Smp ID: HS18111440-04
Inj Date : 03-DEC-2018 12:50
Operator : PC Inst ID: VOA9.i
Smp Info : HS18111440-04;HS18111440-04;;;
Misc Info : 180315V9;WATER;0;1;
Comment :
Method : \\NAHSTWS005\Target\chem\voa9.i\U181203.b\8260C.m
Meth Date : 25-Jan-2019 19:24 VOA9.i Quant Type: ISTD
Cal Date : 13-NOV-2018 14:15 Cal File: U111308.D
Als bottle: 8
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: LHAAP.sub
Target Version: 4.14
Processing Host: NAHSTW7087

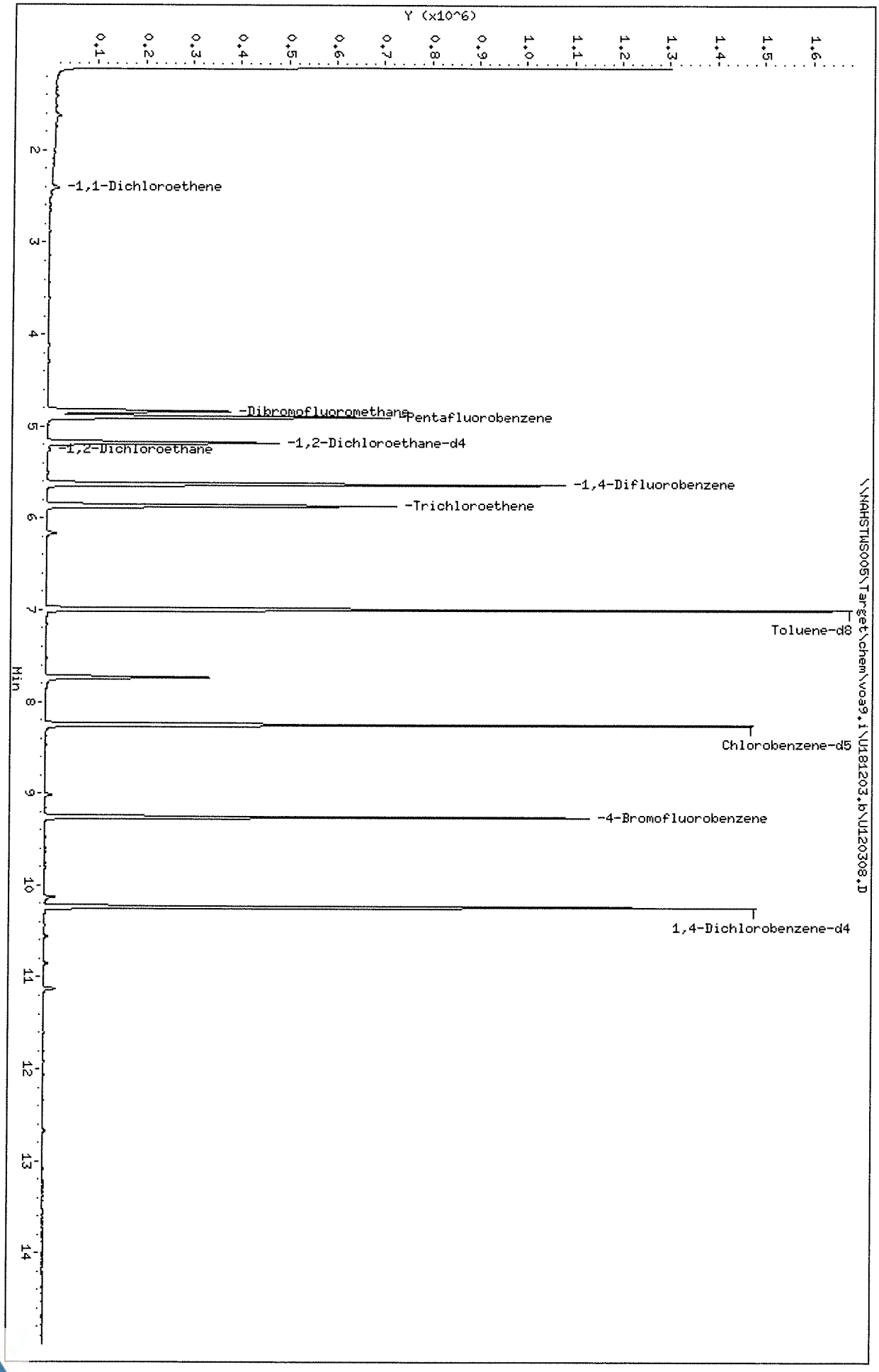
Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	CONCENTRATIONS FINAL (ug/l)
* 1 Pentafluorobenzene	168	4.898	4.894	(1.000)	428447	50.0000	
* 36 1,4-Difluorobenzene	114	5.629	5.625	(1.000)	772735	50.0000	
* 47 Chlorobenzene-d5	117	8.253	8.249	(1.000)	714431	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	10.236	10.236	(1.000)	326256	50.0000	
$ 30 Dibromofluoromethane	113	4.834	4.826	(0.987)	223479	45.2593	45.25
$ 35 1,2-Dichloroethane-d4	65	5.179	5.175	(1.057)	305608	47.0839	47.08
$ 48 Toluene-d8	98	6.989	6.989	(0.847)	954768	52.3649	52.36
$ 69 4-Bromofluorobenzene	95	9.257	9.257	(1.122)	341323	48.2789	48.27
11 1,1-Dichloroethene	96	2.409	2.397	(0.492)	3996	0.82628	0.82(a)
33 1,2-Dichloroethane	62	5.258	5.250	(0.934)	4551	0.56282	0.56(a)
38 Trichloroethene	130	5.865	5.861	(1.042)	215765	40.9779	40.97

QC Flag Legend

a - Target compound detected but, quantitated amount
Below Limit Of Quantitation(BLOQ).



Data File: \\NAHSTWS005\Target\chem\voa9.i\U181203.b\U120308.D
Date : 03-DEC-2018 12:50
Client ID: HS18111440-04
Sample Info: HS18111440-04;HS18111440-04;;;
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA9.i
Operator: PC
Column diameter: 0.18

Data File: \\NAHSTWS005\Target\chem\voa9.i\U181203.b\U120308.D

Date : 03-DEC-2018 12:50

Client ID: HS18111440-04

Instrument: VOA9.i

Sample Info: HS18111440-04;HS18111440-04;;;

Purge Volume: 5.0

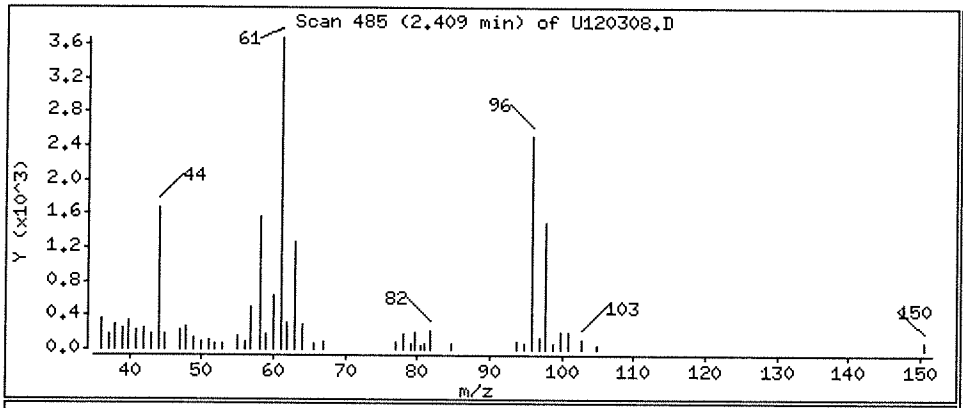
Operator: PC

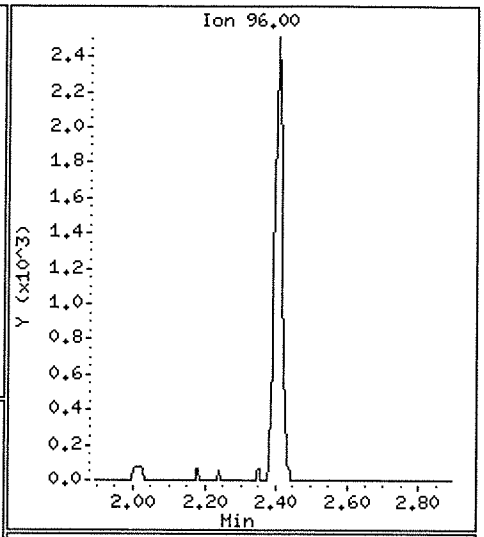
Column phase: DB624

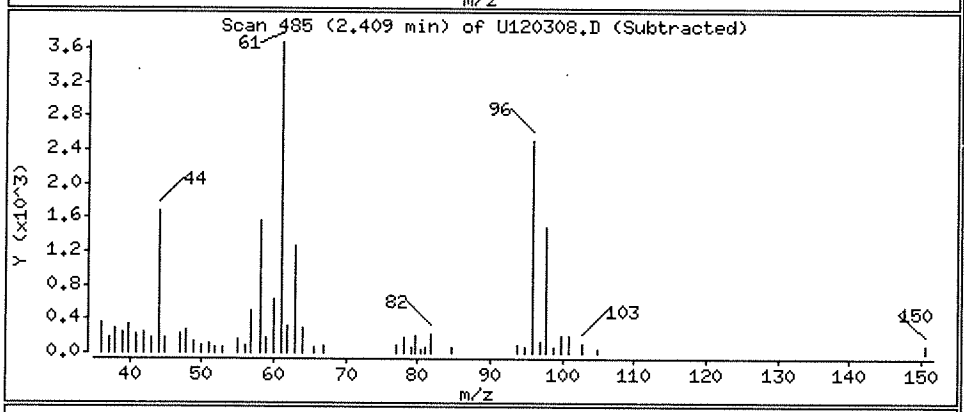
Column diameter: 0.18

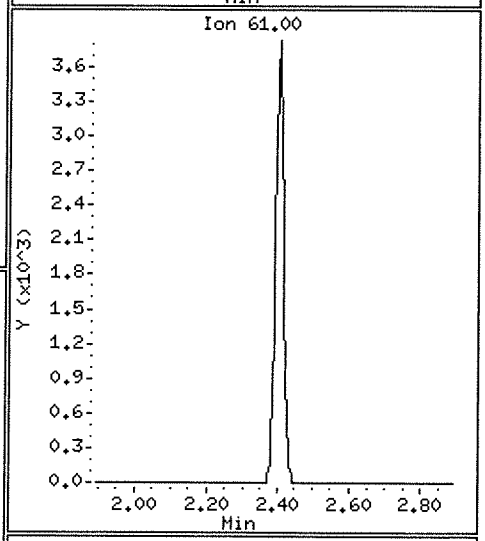
11 1,1-Dichloroethene

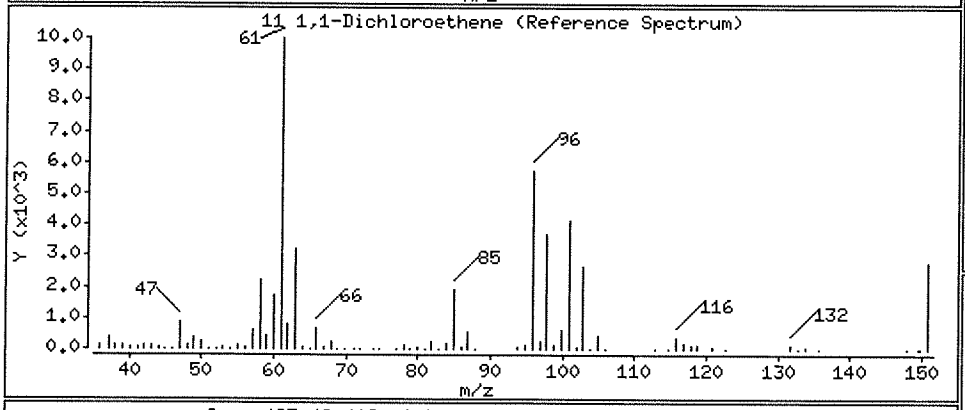
Concentration: 0.82 ug/l

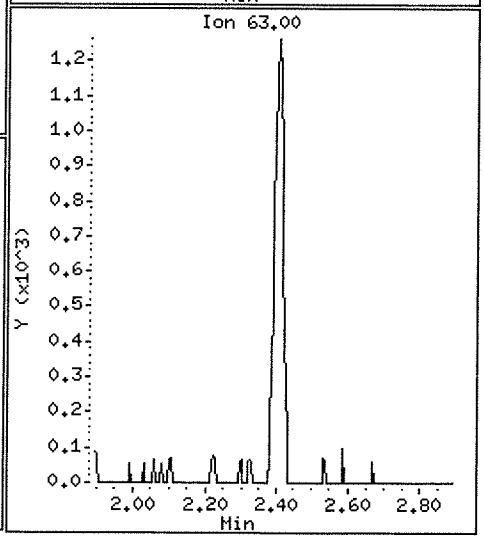


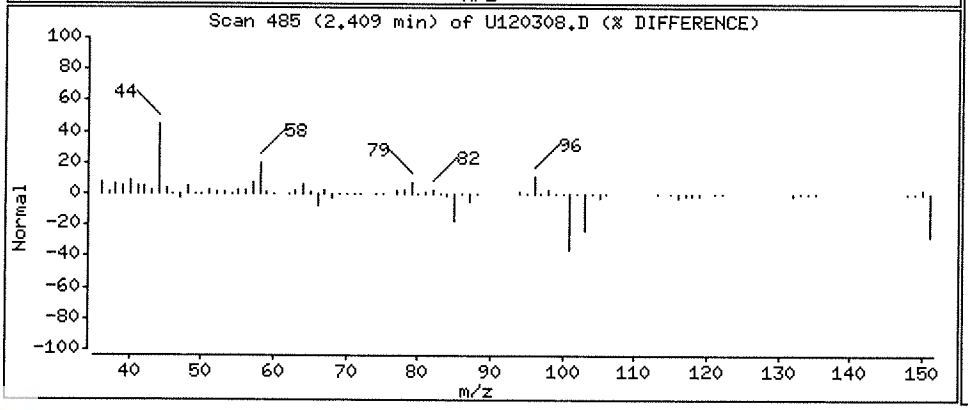












Data File: \\NAHSTWS005\Target\chem\voa9.i\U181203.b\U120308.D Page 4

Date : 03-DEC-2018 12:50

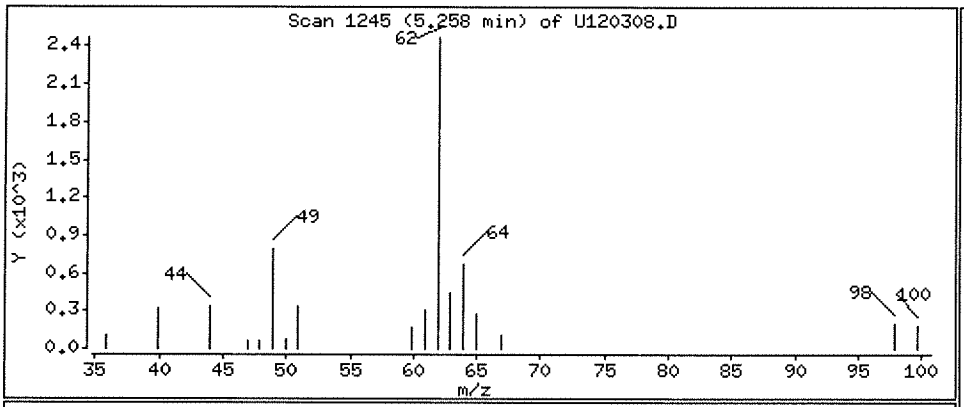
Client ID: HS18111440-04 Instrument: VOA9.i

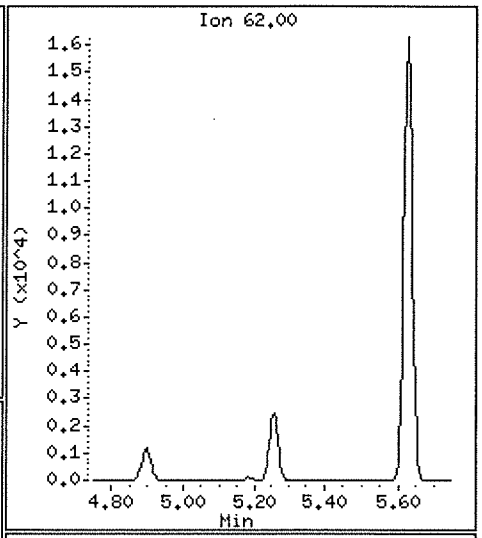
Sample Info: HS18111440-04;HS18111440-04;;;

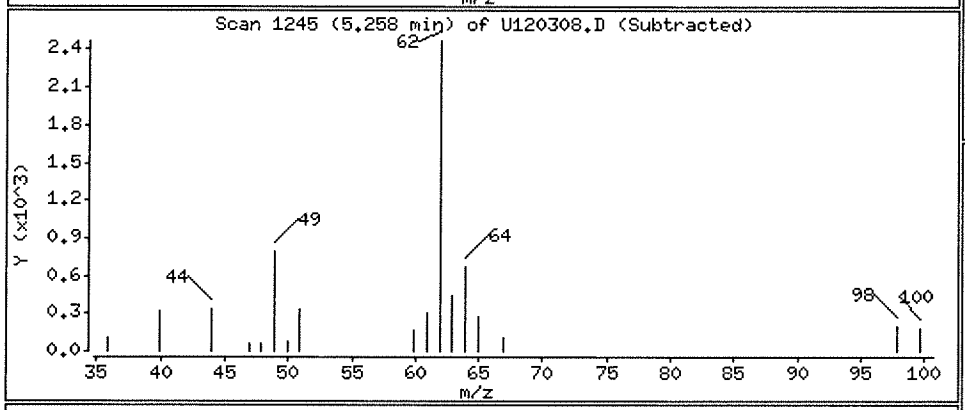
Purge Volume: 5.0 Operator: PC

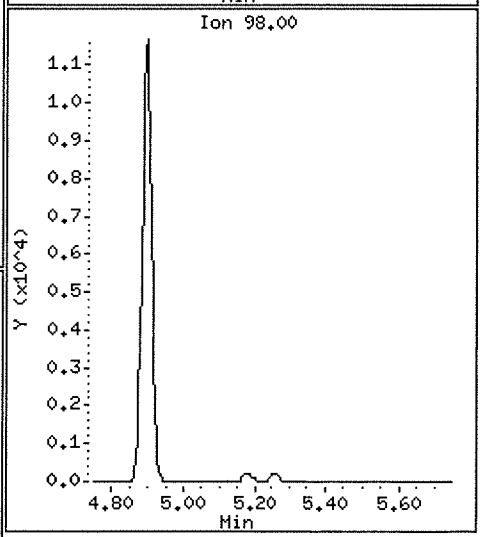
Column phase: DB624 Column diameter: 0.18

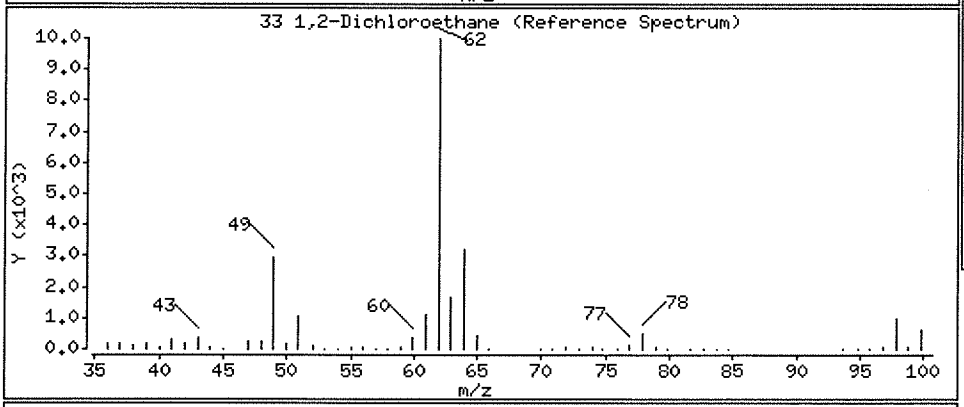
33 1,2-Dichloroethane Concentration: 0.56 ug/l

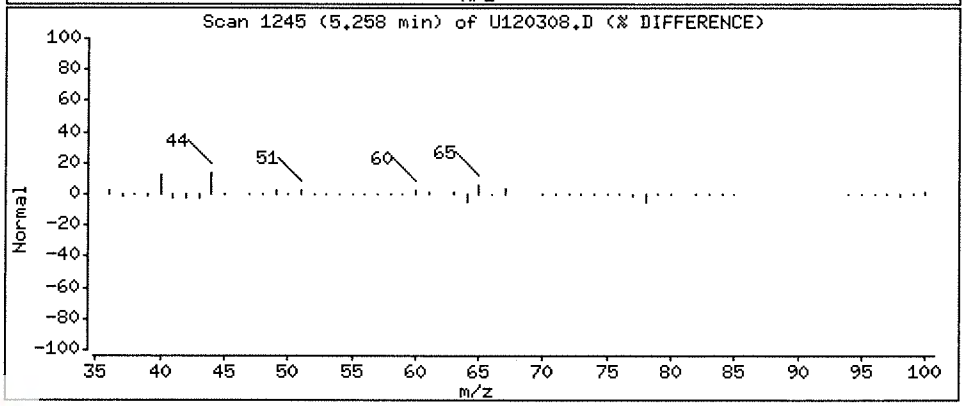












Data File: \\NAHSTWS005\Target\chem\voa9.i\U181203.b\U120308.D

Date : 03-DEC-2018 12:50

Client ID: HS18111440-04

Instrument: VOA9.i

Sample Info: HS18111440-04;HS18111440-04;;;

Purge Volume: 5.0

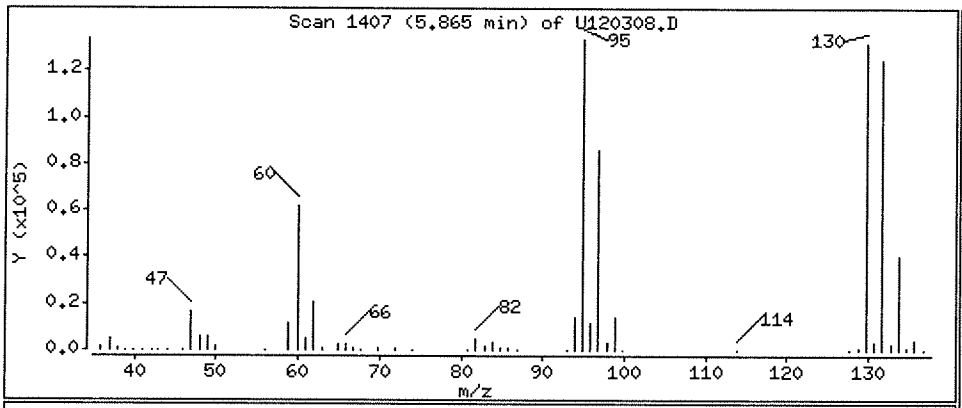
Operator: PC

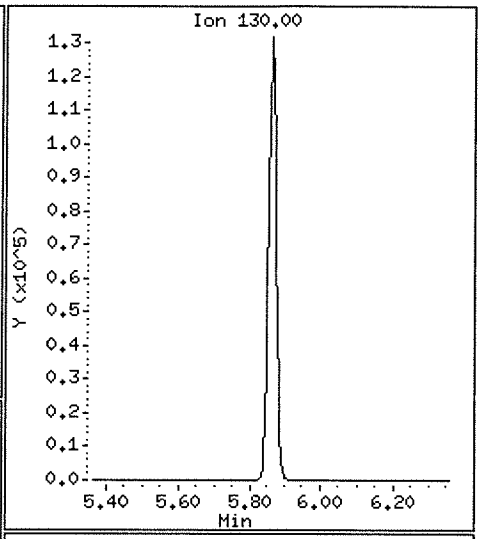
Column phase: DB624

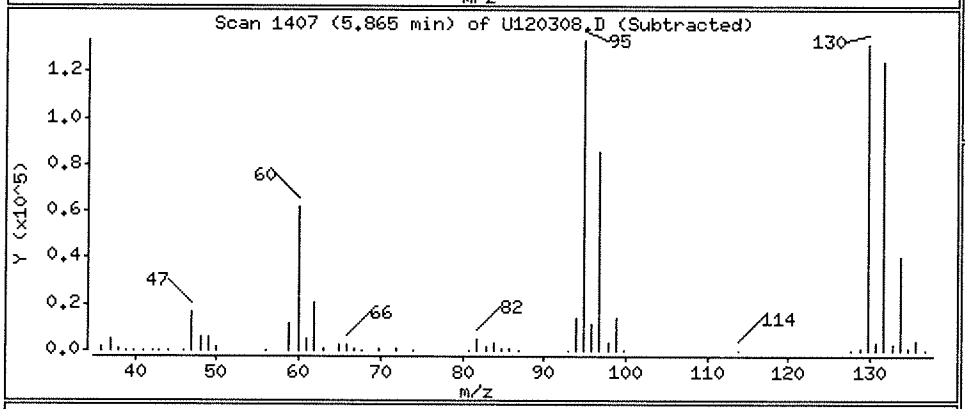
Column diameter: 0.18

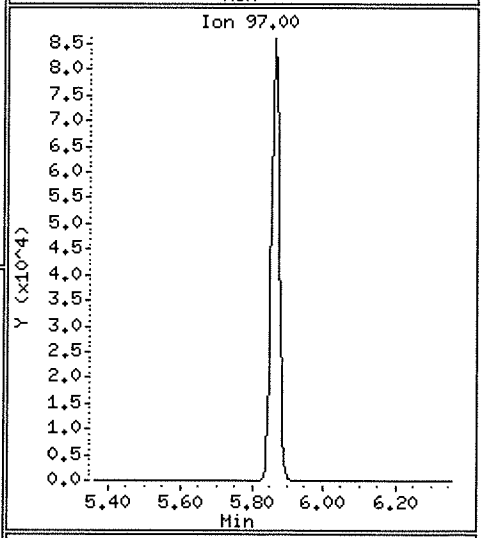
38 Trichloroethene

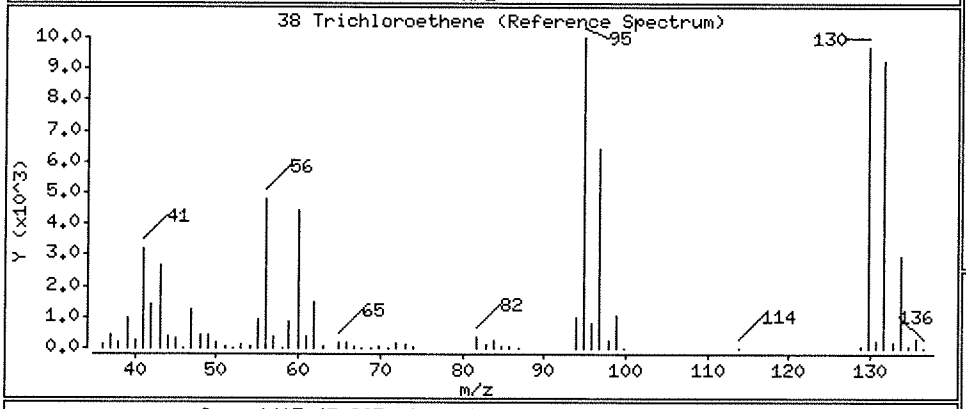
Concentration: 40.97 ug/l

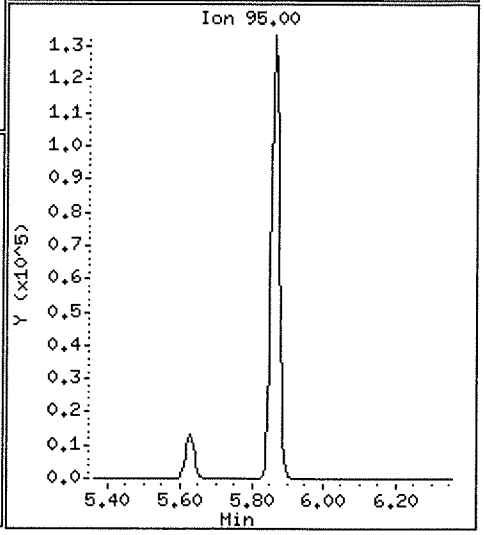


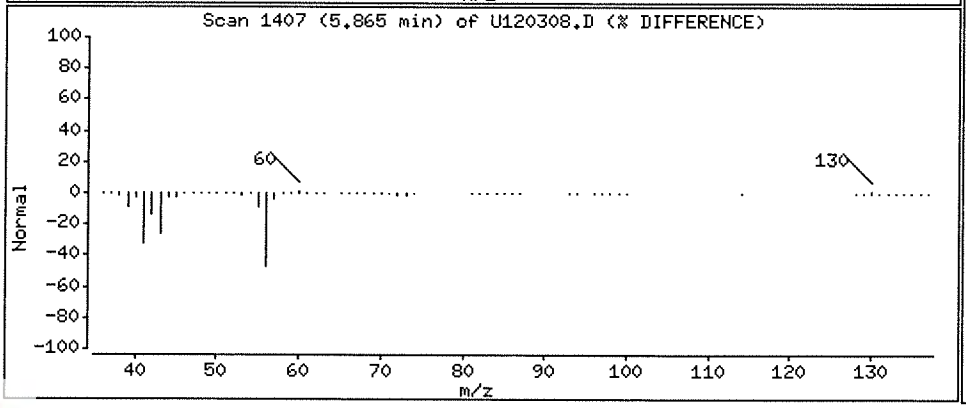












ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa9.i\U181203.b\U120309.D
Lab Smp Id: HS18111440-05 Client Smp ID: HS18111440-05
Inj Date : 03-DEC-2018 13:15
Operator : PC Inst ID: VOA9.i
Smp Info : HS18111440-05;HS18111440-05;;;
Misc Info : 180315V9;WATER;0;1;
Comment :
Method : \\NAHSTWS005\Target\chem\voa9.i\U181203.b\8260C.m
Meth Date : 25-Jan-2019 19:24 VOA9.i Quant Type: ISTD
Cal Date : 13-NOV-2018 14:15 Cal File: U111308.D
Als bottle: 9
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: LHAAP.sub
Target Version: 4.14
Processing Host: NAHSTW7087

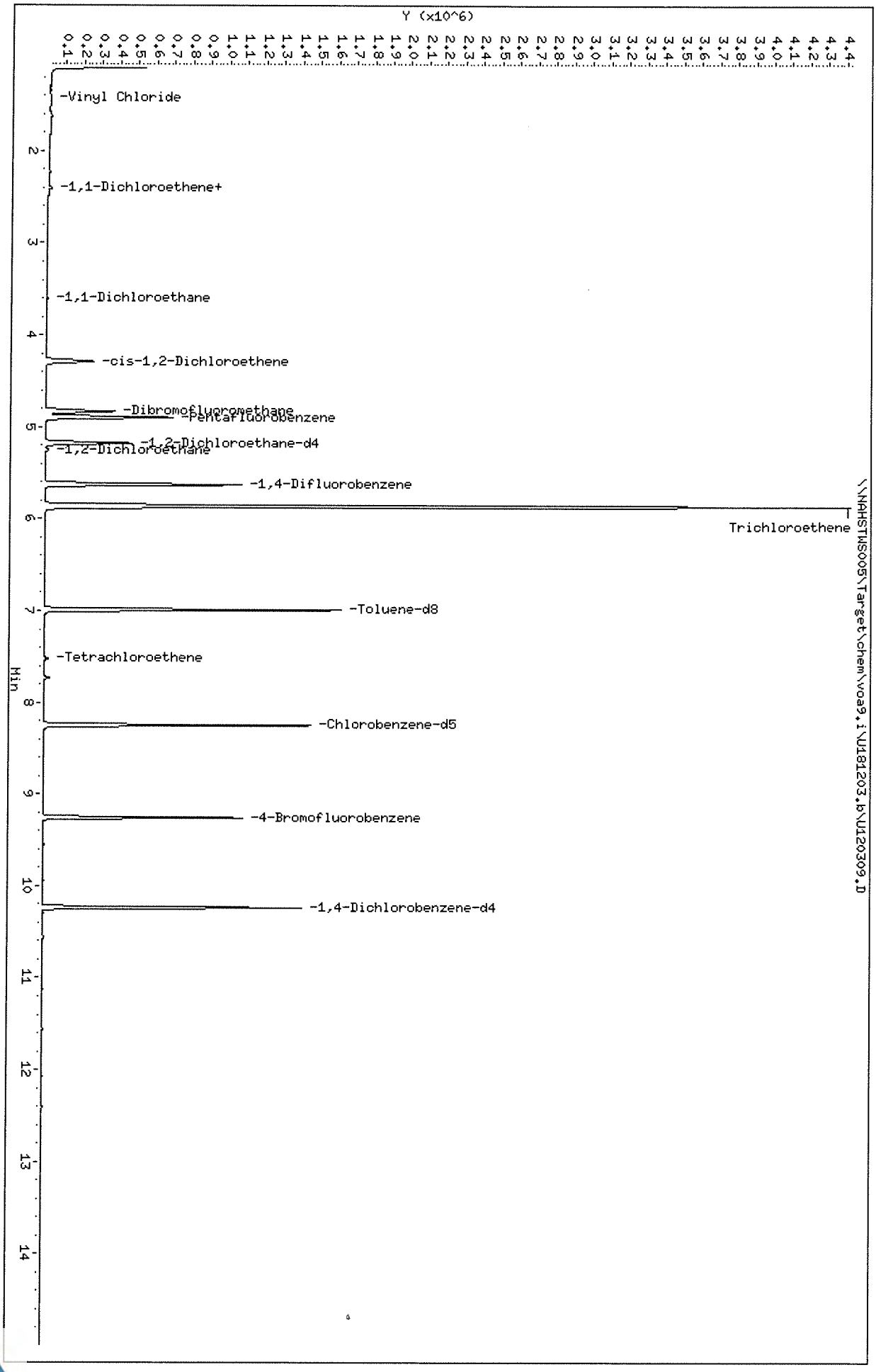
Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	CONCENTRATIONS FINAL (ug/l)
* 1 Pentafluorobenzene	168	4.894	4.894	(1.000)	421076	50.0000	
* 36 1,4-Difluorobenzene	114	5.625	5.625	(1.000)	760861	50.0000	
* 47 Chlorobenzene-d5	117	8.249	8.249	(1.000)	698059	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	10.236	10.236	(1.000)	311309	50.0000	
$ 30 Dibromofluoromethane	113	4.830	4.826	(0.987)	216339	44.5614	44.56
$ 35 1,2-Dichloroethane-d4	65	5.175	5.175	(1.057)	301390	47.2531	47.25
$ 48 Toluene-d8	98	6.989	6.989	(0.847)	932133	52.3211	52.32
$ 69 4-Bromofluorobenzene	95	9.257	9.257	(1.122)	334010	48.3542	48.35
138 Freon TF	101	2.401	2.401	(0.491)	3210	0.76099	0.76(a)
22 1,1-Dichloroethane	63	3.604	3.601	(0.737)	4290	0.44459	0.44(a)
11 1,1-Dichloroethene	96	2.401	2.397	(0.491)	2944	0.61941	0.61(a)
33 1,2-Dichloroethane	62	5.254	5.250	(0.934)	12211	1.53370	1.53(a)
27 cis-1,2-Dichloroethene	96	4.286	4.283	(0.876)	120033	20.1176	20.11
56 Tetrachloroethene	164	7.525	7.522	(0.912)	4172	1.14092	1.14(a)
38 Trichloroethene	130	5.861	5.861	(1.042)	1302220	251.176	251.17(A)
5 Vinyl Chloride	62	1.419	1.415	(0.290)	1088	0.66499	0.66(a)

QC Flag Legend

a - Target compound detected but, quantitated amount
Below Limit Of Quantitation(BLOQ).
A - Target compound detected but, quantitated amount
exceeded maximum amount.



Data File: \\NAHSTWS005\Target\chem\voa9,i\U181203,b\U120309,D
Date : 03-DEC-2018 13:15
Client ID: HS18111440-05
Sample Info: HS18111440-05;HS18111440-05;;;
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA9,i
Operator: PC
Column diameter: 0.18

Data File: \\NAHSTWS005\Target\chem\voa9.i\U181203.b\U120309.D

Date : 03-DEC-2018 13:15

Client ID: HS18111440-05

Instrument: VOA9.i

Sample Info: HS18111440-05;HS18111440-05;;;

Purge Volume: 5.0

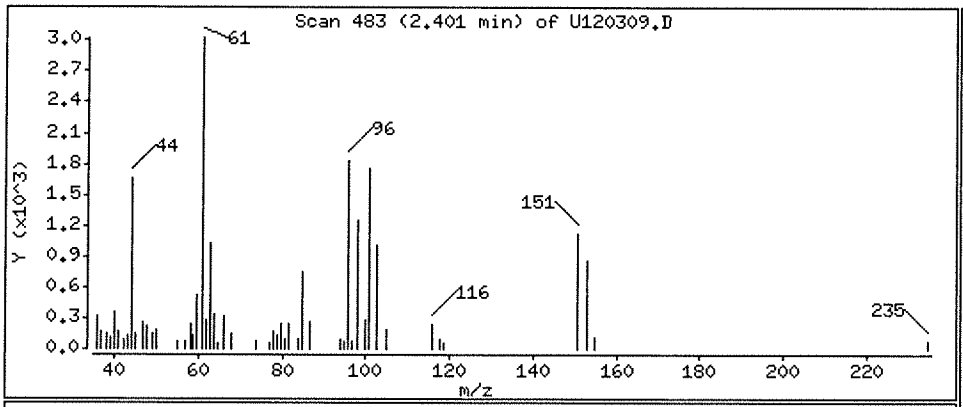
Operator: PC

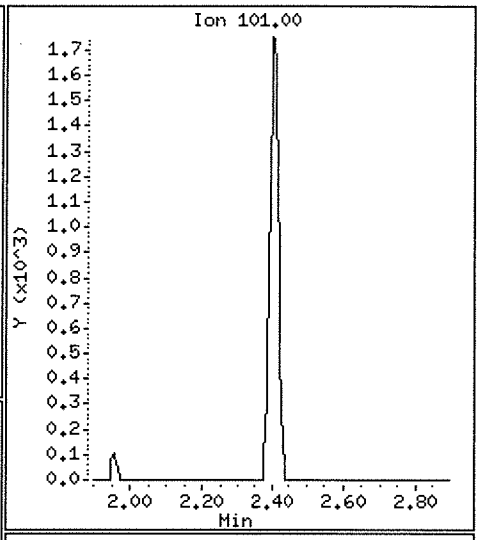
Column phase: DB624

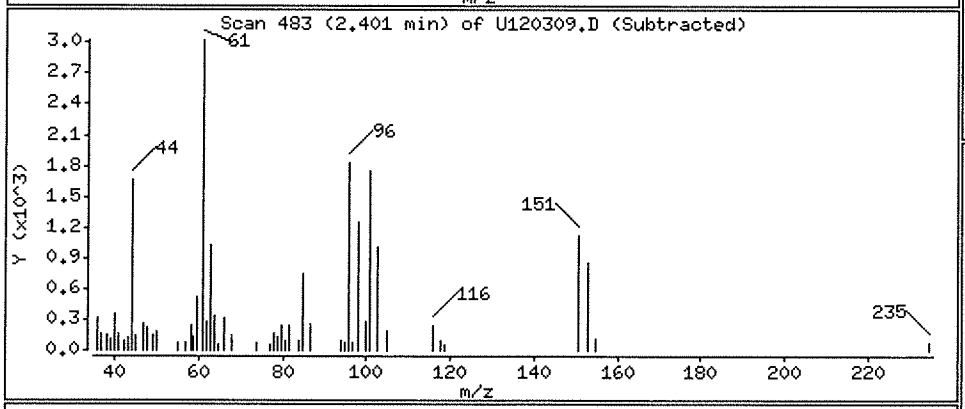
Column diameter: 0.18

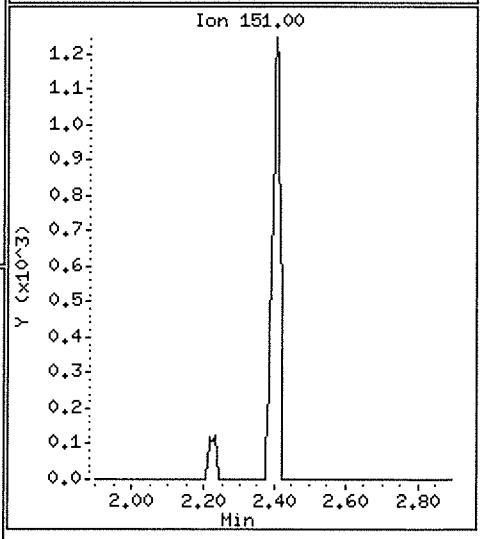
138 Freon TF

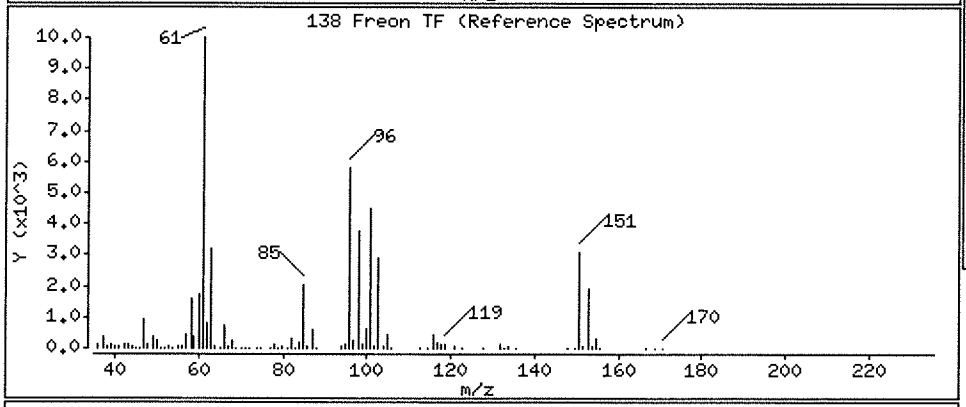
Concentration: 0.76 ug/l

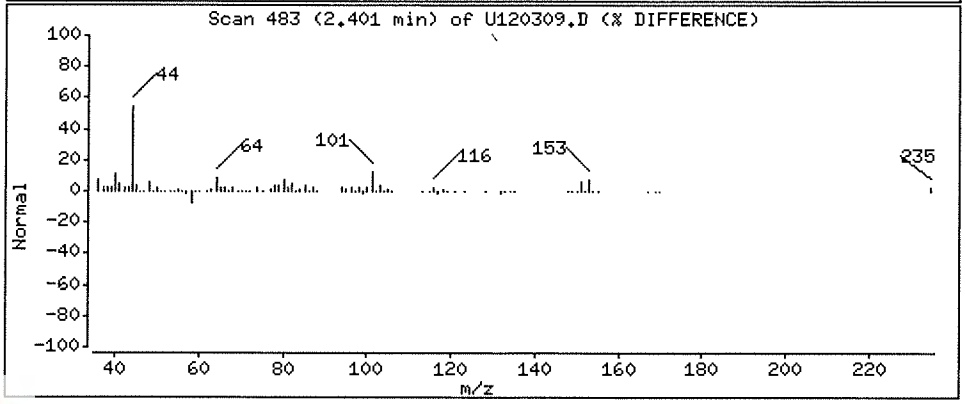












Data File: \\NAHSTWS005\Target\chem\voa9.i\U181203.b\U120309.D

Date : 03-DEC-2018 13:15

Client ID: HS18111440-05

Instrument: VOA9.i

Sample Info: HS18111440-05;HS18111440-05;;;

Purge Volume: 5.0

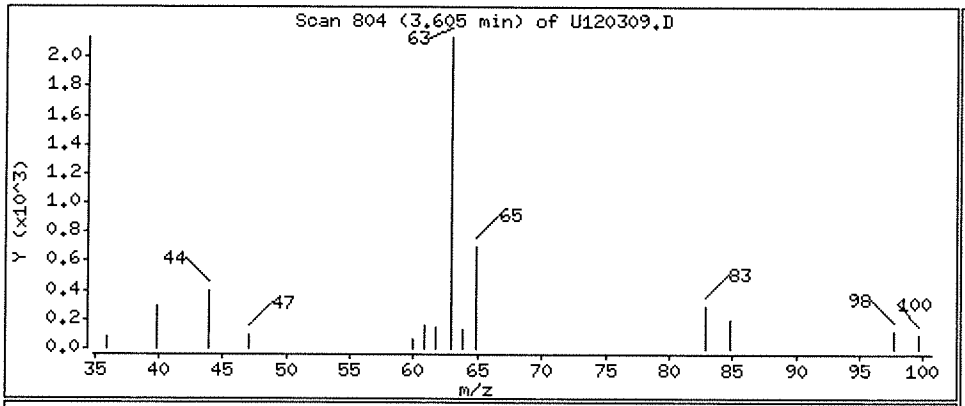
Operator: PC

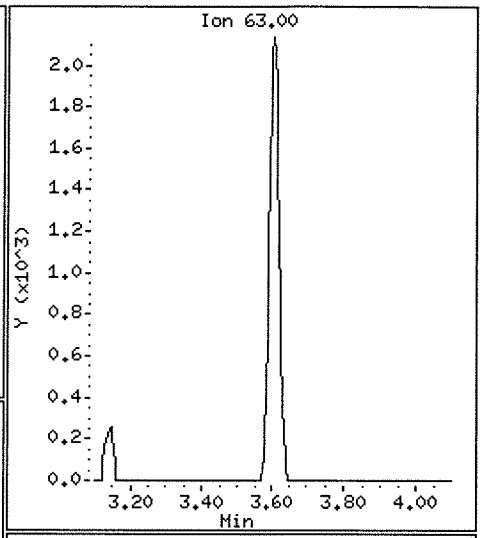
Column phase: DB624

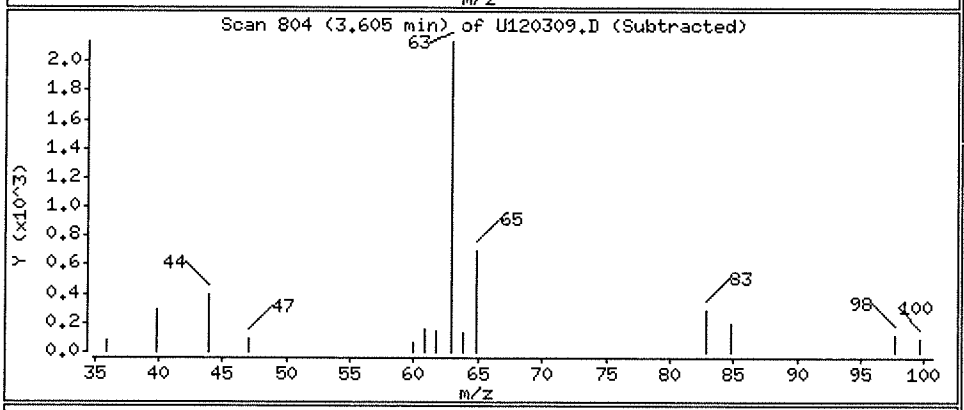
Column diameter: 0.18

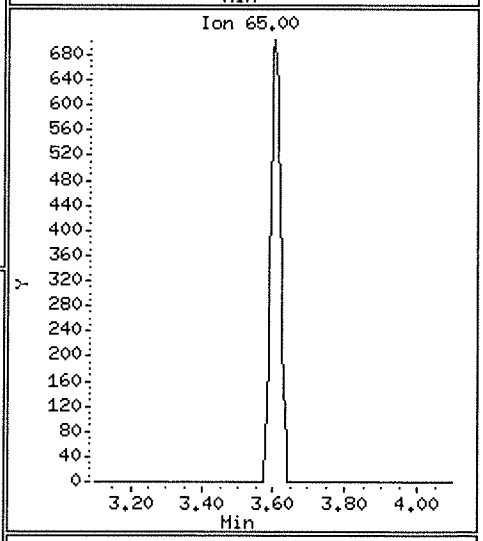
22 1,1-Dichloroethane

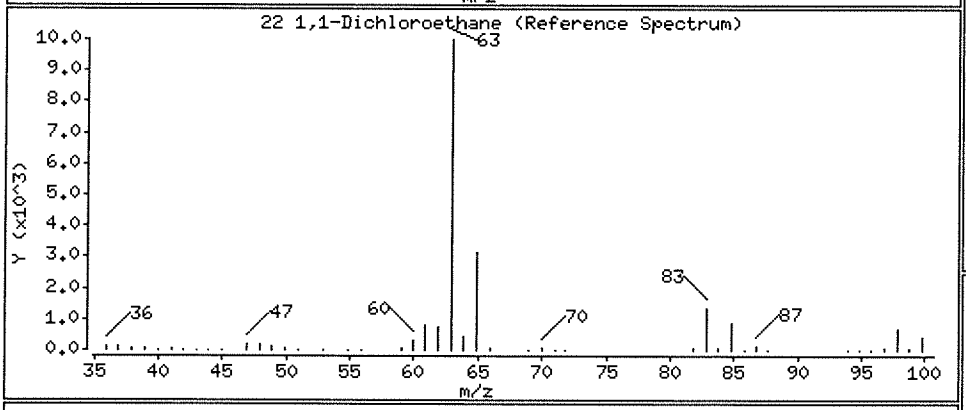
Concentration: 0.44 ug/l

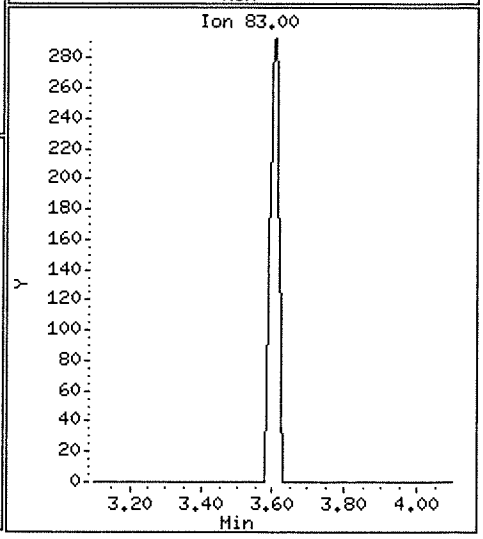


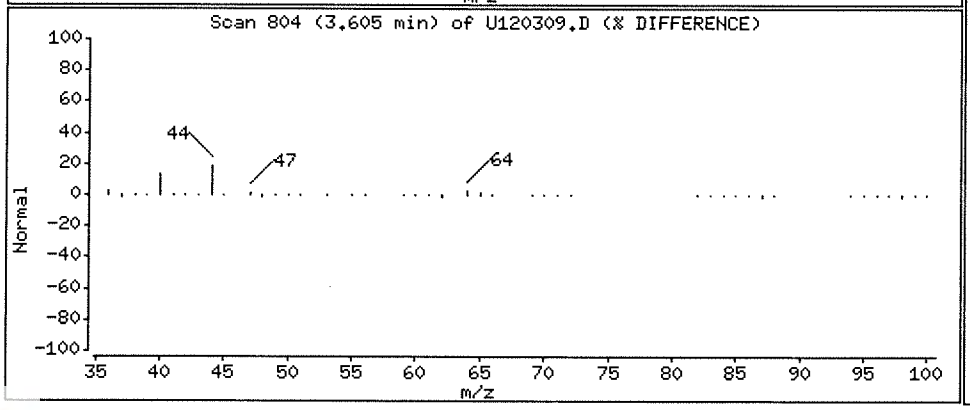












Data File: \\NAHSTWS005\Target\chem\voa9.i\U181203.b\U120309.D

Date : 03-DEC-2018 13:15

Client ID: HS18111440-05

Instrument: VOA9.i

Sample Info: HS18111440-05;HS18111440-05;;;

Purge Volume: 5.0

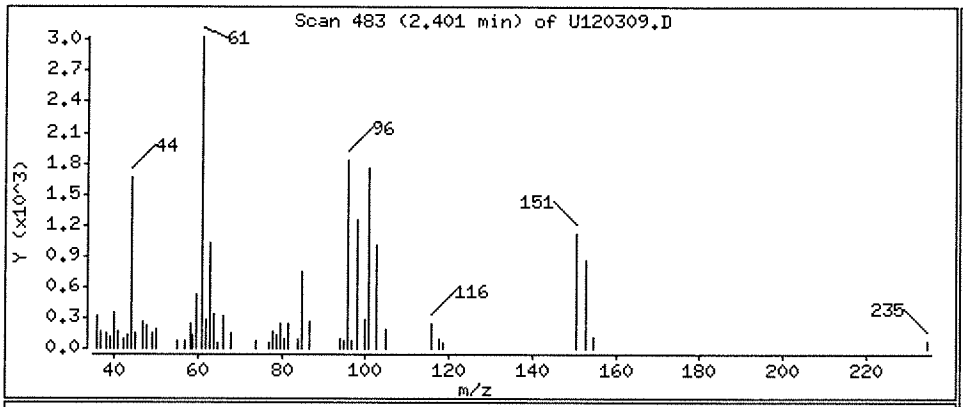
Operator: PC

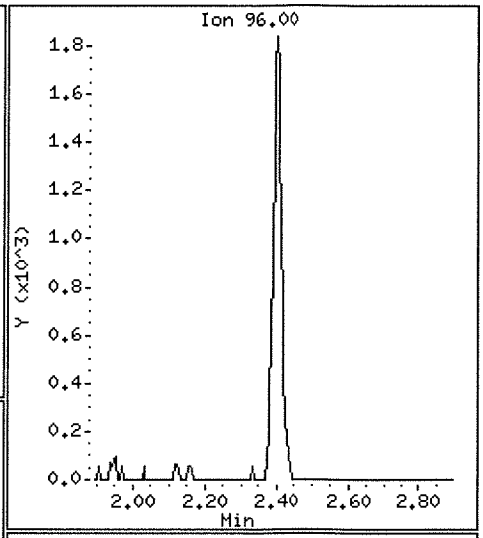
Column phase: DB624

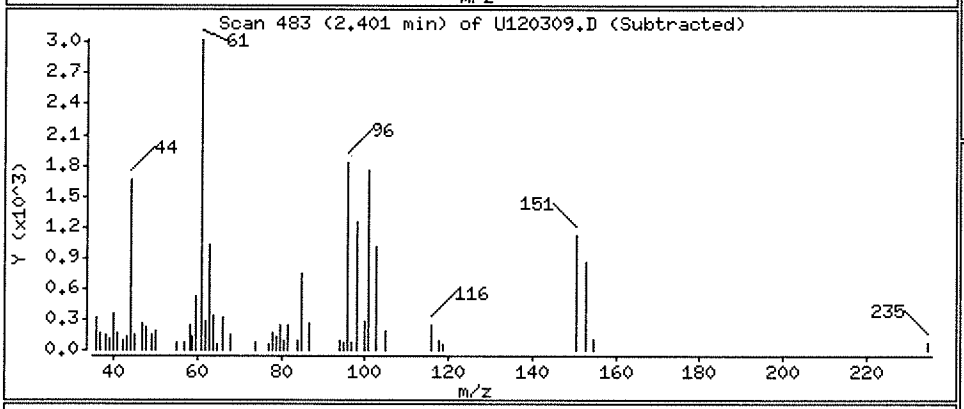
Column diameter: 0.18

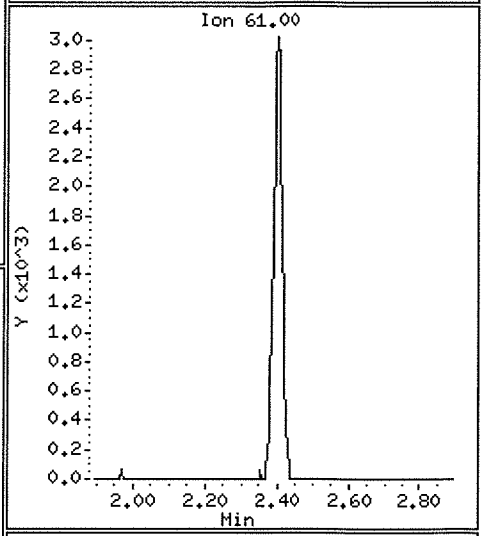
11 1,1-Dichloroethene

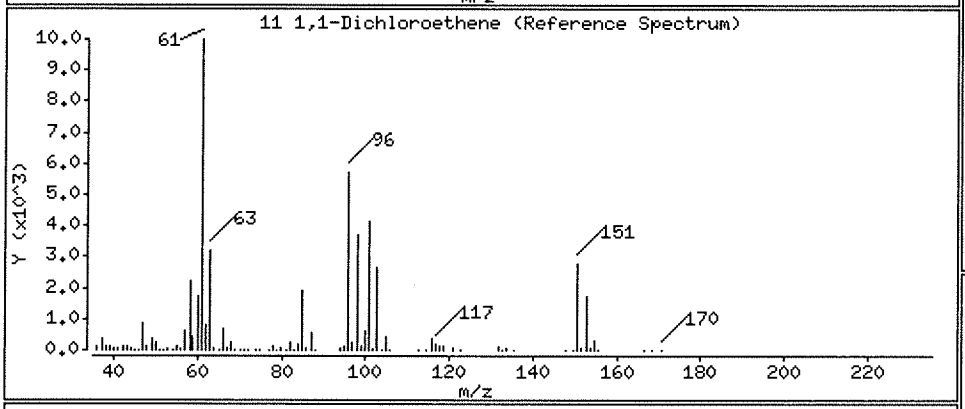
Concentration: 0.61 ug/l

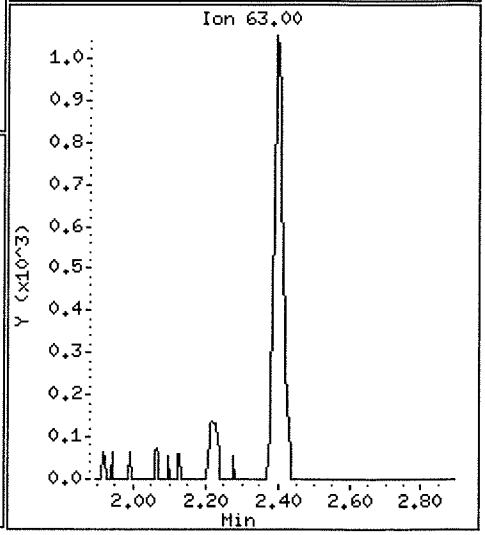


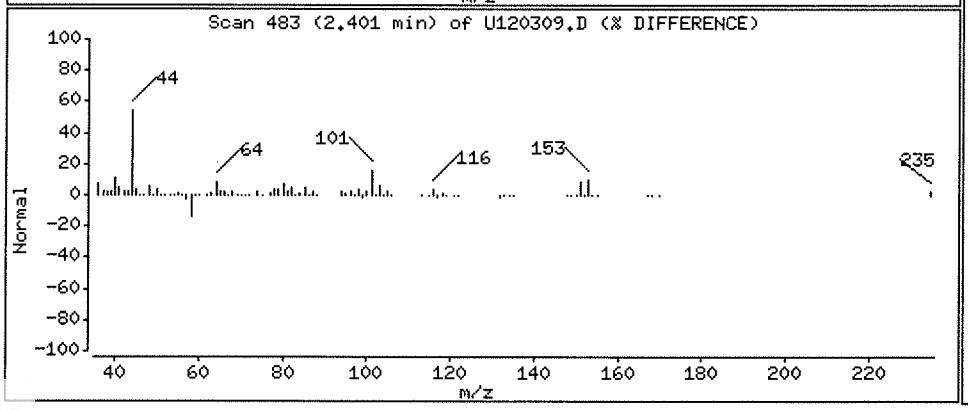












Data File: \\NAHSTWS005\Target\chem\voa9.i\U181203.b\U120309.D

Date : 03-DEC-2018 13:15

Client ID: HS18111440-05

Instrument: VOA9.i

Sample Info: HS18111440-05;HS18111440-05;;;

Purge Volume: 5.0

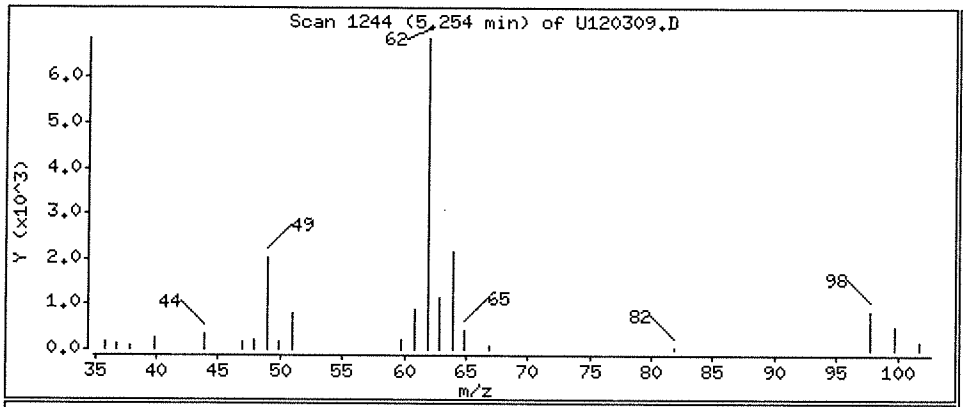
Operator: PC

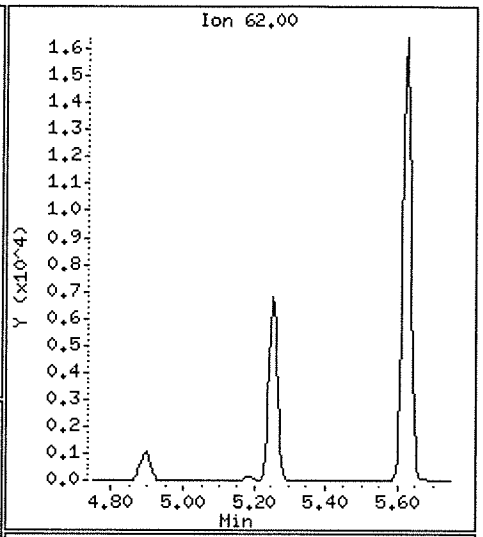
Column phase: DB624

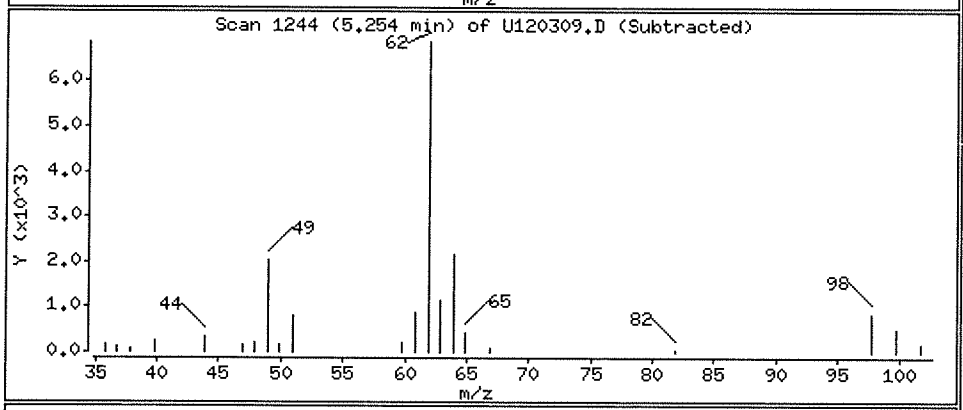
Column diameter: 0.18

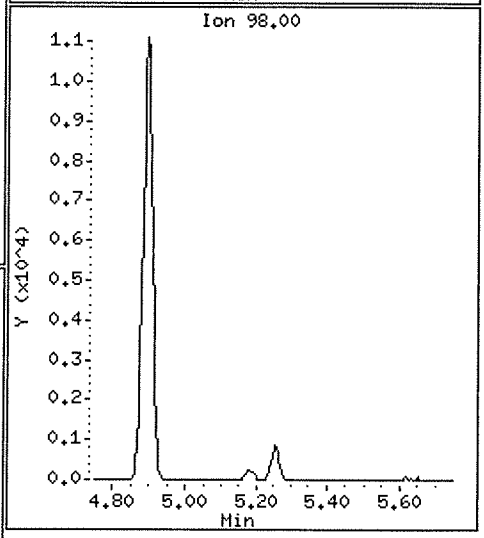
33 1,2-Dichloroethane

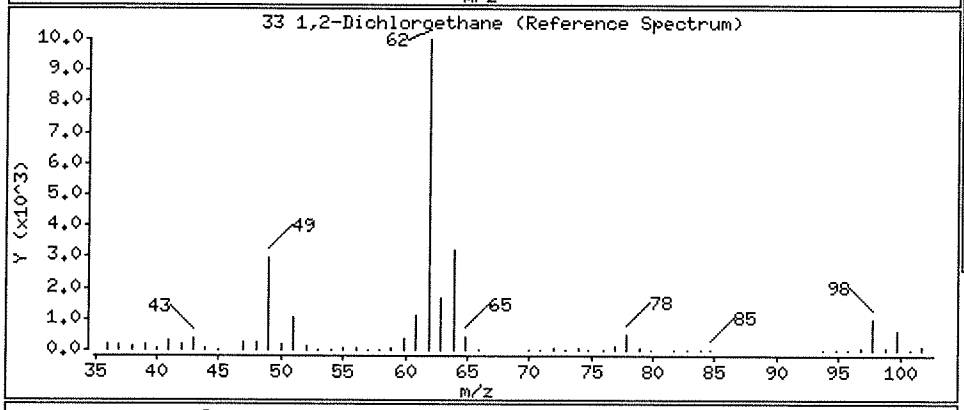
Concentration: 1.53 ug/l

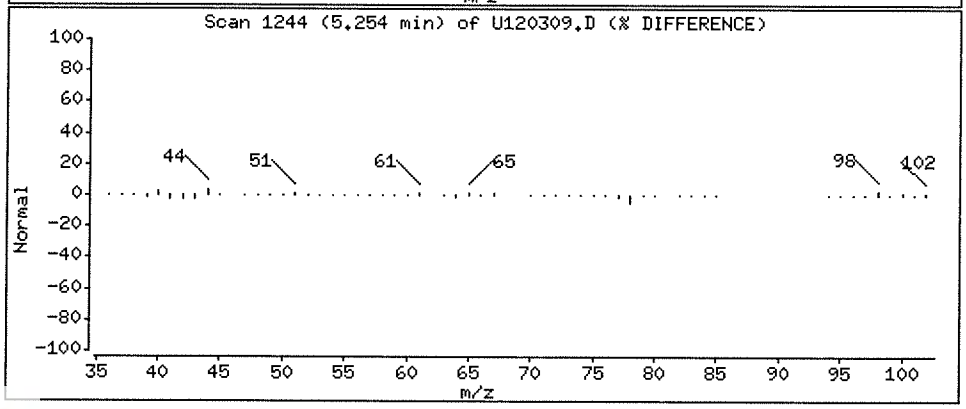












Data File: \\NAHSTWS005\Target\chem\voa9.i\U181203.b\U120309.D

Date : 03-DEC-2018 13:15

Client ID: HS18111440-05

Instrument: VOA9.i

Sample Info: HS18111440-05;HS18111440-05;;;

Purge Volume: 5.0

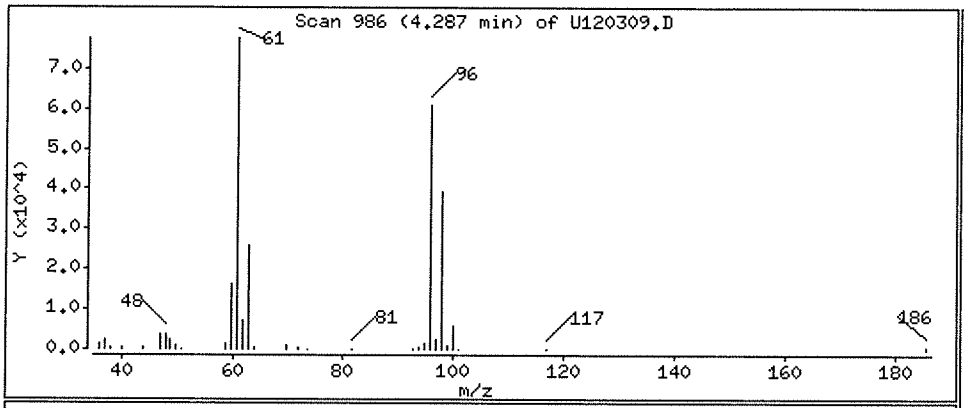
Operator: PC

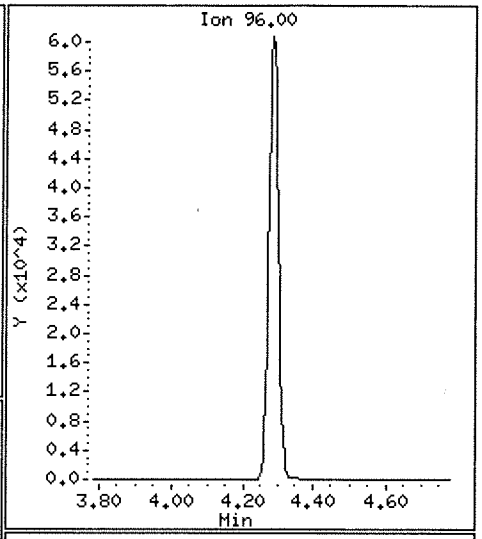
Column phase: DB624

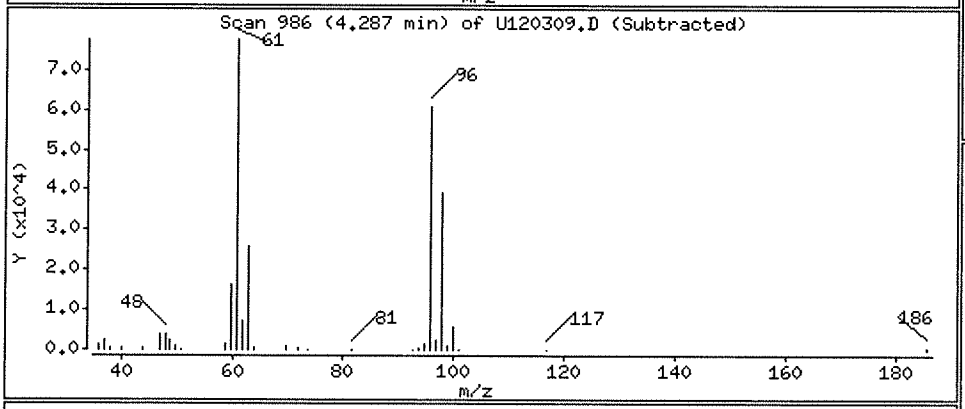
Column diameter: 0.18

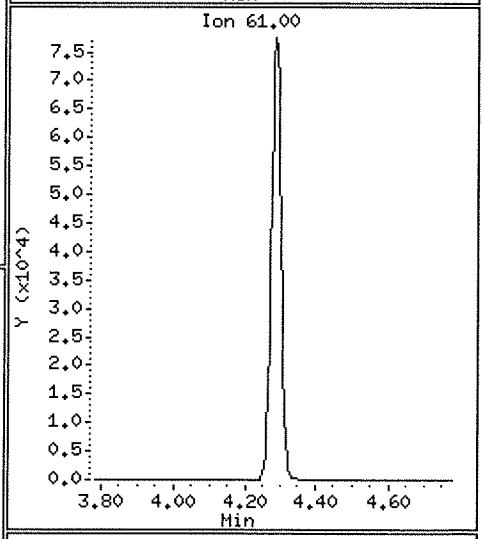
27 cis-1,2-Dichloroethene

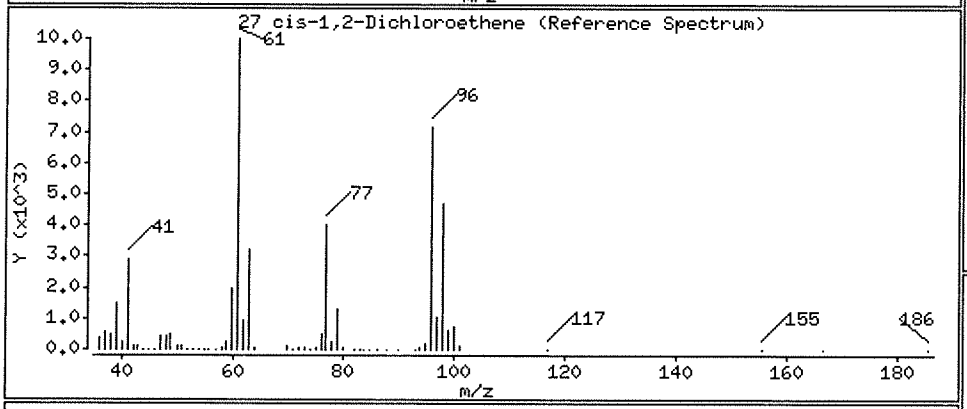
Concentration: 20.11 ug/l

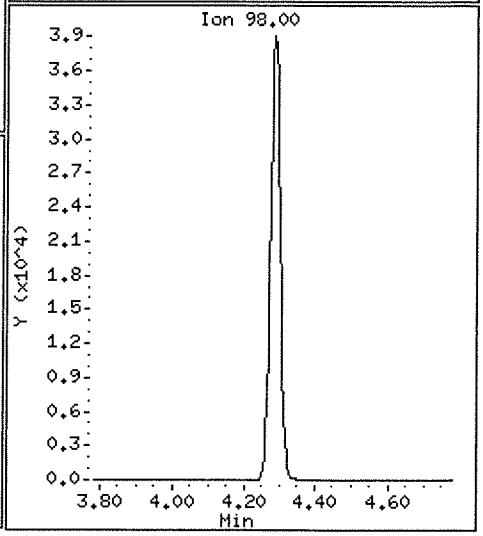


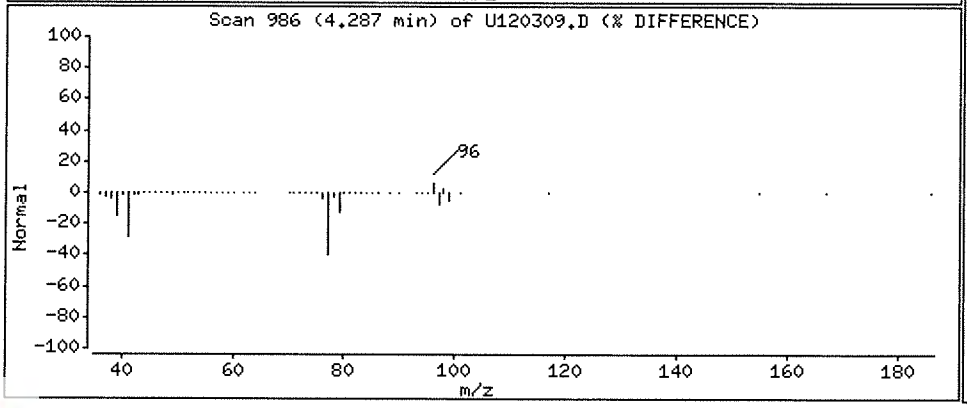












Data File: \\NAHSTWS005\Target\chem\voa9.i\U181203.b\U120309.D

Date : 03-DEC-2018 13:15

Client ID: HS18111440-05

Instrument: VOA9.i

Sample Info: HS18111440-05;HS18111440-05;;;

Purge Volume: 5.0

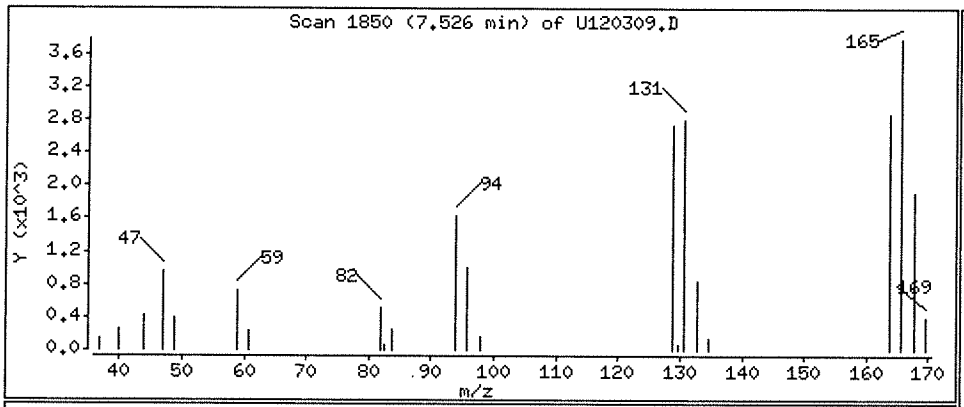
Operator: PC

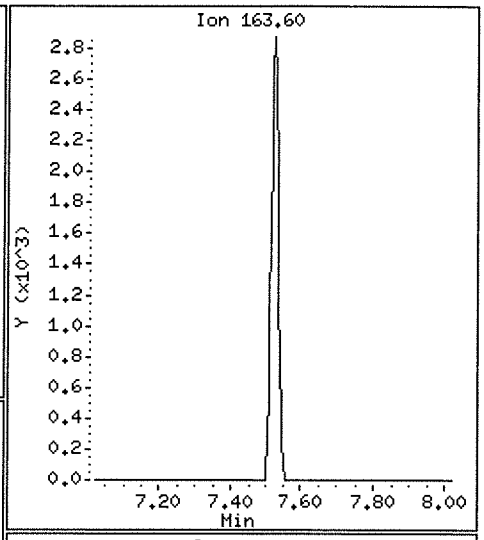
Column phase: DB624

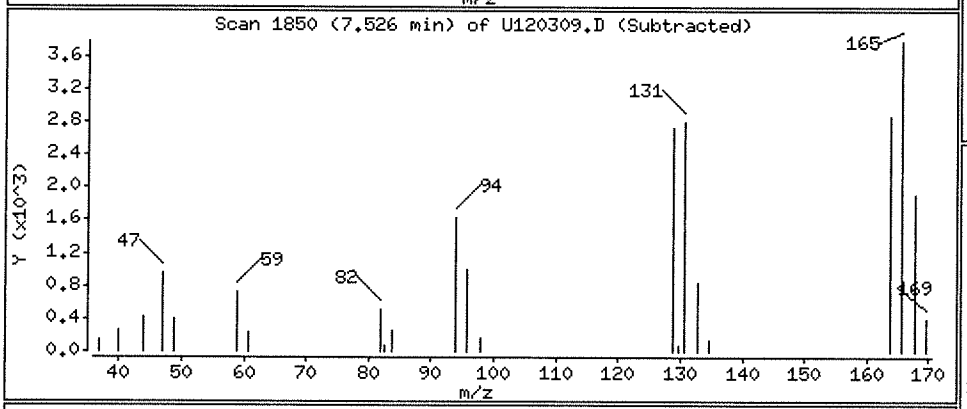
Column diameter: 0.18

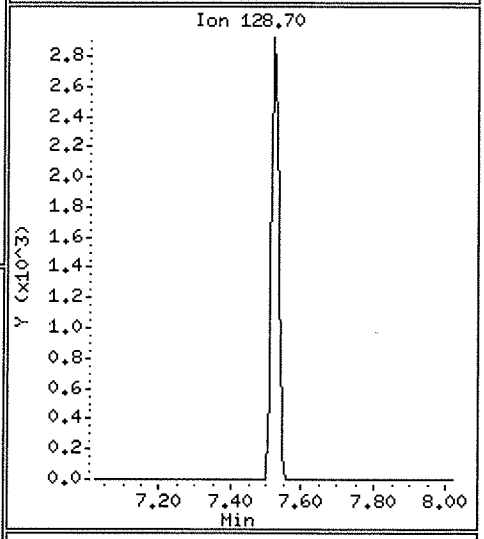
56 Tetrachloroethene

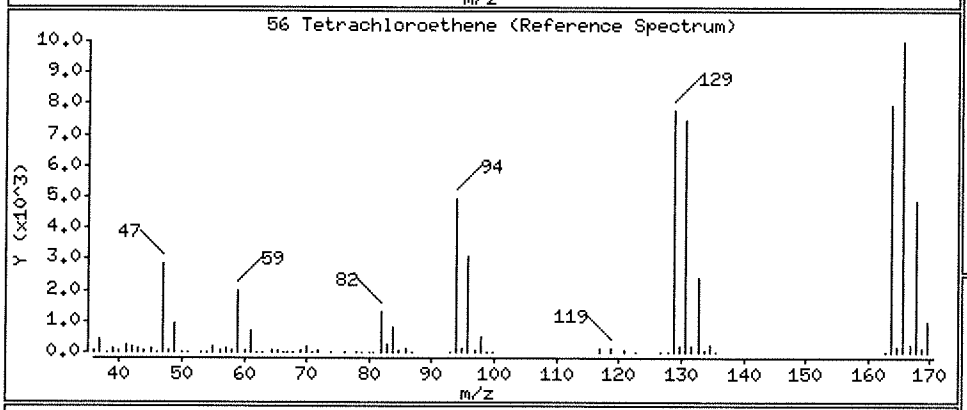
Concentration: 1.14 ug/l

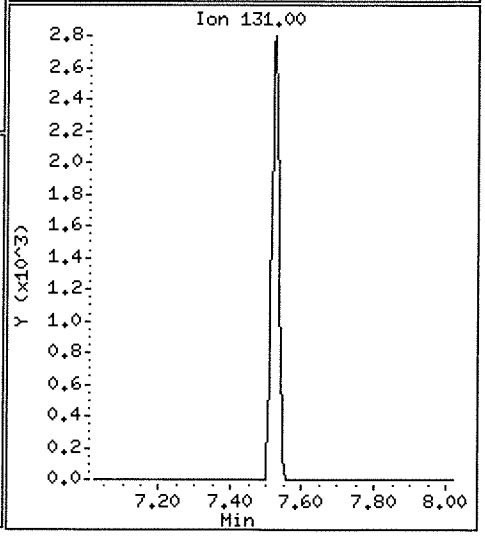


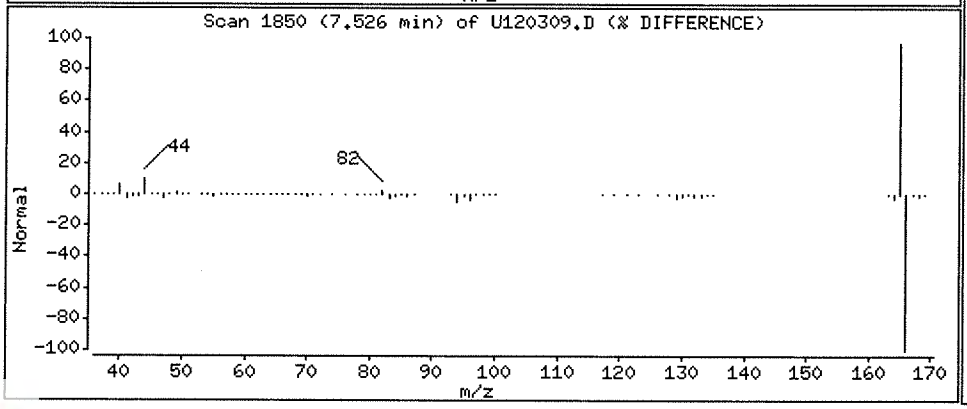












Data File: \\NAHSTWS005\Target\chem\voa9.i\U181203.b\U120309.D

Date : 03-DEC-2018 13:15

Client ID: HS18111440-05

Instrument: VOA9.i

Sample Info: HS18111440-05;HS18111440-05;;;

Purge Volume: 5.0

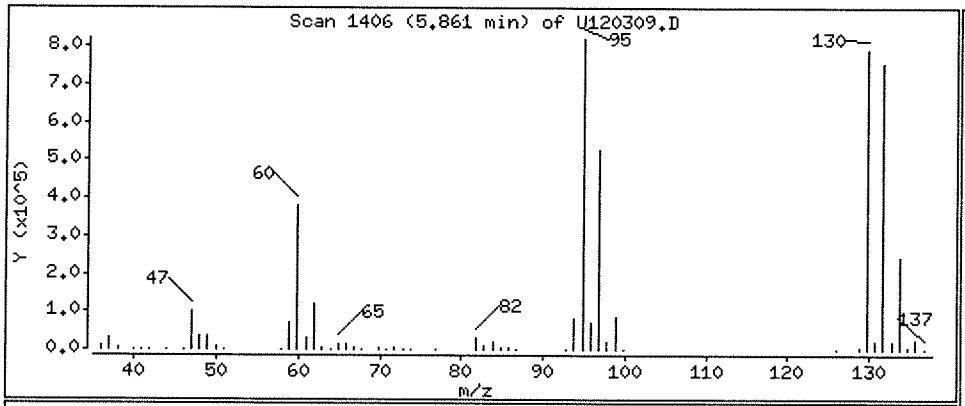
Operator: PC

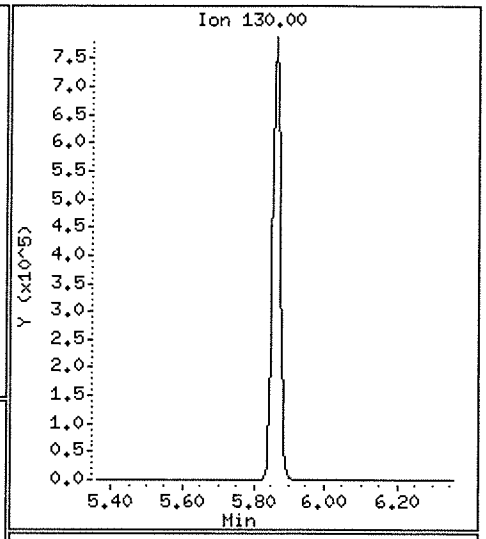
Column phase: DB624

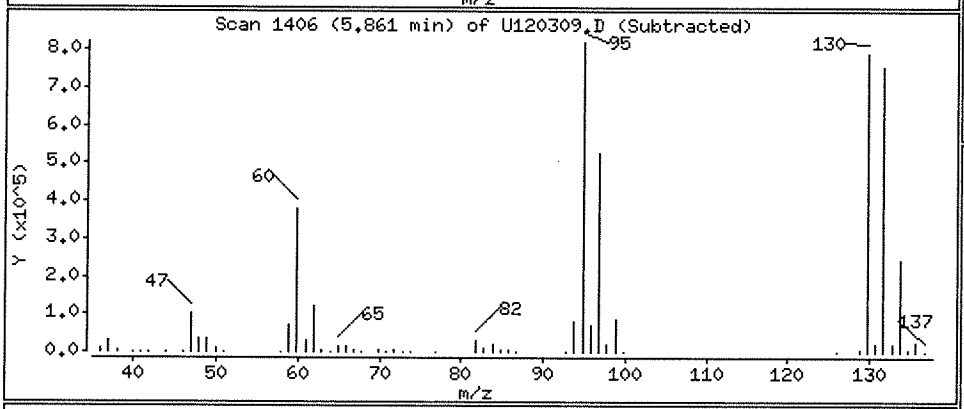
Column diameter: 0.18

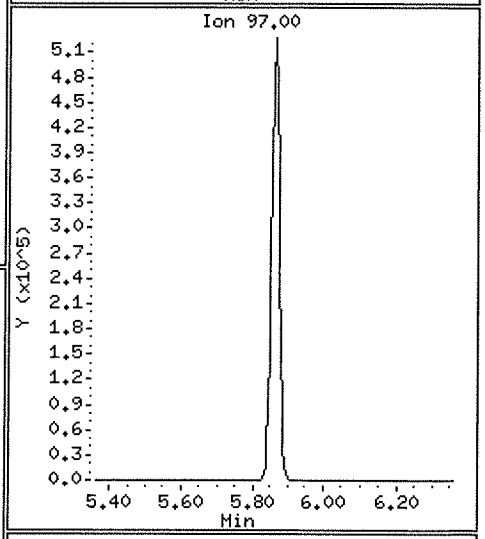
38 Trichloroethene

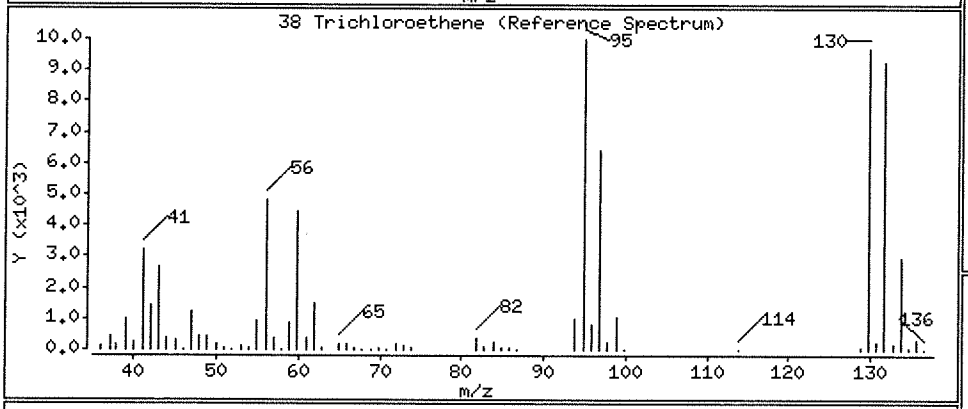
Concentration: 251.17 ug/l

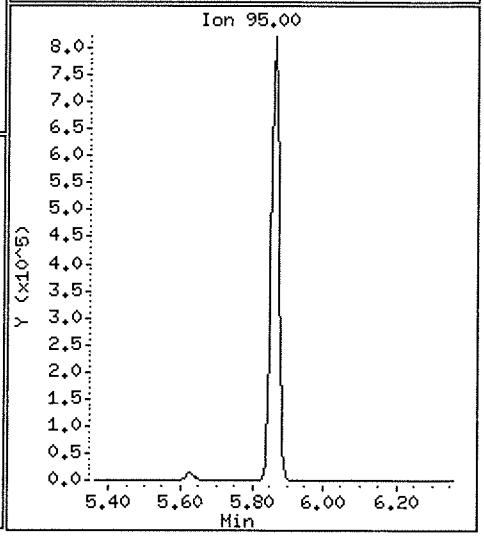


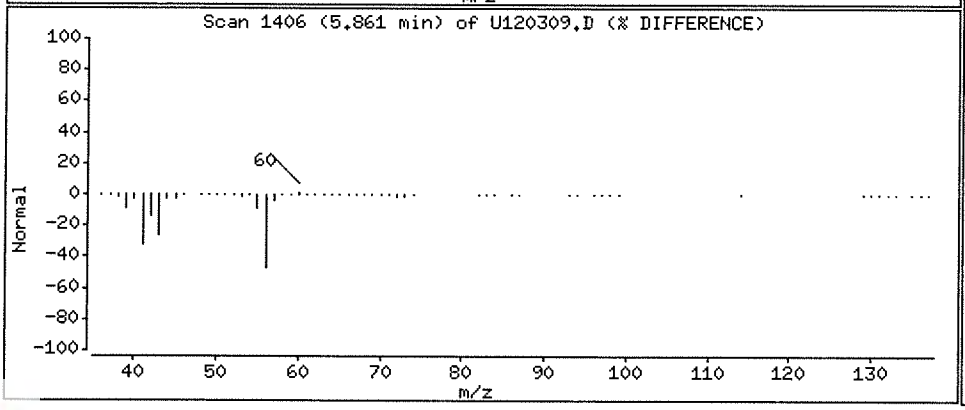












Data File: \\NAHSTWS005\Target\chem\voa9.i\U181203.b\U120309.D

Date : 03-DEC-2018 13:15

Client ID: HS18111440-05

Instrument: VOA9.i

Sample Info: HS18111440-05;HS18111440-05;;;

Purge Volume: 5.0

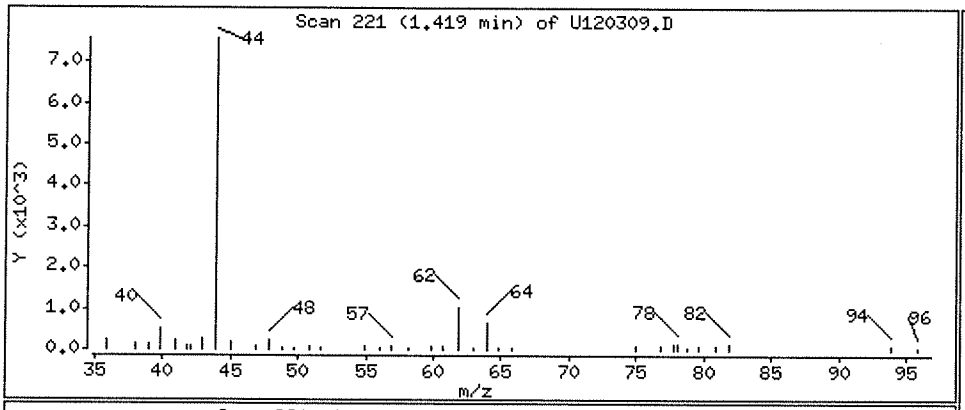
Operator: PC

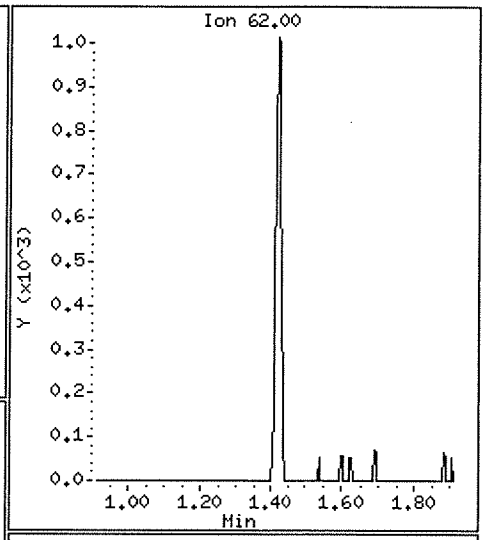
Column phase: DB624

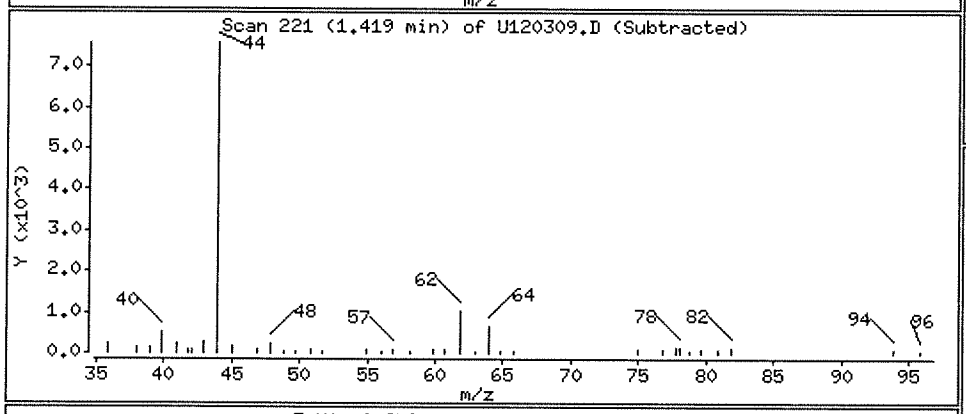
Column diameter: 0.18

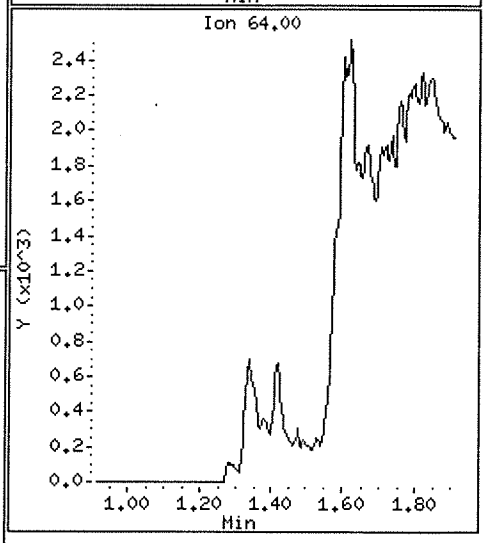
5 Vinyl Chloride

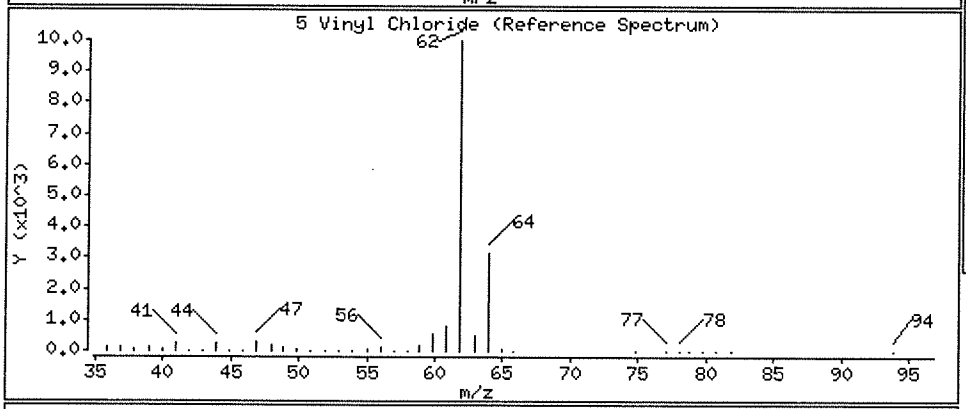
Concentration: 0.66 ug/l

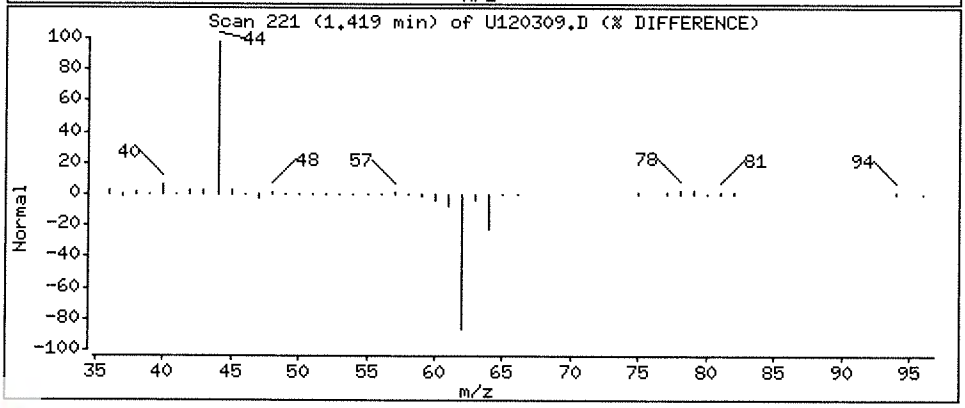












ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa9.i\U181203.b\U120310.D
Lab Smp Id: HS18111440-02 Client Smp ID: HS18111440-02
Inj Date : 03-DEC-2018 13:40
Operator : PC Inst ID: VOA9.i
Smp Info : HS18111440-02;HS18111440-02;;;
Misc Info : 180315V9;WATER;0;1;
Comment :
Method : \\NAHSTWS005\Target\chem\voa9.i\U181203.b\8260C.m
Meth Date : 25-Jan-2019 19:24 VOA9.i Quant Type: ISTD
Cal Date : 13-NOV-2018 14:15 Cal File: U111308.D
Als bottle: 10
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: LHAAP.sub
Target Version: 4.14
Processing Host: NAHSTW7087

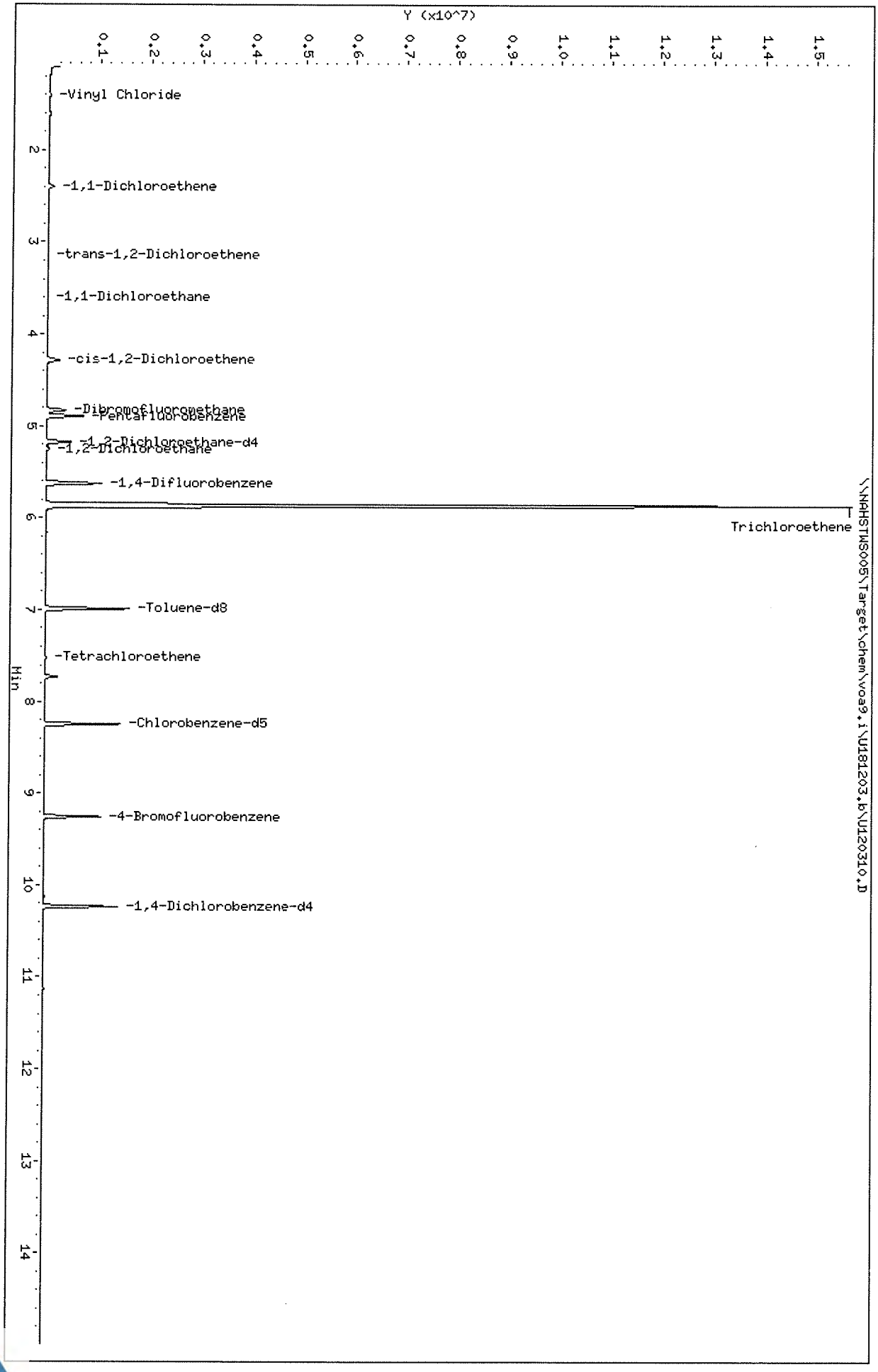
Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
* 1 Pentafluorobenzene	168	4.894	4.894	(1.000)	430430	50.0000	
* 36 1,4-Difluorobenzene	114	5.625	5.625	(1.000)	770584	50.0000	
* 47 Chlorobenzene-d5	117	8.249	8.249	(1.000)	702879	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	10.236	10.236	(1.000)	321268	50.0000	
$ 30 Dibromofluoromethane	113	4.826	4.826	(0.986)	219709	44.2640	44.26
$ 35 1,2-Dichloroethane-d4	65	5.175	5.175	(1.057)	304690	46.7127	46.71
$ 48 Toluene-d8	98	6.989	6.989	(0.847)	940220	52.4162	52.41
$ 69 4-Bromofluorobenzene	95	9.257	9.257	(1.122)	339099	48.7631	48.76
22 1,1-Dichloroethane	63	3.604	3.601	(0.737)	12333	1.25035	1.25(a)
11 1,1-Dichloroethene	96	2.397	2.397	(0.490)	26690	5.49343	5.49
33 1,2-Dichloroethane	62	5.254	5.250	(0.934)	45413	5.63188	5.63
27 cis-1,2-Dichloroethene	96	4.283	4.283	(0.875)	111953	18.3556	18.35
56 Tetrachloroethene	164	7.525	7.522	(0.912)	6282	1.70616	1.70(a)
20 trans-1,2-Dichloroethene	96	3.143	3.139	(0.642)	2183	0.40997	0.40(a)
38 Trichloroethene	130	5.861	5.861	(1.042)	4550177	866.578	866.57(A)
5 Vinyl Chloride	62	1.415	1.415	(0.289)	3432	0.99224	0.99(a)

QC Flag Legend

a - Target compound detected but, quantitated amount
Below Limit Of Quantitation(BLOQ).
A - Target compound detected but, quantitated amount
exceeded maximum amount.



Data File: \\NAHSTWS005\Target\chem\voa9,i\U181203,b\U120310,D
Date : 03-DEC-2018 13:40
Client ID: HS18111440-02
Sample Info: HS18111440-02;HS18111440-02;;;
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA9,i
Operator: PC
Column diameter: 0.18

Data File: \\NAHSTWS005\Target\chem\voa9.i\U181203.b\U120310.D

Date : 03-DEC-2018 13:40

Client ID: HS18111440-02

Instrument: VOA9.i

Sample Info: HS18111440-02;HS18111440-02;;;

Purge Volume: 5.0

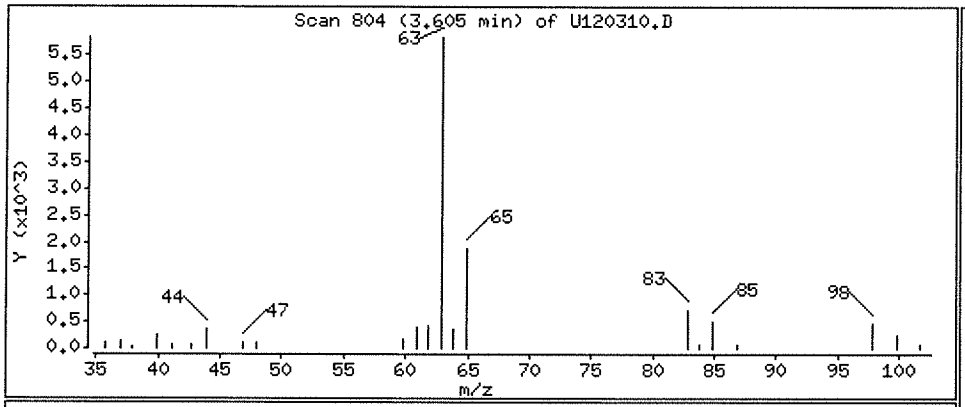
Operator: PC

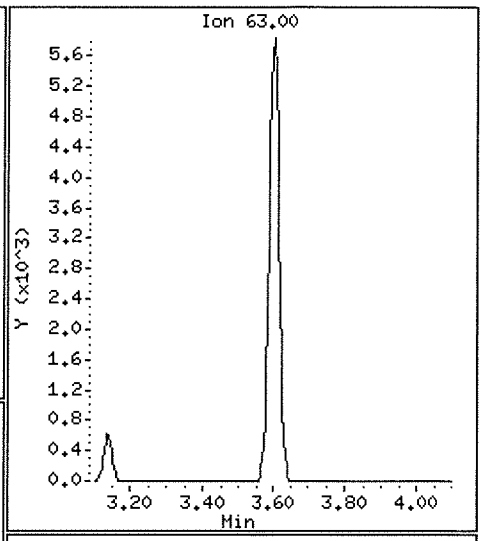
Column phase: DB624

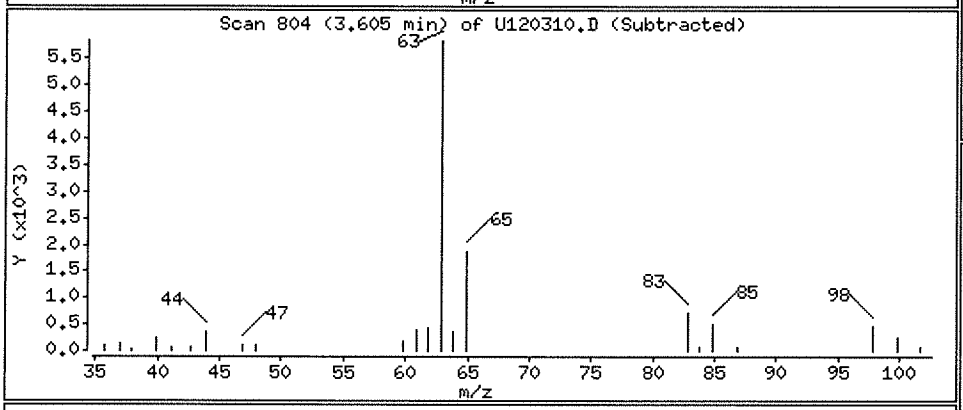
Column diameter: 0.18

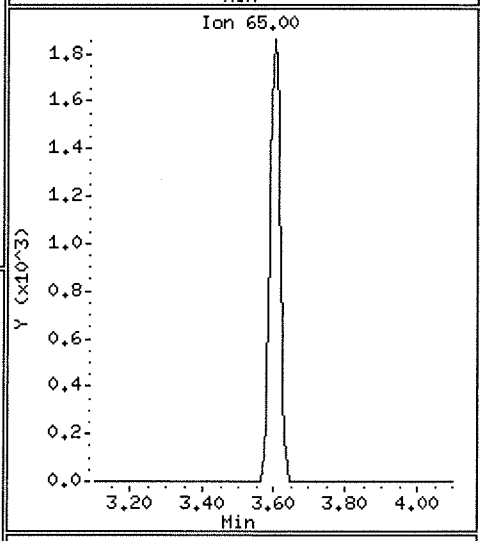
22 1,1-Dichloroethane

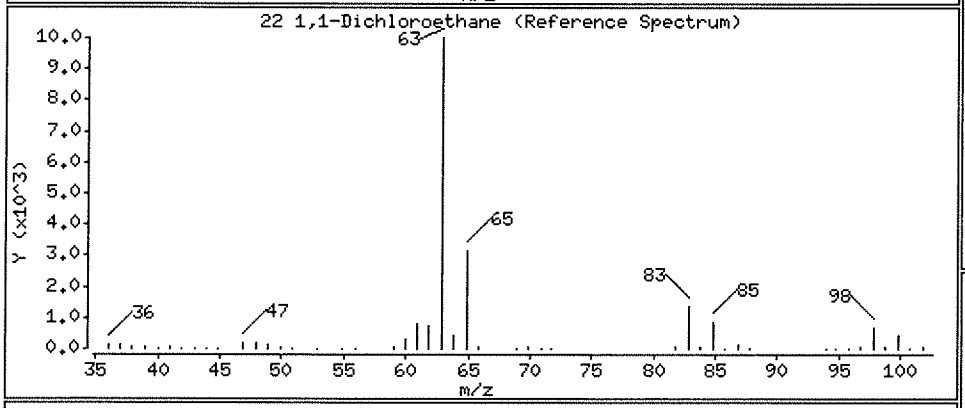
Concentration: 1.25 ug/l

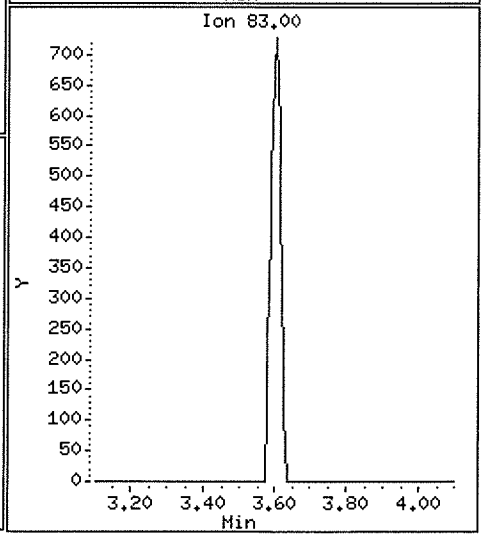


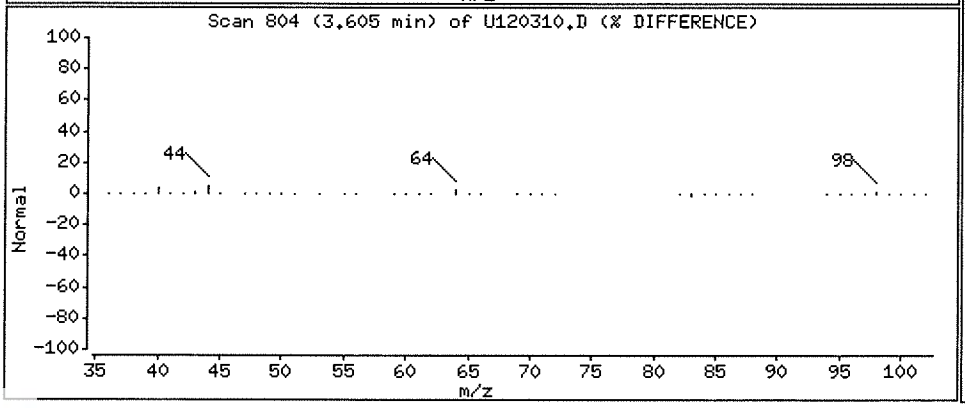












Data File: \\NAHSTWS005\Target\chem\voa9.i\U181203.b\U120310.D

Date : 03-DEC-2018 13:40

Client ID: HS18111440-02

Instrument: VOA9.i

Sample Info: HS18111440-02;HS18111440-02;;;

Purge Volume: 5.0

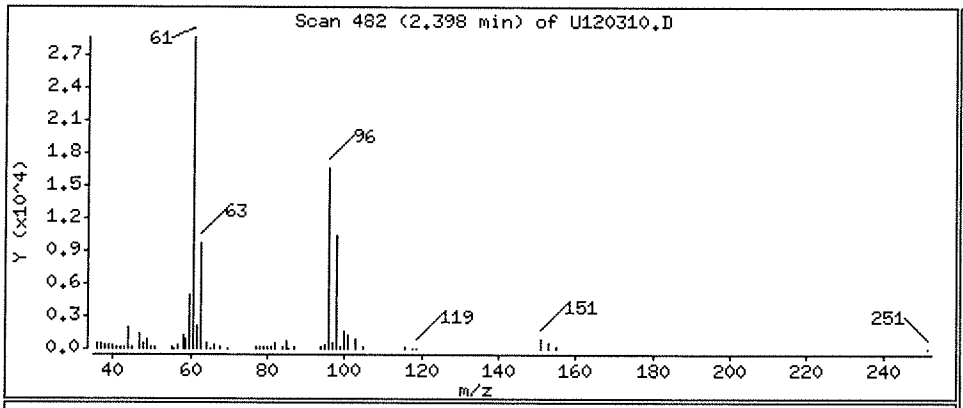
Operator: PC

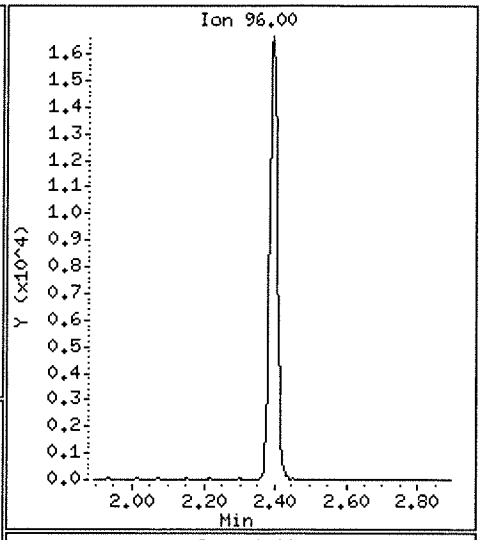
Column phase: DB624

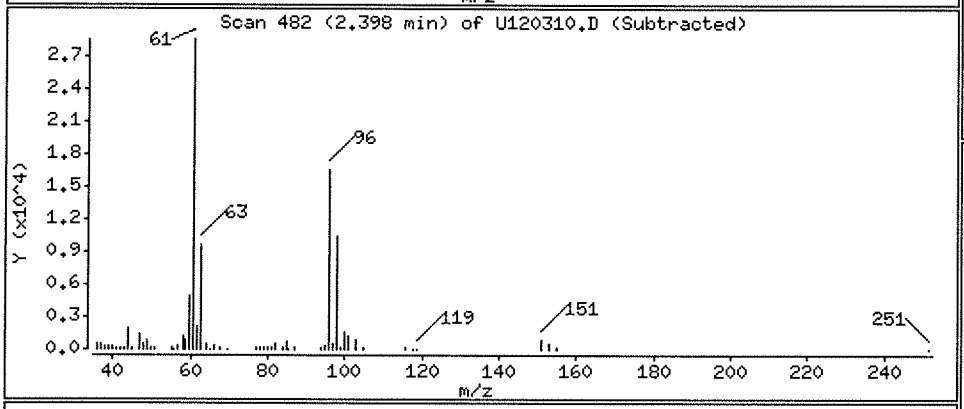
Column diameter: 0.18

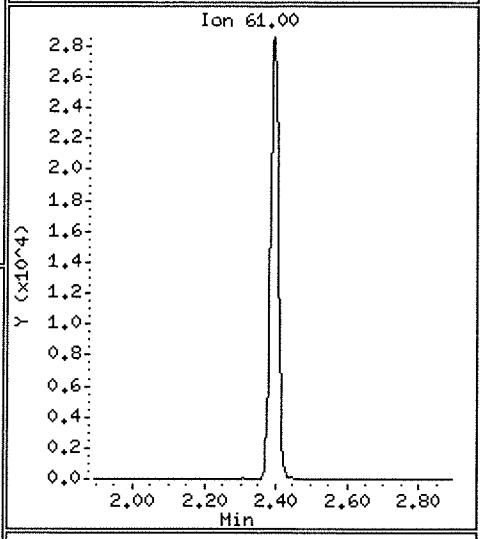
11 1,1-Dichloroethene

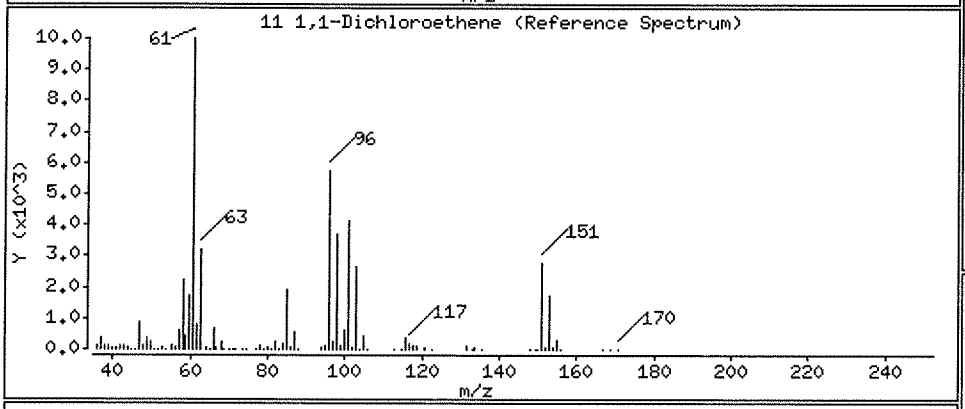
Concentration: 5.49 ug/l

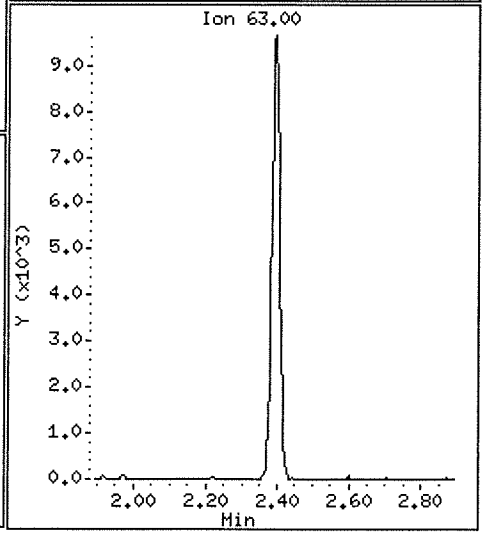


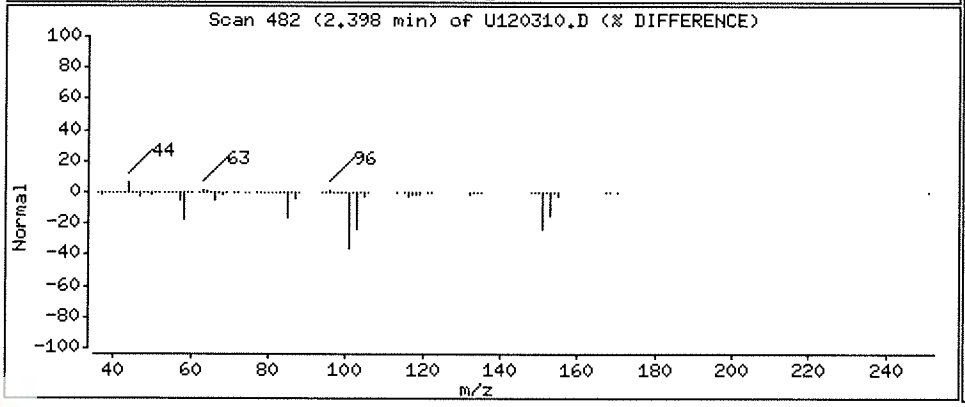












Data File: \\NAHSTWS005\Target\chem\voa9.i\U181203.b\U120310.D

Date : 03-DEC-2018 13:40

Client ID: HS18111440-02

Instrument: VOA9.i

Sample Info: HS18111440-02;HS18111440-02;;;

Purge Volume: 5.0

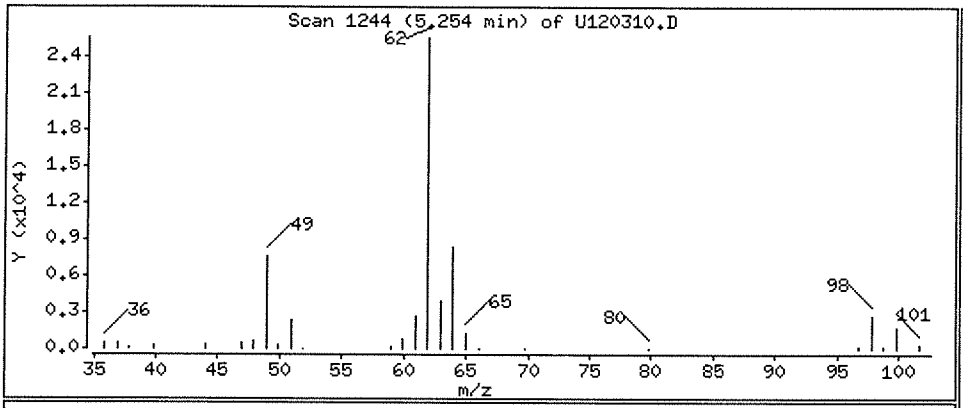
Operator: PC

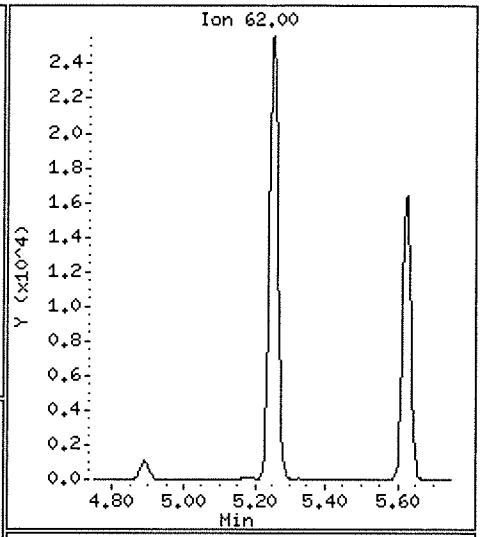
Column phase: DB624

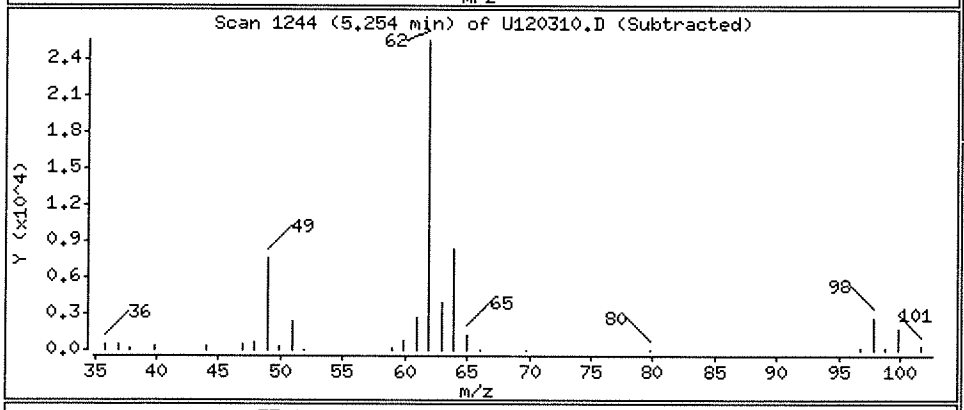
Column diameter: 0.18

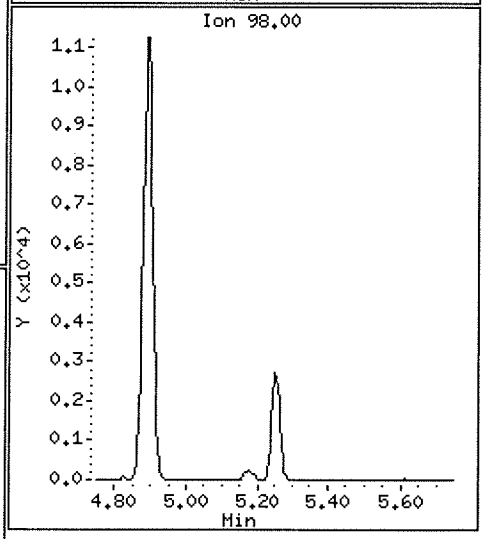
33 1,2-Dichloroethane

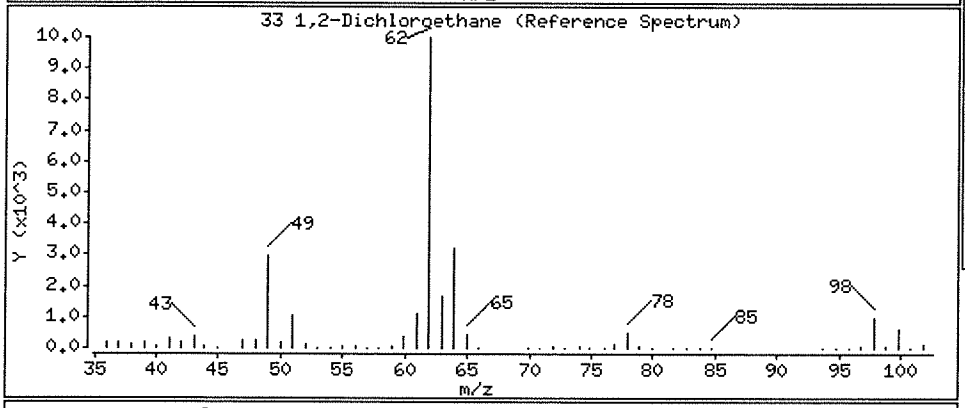
Concentration: 5.63 ug/l

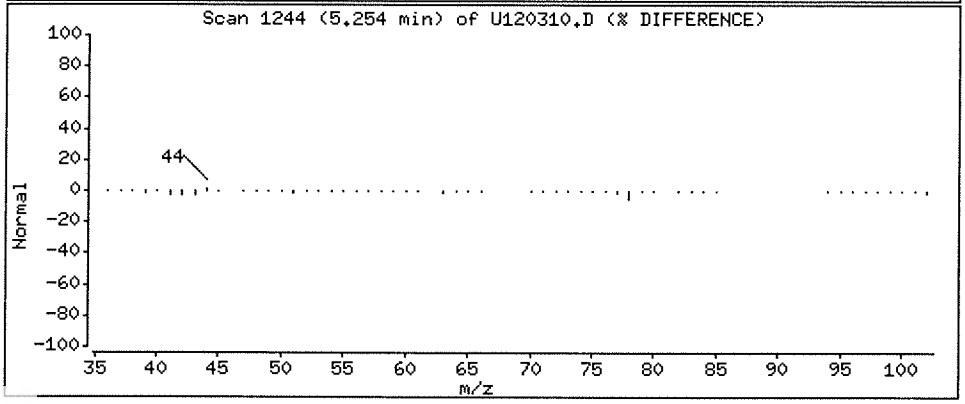












Data File: \\NAHSTWS005\Target\chem\voa9.i\U181203.b\U120310.D

Date : 03-DEC-2018 13:40

Client ID: HS18111440-02

Instrument: VOA9.i

Sample Info: HS18111440-02;HS18111440-02;;;

Purge Volume: 5.0

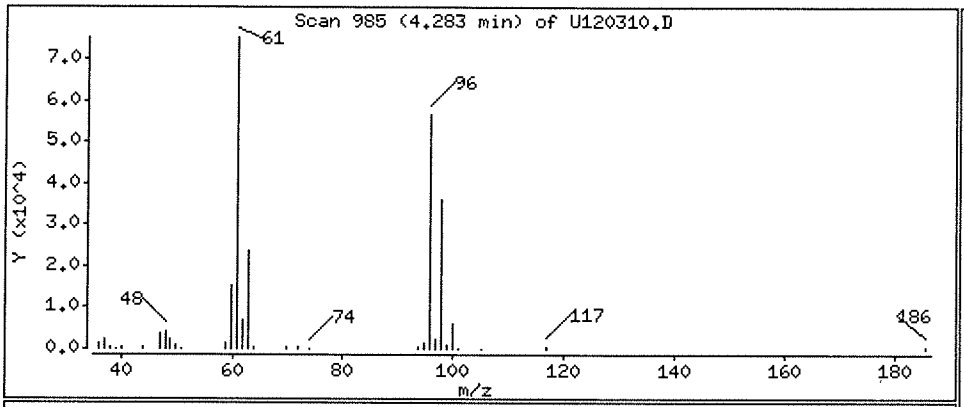
Operator: PC

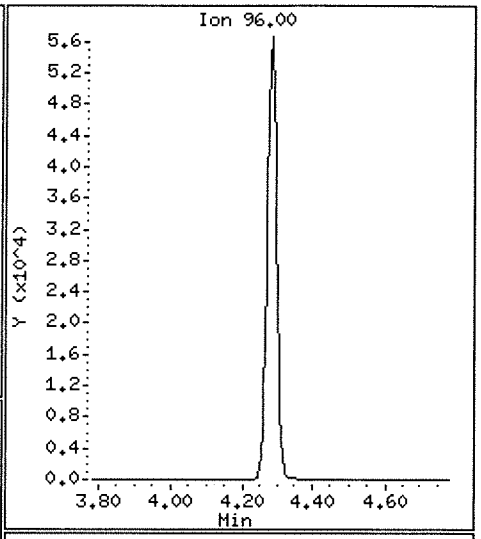
Column phase: DB624

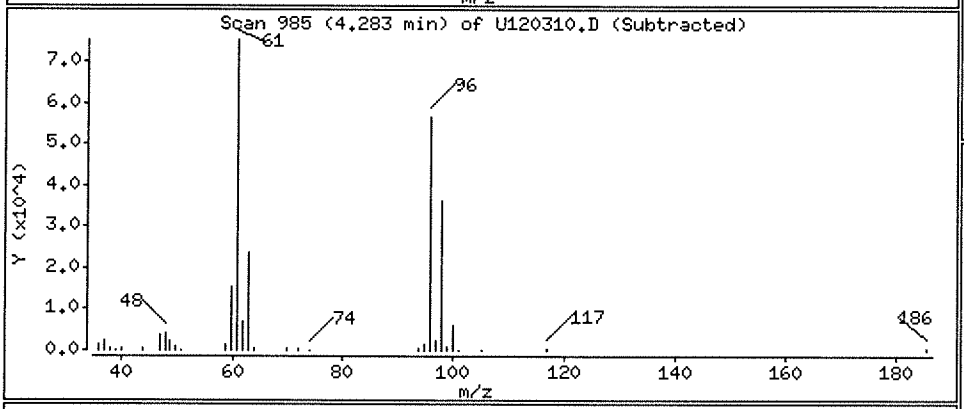
Column diameter: 0.18

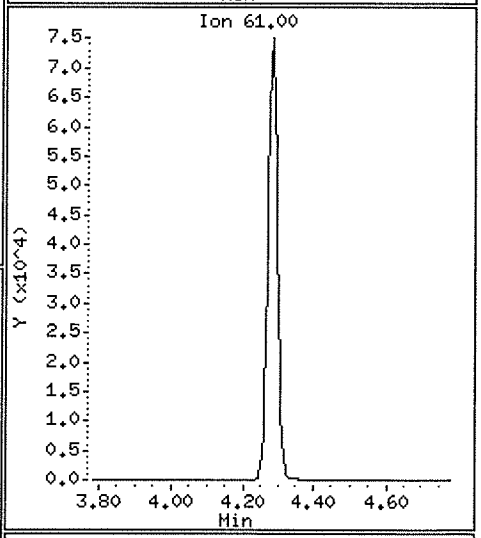
27 cis-1,2-Dichloroethene

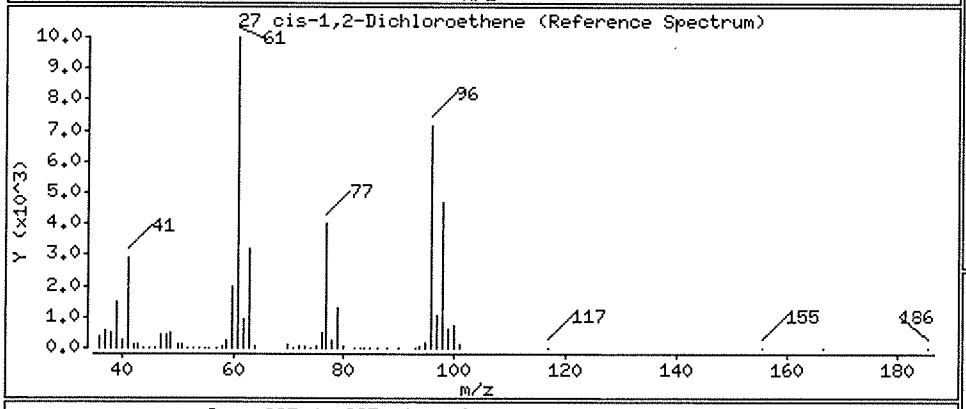
Concentration: 18.35 ug/l

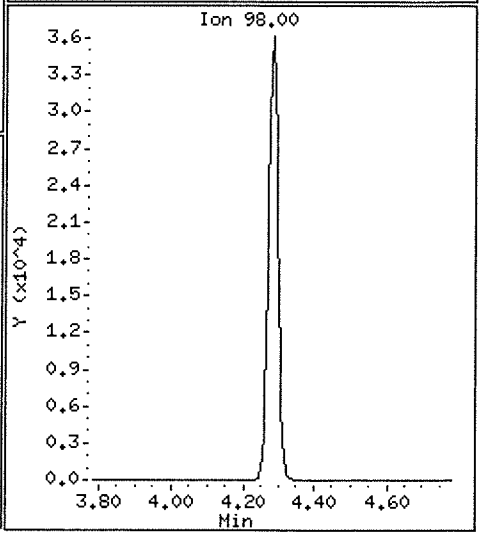


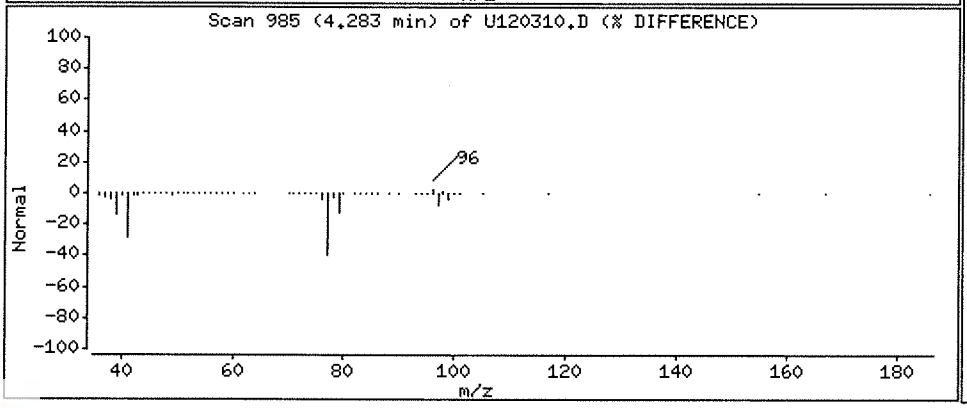












Data File: \\NAHSTWS005\Target\chem\voa9.i\U181203.b\U120310.D

Date : 03-DEC-2018 13:40

Client ID: HS18111440-02

Instrument: VOA9.i

Sample Info: HS18111440-02;HS18111440-02;;;

Purge Volume: 5.0

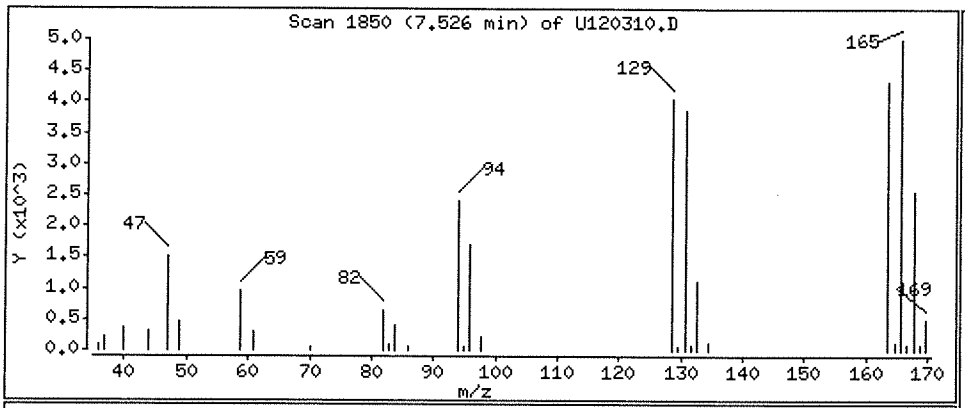
Operator: PC

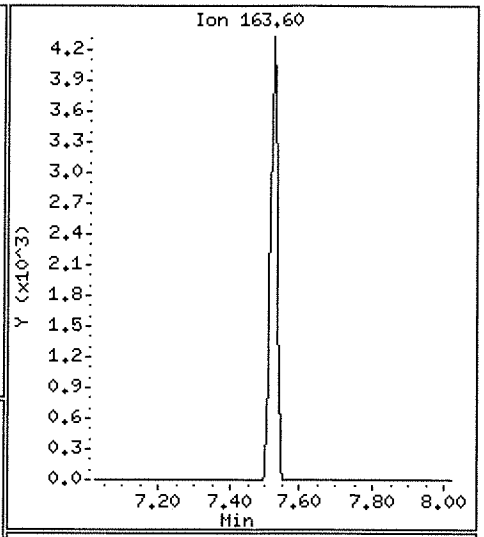
Column phase: DB624

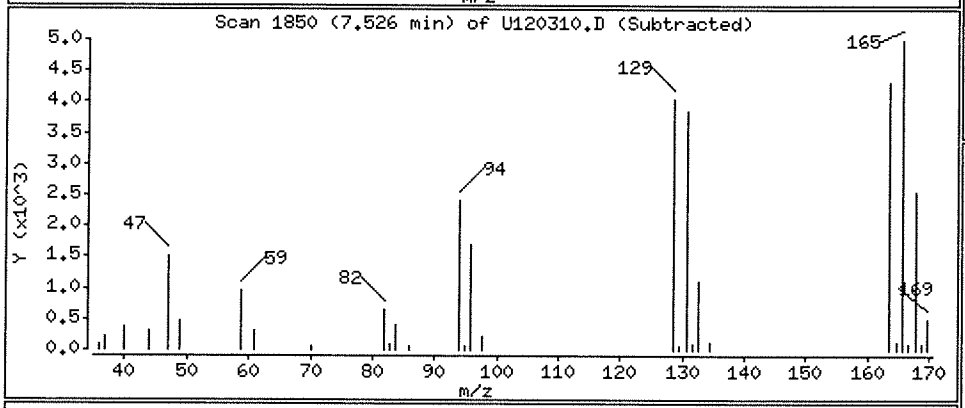
Column diameter: 0.18

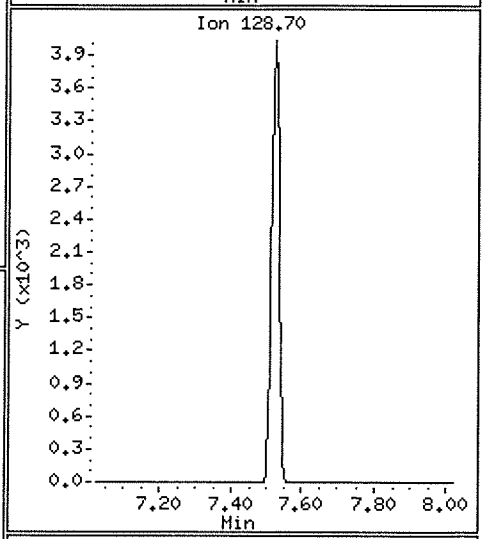
56 Tetrachloroethene

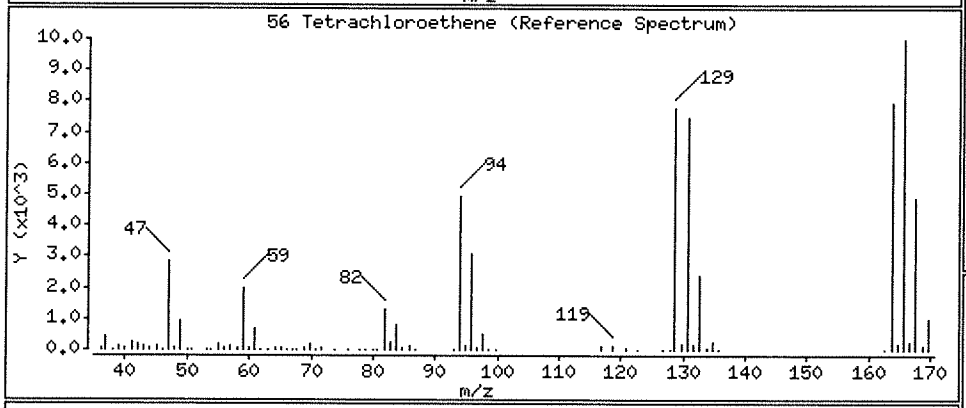
Concentration: 1.70 ug/l

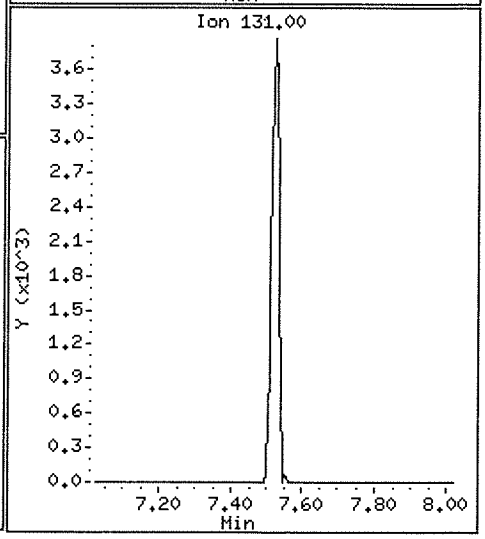


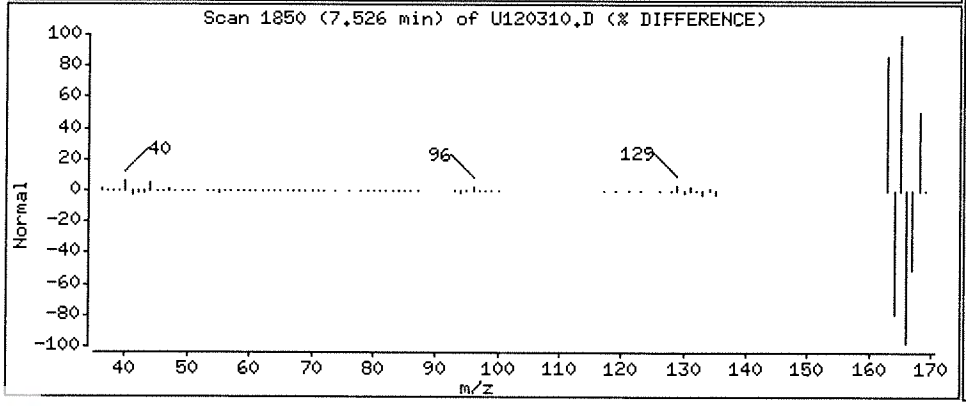












Data File: \\NAHSTWS005\Target\chem\voa9.i\U181203.b\U120310.D

Date : 03-DEC-2018 13:40

Client ID: HS18111440-02

Instrument: VOA9.i

Sample Info: HS18111440-02;HS18111440-02;;;

Purge Volume: 5.0

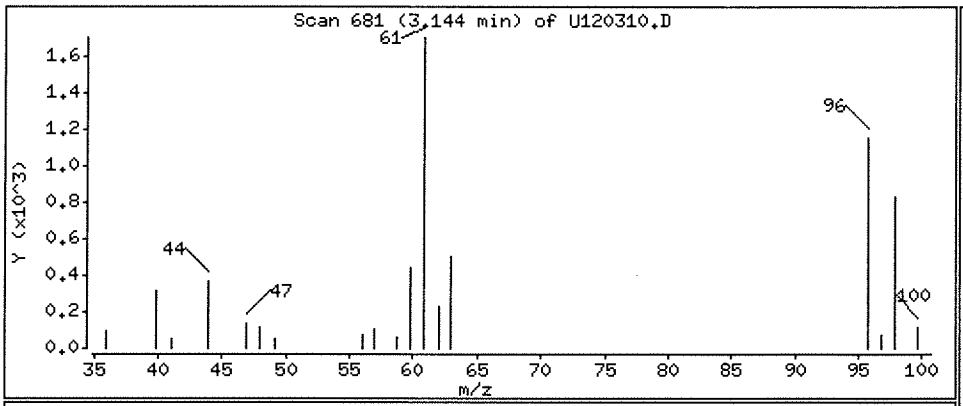
Operator: PC

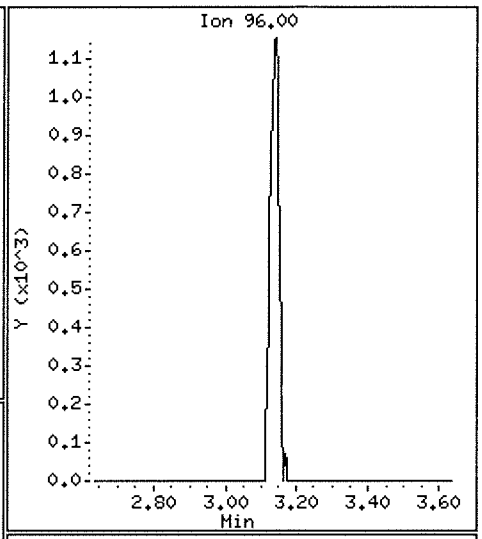
Column phase: DB624

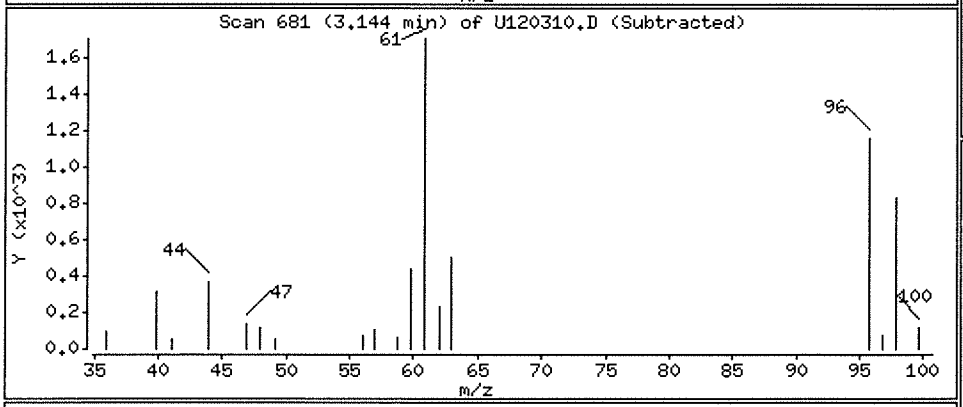
Column diameter: 0.18

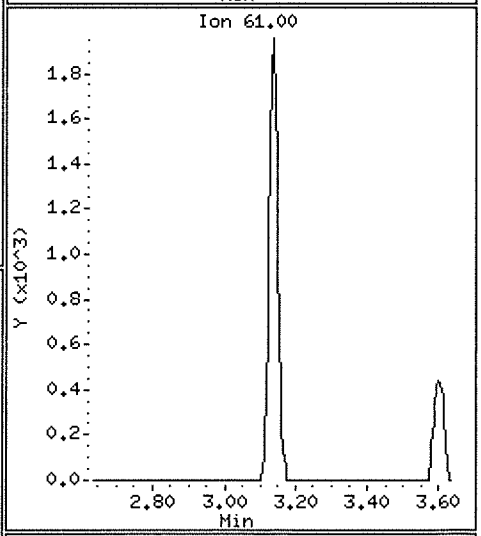
20 trans-1,2-Dichloroethene

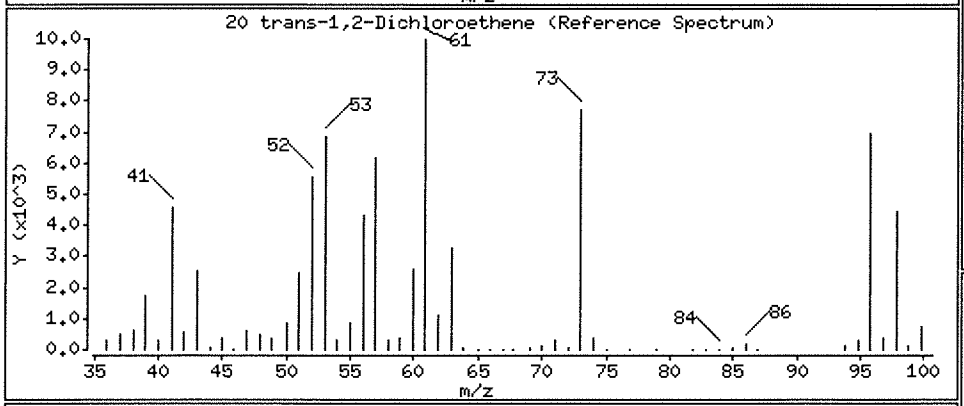
Concentration: 0.40 ug/l

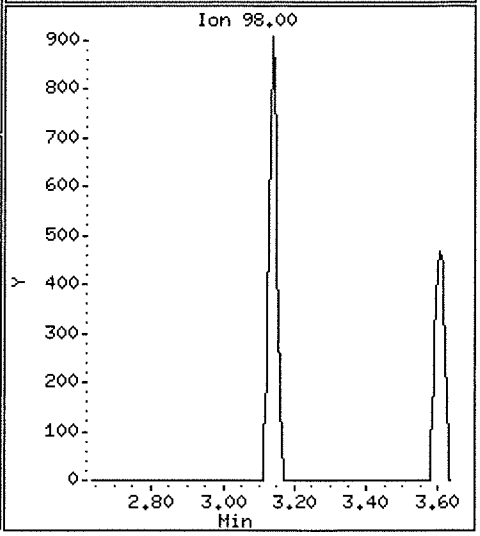


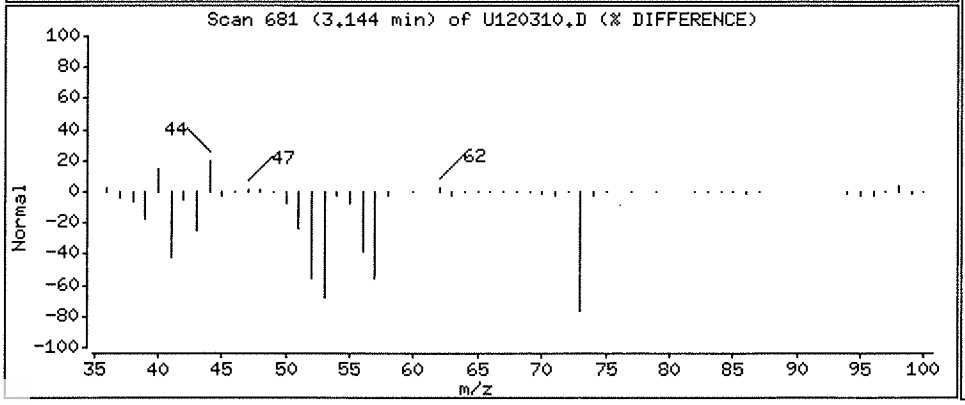












Data File: \\NAHSTWS005\Target\chem\voa9.i\U181203.b\U120310.D

Date : 03-DEC-2018 13:40

Client ID: HS18111440-02

Instrument: VOA9.i

Sample Info: HS18111440-02;HS18111440-02;;;

Purge Volume: 5.0

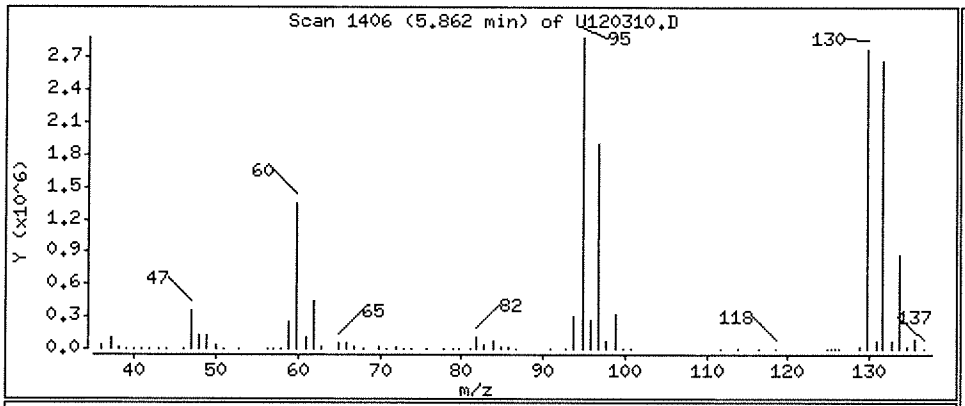
Operator: PC

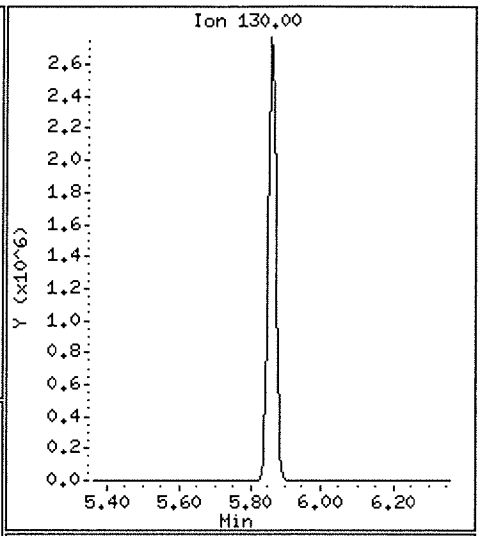
Column phase: DB624

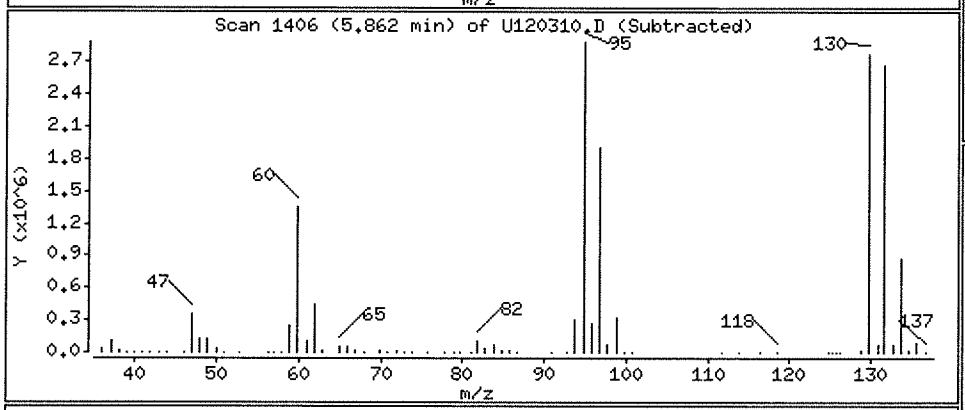
Column diameter: 0.18

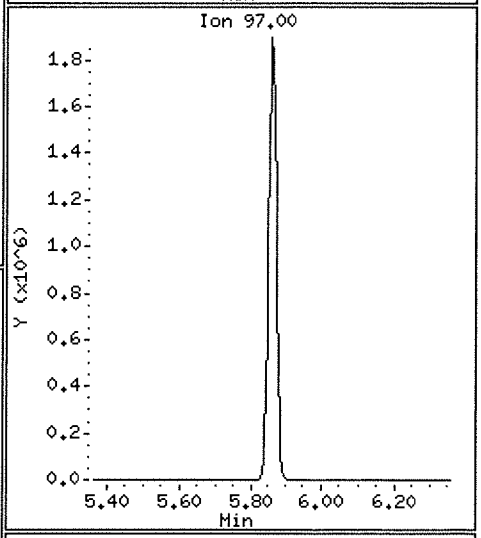
38 Trichloroethene

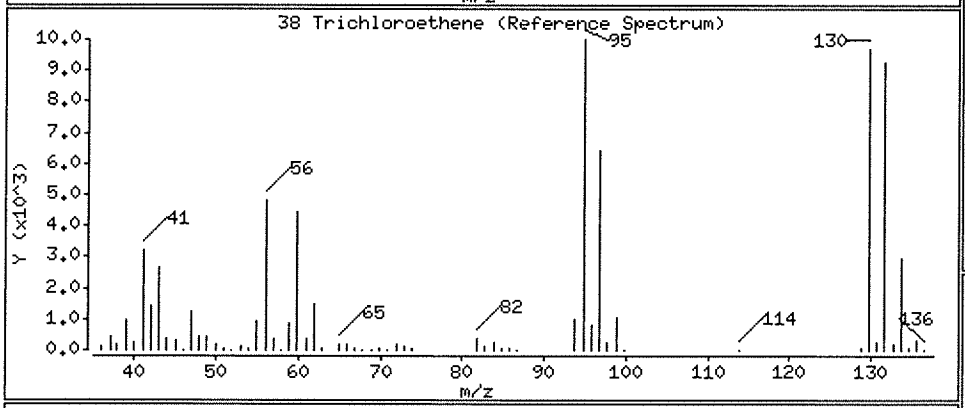
Concentration: 866.57 ug/l

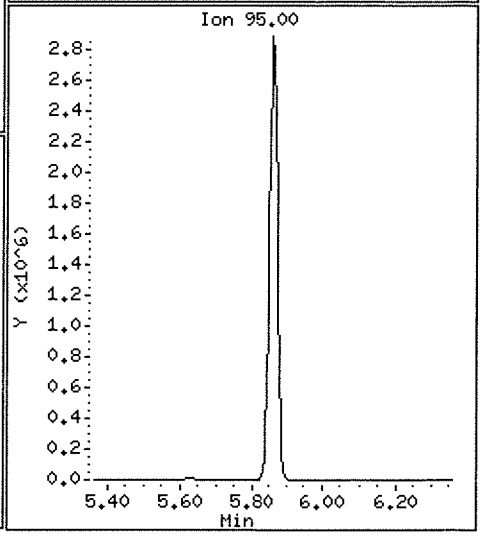


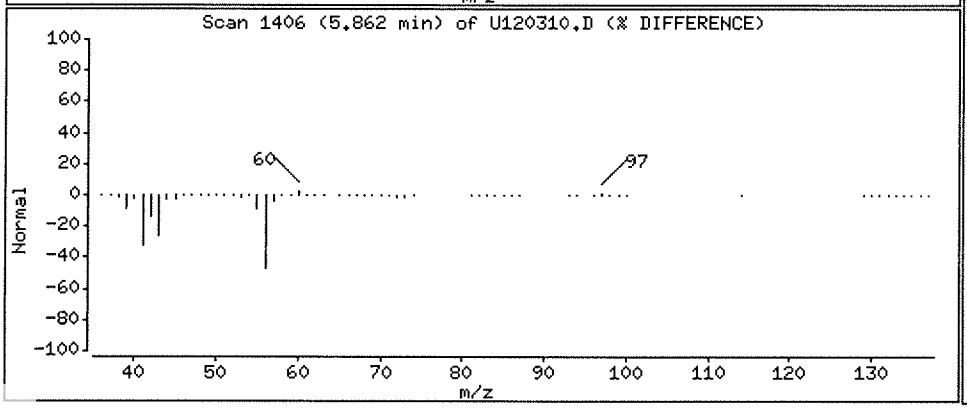












Data File: \\NAHSTWS005\Target\chem\voa9.i\U181203.b\U120310.D

Date : 03-DEC-2018 13:40

Client ID: HS18111440-02

Instrument: VOA9.i

Sample Info: HS18111440-02;HS18111440-02;;;

Purge Volume: 5.0

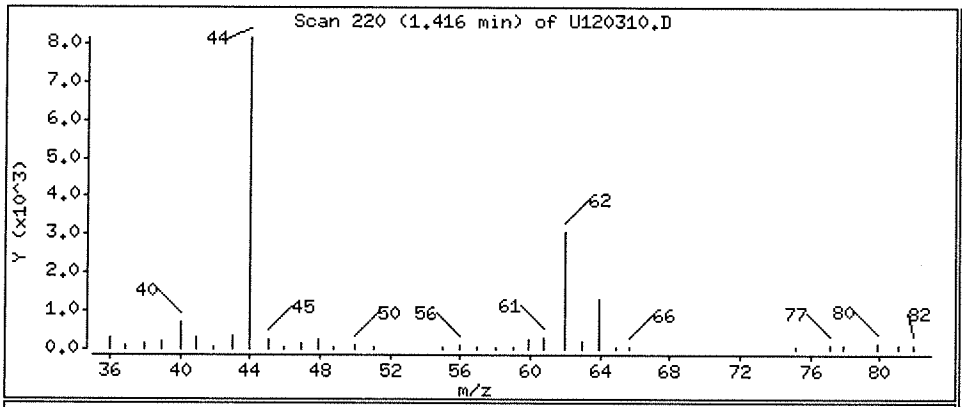
Operator: PC

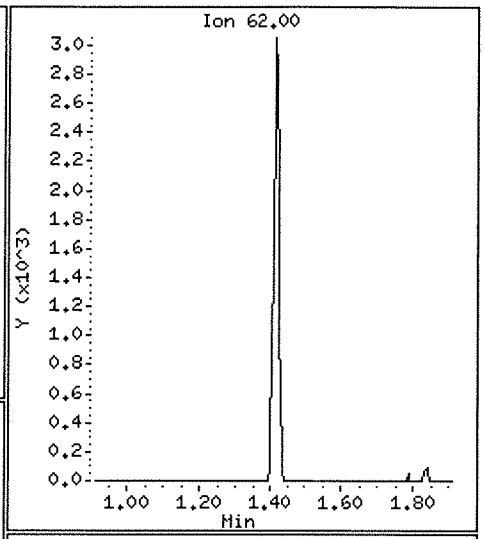
Column phase: DB624

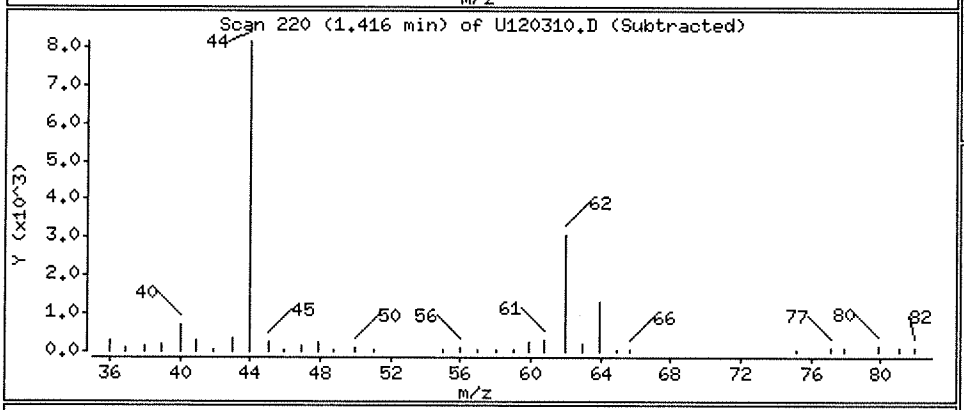
Column diameter: 0.18

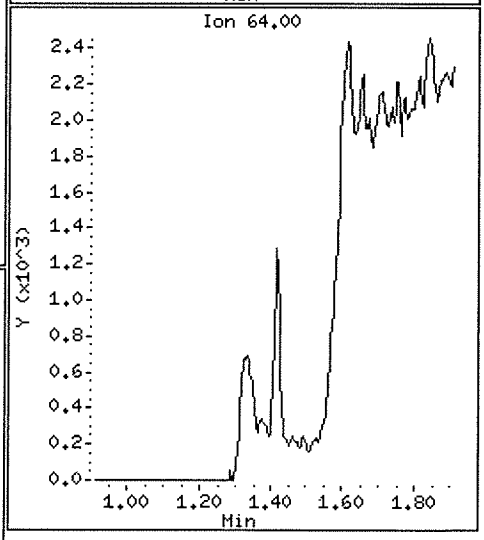
5 Vinyl Chloride

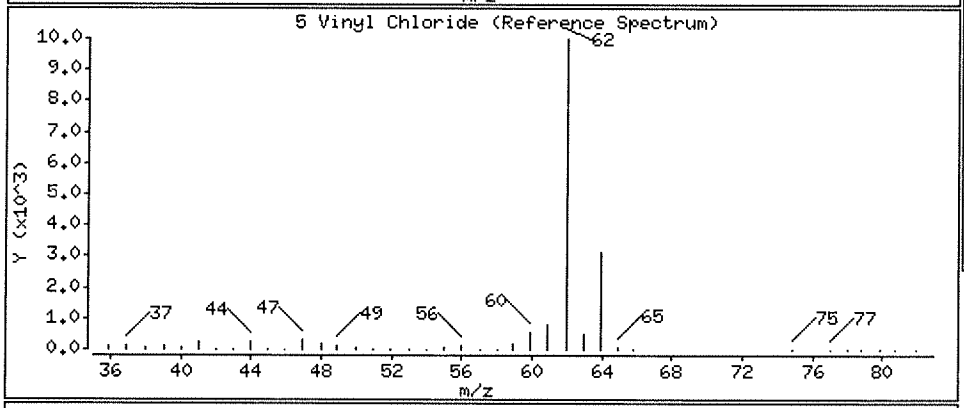
Concentration: 0.99 ug/l

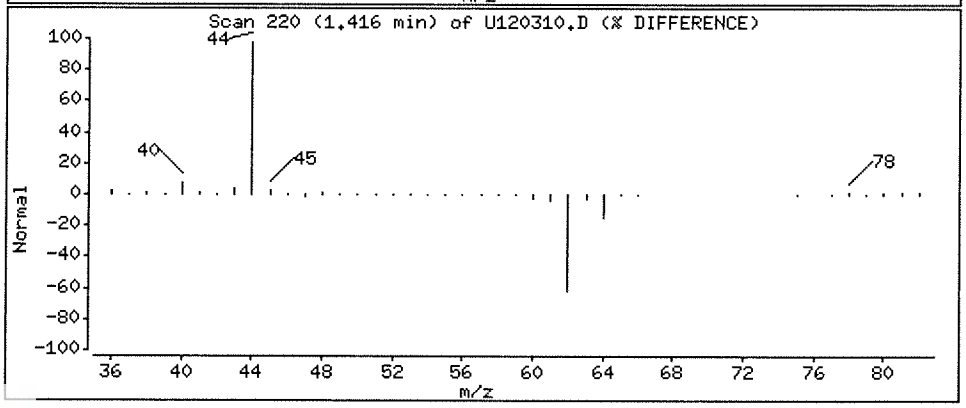












Data File: \\NAHSTWS005\Target\chem\voa9.i\U181203.b\U120311.D Page 1
Report Date: 25-Jan-2019 19:24

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa9.i\U181203.b\U120311.D
Lab Smp Id: HS18111440-03 Client Smp ID: HS18111440-03
Inj Date : 03-DEC-2018 14:04
Operator : PC Inst ID: VOA9.i
Smp Info : HS18111440-03;HS18111440-03;;;
Misc Info : 180315V9;WATER;0;1;
Comment :
Method : \\NAHSTWS005\Target\chem\voa9.i\U181203.b\8260C.m
Meth Date : 25-Jan-2019 19:24 VOA9.i Quant Type: ISTD
Cal Date : 13-NOV-2018 14:15 Cal File: U111308.D
Als bottle: 11
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: LHAAP.sub
Target Version: 4.14
Processing Host: NAHSTW7087

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Cpnd Variable		Local Compound Variable

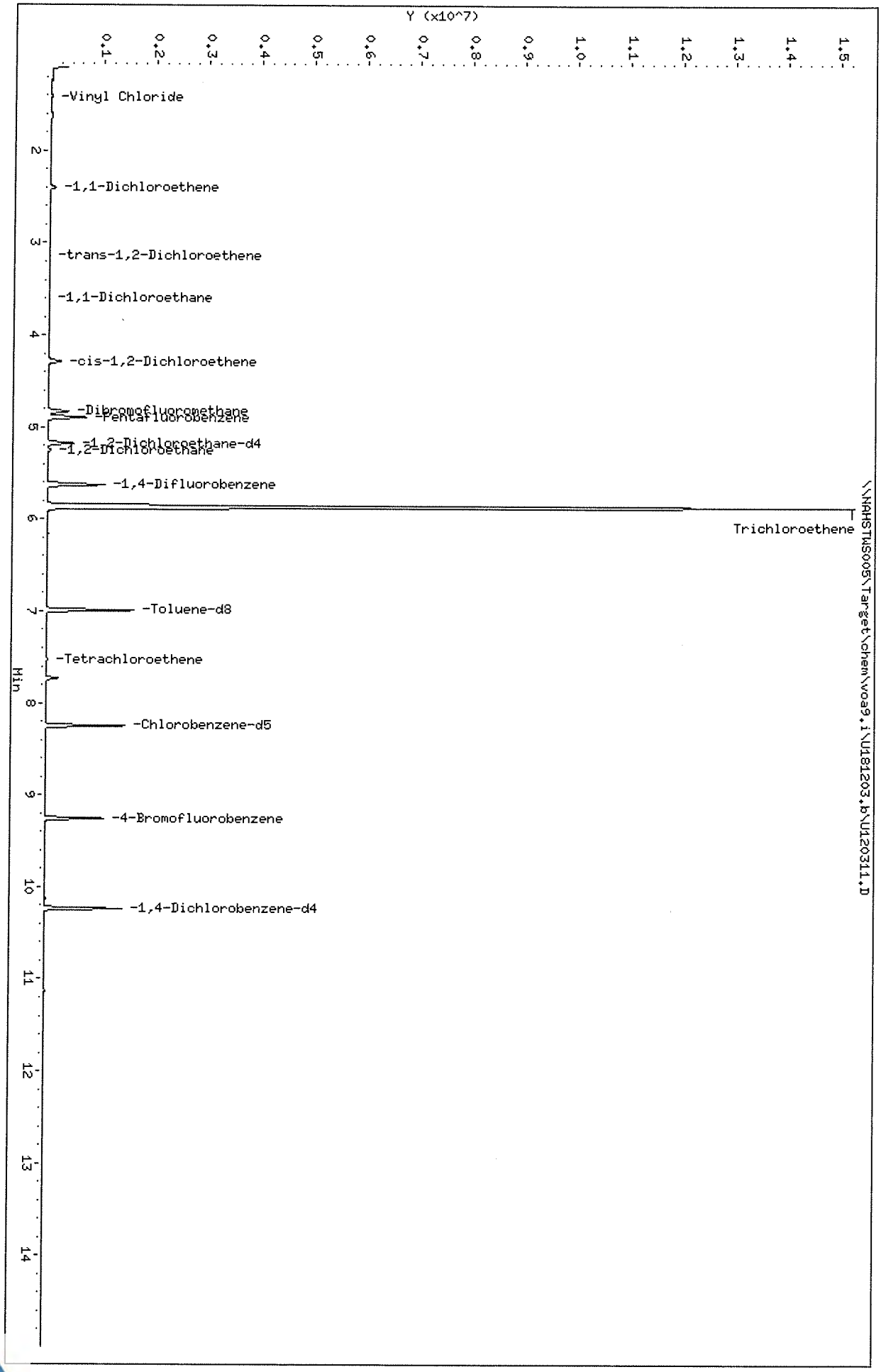
Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
* 1 Pentafluorobenzene	168	4.894	4.894	(1.000)	431112	50.0000	
* 36 1,4-Difluorobenzene	114	5.625	5.625	(1.000)	770860	50.0000	
* 47 Chlorobenzene-d5	117	8.249	8.249	(1.000)	703803	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	10.236	10.236	(1.000)	322055	50.0000	
$ 30 Dibromofluoromethane	113	4.830	4.826	(0.987)	221069	44.4733	44.47
$ 35 1,2-Dichloroethane-d4	65	5.175	5.175	(1.057)	304232	46.5633	46.56
$ 48 Toluene-d8	98	6.989	6.989	(0.847)	938898	52.2691	52.26
$ 69 4-Bromofluorobenzene	95	9.257	9.257	(1.122)	340556	48.9115	48.91
22 1,1-Dichloroethane	63	3.604	3.601	(0.737)	11936	1.20819	1.20(a)
11 1,1-Dichloroethene	96	2.401	2.397	(0.491)	26660	5.47858	5.47
33 1,2-Dichloroethane	62	5.254	5.250	(0.934)	43377	5.37746	5.37
27 cis-1,2-Dichloroethene	96	4.287	4.283	(0.876)	103386	16.9241	16.92
56 Tetrachloroethene	164	7.525	7.522	(0.912)	6194	1.68005	1.68(a)
20 trans-1,2-Dichloroethene	96	3.143	3.139	(0.642)	2387	0.44757	0.44(a)
38 Trichloroethene	130	5.865	5.861	(1.043)	4465400	850.127	850.12(A)
5 Vinyl Chloride	62	1.419	1.415	(0.290)	3535	1.00598	1.00(a)

QC Flag Legend

a - Target compound detected but, quantitated amount
Below Limit Of Quantitation(BLOQ).
A - Target compound detected but, quantitated amount
exceeded maximum amount.

Data File: \\NAHSTWS005\Target\chem\voa9.i\U181203.b\U120311.D
Date : 03-DEC-2018 14:04
Client ID: HS18111440-03
Sample Info: HS18111440-03;HS18111440-03;;;
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA9.i
Operator: PC
Column diameter: 0.18



Data File: \\NAHSTWS005\Target\chem\voa9.i\U181203.b\U120311.D

Date : 03-DEC-2018 14:04

Client ID: HS18111440-03

Instrument: VOA9.i

Sample Info: HS18111440-03;HS18111440-03;;;

Purge Volume: 5.0

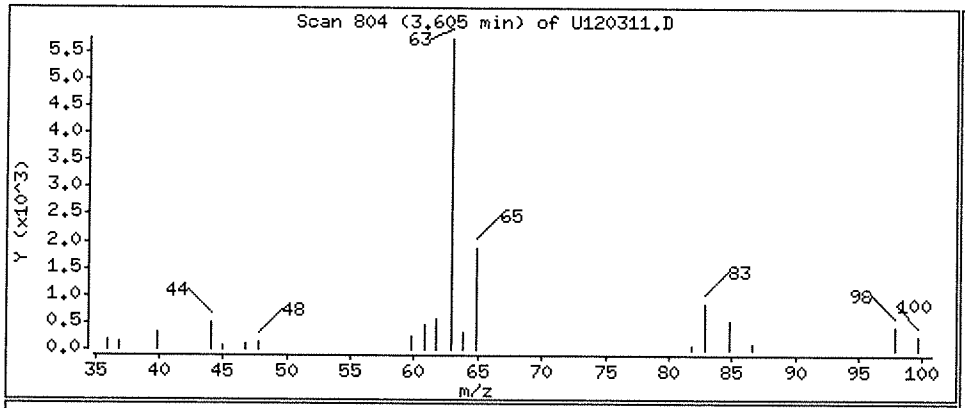
Operator: PC

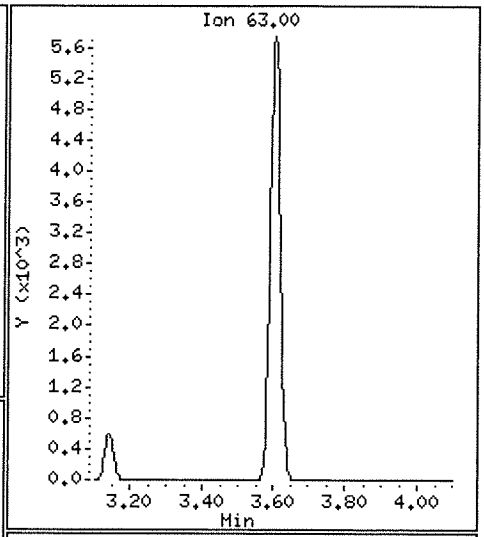
Column phase: DB624

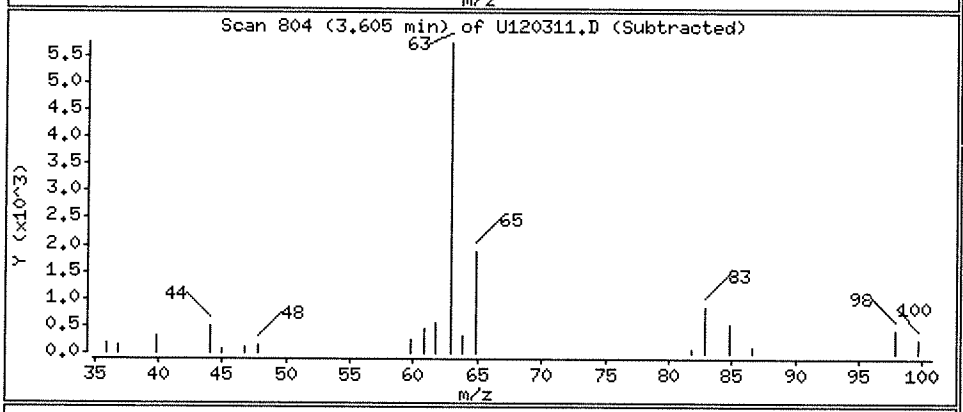
Column diameter: 0.18

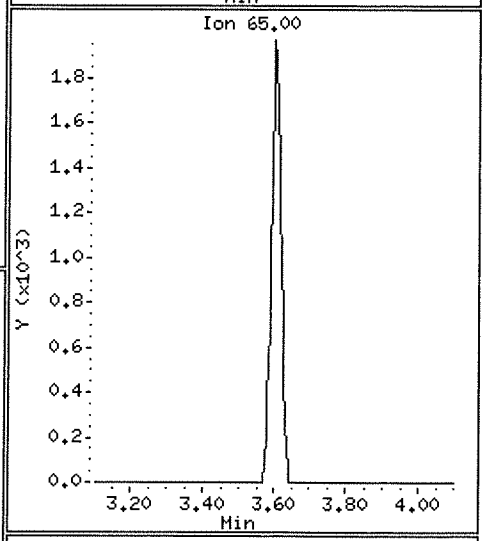
22 1,1-Dichloroethane

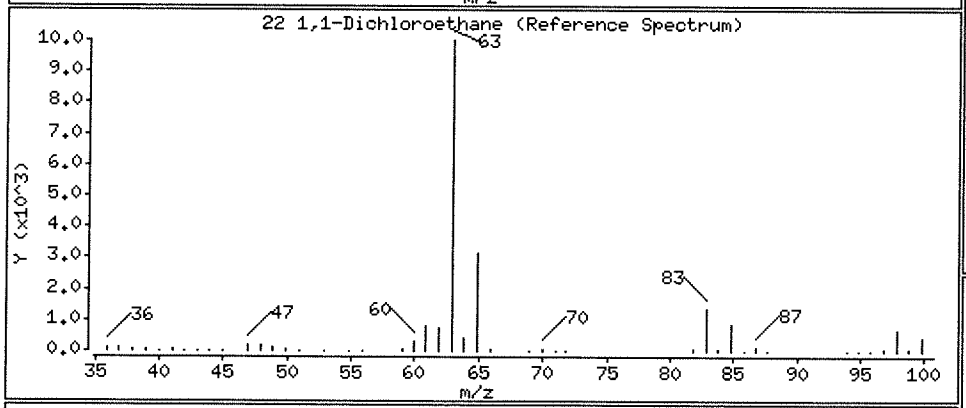
Concentration: 1.20 ug/l

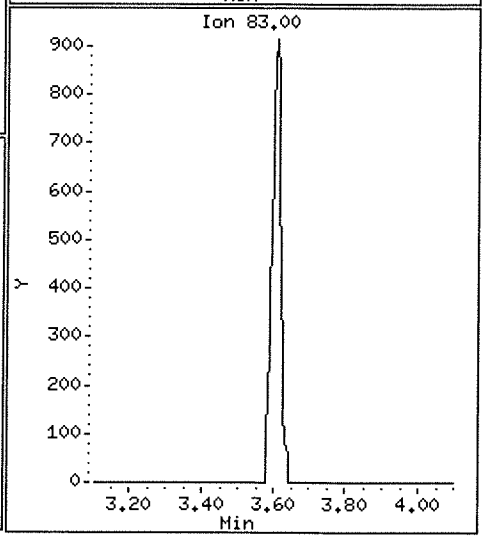


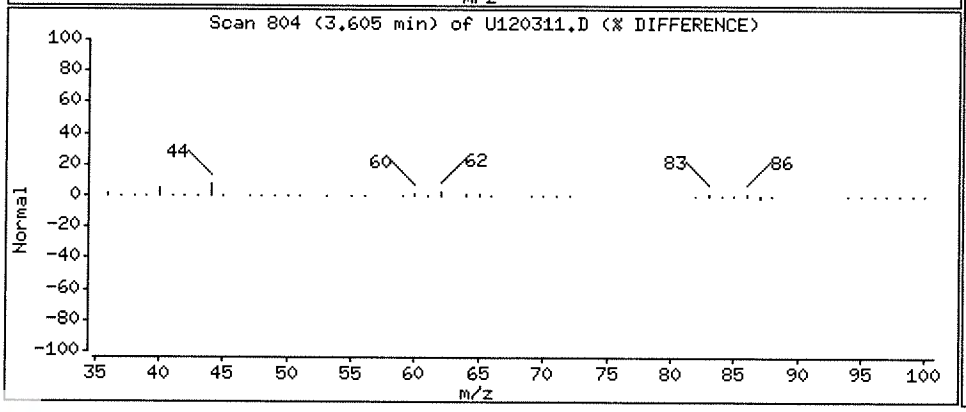












Data File: \\NAHSTWS005\Target\chem\voa9.i\U181203.b\U120311.D

Date : 03-DEC-2018 14:04

Client ID: HS18111440-03

Instrument: VOA9.i

Sample Info: HS18111440-03;HS18111440-03;;;

Purge Volume: 5.0

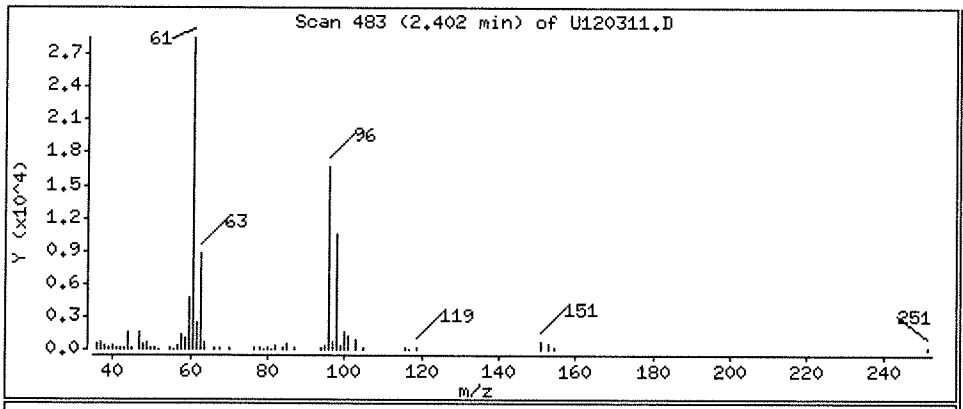
Operator: PC

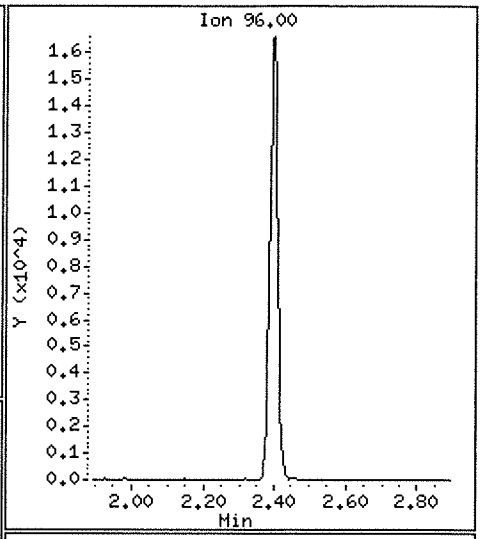
Column phase: DB624

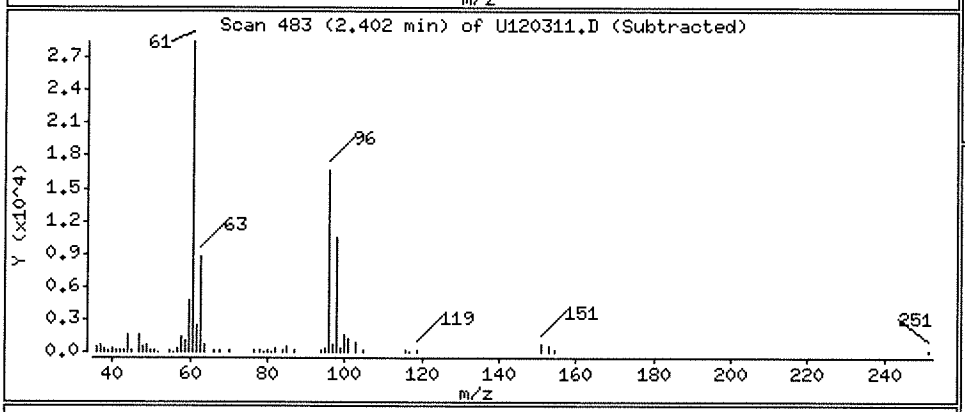
Column diameter: 0.18

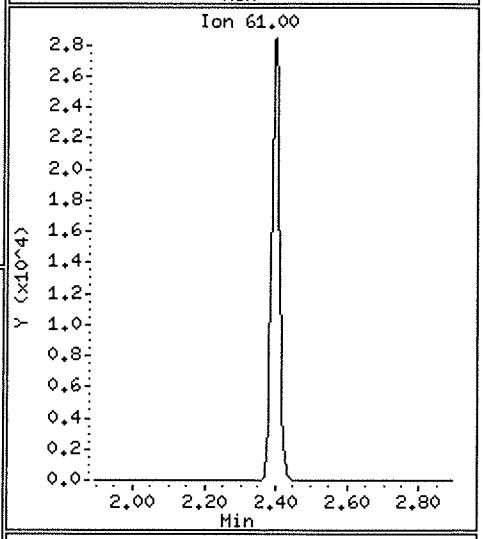
11 1,1-Dichloroethene

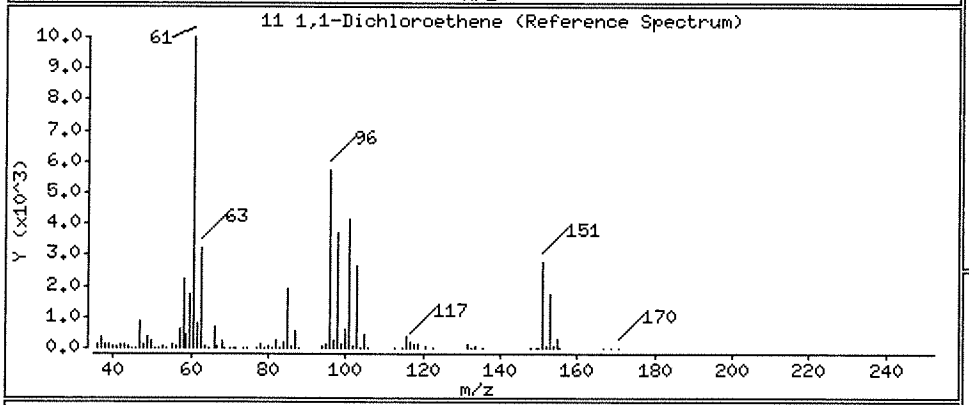
Concentration: 5.47 ug/l

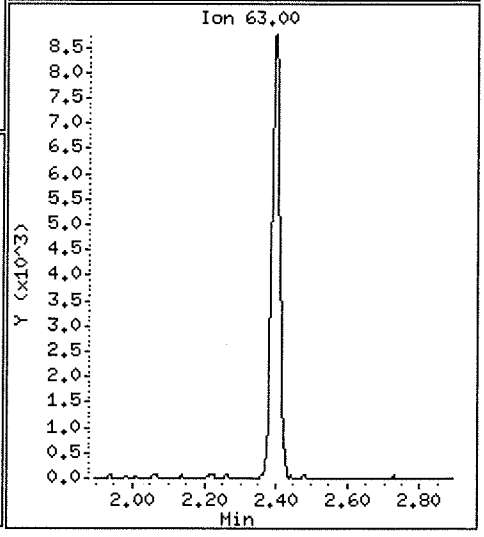


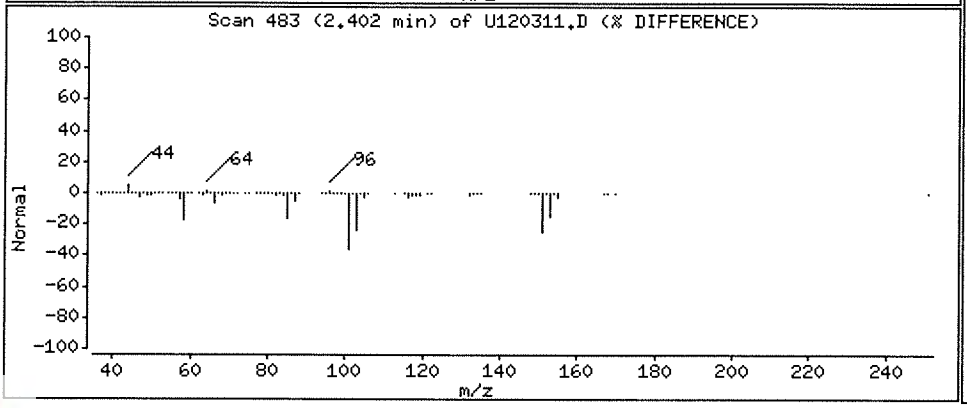












Data File: \\NAHSTWS005\Target\chem\voa9.i\U181203.b\U120311.D

Date : 03-DEC-2018 14:04

Client ID: HS18111440-03

Instrument: VOA9.i

Sample Info: HS18111440-03;HS18111440-03;;;

Purge Volume: 5.0

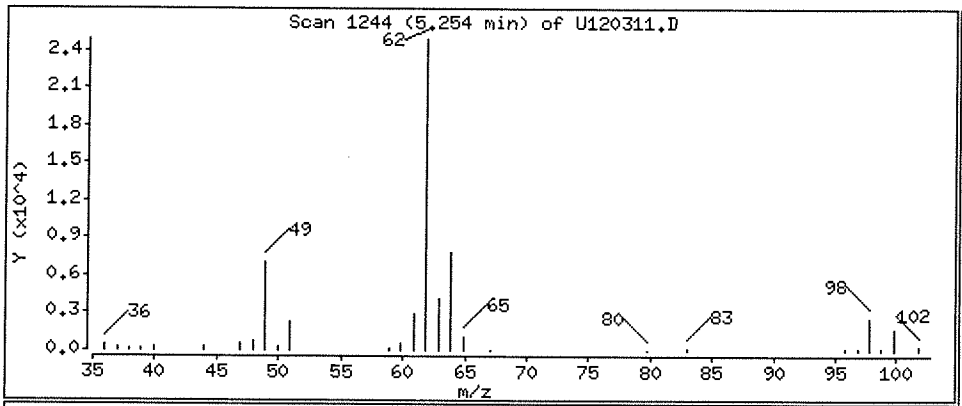
Operator: PC

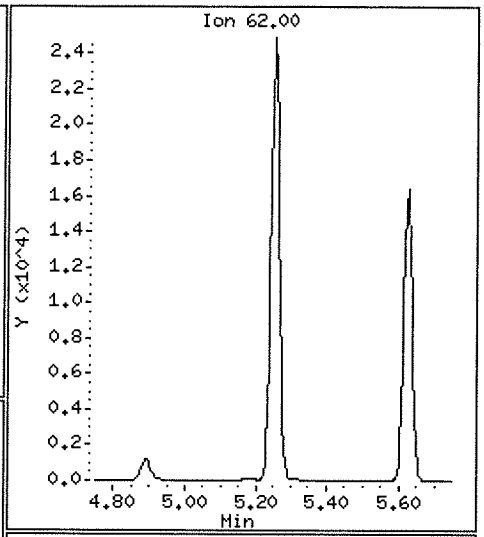
Column phase: DB624

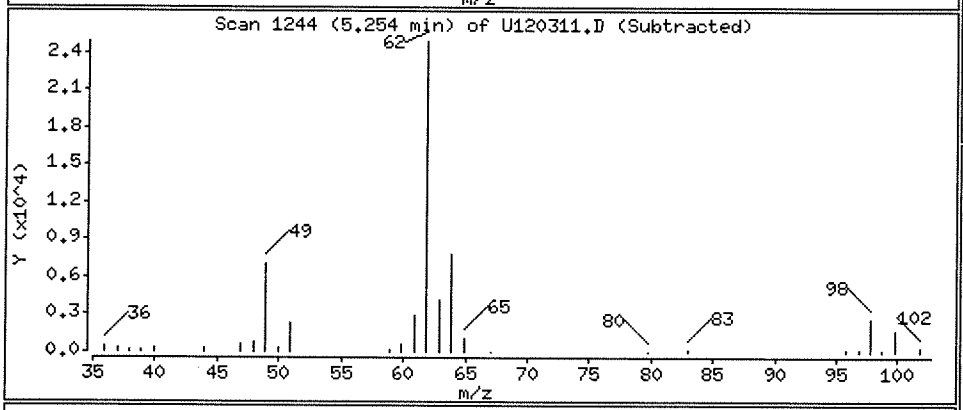
Column diameter: 0.18

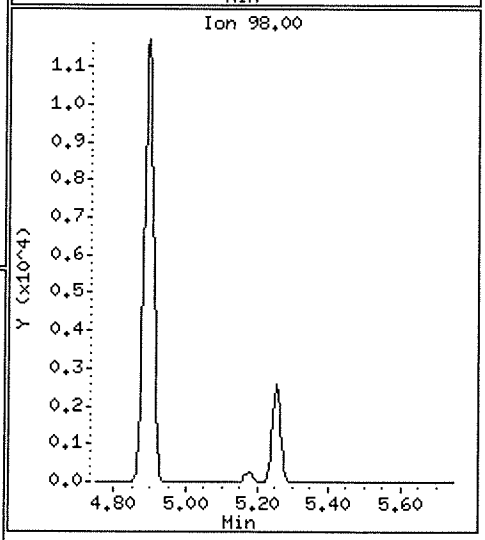
33 1,2-Dichloroethane

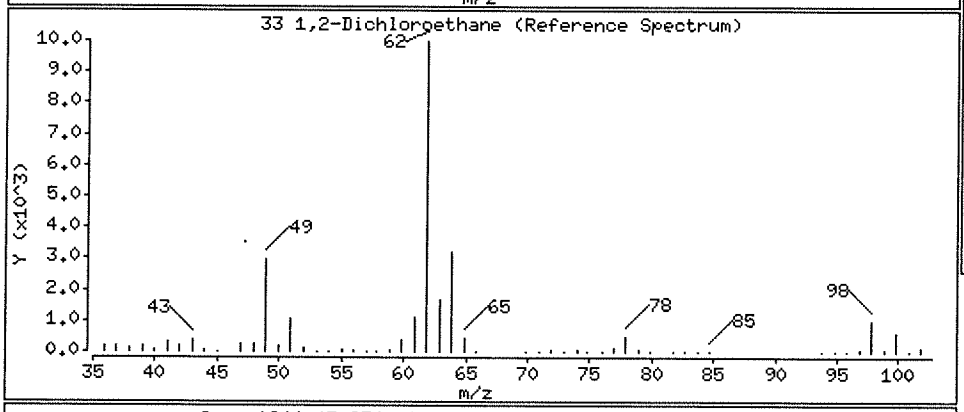
Concentration: 5.37 ug/l

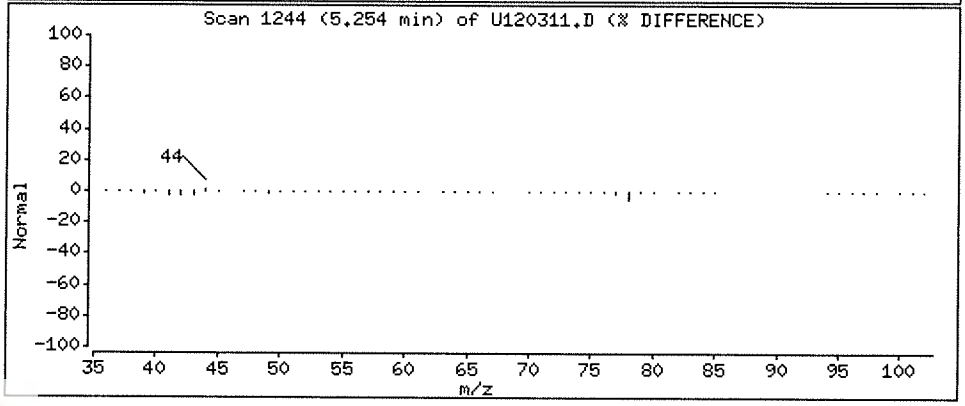












Data File: \\NAHSTWS005\Target\chem\voa9.i\U181203.b\U120311.D

Date : 03-DEC-2018 14:04

Client ID: HS18111440-03

Instrument: VOA9.i

Sample Info: HS18111440-03;HS18111440-03;;;

Purge Volume: 5.0

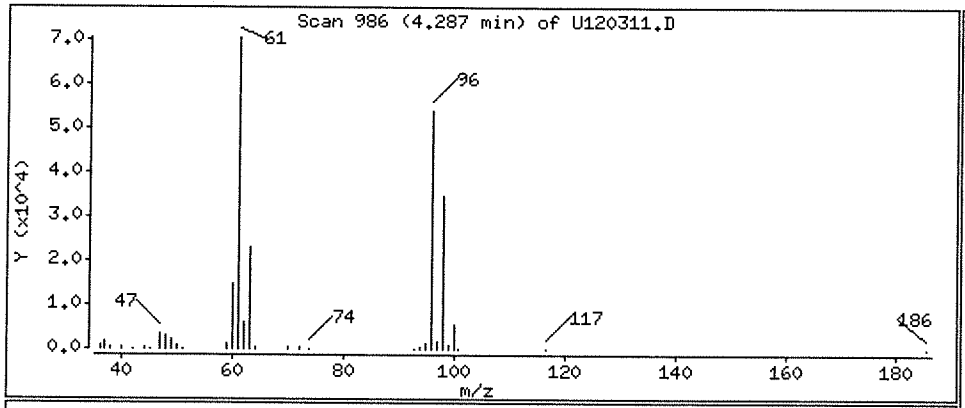
Operator: PC

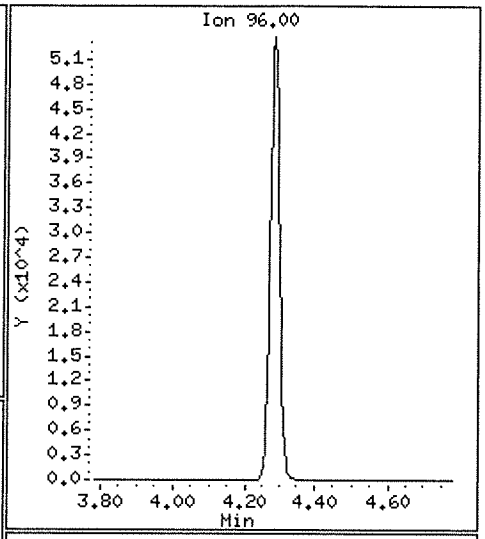
Column phase: DB624

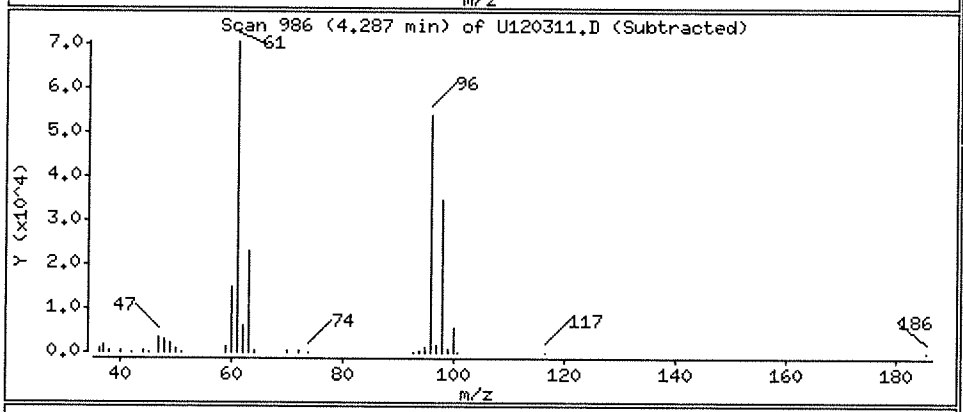
Column diameter: 0.18

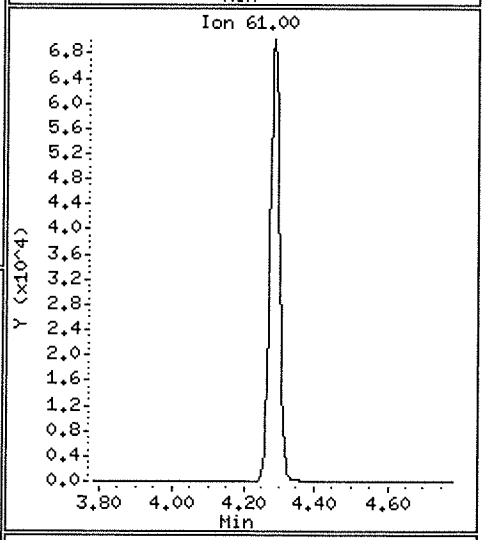
27 cis-1,2-Dichloroethene

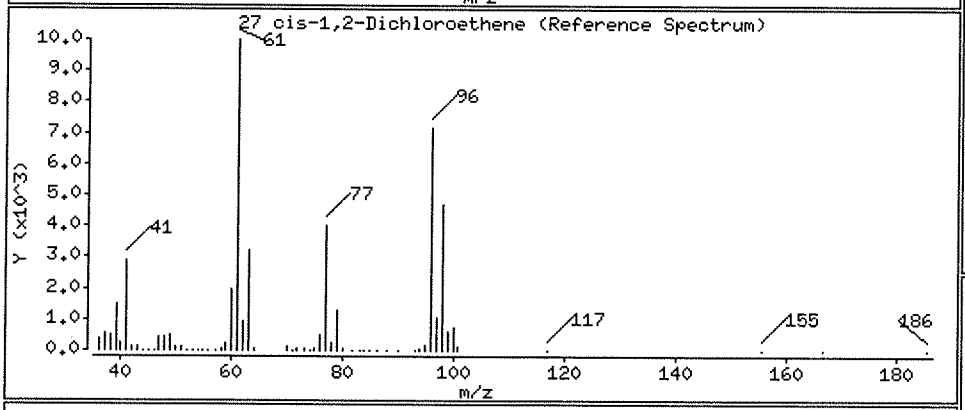
Concentration: 16.92 ug/l

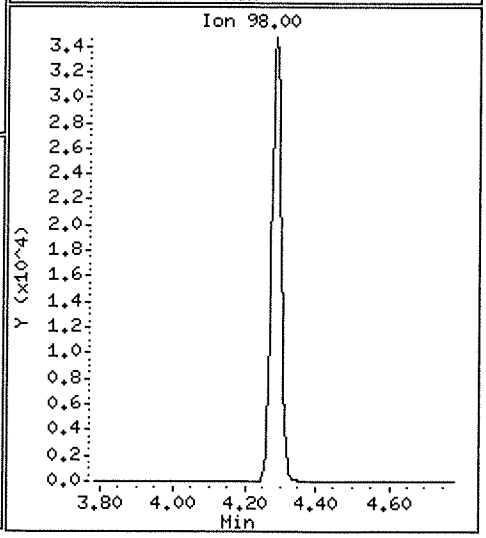


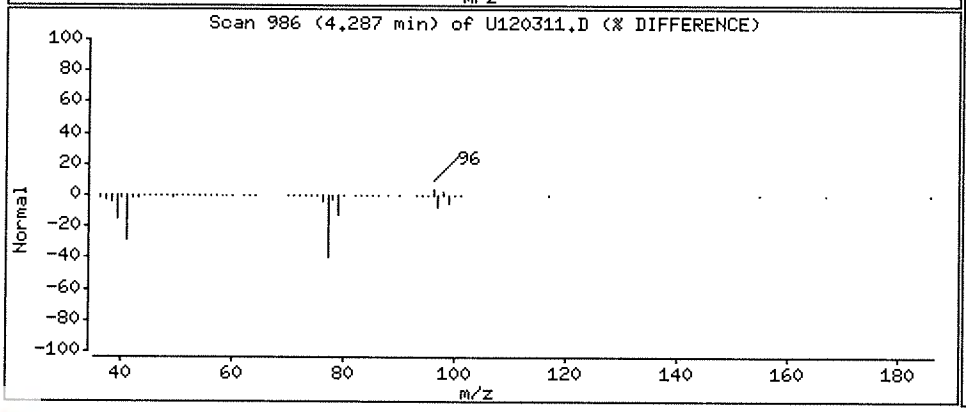












Data File: \\NAHSTWS005\Target\chem\voa9.i\U181203.b\U120311.D

Date : 03-DEC-2018 14:04

Client ID: HS18111440-03

Instrument: VOA9.i

Sample Info: HS18111440-03;HS18111440-03;;;

Purge Volume: 5.0

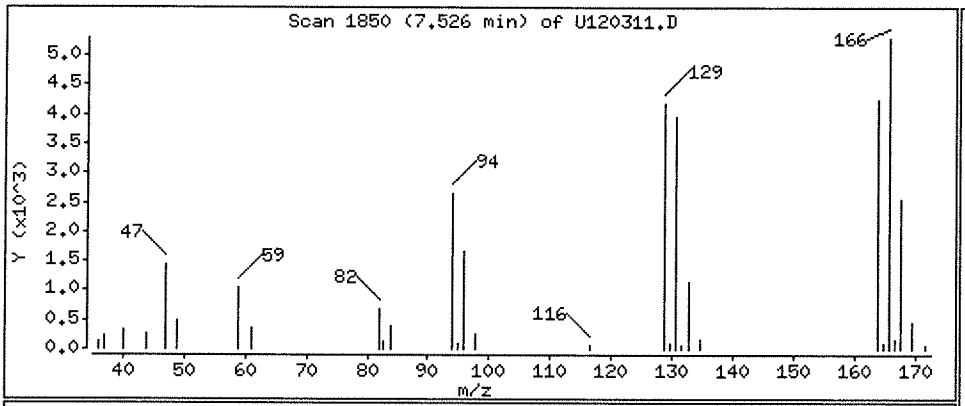
Operator: PC

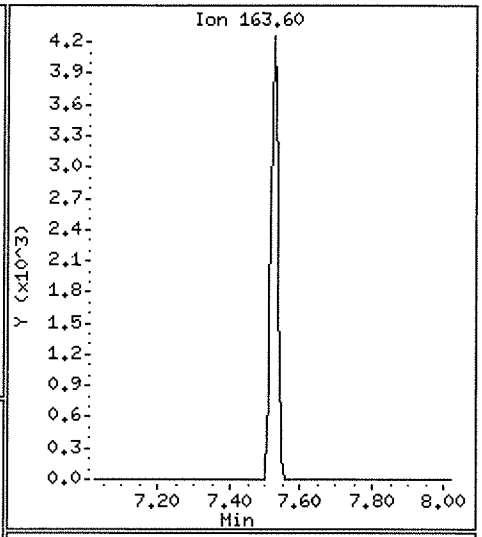
Column phase: DB624

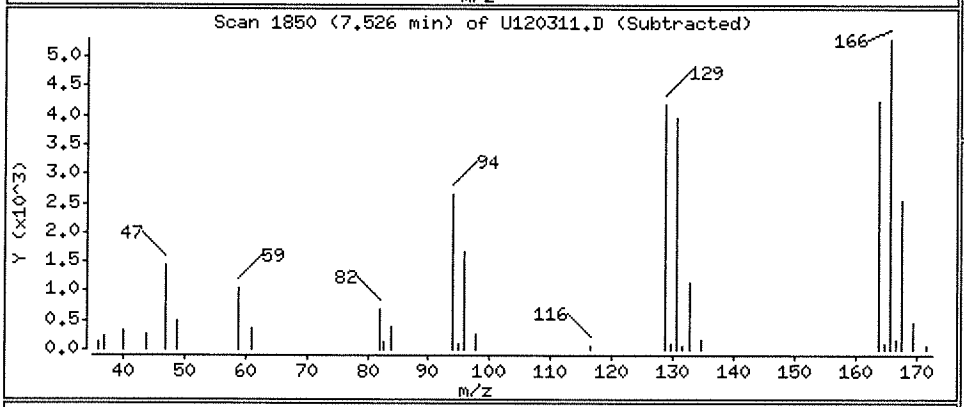
Column diameter: 0.18

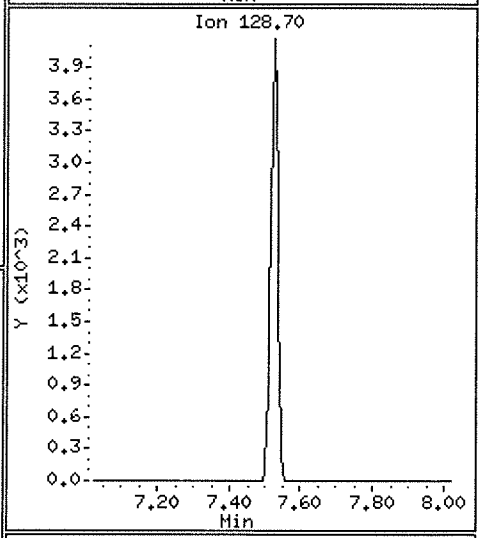
56 Tetrachloroethene

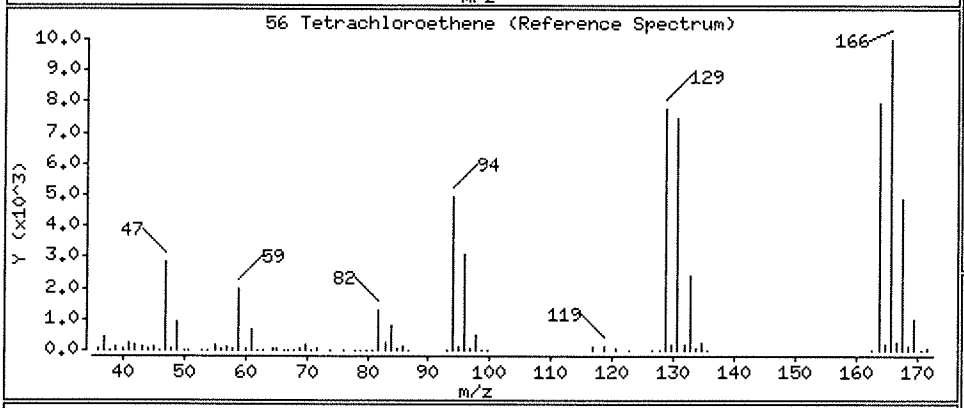
Concentration: 1.68 ug/l

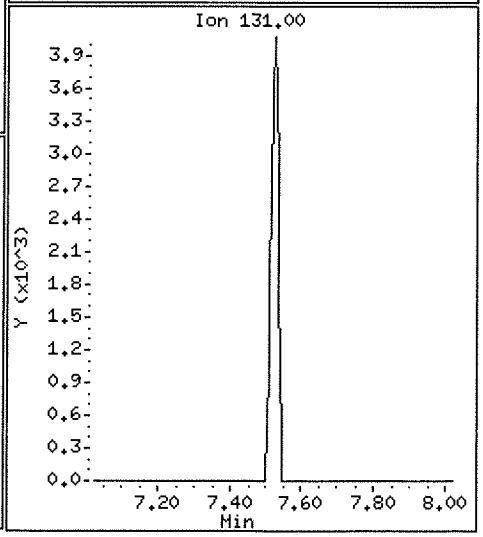


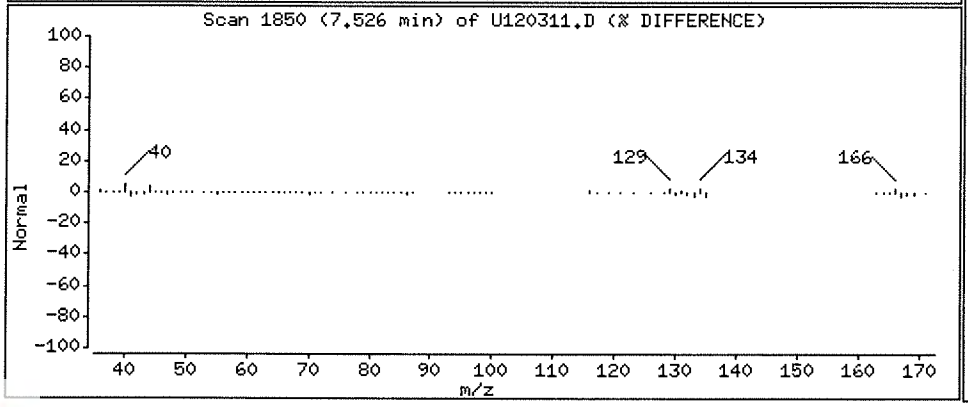












Data File: \\NAHSTWS005\Target\chem\voa9.i\U181203.b\U120311.D

Date : 03-DEC-2018 14:04

Client ID: HS18111440-03

Instrument: VOA9.i

Sample Info: HS18111440-03;HS18111440-03;;;

Purge Volume: 5.0

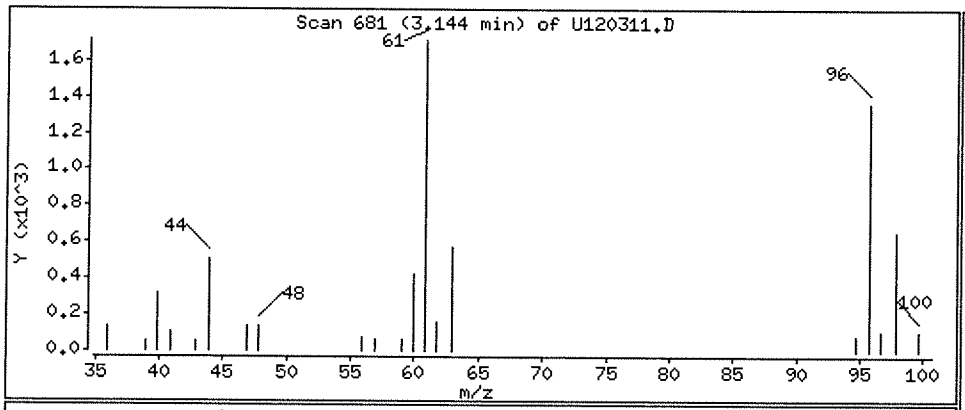
Operator: PC

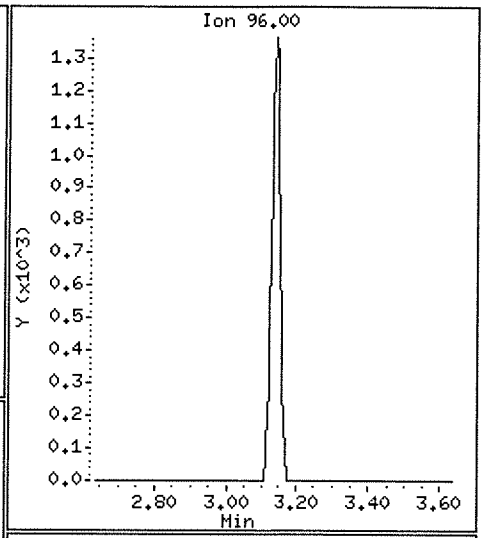
Column phase: DB624

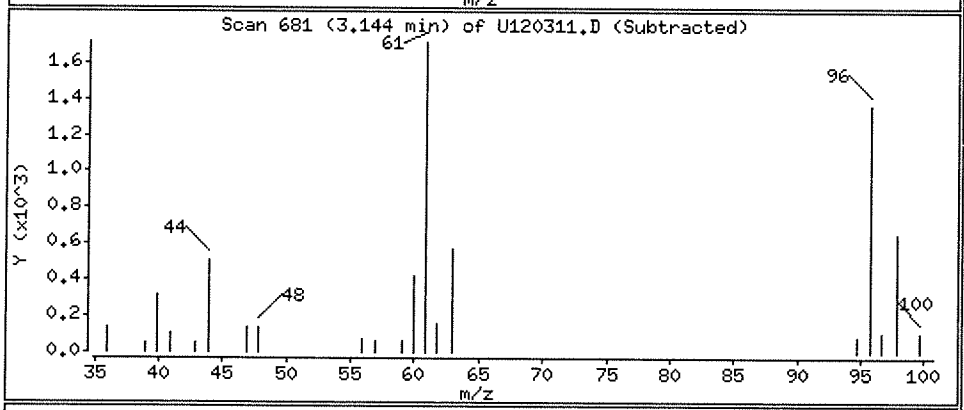
Column diameter: 0.18

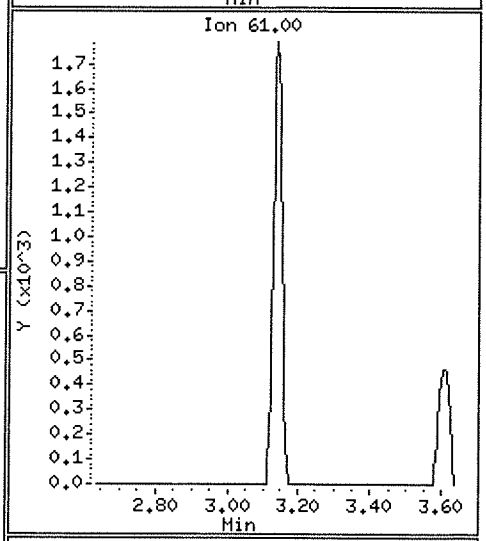
20 trans-1,2-Dichloroethene

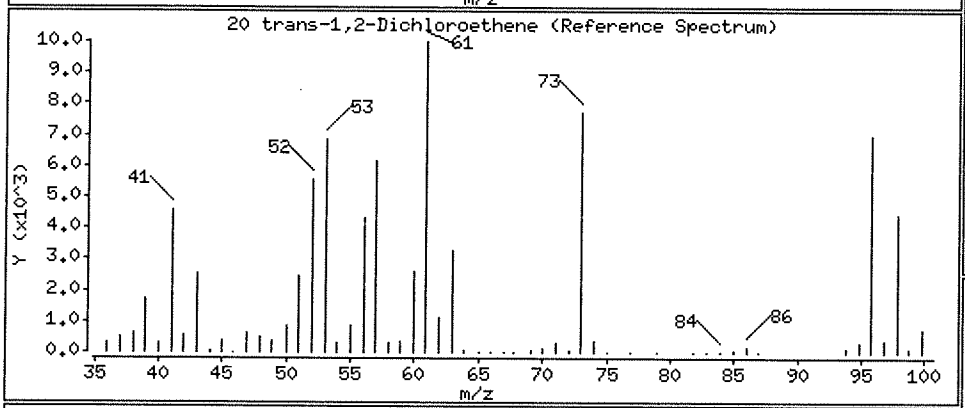
Concentration: 0.44 ug/l

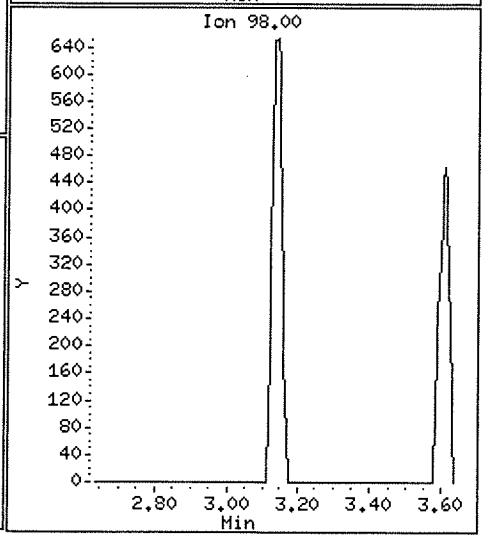


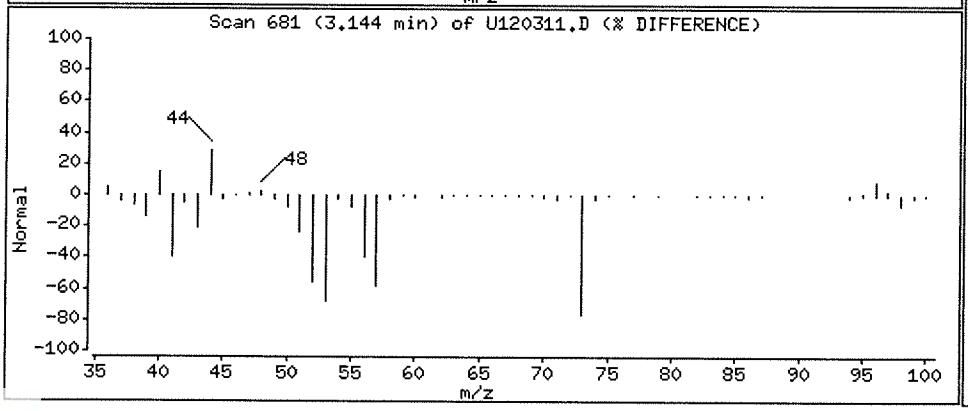












Data File: \\NAHSTWS005\Target\chem\voa9.i\U181203.b\U120311.D

Date : 03-DEC-2018 14:04

Client ID: HS18111440-03

Instrument: VOA9.i

Sample Info: HS18111440-03;HS18111440-03;;;

Purge Volume: 5.0

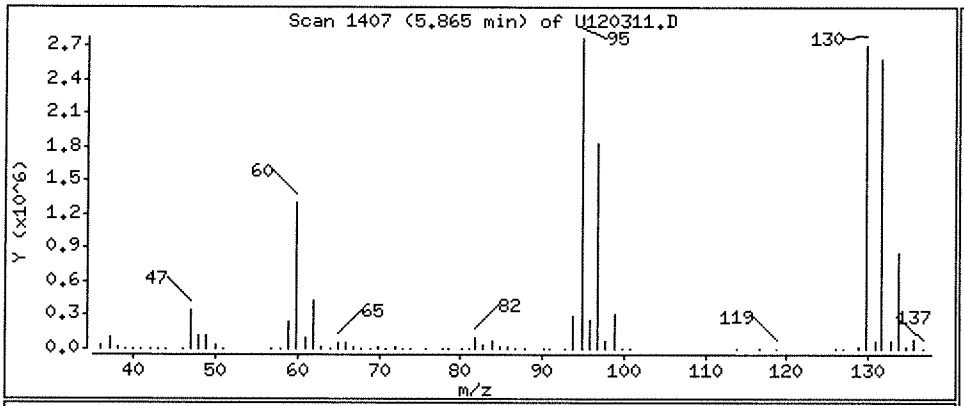
Operator: PC

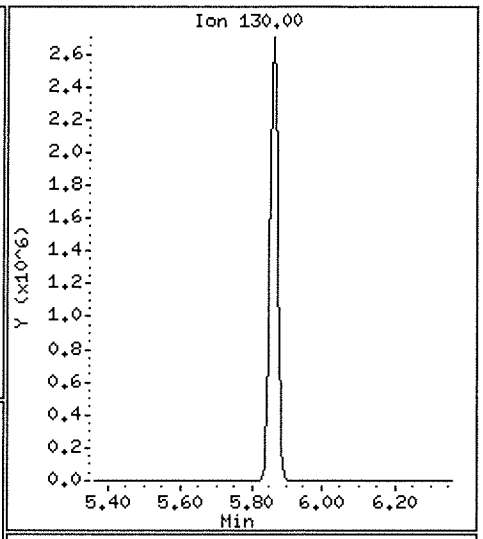
Column phase: DB624

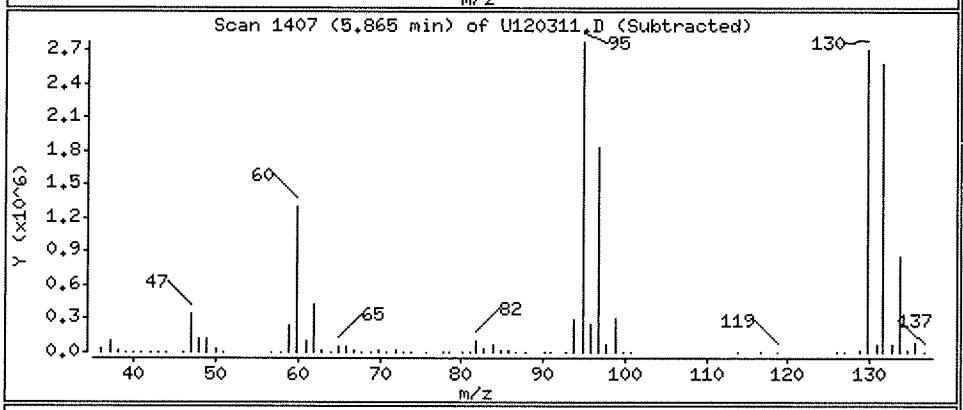
Column diameter: 0.18

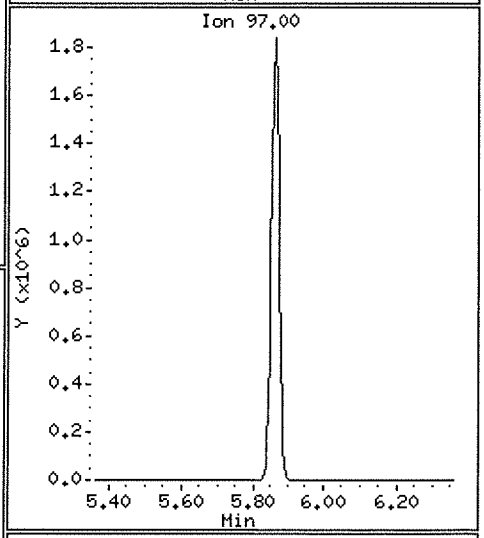
38 Trichloroethene

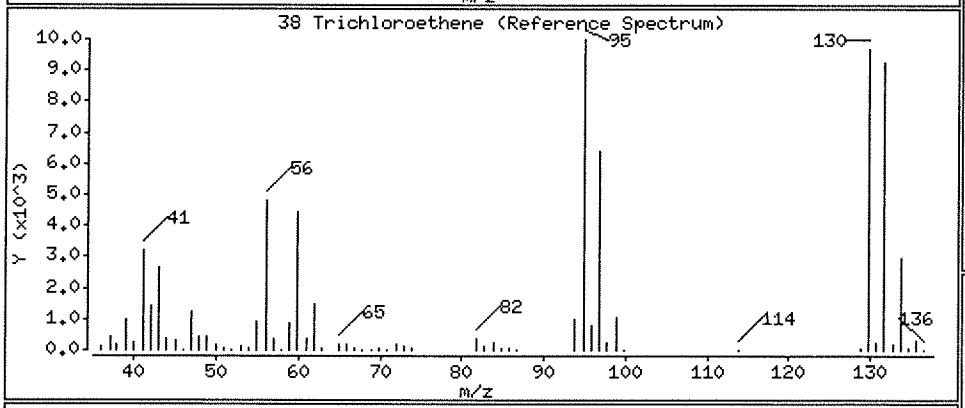
Concentration: 850.12 ug/l

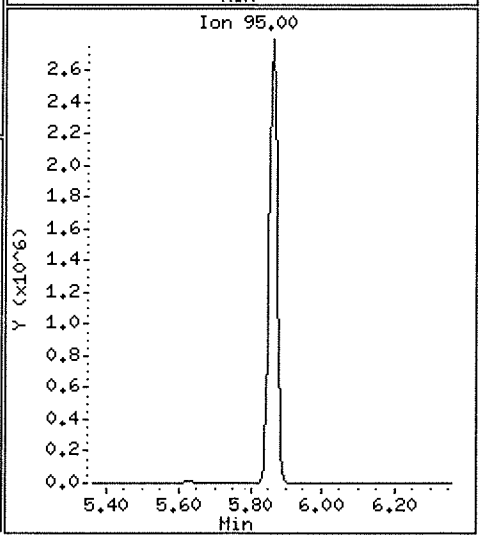


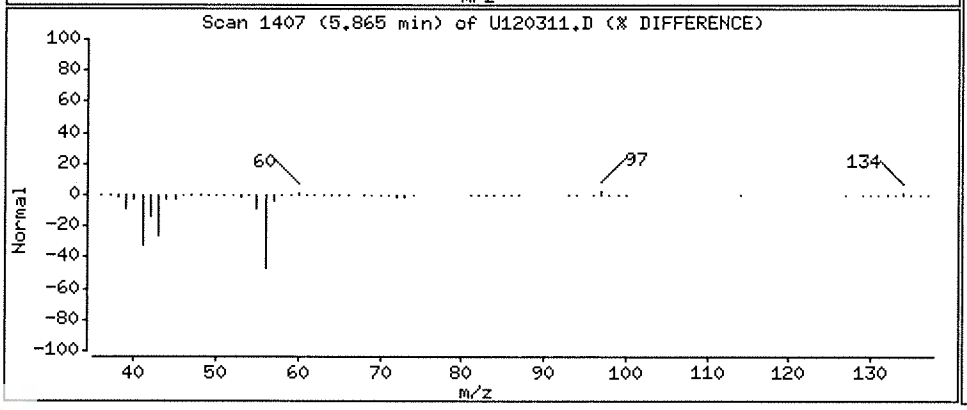












Data File: \\NAHSTWS005\Target\chem\voa9.i\U181203.b\U120311.D

Date : 03-DEC-2018 14:04

Client ID: HS18111440-03

Instrument: VOA9.i

Sample Info: HS18111440-03;HS18111440-03;;;

Purge Volume: 5.0

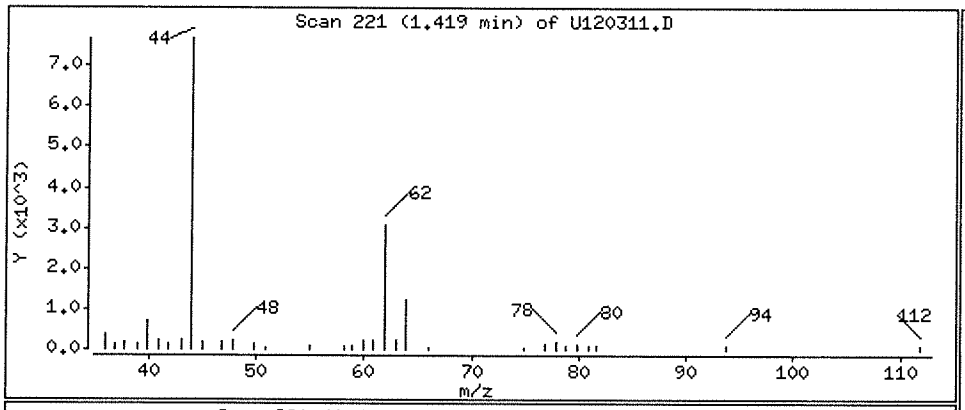
Operator: PC

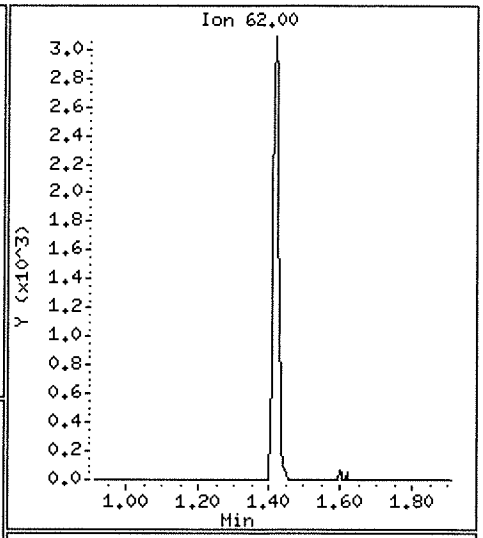
Column phase: DB624

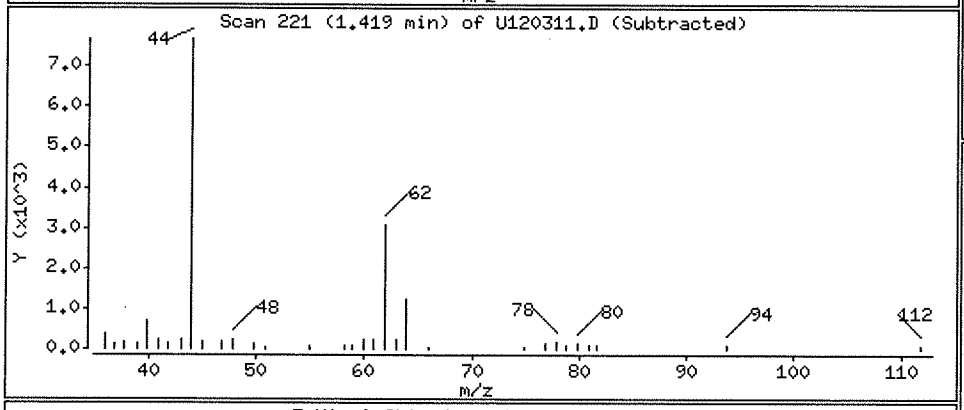
Column diameter: 0.18

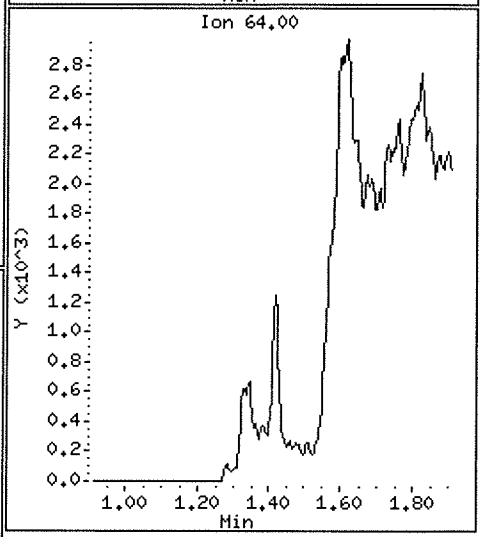
5 Vinyl Chloride

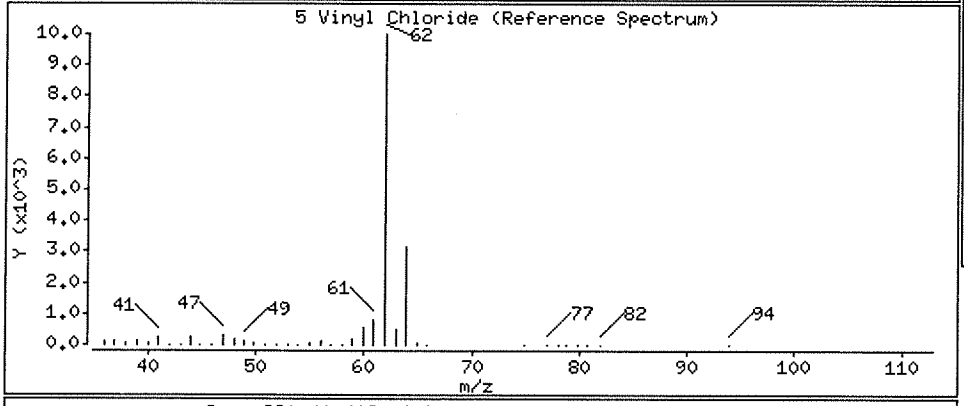
Concentration: 1.00 ug/l

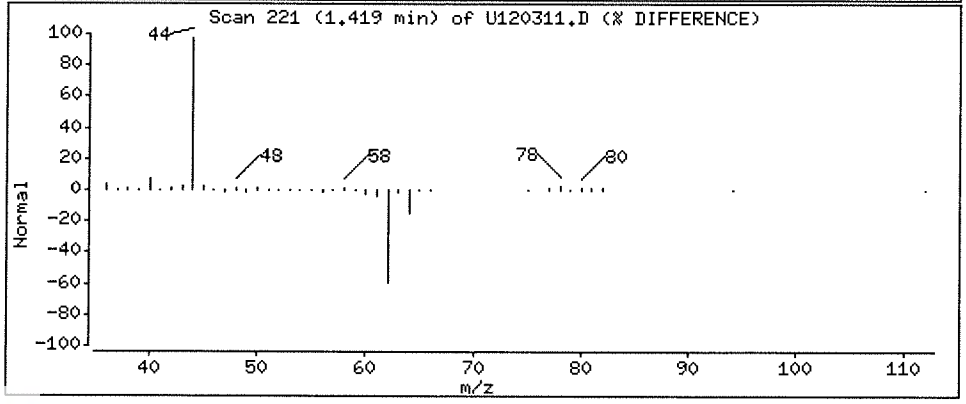












Data File: \\NAHSTWS005\Target\chem\voa9.i\U181203.b\U120312.D Page 1
Report Date: 25-Jan-2019 19:24

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa9.i\U181203.b\U120312.D
Lab Smp Id: HS18111440-01MS Client Smp ID: HS18111440-01MS
Inj Date : 03-DEC-2018 14:29
Operator : PC Inst ID: VOA9.i
Smp Info : HS18111440-01MS;HS18111440-01MS;3;;MS
Misc Info : 180315V9;WATER;0;1;
Comment :
Method : \\NAHSTWS005\Target\chem\voa9.i\U181203.b\8260C.m
Meth Date : 25-Jan-2019 19:24 VOA9.i Quant Type: ISTD
Cal Date : 13-NOV-2018 14:15 Cal File: U111308.D
Als bottle: 12 QC Sample: MS
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: LHAAP.sub
Target Version: 4.14
Processing Host: NAHSTW7087

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Cpnd Variable		Local Compound Variable

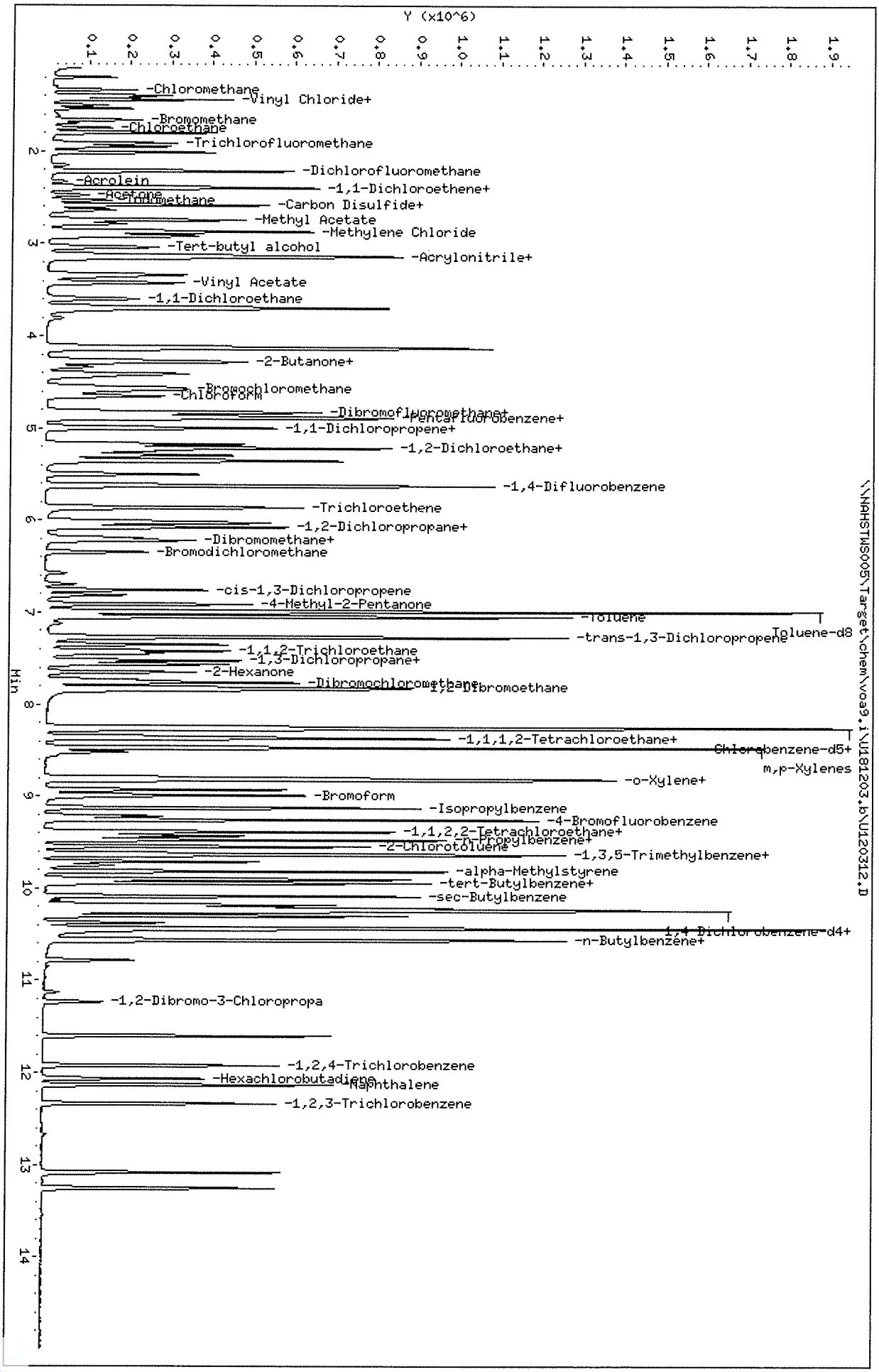
Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
* 1 Pentafluorobenzene	168	4.890	4.894	(1.000)	441437	50.0000	
* 36 1,4-Difluorobenzene	114	5.625	5.625	(1.000)	781317	50.0000	
* 47 Chlorobenzene-d5	117	8.249	8.249	(1.000)	723094	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	10.236	10.236	(1.000)	348124	50.0000	
$ 30 Dibromofluoromethane	113	4.826	4.826	(0.987)	229531	45.1131	45.11
$ 35 1,2-Dichloroethane-d4	65	5.171	5.175	(1.057)	304386	45.4565	45.45
$ 48 Toluene-d8	98	6.989	6.989	(0.847)	977771	53.0043	53.00
$ 69 4-Bromofluorobenzene	95	9.257	9.257	(1.122)	362516	50.7148	50.71
60 1,1,1,2-Tetrachloroethane	131	8.350	8.350	(1.012)	102847	22.5490	22.54
31 1,1,1-Trichloroethane	97	4.826	4.826	(0.987)	168161	21.6866	21.68
68 1,1,2,2-Tetrachloroethane	83	9.392	9.392	(0.918)	185039	22.4401	22.44
138 Freon TF	101	2.397	2.401	(0.490)	101689	22.9953	22.99
53 1,1,2-Trichloroethane	83	7.421	7.420	(0.900)	105222	22.8889	22.88
22 1,1-Dichloroethane	63	3.601	3.601	(0.736)	223143	22.0588	22.05
11 1,1-Dichloroethene	96	2.394	2.397	(0.490)	111237	22.3243	22.32
32 1,1-Dichloropropene	75	5.003	5.003	(0.889)	177895	24.6527	24.65
93 1,2,3-Trichlorobenzene	180	12.335	12.335	(1.205)	145899	22.1985	22.19
71 1,2,3-Trichloropropane	75	9.426	9.426	(0.921)	197907	22.9996	22.99
90 1,2,4-Trichlorobenzene	180	11.926	11.923	(1.165)	150704	22.0137	22.01
79 1,2,4-Trimethylbenzene	105	9.943	9.943	(0.971)	460624	23.8221	23.82
89 1,2-Dibromo-3-Chloropropane	155	11.233	11.233	(1.097)	24971	20.3145	20.31
57 1,2-Dibromoethane	107	7.852	7.852	(0.952)	122622	23.0350	23.03

Data File: \\NAHSTWS005\Target\chem\voa9.i\U181203.b\U120312.D Page 2
Report Date: 25-Jan-2019 19:24

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
88	1,2-Dichlorobenzene	146	10.573	10.569	(1.033)	243251	21.8807	21.88
33	1,2-Dichloroethane	62	5.250	5.250	(0.933)	180493	22.0763	22.07
42	1,2-Dichloropropane	63	6.078	6.078	(1.081)	134523	24.1825	24.18
75	1,3,5-Trimethylbenzene	105	9.625	9.625	(0.940)	446222	23.8567	23.85
83	1,3-Dichlorobenzene	146	10.180	10.180	(0.995)	243337	22.2011	22.20
54	1,3-Dichloropropane	76	7.563	7.563	(0.917)	224892	22.7832	22.78
84	1,4-Dichlorobenzene	146	10.255	10.255	(1.002)	248248	23.1323	23.13
26	2,2-Dichloropropane	77	4.272	4.272	(0.874)	139712	22.3021	22.30
24	2-Butanone	43	4.335	4.335	(0.887)	134974	43.4973	43.49
76	2-Chlorotoluene	91	9.546	9.546	(0.933)	399977	23.4635	23.46
52	2-Hexanone	43	7.649	7.649	(0.927)	200276	47.6465	47.64
77	4-Chlorotoluene	91	9.640	9.640	(0.942)	463922	23.5852	23.58
82	p-Isopropyltoluene	119	10.210	10.210	(0.997)	477083	25.0252	25.02
45	4-Methyl-2-Pentanone	43	6.914	6.914	(0.838)	285890	47.3941	47.39
10	Acetone	43	2.476	2.476	(0.506)	96894	45.5048	45.50
37	Benzene	78	5.216	5.216	(0.927)	516845	23.9310	23.93
74	Bromobenzene	156	9.381	9.381	(0.917)	126619	22.1726	22.17
29	Bromochloromethane	128	4.553	4.553	(0.931)	59484	22.8573	22.85
39	Bromodichloromethane	83	6.345	6.348	(1.128)	143178	22.0547	22.05
66	Bromoform	173	8.984	8.984	(1.089)	63018	19.9915	19.99
6	Bromomethane	94	1.663	1.663	(0.340)	88100	25.0400	25.04
19	Carbon Disulfide	76	2.585	2.588	(0.529)	654914	42.5604	42.56
34	Carbon Tetrachloride	117	4.991	4.995	(0.887)	133231	23.6341	23.63
59	Chlorobenzene	112	8.275	8.275	(1.003)	337730	22.6298	22.62
7	Chloroethane	64	1.745	1.749	(0.357)	102238	22.1970	22.19(M)
28	Chloroform	83	4.654	4.654	(0.952)	212294	20.8877	20.88
3	Chloromethane	50	1.333	1.336	(0.273)	130209	22.2217	22.22
27	cis-1,2-Dichloroethene	96	4.283	4.283	(0.876)	136483	21.8195	21.81
46	cis-1,3-Dichloropropene	75	6.757	6.757	(1.201)	190178	23.2627	23.26
55	Dibromochloromethane	129	7.758	7.758	(0.940)	103535	22.6280	22.62
44	Dibromomethane	93	6.187	6.187	(1.100)	76957	22.0742	22.07
2	Dichlorodifluoromethane	85	1.198	1.201	(0.245)	96443	15.4860	15.48
61	Ethylbenzene	106	8.369	8.369	(1.015)	177613	23.5410	23.54
91	Hexachlorobutadiene	225	12.065	12.065	(1.179)	60649	28.9161	28.91
67	Isopropylbenzene	105	9.126	9.126	(1.106)	530445	24.1383	24.13
62	m,p-Xylenes	106	8.474	8.474	(1.027)	447183	48.0884	48.08
17	Methylene Chloride	84	2.866	2.870	(0.586)	130815	22.8495	22.84
87	n-Butylbenzene	91	10.558	10.558	(1.031)	459656	25.6546	25.65
73	n-Propylbenzene	91	9.475	9.475	(0.926)	677903	24.6775	24.67
92	Naphthalene	128	12.133	12.133	(1.185)	479181	23.2450	23.24
63	o-Xylene	106	8.811	8.811	(1.068)	223104	23.9759	23.97
81	sec-Butylbenzene	105	10.086	10.086	(0.985)	566032	24.7463	24.74
64	Styrene	104	8.826	8.826	(1.070)	381630	24.2900	24.28
78	tert-Butylbenzene	119	9.902	9.902	(0.967)	382116	23.9710	23.97
56	Tetrachloroethene	164	7.522	7.522	(0.912)	91164	24.0675	24.06
50	Toluene	91	7.046	7.046	(0.854)	546922	23.8236	23.82
20	trans-1,2-Dichloroethene	96	3.136	3.139	(0.641)	121339	22.2195	22.21
51	trans-1,3-Dichloropropene	75	7.259	7.259	(1.291)	161380	20.8389	20.83
38	Trichloroethene	130	5.861	5.861	(1.042)	151833	28.5192	28.51
8	Trichlorofluoromethane	101	1.947	1.951	(0.398)	189165	21.4343	21.43
5	Vinyl Chloride	62	1.411	1.415	(0.289)	157984	22.2386	22.23

QC Flag Legend

M - Compound response manually integrated.

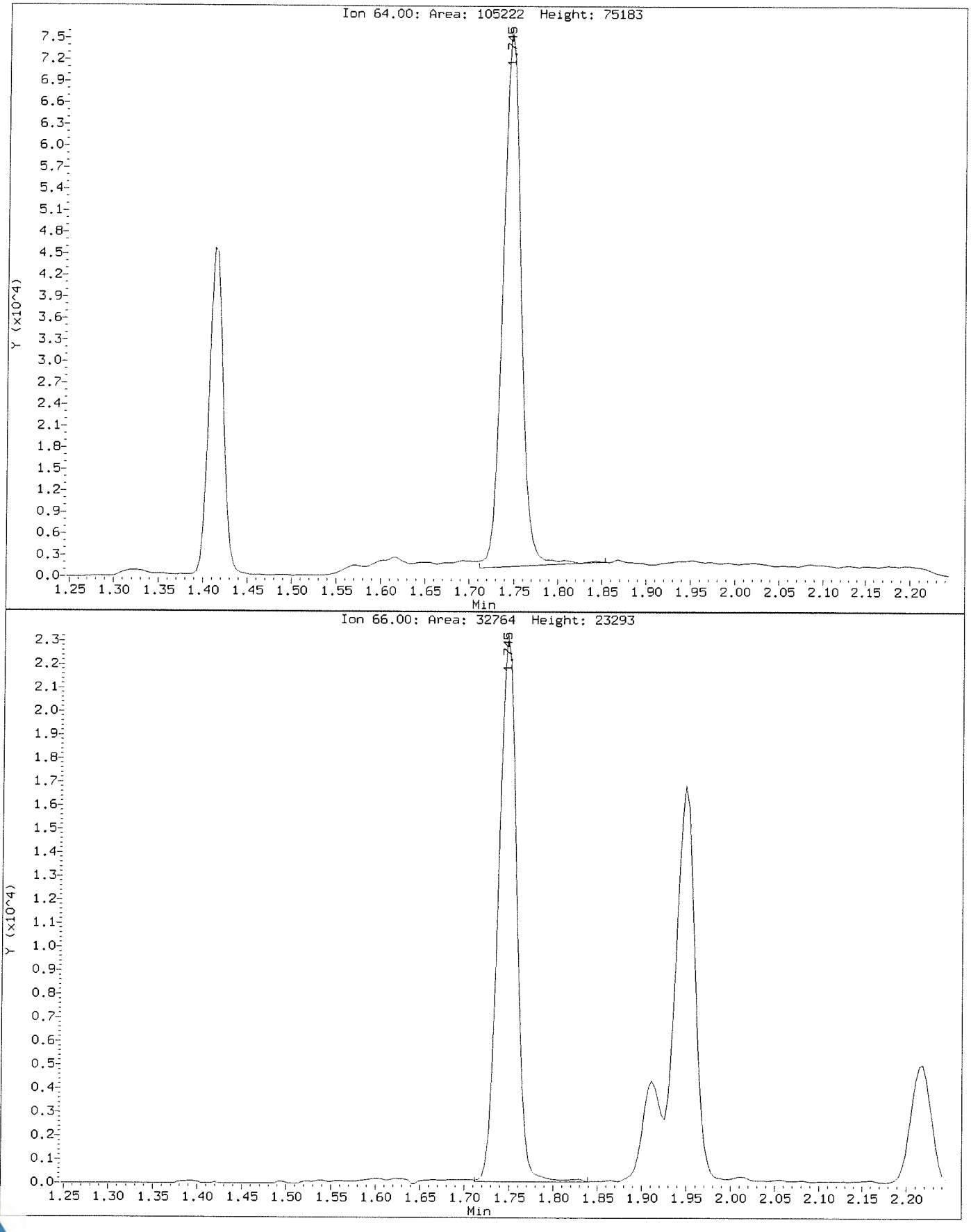


Data File: \\NAHSTWS005\Target\chem\voa9,i\U181203,b\U120312,D
Date : 03-DEC-2018 14:29
Client ID: HS18111440-01MS
Sample Info: HS18111440-01MS;HS18111440-01MS;3;;MS
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA9,i
Operator: PC
Column diameter: 0.18

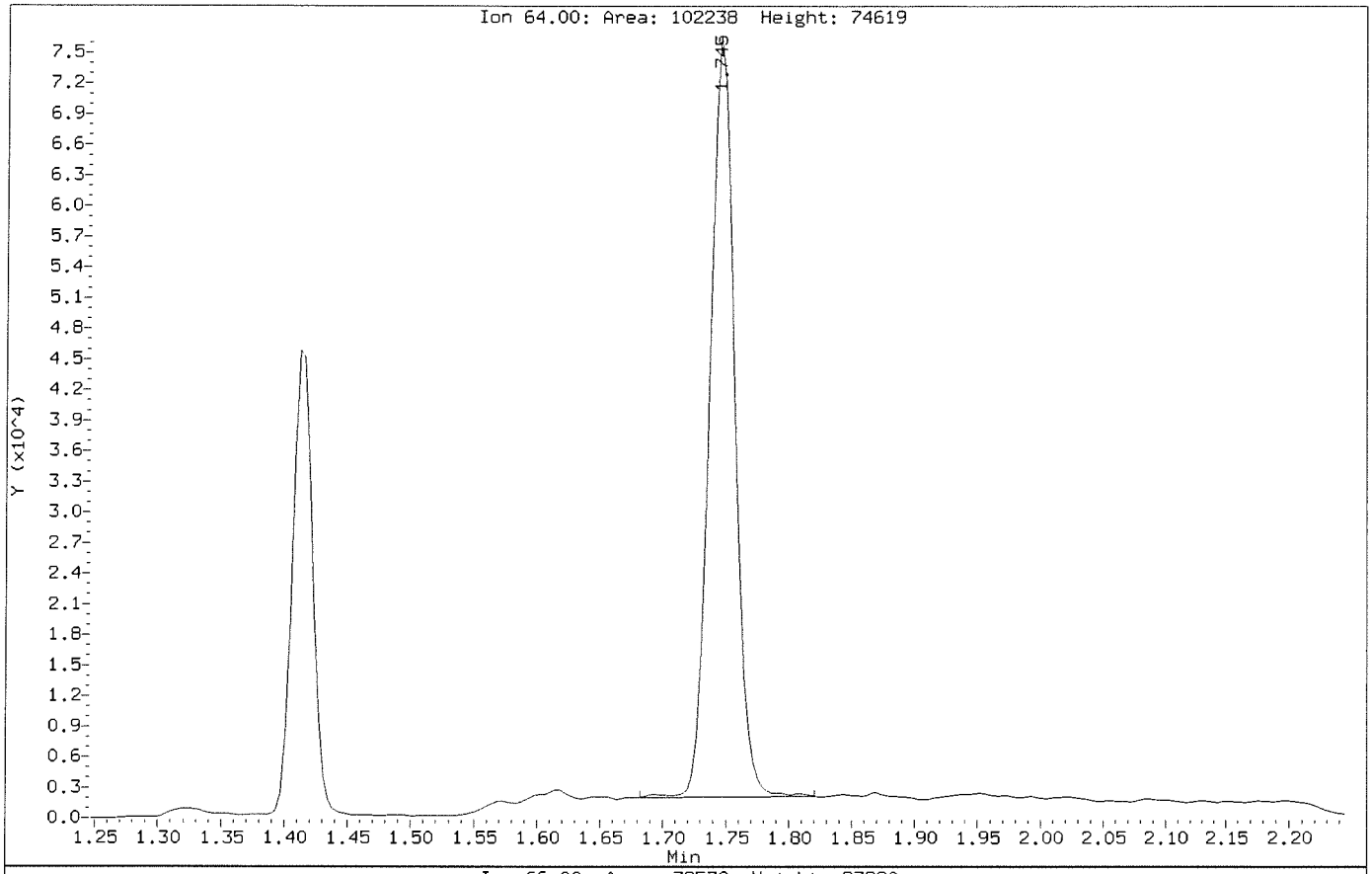
Data File: \\NAHSTWS005\Target\chem\voa9.i\U181203.b\Before\U120312.D
Injection Date: 03-DEC-2018 14:29
Instrument: VOA9.i
Client Sample ID: HS18111440-01MS

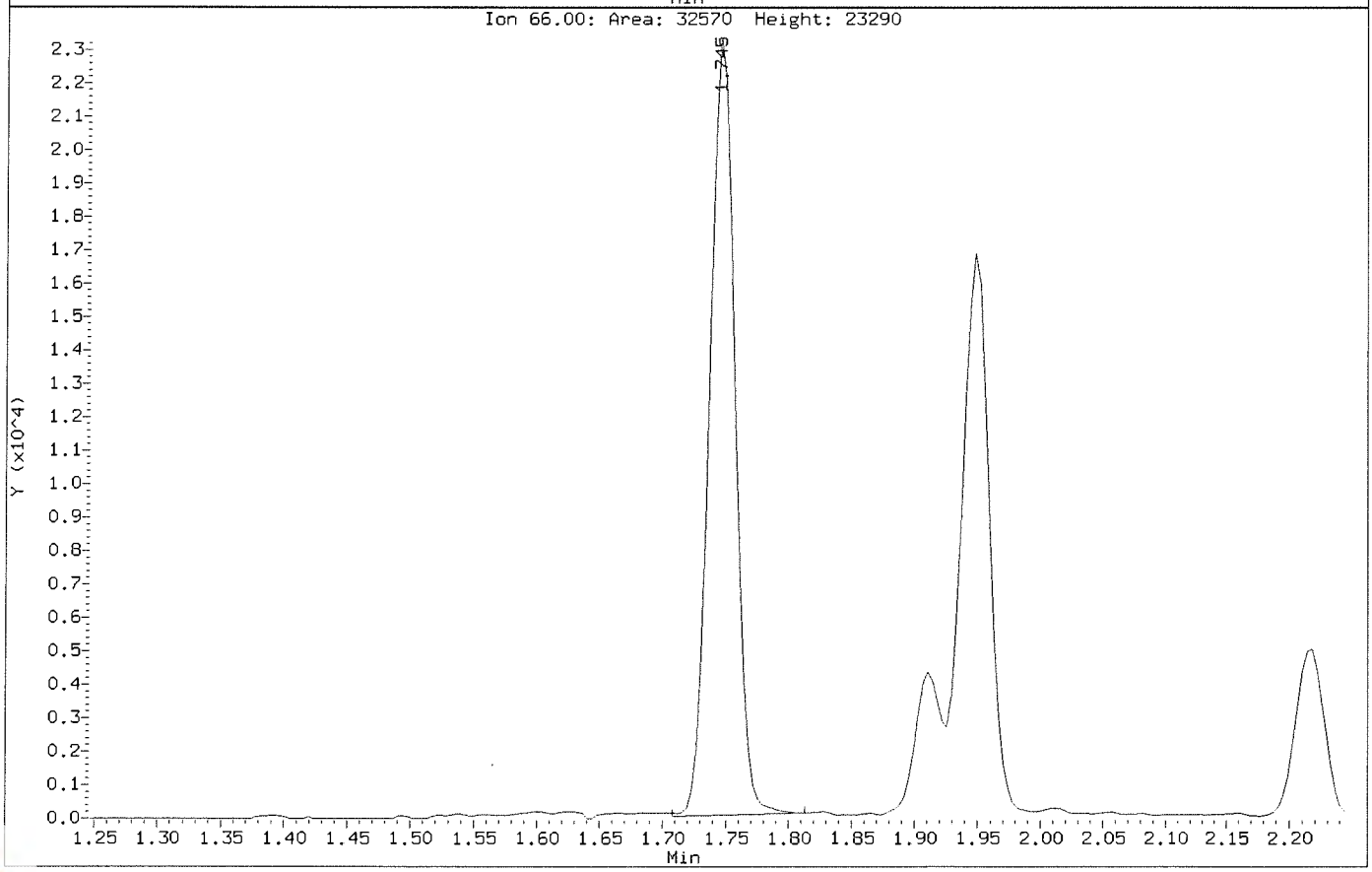
Compound: Chloroethane
CAS Number: 75-00-3



Data File: \\NAHSTWS005\Target\chem\voa9.i\U181203.b\U120312.D
Injection Date: 03-DEC-2018 14:29
Instrument: VOA9.i
Client Sample ID: HS18111440-01MS

Compound: Chloroethane
CAS Number: 75-00-3





Data File: \\NAHSTWS005\Target\chem\voa9.i\U181203.b\U120313.D Page 1
Report Date: 25-Jan-2019 19:24

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa9.i\U181203.b\U120313.D
Lab Smp Id: HS18111440-01MSD Client Smp ID: HS18111440-01MSD
Inj Date : 03-DEC-2018 14:54
Operator : PC Inst ID: VOA9.i
Smp Info : HS18111440-01MSD;HS18111440-01MSD;3;;MSD
Misc Info : 180315V9;WATER;0;1;
Comment :
Method : \\NAHSTWS005\Target\chem\voa9.i\U181203.b\8260C.m
Meth Date : 25-Jan-2019 19:24 VOA9.i Quant Type: ISTD
Cal Date : 13-NOV-2018 14:15 Cal File: U111308.D
Als bottle: 12 QC Sample: MSD
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: LHAAP.sub
Target Version: 4.14
Processing Host: NAHSTW7087

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Cpnd Variable		Local Compound Variable

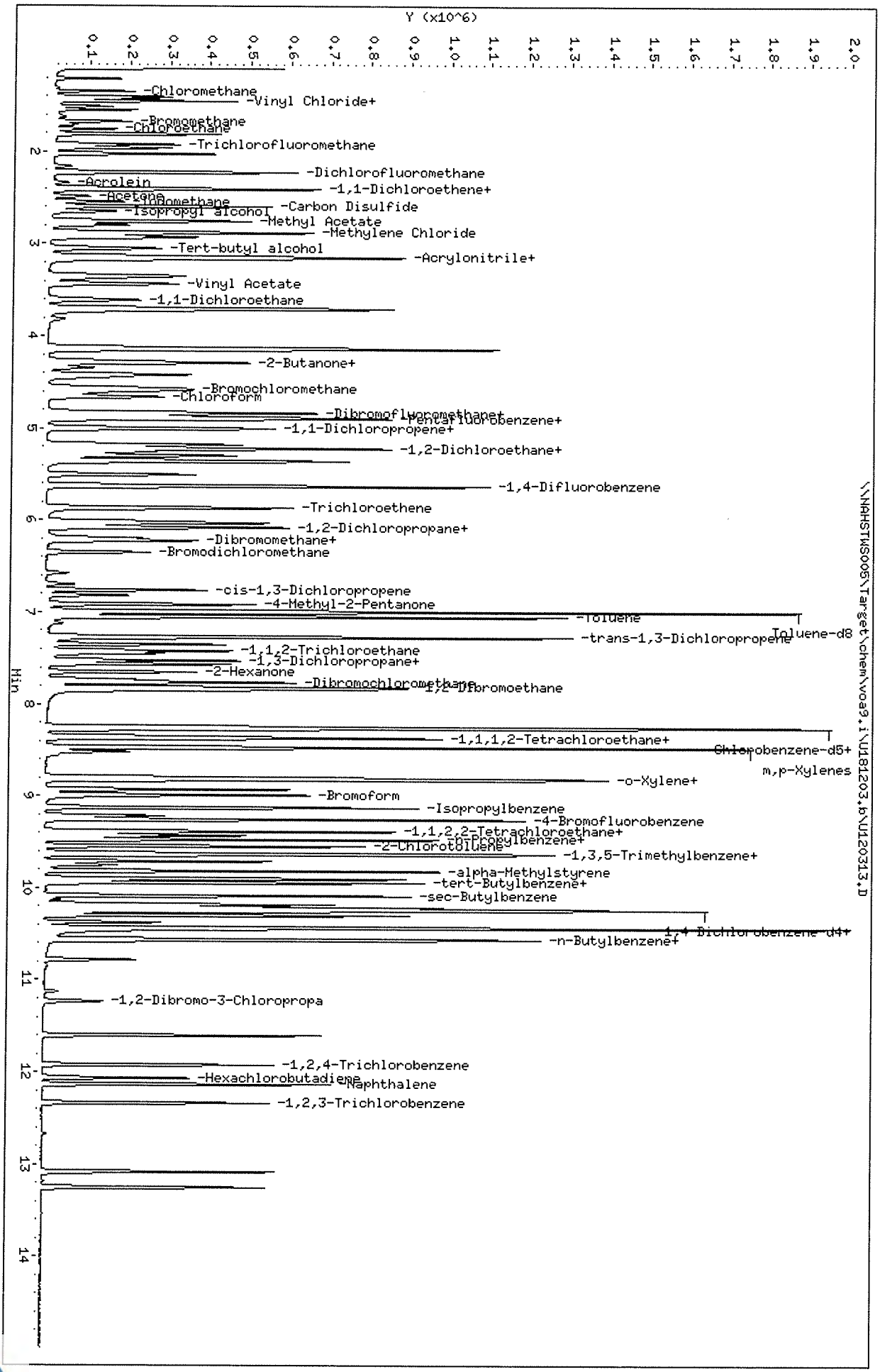
Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	CONCENTRATIONS FINAL (ug/l)
* 1 Pentafluorobenzene	168	4.898	4.894	(1.000)	442017	50.0000	
* 36 1,4-Difluorobenzene	114	5.629	5.625	(1.000)	785333	50.0000	
* 47 Chlorobenzene-d5	117	8.249	8.249	(1.000)	724374	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	10.236	10.236	(1.000)	350060	50.0000	
$ 30 Dibromofluoromethane	113	4.834	4.826	(0.987)	227742	44.6914	44.69
$ 35 1,2-Dichloroethane-d4	65	5.179	5.175	(1.057)	301745	44.9853	44.98
$ 48 Toluene-d8	98	6.989	6.989	(0.847)	985630	53.3466	53.34
$ 69 4-Bromofluorobenzene	95	9.257	9.257	(1.122)	366773	51.2303	51.23
60 1,1,1,2-Tetrachloroethane	131	8.350	8.350	(1.012)	108111	23.6612	23.66
31 1,1,1-Trichloroethane	97	4.830	4.826	(0.986)	171424	22.0784	22.07
68 1,1,2,2-Tetrachloroethane	83	9.392	9.392	(0.918)	187728	22.6403	22.64
138 Freon TF	101	2.408	2.401	(0.492)	102746	23.2039	23.20
53 1,1,2-Trichloroethane	83	7.420	7.420	(0.900)	107300	23.2997	23.29
22 1,1-Dichloroethane	63	3.608	3.601	(0.737)	226262	22.3377	22.33
11 1,1-Dichloroethene	96	2.405	2.397	(0.491)	114260	22.9009	22.90
32 1,1-Dichloropropene	75	5.006	5.003	(0.889)	180409	24.8733	24.87
93 1,2,3-Trichlorobenzene	180	12.335	12.335	(1.205)	146991	22.2410	22.24
71 1,2,3-Trichloropropane	75	9.426	9.426	(0.921)	202456	23.3982	23.39
90 1,2,4-Trichlorobenzene	180	11.923	11.923	(1.165)	151490	22.0061	22.00
79 1,2,4-Trimethylbenzene	105	9.943	9.943	(0.971)	464326	23.8807	23.88
89 1,2-Dibromo-3-Chloropropane	155	11.233	11.233	(1.097)	25527	20.6338	20.63
57 1,2-Dibromoethane	107	7.852	7.852	(0.952)	124874	23.4166	23.41

Data File: \\NAHSTWS005\Target\chem\voa9.i\U181203.b\U120313.D Page 2
Report Date: 25-Jan-2019 19:24

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
88 1,2-Dichlorobenzene	146	10.573	10.569	(1.033)	246711	22.0692	22.06
33 1,2-Dichloroethane	62	5.254	5.250	(0.933)	184466	22.4469	22.44
42 1,2-Dichloropropane	63	6.082	6.078	(1.081)	137505	24.5922	24.59
75 1,3,5-Trimethylbenzene	105	9.625	9.625	(0.940)	446851	23.7582	23.75
83 1,3-Dichlorobenzene	146	10.180	10.180	(0.995)	247079	22.4179	22.41
54 1,3-Dichloropropane	76	7.563	7.563	(0.917)	231771	23.4386	23.43
84 1,4-Dichlorobenzene	146	10.254	10.255	(1.002)	251763	23.3305	23.33
26 2,2-Dichloropropane	77	4.279	4.272	(0.874)	143704	22.9093	22.90
24 2-Butanone	43	4.343	4.335	(0.887)	138295	44.5091	44.50
76 2-Chlorotoluene	91	9.546	9.546	(0.933)	402701	23.4926	23.49
52 2-Hexanone	43	7.653	7.649	(0.928)	206195	48.9679	48.96
77 4-Chlorotoluene	91	9.640	9.640	(0.942)	469254	23.7244	23.72
82 p-Isopropyltoluene	119	10.210	10.210	(0.997)	478495	24.9604	24.96
45 4-Methyl-2-Pentanone	43	6.914	6.914	(0.838)	293432	48.5584	48.55
10 Acetone	43	2.487	2.476	(0.508)	99014	46.5304	46.53
37 Benzene	78	5.220	5.216	(0.927)	529664	24.3992	24.39
74 Bromobenzene	156	9.381	9.381	(0.917)	129316	22.5196	22.51
29 Bromochloromethane	128	4.556	4.553	(0.930)	61373	23.5523	23.55
39 Bromodichloromethane	83	6.348	6.348	(1.128)	147185	22.5559	22.55
66 Bromoform	173	8.984	8.984	(1.089)	64240	20.3214	20.32
6 Bromomethane	94	1.674	1.663	(0.342)	85903	24.4335	24.43
19 Carbon Disulfide	76	2.596	2.588	(0.530)	673234	43.6935	43.69
34 Carbon Tetrachloride	117	4.999	4.995	(0.888)	137557	24.2767	24.27
59 Chlorobenzene	112	8.275	8.275	(1.003)	344005	23.0096	23.00
7 Chloroethane	64	1.756	1.749	(0.359)	104857	22.7357	22.73(M)
28 Chloroform	83	4.661	4.654	(0.952)	220316	21.6486	21.64
3 Chloromethane	50	1.344	1.336	(0.274)	126081	21.4966	21.49
27 cis-1,2-Dichloroethene	96	4.290	4.283	(0.876)	140463	22.4263	22.42
46 cis-1,3-Dichloropropene	75	6.761	6.757	(1.201)	198945	24.2106	24.21
55 Dibromochloromethane	129	7.758	7.758	(0.940)	107135	23.3734	23.37
44 Dibromomethane	93	6.191	6.187	(1.100)	79632	22.7247	22.72
2 Dichlorodifluoromethane	85	1.209	1.201	(0.247)	97505	15.6263	15.62
61 Ethylbenzene	106	8.373	8.369	(1.015)	184343	24.3898	24.38
91 Hexachlorobutadiene	225	12.065	12.065	(1.179)	57335	27.2435	27.24
67 Isopropylbenzene	105	9.126	9.126	(1.106)	536450	24.3684	24.36
62 m,p-Xylenes	106	8.474	8.474	(1.027)	447690	48.0579	48.05
17 Methylene Chloride	84	2.877	2.870	(0.587)	134649	23.5080	23.50
87 n-Butylbenzene	91	10.558	10.558	(1.031)	457315	25.3895	25.38
73 n-Propylbenzene	91	9.475	9.475	(0.926)	680191	24.6238	24.62
92 Naphthalene	128	12.133	12.133	(1.185)	480695	23.1895	23.18
63 o-Xylene	106	8.811	8.811	(1.068)	224101	24.0405	24.04
81 sec-Butylbenzene	105	10.090	10.086	(0.986)	567515	24.6739	24.67
64 Styrene	104	8.826	8.826	(1.070)	385470	24.4910	24.49
78 tert-Butylbenzene	119	9.902	9.902	(0.967)	386311	24.1001	24.10
56 Tetrachloroethene	164	7.525	7.522	(0.912)	90475	23.8434	23.84
50 Toluene	91	7.049	7.046	(0.855)	555604	24.1590	24.15
20 trans-1,2-Dichloroethene	96	3.147	3.139	(0.643)	124321	22.7356	22.73
51 trans-1,3-Dichloropropene	75	7.263	7.259	(1.290)	166000	21.2914	21.29
38 Trichloroethene	130	5.865	5.861	(1.042)	147403	27.5456	27.54
8 Trichlorofluoromethane	101	1.959	1.951	(0.400)	193976	21.9506	21.95
5 Vinyl Chloride	62	1.426	1.415	(0.291)	165016	23.1761	23.17

QC Flag Legend

M - Compound response manually integrated.

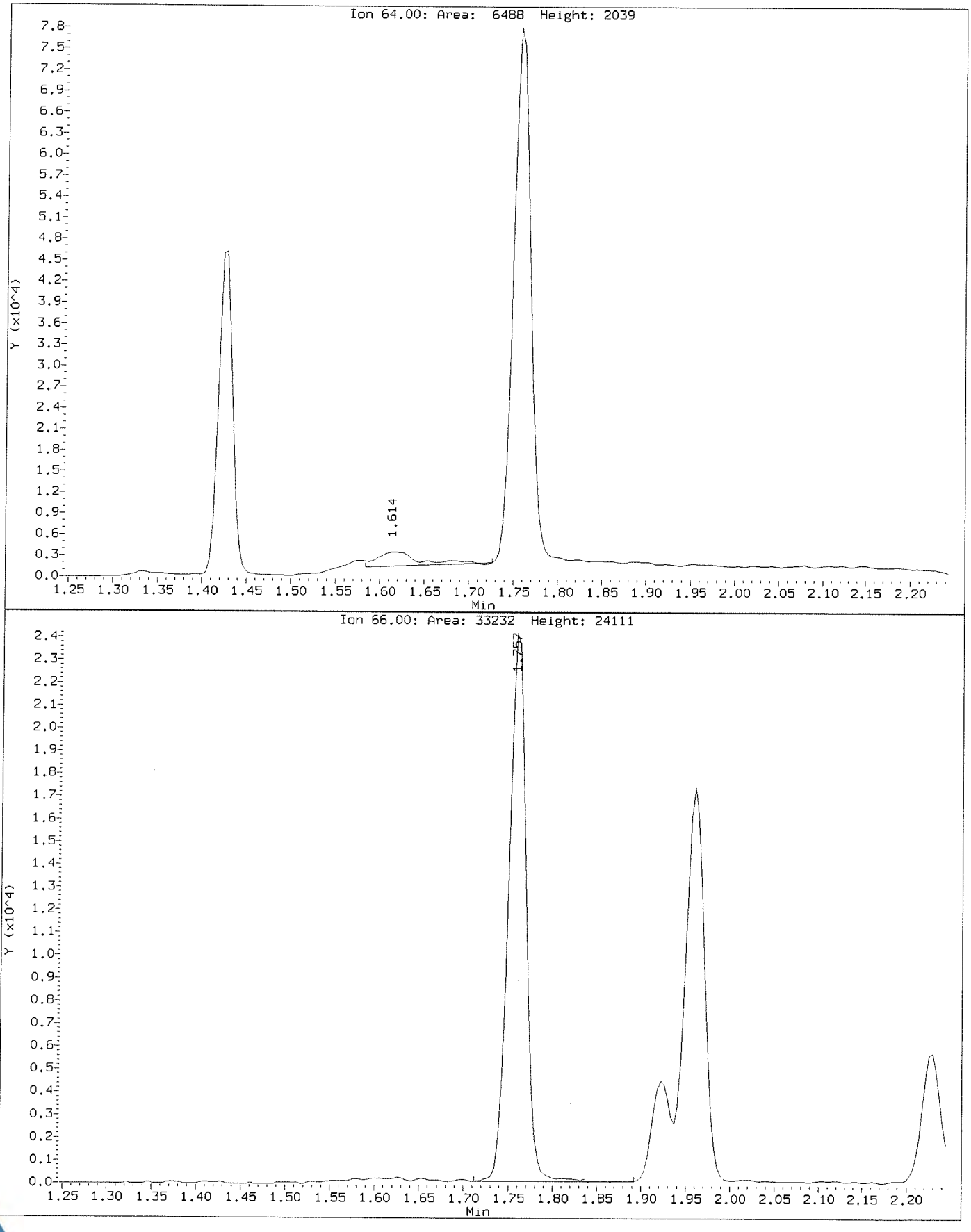


Data File: \\NAHSTWS005\Target\chem\voa9.i\U181203.b\U120313.D
Date : 03-DEC-2018 14:54
Client ID: HS18111440-01HSD
Sample Info: HS18111440-01HSD;HS18111440-01HSD;3;;HSD
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA9.i
Operator: PC
Column diameter: 0.18

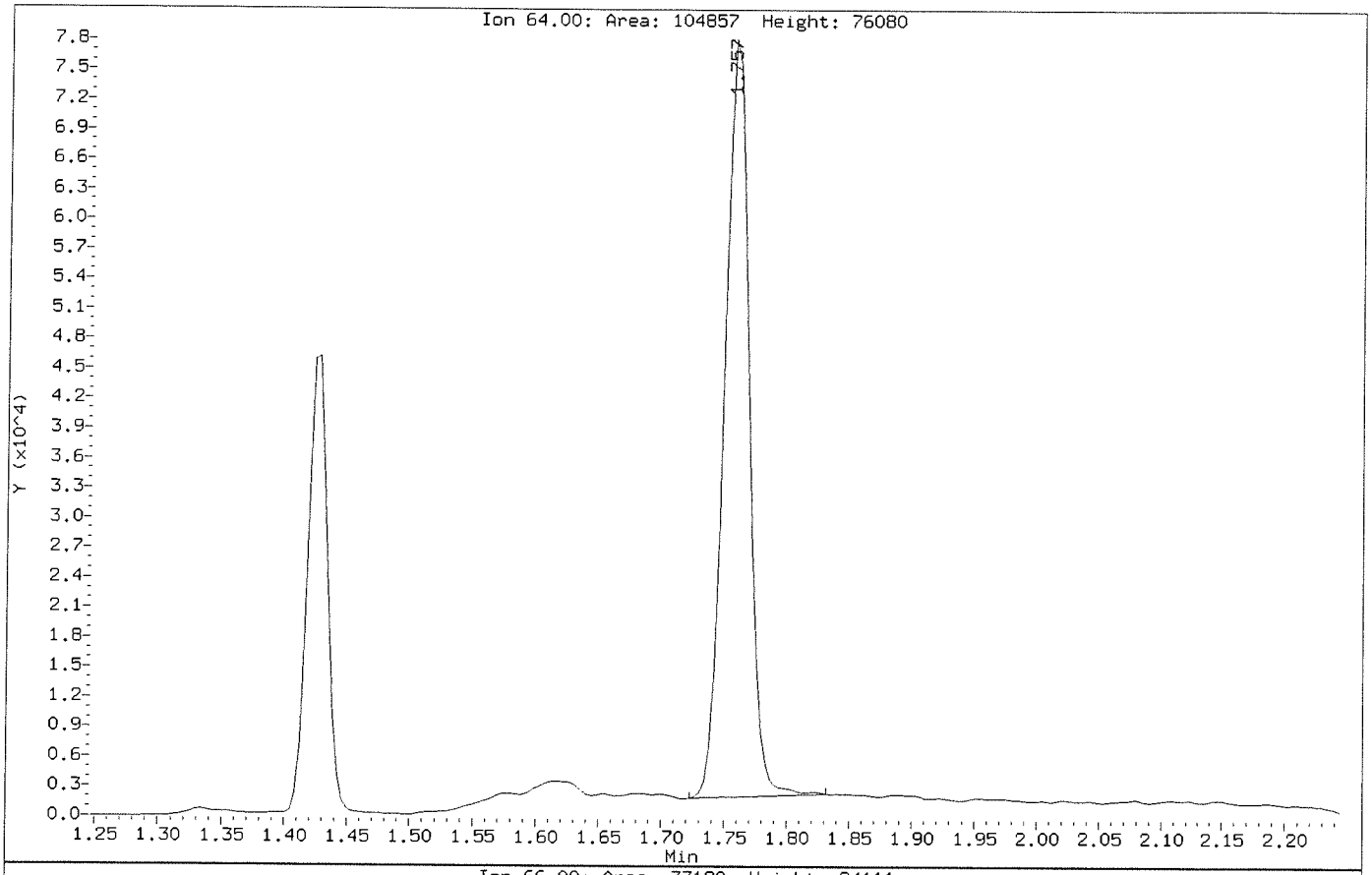
Data File: \\NAHSTWS005\Target\chem\voa9.i\U181203.b\Before\U120313.D
Injection Date: 03-DEC-2018 14:54
Instrument: VOA9.i
Client Sample ID: HS18111440-01MSD

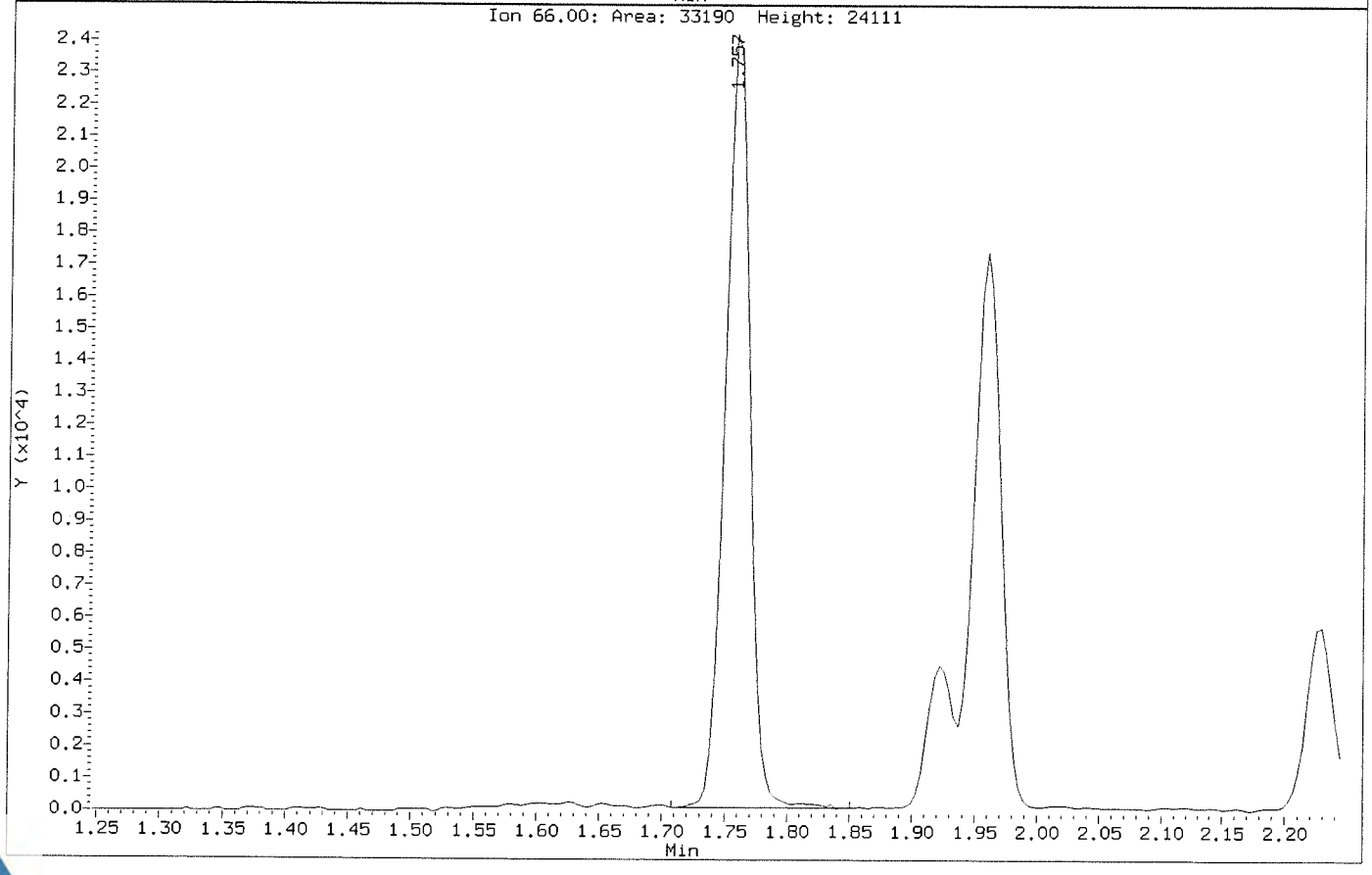
Compound: Chloroethane
CAS Number: 75-00-3



Data File: \\NAHSTWS005\Target\chem\voa9.i\U181203.b\U120313.D
Injection Date: 03-DEC-2018 14:54
Instrument: VOA9.i
Client Sample ID: HS18111440-01MSD

Compound: Chloroethane
CAS Number: 75-00-3





Data File: \\NAHSTWS005\Target\chem\voa9.i\U181203.b\U120314.D Page 1
Report Date: 25-Jan-2019 19:24

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa9.i\U181203.b\U120314.D
Lab Smp Id: HS18111440-05DL Client Smp ID: HS18111440-05DL
Inj Date : 03-DEC-2018 15:19
Operator : PC Inst ID: VOA9.i
Smp Info : HS18111440-05;HS18111440-05;;;
Misc Info : 180315V9;WATER;0;10;
Comment :
Method : \\NAHSTWS005\Target\chem\voa9.i\U181203.b\8260C.m
Meth Date : 25-Jan-2019 19:24 VOA9.i Quant Type: ISTD
Cal Date : 13-NOV-2018 14:15 Cal File: U111308.D
Als bottle: 13
Dil Factor: 10.00000
Integrator: HP RTE Compound Sublist: LHAAP.sub
Target Version: 4.14
Processing Host: NAHSTW7087

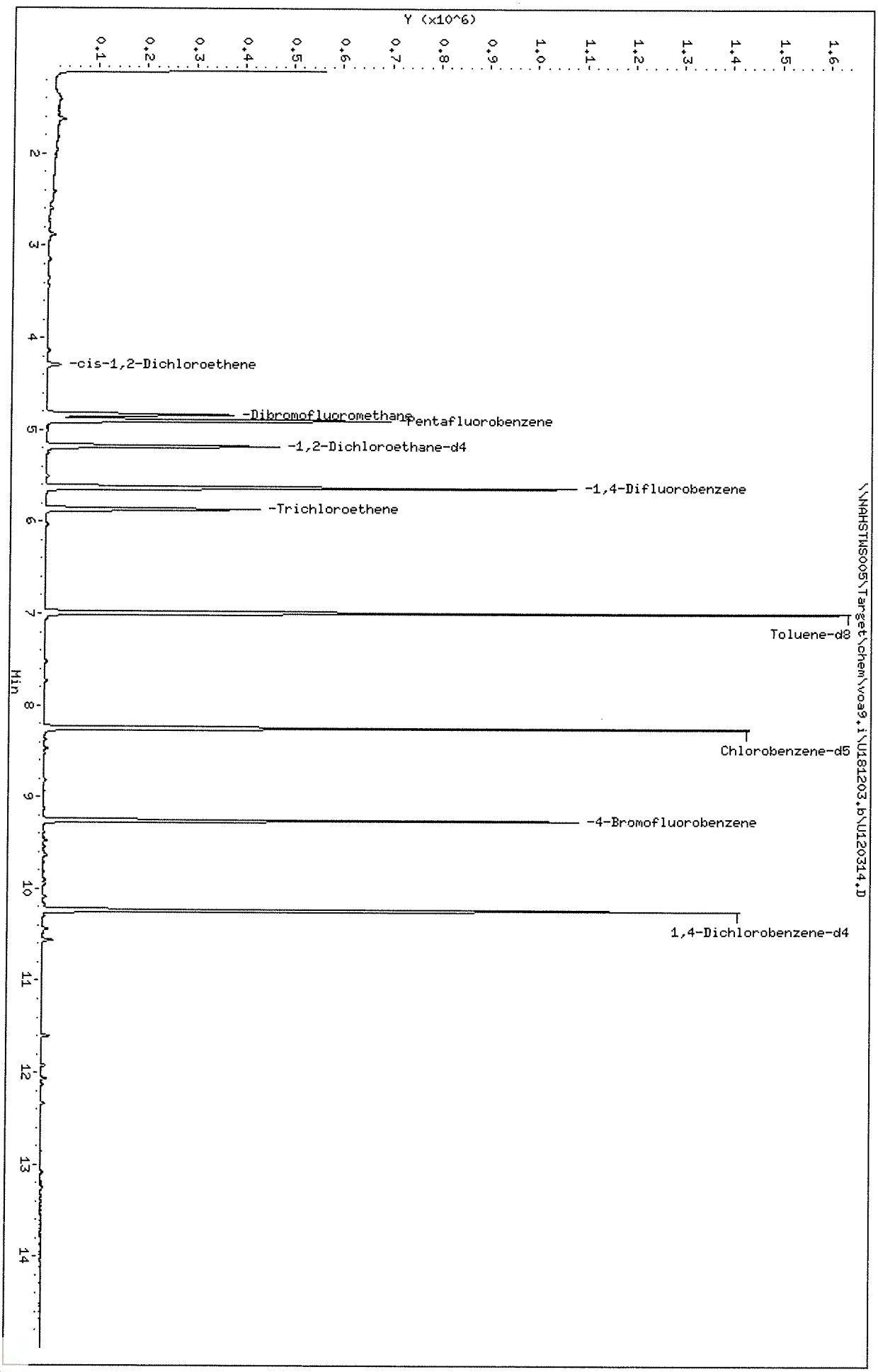
Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	10.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	CONCENTRATIONS FINAL (ug/l)
* 1 Pentafluorobenzene	168	4.898	4.894	(1.000)	425999	50.0000	
* 36 1,4-Difluorobenzene	114	5.629	5.625	(1.000)	769121	50.0000	
* 47 Chlorobenzene-d5	117	8.253	8.249	(1.000)	690475	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	10.236	10.236	(1.000)	313259	50.0000	
$ 30 Dibromofluoromethane	113	4.834	4.826	(0.987)	217783	44.3342	44.33
$ 35 1,2-Dichloroethane-d4	65	5.179	5.175	(1.057)	300675	46.5715	46.57
$ 48 Toluene-d8	98	6.989	6.989	(0.847)	939408	53.3409	53.34
$ 69 4-Bromofluorobenzene	95	9.257	9.257	(1.122)	330636	48.3923	48.39
27 cis-1,2-Dichloroethene	96	4.290	4.283	(0.876)	12008	1.98929	19.89(a)
38 Trichloroethene	130	5.865	5.861	(1.042)	126724	24.1804	241.80

QC Flag Legend

a - Target compound detected but, quantitated amount
Below Limit Of Quantitation(BLOQ).



Data File: \\NAHSTWS005\Target\chem\voa9,i\U181203,b\U120314,D
Date : 03-DEC-2018 15:19
Client ID: HS18111440-05DL
Sample Info: HS18111440-05;HS18111440-05;;;
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA9,i
Operator: PC
Column diameter: 0.18

Data File: \\NAHSTWS005\Target\chem\voa9.i\U181203.b\U120314.D

Date : 03-DEC-2018 15:19

Client ID: HS18111440-05DL

Instrument: VOA9.i

Sample Info: HS18111440-05;HS18111440-05;;;

Purge Volume: 5.0

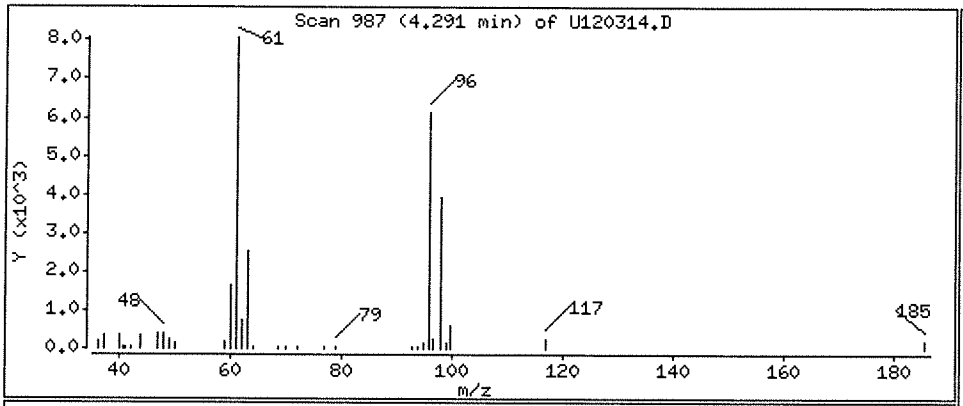
Operator: PC

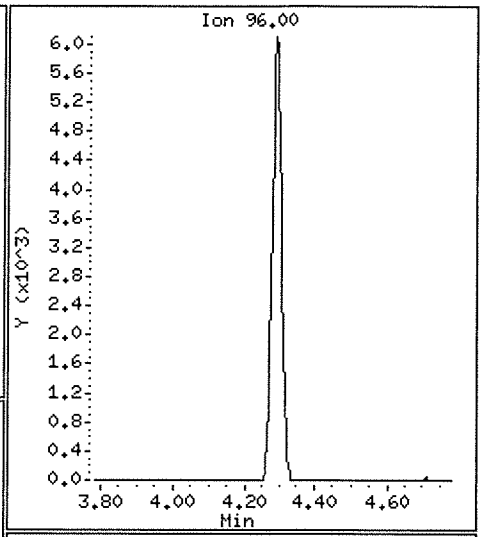
Column phase: DB624

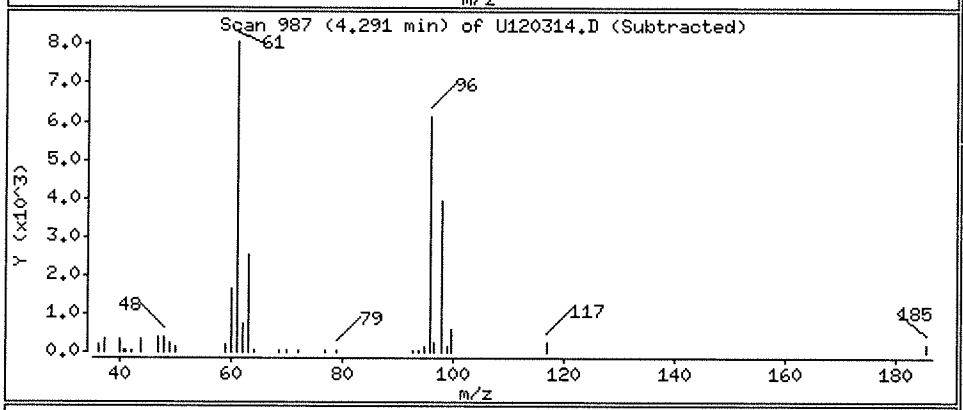
Column diameter: 0.18

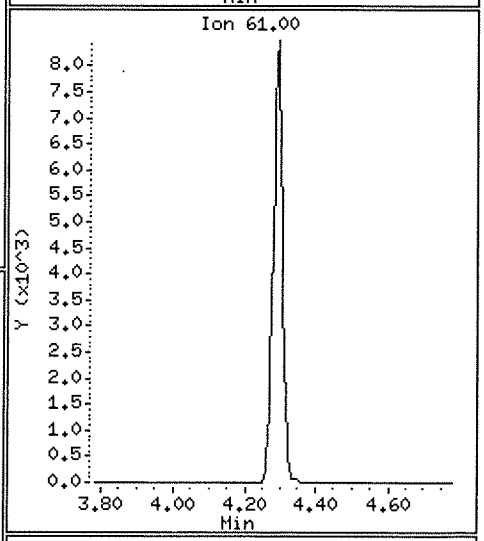
27 cis-1,2-Dichloroethene

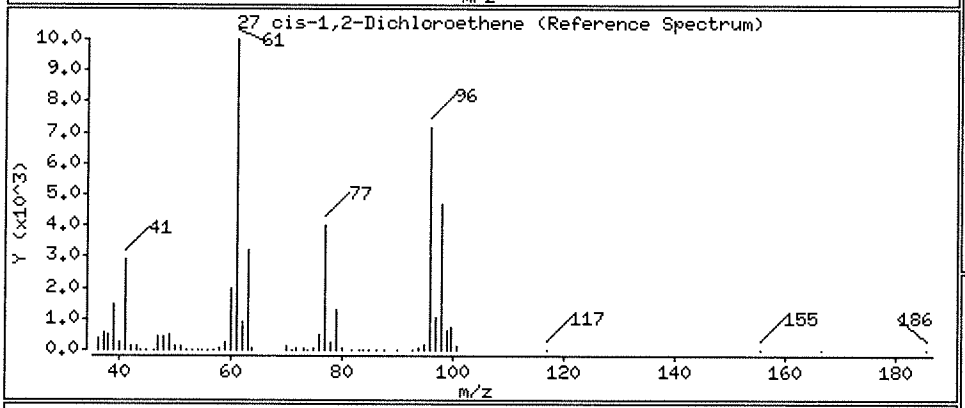
Concentration: 19.89 ug/l

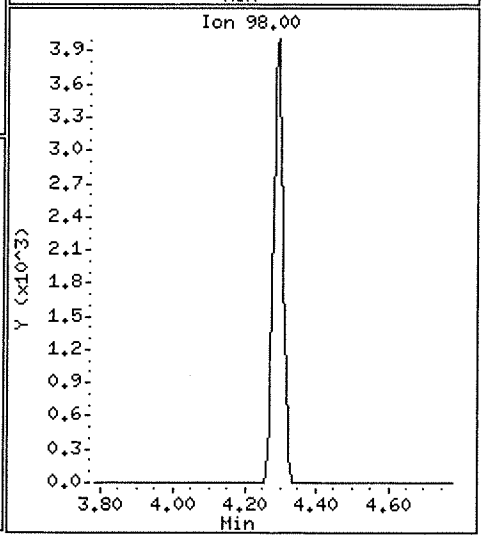


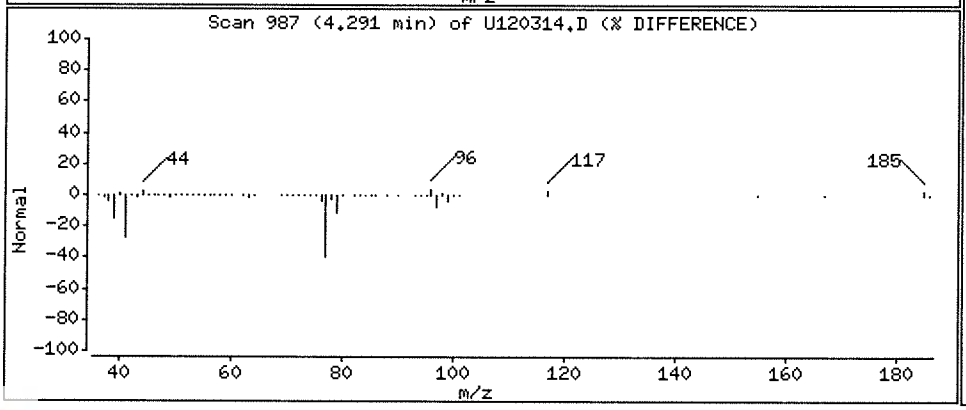












Data File: \\NAHSTWS005\Target\chem\voa9.i\U181203.b\U120314.D

Date : 03-DEC-2018 15:19

Client ID: HS18111440-05DL

Instrument: VOA9.i

Sample Info: HS18111440-05;HS18111440-05;;;

Purge Volume: 5.0

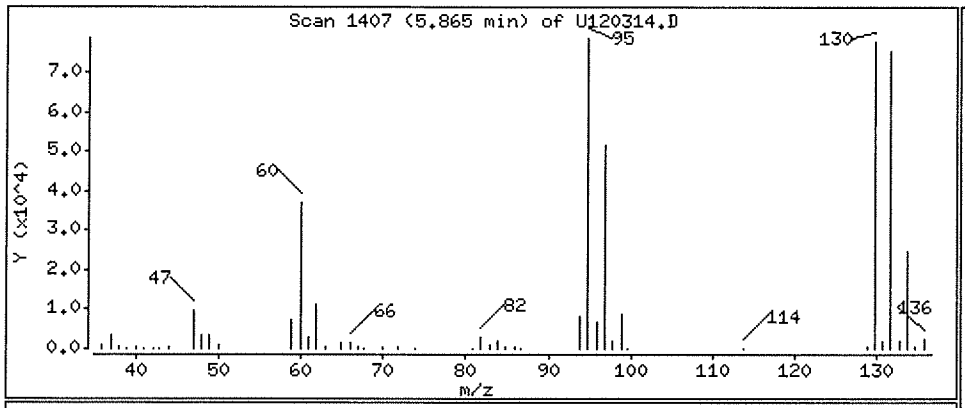
Operator: PC

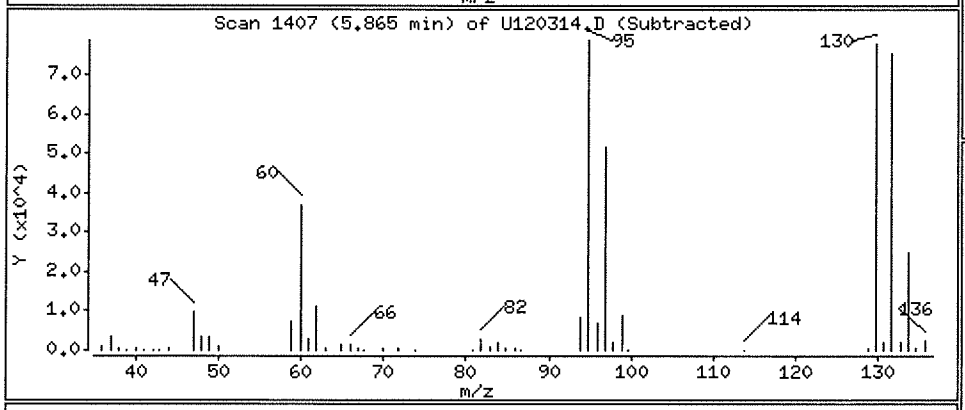
Column phase: DB624

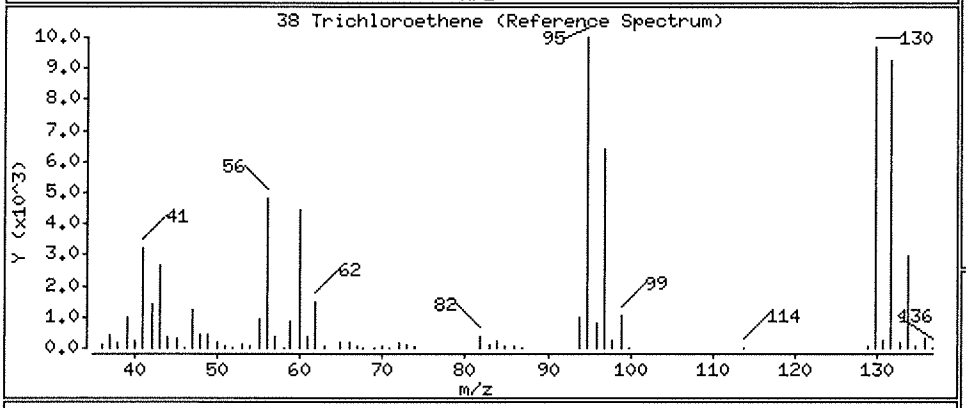
Column diameter: 0.18

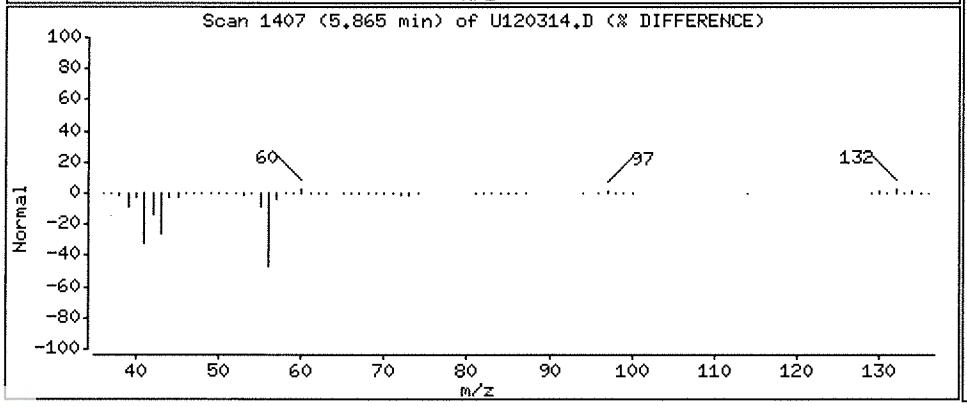
38 Trichloroethene

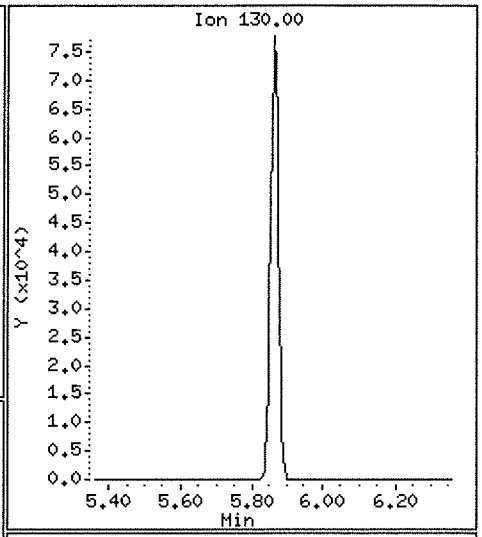
Concentration: 241.80 ug/l

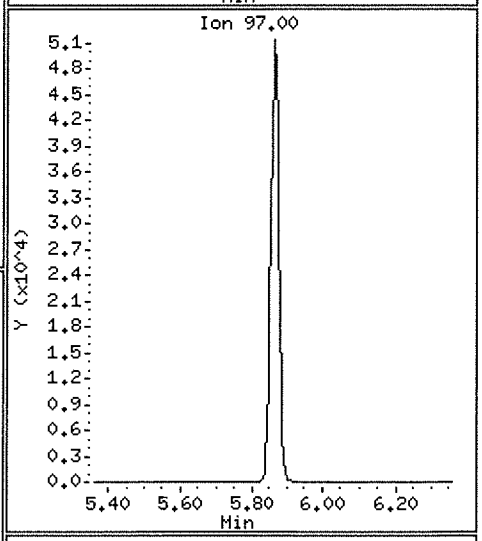


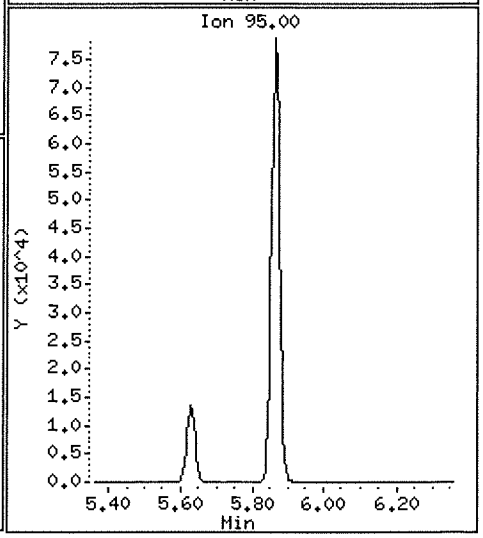












ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa9.i\U181203.b\U120315.D
Lab Smp Id: HS18111440-02DL Client Smp ID: HS18111440-02DL
Inj Date : 03-DEC-2018 15:44
Operator : PC Inst ID: VOA9.i
Smp Info : HS18111440-02;HS18111440-02;;;
Misc Info : 180315V9;WATER;0;25;
Comment :
Method : \\NAHSTWS005\Target\chem\voa9.i\U181203.b\8260C.m
Meth Date : 25-Jan-2019 19:24 VOA9.i Quant Type: ISTD
Cal Date : 13-NOV-2018 14:15 Cal File: U111308.D
Als bottle: 14
Dil Factor: 25.00000
Integrator: HP RTE Compound Sublist: LHAAP.sub
Target Version: 4.14
Processing Host: NAHSTW7087

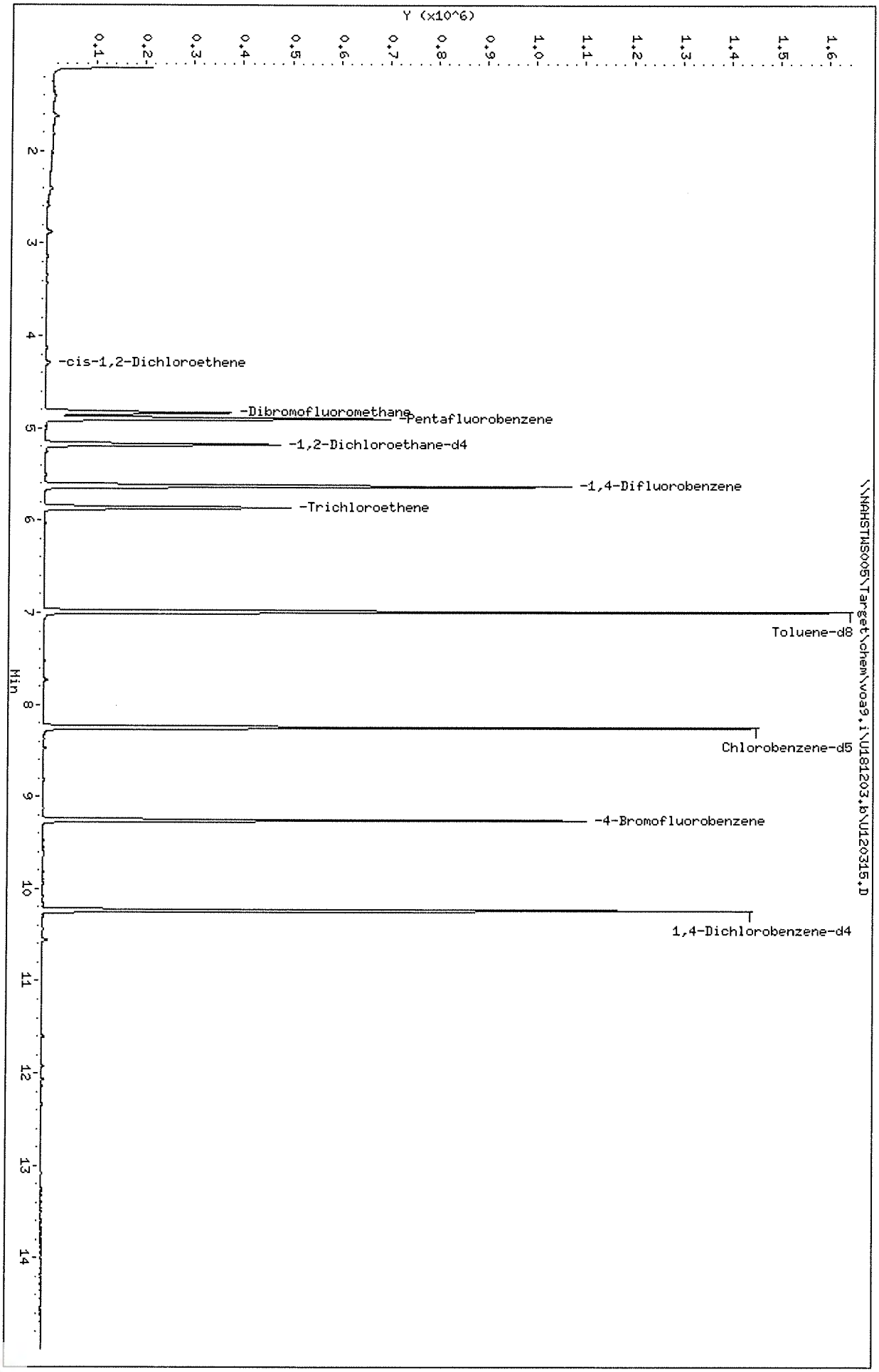
Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	25.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
* 1 Pentafluorobenzene	168	4.898	4.894	(1.000)	428957	50.0000	
* 36 1,4-Difluorobenzene	114	5.629	5.625	(1.000)	774448	50.0000	
* 47 Chlorobenzene-d5	117	8.249	8.249	(1.000)	700244	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	10.236	10.236	(1.000)	317843	50.0000	
$ 30 Dibromofluoromethane	113	4.830	4.826	(0.986)	220456	44.5756	44.57
$ 35 1,2-Dichloroethane-d4	65	5.175	5.175	(1.057)	305619	47.0276	47.02
$ 48 Toluene-d8	98	6.989	6.989	(0.847)	945977	52.9525	52.95
$ 69 4-Bromofluorobenzene	95	9.257	9.257	(1.122)	336103	48.5087	48.50
27 cis-1,2-Dichloroethene	96	4.290	4.283	(0.876)	3895	0.64081	16.02(a)
38 Trichloroethene	130	5.861	5.861	(1.041)	147469	27.9452	698.63

QC Flag Legend

a - Target compound detected but, quantitated amount
Below Limit Of Quantitation(BLOQ).



Data File: \\NAHSTWS005\Target\chem\voa9.i\U181203.b\U120315.D
Date : 03-DEC-2018 15:44
Client ID: HS18111440-02DL
Sample Info: HS18111440-02;HS18111440-02;;;
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA9.i
Operator: PC
Column diameter: 0.18

Data File: \\NAHSTWS005\Target\chem\voa9.i\U181203.b\U120315.D

Date : 03-DEC-2018 15:44

Client ID: HS18111440-02DL

Instrument: VOA9.i

Sample Info: HS18111440-02;HS18111440-02;;;

Purge Volume: 5.0

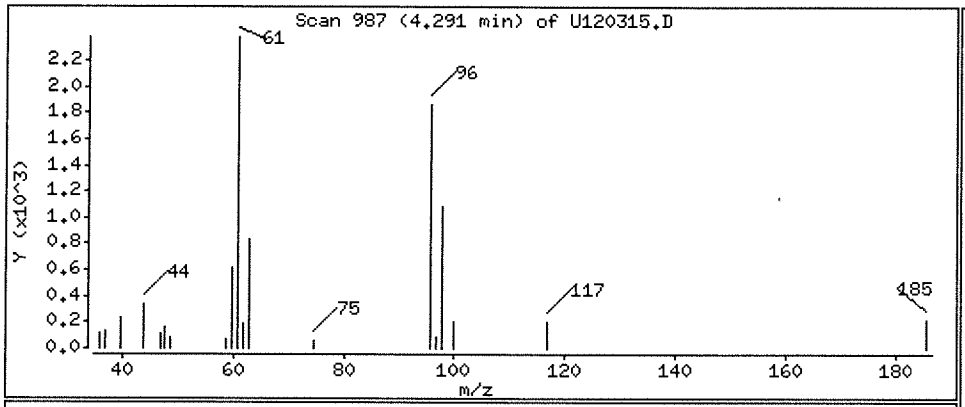
Operator: PC

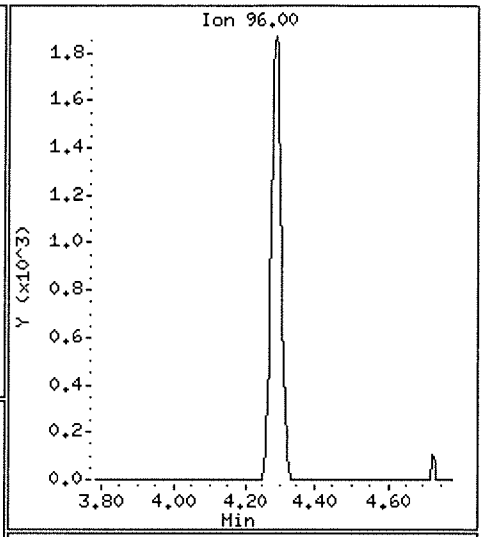
Column phase: DB624

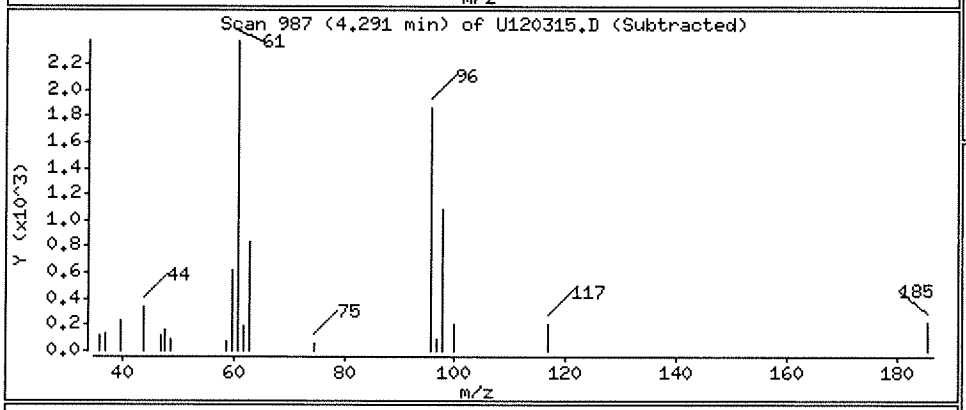
Column diameter: 0.18

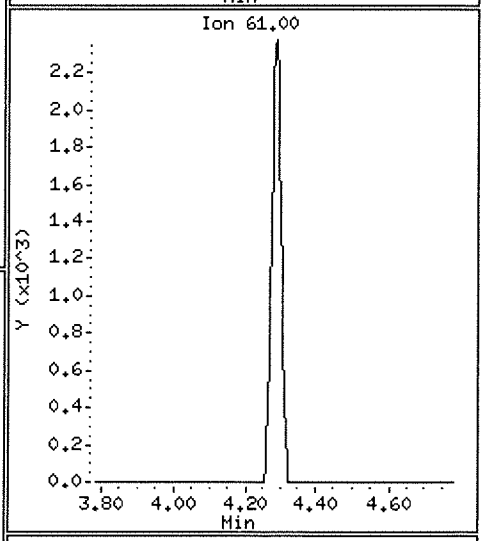
27 cis-1,2-Dichloroethene

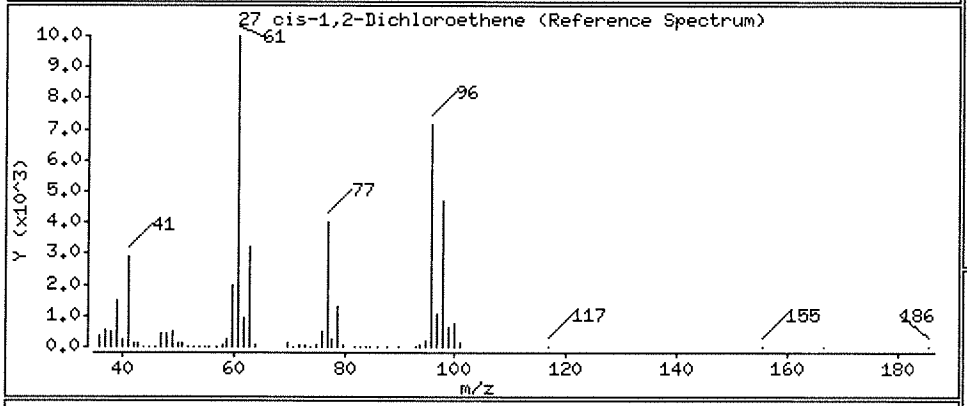
Concentration: 16.02 ug/l

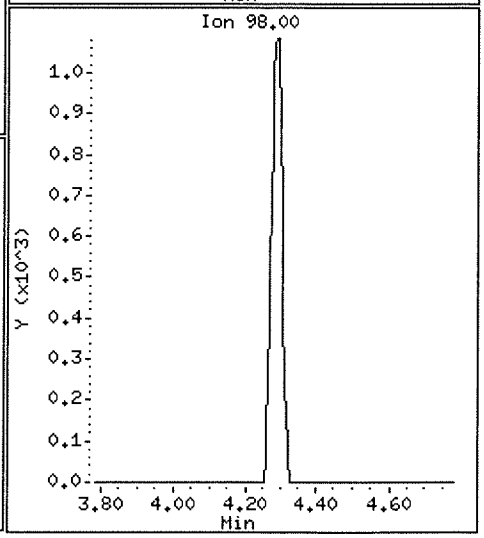


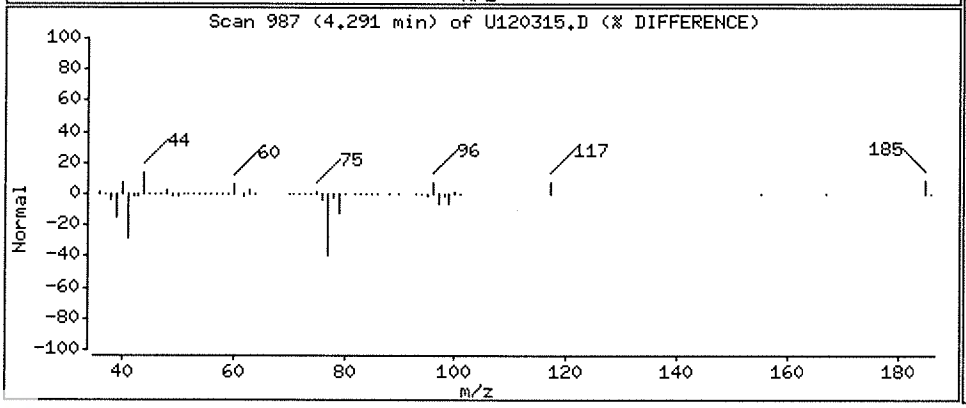












Data File: \\NAHSTWS005\Target\chem\voa9.i\U181203.b\U120315.D

Date : 03-DEC-2018 15:44

Client ID: HS18111440-02DL

Instrument: VOA9.i

Sample Info: HS18111440-02;HS18111440-02;;;

Purge Volume: 5.0

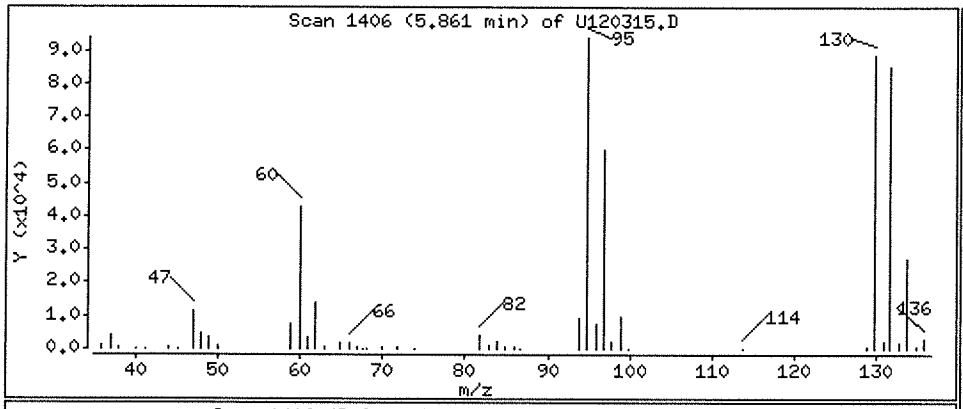
Operator: PC

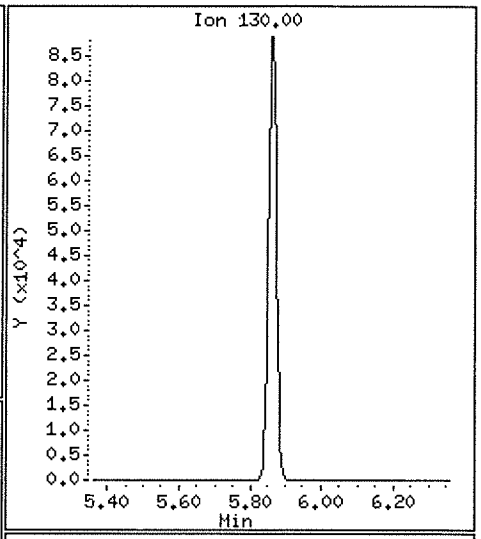
Column phase: DB624

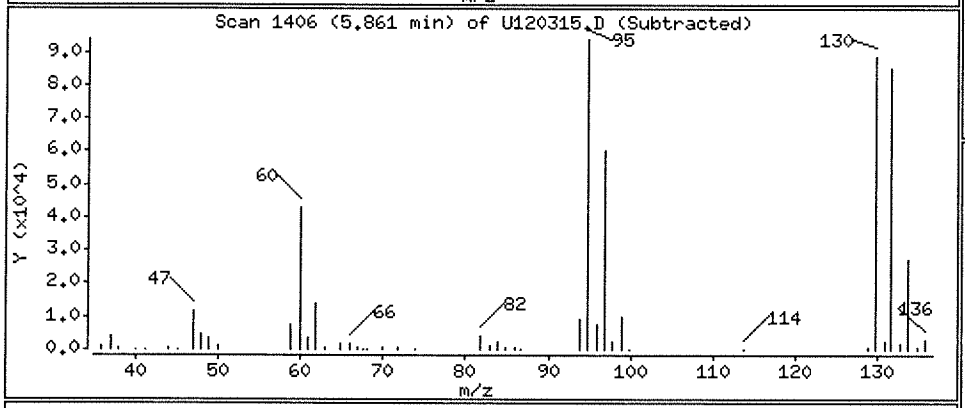
Column diameter: 0.18

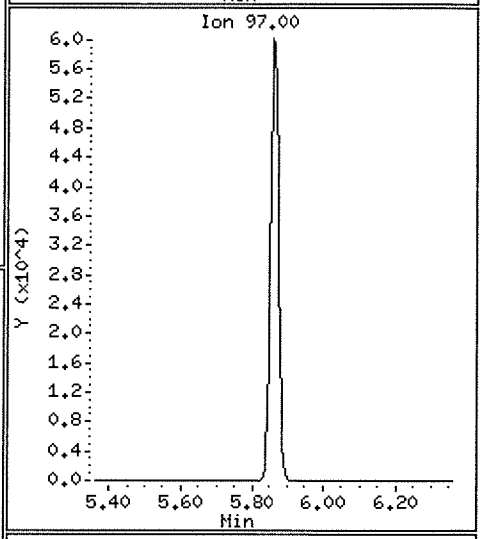
38 Trichloroethene

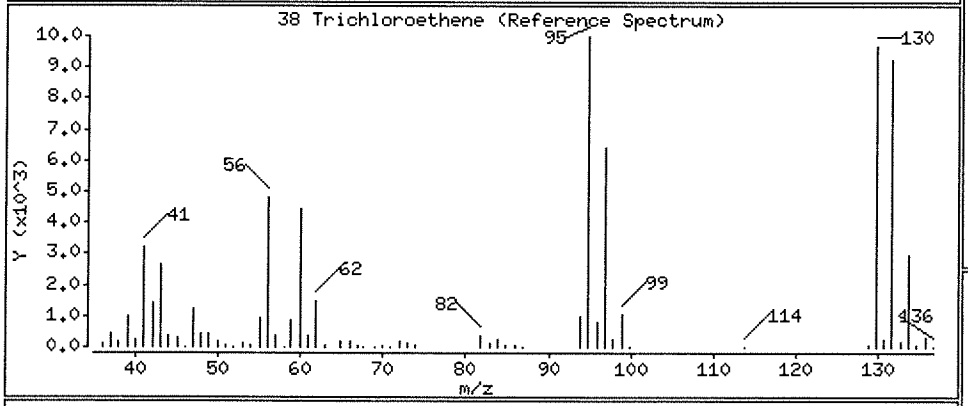
Concentration: 698.63 ug/l

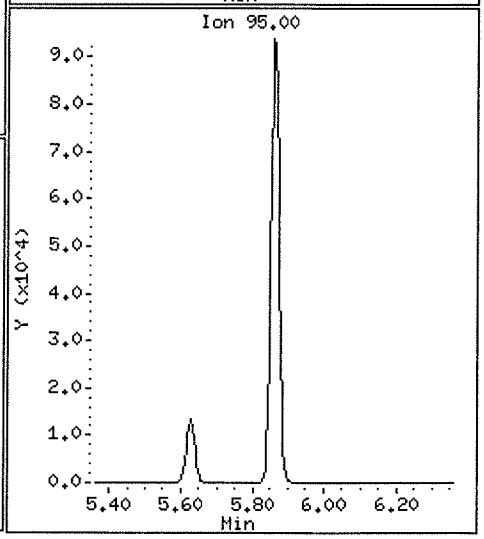


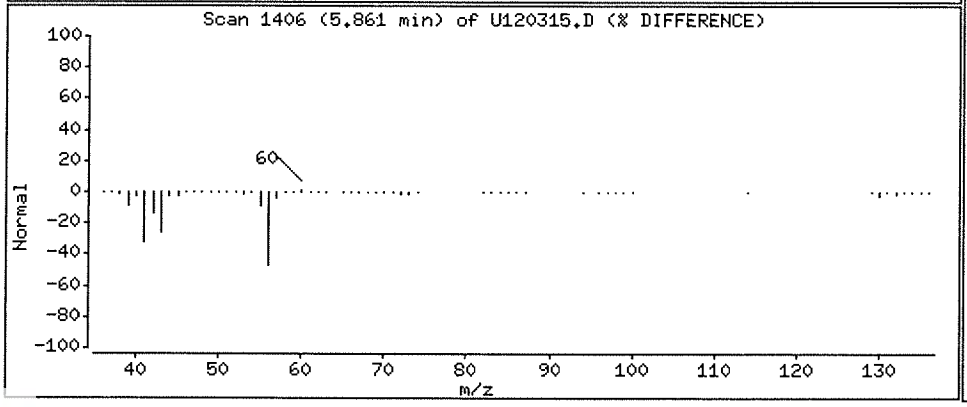












Data File: \\NAHSTWS005\Target\chem\voa9.i\U181203.b\U120316.D Page 1
Report Date: 25-Jan-2019 19:24

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa9.i\U181203.b\U120316.D
Lab Smp Id: HS18111440-03D Client Smp ID: HS18111440-03DL
Inj Date : 03-DEC-2018 16:08
Operator : PC Inst ID: VOA9.i
Smp Info : HS18111440-03;HS18111440-03;;;
Misc Info : 180315V9;WATER;0;25;
Comment :
Method : \\NAHSTWS005\Target\chem\voa9.i\U181203.b\8260C.m
Meth Date : 25-Jan-2019 19:24 VOA9.i Quant Type: ISTD
Cal Date : 13-NOV-2018 14:15 Cal File: U111308.D
Als bottle: 15
Dil Factor: 25.00000
Integrator: HP RTE Compound Sublist: LHAAP.sub
Target Version: 4.14
Processing Host: NAHSTW7087

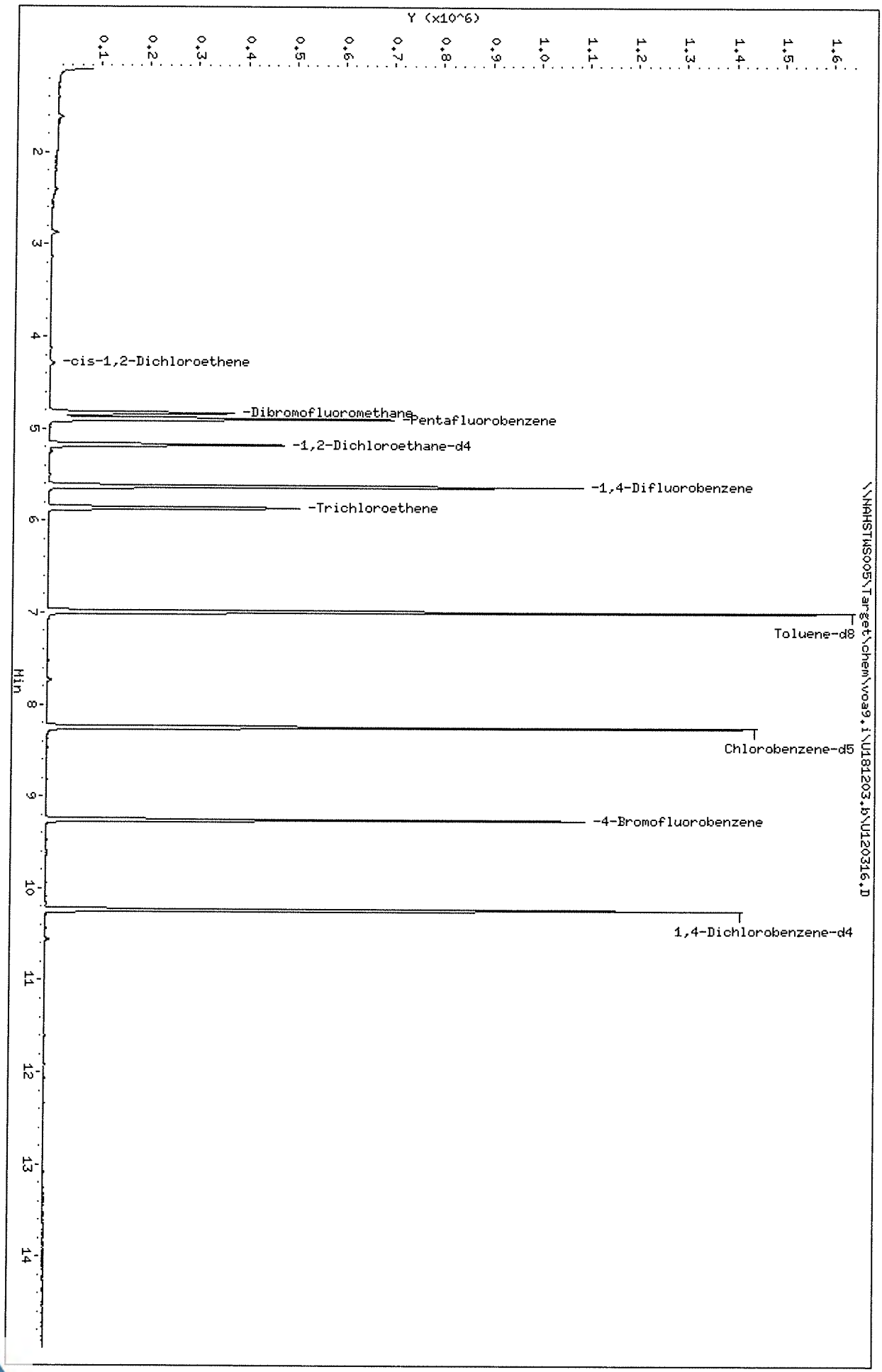
Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	25.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	CONCENTRATIONS FINAL (ug/l)
* 1 Pentafluorobenzene	168	4.894	4.894	(1.000)	423114	50.0000	
* 36 1,4-Difluorobenzene	114	5.625	5.625	(1.000)	761942	50.0000	
* 47 Chlorobenzene-d5	117	8.249	8.249	(1.000)	695621	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	10.236	10.236	(1.000)	312192	50.0000	
$ 30 Dibromofluoromethane	113	4.830	4.826	(0.987)	215925	44.2535	44.25
$ 35 1,2-Dichloroethane-d4	65	5.175	5.175	(1.057)	302071	47.1272	47.12
$ 48 Toluene-d8	98	6.990	6.989	(0.847)	935121	52.6843	52.68
$ 69 4-Bromofluorobenzene	95	9.258	9.257	(1.122)	333772	48.4920	48.49
27 cis-1,2-Dichloroethene	96	4.283	4.283	(0.875)	4120	0.68719	17.17(a)
38 Trichloroethene	130	5.861	5.861	(1.042)	148270	28.5582	713.95

QC Flag Legend

a - Target compound detected but, quantitated amount
Below Limit Of Quantitation(BLOQ).



Data File: \\NAHSTWS005\Target\chem\voa9,i\U181203,b\U120316,D
Date : 03-DEC-2018 16:08
Client ID: HS18111440-03DL
Sample Info: HS18111440-03;HS18111440-03;;;
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA9,i
Operator: PC
Column diameter: 0.18

Data File: \\NAHSTWS005\Target\chem\voa9.i\U181203.b\U120316.D

Date : 03-DEC-2018 16:08

Client ID: HS18111440-03DL

Instrument: VOA9.i

Sample Info: HS18111440-03;HS18111440-03;;;

Purge Volume: 5.0

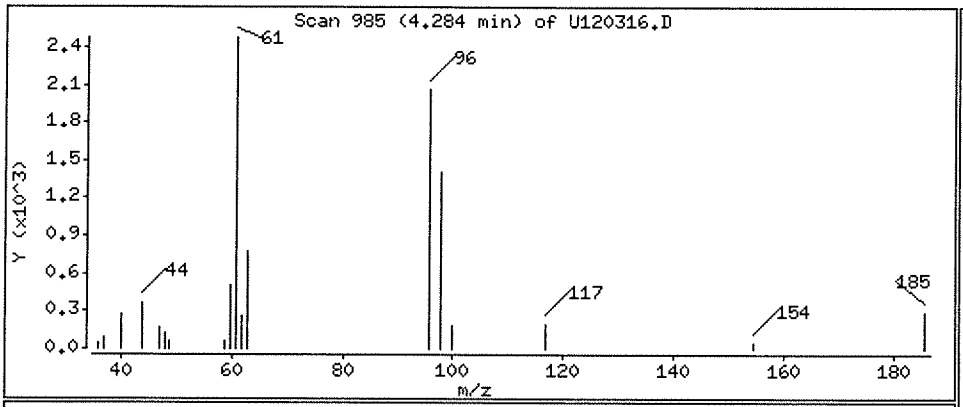
Operator: PC

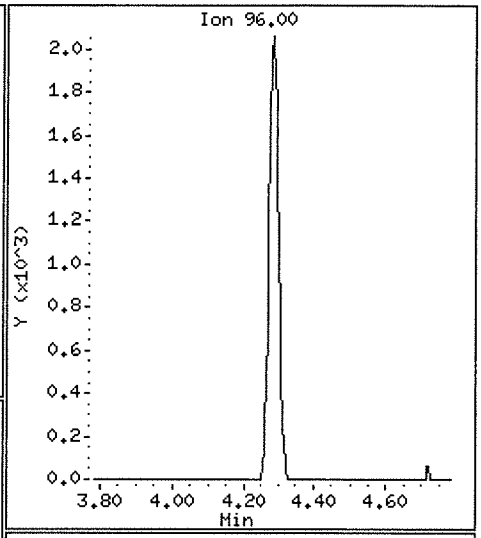
Column phase: DB624

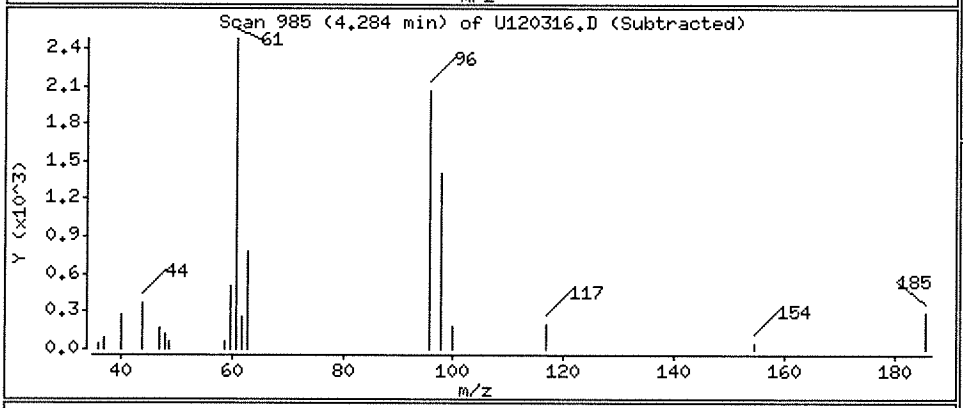
Column diameter: 0.18

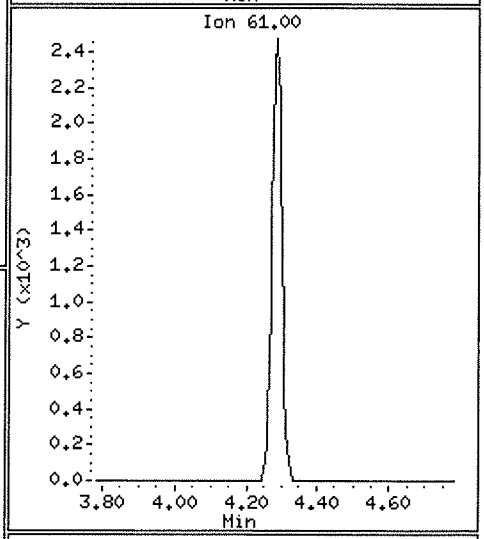
27 cis-1,2-Dichloroethene

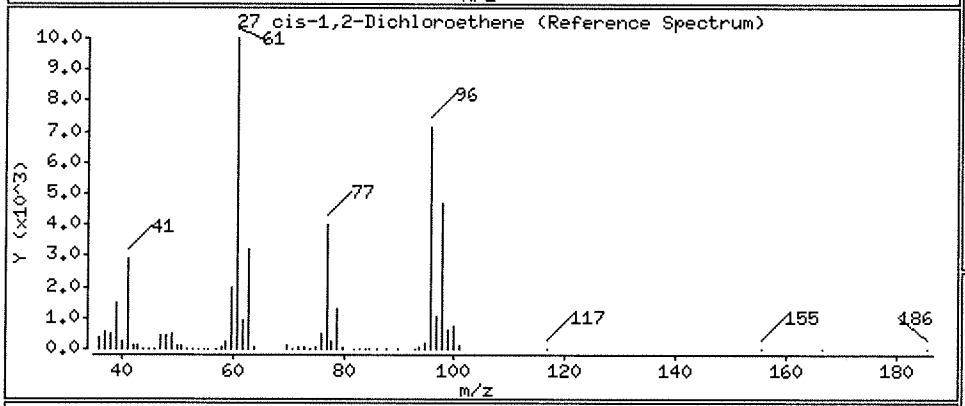
Concentration: 17.17 ug/l

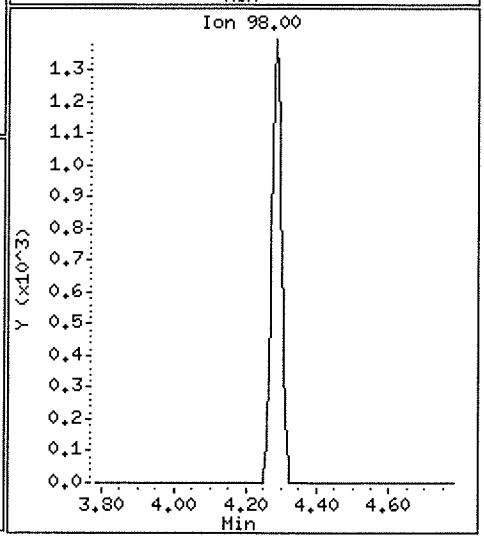


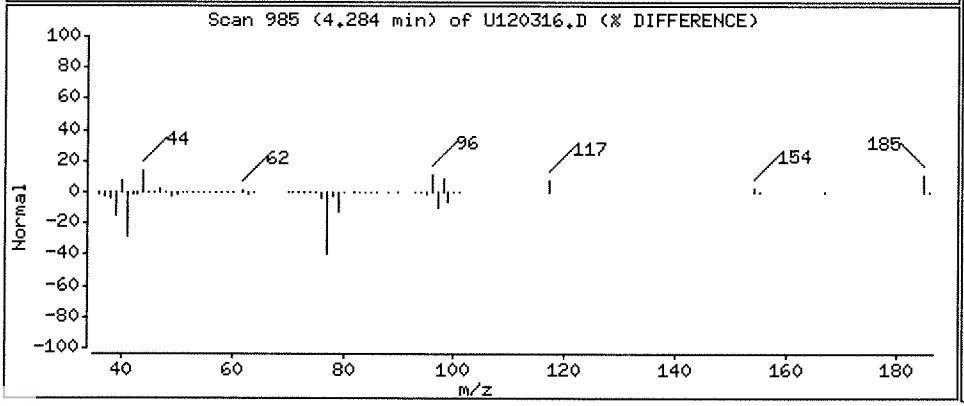












Data File: \\NAHSTWS005\Target\chem\voa9.i\U181203.b\U120316.D

Date : 03-DEC-2018 16:08

Client ID: HS18111440-03DL

Instrument: VOA9.i

Sample Info: HS18111440-03;HS18111440-03;;;

Purge Volume: 5.0

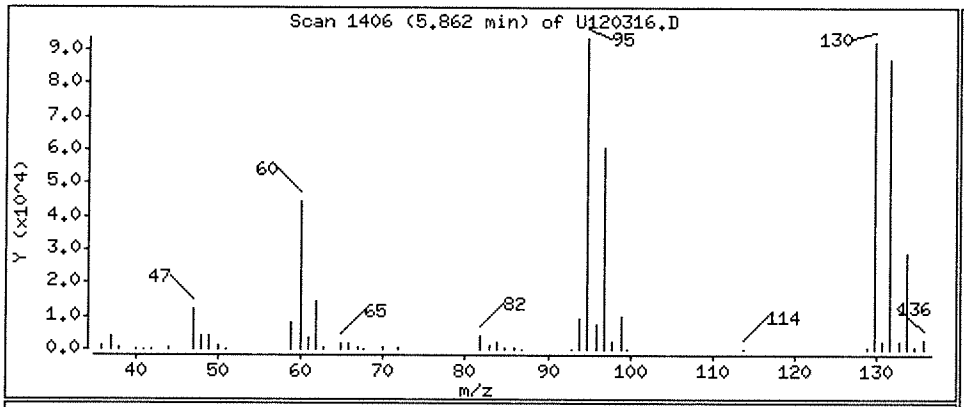
Operator: PC

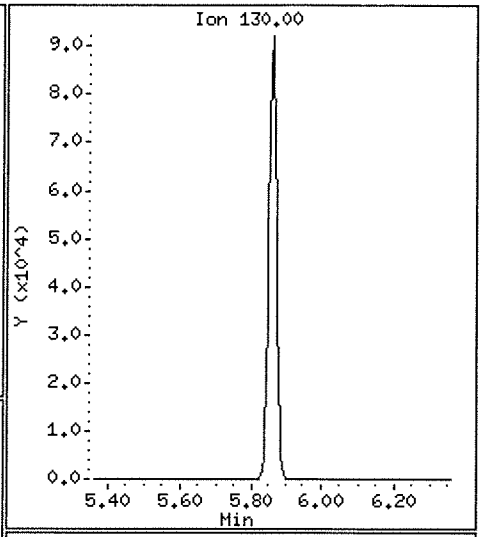
Column phase: DB624

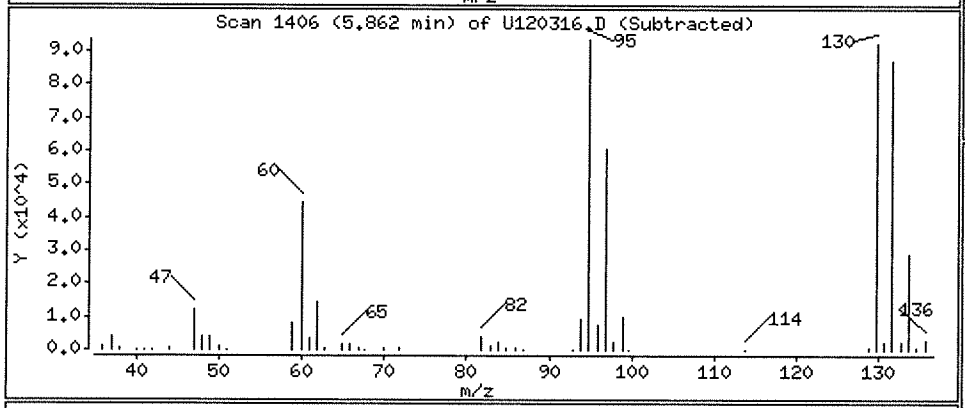
Column diameter: 0.18

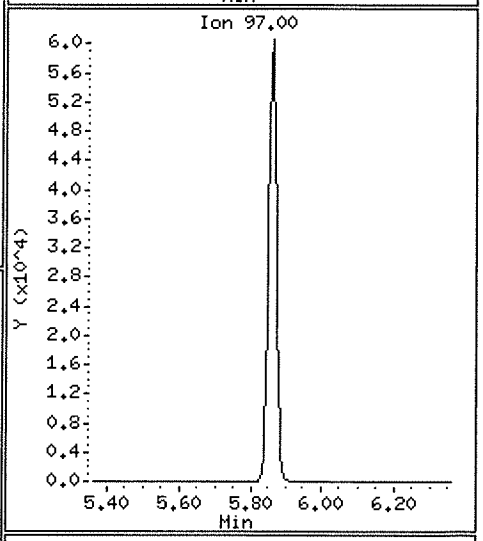
38 Trichloroethene

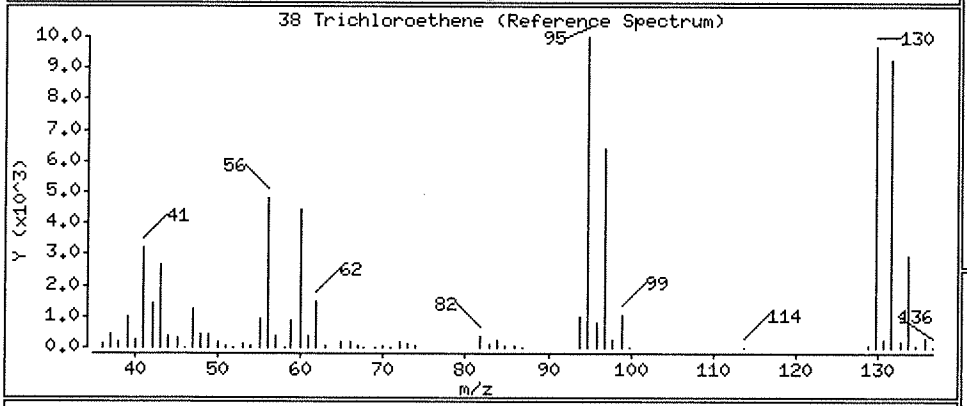
Concentration: 713.95 ug/l

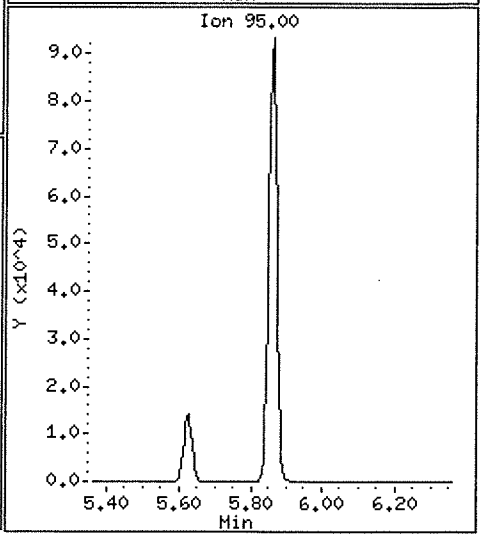


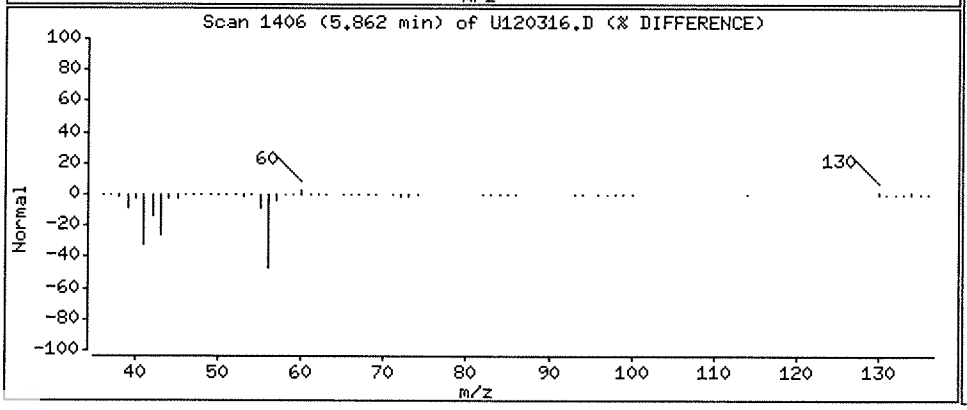












Data File: \\NAHSTWS005\Target\chem\voa9.i\U181203.b\U120328.D Page 1
Report Date: 25-Jan-2019 19:24

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa9.i\U181203.b\U120328.D
Lab Smp Id: VSTD050-END Client Smp ID: VSTD050-END
Inj Date : 03-DEC-2018 21:06
Operator : PC Inst ID: VOA9.i
Smp Info : VSTD050-END;VSTD050-END;2;;
Misc Info : 180315V9;WATER;0;1;
Comment :
Method : \\NAHSTWS005\Target\chem\voa9.i\U181203.b\8260C.m
Meth Date : 25-Jan-2019 19:24 VOA9.i Quant Type: ISTD
Cal Date : 13-NOV-2018 14:15 Cal File: U111308.D
Als bottle: 27 Continuing Calibration Sample
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: LHAAP.sub
Target Version: 4.14
Processing Host: NAHSTW7087

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Cpnd Variable		Local Compound Variable

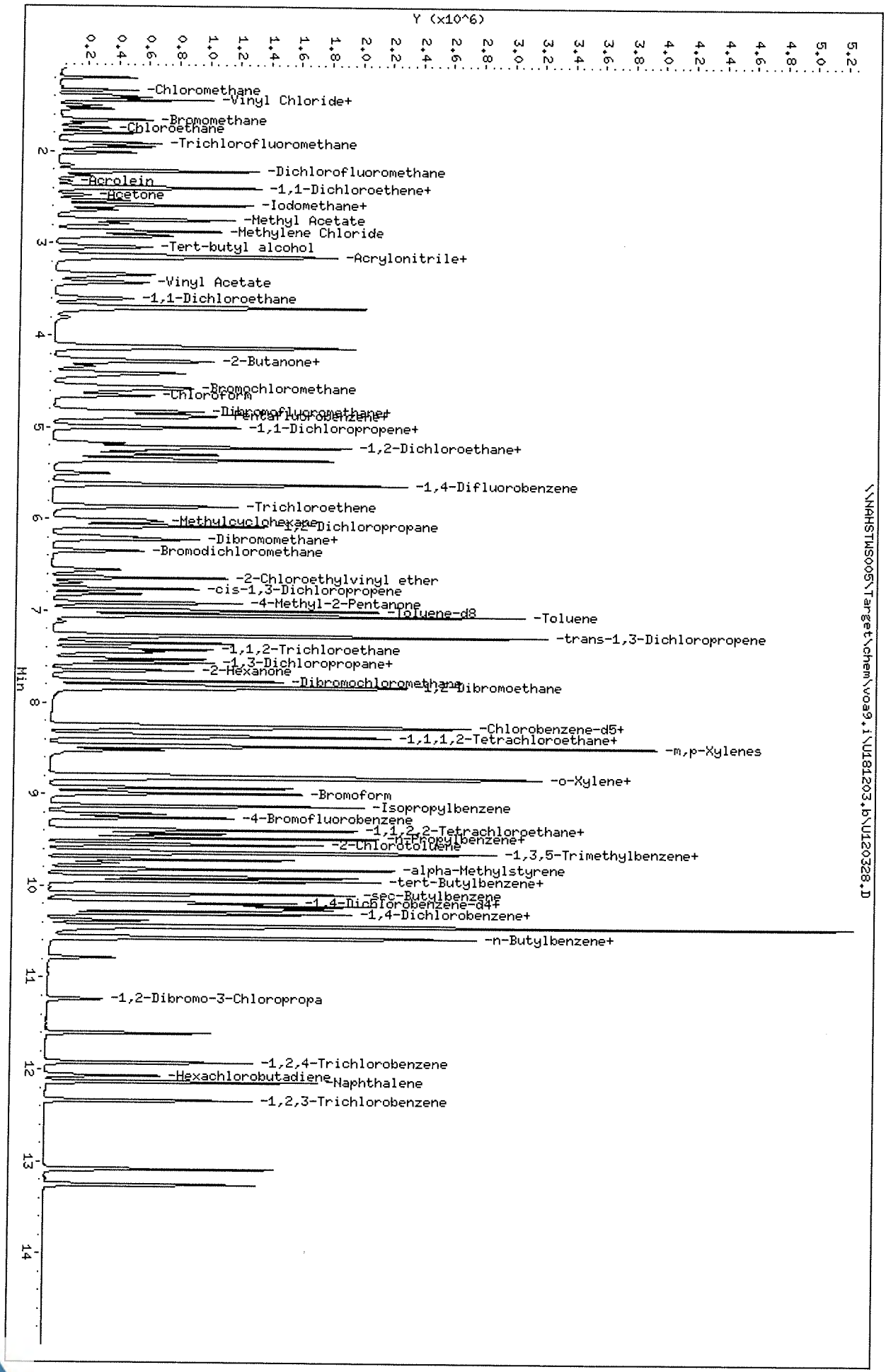
Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	ON-COL (ug/l)
* 1 Pentafluorobenzene	168	4.890	4.890	(1.000)	430199	50.0000	
* 36 1,4-Difluorobenzene	114	5.625	5.625	(1.000)	772647	50.0000	
* 47 Chlorobenzene-d5	117	8.249	8.249	(1.000)	714135	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	10.236	10.236	(1.000)	345411	50.0000	
$ 30 Dibromofluoromethane	113	4.826	4.826	(0.987)	224872	50.0000	45.35
$ 35 1,2-Dichloroethane-d4	65	5.171	5.171	(1.057)	295748	50.0000	45.31
$ 48 Toluene-d8	98	6.989	6.989	(0.847)	964973	50.0000	52.96
$ 69 4-Bromofluorobenzene	95	9.257	9.257	(1.122)	365454	50.0000	51.78
60 1,1,1,2-Tetrachloroethane	131	8.350	8.350	(1.012)	249773	50.0000	55.44
31 1,1,1-Trichloroethane	97	4.823	4.823	(0.986)	375523	50.0000	49.69
68 1,1,2,2-Tetrachloroethane	83	9.392	9.392	(0.918)	446139	50.0000	54.52
138 Freon TF	101	2.397	2.397	(0.490)	214377	50.0000	49.74
53 1,1,2-Trichloroethane	83	7.421	7.421	(0.900)	249561	50.0000	54.96
22 1,1-Dichloroethane	63	3.601	3.601	(0.736)	511105	50.0000	51.84
11 1,1-Dichloroethene	96	2.394	2.394	(0.490)	242216	50.0000	49.88
32 1,1-Dichloropropene	75	5.003	5.003	(0.889)	387244	50.0000	54.26
93 1,2,3-Trichlorobenzene	180	12.335	12.335	(1.205)	350118	50.0000	53.68
71 1,2,3-Trichloropropane	75	9.426	9.426	(0.921)	484798	50.0000	56.78
90 1,2,4-Trichlorobenzene	180	11.923	11.923	(1.165)	356992	50.0000	52.55
79 1,2,4-Trimethylbenzene	105	9.943	9.943	(0.971)	1057346	50.0000	55.11
89 1,2-Dibromo-3-Chloropropane	155	11.233	11.233	(1.097)	64138	50.0000	50.72
57 1,2-Dibromoethane	107	7.852	7.852	(0.952)	293077	50.0000	55.74

Data File: \\NAHSTWS005\Target\chem\voa9.i\U181203.b\U120328.D Page 2
Report Date: 25-Jan-2019 19:24

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
88	1,2-Dichlorobenzene	146	10.569	10.569	(1.033)	570944	50.0000	51.76
33	1,2-Dichloroethane	62	5.250	5.250	(0.933)	417490	50.0000	51.63
42	1,2-Dichloropropane	63	6.079	6.079	(1.081)	314974	50.0000	57.25
75	1,3,5-Trimethylbenzene	105	9.625	9.625	(0.940)	1027123	50.0000	55.34
83	1,3-Dichlorobenzene	146	10.180	10.180	(0.995)	563112	50.0000	51.77
54	1,3-Dichloropropane	76	7.563	7.563	(0.917)	535973	50.0000	54.97
84	1,4-Dichlorobenzene	146	10.255	10.255	(1.002)	578444	50.0000	54.38
26	2,2-Dichloropropane	77	4.272	4.272	(0.874)	275304	50.0000	45.09
24	2-Butanone	43	4.335	4.335	(0.887)	327733	100.000	108.37
76	2-Chlorotoluene	91	9.546	9.546	(0.933)	908580	50.0000	53.71
52	2-Hexanone	43	7.649	7.649	(0.927)	496077	100.000	119.49
77	4-Chlorotoluene	91	9.640	9.640	(0.942)	1070194	50.0000	54.83
82	p-Isopropyltoluene	119	10.210	10.210	(0.997)	1063301	50.0000	56.21
45	4-Methyl-2-Pentanone	43	6.911	6.911	(0.838)	707322	100.000	118.72
10	Acetone	43	2.476	2.476	(0.506)	229419	100.000	116.89
37	Benzene	78	5.216	5.216	(0.927)	1182587	50.0000	55.37
74	Bromobenzene	156	9.385	9.385	(0.917)	299381	50.0000	52.83
29	Bromochloromethane	128	4.553	4.553	(0.931)	140704	50.0000	55.47
39	Bromodichloromethane	83	6.345	6.345	(1.128)	347464	50.0000	54.12
66	Bromoform	173	8.984	8.984	(1.089)	162208	50.0000	49.97(T)
6	Bromomethane	94	1.659	1.659	(0.339)	195016	50.0000	54.45
19	Carbon Disulfide	76	2.585	2.585	(0.529)	1591695	100.000	106.14
34	Carbon Tetrachloride	117	4.991	4.991	(0.887)	294637	50.0000	52.85
59	Chlorobenzene	112	8.275	8.275	(1.003)	779452	50.0000	52.88
7	Chloroethane	64	1.745	1.745	(0.357)	260363	50.0000	58.00
28	Chloroform	83	4.654	4.654	(0.952)	497748	50.0000	50.25
3	Chloromethane	50	1.333	1.333	(0.273)	333575	50.0000	58.04
27	cis-1,2-Dichloroethene	96	4.283	4.283	(0.876)	311953	50.0000	51.17
46	cis-1,3-Dichloropropene	75	6.757	6.757	(1.201)	474961	50.0000	58.74
55	Dibromochloromethane	129	7.758	7.758	(0.940)	259422	50.0000	57.40
44	Dibromomethane	93	6.187	6.187	(1.100)	184503	50.0000	53.51
2	Dichlorodifluoromethane	85	1.198	1.198	(0.245)	307085	50.0000	48.32
61	Ethylbenzene	106	8.373	8.373	(1.015)	402789	50.0000	54.05
91	Hexachlorobutadiene	225	12.065	12.065	(1.179)	119344	50.0000	55.58
67	Isopropylbenzene	105	9.126	9.126	(1.106)	1197551	50.0000	55.17
62	m,p-Xylenes	106	8.474	8.474	(1.027)	1009204	100.000	109.88
17	Methylene Chloride	84	2.866	2.866	(0.586)	304357	50.0000	55.52
87	n-Butylbenzene	91	10.558	10.558	(1.031)	999093	50.0000	55.07
73	n-Propylbenzene	91	9.475	9.475	(0.926)	1511151	50.0000	55.44
92	Naphthalene	128	12.133	12.133	(1.185)	1195734	50.0000	58.46
63	o-Xylene	106	8.811	8.811	(1.068)	513857	50.0000	55.91
81	sec-Butylbenzene	105	10.086	10.086	(0.985)	1255625	50.0000	55.32
64	Styrene	104	8.826	8.826	(1.070)	892581	50.0000	57.52
78	tert-Butylbenzene	119	9.902	9.902	(0.967)	867837	50.0000	54.86
56	Tetrachloroethene	164	7.522	7.522	(0.912)	190658	50.0000	50.96
50	Toluene	91	7.046	7.046	(0.854)	1241890	50.0000	54.77
20	trans-1,2-Dichloroethene	96	3.136	3.136	(0.641)	272886	50.0000	51.27
51	trans-1,3-Dichloropropene	75	7.259	7.259	(1.291)	403195	50.0000	50.39
38	Trichloroethene	130	5.861	5.861	(1.042)	274611	50.0000	52.15
8	Trichlorofluoromethane	101	1.947	1.947	(0.398)	421732	50.0000	49.03
5	Vinyl Chloride	62	1.411	1.411	(0.289)	395618	50.0000	56.34

QC Flag Legend

T - Target compound detected outside RT window.



Data File: \\NAHSTWS005\Target\chem\voa9,i\U181203,b\U120328,D
Date : 03-DEC-2018 21:06
Client ID: VSTD050-END
Sample Info: VSTD050-END;VSTD050-END;2;;
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA9,i
Operator: PC
Column diameter: 0.18

HS18111440 Longhorn Army Ammunition Plant LHAAP50

ALS WO# HS18111440

Form 11 - INTERNAL STANDARD ASSOCIATION

Client: Aptim Environmental & Infrastucture, Inc.

Project: Longhorn Army Ammunition Plant LHAAP-50

WorkOrder: HS18111440

Instrument:ICPMS05

Mass	Analyte	Assoc Int Standard 1	Assoc Int Standard 2	Mode
9	Beryllium	Lithium		Ar
11	Boron	Lithium		Ar
23	Sodium	Germanium		Ar
24	Magnesium	Germanium		Ar
27	Aluminum	Germanium		Ar
39	Potassium	Germanium		Ar
44	Calcium	Germanium		Ar
47	Titanium	Germanium		Ar
51	Vanadium	Germanium		ArHe
52	Chromium	Germanium		ArHe
55	Manganese	Germanium		ArHe
56	Iron	Germanium		ArHe
59	Cobalt	Germanium		ArHe
60	Nickel	Germanium		ArHe
63	Copper	Germanium		ArHe
66	Zinc	Germanium		ArHe
75	Arsenic	Germanium		ArHe
78	Selenium	Germanium		ArHe
88	Strontium	Germanium		Ar
95	Molybdenum	Germanium		Ar
105	Palladium	Germanium		Ar
107	Silver	Germanium		Ar
114	Cadmium	Indium		Ar
118	Tin	Germanium		Ar
121	Antimony	Germanium		ArHe
137	Barium	Indium		Ar
205	Thallium	Bismuth		Ar
208	Lead	Bismuth		Ar

ALS Houston, US

Date: 04-Jan-19

FORM 12 - PREPARATION LOG

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant LHAAP-50
WorkOrder: HS18111440
Start Date: 10-Dec-2018 09:30 End Date: 10-Dec-2018 13:30

Batch ID: 135382
Prep Code: 3010A Diss
Method: SW3010A
Technician:

SampID	ClientID	Matrix	Init Wt	Init Vol	FinalVol (mL)	PrepFac
HS18111440-01	50WW16-181128	Groundwater		10	10	1
HS18111440-01MS				10	10	1
HS18111440-01MSD				10	10	1
HS18111440-01PDS				10	10	1
HS18111440-01SD				10	10	1
HS18111440-02	50WW11-181128	Groundwater		10	10	1
HS18111440-03	50WW11-181128-FD	Groundwater		10	10	1
HS18111440-04	50WW12-181128	Groundwater		10	10	1
HS18111440-05	50WW08-181128	Groundwater		10	10	1
LCS-135382				10	10	1
LCSD-135382				10	10	1
MBLK-135382				10	10	1
MBLKF1-135382				10	10	1

FORM 12 - PREPARATION LOG

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant LHAAP-50
WorkOrder: HS18111440
Start Date: 07-Dec-2018 13:30 End Date: 07-Dec-2018 17:30

Batch ID: 135349
Prep Code: 3010A
Method: SW3010A
Technician:

SampID	ClientID	Matrix	Init Wt	Init Vol	FinalVol (mL)	PrepFac
HS18111440-01	50WW16-181128	Groundwater		10	10	1
HS18111440-01MS				10	10	1
HS18111440-01MSD				10	10	1
HS18111440-01PDS				10	10	1
HS18111440-01SD				10	10	1
HS18111440-02	50WW11-181128	Groundwater		10	10	1
HS18111440-03	50WW11-181128-FD	Groundwater		10	10	1
HS18111440-04	50WW12-181128	Groundwater		10	10	1
HS18111440-05	50WW08-181128	Groundwater		10	10	1
LCS-135349				10	10	1
MBLK-135349				10	10	1

FORM 13 - ANALYSIS RUN LOG

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant LHAAP-50
WorkOrder: HS18111440
Start Date: 10-Dec-2018 End Date: 11-Dec-2018

Run ID:ICPMS05_328925
Instrument:ICPMS05
Method:

Sample No.	D/F	Time	FileID	Analytes
ICPMS05_328925_Tune	1	10-Dec-2018 00:00	ICPMS05_328925_Tune_1	
CAL BLK	1	10-Dec-2018 17:22	019CALB.d_4857059	FE MN
2/10/200	1	10-Dec-2018 17:24	020CALS.d_4857060	FE MN
5/25/500	1	10-Dec-2018 17:26	021CALS.d_4857061	FE MN
10/50/1000	1	10-Dec-2018 17:28	022CALS.d_4857062	FE MN
100/500/10K	1	10-Dec-2018 17:31	023CALS.d_4857063	FE MN
200/1000/20K	1	10-Dec-2018 17:33	024CALS.d_4857064	FE MN
ICV	1	10-Dec-2018 17:37	026_ICV.d_4857066	FE MN
LLICV2	1	10-Dec-2018 17:39	027SMPL.d_4857067	FE MN
LLICV5	1	10-Dec-2018 17:41	028LICV.d_4857068	FE MN
ICB	1	10-Dec-2018 17:43	029_ICB.d_4857069	FE MN
ICSA	1	10-Dec-2018 17:47	031ICSA.d_4857071	FE MN
ICSAB	1	10-Dec-2018 17:49	032ICSB.d_4857072	FE MN
CCV 1	1	10-Dec-2018 18:12	043_CCV.d_4857116	FE MN
CCB 1	1	10-Dec-2018 18:14	044_CCB.d_4857117	FE MN
CCV 2	1	10-Dec-2018 18:38	054_CCV.d_4857147	FE MN
CCB 2	1	10-Dec-2018 18:41	055_CCB.d_4857148	FE MN
CCV 3	1	10-Dec-2018 18:59	064_CCV.d_4857169	FE MN
CCB 3	1	10-Dec-2018 19:01	065_CCB.d_4857170	FE MN
CCV 4	1	10-Dec-2018 19:24	076_CCV.d_4857181	FE MN
CCB 4	1	10-Dec-2018 19:26	077_CCB.d_4857182	FE MN
CCV 5	1	10-Dec-2018 19:49	088_CCV.d_4857193	FE MN
CCB 5	1	10-Dec-2018 19:51	089_CCB.d_4857194	FE MN
MBLKF1-135382	1	10-Dec-2018 19:59	093SMPL.d_4857201	FE MN
MBLK-135382	1	10-Dec-2018 20:01	094SMPL.d_4857202	FE MN
LCS-135382	1	10-Dec-2018 20:03	095SMPL.d_4857203	FE MN
LCSD-135382	1	10-Dec-2018 20:05	096SMPL.d_4857204	FE MN
CCV 6	1	10-Dec-2018 20:07	097_CCV.d_4857205	FE MN
CCB 6	1	10-Dec-2018 20:09	098_CCB.d_4857206	FE MN
50WW16-181128	1	10-Dec-2018 20:11	099SMPL.d_4857207	FE MN
50WW16-181128SD	5	10-Dec-2018 20:13	100SMPL.d_4857208	FE
50WW16-181128MS	1	10-Dec-2018 20:16	101SMPL.d_4857209	FE MN
50WW16-181128MSD	1	10-Dec-2018 20:18	102SMPL.d_4857210	FE MN
50WW16-181128PDS	1	10-Dec-2018 20:20	103SMPL.d_4857211	FE MN
50WW11-181128	1	10-Dec-2018 20:22	104SMPL.d_4857212	FE MN
50WW11-181128-FD	1	10-Dec-2018 20:24	105SMPL.d_4857213	FE MN
50WW12-181128	1	10-Dec-2018 20:26	106SMPL.d_4857214	FE MN
50WW08-181128	1	10-Dec-2018 20:28	107SMPL.d_4857215	FE MN
CCV 7	1	10-Dec-2018 20:32	109_CCV.d_4857217	FE MN
CCB 7	1	10-Dec-2018 20:34	110_CCB.d_4857218	FE MN
CCV 8	1	10-Dec-2018 20:57	121_CCV.d_4857229	FE MN
CCB 8	1	10-Dec-2018 20:59	122_CCB.d_4857230	FE MN
CCV 9	1	10-Dec-2018 21:09	127_CCV.d_4857235	FE MN
CCB 9	1	10-Dec-2018 21:12	128_CCB.d_4857236	FE MN
CAL BLK	1	10-Dec-2018 21:20	132CALB.d_4857240	FE MN
2/10/200	1	10-Dec-2018 21:22	133CALS.d_4857241	FE MN
5/25/500	1	10-Dec-2018 21:24	134CALS.d_4857242	FE MN
10/50/1000	1	10-Dec-2018 21:26	135CALS.d_4857243	FE MN
100/500/10K	1	10-Dec-2018 21:28	136CALS.d_4857244	FE MN
200/1000/20K	1	10-Dec-2018 21:30	137CALS.d_4857245	FE MN
ICCV 10	1	10-Dec-2018 21:32	138_ICV.d_4857246	FE MN

ALS Houston, US

Date: 04-Jan-19

FORM 13 - ANALYSIS RUN LOG

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant LHAAP-50
WorkOrder: HS18111440
Start Date: 10-Dec-2018 End Date: 11-Dec-2018

Run ID:ICPMS05_328925
Instrument:ICPMS05
Method:

Sample No.	D/F	Time	FileID	Analytes
LLCCV2	1	10-Dec-2018 21:34	139SMPL.d_4857247	FE MN
LLCCV5	1	10-Dec-2018 21:36	140LICV.d_4857248	FE MN
ICCB 10	1	10-Dec-2018 21:38	141_ICB.d_4857249	FE MN
CCV 11	1	10-Dec-2018 21:57	150_CCV.d_4857258	FE MN
CCB 11	1	10-Dec-2018 21:59	151_CCB.d_4857259	FE MN
CCV 12	1	10-Dec-2018 22:22	162_CCV.d_4857270	FE MN
CCB 12	1	10-Dec-2018 22:24	163_CCB.d_4857271	FE MN
CCV 13	1	10-Dec-2018 22:41	171_CCV.d_4857279	FE MN
CCB 13	1	10-Dec-2018 22:43	172_CCB.d_4857280	FE MN
CCV 14	1	10-Dec-2018 23:06	183_CCV.d_4857511	FE MN
CCB 14	1	10-Dec-2018 23:08	184_CCB.d_4857512	FE MN
CCV 15	1	10-Dec-2018 23:31	195_CCV.d_4857523	FE MN
CCB 15	1	10-Dec-2018 23:33	196_CCB.d_4857524	FE MN
CCB 16	1	10-Dec-2018 23:54	206_CCB.d_4857534	FE MN
CCV 16	1	11-Dec-2018 00:02	208_CCV.d_4857536	FE MN
CCV 17	1	11-Dec-2018 00:23	218_CCV.d_4857643	FE MN
CCB 17	1	11-Dec-2018 00:25	219_CCB.d_4857644	FE MN
CCV 18	1	11-Dec-2018 00:27	220_CCV.d_4857645	FE MN
CCB 18	1	11-Dec-2018 00:29	221_CCB.d_4857646	FE MN
CCV 19	1	11-Dec-2018 00:52	232_CCV.d_4857657	FE MN
CCB 19	1	11-Dec-2018 00:54	233_CCB.d_4857658	FE MN
CCV 20	1	11-Dec-2018 01:13	242_CCV.d_4857667	FE MN
CCB 20	1	11-Dec-2018 01:15	243_CCB.d_4857668	FE MN
CCV 21	1	11-Dec-2018 01:37	254_CCV.d_4857679	FE MN
CCB 21	1	11-Dec-2018 01:39	255_CCB.d_4857680	FE MN
CCV 22	1	11-Dec-2018 01:41	256_CCV.d_4857681	FE MN
CCB 22	1	11-Dec-2018 01:43	257_CCB.d_4857682	FE MN
LLCCV5	1	11-Dec-2018 01:46	258LICV.d_4857683	FE MN
LLCCV2	1	11-Dec-2018 01:48	259SMPL.d_4857684	FE MN
ICSA	1	11-Dec-2018 01:50	260ICSA.d_4857685	FE MN
ICSAB	1	11-Dec-2018 01:52	261ICSB.d_4857686	FE MN

FORM 13 - ANALYSIS RUN LOG

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant LHAAP-50
WorkOrder: HS18111440
Start Date: 11-Dec-2018 End Date: 11-Dec-2018

Run ID:ICPMS05_328971
Instrument:ICPMS05
Method:

Sample No.	D/F	Time	FileID	Analytes
ICPMS05_328971_Tune	1	11-Dec-2018 00:00	ICPMS05_328971_Tune_1	
CAL BLK	1	11-Dec-2018 13:43	005CALB.d_4858276	FE
2/10/200	1	11-Dec-2018 13:45	006CALS.d_4858284	FE
5/25/500	1	11-Dec-2018 13:47	007CALS.d_4858293	FE
10/50/1000	1	11-Dec-2018 13:49	008CALS.d_4858294	FE
100/500/10K	1	11-Dec-2018 13:51	009CALS.d_4858295	FE
200/1000/20K	1	11-Dec-2018 13:53	010CALS.d_4858296	FE
LLICV2	1	11-Dec-2018 13:59	013SMPL.d_4858299	FE
LLICV5	1	11-Dec-2018 14:01	014LICV.d_4858300	FE
ICB	1	11-Dec-2018 14:03	015_ICB.d_4858301	FE
ICV	1	11-Dec-2018 14:15	017_ICV.d_4858303	FE
ICSA	1	11-Dec-2018 14:28	018ICSA.d_4858464	FE
ICSAB	1	11-Dec-2018 14:30	019ICSB.d_4858465	FE
CCB 1	1	11-Dec-2018 15:03	031_CCB.d_4858619	FE
CCV 1	1	11-Dec-2018 15:15	033_CCV.d_4858621	FE
CCV 2	1	11-Dec-2018 15:42	039_CCV.d_4858745	FE
CCB 2	1	11-Dec-2018 15:45	040_CCB.d_4858746	FE
CCV 3	1	11-Dec-2018 17:17	044_CCV.d_4859263	FE
CCB 3	1	11-Dec-2018 17:19	045_CCB.d_4859264	FE
CCV 4	1	11-Dec-2018 17:37	054_CCV.d_4859273	FE
CCB 4	1	11-Dec-2018 17:39	055_CCB.d_4859274	FE
CCB 5	1	11-Dec-2018 18:04	067_CCB.d_4859290	FE
CCV 5	1	11-Dec-2018 18:17	069_CCV.d_4859292	FE
CCV 6	1	11-Dec-2018 18:27	074_CCV.d_4859395	FE
CCB 6	1	11-Dec-2018 18:29	075_CCB.d_4859396	FE
CCV 7	1	11-Dec-2018 18:48	084_CCV.d_4859450	FE
CCB 7	1	11-Dec-2018 18:50	085_CCB.d_4859451	FE
CCV 8	1	11-Dec-2018 19:12	096_CCV.d_4859462	FE
CCB 8	1	11-Dec-2018 19:14	097_CCB.d_4859463	FE
CCV 9	1	11-Dec-2018 19:35	107_CCV.d_4859473	FE
CCB 9	1	11-Dec-2018 19:37	108_CCB.d_4859474	FE
CAL BLK	1	11-Dec-2018 19:47	113CALB.d_4859479	FE
2/10/200	1	11-Dec-2018 19:49	114CALS.d_4859480	FE
5/25/500	1	11-Dec-2018 19:51	115CALS.d_4859481	FE
10/50/1000	1	11-Dec-2018 19:53	116CALS.d_4859482	FE
100/500/10K	1	11-Dec-2018 19:55	117CALS.d_4859483	FE
200/1000/20K	1	11-Dec-2018 19:58	118CALS.d_4859484	FE
ICCV 10	1	11-Dec-2018 20:02	120_ICV.d_4859486	FE
LLCCV2	1	11-Dec-2018 20:04	121SMPL.d_4859487	FE
LLCCV5	1	11-Dec-2018 20:06	122LICV.d_4859488	FE
ICCB 10	1	11-Dec-2018 20:08	123_ICB.d_4859489	FE
CCV 11	1	11-Dec-2018 20:25	131_CCV.d_4859497	FE
CCB 11	1	11-Dec-2018 20:27	132_CCB.d_4859498	FE
CCV 12	1	11-Dec-2018 20:41	139_CCV.d_4859505	FE
CCB 12	1	11-Dec-2018 20:43	140_CCB.d_4859506	FE
CCV 13	1	11-Dec-2018 21:06	151_CCV.d_4859517	FE
CCB 13	1	11-Dec-2018 21:08	152_CCB.d_4859518	FE
LLCCV2	1	11-Dec-2018 21:10	153SMPL.d_4859519	FE
CCV 14	1	11-Dec-2018 21:31	163_CCV.d_4859800	FE
CCB 14	1	11-Dec-2018 21:33	164_CCB.d_4859801	FE
CCV 15	1	11-Dec-2018 21:45	170_CCV.d_4859807	FE

FORM 13 - ANALYSIS RUN LOG

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant LHAAP-50
WorkOrder: HS18111440
Start Date: 11-Dec-2018 End Date: 11-Dec-2018

Run ID:ICPMS05_328971
Instrument:ICPMS05
Method:

Sample No.	D/F	Time	FileID	Analytes
CCB 15	1	11-Dec-2018 21:47	171_CCB.d_4859808	FE
MBLK-135349	1	11-Dec-2018 21:49	172SMPL.d_4860013	FE
LCS-135349	1	11-Dec-2018 21:51	173SMPL.d_4860014	FE
50WW16-181128	1	11-Dec-2018 21:53	174SMPL.d_4860015	FE
50WW16-181128SD	5	11-Dec-2018 21:55	175SMPL.d_4860016	FE
50WW16-181128MS	1	11-Dec-2018 21:57	176SMPL.d_4860017	FE
50WW16-181128MSD	1	11-Dec-2018 21:59	177SMPL.d_4860018	FE
50WW16-181128PDS	1	11-Dec-2018 22:01	178SMPL.d_4860019	FE
CCV 16	1	11-Dec-2018 22:03	179_CCV.d_4860020	FE
CCB 16	1	11-Dec-2018 22:06	180_CCB.d_4860021	FE
50WW11-181128	1	11-Dec-2018 22:08	181SMPL.d_4860022	FE
50WW11-181128-FD	1	11-Dec-2018 22:10	182SMPL.d_4860023	FE
50WW12-181128	1	11-Dec-2018 22:12	183SMPL.d_4860024	FE
50WW08-181128	1	11-Dec-2018 22:14	184SMPL.d_4860025	FE
CCV 17	1	11-Dec-2018 22:24	189_CCV.d_4860030	FE
CCB 17	1	11-Dec-2018 22:26	190_CCB.d_4860031	FE
CCV 18	1	11-Dec-2018 22:49	201_CCV.d_4860064	FE
CCB 18	1	11-Dec-2018 22:51	202_CCB.d_4860065	FE
CCV 19	1	11-Dec-2018 22:55	204_CCV.d_4860067	FE
CCB 19	1	11-Dec-2018 22:57	205_CCB.d_4860068	FE
LLCCV5	1	11-Dec-2018 22:59	206LICV.d_4860069	FE
LLCCV2	1	11-Dec-2018 23:01	207SMPL.d_4860070	FE
ICSA	1	11-Dec-2018 23:03	208ICSA.d_4860071	FE
ICSAB	1	11-Dec-2018 23:05	209ICSB.d_4860072	FE

Form 2 - Initial and Continuing Calibration Verification

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant LHAAP-50
WorkOrder: HS18111440

Run ID: ICPMS05_328925
Instrument: ICPMS05
Method: SW6020

ICV	Date: 10-Dec-2018 17:37		Seq: 4857066	ICV	Units: ug/L
Analyte	**True**	**Found**	**%R**	**Control Limits**	**Flag**
Iron	10000	9979.052	100	90-110	
Manganese	100	98.654	99	90-110	

CCV1	Date: 10-Dec-2018 18:12		Seq: 4857116	CCV	Units: ug/L
Analyte	**True**	**Found**	**%R**	**Control Limits**	**Flag**
Iron	10000	10112.688	101	90-110	
Manganese	100	101.137	101	90-110	

CCV2	Date: 10-Dec-2018 18:38		Seq: 4857147	CCV	Units: ug/L
Analyte	**True**	**Found**	**%R**	**Control Limits**	**Flag**
Iron	10000	10303.453	103	90-110	
Manganese	100	103.098	103	90-110	

CCV3	Date: 10-Dec-2018 18:59		Seq: 4857169	CCV	Units: ug/L
Analyte	**True**	**Found**	**%R**	**Control Limits**	**Flag**
Iron	10000	10011.439	100	90-110	
Manganese	100	100.033	100	90-110	

CCV4	Date: 10-Dec-2018 19:24		Seq: 4857181	CCV	Units: ug/L
Analyte	**True**	**Found**	**%R**	**Control Limits**	**Flag**
Iron	10000	9750.742	98	90-110	
Manganese	100	99.022	99	90-110	

CCV5	Date: 10-Dec-2018 19:49		Seq: 4857193	CCV	Units: ug/L
Analyte	**True**	**Found**	**%R**	**Control Limits**	**Flag**
Iron	10000	9889.226	99	90-110	
Manganese	100	98.406	98	90-110	

CCV6	Date: 10-Dec-2018 20:07		Seq: 4857205	CCV	Units: ug/L
Analyte	**True**	**Found**	**%R**	**Control Limits**	**Flag**
Iron	10000	9920.947	99	90-110	
Manganese	100	98.686	99	90-110	

CCV7	Date: 10-Dec-2018 20:32		Seq: 4857217	CCV	Units: ug/L
Analyte	**True**	**Found**	**%R**	**Control Limits**	**Flag**
Iron	10000	10029.326	100	90-110	
Manganese	100	98.597	99	90-110	

CCV8	Date: 10-Dec-2018 20:57		Seq: 4857229	CCV	Units: ug/L
Analyte	**True**	**Found**	**%R**	**Control Limits**	**Flag**
Iron	10000	9913.873	99	90-110	
Manganese	100	97.804	98	90-110	

CCV9	Date: 10-Dec-2018 21:09		Seq: 4857235	CCV	Units: ug/L
Analyte	**True**	**Found**	**%R**	**Control Limits**	**Flag**
Iron	10000	10059.449	101	90-110	
Manganese	100	100.52	101	90-110	

ICCV10	Date: 10-Dec-2018 21:32		Seq: 4857246	CCV	Units: ug/L
Analyte	**True**	**Found**	**%R**	**Control Limits**	**Flag**
Iron	10000	10364.522	104	90-110	
Manganese	100	101.305	101	90-110	

Form 2 - Initial and Continuing Calibration Verification

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant LHAAP-50
WorkOrder: HS18111440

Run ID: ICPMS05_328925
Instrument: ICPMS05
Method: SW6020

CCV11	Date: 10-Dec-2018 21:57		Seq: 4857258	CCV	Units: ug/L
Analyte	**True**	**Found**	**%R**	**Control Limits**	**Flag**
Iron	10000	10240.425	102	90-110	
Manganese	100	102.954	103	90-110	

CCV12	Date: 10-Dec-2018 22:22		Seq: 4857270	CCV	Units: ug/L
Analyte	**True**	**Found**	**%R**	**Control Limits**	**Flag**
Iron	10000	10153.735	102	90-110	
Manganese	100	101.083	101	90-110	

CCV13	Date: 10-Dec-2018 22:41		Seq: 4857279	CCV	Units: ug/L
Analyte	**True**	**Found**	**%R**	**Control Limits**	**Flag**
Iron	10000	10132.344	101	90-110	
Manganese	100	101.031	101	90-110	

CCV14	Date: 10-Dec-2018 23:06		Seq: 4857511	CCV	Units: ug/L
Analyte	**True**	**Found**	**%R**	**Control Limits**	**Flag**
Iron	10000	10062.185	101	90-110	
Manganese	100	99.843	100	90-110	

CCV15	Date: 10-Dec-2018 23:31		Seq: 4857523	CCV	Units: ug/L
Analyte	**True**	**Found**	**%R**	**Control Limits**	**Flag**
Iron	10000	10152.363	102	90-110	
Manganese	100	100.34	100	90-110	

CCV16	Date: 11-Dec-2018 00:02		Seq: 4857536	CCV	Units: ug/L
Analyte	**True**	**Found**	**%R**	**Control Limits**	**Flag**
Iron	10000	9829.612	98	90-110	
Manganese	100	99.111	99	90-110	

CCV17	Date: 11-Dec-2018 00:23		Seq: 4857643	CCV	Units: ug/L
Analyte	**True**	**Found**	**%R**	**Control Limits**	**Flag**
Iron	10000	10373.839	104	90-110	
Manganese	100	104.855	105	90-110	

CCV18	Date: 11-Dec-2018 00:27		Seq: 4857645	CCV	Units: ug/L
Analyte	**True**	**Found**	**%R**	**Control Limits**	**Flag**
Iron	10000	10078.685	101	90-110	
Manganese	100	99.51	100	90-110	

CCV19	Date: 11-Dec-2018 00:52		Seq: 4857657	CCV	Units: ug/L
Analyte	**True**	**Found**	**%R**	**Control Limits**	**Flag**
Iron	10000	9722.227	97	90-110	
Manganese	100	98.678	99	90-110	

CCV20	Date: 11-Dec-2018 01:13		Seq: 4857667	CCV	Units: ug/L
Analyte	**True**	**Found**	**%R**	**Control Limits**	**Flag**
Iron	10000	9746.941	98	90-110	
Manganese	100	97.977	98	90-110	

CCV21	Date: 11-Dec-2018 01:37		Seq: 4857679	CCV	Units: ug/L
Analyte	**True**	**Found**	**%R**	**Control Limits**	**Flag**
Iron	10000	9899.631	99	90-110	
Manganese	100	99.233	99	90-110	

Form 2 - Initial and Continuing Calibration Verification

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant LHAAP-50
WorkOrder: HS18111440

Run ID: ICPMS05_328925
Instrument: ICPMS05
Method: SW6020

CCV22 | Date: 11-Dec-2018 01:41 | Seq: 4857681 | CCV | Units: ug/L

Analyte	True	Found	%R	Control Limits	Flag
Iron	10000	9954.743	100	90-110	
Manganese	100	98.904	99	90-110	

Form 2 - Initial and Continuing Calibration Verification

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant LHAAP-50
WorkOrder: HS18111440

Run ID: ICPMS05_328971
Instrument: ICPMS05
Method: SW6020

ICV	Date: 11-Dec-2018 14:15		Seq: 4858303	ICV	Units: ug/L
Analyte	**True**	**Found**	**%R**	**Control Limits**	**Flag**
Iron	10000	9403.401	94	90-110	

CCV1	Date: 11-Dec-2018 15:15		Seq: 4858621	CCV	Units: ug/L
Analyte	**True**	**Found**	**%R**	**Control Limits**	**Flag**
Iron	10000	10182.802	102	90-110	

CCV2	Date: 11-Dec-2018 15:42		Seq: 4858745	CCV	Units: ug/L
Analyte	**True**	**Found**	**%R**	**Control Limits**	**Flag**
Iron	10000	10138.336	101	90-110	

CCV3	Date: 11-Dec-2018 17:17		Seq: 4859263	CCV	Units: ug/L
Analyte	**True**	**Found**	**%R**	**Control Limits**	**Flag**
Iron	10000	10404.677	104	90-110	

CCV4	Date: 11-Dec-2018 17:37		Seq: 4859273	CCV	Units: ug/L
Analyte	**True**	**Found**	**%R**	**Control Limits**	**Flag**
Iron	10000	10228.767	102	90-110	

CCV5	Date: 11-Dec-2018 18:17		Seq: 4859292	CCV	Units: ug/L
Analyte	**True**	**Found**	**%R**	**Control Limits**	**Flag**
Iron	10000	10064.325	101	90-110	

CCV6	Date: 11-Dec-2018 18:27		Seq: 4859395	CCV	Units: ug/L
Analyte	**True**	**Found**	**%R**	**Control Limits**	**Flag**
Iron	10000	10295.11	103	90-110	

CCV7	Date: 11-Dec-2018 18:48		Seq: 4859450	CCV	Units: ug/L
Analyte	**True**	**Found**	**%R**	**Control Limits**	**Flag**
Iron	10000	10177.607	102	90-110	

CCV8	Date: 11-Dec-2018 19:12		Seq: 4859462	CCV	Units: ug/L
Analyte	**True**	**Found**	**%R**	**Control Limits**	**Flag**
Iron	10000	10335.306	103	90-110	

CCV9	Date: 11-Dec-2018 19:35		Seq: 4859473	CCV	Units: ug/L
Analyte	**True**	**Found**	**%R**	**Control Limits**	**Flag**
Iron	10000	9899.745	99	90-110	

ICCV10	Date: 11-Dec-2018 20:02		Seq: 4859486	CCV	Units: ug/L
Analyte	**True**	**Found**	**%R**	**Control Limits**	**Flag**
Iron	10000	9830.279	98	90-110	

CCV11	Date: 11-Dec-2018 20:25		Seq: 4859497	CCV	Units: ug/L
Analyte	**True**	**Found**	**%R**	**Control Limits**	**Flag**
Iron	10000	10017.452	100	90-110	

CCV12	Date: 11-Dec-2018 20:41		Seq: 4859505	CCV	Units: ug/L
Analyte	**True**	**Found**	**%R**	**Control Limits**	**Flag**
Iron	10000	10126.235	101	90-110	

CCV13	Date: 11-Dec-2018 21:06		Seq: 4859517	CCV	Units: ug/L
Analyte	**True**	**Found**	**%R**	**Control Limits**	**Flag**
Iron	10000	9823.304	98	90-110	

Form 2 - Initial and Continuing Calibration Verification

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant LHAAP-50
WorkOrder: HS18111440

Run ID: ICPMS05_328971
Instrument: ICPMS05
Method: SW6020

CCV14	Date: 11-Dec-2018 21:31		Seq: 4859800	CCV	Units: ug/L
Analyte	**True**	**Found**	**%R**	**Control Limits**	**Flag**
Iron	10000	9811.672	98	90-110	

CCV15	Date: 11-Dec-2018 21:45		Seq: 4859807	CCV	Units: ug/L
Analyte	**True**	**Found**	**%R**	**Control Limits**	**Flag**
Iron	10000	10000.318	100	90-110	

CCV16	Date: 11-Dec-2018 22:03		Seq: 4860020	CCV	Units: ug/L
Analyte	**True**	**Found**	**%R**	**Control Limits**	**Flag**
Iron	10000	10132.893	101	90-110	

CCV17	Date: 11-Dec-2018 22:24		Seq: 4860030	CCV	Units: ug/L
Analyte	**True**	**Found**	**%R**	**Control Limits**	**Flag**
Iron	10000	9853.347	99	90-110	

CCV18	Date: 11-Dec-2018 22:49		Seq: 4860064	CCV	Units: ug/L
Analyte	**True**	**Found**	**%R**	**Control Limits**	**Flag**
Iron	10000	9699.605	97	90-110	

CCV19	Date: 11-Dec-2018 22:55		Seq: 4860067	CCV	Units: ug/L
Analyte	**True**	**Found**	**%R**	**Control Limits**	**Flag**
Iron	10000	9896.055	99	90-110	

Form 3 - BLANKS

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant LHAAP-50
WorkOrder: HS18111440

Run ID: ICPMS05_328925
Instrument: ICPMS05
Method: SW6020

ICB	Date: 10-Dec-2018 17:43		Seq: 4857069	ICB	Units: ug/L
Analyte	**Result**	**MDL**	**Report Limit**	**Qual**	
Iron	200	12	200	U	
Manganese	5	0.7	5	U	
CCB1	Date: 10-Dec-2018 18:14		Seq: 4857117	CCB	Units: ug/L
Analyte	**Result**	**MDL**	**Report Limit**	**Qual**	
Iron	200	12	200	U	
Manganese	5	0.7	5	U	
CCB2	Date: 10-Dec-2018 18:41		Seq: 4857148	CCB	Units: ug/L
Analyte	**Result**	**MDL**	**Report Limit**	**Qual**	
Iron	200	12	200	U	
Manganese	5	0.7	5	U	
CCB3	Date: 10-Dec-2018 19:01		Seq: 4857170	CCB	Units: ug/L
Analyte	**Result**	**MDL**	**Report Limit**	**Qual**	
Iron	200	12	200	U	
Manganese	5	0.7	5	U	
CCB4	Date: 10-Dec-2018 19:26		Seq: 4857182	CCB	Units: ug/L
Analyte	**Result**	**MDL**	**Report Limit**	**Qual**	
Iron	200	12	200	U	
Manganese	5	0.7	5	U	
CCB5	Date: 10-Dec-2018 19:51		Seq: 4857194	CCB	Units: ug/L
Analyte	**Result**	**MDL**	**Report Limit**	**Qual**	
Iron	200	12	200	U	
Manganese	5	0.7	5	U	
MBLKF1-135382	Date: 10-Dec-2018 19:59		Seq: 4857201	MBLK	Units: ug/L
Analyte	**Result**	**MDL**	**Report Limit**	**Qual**	
Iron	200	12	200	U	
Manganese	2.26	0.7	5	J	
MBLK-135382	Date: 10-Dec-2018 20:01		Seq: 4857202	MBLK	Units: ug/L
Analyte	**Result**	**MDL**	**Report Limit**	**Qual**	
Iron	200	12	200	U	
Manganese	1.521	0.7	5	J	
CCB6	Date: 10-Dec-2018 20:09		Seq: 4857206	CCB	Units: ug/L
Analyte	**Result**	**MDL**	**Report Limit**	**Qual**	
Iron	200	12	200	U	
Manganese	5	0.7	5	U	
CCB7	Date: 10-Dec-2018 20:34		Seq: 4857218	CCB	Units: ug/L
Analyte	**Result**	**MDL**	**Report Limit**	**Qual**	
Iron	200	12	200	U	
Manganese	5	0.7	5	U	
CCB8	Date: 10-Dec-2018 20:59		Seq: 4857230	CCB	Units: ug/L
Analyte	**Result**	**MDL**	**Report Limit**	**Qual**	
Iron	200	12	200	U	
Manganese	5	0.7	5	U	
CCB9	Date: 10-Dec-2018 21:12		Seq: 4857236	CCB	Units: ug/L
Analyte	**Result**	**MDL**	**Report Limit**	**Qual**	
Iron	200	12	200	U	

Form 3 - BLANKS

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant LHAAP-50
WorkOrder: HS18111440

Run ID: ICPMS05_328925
Instrument: ICPMS05
Method: SW6020

CCB9	Date: 10-Dec-2018 21:12		Seq: 4857236	CCB	Units: ug/L
Analyte	**Result**	**MDL**	**Report Limit**	**Qual**	
Manganese	0.919	0.7	5	J	
ICCB10	Date: 10-Dec-2018 21:38		Seq: 4857249	CCB	Units: ug/L
Analyte	**Result**	**MDL**	**Report Limit**	**Qual**	
Iron	200	12	200	U	
Manganese	5	0.7	5	U	
CCB11	Date: 10-Dec-2018 21:59		Seq: 4857259	CCB	Units: ug/L
Analyte	**Result**	**MDL**	**Report Limit**	**Qual**	
Iron	200	12	200	U	
Manganese	5	0.7	5	U	
CCB12	Date: 10-Dec-2018 22:24		Seq: 4857271	CCB	Units: ug/L
Analyte	**Result**	**MDL**	**Report Limit**	**Qual**	
Iron	200	12	200	U	
Manganese	5	0.7	5	U	
CCB13	Date: 10-Dec-2018 22:43		Seq: 4857280	CCB	Units: ug/L
Analyte	**Result**	**MDL**	**Report Limit**	**Qual**	
Iron	200	12	200	U	
Manganese	5	0.7	5	U	
CCB14	Date: 10-Dec-2018 23:08		Seq: 4857512	CCB	Units: ug/L
Analyte	**Result**	**MDL**	**Report Limit**	**Qual**	
Iron	200	12	200	U	
Manganese	5	0.7	5	U	
CCB15	Date: 10-Dec-2018 23:33		Seq: 4857524	CCB	Units: ug/L
Analyte	**Result**	**MDL**	**Report Limit**	**Qual**	
Iron	200	12	200	U	
Manganese	5	0.7	5	U	
CCB16	Date: 10-Dec-2018 23:54		Seq: 4857534	CCB	Units: ug/L
Analyte	**Result**	**MDL**	**Report Limit**	**Qual**	
Iron	200	12	200	U	
Manganese	5	0.7	5	U	
CCB17	Date: 11-Dec-2018 00:25		Seq: 4857644	CCB	Units: ug/L
Analyte	**Result**	**MDL**	**Report Limit**	**Qual**	
Iron	200	12	200	U	
Manganese	0.795	0.7	5	J	
CCB18	Date: 11-Dec-2018 00:29		Seq: 4857646	CCB	Units: ug/L
Analyte	**Result**	**MDL**	**Report Limit**	**Qual**	
Iron	200	12	200	U	
Manganese	5	0.7	5	U	
CCB19	Date: 11-Dec-2018 00:54		Seq: 4857658	CCB	Units: ug/L
Analyte	**Result**	**MDL**	**Report Limit**	**Qual**	
Iron	200	12	200	U	
Manganese	5	0.7	5	U	
CCB20	Date: 11-Dec-2018 01:15		Seq: 4857668	CCB	Units: ug/L
Analyte	**Result**	**MDL**	**Report Limit**	**Qual**	
Iron	200	12	200	U	
Manganese	5	0.7	5	U	

ALS Houston, US

Date: 04-Jan-19

Form 3 - BLANKS

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant LHAAP-50
WorkOrder: HS18111440

Run ID: ICPMS05_328925
Instrument: ICPMS05
Method: SW6020

CCB21	Date: 11-Dec-2018 01:39		Seq: 4857680	CCB	Units: ug/L
Analyte	**Result**	**MDL**	**Report Limit**	**Qual**	
Iron	200	12	200	U	
Manganese	5	0.7	5	U	

CCB22	Date: 11-Dec-2018 01:43		Seq: 4857682	CCB	Units: ug/L
Analyte	**Result**	**MDL**	**Report Limit**	**Qual**	
Iron	200	12	200	U	
Manganese	5	0.7	5	U	

Form 3 - BLANKS

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant LHAAP-50
WorkOrder: HS18111440

Run ID: ICPMS05_328971
Instrument: ICPMS05
Method: SW6020

ICB	Date: 11-Dec-2018 14:03		Seq: 4858301	ICB	Units: ug/L
Analyte	**Result**	**MDL**	**Report Limit**	**Qual**	
Iron	200	12	200	U	

CCB1	Date: 11-Dec-2018 15:03		Seq: 4858619	CCB	Units: ug/L
Analyte	**Result**	**MDL**	**Report Limit**	**Qual**	
Iron	13.63	12	200	J	

CCB2	Date: 11-Dec-2018 15:45		Seq: 4858746	CCB	Units: ug/L
Analyte	**Result**	**MDL**	**Report Limit**	**Qual**	
Iron	200	12	200	U	

CCB3	Date: 11-Dec-2018 17:19		Seq: 4859264	CCB	Units: ug/L
Analyte	**Result**	**MDL**	**Report Limit**	**Qual**	
Iron	200	12	200	U	

CCB4	Date: 11-Dec-2018 17:39		Seq: 4859274	CCB	Units: ug/L
Analyte	**Result**	**MDL**	**Report Limit**	**Qual**	
Iron	14.22	12	200	J	

CCB5	Date: 11-Dec-2018 18:04		Seq: 4859290	CCB	Units: ug/L
Analyte	**Result**	**MDL**	**Report Limit**	**Qual**	
Iron	200	12	200	U	

CCB6	Date: 11-Dec-2018 18:29		Seq: 4859396	CCB	Units: ug/L
Analyte	**Result**	**MDL**	**Report Limit**	**Qual**	
Iron	200	12	200	U	

CCB7	Date: 11-Dec-2018 18:50		Seq: 4859451	CCB	Units: ug/L
Analyte	**Result**	**MDL**	**Report Limit**	**Qual**	
Iron	200	12	200	U	

CCB8	Date: 11-Dec-2018 19:14		Seq: 4859463	CCB	Units: ug/L
Analyte	**Result**	**MDL**	**Report Limit**	**Qual**	
Iron	200	12	200	U	

CCB9	Date: 11-Dec-2018 19:37		Seq: 4859474	CCB	Units: ug/L
Analyte	**Result**	**MDL**	**Report Limit**	**Qual**	
Iron	200	12	200	U	

ICCB10	Date: 11-Dec-2018 20:08		Seq: 4859489	CCB	Units: ug/L
Analyte	**Result**	**MDL**	**Report Limit**	**Qual**	
Iron	200	12	200	U	

CCB11	Date: 11-Dec-2018 20:27		Seq: 4859498	CCB	Units: ug/L
Analyte	**Result**	**MDL**	**Report Limit**	**Qual**	
Iron	200	12	200	U	

CCB12	Date: 11-Dec-2018 20:43		Seq: 4859506	CCB	Units: ug/L
Analyte	**Result**	**MDL**	**Report Limit**	**Qual**	
Iron	200	12	200	U	

CCB13	Date: 11-Dec-2018 21:08		Seq: 4859518	CCB	Units: ug/L
Analyte	**Result**	**MDL**	**Report Limit**	**Qual**	
Iron	200	12	200	U	

CCB14	Date: 11-Dec-2018 21:33		Seq: 4859801	CCB	Units: ug/L
Analyte	**Result**	**MDL**	**Report Limit**	**Qual**	
Iron	200	12	200	U	

Form 3 - BLANKS

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant LHAAP-50
WorkOrder: HS18111440

Run ID: ICPMS05_328971
Instrument: ICPMS05
Method: SW6020

CCB15	Date: 11-Dec-2018 21:47		Seq: 4859808	CCB	Units: ug/L
Analyte	**Result**	**MDL**	**Report Limit**	**Qual**	
Iron	200	12	200	U	
MBLK-135349	Date: 11-Dec-2018 21:49		Seq: 4860013	MBLK	Units: ug/L
Analyte	**Result**	**MDL**	**Report Limit**	**Qual**	
Iron	200	12	200	U	
CCB16	Date: 11-Dec-2018 22:06		Seq: 4860021	CCB	Units: ug/L
Analyte	**Result**	**MDL**	**Report Limit**	**Qual**	
Iron	200	12	200	U	
CCB17	Date: 11-Dec-2018 22:26		Seq: 4860031	CCB	Units: ug/L
Analyte	**Result**	**MDL**	**Report Limit**	**Qual**	
Iron	200	12	200	U	
CCB18	Date: 11-Dec-2018 22:51		Seq: 4860065	CCB	Units: ug/L
Analyte	**Result**	**MDL**	**Report Limit**	**Qual**	
Iron	200	12	200	U	
CCB19	Date: 11-Dec-2018 22:57		Seq: 4860068	CCB	Units: ug/L
Analyte	**Result**	**MDL**	**Report Limit**	**Qual**	
Iron	200	12	200	U	

Form 4 - ICP Interference Check Sample

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant LHAAP-50
WorkOrder: HS18111440

Run ID: ICPMS05_328925
Instrument: ICPMS05
Method: SW6020

ICSA	Date: 10-Dec-2018 17:47	Seq: 4857071	ICSA	Units: ug/L
Analyte	**True**	**Found**	**%R**	
Iron	100000	98610	98.6	
Manganese		0.225	0	

ICSAB	Date: 10-Dec-2018 17:49	Seq: 4857072	ICSAB	Units: ug/L
Analyte	**True**	**Found**	**%R**	
Iron	110000	107700	97.9	
Manganese	100	106.5	106	

ICSA	Date: 11-Dec-2018 01:50	Seq: 4857685	ICSA	Units: ug/L
Analyte	**True**	**Found**	**%R**	
Iron	100000	100300	100	
Manganese		-0.157	0	

ICSAB	Date: 11-Dec-2018 01:52	Seq: 4857686	ICSAB	Units: ug/L
Analyte	**True**	**Found**	**%R**	
Iron	110000	109800	99.8	
Manganese	100	106.8	107	

Form 4 - ICP Interference Check Sample

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant LHAAP-50
WorkOrder: HS18111440

Run ID: ICPMS05_328971
Instrument: ICPMS05
Method: SW6020

ICSA	Date: 11-Dec-2018 14:28	Seq: 4858464	ICSA	Units: ug/L
Analyte	**True**	**Found**	**%R**	
Iron	100000	91540	91.5	

ICSAB	Date: 11-Dec-2018 14:30	Seq: 4858465	ICSAB	Units: ug/L
Analyte	**True**	**Found**	**%R**	
Iron	110000	106500	96.8	

ICSA	Date: 11-Dec-2018 23:03	Seq: 4860071	ICSA	Units: ug/L
Analyte	**True**	**Found**	**%R**	
Iron	100000	101000	101	

ICSAB	Date: 11-Dec-2018 23:05	Seq: 4860072	ICSAB	Units: ug/L
Analyte	**True**	**Found**	**%R**	
Iron	110000	107400	97.6	

ALS Houston, US

Date: 04-Jan-19

Form 5A - Matrix Spike/Matrix Spike Duplicate Recovery

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant LHAAP-50
WorkOrder: HS18111440

Date Analyzed: 10-Dec-2018 20:18
Date Extracted: 10-Dec-2018 09:30
Units: ug/L

Matrix Spike: HS18111440-01MS
Client Sample ID: 50WW16-181128

Analysis Method: SW6020

Analyte	Sample Result	MS Result	Spike Amount	% Rec	MSD Result	Spike Amount	% Rec	% Rec Limits	RPD	RPD Limit
Iron	1553	6274	5000	94.4	6289	5000	94.7	75-125	0.246	20
Manganese	38.51	81.37	50.00	85.7	82.02	50.00	87.0	75-125	0.785	20

ALS Houston, US

Date: 04-Jan-19

Form 5A - Matrix Spike/Matrix Spike Duplicate Recovery

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant LHAAP-50
WorkOrder: HS18111440

Date Analyzed: 11-Dec-2018 21:59
Date Extracted: 07-Dec-2018 13:30
Units: ug/L

Matrix Spike: HS18111440-01MS
Client Sample ID: 50WW16-181128

Analysis Method: SW6020

Analyte	Sample Result	MS Result	Spike Amount	% Rec	MSD Result	Spike Amount	% Rec	% Rec Limits	RPD	RPD Limit
Iron	800.0	6291	5000	110	6526	5000	115	80-120	3.67	20

ALS Houston, US

Date: 04-Jan-19

Form 5B - Post Digest Sample Recovery

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant LHAAP-50
WorkOrder: HS18111440

Date Analyzed: 10-Dec-2018 20:20
Date Extracted: 10-Dec-2018 09:30
Units: ug/L

Lab Sample ID: HS18111440-01PDS
Client Sample ID: 50WW16-181128

Analysis Method: SW6020

Analyte	Sample Result	PDS Result	Spike Amount	% Rec	% Rec Limits
Iron	1553	11440	10000	99	75-125
Manganese	38.51	131.4	100	93	75-125

Form 5B - Post Digest Sample Recovery

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant LHAAP-50
WorkOrder: HS18111440

Date Analyzed: 11-Dec-2018 22:01
Date Extracted: 07-Dec-2018 13:30
Units: ug/L

Lab Sample ID: HS18111440-01PDS
Client Sample ID: 50WW16-181128

Analysis Method: SW6020

Analyte	Sample Result	PDS Result	Spike Amount	% Rec	% Rec Limits
Iron	800	11150	10000	104	75-125

ALS Houston, US

Date: 04-Jan-19

Form 7 - Laboratory Control Sample

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant LHAAP-50
WorkOrder: HS18111440

Date Analyzed: 10-Dec-2018 20:03
Date Extracted: 10-Dec-2018 09:30
Units: ug/L

Lab Sample ID: LCS-135382
Analysis Method: SW6020

Analyte	Spike Amount	LCS Result	% Rec	% Rec Limits
Iron	5000	5001	100	80-120
Manganese	50	50.62	101	80-120

ALS Houston, US Date: 04-Jan-19

Form 7 - Laboratory Control Sample

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant LHAAP-50
WorkOrder: HS18111440

Date Analyzed: 11-Dec-2018 21:51
Date Extracted: 07-Dec-2018 13:30
Units: ug/L

Lab Sample ID: LCS-135349 Analysis Method: SW6020

Analyte	Spike Amount	LCS Result	% Rec	% Rec Limits
Iron	5000	5264	105	80-120

ALS Houston, US

Date: 04-Jan-19

Form 8 - ICP Serial Dilutions

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant LHAAP-50
WorkOrder: HS18111440

Date Analyzed: 10-Dec-2018 20:13
Date Extracted: 10-Dec-2018 09:30
Units: ug/L

Lab Sample ID: HS18111440-01SD
Client Sample ID:50WW16-181128

Analysis Method: SW6020

Analyte	Sample Result	C	SD Result	C	RPD	Q
Iron	1553		1642		6	

Form 8 - ICP Serial Dilutions

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant LHAAP-50
WorkOrder: HS18111440

Date Analyzed: 11-Dec-2018 21:55
Date Extracted: 07-Dec-2018 13:30
Units: ug/L

Lab Sample ID: HS18111440-01SD
Client Sample ID:50WW16-181128

Analysis Method: SW6020

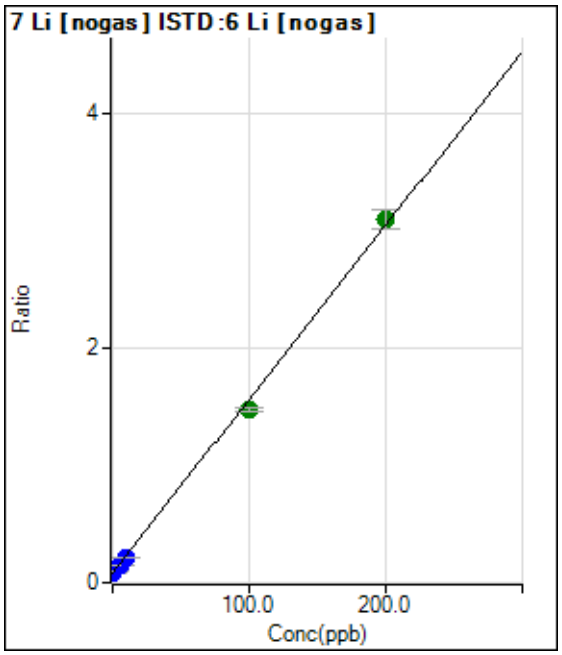
Analyte	Sample Result	C	SD Result	C	RPD	Q
Iron	800		799.9	J	0	

Calibration for 026_ICV.d

Batch Folder: C:\Agilent\ICPMH\1\DATA\121018B.b\
Analysis File: 121018B.batch.bin
DA Date-Time: 2018-12-10 17:46:50
Calibration Title:
Calibration Method: External Calibration
VIS Interpolation Fit:

Level	Standard Data File	Sample Name	Acq. Date-Time
1	019CALB.d	CAL BLK	2018-12-10 17:22:50
2	020CALS.d	2/10/200	2018-12-10 17:24:52
3	021CALS.d	5/25/500	2018-12-10 17:26:55
4	022CALS.d	10/50/1000	2018-12-10 17:28:58
5	023CALS.d	100/500/10K	2018-12-10 17:31:00
6	024CALS.d	200/1000/20K	2018-12-10 17:33:03
7			

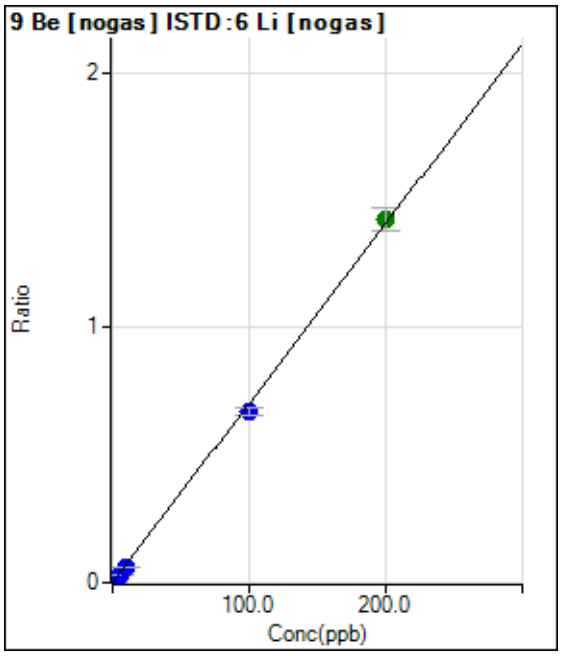
Calibration for 026_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	101659.32	0.0828	P	3.2
2	☐	2.000	1.723	132851.12	0.1083	P	4.3
3	☐	5.000	4.100	175639.00	0.1435	P	1.9
4	☐	10.000	8.613	262909.70	0.2103	P	3.7
5	☐	100.000	93.797	1681555.55	1.4711	A	2.5
6	☐	200.000	203.196	3241400.26	3.0903	A	5.2
7	☐	1.000					

y = 0.0148 * x + 0.0828
R = 0.9994
DL = 0.5437
BEC = 5.593

Weight: <None>
Min Conc: <None>

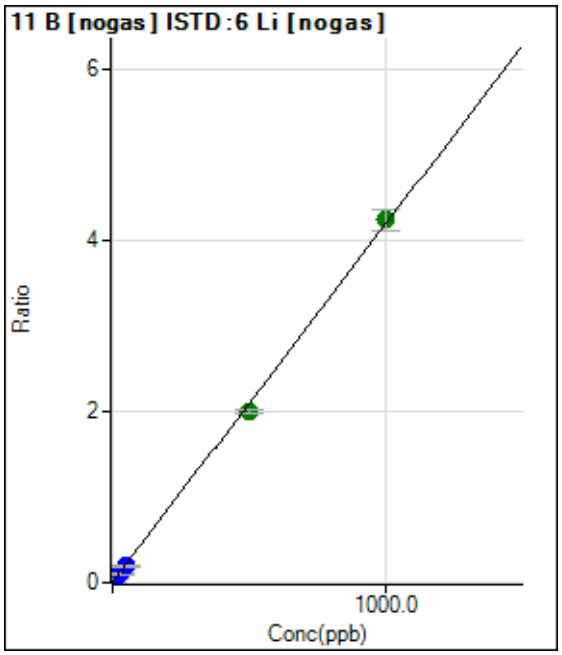


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	36.67	0.0000	P	106.
2	☐	2.000	1.725	14892.62	0.0122	P	8.6
3	☐	5.000	4.346	37420.34	0.0306	P	2.1
4	☐	10.000	8.607	75655.29	0.0605	P	5.2
5	☐	100.000	95.676	768211.11	0.6724	P	4.0
6	☐	200.000	202.251	1490338.94	1.4215	A	6.2
7	☐	1.000					

y = 0.0070 * x + 3.0869E-005
R = 0.9997
DL = 0.01397
BEC = 0.004392

Weight: <None>
Min Conc: <None>

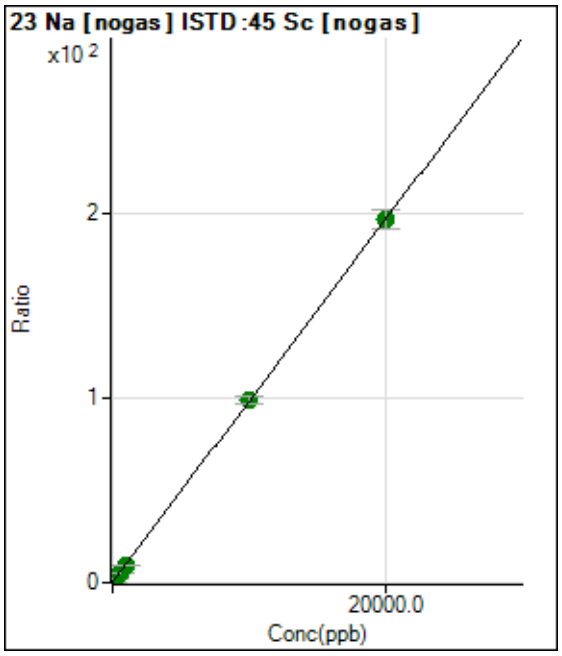
Calibration for 026_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	9259.03	0.0076	P	12.0
2	☐	10.000	8.594	53374.51	0.0435	P	6.0
3	☐	25.000	22.402	123947.25	0.1013	P	3.3
4	☐	50.000	43.944	239318.10	0.1915	P	5.9
5	☐	500.000	475.868	2284042.78	1.9989	A	2.8
6	☐	1000.000	1012.448	4449103.68	4.2443	A	5.9
7	☐	5.000					

y = 0.0042 * x + 0.0076
R = 0.9996
DL = 0.652
BEC = 1.809

Weight: <None>
Min Conc: <None>

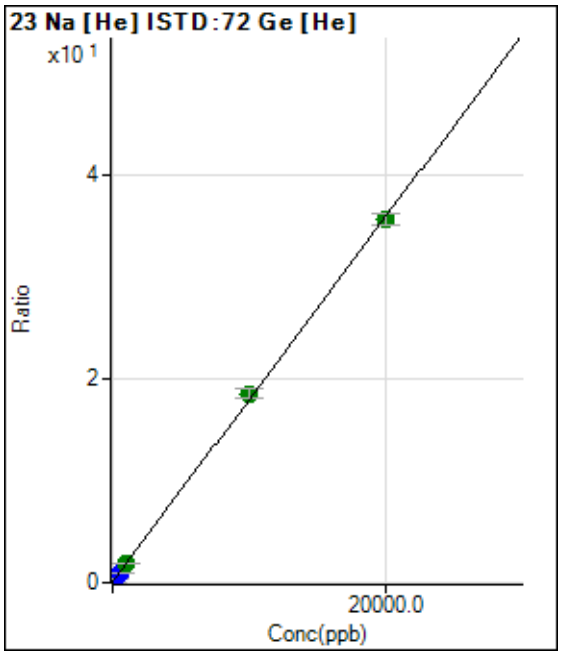


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	496567.70	0.1889	P	4.1
2	☐	200.000	192.936	5429107.28	2.0839	A	1.0
3	☐	500.000	521.172	13049242.22	5.3079	A	1.0
4	☐	1000.000	965.253	25117059.41	9.6696	A	0.7
5	☐	10000.00	10036.953	246379138.8	98.7723	A	4.7
6	☐	20000.00	19982.802	481847077.4	196.461	A	5.2
7	☐	100.000					

y = 0.0098 * x + 0.1889
R = 1.0000
DL = 2.36
BEC = 19.23

Weight: <None>
Min Conc: <None>

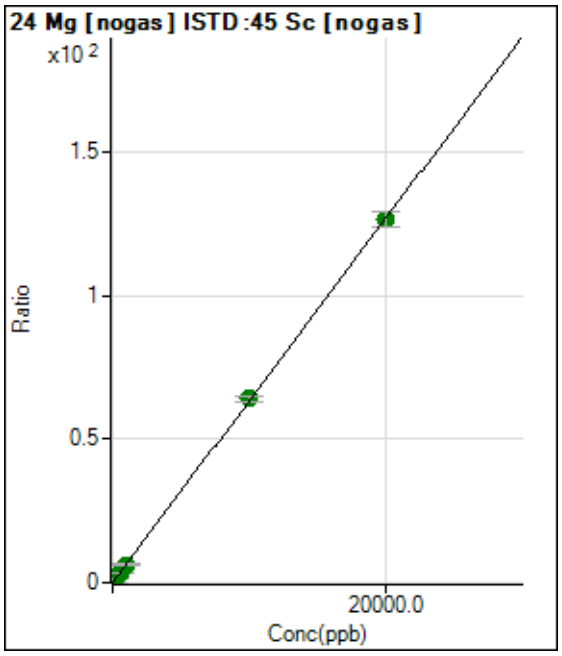
Calibration for 026_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	71384.33	0.0719	P	3.2
2	☐	200.000	200.265	399017.30	0.4305	P	3.2
3	☐	500.000	501.619	892709.28	0.9701	P	2.3
4	☐	1000.000	1004.751	1730789.66	1.8709	A	3.9
5	☐	10000.00	10314.394	16078625.59	18.5402	A	4.8
6	☐	20000.00	19842.522	31690889.53	35.6006	A	3.2
7	☐	100.000					

y = 0.0018 * x + 0.0719
R = 0.9998
DL = 3.812
BEC = 40.16

Weight: <None>
Min Conc: <None>

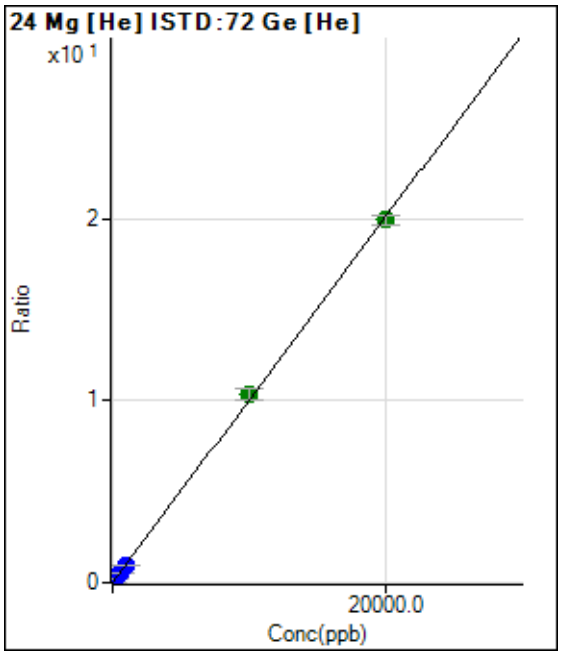


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	5968.63	0.0023	P	5.2
2	☐	200.000	200.623	3317538.29	1.2732	A	2.3
3	☐	500.000	539.539	8403653.84	3.4203	A	3.9
4	☐	1000.000	993.128	16349977.45	6.2938	A	2.3
5	☐	10000.00	10118.078	159932991.0	64.1010	A	3.7
6	☐	20000.00	19940.310	309884790.2	126.325	A	4.1
7	☐	100.000					

y = 0.0063 * x + 0.0023
R = 1.0000
DL = 0.05537
BEC = 0.3582

Weight: <None>
Min Conc: <None>

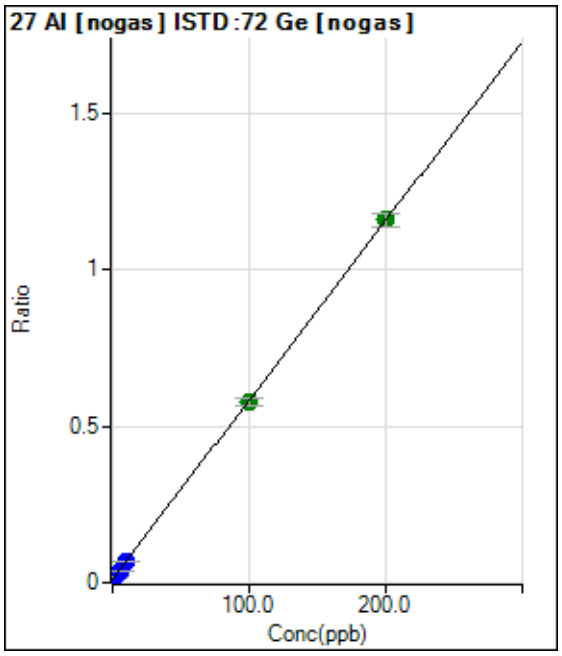
Calibration for 026_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	540.02	0.0005	P	15.1
2	☐	200.000	199.096	185807.38	0.2005	P	4.5
3	☐	500.000	498.507	461122.25	0.5011	P	3.5
4	☐	1000.000	982.466	913345.19	0.9871	P	2.4
5	☐	10000.00	10301.712	8966446.53	10.3451	A	6.7
6	☐	20000.00	19850.067	17745286.40	19.9331	A	2.5
7	☐	100.000					

y = 0.0010 * x + 5.4535E-004
R = 0.9998
DL = 0.2461
BEC = 0.5431

Weight: <None>
Min Conc: <None>

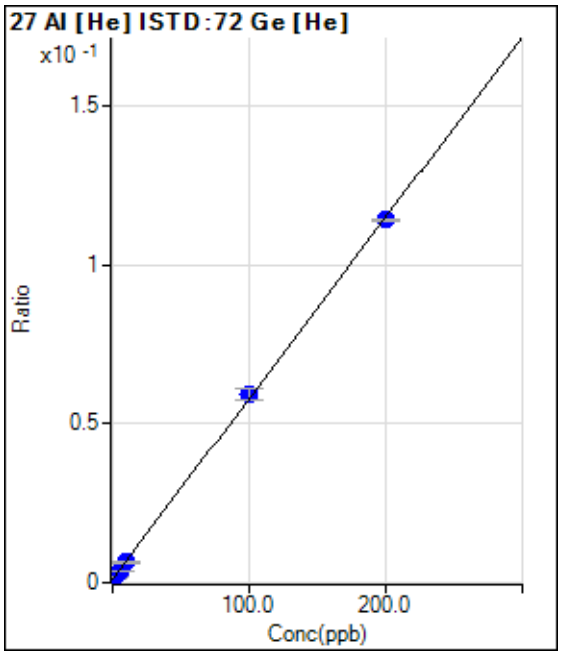


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	38856.78	0.0110	P	2.3
2	☐	2.000	1.542	68910.12	0.0198	P	3.0
3	☐	5.000	4.543	127300.03	0.0370	P	0.5
4	☐	10.000	9.616	227124.10	0.0660	P	1.7
5	☐	100.000	98.883	1950181.12	0.5767	A	3.5
6	☐	200.000	200.594	3782656.30	1.1586	A	3.7
7	☐	1.000					

y = 0.0057 * x + 0.0110
R = 1.0000
DL = 0.1312
BEC = 1.918

Weight: <None>
Min Conc: <None>

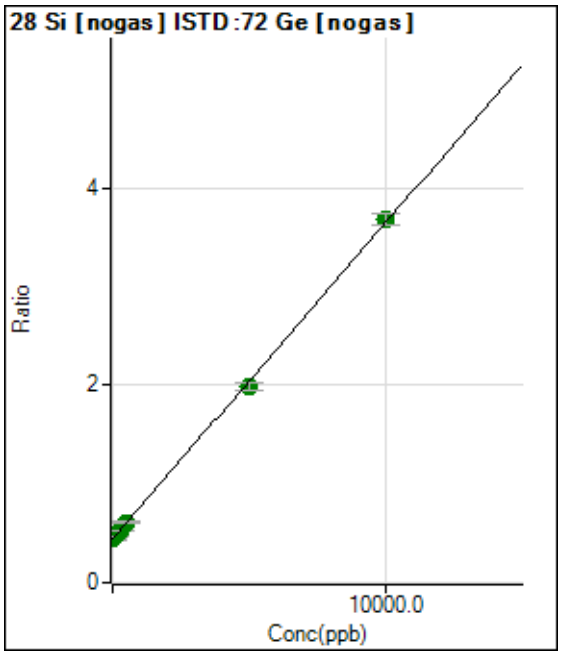
Calibration for 026_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	-0.062	1043.38	0.0011	P	14.6
2	☐	2.000	1.734	1923.47	0.0021	P	5.1
3	☐	5.000	4.570	3390.35	0.0037	P	10.4
4	☐	10.000	9.501	6007.71	0.0065	P	4.7
5	☐	100.000	102.438	51493.98	0.0594	P	6.0
6	☐	200.000	198.819	101712.34	0.1142	P	0.5
7	☐	1.000					

y = 5.6907E-004 * x + 0.0011
R = 0.9999
DL = 0.8089
BEC = 1.913

Weight: <None>
Min Conc: <None>

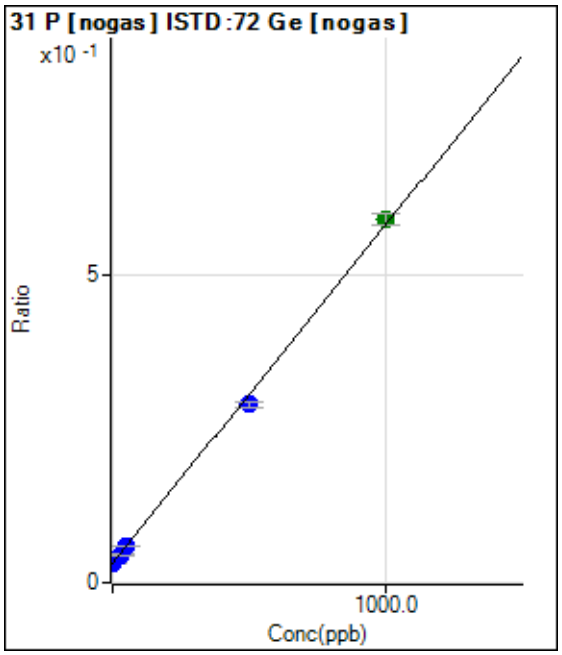


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	1566587.89	0.4426	A	3.6
2	☐	100.000	85.902	1636137.16	0.4701	A	0.4
3	☐	250.000	250.694	1800665.70	0.5229	A	2.1
4	☐	500.000	518.770	2095245.12	0.6087	A	1.6
5	☐	5000.000	4818.958	6715267.81	1.9862	A	4.5
6	☐	10000.00	10089.706	11996350.66	3.6745	A	3.3
7	☐	5.000					

y = 3.2032E-004 * x + 0.4426
R = 0.9998
DL = 151.3
BEC = 1382

Weight: <None>
Min Conc: <None>

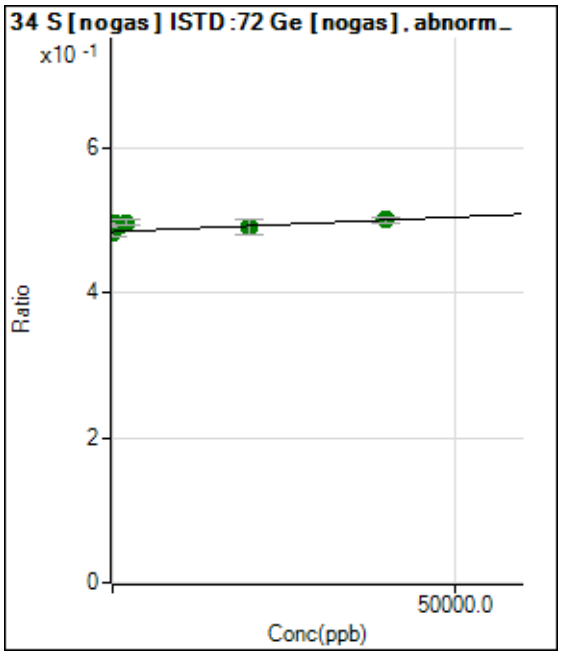
Calibration for 026_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	111301.54	0.0314	P	3.2
2	☐	10.000	9.665	127861.09	0.0367	P	1.8
3	☐	25.000	25.093	155640.26	0.0452	P	1.8
4	☐	50.000	49.357	201331.02	0.0585	P	2.6
5	☐	500.000	469.771	977117.85	0.2890	P	3.3
6	☐	1000.000	1015.148	1920065.34	0.5881	A	3.2
7	☐	5.000					

y = 5.4835E-004 * x + 0.0314
R = 0.9994
DL = 5.538
BEC = 57.33

Weight: <None>
Min Conc: <None>

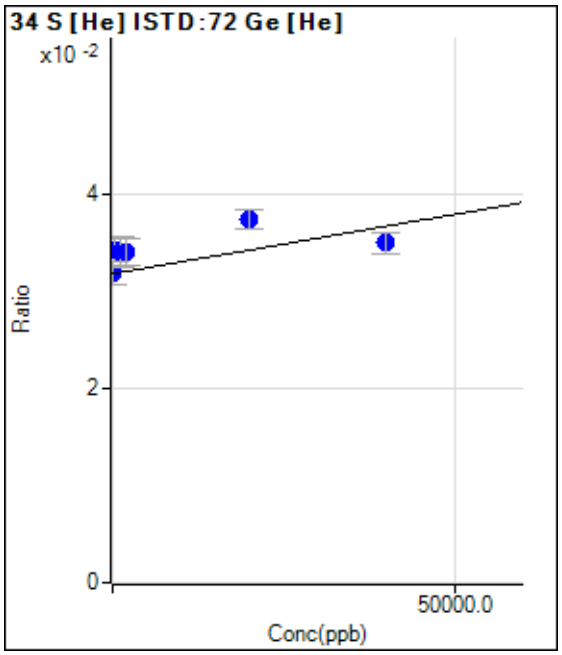


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	1712092.42	0.4835	A	2.5
2	☐	400.000	27229.811	1721374.84	0.4946	A	2.2
3	☐	1000.000	23169.344	1697516.05	0.4929	A	1.1
4	☐	2000.000	31996.747	1708862.34	0.4965	A	1.8
5	☐	20000.00	14926.341	1654810.49	0.4896	A	4.0
6	☐	40000.00	40214.461	1631836.10	0.4998	A	1.4
7	☐	100.000					

y = 4.0647E-007 * x + 0.4835
R = 0.4801
DL = 9.054E+04
BEC = 1.189E+06

Weight: <None>
Min Conc: <None>

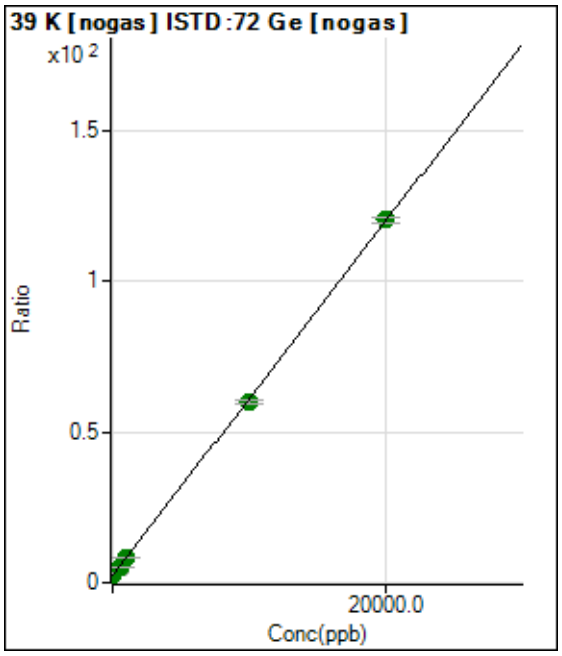
Calibration for 026_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	31530.77	0.0318	P	7.5
2	☐	400.000	20314.488	31765.29	0.0343	P	7.3
3	☐	1000.000	19000.660	31364.42	0.0341	P	9.3
4	☐	2000.000	18660.291	31497.42	0.0341	P	8.2
5	☐	20000.00	45364.044	32366.64	0.0373	P	5.5
6	☐	40000.00	25835.802	31099.32	0.0349	P	6.2
7	☐	100.000					

y = 1.2207E-007 * x + 0.0318
R = 0.5366
DL = 5.863E+04
BEC = 2.604E+05

Weight: <None>
Min Conc: <None>

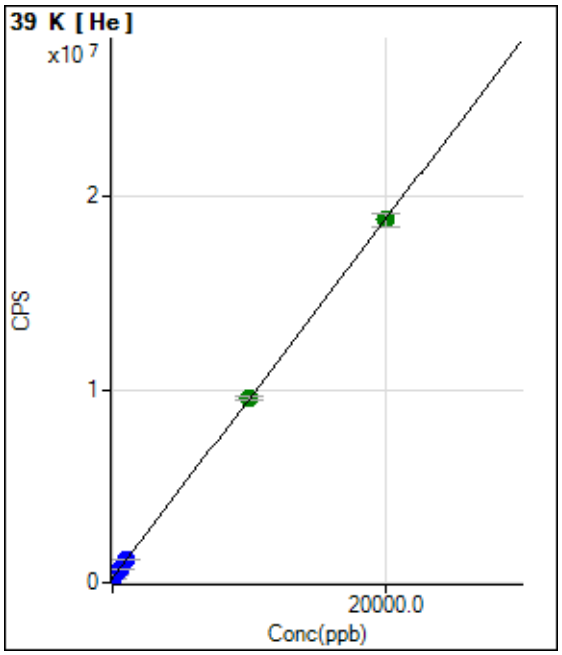


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	8289091.85	2.3411	A	1.7
2	☐	200.000	201.388	12268207.83	3.5247	A	1.7
3	☐	500.000	501.091	18204673.32	5.2862	A	2.2
4	☐	1000.000	1004.186	28374235.01	8.2431	A	1.2
5	☐	10000.00	9823.483	203139275.3	60.0781	A	1.4
6	☐	20000.00	20088.008	393096833.7	120.407	A	1.5
7	☐	100.000					

y = 0.0059 * x + 2.3411
R = 0.9999
DL = 20.67
BEC = 398.3

Weight: <None>
Min Conc: <None>

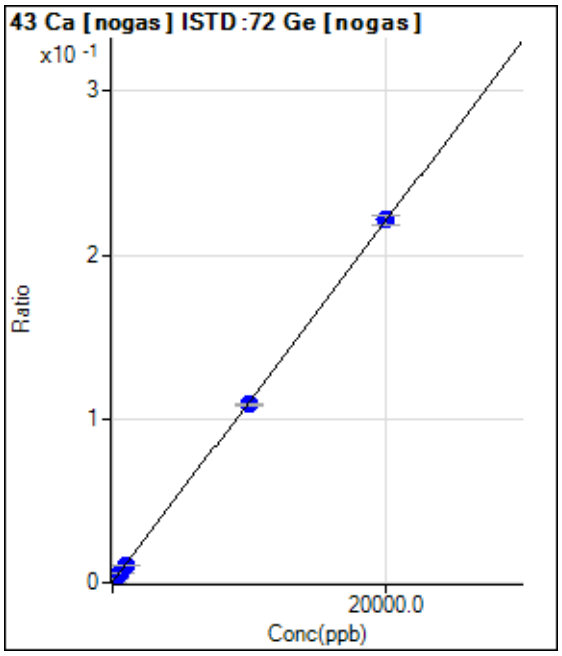
Calibration for 026_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	225828.67		P	1.4
2	☐	200.000	207.946	419262.62		P	0.7
3	☐	500.000	534.074	722630.51		P	1.8
4	☐	1000.000	1053.850	1206131.94		P	1.0
5	☐	10000.00	10051.724	9576055.48		A	1.6
6	☐	20000.00	19970.514	18802625.14		A	3.5
7	☐	100.000					

y = 930.2112 * x + 225828.6667
R = 1.0000
DL = 10.22
BEC = 242.8

Weight: <None>
Min Conc: <None>

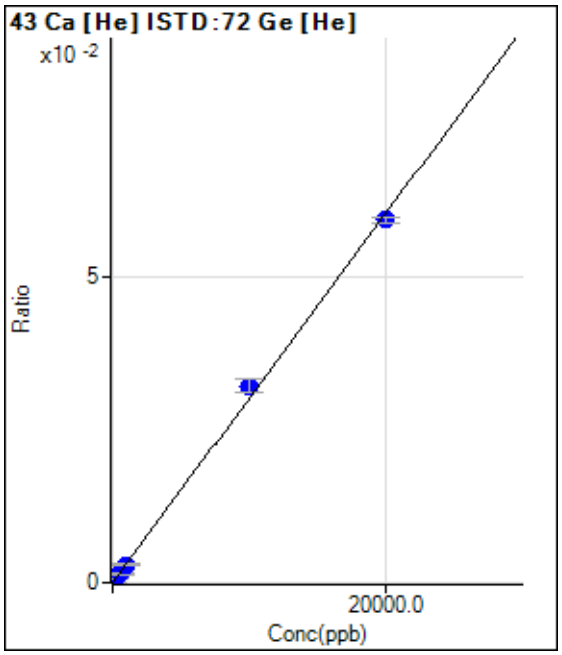


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	930.04	0.0003	P	20.8
2	☐	200.000	197.546	8492.10	0.0024	P	2.6
3	☐	500.000	479.600	19103.43	0.0055	P	2.6
4	☐	1000.000	974.876	37879.09	0.0110	P	1.9
5	☐	10000.00	9840.960	367566.24	0.1087	P	1.3
6	☐	20000.00	20081.311	723176.32	0.2215	P	2.7
7	☐	100.000					

y = 1.1018E-005 * x + 2.6329E-004
R = 1.0000
DL = 14.9
BEC = 23.9

Weight: <None>
Min Conc: <None>

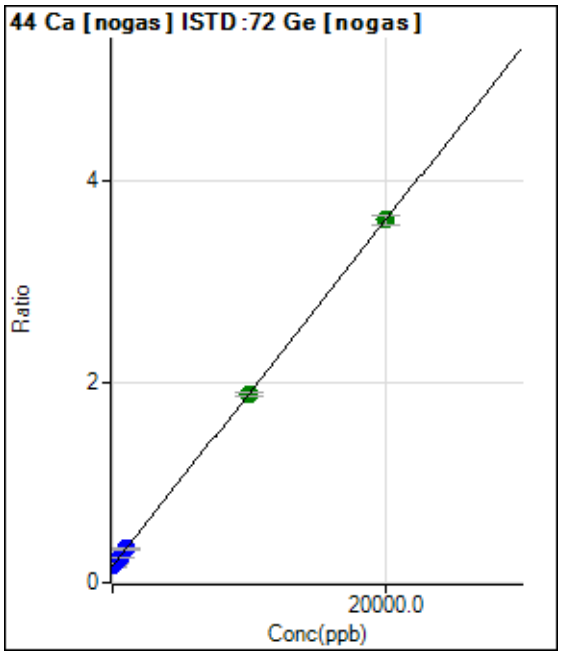
Calibration for 026_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	10.00	0.0000	P	99.3
2	☐	200.000	222.500	630.02	0.0007	P	9.6
3	☐	500.000	468.623	1306.73	0.0014	P	8.6
4	☐	1000.000	964.898	2693.58	0.0029	P	8.6
5	☐	10000.00	10670.145	27834.44	0.0321	P	6.8
6	☐	20000.00	19667.242	52694.69	0.0592	P	1.6
7	☐	100.000					

y = 3.0089E-006 * x + 1.0202E-005
R = 0.9992
DL = 10.1
BEC = 3.391

Weight: <None>
Min Conc: <None>

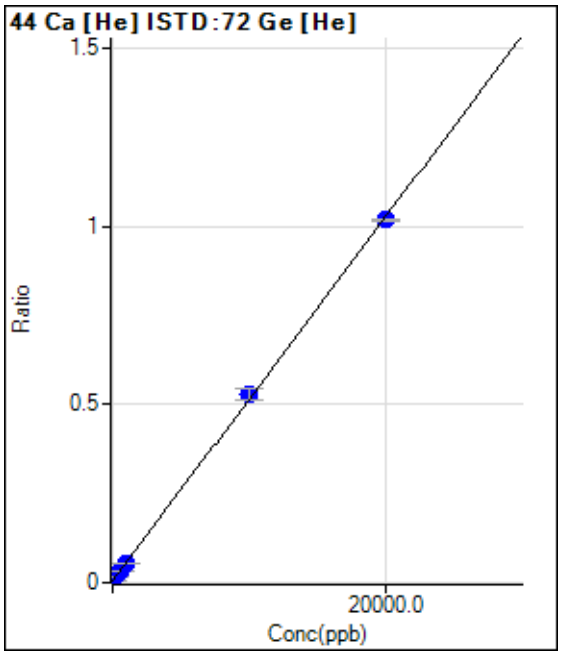


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	580985.60	0.1641	P	3.0
2	☐	200.000	208.291	696122.39	0.2000	P	0.6
3	☐	500.000	525.330	876898.19	0.2546	P	0.7
4	☐	1000.000	1015.833	1167137.07	0.3391	P	2.4
5	☐	10000.00	9959.524	6358463.24	1.8802	A	1.4
6	☐	20000.00	20018.730	11798086.08	3.6135	A	2.6
7	☐	100.000					

y = 1.7231E-004 * x + 0.1641
R = 1.0000
DL = 86.4
BEC = 952.5

Weight: <None>
Min Conc: <None>

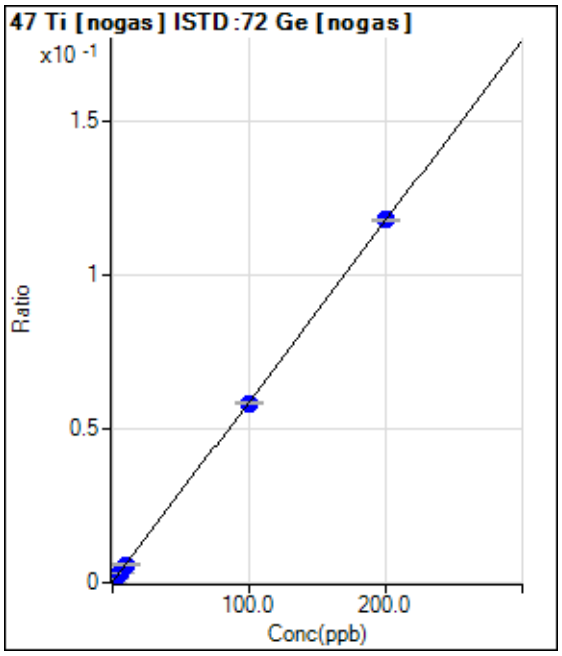
Calibration for 026_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	4433.93	0.0045	P	4.1
2	☐	200.000	199.993	13618.45	0.0147	P	3.4
3	☐	500.000	512.364	28218.21	0.0307	P	4.6
4	☐	1000.000	1006.101	51741.70	0.0559	P	1.5
5	☐	10000.00	10306.201	460785.89	0.5315	P	6.2
6	☐	20000.00	19846.285	907691.37	1.0194	P	0.6
7	☐	100.000					

y = 5.1141E-005 * x + 0.0045
R = 0.9998
DL = 10.69
BEC = 87.27

Weight: <None>
Min Conc: <None>

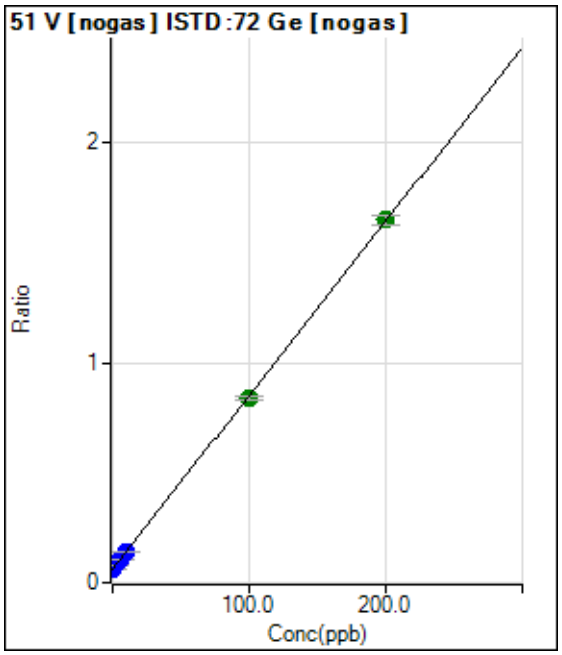


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	473.35	0.0001	P	12.3
2	☐	2.000	1.904	4360.57	0.0013	P	4.0
3	☐	5.000	4.845	10266.33	0.0030	P	2.9
4	☐	10.000	9.701	20074.43	0.0058	P	4.2
5	☐	100.000	99.002	197202.13	0.0583	P	1.4
6	☐	200.000	200.519	385199.20	0.1180	P	0.6
7	☐	1.000					

y = 5.8771E-004 * x + 1.3361E-004
R = 1.0000
DL = 0.08392
BEC = 0.2273

Weight: <None>
Min Conc: <None>

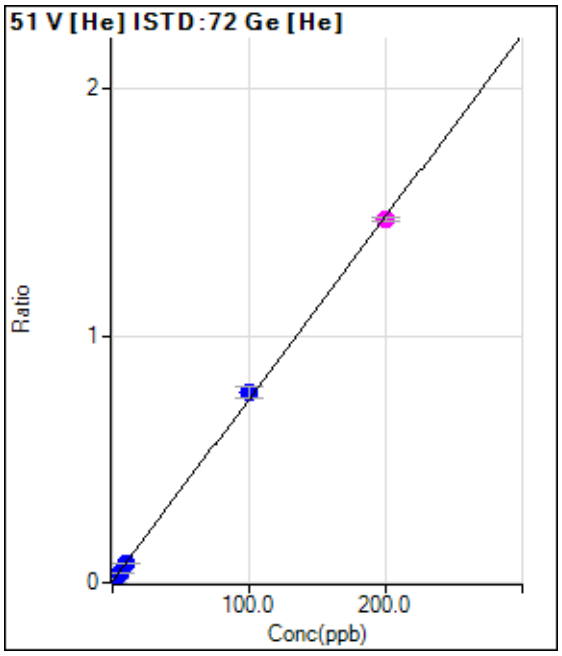
Calibration for 026_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	216785.89	0.0612	P	4.4
2	☐	2.000	2.058	269703.40	0.0775	P	5.9
3	☐	5.000	5.283	354652.58	0.1030	P	1.7
4	☐	10.000	9.805	477473.47	0.1387	P	2.2
5	☐	100.000	98.235	2832910.80	0.8378	A	1.4
6	☐	200.000	200.885	5384219.13	1.6492	A	2.3
7	☐	1.000					

y = 0.0079 * x + 0.0612
R = 0.9999
DL = 1.029
BEC = 7.744

Weight: <None>
Min Conc: <None>

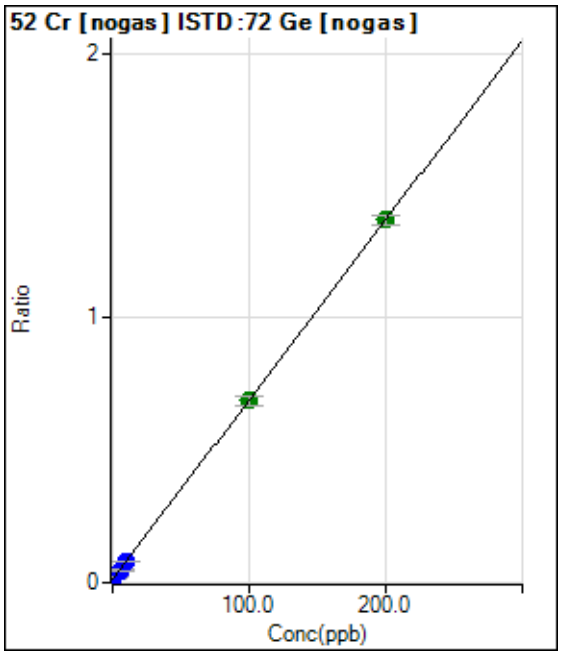


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	-0.367	3338.97	0.0034	P	3.6
2	☐	2.000	1.607	16614.76	0.0179	P	2.3
3	☐	5.000	4.554	36498.97	0.0397	P	2.9
4	☐	10.000	9.344	69397.11	0.0750	P	2.3
5	☐	100.000	103.627	668253.94	0.7706	P	5.3
6	☐	200.000	198.234	1307510.79	1.4685	M	1.0
7	☐	1.000					

y = 0.0074 * x + 0.0061
R = 0.9997
DL = 0.04912
BEC = 0.8227

Weight: <None>
Min Conc: <None>

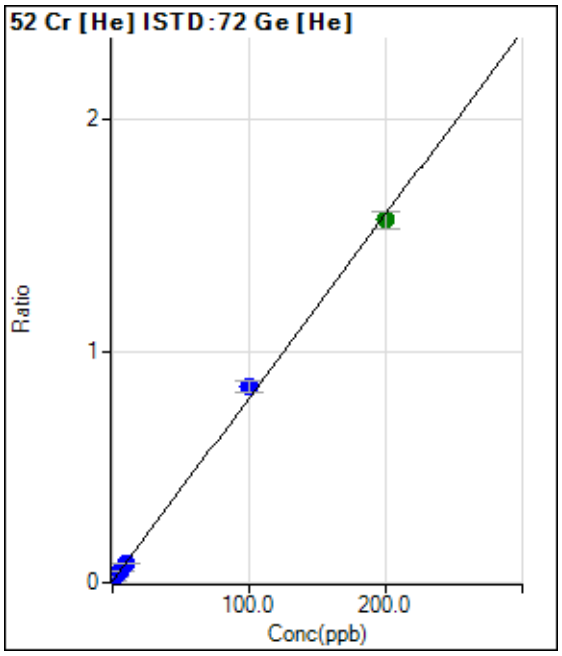
Calibration for 026_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	41864.07	0.0118	P	3.7
2	☐	2.000	2.005	88517.22	0.0254	P	2.2
3	☐	5.000	5.163	161392.53	0.0469	P	4.0
4	☐	10.000	10.122	277056.74	0.0805	P	2.3
5	☐	100.000	99.696	2326480.90	0.6883	A	5.0
6	☐	200.000	200.142	4472257.23	1.3699	A	2.9
7	☐	1.000					

y = 0.0068 * x + 0.0118
R = 1.0000
DL = 0.1918
BEC = 1.743

Weight: <None>
Min Conc: <None>

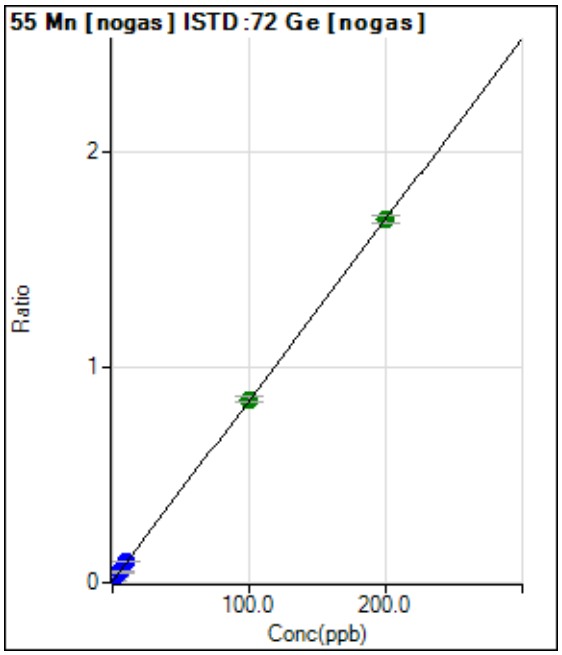


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	6124.45	0.0062	P	3.2
2	☐	2.000	2.080	20985.45	0.0226	P	0.6
3	☐	5.000	5.255	43952.53	0.0478	P	3.6
4	☐	10.000	10.042	79272.94	0.0857	P	1.8
5	☐	100.000	105.945	732662.25	0.8450	P	5.7
6	☐	200.000	197.018	1393826.33	1.5660	A	4.5
7	☐	1.000					

y = 0.0079 * x + 0.0062
R = 0.9994
DL = 0.07577
BEC = 0.7793

Weight: <None>
Min Conc: <None>

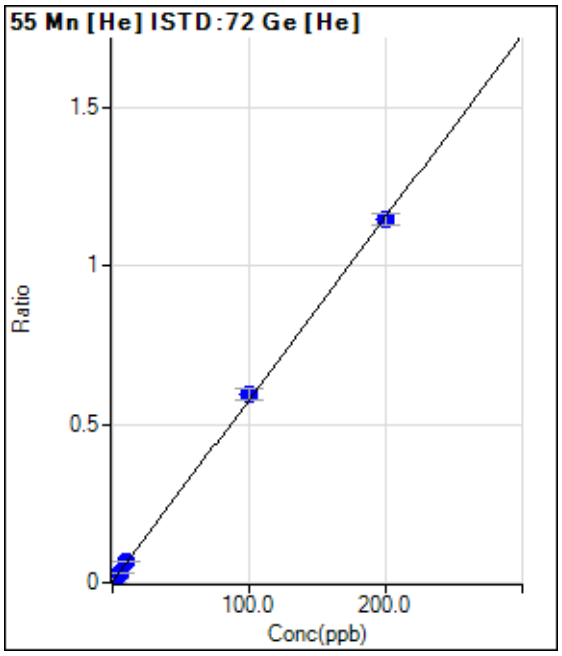
Calibration for 026_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	24106.02	0.0068	P	4.1
2	☐	2.000	1.951	80626.06	0.0232	P	2.4
3	☐	5.000	5.067	169729.11	0.0493	P	2.2
4	☐	10.000	10.899	337912.31	0.0982	P	1.8
5	☐	100.000	100.476	2870602.15	0.8492	A	3.1
6	☐	200.000	199.716	5488765.13	1.6812	A	2.0
7	☐	1.000					

y = 0.0084 * x + 0.0068
R = 1.0000
DL = 0.09978
BEC = 0.8115

Weight: <None>
Min Conc: <None>

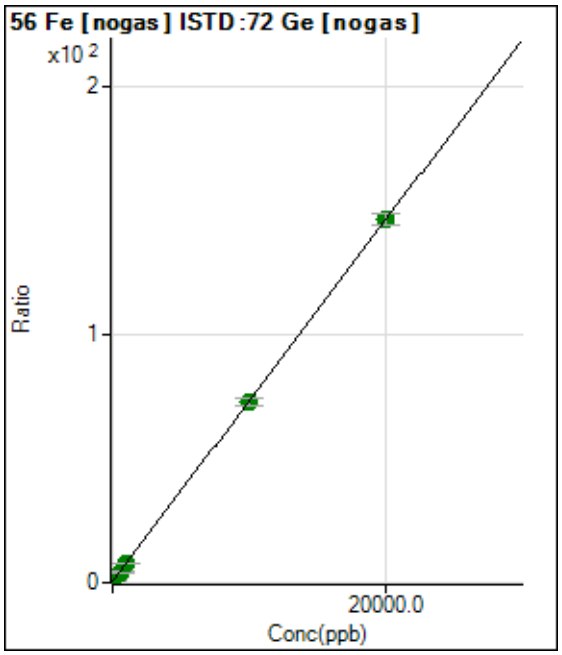


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	2873.59	0.0029	P	7.6
2	☐	2.000	2.027	13481.85	0.0145	P	4.5
3	☐	5.000	5.093	29577.29	0.0322	P	6.2
4	☐	10.000	10.744	59817.49	0.0646	P	1.5
5	☐	100.000	102.911	515346.02	0.5943	P	5.2
6	☐	200.000	198.505	1018107.15	1.1437	P	3.0
7	☐	1.000					

y = 0.0057 * x + 0.0029
R = 0.9998
DL = 0.1155
BEC = 0.5037

Weight: <None>
Min Conc: <None>

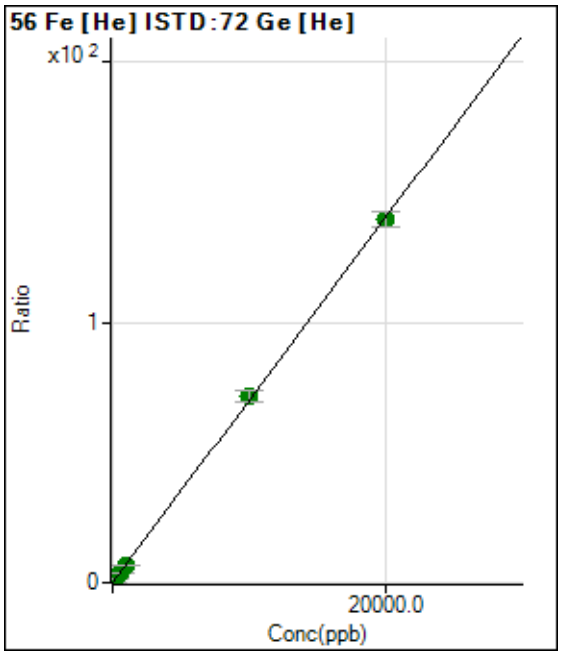
Calibration for 026_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	2248066.46	0.6349	A	1.6
2	☐	200.000	192.123	7072808.49	2.0321	A	2.7
3	☐	500.000	492.005	14507447.20	4.2130	A	2.7
4	☐	1000.000	967.253	26396951.63	7.6692	A	1.3
5	☐	10000.00	9948.221	246666080.5	72.9832	A	4.7
6	☐	20000.00	20027.806	477588844.0	146.286	A	3.3
7	☐	100.000					

y = 0.0073 * x + 0.6349
R = 1.0000
DL = 4.136
BEC = 87.3

Weight: <None>
Min Conc: <None>

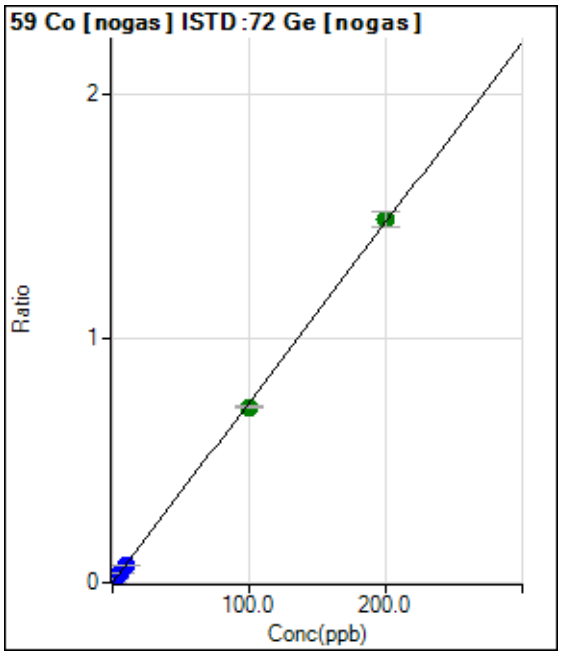


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	15286.54	0.0154	P	2.8
2	☐	200.000	204.544	1344255.50	1.4503	A	4.7
3	☐	500.000	504.894	3274561.93	3.5573	A	1.8
4	☐	1000.000	970.359	6314221.16	6.8225	A	0.9
5	☐	10000.00	10239.315	62281095.74	71.8450	A	6.3
6	☐	20000.00	19881.657	124153878.1	139.486	A	4.2
7	☐	100.000					

y = 0.0070 * x + 0.0154
R = 0.9999
DL = 0.1842
BEC = 2.194

Weight: <None>
Min Conc: <None>

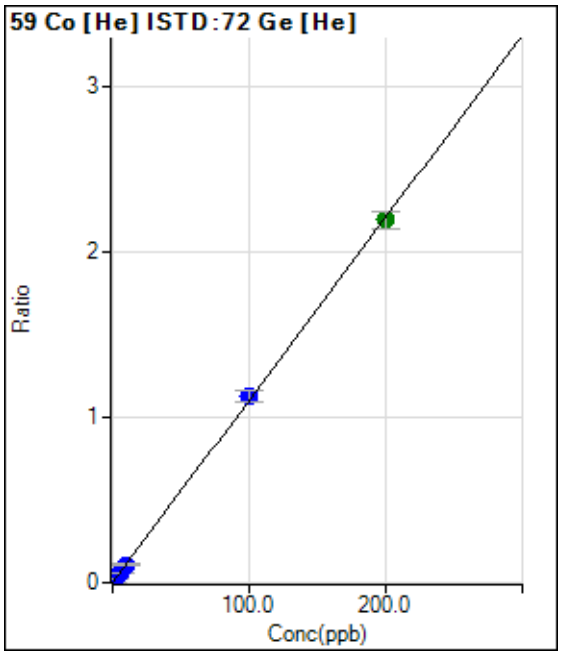
Calibration for 026_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	1433.41	0.0004	P	3.3
2	☐	2.000	1.940	51194.92	0.0147	P	1.4
3	☐	5.000	4.873	125136.50	0.0363	P	2.1
4	☐	10.000	9.792	249898.70	0.0726	P	1.2
5	☐	100.000	97.264	2427126.48	0.7176	A	0.9
6	☐	200.000	201.382	4848474.09	1.4853	A	4.1
7	☐	1.000					

y = 0.0074 * x + 4.0489E-004
R = 0.9999
DL = 0.00543
BEC = 0.05491

Weight: <None>
Min Conc: <None>

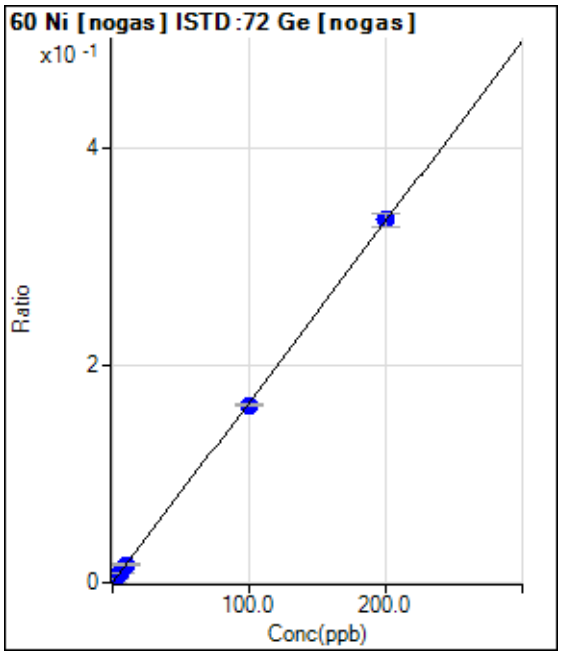


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	423.35	0.0004	P	26.3
2	☐	2.000	1.999	20798.67	0.0224	P	1.7
3	☐	5.000	5.011	51178.19	0.0556	P	5.0
4	☐	10.000	9.840	100661.12	0.1088	P	3.2
5	☐	100.000	102.431	978259.91	1.1287	P	6.7
6	☐	200.000	198.792	1949276.79	2.1900	A	4.9
7	☐	1.000					

y = 0.0110 * x + 4.2484E-004
R = 0.9999
DL = 0.03044
BEC = 0.03857

Weight: <None>
Min Conc: <None>

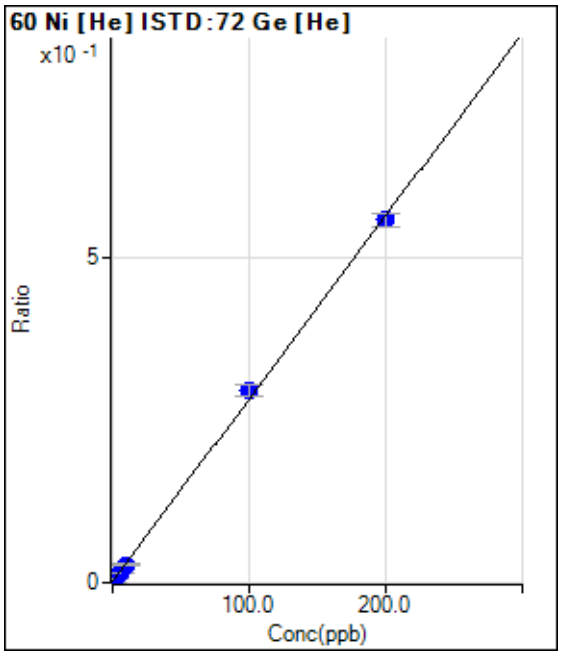
Calibration for 026_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.249	596.69	0.0002	P	19.0
2	☐	2.000	2.184	11793.95	0.0034	P	1.5
3	☐	5.000	5.304	29547.38	0.0086	P	0.4
4	☐	10.000	10.212	57633.87	0.0167	P	2.6
5	☐	100.000	98.142	551339.73	0.1630	P	1.1
6	☐	200.000	200.909	1090401.86	0.3340	P	4.0
7	☐	1.000					

y = 0.0017 * x - 2.4547E-004
R = 0.9999
DL = 0.05799
BEC = -0.1475

Weight: <None>
Min Conc: <None>

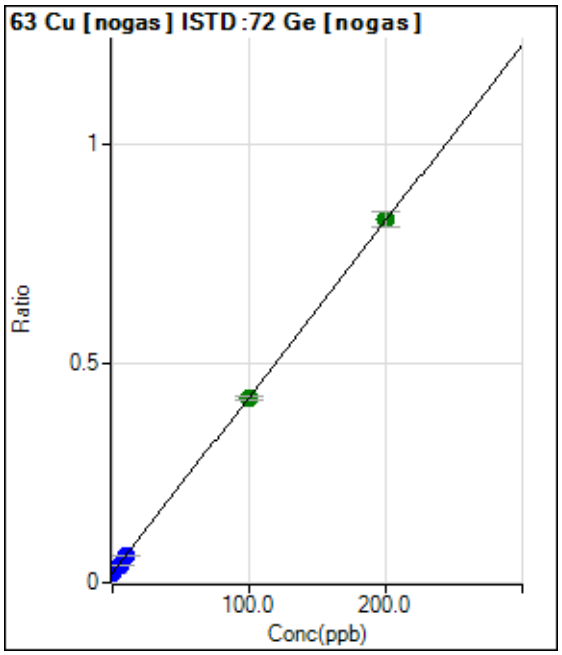


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	-0.498	193.34	0.0002	P	17.8
2	☐	2.000	1.518	5424.22	0.0059	P	3.9
3	☐	5.000	4.423	12884.74	0.0140	P	8.4
4	☐	10.000	9.369	25798.44	0.0279	P	2.4
5	☐	100.000	104.273	255072.33	0.2942	P	5.8
6	☐	200.000	197.914	495773.16	0.5570	P	3.5
7	☐	1.000					

y = 0.0028 * x + 0.0016
R = 0.9996
DL = 0.0369
BEC = 0.5671

Weight: <None>
Min Conc: <None>

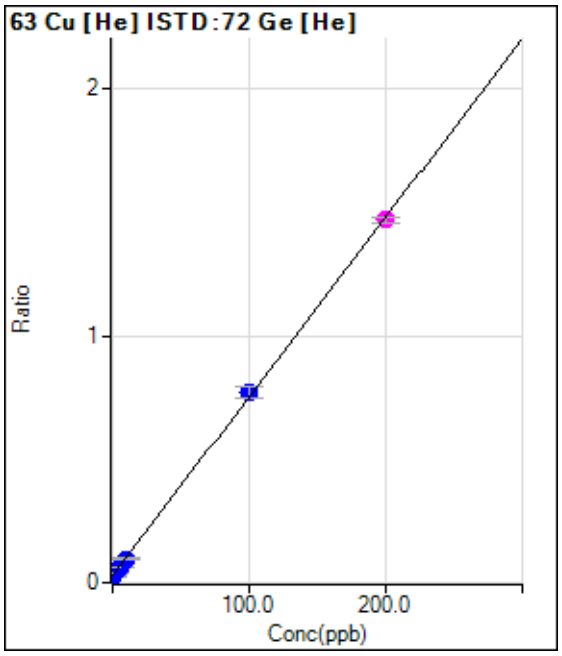
Calibration for 026_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	79347.30	0.0224	P	1.1
2	☐	2.000	1.695	101634.85	0.0292	P	2.7
3	☐	5.000	4.606	140755.62	0.0409	P	1.2
4	☐	10.000	9.672	210597.54	0.0612	P	1.3
5	☐	100.000	98.846	1415687.38	0.4187	A	2.1
6	☐	200.000	200.606	2698816.63	0.8267	A	4.3
7	☐	1.000					

y = 0.0040 * x + 0.0224
R = 1.0000
DL = 0.1865
BEC = 5.588

Weight: <None>
Min Conc: <None>

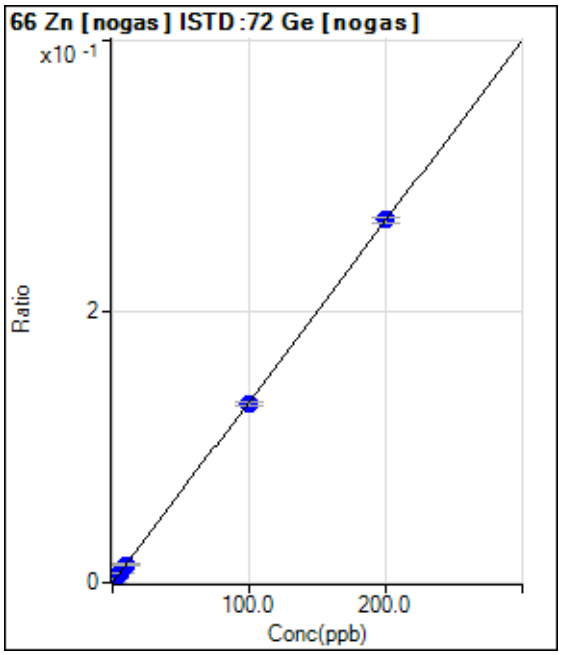


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	-0.181	27070.20	0.0273	P	4.4
2	☐	2.000	1.744	38226.46	0.0412	P	3.5
3	☐	5.000	4.620	57158.58	0.0621	P	3.1
4	☐	10.000	9.462	89962.38	0.0973	P	5.1
5	☐	100.000	102.632	670772.77	0.7736	P	5.7
6	☐	200.000	198.723	1309729.43	1.4711	M	1.9
7	☐	1.000					

y = 0.0073 * x + 0.0286
R = 0.9999
DL = 0.4959
BEC = 3.938

Weight: <None>
Min Conc: <None>

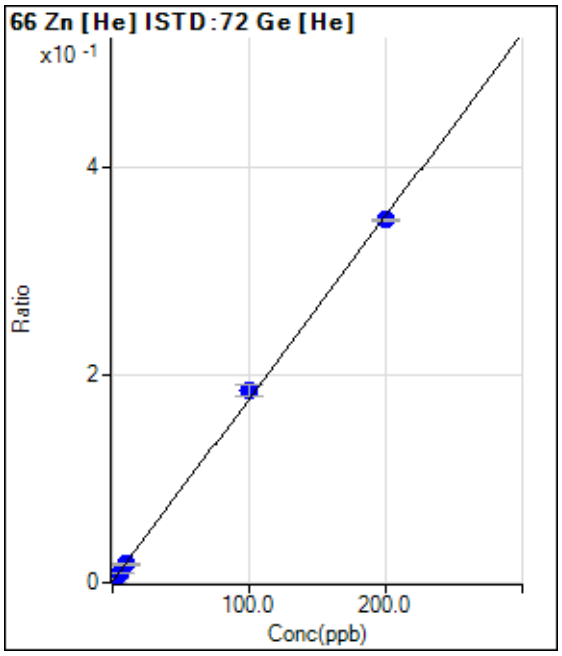
Calibration for 026_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.186	980.04	0.0003	P	2.6
2	☐	2.000	2.153	10089.61	0.0029	P	1.1
3	☐	5.000	5.208	24006.12	0.0070	P	2.7
4	☐	10.000	10.072	46312.18	0.0135	P	1.1
5	☐	100.000	98.781	445333.93	0.1317	P	1.7
6	☐	200.000	200.599	873086.21	0.2674	P	1.4
7	☐	1.000					

y = 0.0013 * x + 2.8348E-005
R = 1.0000
DL = 0.01614
BEC = 0.02127

Weight: <None>
Min Conc: <None>

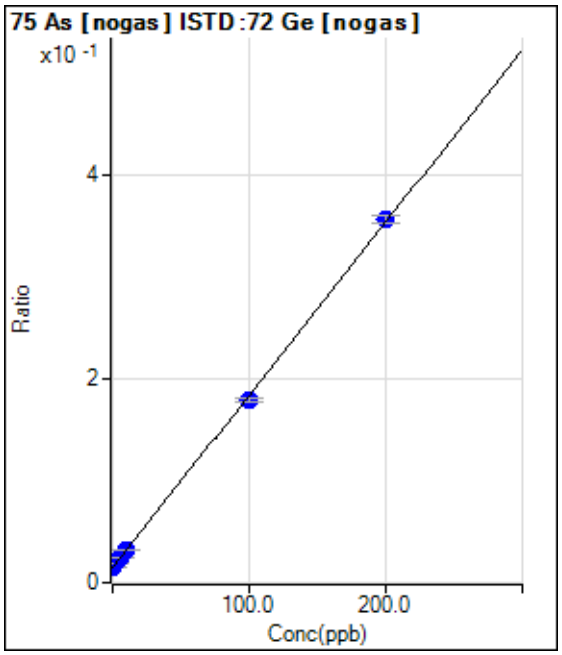


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	-0.486	366.67	0.0004	P	16.4
2	☐	2.000	1.469	3537.08	0.0038	P	4.9
3	☐	5.000	4.490	8408.71	0.0091	P	7.6
4	☐	10.000	9.359	16400.90	0.0177	P	2.1
5	☐	100.000	104.238	160399.04	0.1850	P	5.9
6	☐	200.000	197.931	311834.25	0.3502	P	0.7
7	☐	1.000					

y = 0.0018 * x + 0.0012
R = 0.9996
DL = 0.1026
BEC = 0.6953

Weight: <None>
Min Conc: <None>

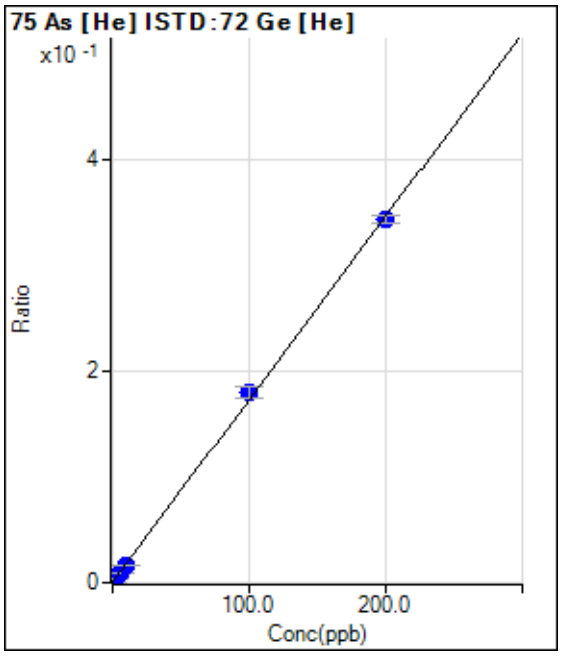
Calibration for 026_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.279	53472.21	0.0151	P	2.2
2	☐	2.000	2.227	64022.35	0.0184	P	1.3
3	☐	5.000	5.524	82536.15	0.0240	P	2.3
4	☐	10.000	10.558	111783.07	0.0325	P	1.3
5	☐	100.000	96.910	603316.46	0.1784	P	1.7
6	☐	200.000	201.501	1159609.33	0.3552	P	2.2
7	☐	1.000					

y = 0.0017 * x + 0.0146
R = 0.9998
DL = 0.5858
BEC = 8.657

Weight: <None>
Min Conc: <None>

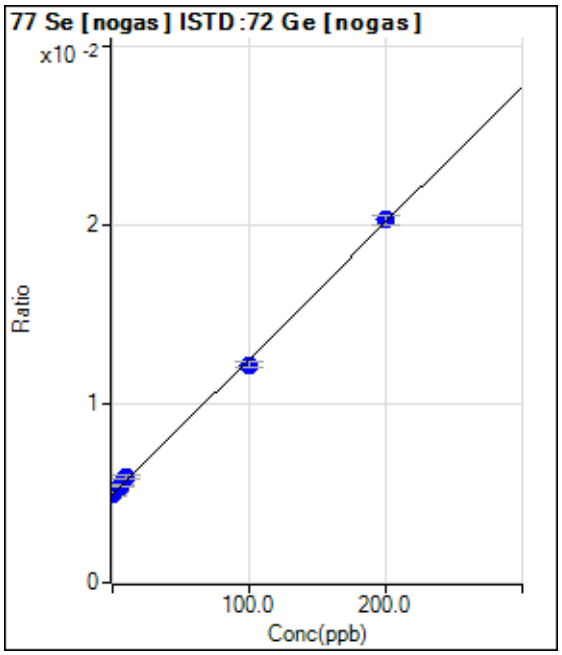


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	346.67	0.0003	P	11.4
2	☐	2.000	2.017	3559.26	0.0038	P	0.4
3	☐	5.000	4.956	8212.99	0.0089	P	2.7
4	☐	10.000	9.446	15446.57	0.0167	P	2.8
5	☐	100.000	103.622	155774.10	0.1797	P	5.7
6	☐	200.000	198.218	305661.30	0.3433	P	2.1
7	☐	1.000					

y = 0.0017 * x + 3.4917E-004
R = 0.9998
DL = 0.06872
BEC = 0.2018

Weight: <None>
Min Conc: <None>

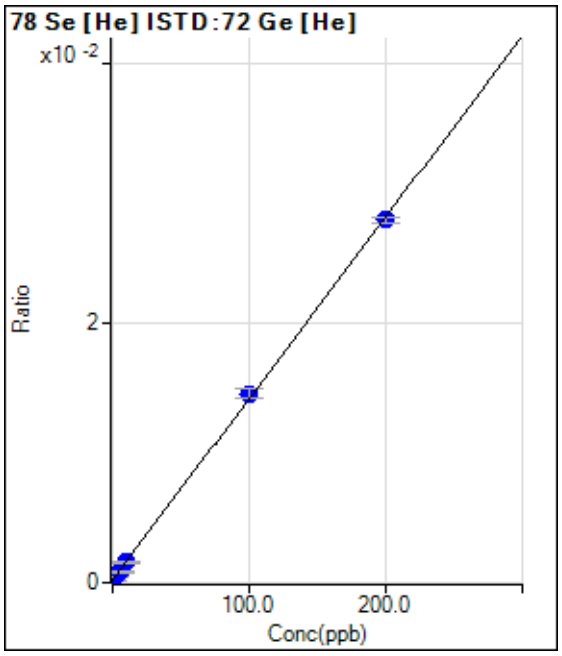
Calibration for 026_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	17428.70	0.0049	P	1.5
2	☐	2.000	3.225	17985.86	0.0052	P	3.5
3	☐	5.000	6.638	18693.12	0.0054	P	1.9
4	☐	10.000	13.012	20354.97	0.0059	P	3.0
5	☐	100.000	95.677	41310.46	0.0122	P	2.1
6	☐	200.000	201.958	66343.92	0.0203	P	2.9
7	☐	1.000					

y = 7.6254E-005 * x + 0.0049
R = 0.9995
DL = 2.966
BEC = 64.55

Weight: <None>
Min Conc: <None>

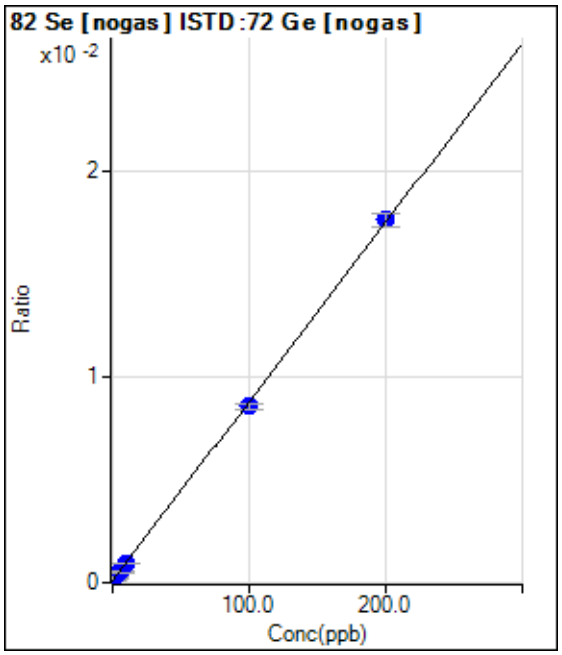


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	-0.260	174.67	0.0002	P	13.6
2	☐	2.000	1.766	426.01	0.0005	P	3.0
3	☐	5.000	4.384	760.02	0.0008	P	3.0
4	☐	10.000	9.615	1440.06	0.0016	P	5.4
5	☐	100.000	102.917	12657.07	0.0146	P	5.7
6	☐	200.000	198.578	24908.32	0.0280	P	1.2
7	☐	1.000					

y = 1.3978E-004 * x + 2.1275E-004
R = 0.9998
DL = 0.5135
BEC = 1.522

Weight: <None>
Min Conc: <None>

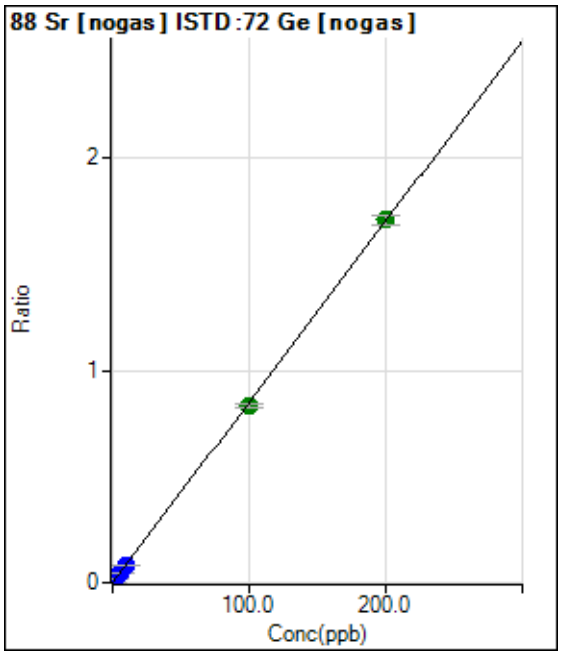
Calibration for 026_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	370.01	0.0001	P	6.7
2	☐	2.000	1.532	826.70	0.0002	P	5.2
3	☐	5.000	4.849	1810.12	0.0005	P	7.0
4	☐	10.000	9.303	3140.32	0.0009	P	3.8
5	☐	100.000	97.114	28880.24	0.0085	P	4.2
6	☐	200.000	201.486	57474.71	0.0176	P	3.4
7	☐	1.000					

y = 8.6861E-005 * x + 1.0442E-004
R = 0.9999
DL = 0.2413
BEC = 1.202

Weight: <None>
Min Conc: <None>

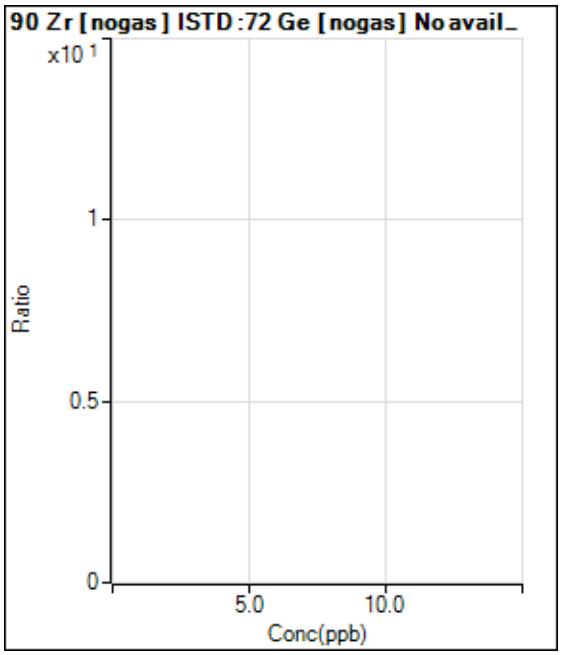


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	963.38	0.0003	P	12.8
2	☐	2.000	1.973	59318.52	0.0170	P	3.1
3	☐	5.000	4.873	143554.79	0.0417	P	3.7
4	☐	10.000	9.930	291422.84	0.0847	P	1.9
5	☐	100.000	98.296	2826180.79	0.8357	A	2.0
6	☐	200.000	200.859	5575103.46	1.7075	A	2.4
7	☐	1.000					

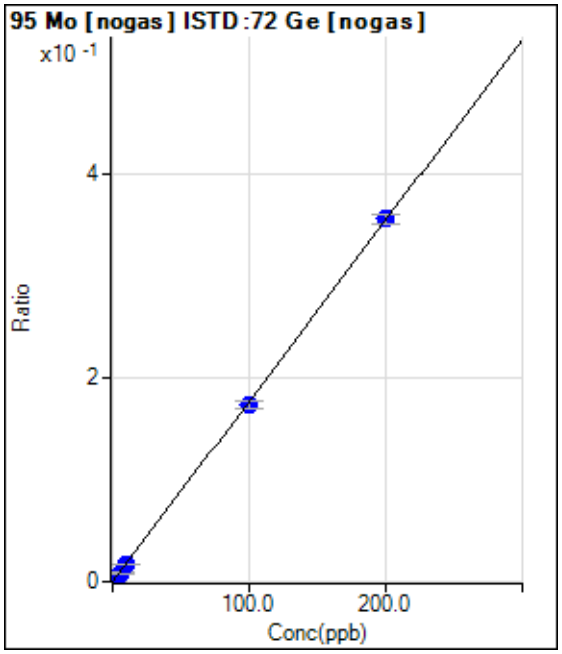
y = 0.0085 * x + 2.7157E-004
R = 0.9999
DL = 0.01228
BEC = 0.03195

Weight: <None>
Min Conc: <None>

Calibration for 026_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000					
2	☐	2.000					
3	☐	5.000					
4	☐	10.000					
5	☐	100.000					
6	☐	200.000					
7	☐	1.000					

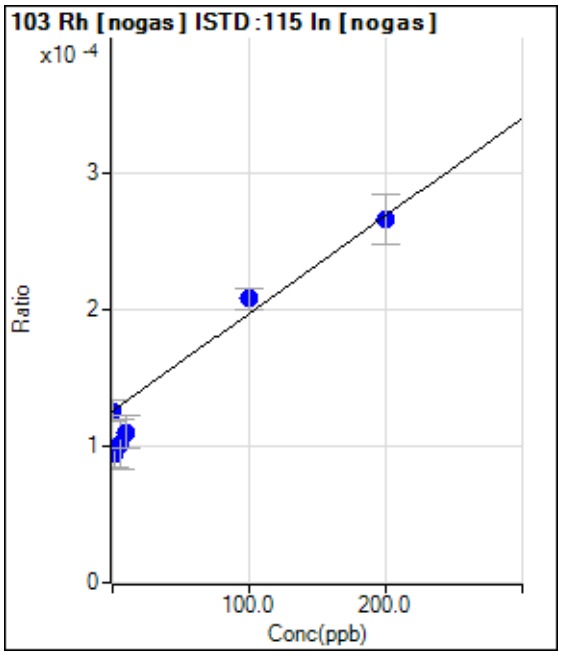


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	310.01	0.0001	P	21.2
2	☐	2.000	1.791	11343.77	0.0033	P	1.5
3	☐	5.000	4.734	29164.11	0.0085	P	3.2
4	☐	10.000	9.682	59308.62	0.0172	P	1.0
5	☐	100.000	98.132	587620.47	0.1739	P	4.8
6	☐	200.000	200.958	1162024.02	0.3559	P	2.8
7	☐	1.000					

y = 0.0018 * x + 8.7308E-005
R = 0.9999
DL = 0.03135
BEC = 0.04931

Weight: <None>
Min Conc: <None>

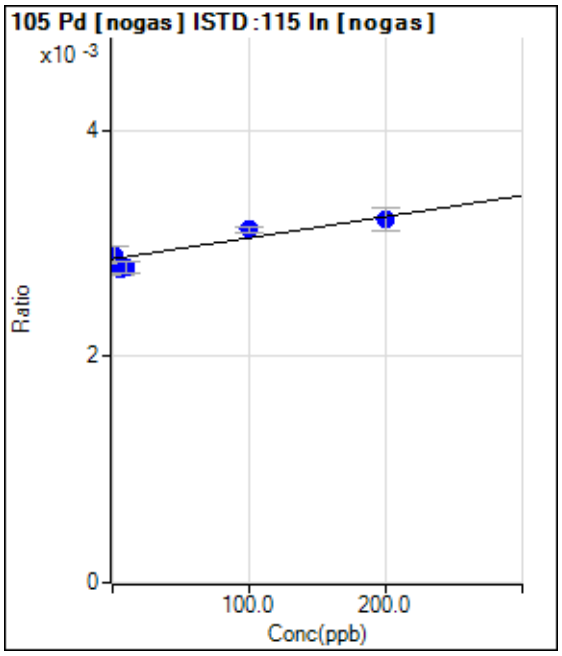
Calibration for 026_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	380.01	0.0001	P	11.8
2	☐	2.000	-44.037	280.01	0.0001	P	22.3
3	☐	5.000	-34.948	300.01	0.0001	P	36.3
4	☐	10.000	-21.882	326.68	0.0001	P	21.1
5	☐	100.000	114.825	583.35	0.0002	P	7.3
6	☐	200.000	195.641	733.36	0.0003	P	13.7
7	☐	1.000					

y = 7.1605E-007 * x + 1.2614E-004
R = 0.9780
DL = 62.56
BEC = 176.2

Weight: <None>
Min Conc: <None>

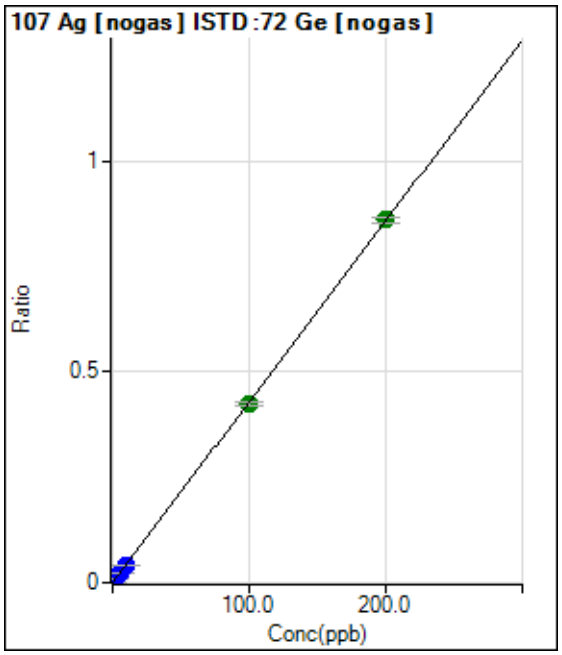


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	8582.28	0.0029	P	7.7
2	☐	2.000	14.730	8552.23	0.0029	P	5.9
3	☐	5.000	-50.499	8165.33	0.0028	P	3.5
4	☐	10.000	-42.484	8235.38	0.0028	P	3.5
5	☐	100.000	139.199	8742.30	0.0031	P	1.5
6	☐	200.000	184.285	8819.01	0.0032	P	6.2
7	☐	1.000					

y = 1.8734E-006 * x + 0.0029
R = 0.9298
DL = 352.7
BEC = 1527

Weight: <None>
Min Conc: <None>

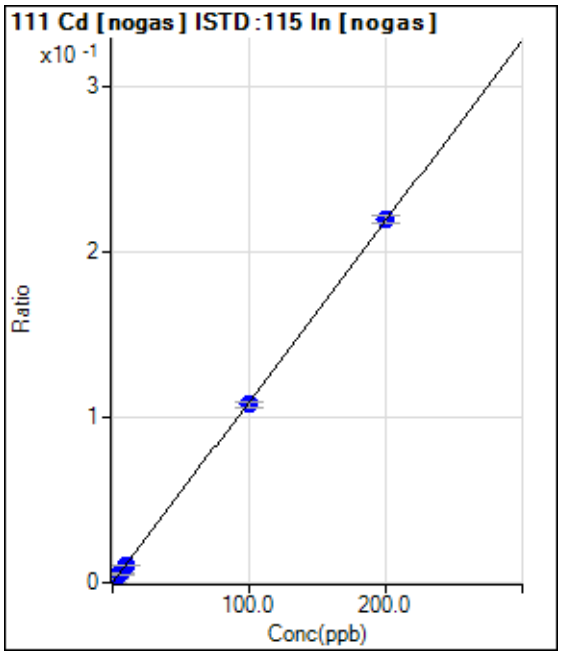
Calibration for 026_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	130.00	0.0000	P	59.4
2	☐	2.000	1.947	29174.42	0.0084	P	3.8
3	☐	5.000	4.973	73540.92	0.0214	P	4.6
4	☐	10.000	9.911	146315.13	0.0425	P	3.5
5	☐	100.000	98.615	1430032.69	0.4228	A	2.6
6	☐	200.000	200.698	2808797.25	0.8604	A	1.7
7	☐	1.000					

y = 0.0043 * x + 3.7028E-005
R = 1.0000
DL = 0.01539
BEC = 0.008638

Weight: <None>
Min Conc: <None>

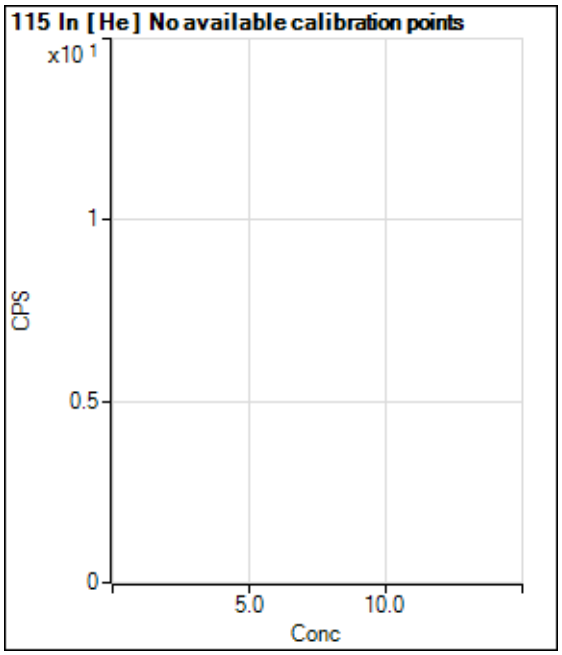


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	20.00	0.0000	P	102.
2	☐	2.000	1.864	6047.79	0.0020	P	6.6
3	☐	5.000	4.791	15460.31	0.0052	P	2.8
4	☐	10.000	9.627	31144.45	0.0105	P	1.6
5	☐	100.000	98.762	302145.44	0.1079	P	3.0
6	☐	200.000	200.644	603088.78	0.2191	P	2.1
7	☐	1.000					

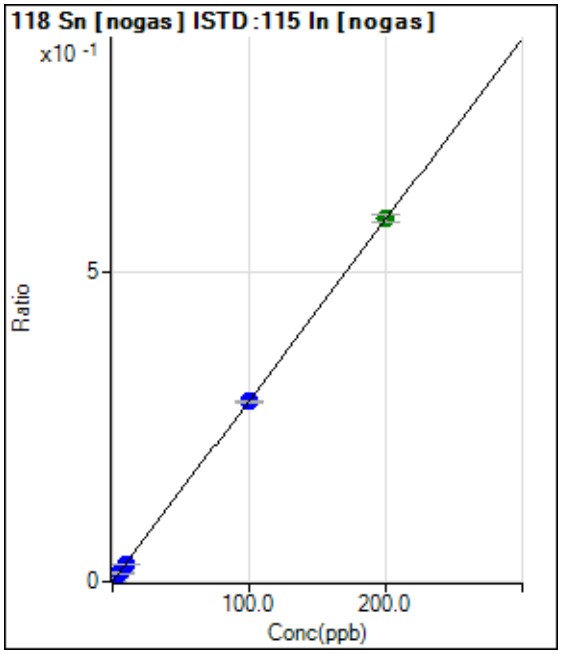
y = 0.0011 * x + 6.7945E-006
R = 1.0000
DL = 0.01908
BEC = 0.006222

Weight: <None>
Min Conc: <None>

Calibration for 026_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐			1105940.57		P	3.2
2	☐			1063093.03		P	1.7
3	☐			1070171.60		P	2.9
4	☐			1079595.73		P	1.5
5	☐			986563.25		P	6.8
6	☐			1036373.93		P	1.1
7	☐						

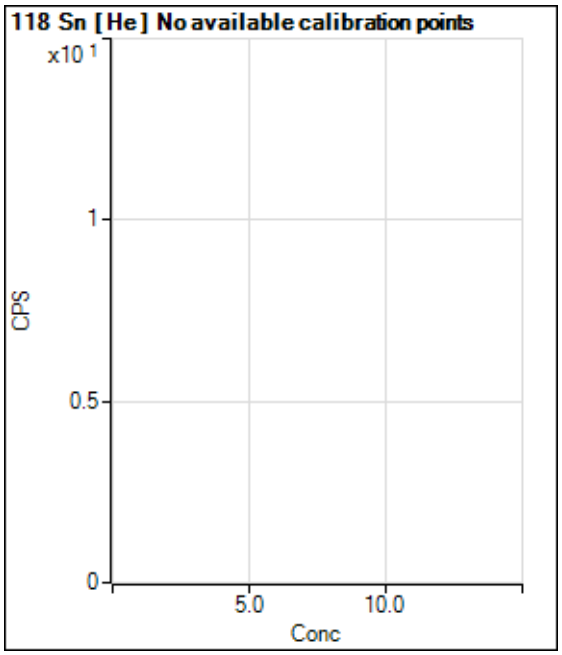


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	1100.05	0.0004	P	5.1
2	☐	2.000	1.908	17629.14	0.0060	P	3.7
3	☐	5.000	4.715	41810.58	0.0142	P	3.2
4	☐	10.000	9.535	83693.11	0.0283	P	2.9
5	☐	100.000	99.254	814798.11	0.2909	P	2.1
6	☐	200.000	200.404	1616222.01	0.5870	A	2.0
7	☐	1.000					

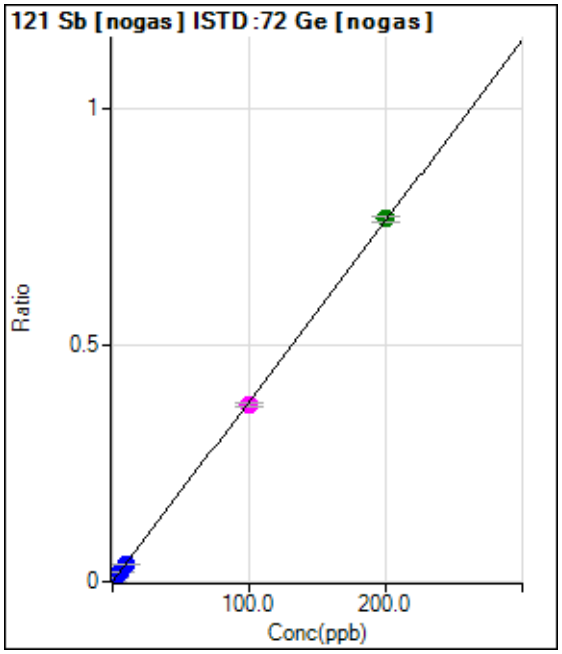
y = 0.0029 * x + 3.6619E-004
R = 1.0000
DL = 0.01931
BEC = 0.1251

Weight: <None>
Min Conc: <None>

Calibration for 026_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐			550.01		P	19.2
2	☐			6981.50		P	0.9
3	☐			17282.11		P	3.2
4	☐			34731.43		P	1.3
5	☐			335570.25		P	1.3
6	☐			683623.89		P	1.0
7	☐						

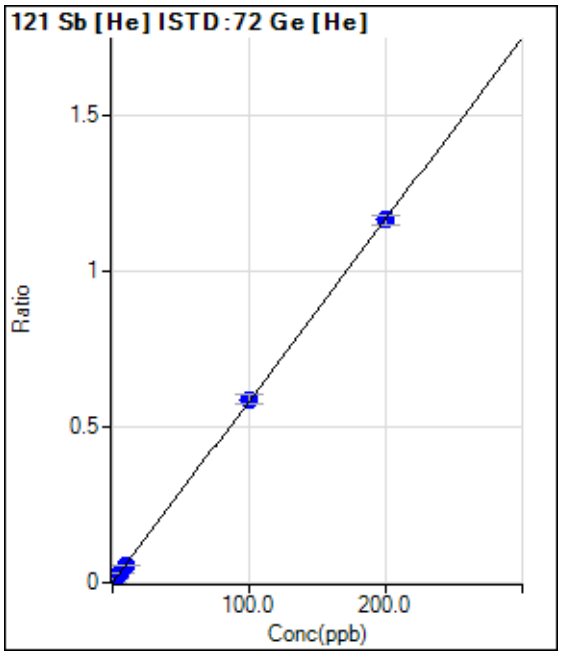


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	1370.08	0.0004	P	6.8
2	☐	2.000	1.891	26393.47	0.0076	P	3.3
3	☐	5.000	4.733	63368.22	0.0184	P	1.2
4	☐	10.000	9.634	127509.91	0.0371	P	3.1
5	☐	100.000	98.015	1262749.59	0.3734	M	1.7
6	☐	200.000	201.018	2499064.91	0.7655	A	1.8
7	☐	1.000					

y = 0.0038 * x + 3.8707E-004
R = 0.9999
DL = 0.02082
BEC = 0.1017

Weight: <None>
Min Conc: <None>

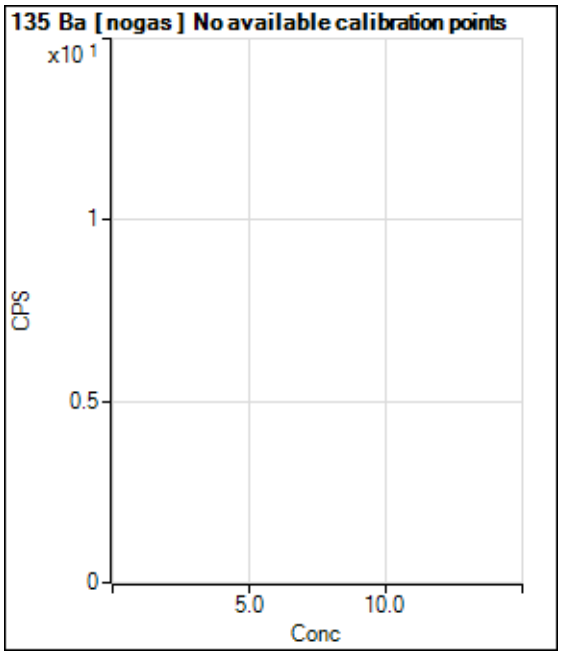
Calibration for 026_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	540.02	0.0005	P	23.8
2	☐	2.000	1.798	10203.13	0.0110	P	3.4
3	☐	5.000	4.790	26169.89	0.0284	P	1.9
4	☐	10.000	9.325	50737.13	0.0548	P	0.4
5	☐	100.000	100.676	508576.65	0.5864	P	5.1
6	☐	200.000	199.703	1035074.96	1.1627	P	2.8
7	☐	1.000					

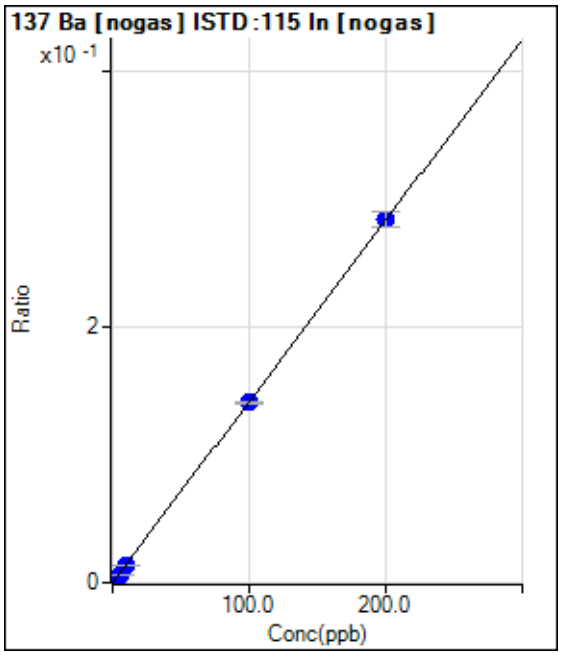
y = 0.0058 * x + 5.4525E-004
R = 1.0000
DL = 0.06697
BEC = 0.09369

Weight: <None>
Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐			186.67		P	11.2
2	☐			4807.42		P	4.6
3	☐			11627.39		P	3.0
4	☐			23386.29		P	1.8
5	☐			231247.66		P	2.2
6	☐			451644.94		P	1.6
7	☐						

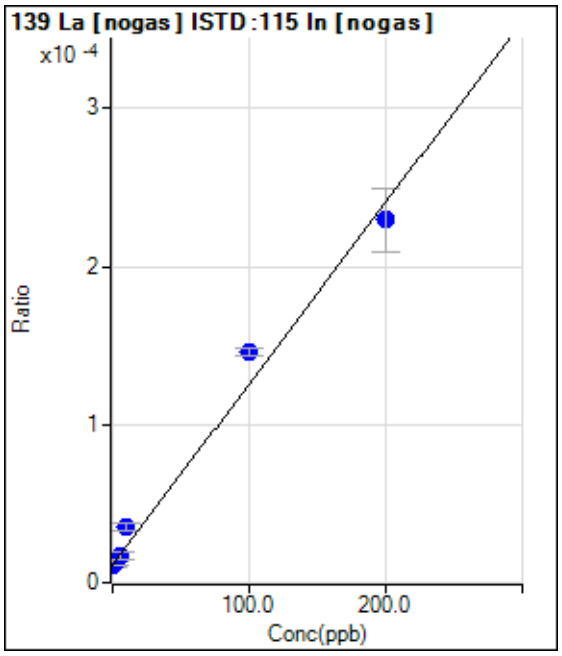
Calibration for 026_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	340.01	0.0001	P	17.4
2	☐	2.000	1.849	8085.36	0.0027	P	5.4
3	☐	5.000	4.669	19845.01	0.0067	P	1.1
4	☐	10.000	9.363	39572.60	0.0134	P	2.3
5	☐	100.000	99.389	394424.42	0.1408	P	1.2
6	☐	200.000	200.347	780655.14	0.2837	P	4.3
7	☐	1.000					

y = 0.0014 * x + 1.1263E-004
R = 1.0000
DL = 0.04153
BEC = 0.07956

Weight: <None>
Min Conc: <None>

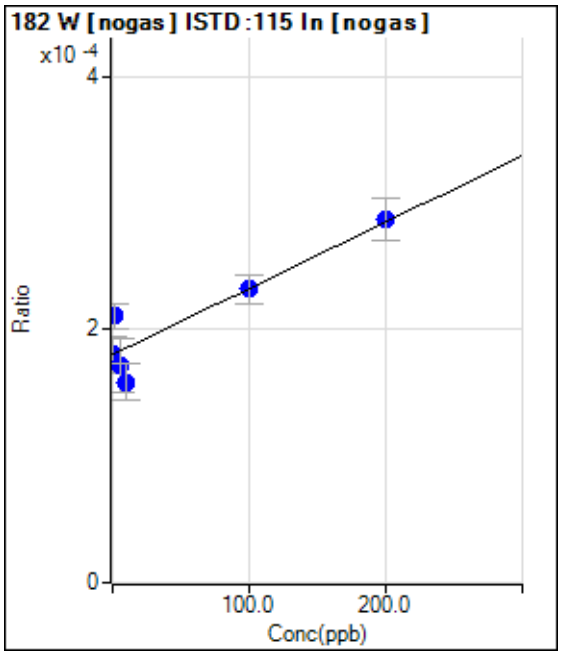


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	33.33	0.0000	P	36.0
2	☐	2.000	1.075	36.67	0.0000	P	15.2
3	☐	5.000	5.000	50.00	0.0000	P	32.6
4	☐	10.000	20.698	103.33	0.0000	P	13.8
5	☐	100.000	117.913	410.01	0.0001	P	3.1
6	☐	200.000	190.518	633.36	0.0002	P	17.6
7	☐	1.000					

y = 1.1465E-006 * x + 1.1139E-005
R = 0.9930
DL = 10.5
BEC = 9.716

Weight: <None>
Min Conc: <None>

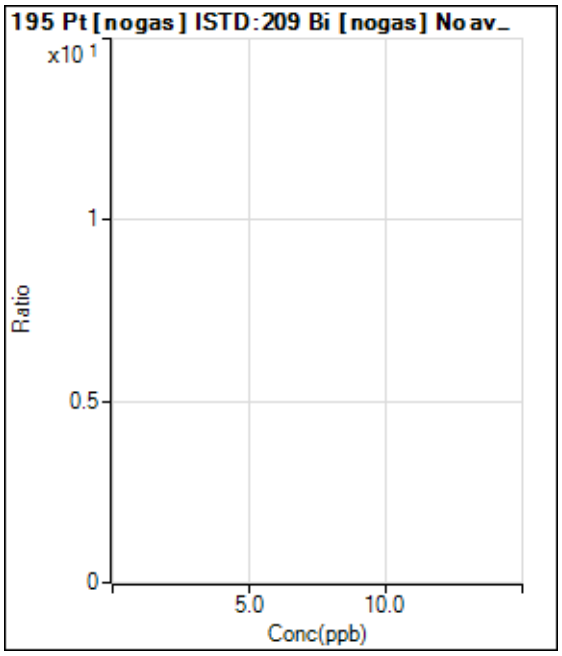
Calibration for 026_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	540.02	0.0002	P	16.1
2	☐	2.000	57.768	623.35	0.0002	P	9.8
3	☐	5.000	-15.309	506.68	0.0002	P	24.9
4	☐	10.000	-40.868	470.01	0.0002	P	18.0
5	☐	100.000	98.757	650.03	0.0002	P	9.5
6	☐	200.000	203.115	790.03	0.0003	P	11.7
7	☐	1.000					

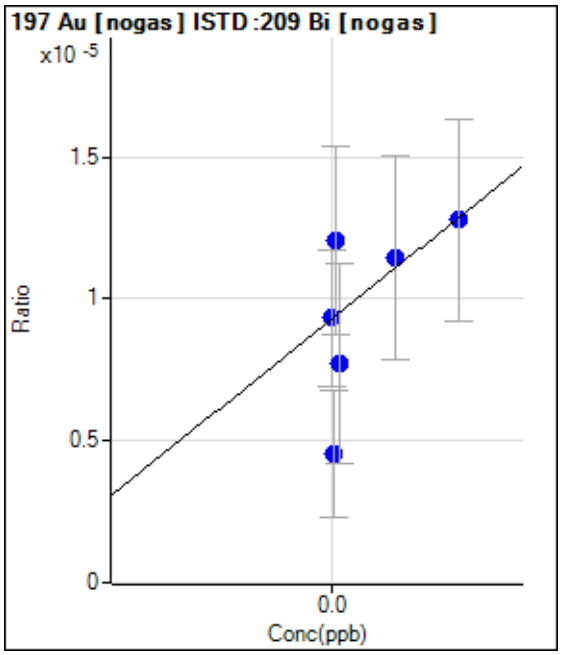
y = 5.2432E-007 * x + 1.8018E-004
R = 0.9227
DL = 166.1
BEC = 343.6

Weight: <None>
Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000					
2	☐	2.000					
3	☐	5.000					
4	☐	10.000					
5	☐	100.000					
6	☐	200.000					
7	☐	1.000					

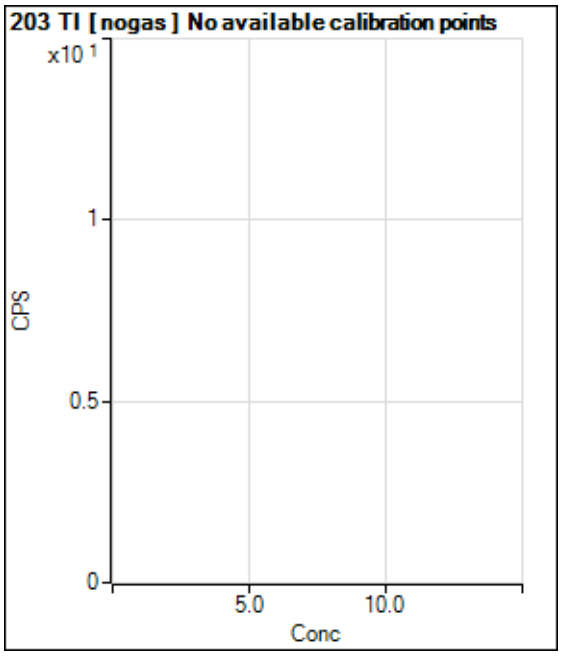
Calibration for 026_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	20.00	0.0000	P	51.6
2	☐	2.000	-268.148	10.00	0.0000	P	98.1
3	☐	5.000	152.914	26.67	0.0000	P	55.1
4	☐	10.000	-90.160	16.67	0.0000	P	91.3
5	☐	100.000	119.361	23.33	0.0000	P	62.9
6	☐	200.000	194.331	26.67	0.0000	P	55.4
7	☐	1.000					

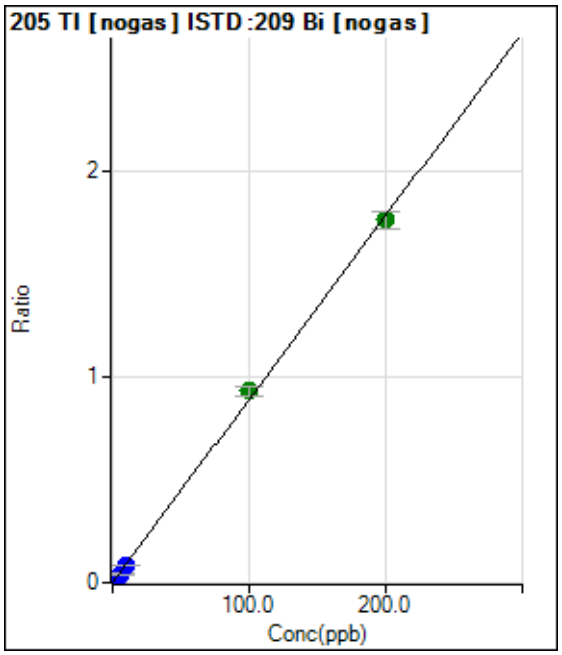
y = 1.7803E-008 * x + 9.3189E-006
R = 0.6204
DL = 810
BEC = 523.4

Weight: <None>
Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐			213.34		P	5.4
2	☐			15491.00		P	5.8
3	☐			38138.38		P	1.9
4	☐			78743.54		P	1.4
5	☐			781830.01		P	0.0
6	☐			1584112.69		A	3.1
7	☐						

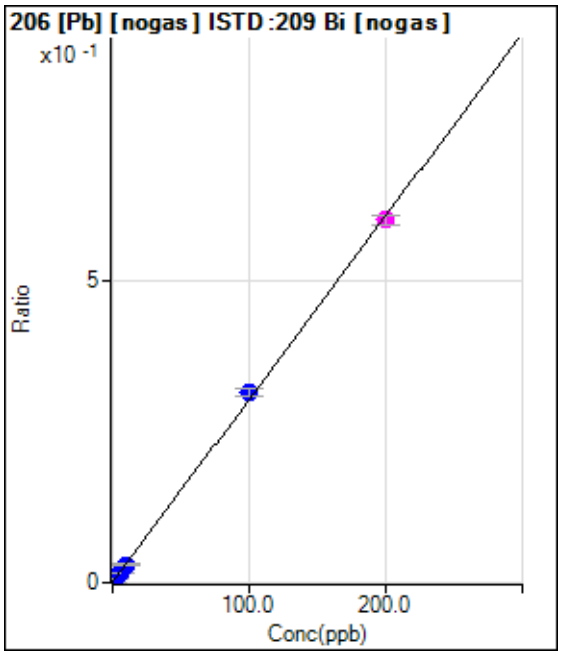
Calibration for 026_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	403.35	0.0002	P	20.9
2	☐	2.000	1.868	36324.42	0.0168	P	6.1
3	☐	5.000	4.643	91200.87	0.0416	P	4.4
4	☐	10.000	9.647	186691.66	0.0861	P	1.5
5	☐	100.000	104.383	1878981.07	0.9302	A	4.4
6	☐	200.000	197.836	3625414.22	1.7629	A	4.6
7	☐	1.000					

y = 0.0089 * x + 1.8813E-004
R = 0.9996
DL = 0.01327
BEC = 0.02111

Weight: <None>
Min Conc: <None>

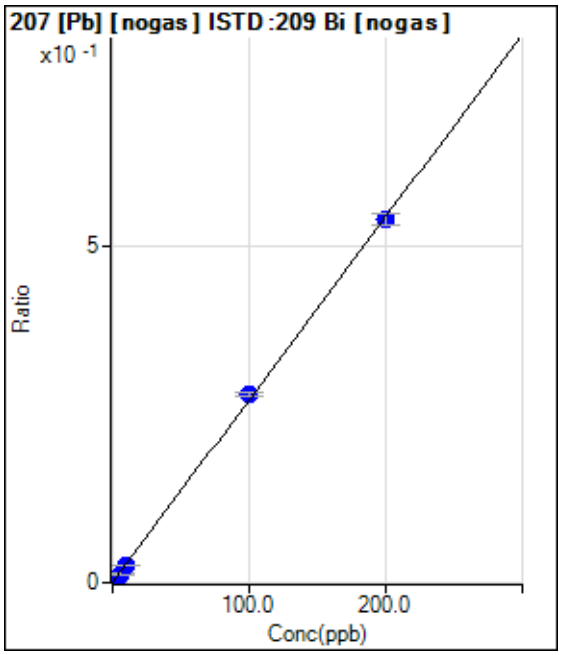


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	1140.06	0.0005	P	0.2
2	☐	2.000	1.894	13525.80	0.0063	P	3.8
3	☐	5.000	4.741	32683.30	0.0149	P	1.8
4	☐	10.000	9.703	64809.98	0.0299	P	2.2
5	☐	100.000	104.001	637153.48	0.3154	P	3.4
6	☐	200.000	198.022	1234604.02	0.6000	M	2.5
7	☐	1.000					

y = 0.0030 * x + 5.2947E-004
R = 0.9997
DL = 0.0008089
BEC = 0.1749

Weight: <None>
Min Conc: <None>

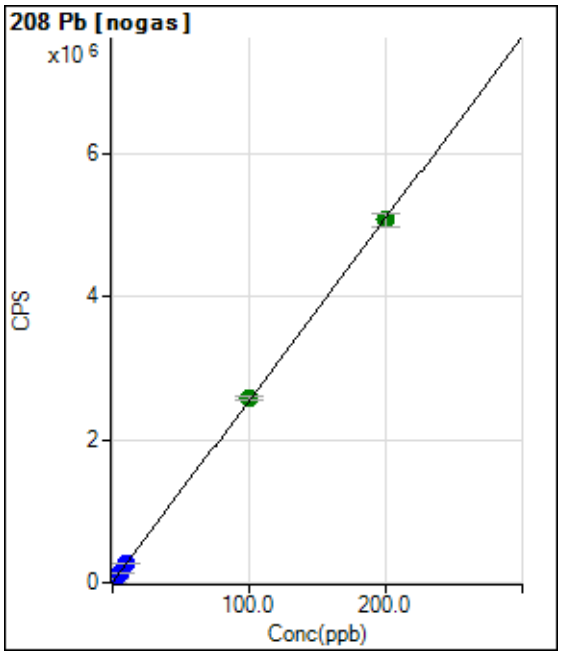
Calibration for 026_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	870.04	0.0004	P	10.7
2	☐	2.000	1.941	12214.76	0.0057	P	8.9
3	☐	5.000	4.569	28051.23	0.0128	P	5.4
4	☐	10.000	9.574	57094.08	0.0263	P	2.5
5	☐	100.000	103.058	565155.60	0.2796	P	1.6
6	☐	200.000	198.504	1107818.73	0.5383	P	3.0
7	☐	1.000					

y = 0.0027 * x + 4.0476E-004
R = 0.9998
DL = 0.04782
BEC = 0.1494

Weight: <None>
Min Conc: <None>

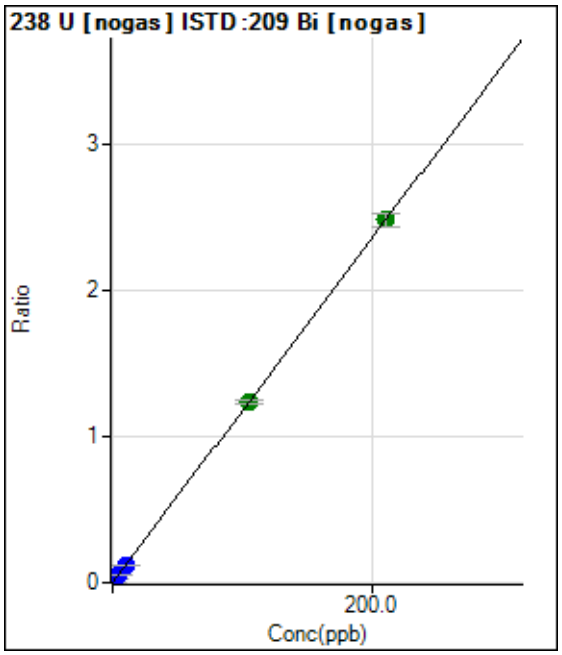


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	4020.26		P	0.9
2	☐	2.000	2.011	55170.96		P	2.2
3	☐	5.000	4.990	130966.61		P	2.3
4	☐	10.000	10.022	258983.22		P	0.8
5	☐	100.000	101.565	2587797.24		A	2.3
6	☐	200.000	199.216	5072002.19		A	3.4
7	☐	1.000					

y = 25439.5808 * x + 4020.2567
R = 1.0000
DL = 0.004253
BEC = 0.158

Weight: <None>
Min Conc: <None>

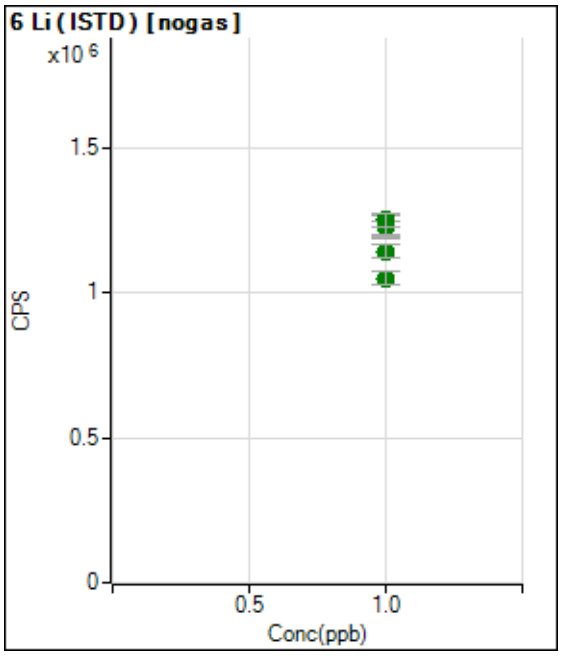
Calibration for 026_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	50.00	0.0000	P	19.8
2	☐	2.000	1.905	48682.59	0.0225	P	0.2
3	☐	5.000	4.717	122522.07	0.0558	P	1.1
4	☐	10.000	9.602	246049.31	0.1135	P	0.6
5	☐	105.000	104.496	2497748.14	1.2352	A	2.1
6	☐	210.000	210.279	5112087.32	2.4856	A	3.7
7	☐	1.000					

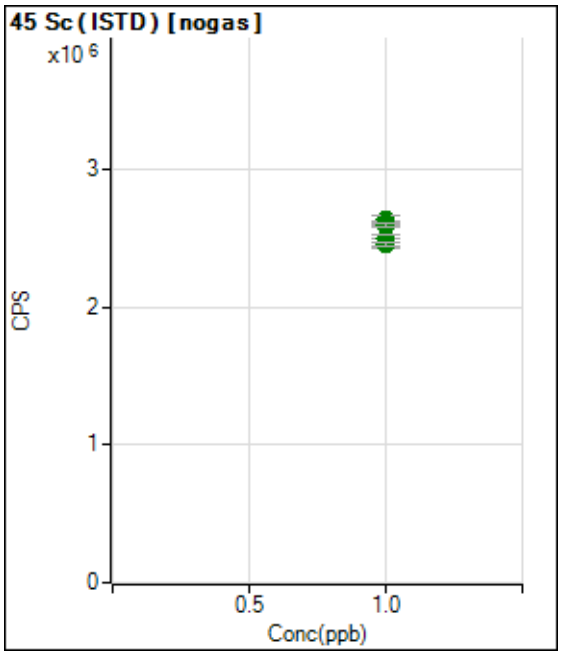
y = 0.0118 * x + 2.3211E-005
R = 1.0000
DL = 0.001164
BEC = 0.001964

Weight: <None>
Min Conc: <None>

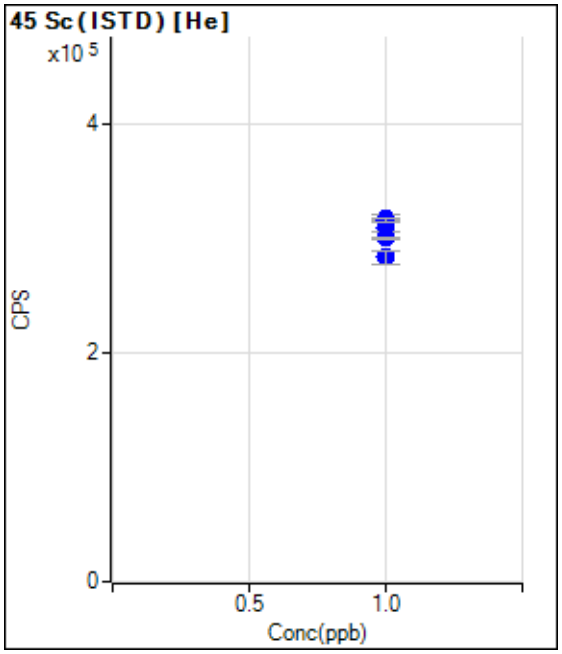


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	1.000		1229805.43		A	6.8
2	☐	1.000		1228956.58		A	5.9
3	☐	1.000		1224222.27		A	3.3
4	☐	1.000		1251492.84		A	3.6
5	☐	1.000		1143511.75		A	4.1
6	☐	1.000		1050150.29		A	4.8
7	☐	1.000					

Calibration for 026_ICV.d

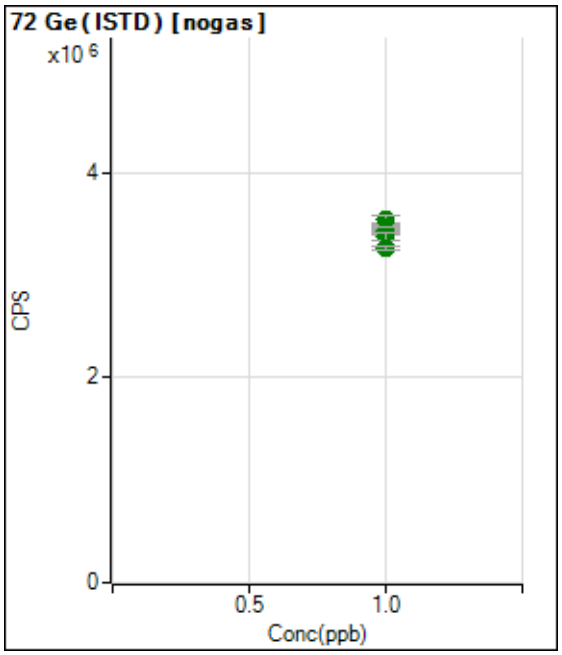


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	1.000		2630545.12		A	2.6
2	☐	1.000		2605370.22		A	1.0
3	☐	1.000		2458870.33		A	3.1
4	☐	1.000		2597407.15		A	1.0
5	☐	1.000		2495971.52		A	2.3
6	☐	1.000		2453955.33		A	1.6
7	☐	1.000					

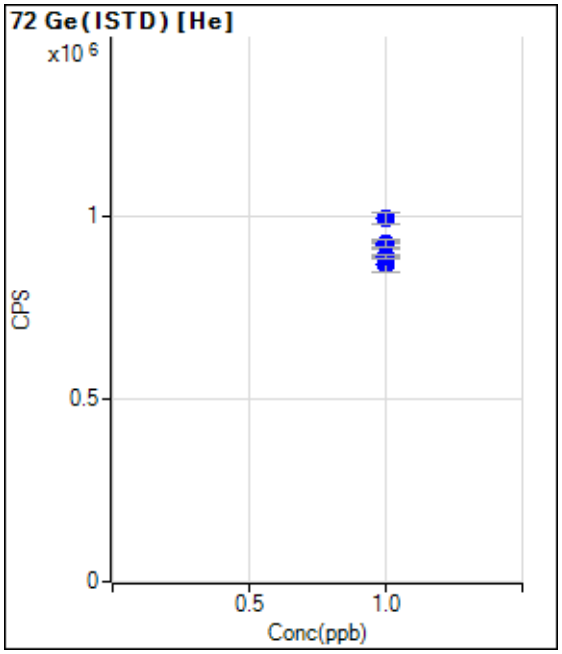


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	1.000		315265.37		P	0.5
2	☐	1.000		310299.20		P	2.7
3	☐	1.000		317425.51		P	2.1
4	☐	1.000		315967.42		P	1.0
5	☐	1.000		283754.26		P	4.0
6	☐	1.000		300464.19		P	0.6
7	☐	1.000					

Calibration for 026_ICV.d

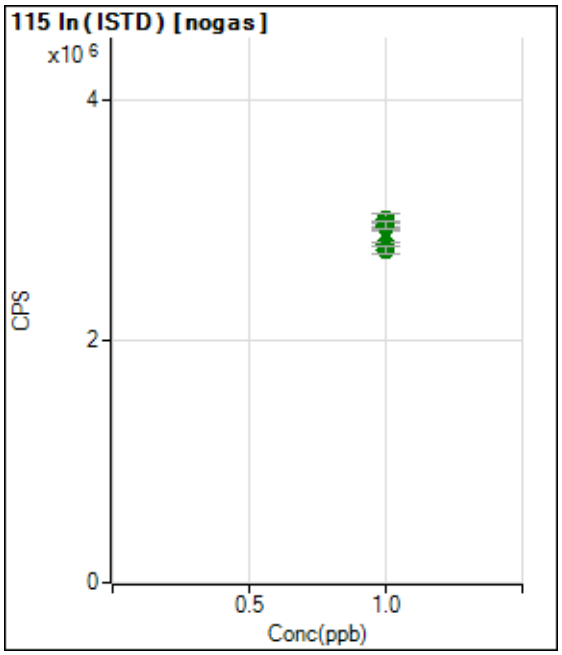


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	1.000		3541557.45		A	2.2
2	☐	1.000		3480521.93		A	0.2
3	☐	1.000		3443846.51		A	0.6
4	☐	1.000		3442490.26		A	2.1
5	☐	1.000		3382029.53		A	2.5
6	☐	1.000		3264970.37		A	0.7
7	☐	1.000					

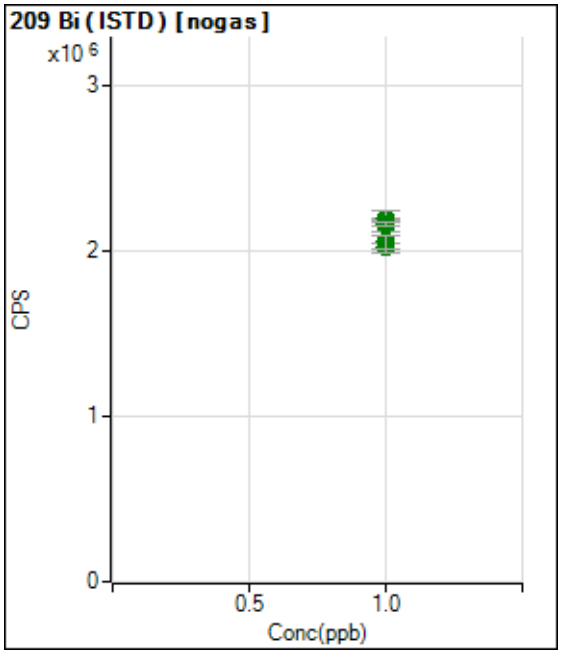


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	1.000		993327.33		P	3.1
2	☐	1.000		926943.19		P	0.3
3	☐	1.000		920502.90		P	2.4
4	☐	1.000		925552.20		P	2.2
5	☐	1.000		868492.33		P	4.5
6	☐	1.000		890447.33		P	1.5
7	☐	1.000					

Calibration for 026_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	1.000		3006327.37		A	3.6
2	☐	1.000		2961941.38		A	1.3
3	☐	1.000		2952199.08		A	2.3
4	☐	1.000		2960727.31		A	1.8
5	☐	1.000		2801397.37		A	1.3
6	☐	1.000		2753059.62		A	2.1
7	☐	1.000					



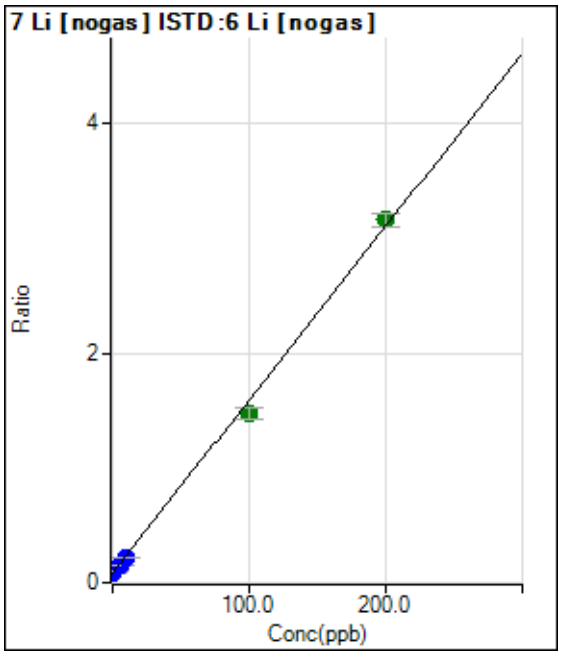
	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	1.000		2153139.50		A	3.0
2	☐	1.000		2160139.71		A	3.3
3	☐	1.000		2197258.67		A	4.1
4	☐	1.000		2167413.14		A	1.1
5	☐	1.000		2021585.28		A	2.9
6	☐	1.000		2058667.99		A	4.0
7	☐	1.000					

Calibration for 138_ICV.d

Batch Folder: C:\Agilent\ICPMH\1\DATA\121018B.b\
Analysis File: 121018B.batch.bin
DA Date-Time: 2018-12-10 21:33:35
Calibration Title:
Calibration Method: External Calibration
VIS Interpolation Fit:

Level	Standard Data File	Sample Name	Acq. Date-Time
1	132CALB.d	CAL BLK	2018-12-10 21:20:18
2	133CALS.d	2/10/200	2018-12-10 21:22:20
3	134CALS.d	5/25/500	2018-12-10 21:24:24
4	135CALS.d	10/50/1000	2018-12-10 21:26:28
5	136CALS.d	100/500/10K	2018-12-10 21:28:31
6	137CALS.d	200/1000/20K	2018-12-10 21:30:36
7			

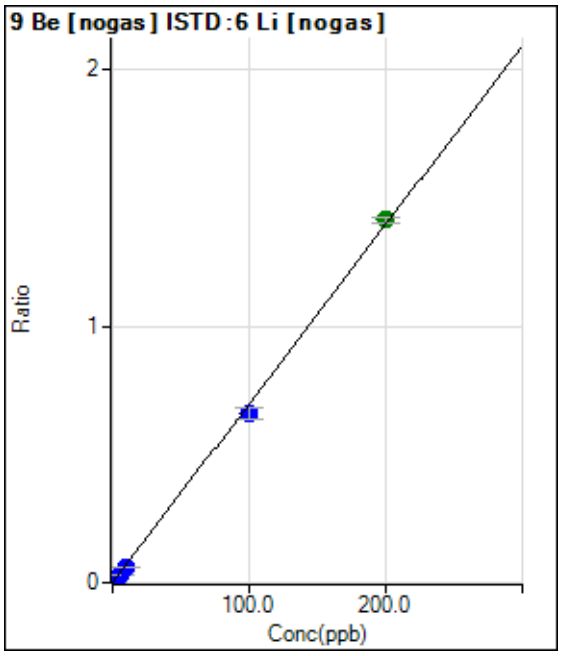
Calibration for 138_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	98156.72	0.0838	P	1.2
2	☐	2.000	1.682	125243.92	0.1091	P	3.8
3	☐	5.000	4.244	171686.09	0.1478	P	3.6
4	☐	10.000	8.651	244566.01	0.2143	P	2.4
5	☐	100.000	92.479	1587240.50	1.4787	A	7.1
6	☐	200.000	203.850	3081008.60	3.1586	A	3.7
7	☐	1.000					

y = 0.0151 * x + 0.0838
R = 0.9991
DL = 0.1951
BEC = 5.555

Weight: <None>
Min Conc: <None>

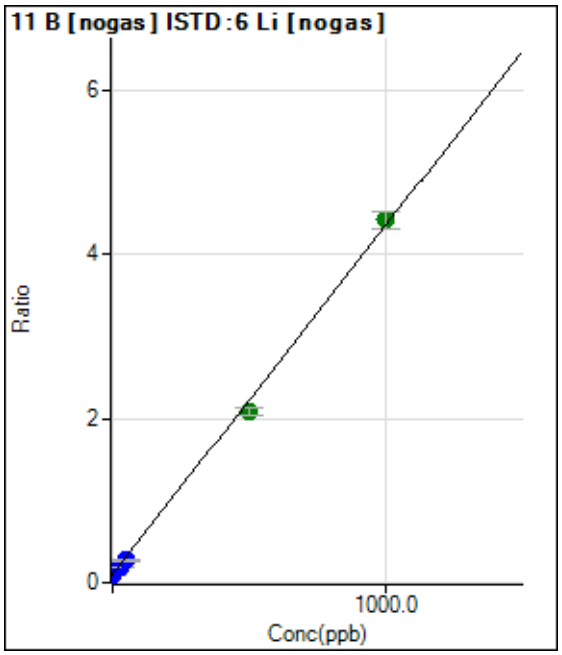


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	50.00	0.0000	P	17.7
2	☐	2.000	1.664	13374.89	0.0117	P	2.6
3	☐	5.000	4.294	34831.82	0.0300	P	5.3
4	☐	10.000	8.426	67130.43	0.0588	P	3.0
5	☐	100.000	94.656	708918.38	0.6603	P	6.2
6	☐	200.000	202.772	1380233.05	1.4145	A	1.3
7	☐	1.000					

y = 0.0070 * x + 4.2550E-005
R = 0.9995
DL = 0.003237
BEC = 0.0061

Weight: <None>
Min Conc: <None>

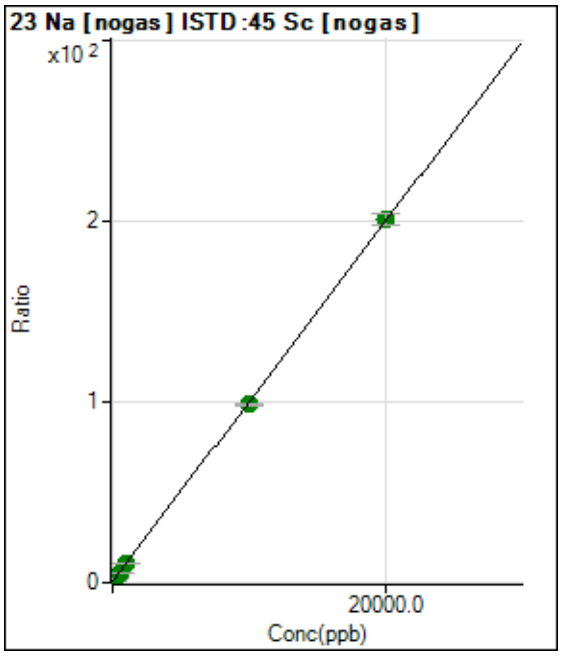
Calibration for 138_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	118774.79	0.1014	P	2.1
2	☐	10.000	8.093	155757.22	0.1358	P	4.2
3	☐	25.000	19.096	211892.21	0.1825	P	4.8
4	☐	50.000	40.942	313967.17	0.2752	P	5.2
5	☐	500.000	467.793	2242263.41	2.0874	A	5.0
6	☐	1000.000	1016.723	4305823.79	4.4179	A	4.7
7	☐	5.000					

y = 0.0042 * x + 0.1014
R = 0.9993
DL = 1.526
BEC = 23.88

Weight: <None>
Min Conc: <None>

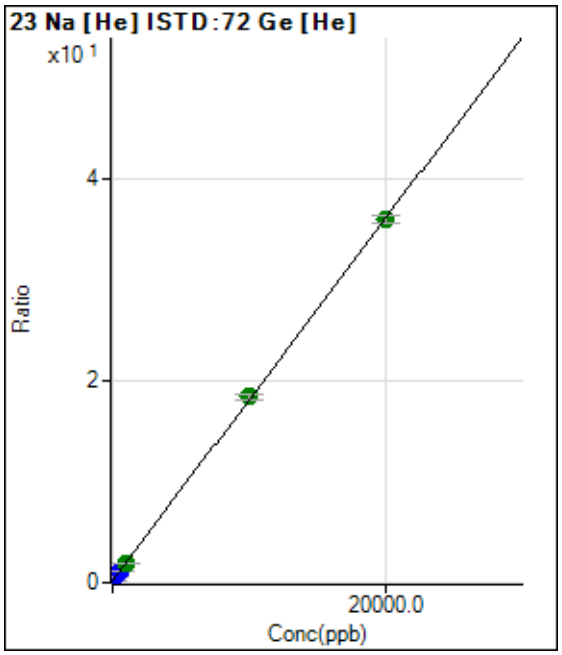


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	1656557.33	0.6740	A	6.8
2	☐	200.000	190.924	6369548.58	2.5746	A	2.9
3	☐	500.000	466.835	13348913.32	5.3212	A	3.0
4	☐	1000.000	968.985	24792704.72	10.3200	A	1.3
5	☐	10000.00	9827.363	239318263.6	98.5035	A	0.8
6	☐	20000.00	20088.789	469382227.1	200.654	A	3.2
7	☐	100.000					

y = 0.0100 * x + 0.6740
R = 0.9999
DL = 13.78
BEC = 67.7

Weight: <None>
Min Conc: <None>

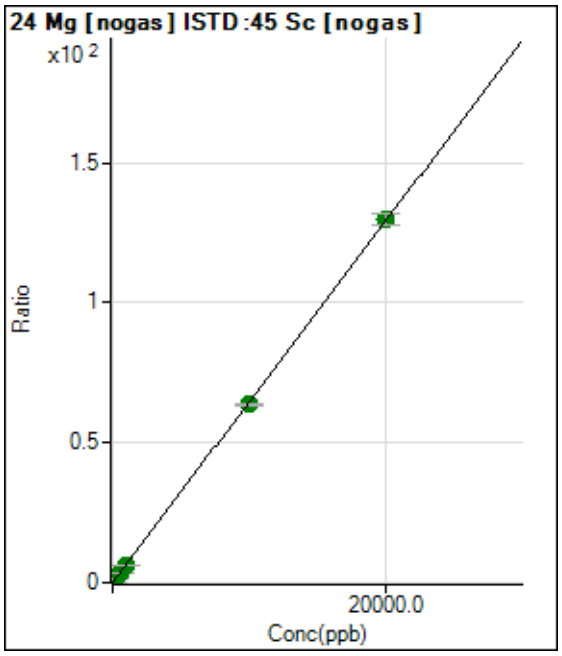
Calibration for 138_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	152546.78	0.1883	P	1.7
2	☐	200.000	202.044	443743.19	0.5514	P	2.0
3	☐	500.000	511.475	894828.50	1.1074	P	0.8
4	☐	1000.000	1001.282	1617547.37	1.9875	A	1.1
5	☐	10000.00	10146.260	14853822.28	18.4202	A	3.2
6	☐	20000.00	19926.499	28601452.90	35.9943	A	2.0
7	☐	100.000					

y = 0.0018 * x + 0.1883
R = 1.0000
DL = 5.295
BEC = 104.8

Weight: <None>
Min Conc: <None>

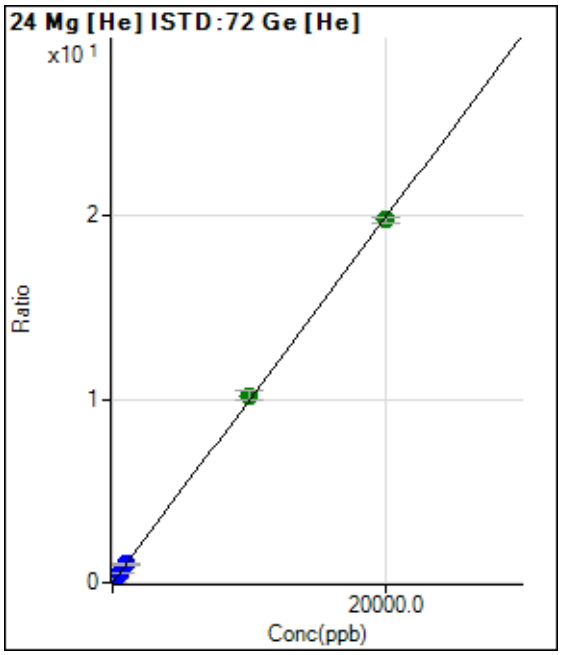


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	41989.09	0.0171	P	13.7
2	☐	200.000	201.394	3260445.00	1.3179	A	1.7
3	☐	500.000	484.818	7899016.32	3.1486	A	2.4
4	☐	1000.000	982.085	15278293.05	6.3604	A	3.1
5	☐	10000.00	9858.871	154747315.9	63.6960	A	0.9
6	☐	20000.00	20071.826	303328815.1	129.661	A	3.1
7	☐	100.000					

y = 0.0065 * x + 0.0171
R = 1.0000
DL = 1.087
BEC = 2.649

Weight: <None>
Min Conc: <None>

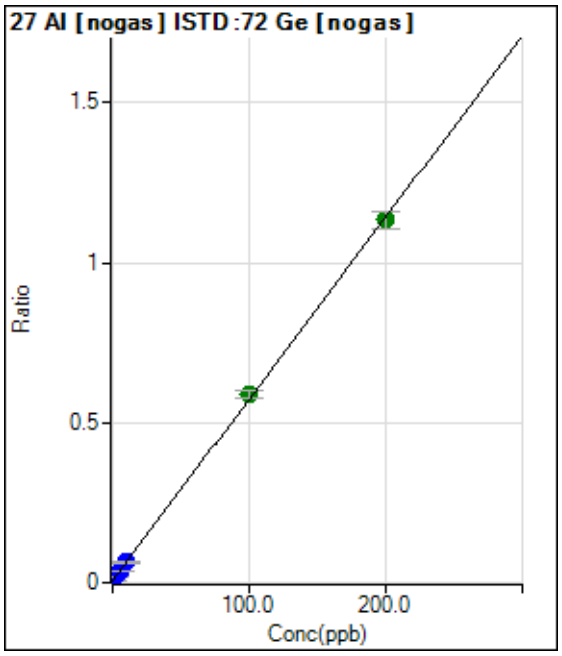
Calibration for 138_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	2396.85	0.0030	P	7.2
2	☐	200.000	207.291	168330.19	0.2092	P	3.1
3	☐	500.000	522.963	422787.42	0.5232	P	0.9
4	☐	1000.000	1000.245	812312.98	0.9980	P	0.9
5	☐	10000.00	10238.506	8216398.63	10.1887	A	4.8
6	☐	20000.00	19880.088	15719288.10	19.7806	A	1.3
7	☐	100.000					

y = 9.9484E-004 * x + 0.0030
R = 0.9999
DL = 0.6443
BEC = 2.975

Weight: <None>
Min Conc: <None>

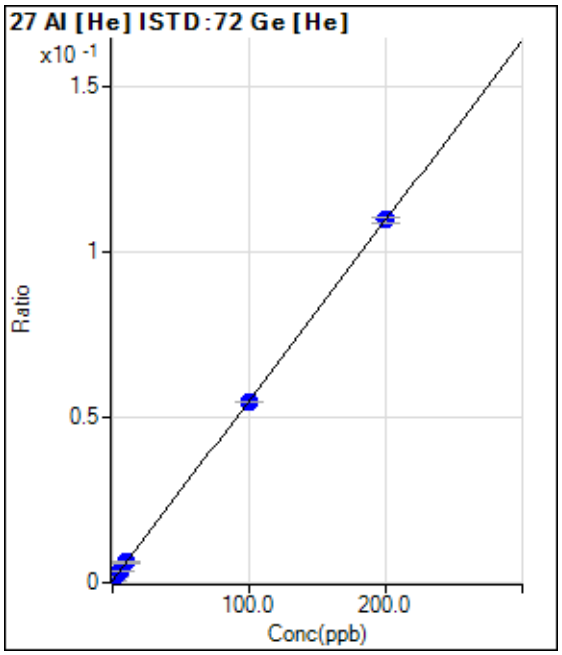


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	20988.53	0.0065	P	2.5
2	☐	2.000	1.771	54394.93	0.0165	P	3.3
3	☐	5.000	4.883	112157.41	0.0342	P	2.0
4	☐	10.000	10.040	209579.00	0.0635	P	2.1
5	☐	100.000	102.676	1913956.01	0.5892	A	4.6
6	☐	200.000	198.665	3591850.57	1.1340	A	4.6
7	☐	1.000					

y = 0.0057 * x + 0.0065
R = 0.9999
DL = 0.08496
BEC = 1.144

Weight: <None>
Min Conc: <None>

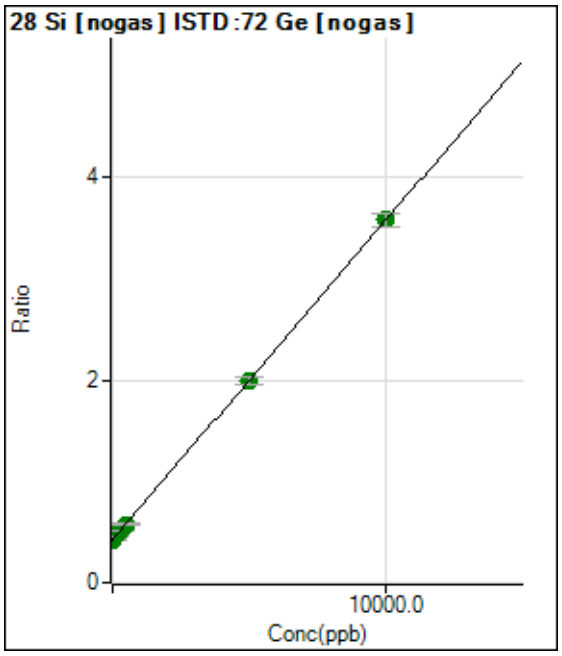
Calibration for 138_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.140	576.68	0.0007	P	6.3
2	☐	2.000	1.839	1316.74	0.0016	P	3.0
3	☐	5.000	5.200	2800.25	0.0035	P	3.5
4	☐	10.000	10.131	5000.73	0.0061	P	5.3
5	☐	100.000	99.401	44111.53	0.0547	P	0.5
6	☐	200.000	200.289	87065.98	0.1096	P	1.4
7	☐	1.000					

y = 5.4385E-004 * x + 6.3611E-004
R = 1.0000
DL = 0.2467
BEC = 1.17

Weight: <None>
Min Conc: <None>

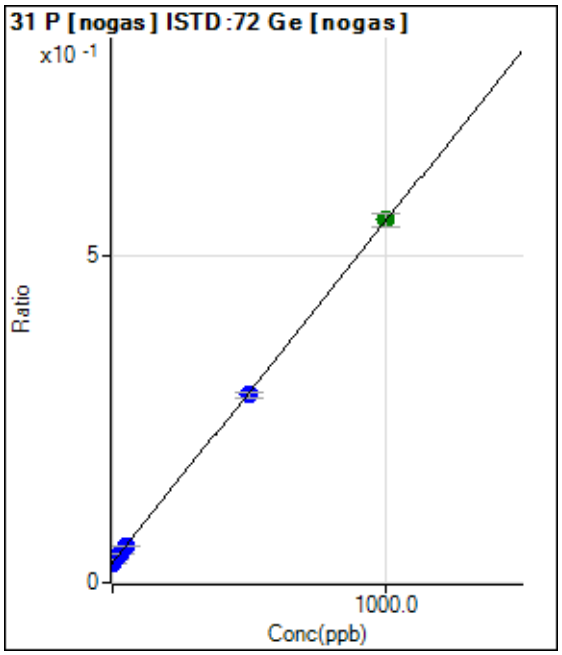


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	1375550.81	0.4255	A	2.4
2	☐	100.000	113.405	1516523.26	0.4612	A	3.9
3	☐	250.000	269.773	1673936.85	0.5104	A	1.5
4	☐	500.000	480.921	1904500.91	0.5769	A	3.0
5	☐	5000.000	4965.448	6461019.07	1.9889	A	4.1
6	☐	10000.00	10017.601	11340206.91	3.5797	A	3.7
7	☐	5.000					

y = 3.1487E-004 * x + 0.4255
R = 1.0000
DL = 95.39
BEC = 1351

Weight: <None>
Min Conc: <None>

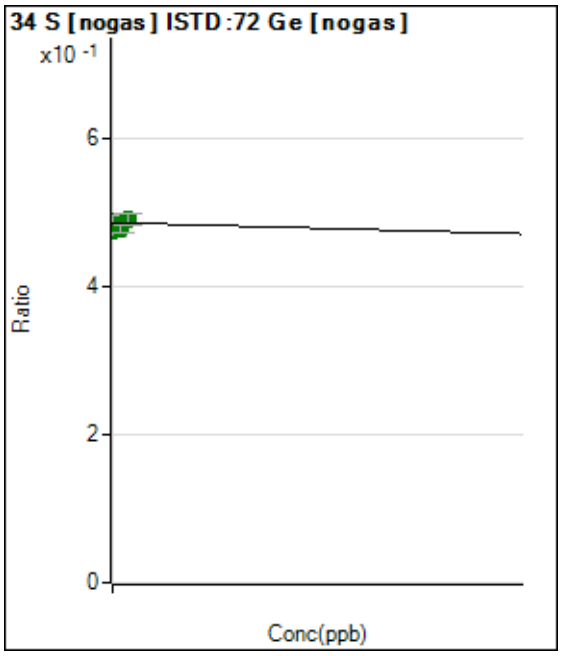
Calibration for 138_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	98907.24	0.0306	P	1.9
2	☐	10.000	8.129	114597.49	0.0348	P	2.0
3	☐	25.000	24.479	142256.11	0.0434	P	1.1
4	☐	50.000	49.349	186094.81	0.0564	P	3.1
5	☐	500.000	491.726	934021.55	0.2875	P	2.9
6	☐	1000.000	1004.201	1758776.64	0.5552	A	3.8
7	☐	5.000					

y = 5.2240E-004 * x + 0.0306
R = 1.0000
DL = 3.318
BEC = 58.56

Weight: <None>
Min Conc: <None>

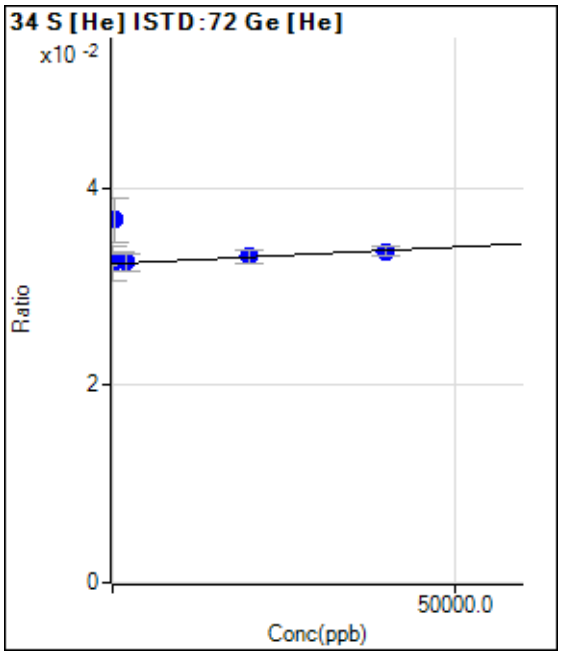


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	1573283.89	0.4867	A	3.4
2	☐	400.000	790308.54	1562470.93	0.4751	A	3.4
3	☐	1000.000	-56410.764	1598252.57	0.4876	A	4.1
4	☐	2000.000	691106.86	1573214.52	0.4766	A	3.0
5	☐	20000.00	502239.99	1557745.15	0.4793	A	2.3
6	☐	40000.00	-242039.15	1553318.49	0.4903	A	3.3
7	☐	100.000					

y = -1.4708E-008 * x + 0.4867
R = 0.4453
DL = -3.408E+06
BEC = -3.309E+07

Weight: <None>
Min Conc: <None>

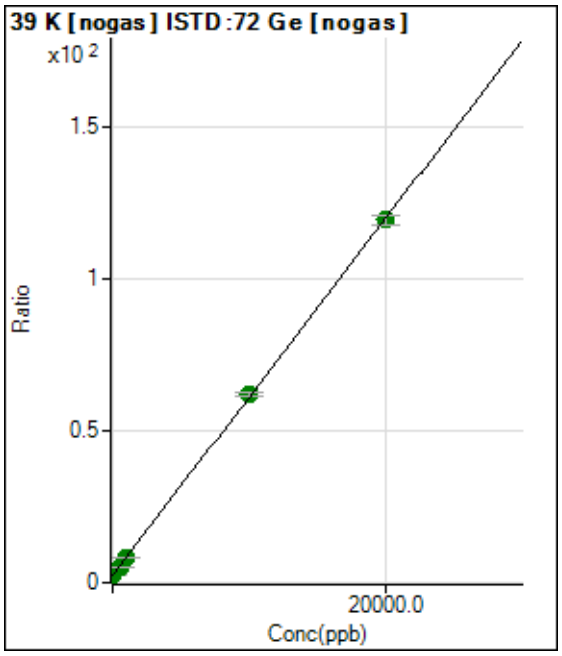
Calibration for 138_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	26156.40	0.0323	P	10.8
2	☐	400.000	130572.70	29560.94	0.0367	P	12.3
3	☐	1000.000	12599.256	26456.57	0.0327	P	4.2
4	☐	2000.000	4741.813	26423.62	0.0325	P	5.7
5	☐	20000.00	21080.333	26623.27	0.0330	P	4.2
6	☐	40000.00	37731.034	26689.35	0.0336	P	3.0
7	☐	100.000					

y = 3.4043E-008 * x + 0.0323
R = -0.0448
DL = 3.084E+05
BEC = 9.488E+05

Weight: <None>
Min Conc: <None>

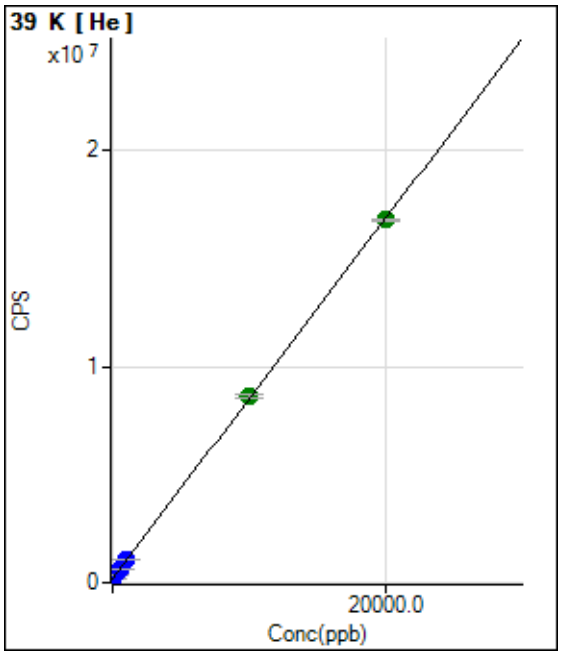


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	7714377.78	2.3864	A	1.9
2	☐	200.000	196.731	11651533.07	3.5428	A	2.6
3	☐	500.000	495.507	17375545.18	5.2991	A	1.7
4	☐	1000.000	994.179	27168466.23	8.2304	A	3.2
5	☐	10000.00	10138.881	201423454.5	61.9848	A	2.0
6	☐	20000.00	19930.996	378799533.4	119.544	A	2.3
7	☐	100.000					

y = 0.0059 * x + 2.3864
R = 1.0000
DL = 23.17
BEC = 406

Weight: <None>
Min Conc: <None>

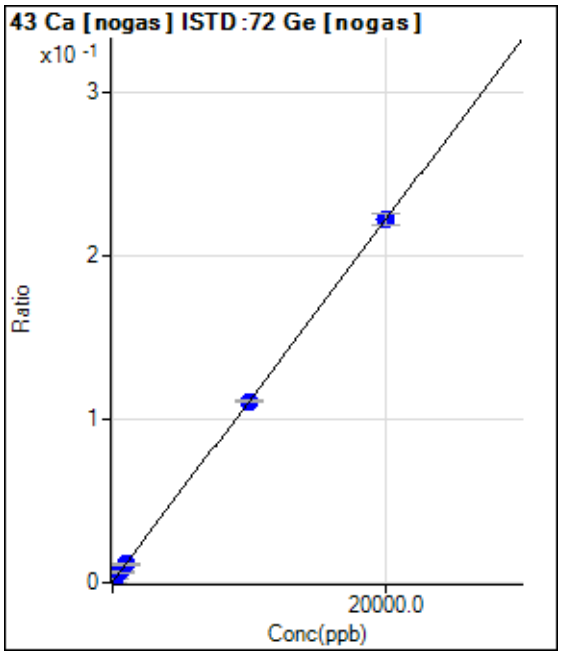
Calibration for 138_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	190056.99		P	1.2
2	☐	200.000	208.759	363905.70		P	0.3
3	☐	500.000	515.669	619491.06		P	0.4
4	☐	1000.000	1051.890	1066040.59		P	1.9
5	☐	10000.00	10145.081	8638586.75		A	1.4
6	☐	20000.00	19924.386	16782508.92		A	0.8
7	☐	100.000					

y = 832.7711 * x + 190056.9933
R = 1.0000
DL = 8.388
BEC = 228.2

Weight: <None>
Min Conc: <None>

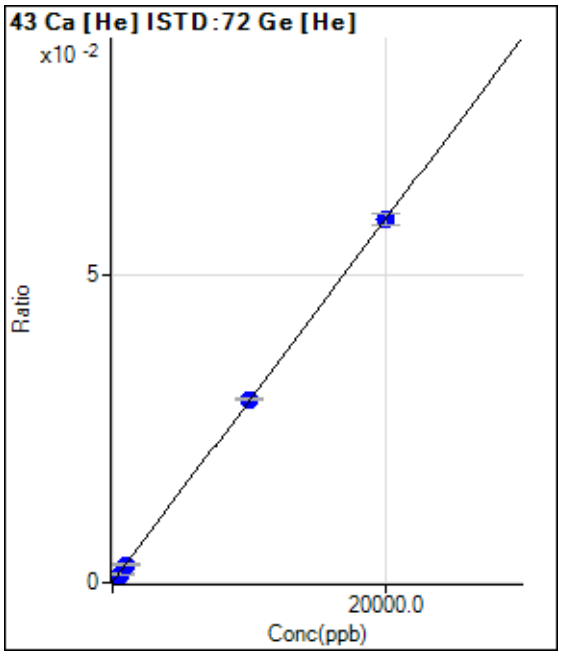


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	1570.09	0.0005	P	16.7
2	☐	200.000	189.883	8498.74	0.0026	P	6.4
3	☐	500.000	551.618	21573.15	0.0066	P	23.6
4	☐	1000.000	965.871	36840.02	0.0112	P	4.2
5	☐	10000.00	9996.204	360667.22	0.1110	P	1.8
6	☐	20000.00	20002.415	702064.03	0.2216	P	3.1
7	☐	100.000					

y = 1.1054E-005 * x + 4.8595E-004
R = 1.0000
DL = 22.07
BEC = 43.96

Weight: <None>
Min Conc: <None>

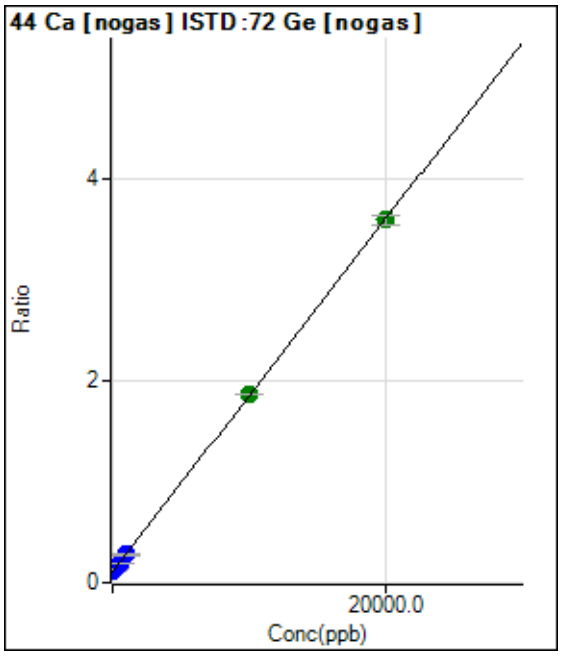
Calibration for 138_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	70.00	0.0001	P	29.0
2	☐	200.000	190.513	520.01	0.0006	P	13.1
3	☐	500.000	438.077	1110.05	0.0014	P	18.1
4	☐	1000.000	938.198	2313.52	0.0028	P	11.9
5	☐	10000.00	10068.440	23935.69	0.0297	P	0.6
6	☐	20000.00	19970.513	46702.27	0.0588	P	3.0
7	☐	100.000					

y = 2.9390E-006 * x + 8.6499E-005
R = 1.0000
DL = 25.56
BEC = 29.43

Weight: <None>
Min Conc: <None>

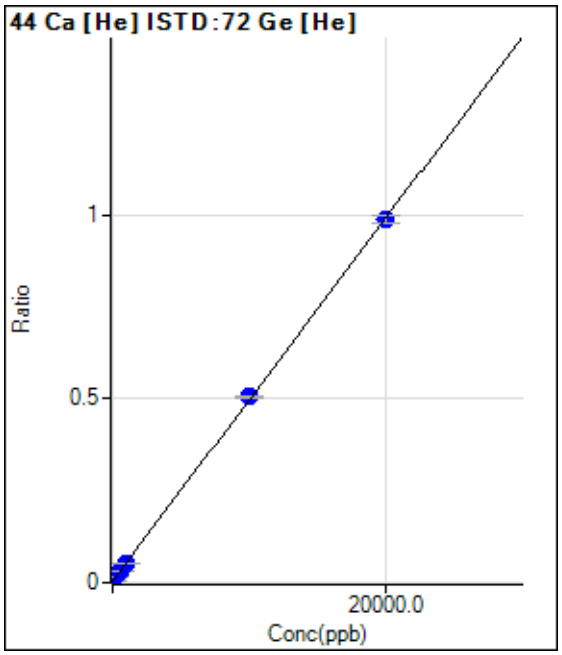


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	346445.06	0.1072	P	0.6
2	☐	200.000	195.345	464418.78	0.1412	P	2.4
3	☐	500.000	505.505	640198.75	0.1953	P	3.0
4	☐	1000.000	978.226	916610.12	0.2777	P	3.1
5	☐	10000.00	10091.250	6066129.28	1.8661	A	0.2
6	☐	20000.00	19955.373	11360076.91	3.5855	A	2.9
7	☐	100.000					

y = 1.7430E-004 * x + 0.1072
R = 1.0000
DL = 11.64
BEC = 614.8

Weight: <None>
Min Conc: <None>

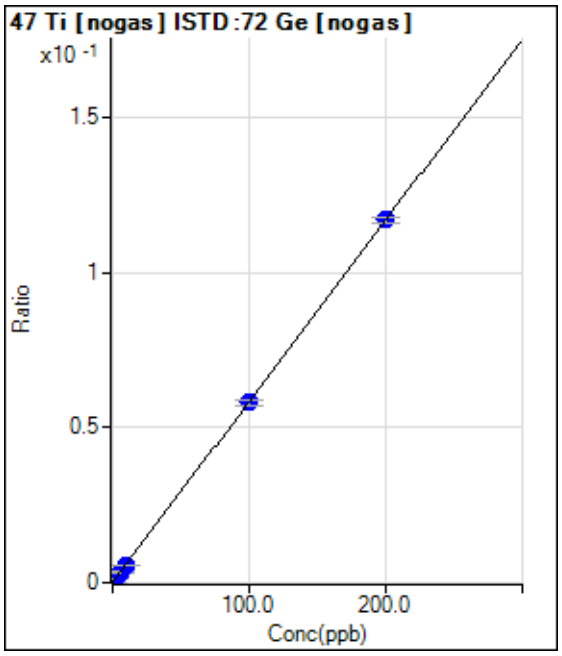
Calibration for 138_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	3160.31	0.0039	P	11.7
2	☐	200.000	198.044	10993.37	0.0137	P	1.7
3	☐	500.000	515.380	23668.64	0.0293	P	1.5
4	☐	1000.000	987.876	42775.90	0.0526	P	1.5
5	☐	10000.00	10153.257	406490.05	0.5040	P	1.8
6	☐	20000.00	19923.613	782864.62	0.9852	P	2.2
7	☐	100.000					

y = 4.9255E-005 * x + 0.0039
R = 1.0000
DL = 27.77
BEC = 79.25

Weight: <None>
Min Conc: <None>

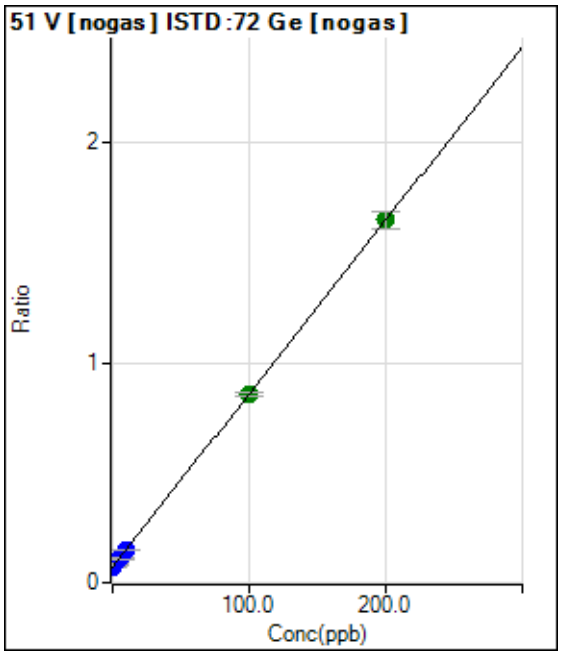


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	436.68	0.0001	P	5.5
2	☐	2.000	1.857	4010.50	0.0012	P	3.2
3	☐	5.000	5.418	10826.85	0.0033	P	9.8
4	☐	10.000	9.230	18225.81	0.0055	P	4.2
5	☐	100.000	99.426	189010.87	0.0582	P	2.8
6	☐	200.000	200.317	370955.04	0.1171	P	1.7
7	☐	1.000					

y = 5.8369E-004 * x + 1.3506E-004
R = 1.0000
DL = 0.03851
BEC = 0.2314

Weight: <None>
Min Conc: <None>

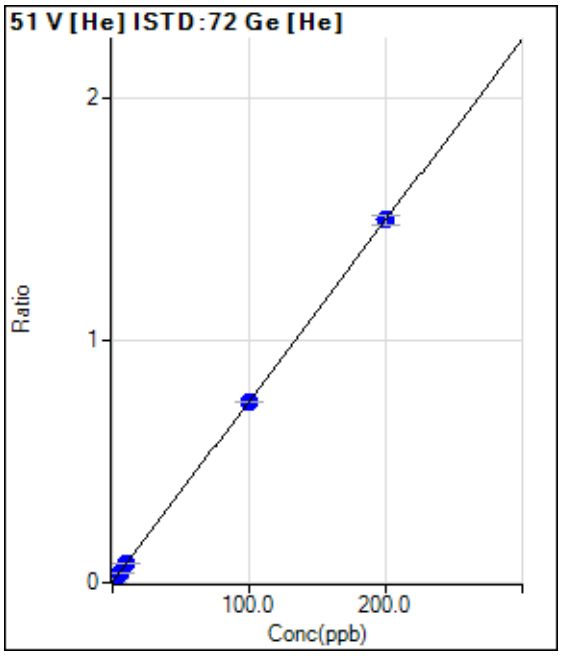
Calibration for 138_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	230343.67	0.0712	P	4.4
2	☐	2.000	1.553	274563.97	0.0835	P	1.4
3	☐	5.000	4.842	358841.39	0.1094	P	2.6
4	☐	10.000	9.864	491727.11	0.1490	P	3.5
5	☐	100.000	99.444	2778562.95	0.8550	A	2.5
6	☐	200.000	200.293	5226242.95	1.6498	A	4.5
7	☐	1.000					

y = 0.0079 * x + 0.0712
R = 1.0000
DL = 1.19
BEC = 9.038

Weight: <None>
Min Conc: <None>

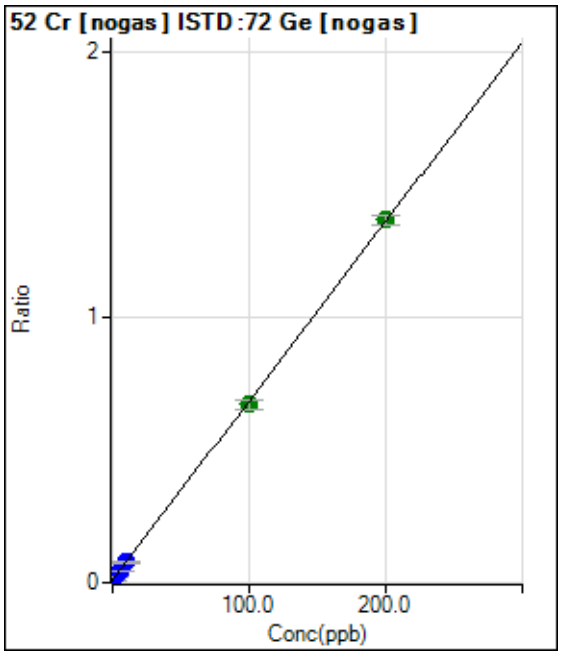


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.136	2635.53	0.0033	P	3.4
2	☐	2.000	2.092	14389.56	0.0179	P	3.6
3	☐	5.000	5.039	32246.53	0.0399	P	2.6
4	☐	10.000	9.937	62290.96	0.0765	P	1.0
5	☐	100.000	99.589	602342.56	0.7469	P	1.0
6	☐	200.000	200.207	1191175.08	1.4992	P	2.7
7	☐	1.000					

y = 0.0075 * x + 0.0022
R = 1.0000
DL = 0.0443
BEC = 0.2992

Weight: <None>
Min Conc: <None>

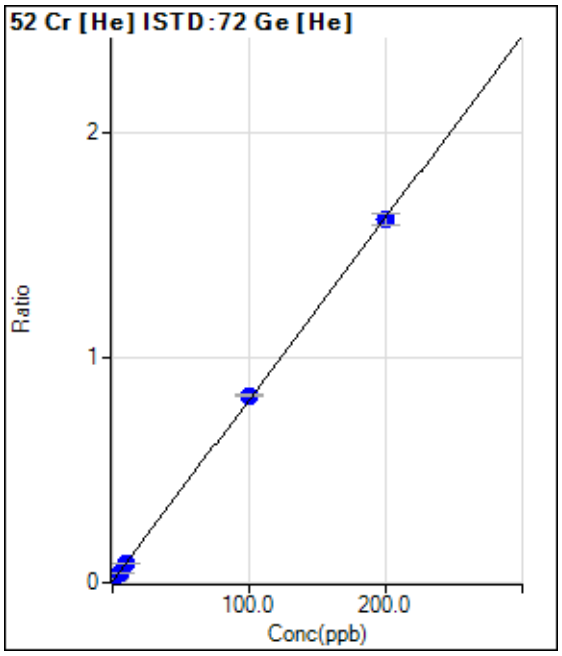
Calibration for 138_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	33153.19	0.0103	P	0.5
2	☐	2.000	1.981	77756.05	0.0236	P	2.6
3	☐	5.000	5.190	148632.04	0.0453	P	1.1
4	☐	10.000	9.786	252243.59	0.0764	P	2.2
5	☐	100.000	97.917	2183332.00	0.6720	A	4.7
6	☐	200.000	201.048	4337628.69	1.3689	A	2.6
7	☐	1.000					

y = 0.0068 * x + 0.0103
R = 0.9999
DL = 0.02172
BEC = 1.517

Weight: <None>
Min Conc: <None>

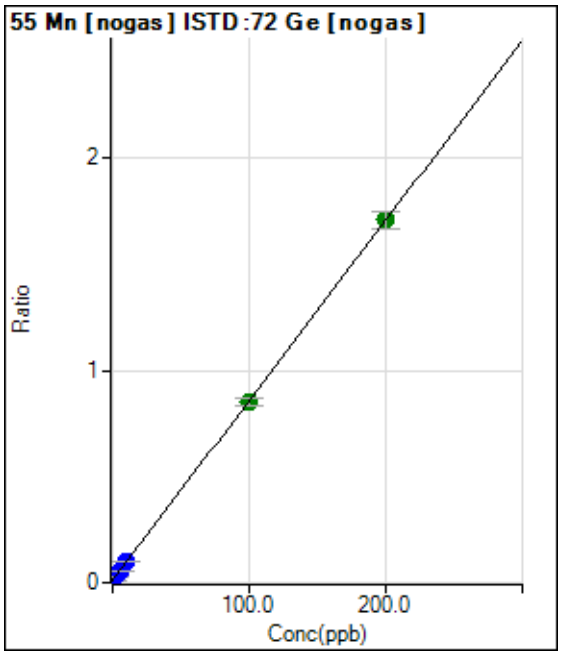


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	4597.29	0.0057	P	2.7
2	☐	2.000	1.951	17258.33	0.0214	P	1.1
3	☐	5.000	4.980	37114.16	0.0459	P	0.9
4	☐	10.000	9.679	68285.71	0.0839	P	2.1
5	☐	100.000	102.358	671833.85	0.8330	P	1.0
6	☐	200.000	198.838	1281350.63	1.6127	P	3.1
7	☐	1.000					

y = 0.0081 * x + 0.0057
R = 0.9999
DL = 0.05648
BEC = 0.7023

Weight: <None>
Min Conc: <None>

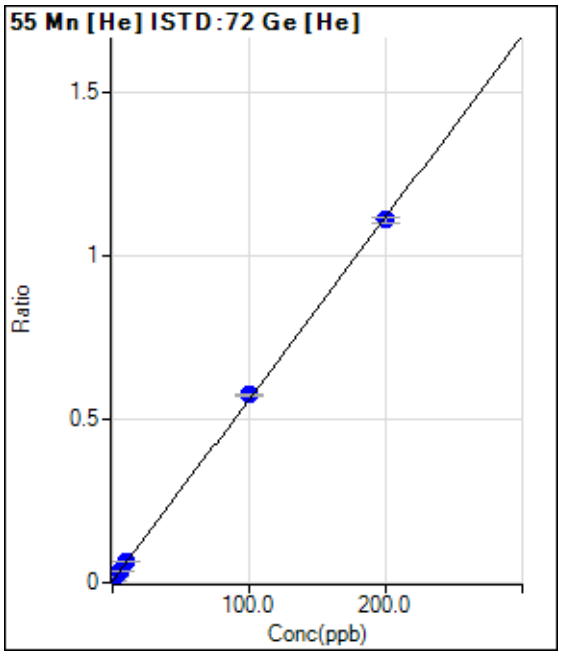
Calibration for 138_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	35550.91	0.0110	P	3.3
2	☐	2.000	1.992	91652.45	0.0279	P	4.6
3	☐	5.000	4.899	172193.42	0.0525	P	1.7
4	☐	10.000	10.521	330635.85	0.1002	P	3.3
5	☐	100.000	99.265	2768286.63	0.8523	A	4.5
6	☐	200.000	200.344	5412668.04	1.7089	A	5.1
7	☐	1.000					

y = 0.0085 * x + 0.0110
R = 1.0000
DL = 0.129
BEC = 1.298

Weight: <None>
Min Conc: <None>

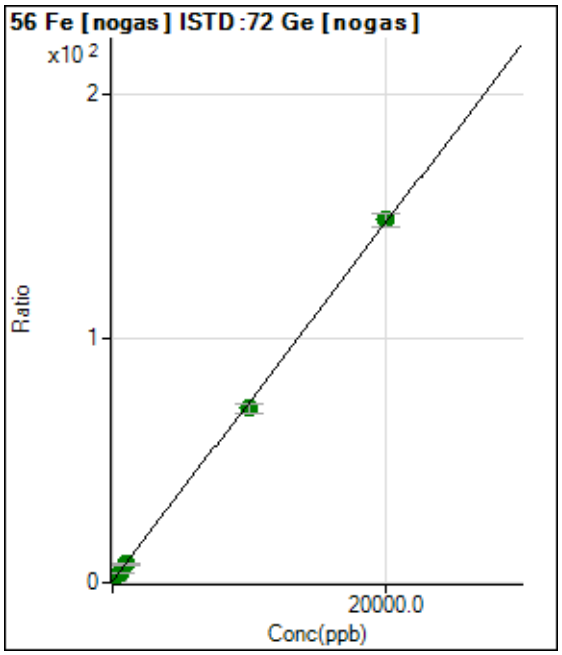


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	3757.12	0.0046	P	4.4
2	☐	2.000	2.025	12791.24	0.0159	P	3.5
3	☐	5.000	5.087	26586.08	0.0329	P	3.6
4	☐	10.000	10.717	52237.31	0.0642	P	0.6
5	☐	100.000	102.739	464116.67	0.5754	P	1.0
6	☐	200.000	198.592	880471.23	1.1080	P	1.4
7	☐	1.000					

y = 0.0056 * x + 0.0046
R = 0.9999
DL = 0.1106
BEC = 0.835

Weight: <None>
Min Conc: <None>

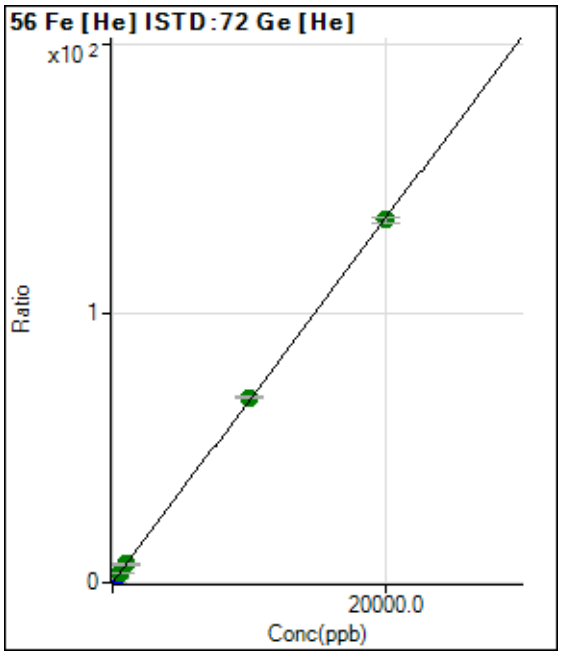
Calibration for 138_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	1956414.17	0.6052	A	2.1
2	☐	200.000	193.025	6643367.08	2.0208	A	4.8
3	☐	500.000	482.743	13592323.74	4.1455	A	2.0
4	☐	1000.000	944.173	24853691.18	7.5294	A	3.5
5	☐	10000.00	9661.030	232052288.5	71.4561	A	5.6
6	☐	20000.00	20172.777	470600377.1	148.545	A	3.6
7	☐	100.000					

y = 0.0073 * x + 0.6052
R = 0.9998
DL = 5.231
BEC = 82.52

Weight: <None>
Min Conc: <None>

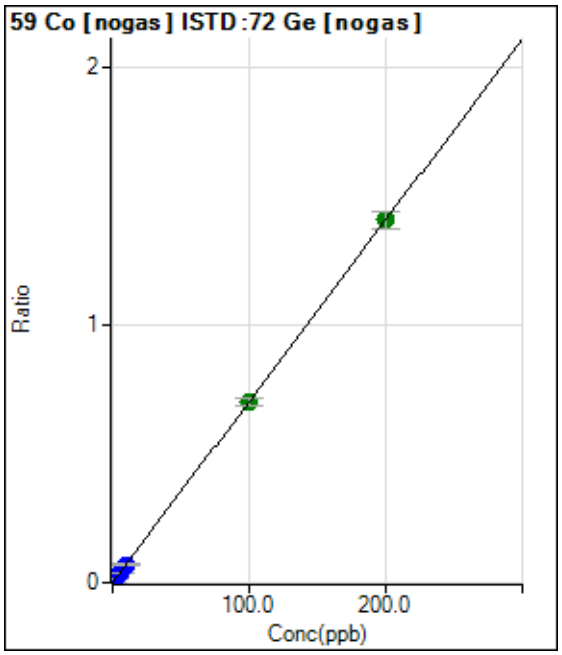


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	13091.48	0.0162	P	6.5
2	☐	200.000	210.939	1161661.57	1.4434	P	1.5
3	☐	500.000	511.225	2808440.17	3.4752	A	0.6
4	☐	1000.000	1001.909	5530173.46	6.7952	A	2.2
5	☐	10000.00	10161.774	55464134.17	68.7723	A	0.9
6	☐	20000.00	19918.628	107109075.0	134.788	A	1.9
7	☐	100.000					

y = 0.0068 * x + 0.0162
R = 1.0000
DL = 0.4672
BEC = 2.388

Weight: <None>
Min Conc: <None>

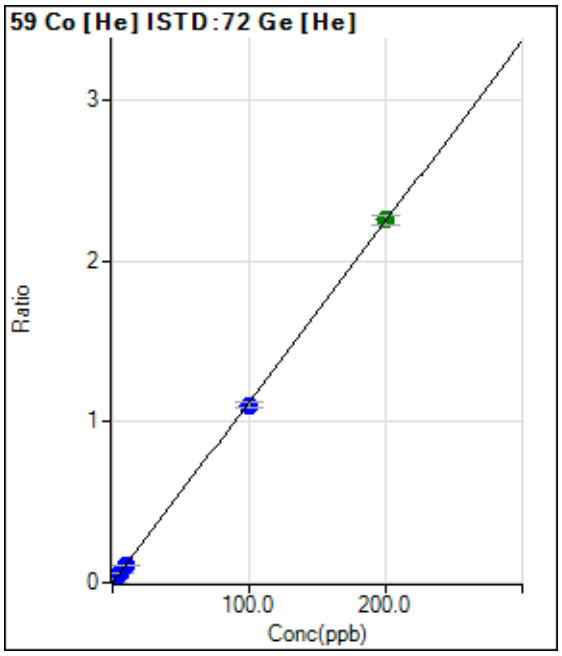
Calibration for 138_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	1110.05	0.0003	P	6.1
2	☐	2.000	2.044	48424.10	0.0147	P	4.6
3	☐	5.000	5.055	117742.98	0.0359	P	2.4
4	☐	10.000	9.932	231885.11	0.0702	P	2.5
5	☐	100.000	99.550	2277158.87	0.7008	A	4.1
6	☐	200.000	200.226	4463820.66	1.4092	A	4.5
7	☐	1.000					

y = 0.0070 * x + 3.4333E-004
R = 1.0000
DL = 0.008964
BEC = 0.04879

Weight: <None>
Min Conc: <None>

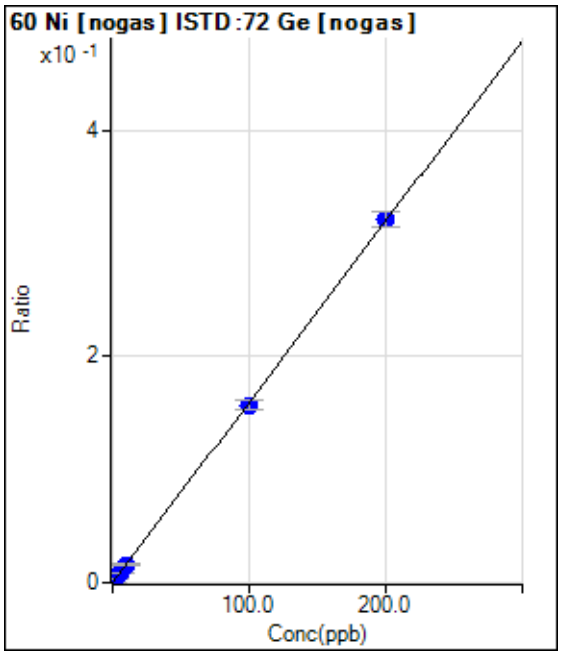


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	310.01	0.0004	P	12.2
2	☐	2.000	2.001	18389.43	0.0228	P	1.6
3	☐	5.000	4.922	44961.91	0.0556	P	1.4
4	☐	10.000	9.653	88516.47	0.1088	P	2.3
5	☐	100.000	98.419	891454.62	1.1055	P	2.5
6	☐	200.000	200.810	1791767.06	2.2552	A	2.9
7	☐	1.000					

y = 0.0112 * x + 3.8290E-004
R = 1.0000
DL = 0.01246
BEC = 0.0341

Weight: <None>
Min Conc: <None>

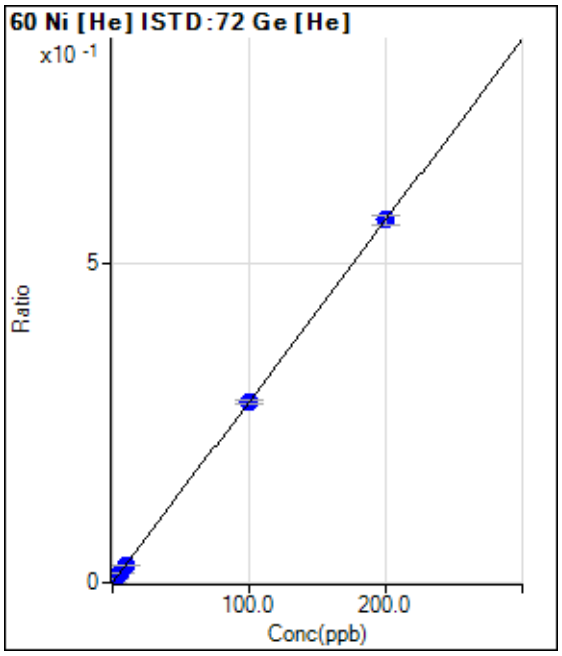
Calibration for 138_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.220	810.03	0.0003	P	4.0
2	☐	2.000	2.229	11383.69	0.0035	P	5.7
3	☐	5.000	5.275	27327.31	0.0083	P	1.1
4	☐	10.000	10.161	53317.76	0.0161	P	3.4
5	☐	100.000	98.264	510058.21	0.1570	P	5.4
6	☐	200.000	200.851	1017116.63	0.3211	P	4.4
7	☐	1.000					

y = 0.0016 * x - 1.0187E-004
R = 0.9999
DL = 0.01863
BEC = -0.0637

Weight: <None>
Min Conc: <None>

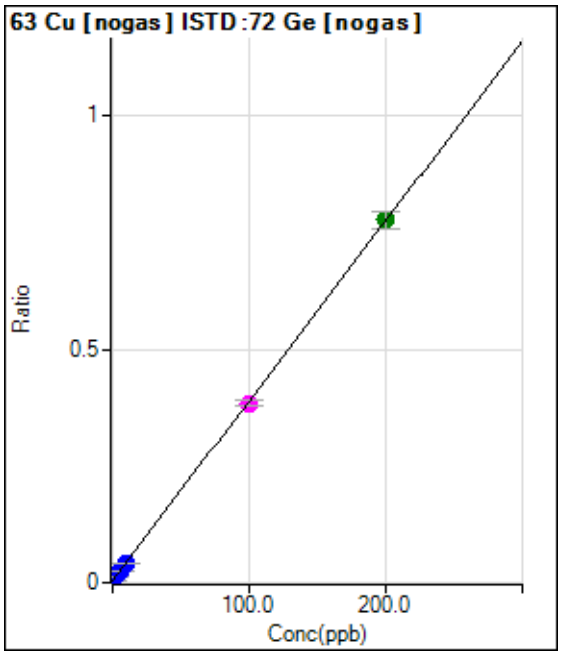


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.085	103.33	0.0001	P	55.2
2	☐	2.000	2.135	4780.69	0.0059	P	4.8
3	☐	5.000	5.093	11577.13	0.0143	P	2.5
4	☐	10.000	9.951	22871.31	0.0281	P	2.6
5	☐	100.000	99.475	227320.65	0.2819	P	2.2
6	☐	200.000	200.261	450978.10	0.5676	P	2.8
7	☐	1.000					

y = 0.0028 * x - 1.1280E-004
R = 1.0000
DL = 0.07452
BEC = -0.03979

Weight: <None>
Min Conc: <None>

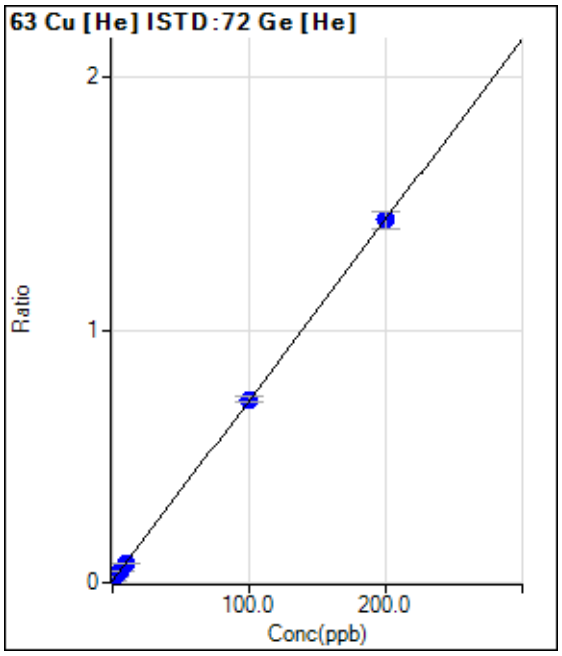
Calibration for 138_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	15116.42	0.0047	P	3.0
2	☐	2.000	2.092	41894.62	0.0127	P	5.4
3	☐	5.000	5.054	79210.34	0.0242	P	0.8
4	☐	10.000	9.849	140775.25	0.0426	P	2.7
5	☐	100.000	98.695	1250823.70	0.3850	M	3.6
6	☐	200.000	200.658	2464249.44	0.7780	A	4.6
7	☐	1.000					

y = 0.0039 * x + 0.0047
R = 1.0000
DL = 0.1098
BEC = 1.213

Weight: <None>
Min Conc: <None>

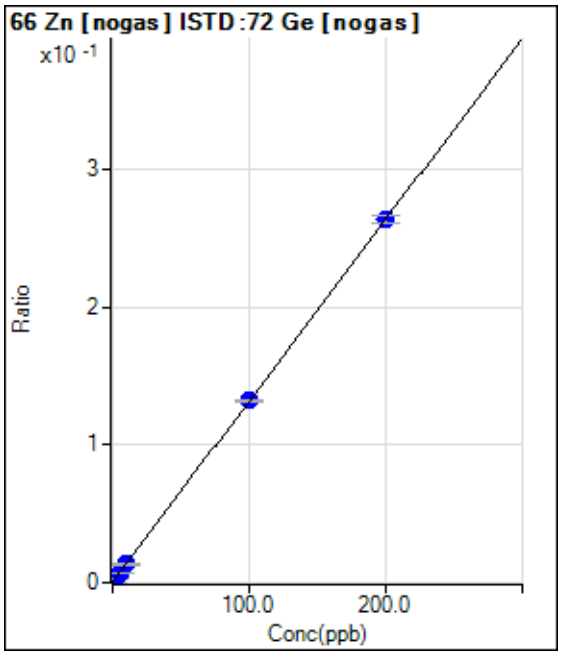


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	-0.102	5817.66	0.0072	P	3.6
2	☐	2.000	1.968	17681.98	0.0220	P	0.9
3	☐	5.000	5.001	35247.47	0.0436	P	3.0
4	☐	10.000	9.991	64527.02	0.0793	P	1.0
5	☐	100.000	100.283	584011.19	0.7242	P	3.0
6	☐	200.000	199.859	1140341.67	1.4355	P	4.6
7	☐	1.000					

y = 0.0071 * x + 0.0079
R = 1.0000
DL = 0.1086
BEC = 1.108

Weight: <None>
Min Conc: <None>

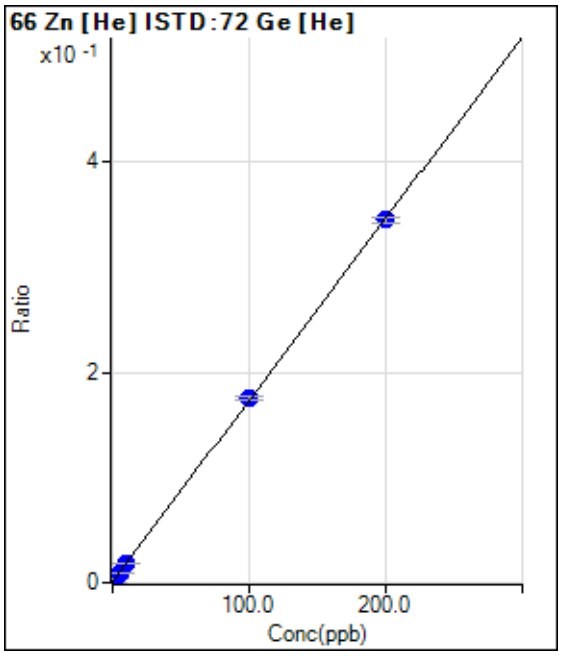
Calibration for 138_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.063	1340.07	0.0004	P	3.3
2	☐	2.000	2.104	10179.63	0.0031	P	3.5
3	☐	5.000	4.892	22157.05	0.0068	P	4.0
4	☐	10.000	9.873	43922.88	0.0133	P	2.4
5	☐	100.000	100.120	428575.06	0.1319	P	1.7
6	☐	200.000	199.948	833502.33	0.2630	P	2.2
7	☐	1.000					

y = 0.0013 * x + 3.3137E-004
R = 1.0000
DL = 0.0308
BEC = 0.2522

Weight: <None>
Min Conc: <None>

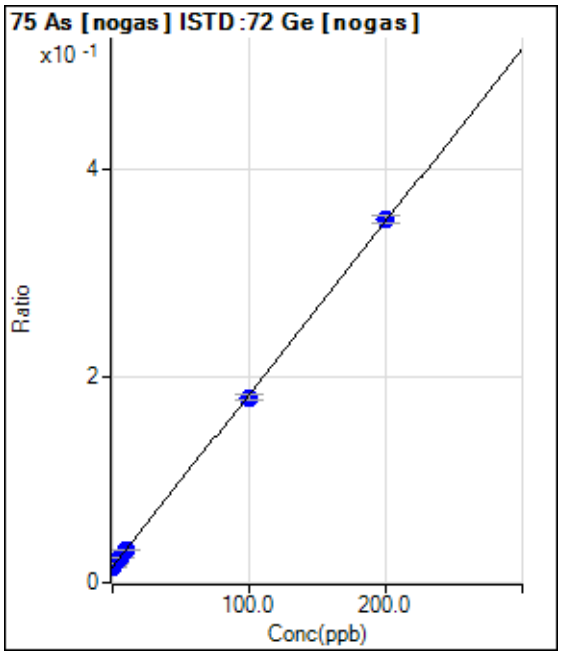


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	-0.228	343.34	0.0004	P	40.2
2	☐	2.000	1.834	3203.67	0.0040	P	0.7
3	☐	5.000	4.738	7264.86	0.0090	P	1.8
4	☐	10.000	9.995	14699.47	0.0181	P	4.5
5	☐	100.000	101.304	141569.40	0.1755	P	1.7
6	☐	200.000	199.356	273886.48	0.3447	P	1.7
7	☐	1.000					

y = 0.0017 * x + 8.1665E-004
R = 1.0000
DL = 0.2964
BEC = 0.4735

Weight: <None>
Min Conc: <None>

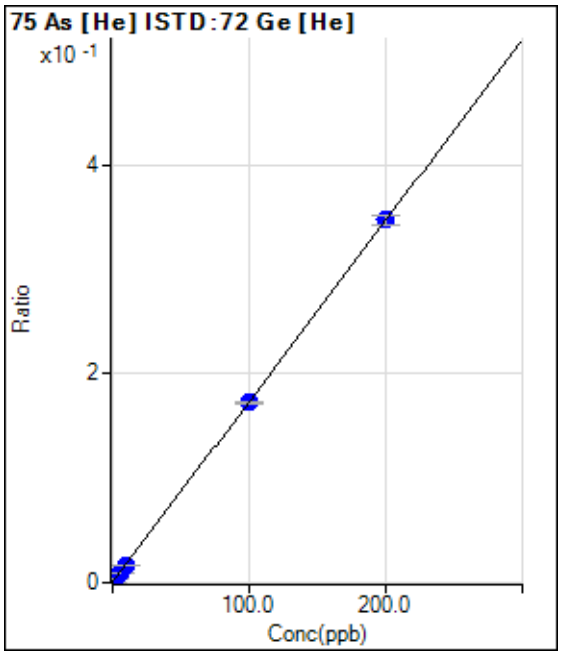
Calibration for 138_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.321	50720.91	0.0157	P	3.3
2	☐	2.000	2.197	61908.22	0.0188	P	2.9
3	☐	5.000	5.391	79254.97	0.0242	P	0.5
4	☐	10.000	10.037	105469.49	0.0319	P	3.7
5	☐	100.000	98.134	582611.05	0.1793	P	2.7
6	☐	200.000	200.919	1113067.04	0.3512	P	2.2
7	☐	1.000					

y = 0.0017 * x + 0.0151
R = 0.9999
DL = 0.9315
BEC = 9.055

Weight: <None>
Min Conc: <None>

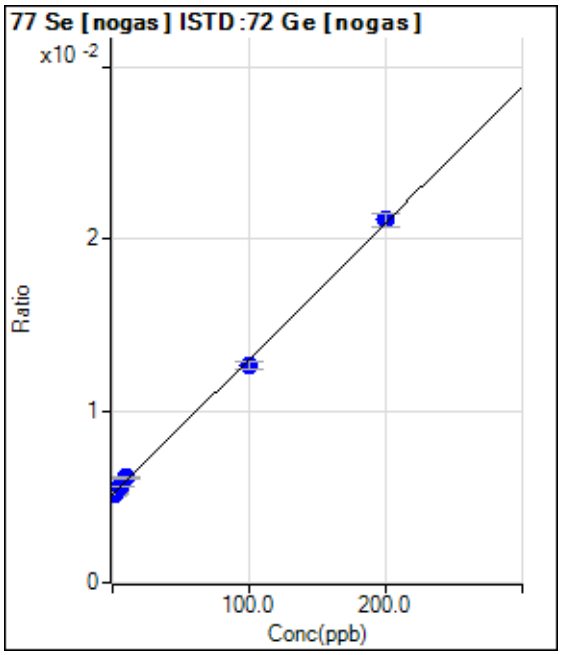


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	265.56	0.0003	P	13.7
2	☐	2.000	1.995	3045.83	0.0038	P	1.1
3	☐	5.000	4.799	6981.36	0.0086	P	3.0
4	☐	10.000	9.715	13963.15	0.0172	P	0.9
5	☐	100.000	99.238	138886.19	0.1722	P	0.9
6	☐	200.000	200.400	276043.22	0.3474	P	2.6
7	☐	1.000					

y = 0.0017 * x + 3.2805E-004
R = 1.0000
DL = 0.07791
BEC = 0.1894

Weight: <None>
Min Conc: <None>

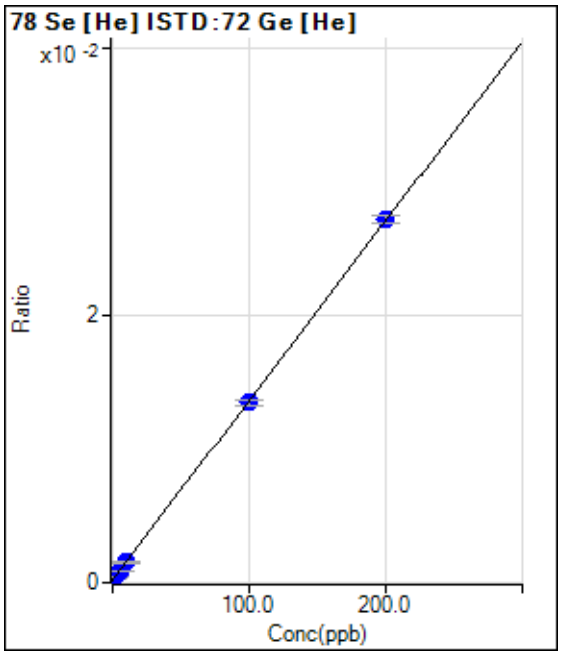
Calibration for 138_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	16564.45	0.0051	P	3.3
2	☐	2.000	0.851	17071.57	0.0052	P	2.2
3	☐	5.000	5.656	18262.68	0.0056	P	1.1
4	☐	10.000	12.601	20198.10	0.0061	P	2.0
5	☐	100.000	95.337	41096.61	0.0126	P	3.7
6	☐	200.000	202.197	66812.34	0.0211	P	3.6
7	☐	1.000					

y = 7.8942E-005 * x + 0.0051
R = 0.9995
DL = 6.461
BEC = 64.89

Weight: <None>
Min Conc: <None>

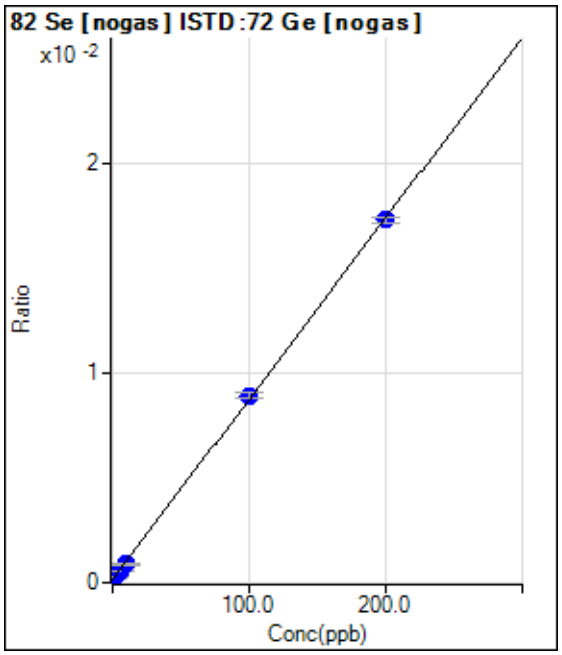


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.460	216.67	0.0003	P	7.1
2	☐	2.000	2.180	401.34	0.0005	P	9.1
3	☐	5.000	5.256	736.02	0.0009	P	3.1
4	☐	10.000	9.763	1233.38	0.0015	P	5.4
5	☐	100.000	98.673	10843.90	0.0134	P	2.9
6	☐	200.000	200.667	21560.74	0.0271	P	2.2
7	☐	1.000					

y = 1.3417E-004 * x + 2.0579E-004
R = 1.0000
DL = 0.4257
BEC = 1.534

Weight: <None>
Min Conc: <None>

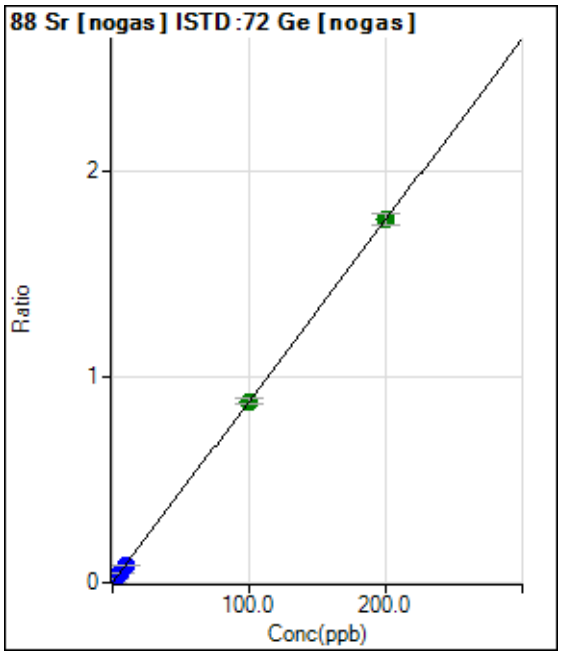
Calibration for 138_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	480.01	0.0001	P	11.9
2	☐	2.000	1.227	836.70	0.0003	P	6.9
3	☐	5.000	4.514	1760.11	0.0005	P	4.3
4	☐	10.000	8.804	2990.30	0.0009	P	9.6
5	☐	100.000	101.803	28953.40	0.0089	P	3.5
6	☐	200.000	199.178	54809.67	0.0173	P	1.8
7	☐	1.000					

y = 8.6086E-005 * x + 1.4839E-004
R = 0.9999
DL = 0.616
BEC = 1.724

Weight: <None>
Min Conc: <None>

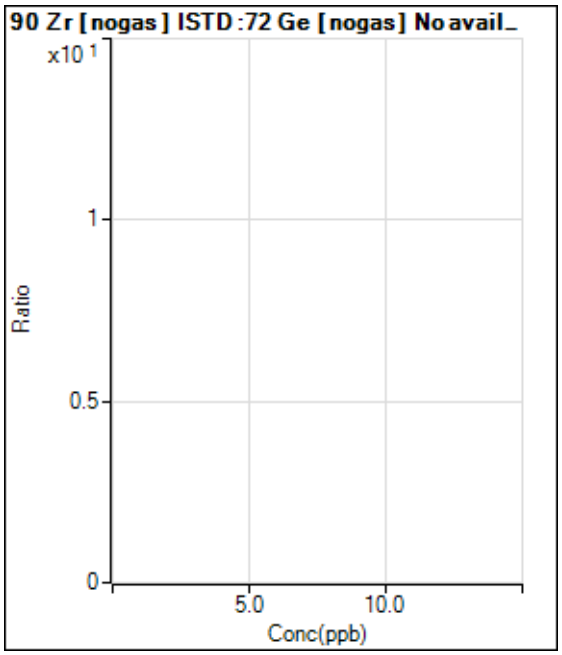


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	3567.07	0.0011	P	3.8
2	☐	2.000	1.944	60017.98	0.0183	P	4.7
3	☐	5.000	4.897	145268.29	0.0443	P	2.4
4	☐	10.000	9.701	286095.07	0.0867	P	4.4
5	☐	100.000	99.968	2869077.98	0.8831	A	3.5
6	☐	200.000	200.034	5595267.00	1.7660	A	3.1
7	☐	1.000					

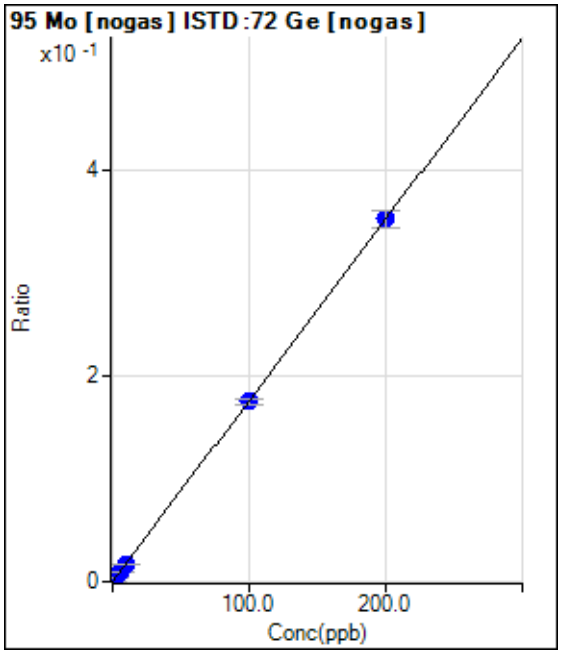
y = 0.0088 * x + 0.0011
R = 1.0000
DL = 0.01426
BEC = 0.1251

Weight: <None>
Min Conc: <None>

Calibration for 138_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000					
2	☐	2.000					
3	☐	5.000					
4	☐	10.000					
5	☐	100.000					
6	☐	200.000					
7	☐	1.000					

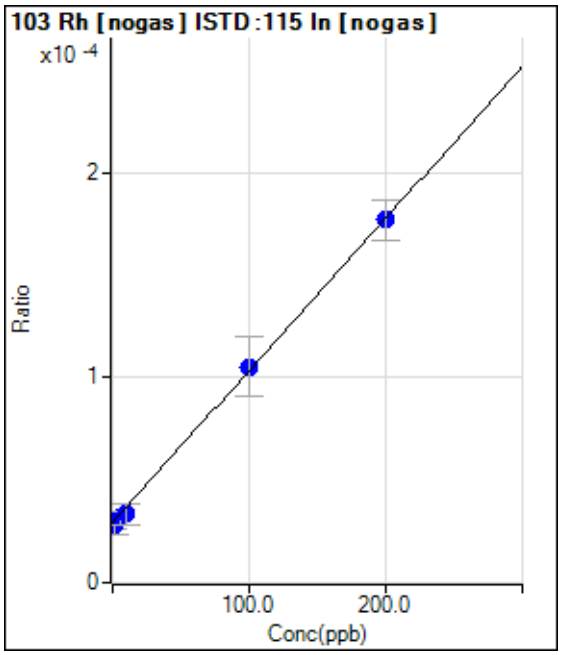


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	150.00	0.0000	P	35.1
2	☐	2.000	1.974	11607.28	0.0035	P	3.0
3	☐	5.000	4.966	28873.67	0.0088	P	4.0
4	☐	10.000	9.652	56343.01	0.0171	P	5.8
5	☐	100.000	99.450	570258.34	0.1755	P	2.9
6	☐	200.000	200.293	1119555.63	0.3534	P	4.7
7	☐	1.000					

y = 0.0018 * x + 4.6391E-005
R = 1.0000
DL = 0.02772
BEC = 0.02629

Weight: <None>
Min Conc: <None>

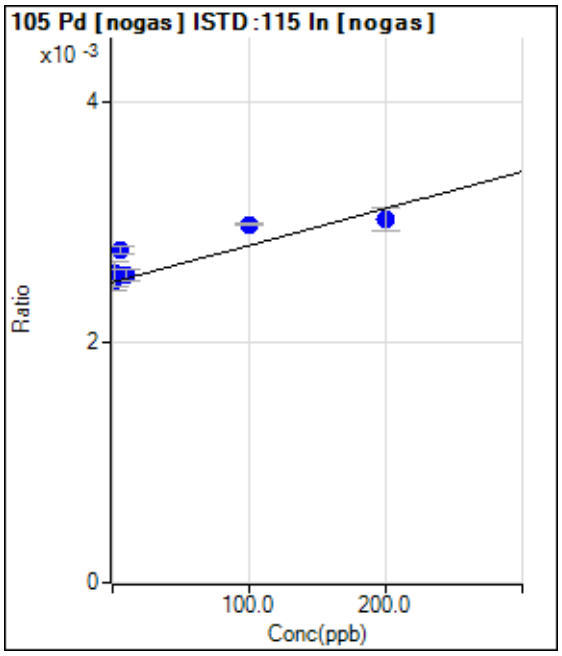
Calibration for 138_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	86.67	0.0000	P	19.6
2	☐	2.000	-1.936	83.33	0.0000	P	32.6
3	☐	5.000	2.983	93.33	0.0000	P	19.5
4	☐	10.000	5.325	96.67	0.0000	P	33.0
5	☐	100.000	102.662	293.34	0.0001	P	27.4
6	☐	200.000	198.992	490.01	0.0002	P	10.9
7	☐	1.000					

y = 7.4138E-007 * x + 2.9371E-005
R = 0.9996
DL = 23.24
BEC = 39.62

Weight: <None>
Min Conc: <None>

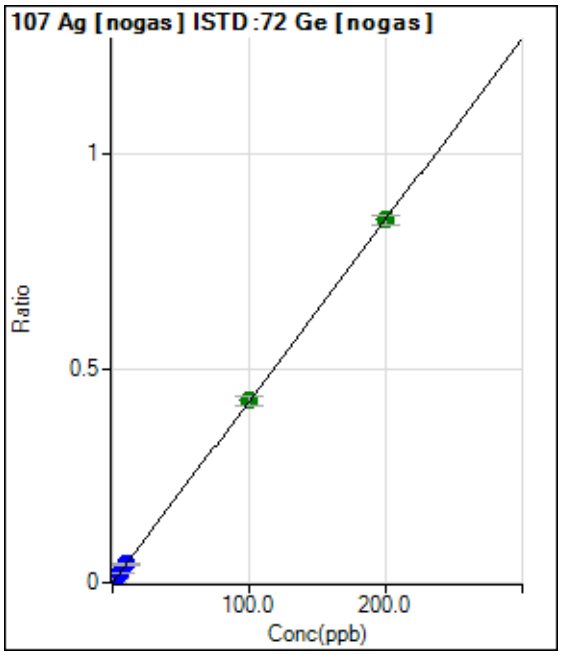


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	7398.35	0.0025	P	4.9
2	☐	2.000	22.187	7688.50	0.0026	P	7.9
3	☐	5.000	86.015	8132.01	0.0028	P	2.3
4	☐	10.000	19.311	7428.35	0.0026	P	3.6
5	☐	100.000	157.048	8328.80	0.0030	P	0.9
6	☐	200.000	168.783	8358.76	0.0030	P	6.3
7	☐	1.000					

y = 3.0700E-006 * x + 0.0025
R = 0.8694
DL = 118.5
BEC = 814.1

Weight: <None>
Min Conc: <None>

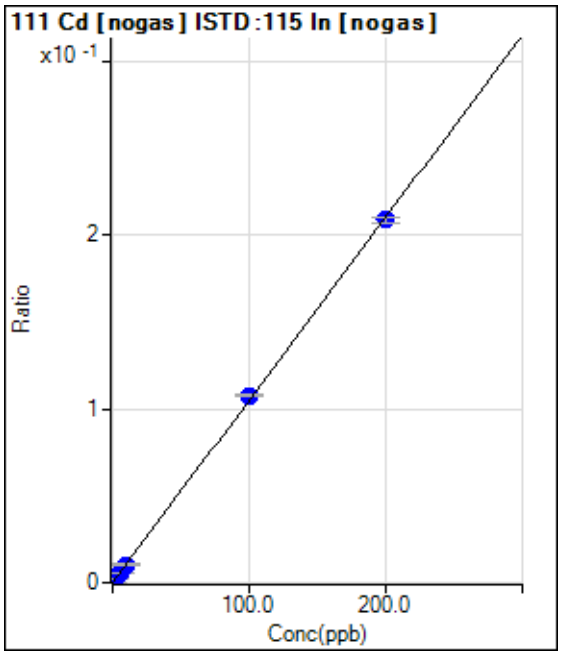
Calibration for 138_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	83.33	0.0000	P	6.9
2	☐	2.000	2.053	28710.36	0.0087	P	3.9
3	☐	5.000	4.982	69336.39	0.0211	P	3.5
4	☐	10.000	10.148	142152.70	0.0431	P	2.6
5	☐	100.000	100.140	1379275.03	0.4247	A	4.8
6	☐	200.000	199.922	2686314.75	0.8478	A	2.5
7	☐	1.000					

y = 0.0042 * x + 2.5776E-005
R = 1.0000
DL = 0.001252
BEC = 0.006079

Weight: <None>
Min Conc: <None>

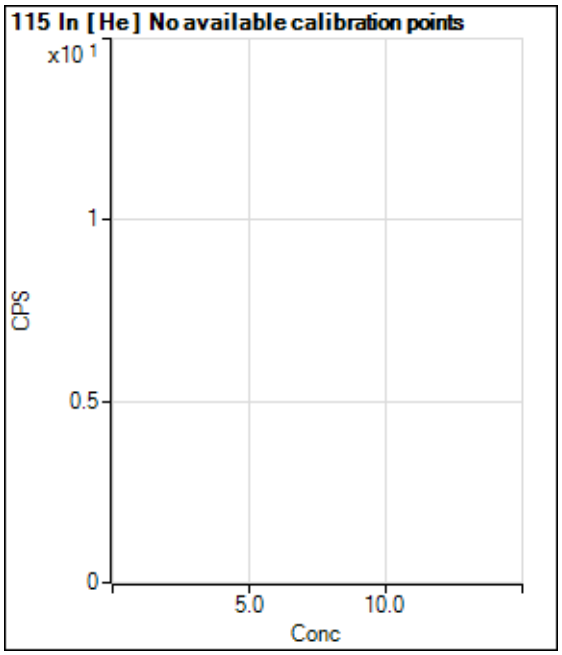


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	30.00	0.0000	P	31.6
2	☐	2.000	1.956	6194.54	0.0021	P	2.7
3	☐	5.000	4.872	15096.74	0.0051	P	1.5
4	☐	10.000	9.908	30236.39	0.0104	P	2.3
5	☐	100.000	102.487	300914.07	0.1077	P	1.6
6	☐	200.000	198.765	578780.75	0.2089	P	1.3
7	☐	1.000					

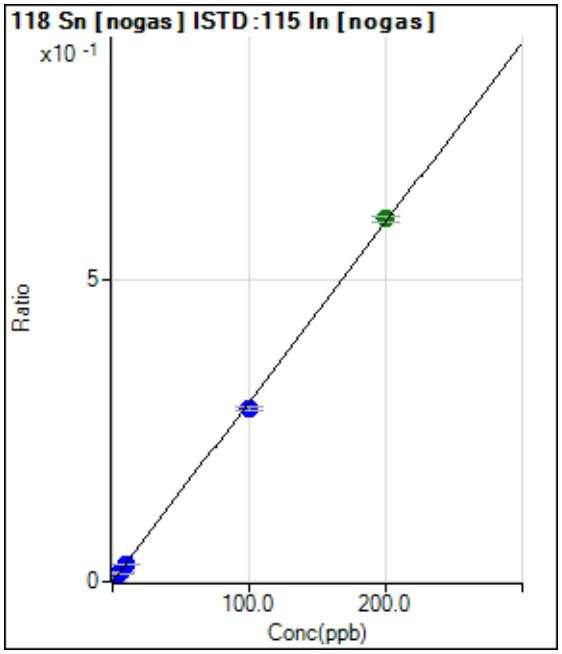
y = 0.0011 * x + 1.0098E-005
R = 0.9999
DL = 0.009118
BEC = 0.009607

Weight: <None>
Min Conc: <None>

Calibration for 138_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐			956719.59		P	3.3
2	☐			956500.06		P	3.1
3	☐			951304.14		P	2.4
4	☐			955736.62		P	1.7
5	☐			941648.28		P	3.0
6	☐			919722.86		P	1.1
7	☐						

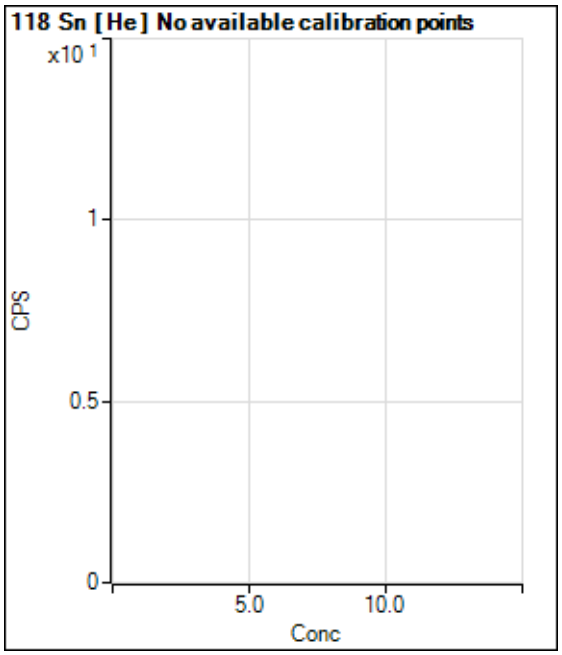


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	1000.04	0.0003	P	5.7
2	☐	2.000	1.846	17505.70	0.0058	P	1.5
3	☐	5.000	4.708	42255.09	0.0144	P	4.6
4	☐	10.000	9.288	81258.71	0.0280	P	0.9
5	☐	100.000	96.229	801581.97	0.2871	P	2.2
6	☐	200.000	201.930	1667639.51	0.6020	A	1.4
7	☐	1.000					

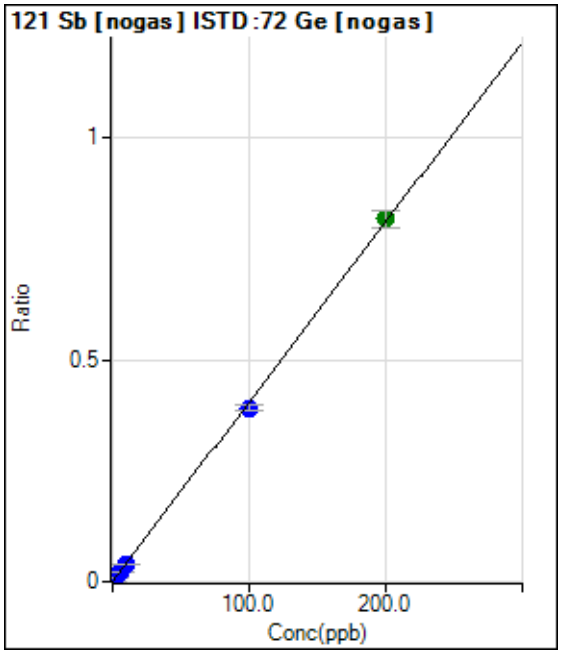
y = 0.0030 * x + 3.3793E-004
R = 0.9998
DL = 0.01956
BEC = 0.1134

Weight: <None>
Min Conc: <None>

Calibration for 138_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐			366.68		P	27.9
2	☐			6534.66		P	2.1
3	☐			15280.29		P	4.1
4	☐			30740.82		P	1.9
5	☐			304450.59		P	1.2
6	☐			612646.56		P	2.3
7	☐						

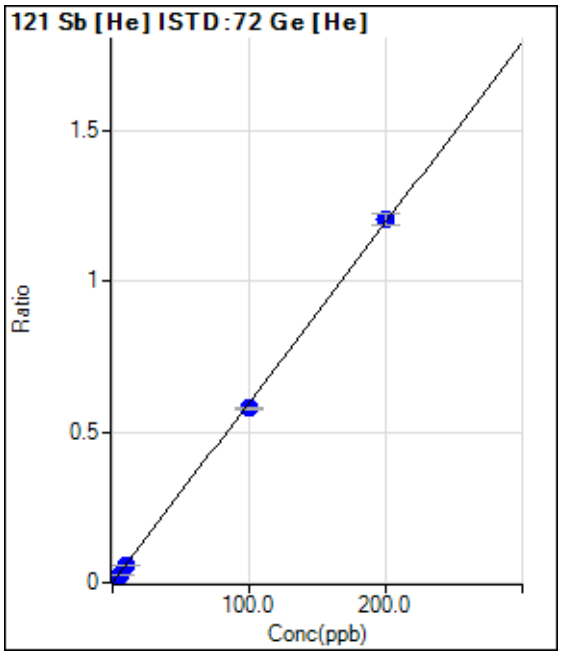


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	1053.38	0.0003	P	8.9
2	☐	2.000	1.982	27475.47	0.0084	P	1.6
3	☐	5.000	4.852	65499.72	0.0200	P	0.6
4	☐	10.000	9.324	125699.88	0.0381	P	3.2
5	☐	100.000	96.480	1270308.16	0.3910	P	3.0
6	☐	200.000	201.798	2589194.80	0.8174	A	4.6
7	☐	1.000					

y = 0.0040 * x + 3.2599E-004
R = 0.9998
DL = 0.02153
BEC = 0.08051

Weight: <None>
Min Conc: <None>

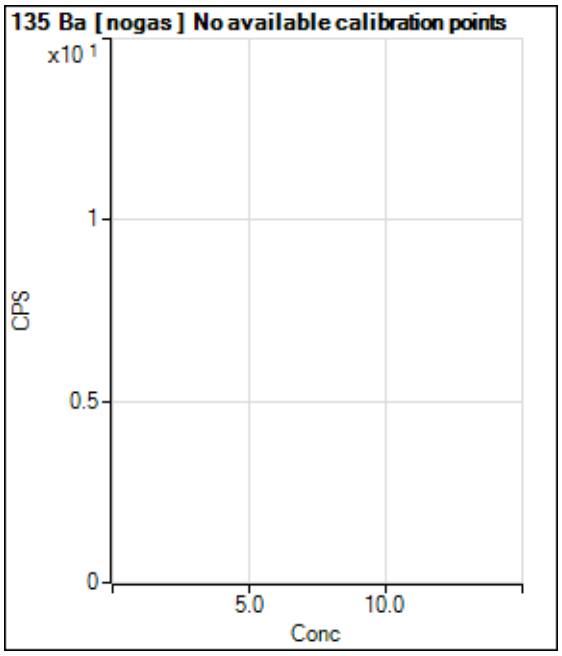
Calibration for 138_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	380.01	0.0005	P	22.2
2	☐	2.000	1.952	9762.86	0.0121	P	4.9
3	☐	5.000	4.643	22788.32	0.0282	P	1.3
4	☐	10.000	9.338	45780.16	0.0563	P	2.4
5	☐	100.000	97.053	467969.33	0.5803	P	1.2
6	☐	200.000	201.516	956850.90	1.2043	P	3.0
7	☐	1.000					

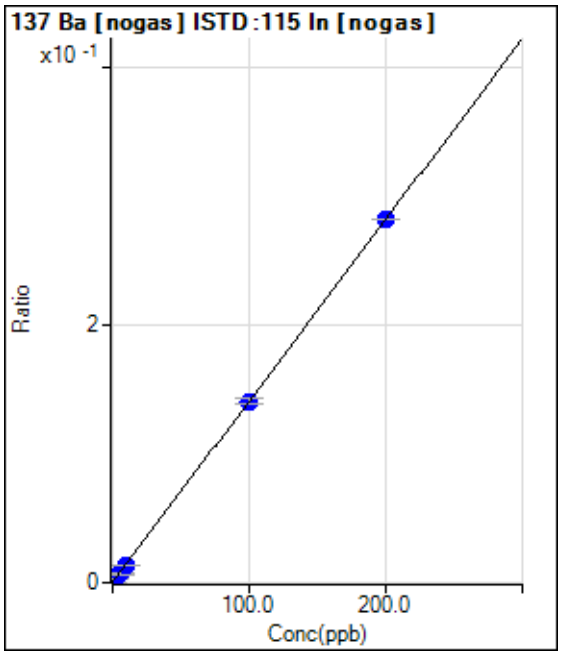
y = 0.0060 * x + 4.6865E-004
R = 0.9999
DL = 0.05224
BEC = 0.07845

Weight: <None>
Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐			373.34		P	5.6
2	☐			4774.10		P	8.7
3	☐			11810.87		P	4.4
4	☐			23062.40		P	2.0
5	☐			233250.56		P	0.5
6	☐			457816.31		P	0.8
7	☐						

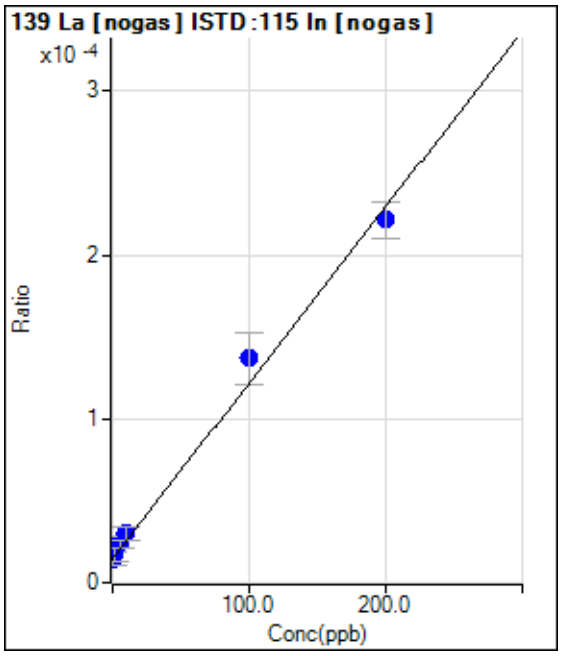
Calibration for 138_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	726.70	0.0002	P	11.4
2	☐	2.000	1.790	8285.46	0.0028	P	5.1
3	☐	5.000	4.619	19851.74	0.0067	P	4.1
4	☐	10.000	9.706	40357.97	0.0139	P	3.3
5	☐	100.000	100.065	394072.13	0.1411	P	2.8
6	☐	200.000	199.994	780755.87	0.2818	P	0.1
7	☐	1.000					

y = 0.0014 * x + 2.4552E-004
R = 1.0000
DL = 0.05938
BEC = 0.1744

Weight: <None>
Min Conc: <None>

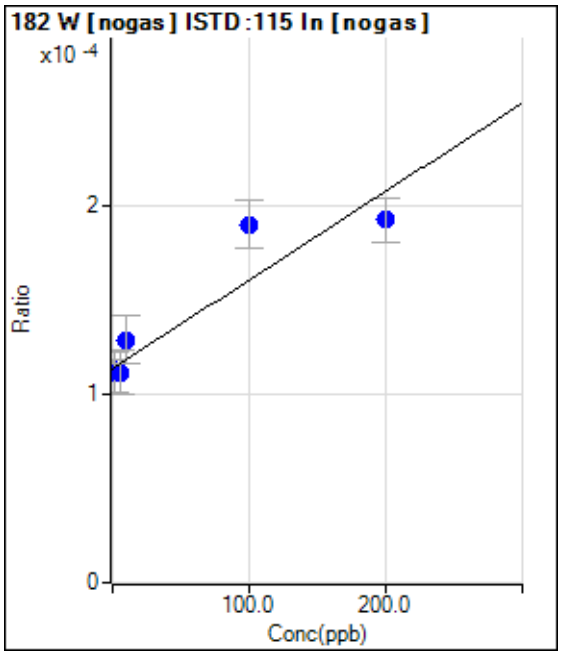


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	43.33	0.0000	P	56.8
2	☐	2.000	3.103	53.33	0.0000	P	54.8
3	☐	5.000	9.587	73.33	0.0000	P	29.4
4	☐	10.000	14.393	86.67	0.0000	P	30.3
5	☐	100.000	113.838	380.01	0.0001	P	22.7
6	☐	200.000	192.735	613.36	0.0002	P	9.8
7	☐	1.000					

y = 1.0732E-006 * x + 1.4544E-005
R = 0.9966
DL = 23.1
BEC = 13.55

Weight: <None>
Min Conc: <None>

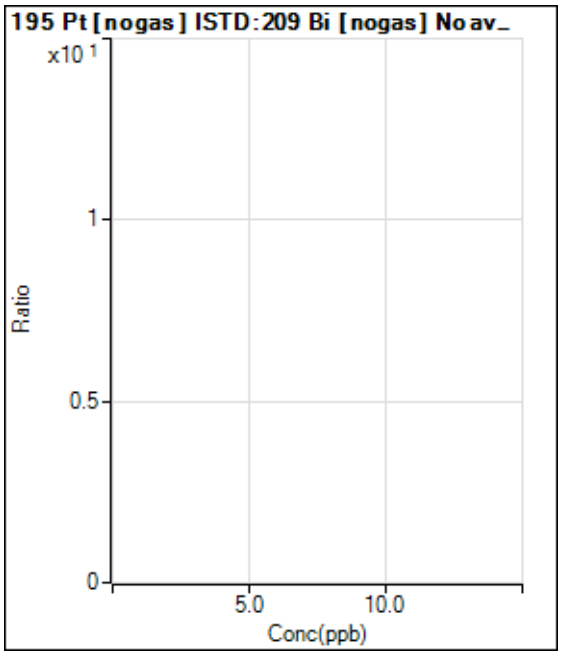
Calibration for 138_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	336.68	0.0001	P	7.4
2	☐	2.000	-4.719	333.34	0.0001	P	18.8
3	☐	5.000	-4.841	326.68	0.0001	P	21.4
4	☐	10.000	32.680	373.34	0.0001	P	19.0
5	☐	100.000	162.957	533.35	0.0002	P	13.9
6	☐	200.000	167.701	533.35	0.0002	P	12.5
7	☐	1.000					

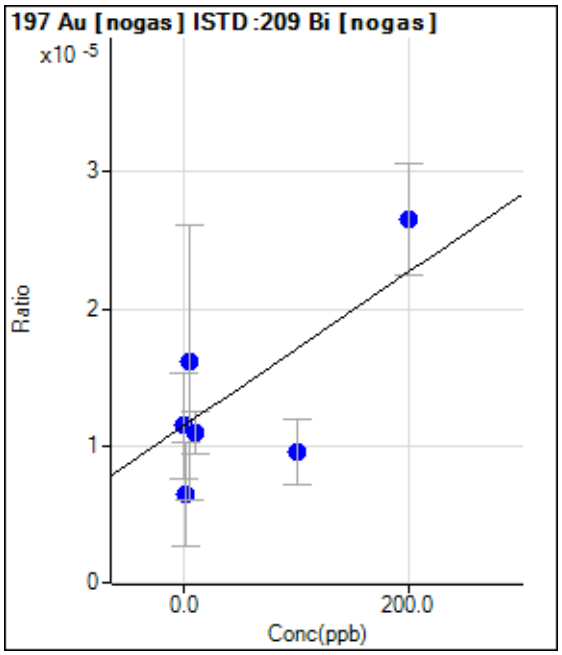
y = 4.6990E-007 * x + 1.1372E-004
R = 0.9206
DL = 53.94
BEC = 242

Weight: <None>
Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000					
2	☐	2.000					
3	☐	5.000					
4	☐	10.000					
5	☐	100.000					
6	☐	200.000					
7	☐	1.000					

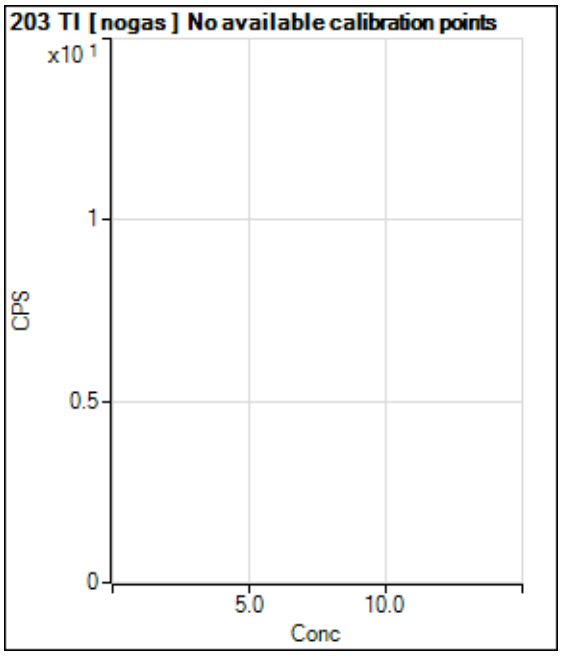
Calibration for 138_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	23.33	0.0000	P	67.1
2	☐	2.000	-87.413	13.33	0.0000	P	116.
3	☐	5.000	82.104	33.33	0.0000	P	124.
4	☐	10.000	-8.871	23.33	0.0000	P	28.6
5	☐	100.000	-33.154	20.00	0.0000	P	50.3
6	☐	200.000	266.487	53.33	0.0000	P	30.7
7	☐	1.000					

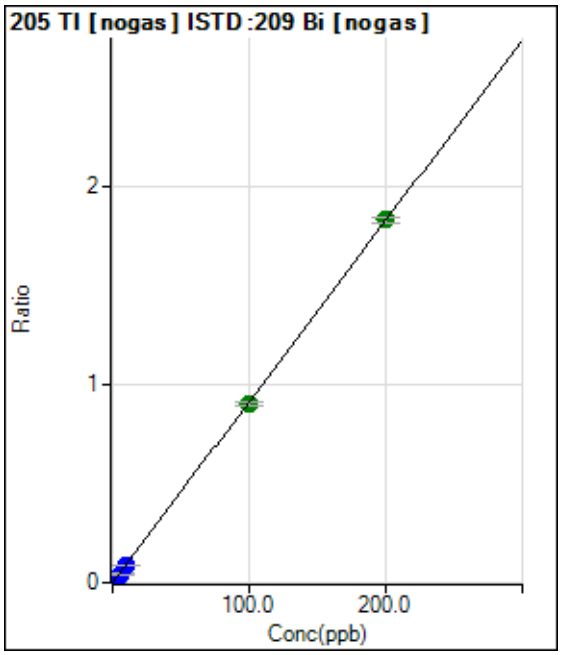
y = 5.6433E-008 * x + 1.1455E-005
R = 0.7527
DL = 408.5
BEC = 203

Weight: <None>
Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐			173.33		P	8.8
2	☐			16191.60		P	1.9
3	☐			38251.93		P	0.6
4	☐			77447.56		P	4.3
5	☐			783376.42		P	2.3
6	☐			1582335.03		A	1.2
7	☐						

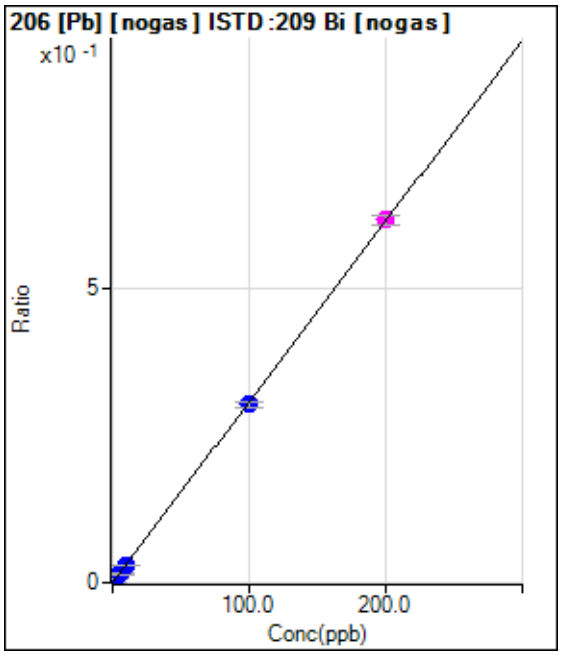
Calibration for 138_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	416.68	0.0002	P	16.0
2	☐	2.000	1.916	37503.83	0.0177	P	8.3
3	☐	5.000	4.691	92530.95	0.0430	P	5.5
4	☐	10.000	9.332	182925.71	0.0854	P	3.2
5	☐	100.000	98.858	1889793.72	0.9025	A	3.0
6	☐	200.000	200.613	3701900.05	1.8311	A	1.6
7	☐	1.000					

y = 0.0091 * x + 2.0147E-004
R = 1.0000
DL = 0.01061
BEC = 0.02208

Weight: <None>
Min Conc: <None>

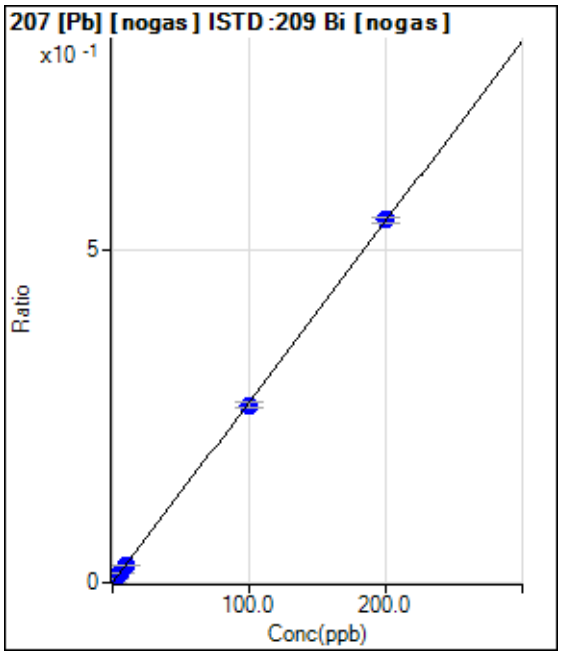


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	380.01	0.0002	P	16.8
2	☐	2.000	1.922	12935.35	0.0061	P	4.5
3	☐	5.000	4.784	32025.35	0.0149	P	6.8
4	☐	10.000	9.419	62458.08	0.0291	P	1.1
5	☐	100.000	98.493	634317.97	0.3029	P	2.5
6	☐	200.000	200.789	1247924.38	0.6174	M	2.4
7	☐	1.000					

y = 0.0031 * x + 1.8362E-004
R = 1.0000
DL = 0.03004
BEC = 0.05974

Weight: <None>
Min Conc: <None>

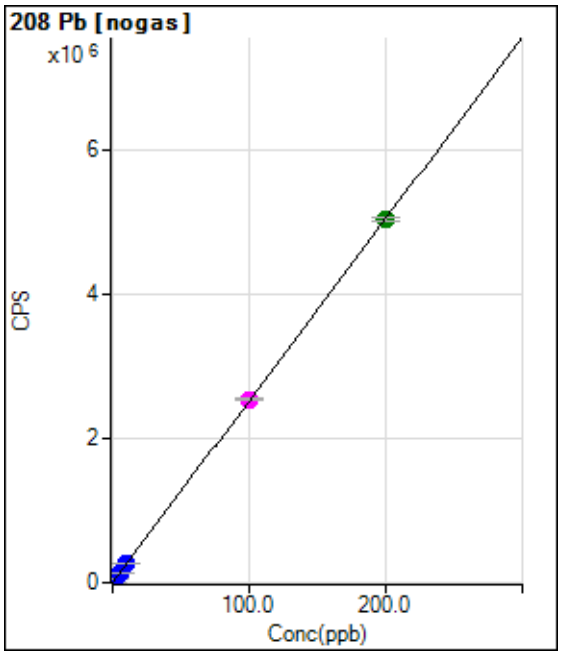
Calibration for 138_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	363.34	0.0002	P	12.9
2	☐	2.000	1.887	11264.11	0.0053	P	4.0
3	☐	5.000	4.920	29150.06	0.0135	P	3.0
4	☐	10.000	9.668	56646.48	0.0264	P	3.1
5	☐	100.000	98.313	559408.52	0.2672	P	3.4
6	☐	200.000	200.863	1103282.74	0.5457	P	1.9
7	☐	1.000					

y = 0.0027 * x + 1.7652E-004
R = 1.0000
DL = 0.02522
BEC = 0.06499

Weight: <None>
Min Conc: <None>

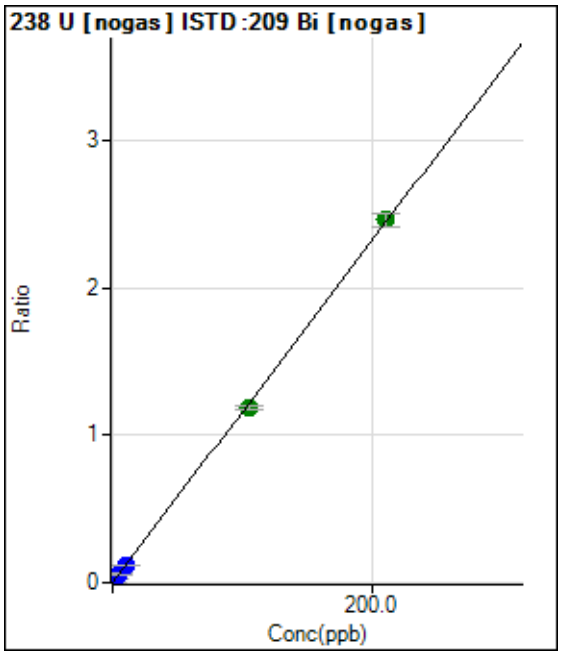


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	1603.39		P	9.0
2	☐	2.000	2.018	52380.86		P	2.5
3	☐	5.000	5.173	131803.39		P	1.5
4	☐	10.000	10.154	257143.87		P	1.4
5	☐	100.000	100.904	2541098.81		M	1.1
6	☐	200.000	199.536	5023408.65		A	0.9
7	☐	1.000					

y = 25167.4391 * x + 1603.3867
R = 1.0000
DL = 0.01721
BEC = 0.06371

Weight: <None>
Min Conc: <None>

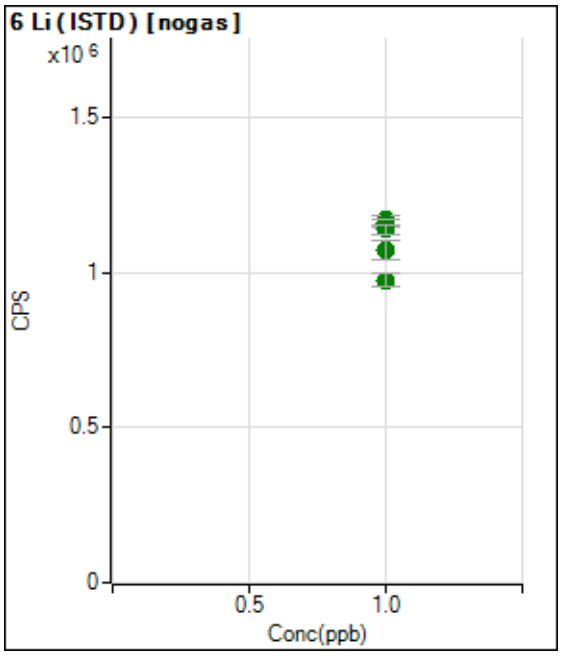
Calibration for 138_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	153.33	0.0001	P	40.5
2	☐	2.000	1.980	49066.10	0.0231	P	7.1
3	☐	5.000	4.958	124455.02	0.0578	P	4.3
4	☐	10.000	9.786	244273.39	0.1140	P	4.1
5	☐	105.000	101.680	2479268.45	1.1840	A	2.4
6	☐	210.000	211.671	4981291.91	2.4647	A	3.5
7	☐	1.000					

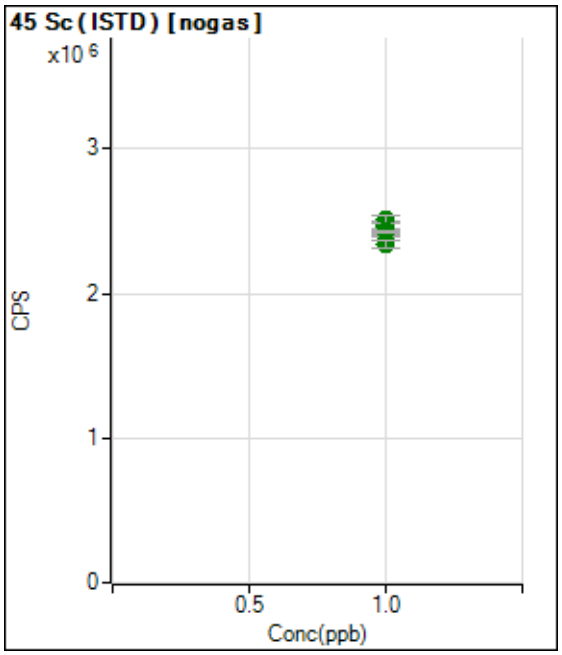
y = 0.0116 * x + 7.4099E-005
R = 0.9998
DL = 0.007735
BEC = 0.006364

Weight: <None>
Min Conc: <None>

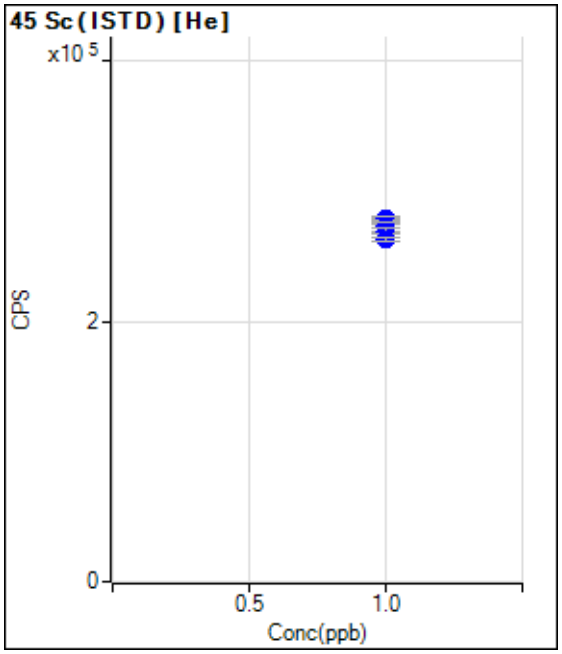


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	1.000		1171765.53		A	2.4
2	☐	1.000		1148786.75		A	4.7
3	☐	1.000		1162132.92		A	2.4
4	☐	1.000		1141882.24		A	2.8
5	☐	1.000		1076082.38		A	5.7
6	☐	1.000		975979.57		A	4.5
7	☐	1.000					

Calibration for 138_ICV.d

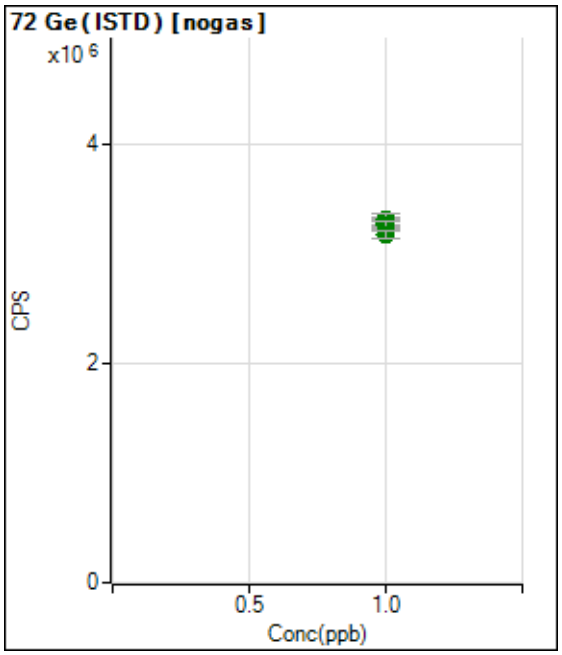


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	1.000		2460984.03		A	2.9
2	☐	1.000		2474528.45		A	2.2
3	☐	1.000		2509689.91		A	2.3
4	☐	1.000		2402318.04		A	0.5
5	☐	1.000		2429523.30		A	0.7
6	☐	1.000		2340485.54		A	2.8
7	☐	1.000					

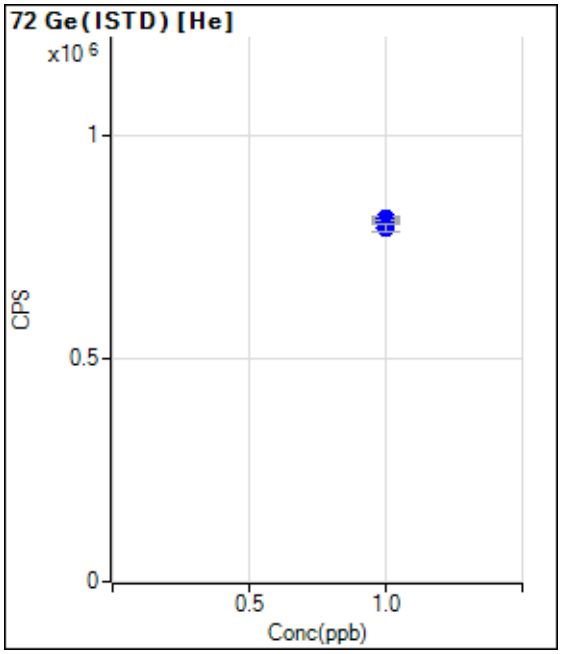


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	1.000		277146.58		P	2.1
2	☐	1.000		273300.02		P	1.5
3	☐	1.000		278924.44		P	1.0
4	☐	1.000		272958.99		P	2.7
5	☐	1.000		269519.61		P	1.9
6	☐	1.000		263024.44		P	1.0
7	☐	1.000					

Calibration for 138_ICV.d

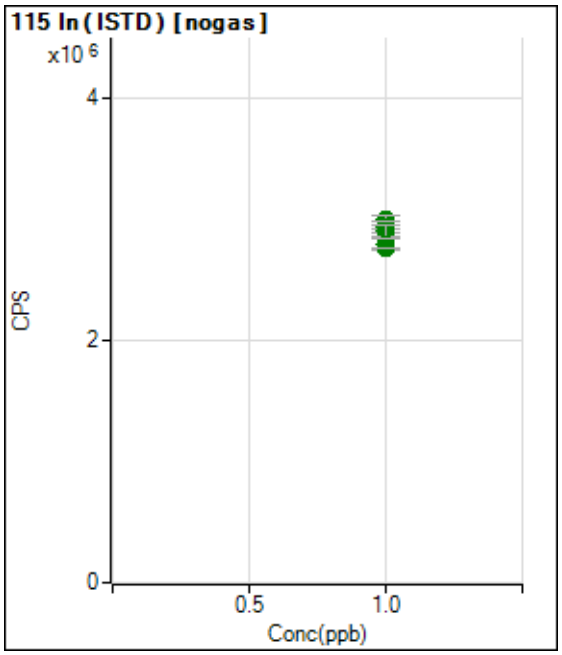


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	1.000		3233064.74		A	1.0
2	☐	1.000		3290282.76		A	2.7
3	☐	1.000		3279638.60		A	1.9
4	☐	1.000		3303477.97		A	3.5
5	☐	1.000		3250742.14		A	2.7
6	☐	1.000		3169936.10		A	2.6
7	☐	1.000					

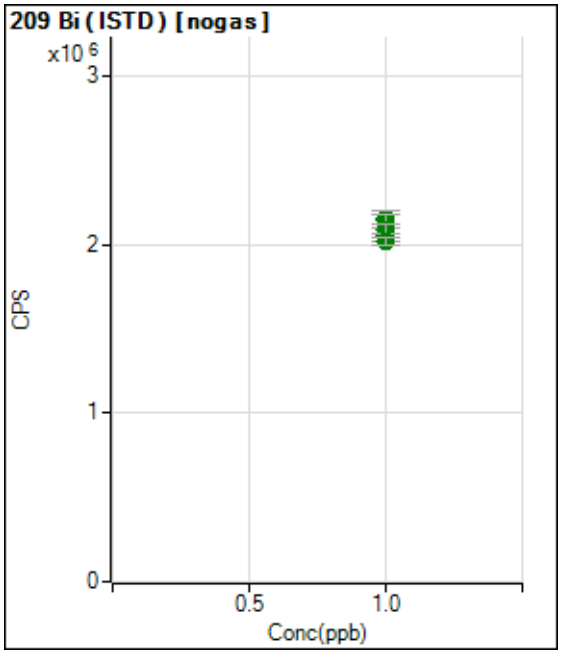


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	1.000		810035.41		P	0.7
2	☐	1.000		804888.56		P	1.1
3	☐	1.000		808101.13		P	1.4
4	☐	1.000		813899.52		P	0.9
5	☐	1.000		806514.70		P	0.8
6	☐	1.000		794814.57		P	2.0
7	☐	1.000					

Calibration for 138_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	1.000		2958353.04		A	2.4
2	☐	1.000		2997832.27		A	2.4
3	☐	1.000		2943060.26		A	3.2
4	☐	1.000		2901412.54		A	3.2
5	☐	1.000		2793850.00		A	3.5
6	☐	1.000		2770189.57		A	0.1
7	☐	1.000					



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	1.000		2061475.33		A	3.5
2	☐	1.000		2126685.85		A	5.2
3	☐	1.000		2155140.02		A	4.8
4	☐	1.000		2144167.62		A	3.6
5	☐	1.000		2094723.46		A	2.4
6	☐	1.000		2022181.32		A	2.5
7	☐	1.000					

Calibration Blank Report

Sample Table

Sample Name	CAL BLK
Data File Name	019CALB.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\121
Acq Date Time	2018-12-10T17:22:50-06:00
Sample Type	CalBlk
Level	1
Dilution	1
Comment	

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD
Be	9	1	nogas	37	281.60
Na	23	1	nogas	496568	0.00
Mg	24	1	nogas	5969	0.09
Al	27	1	nogas	38857	0.00
K	39	1	nogas	8289092	0.00
Ti	47	1	nogas	473	2.69
V	51	1	nogas	216786	0.00
Cr	52	1	nogas	41864	0.00
Mn	55	1	nogas	24106	0.02
Co	59	1	nogas	1433	0.16
Ni	60	1	nogas	597	2.95
Cu	63	1	nogas	79347	0.00
Zn	66	1	nogas	980	0.21
As	75	1	nogas	53472	0.00
Sr	88	1	nogas	963	1.53
Ag	107	1	nogas	130	44.67
Cd	111	1	nogas	20	500.00
Sb	121	1	nogas	1370	0.43
Tl	205	1	nogas	403	4.53
Pb	208	1	nogas	4020	0.02
[Pb]	206	1	nogas	1140	0.28
[Pb]	207	1	nogas	870	1.00
Na	23	2	He	71384	0.00
Mg	24	2	He	540	2.25
Al	27	2	He	1043	1.16
K	39	2	He	225829	0.00
Ca	43	2	He	10	1000.00
Ca	44	2	He	4434	0.12
V	51	2	He	3339	0.04
Cr	52	2	He	6124	0.01
Mn	55	2	He	2874	0.24
Fe	56	2	He	15287	0.02
Co	59	2	He	423	6.54
Ni	60	2	He	193	10.81
Cu	63	2	He	27070	0.01
Zn	66	2	He	367	4.95
As	75	2	He	347	3.20
Se	78	2	He	175	6.09
B	11	1	nogas	9259	0.06
Si	28	1	nogas	1566588	0.00
Ca	43	1	nogas	930	2.03
Ca	44	1	nogas	580986	0.00

Calibration Blank Report

Name	Mass	Tune Step	Tune Mode	CPS	%RSD
Fe	56	1	nogas	2248066	0.00
Se	77	1	nogas	17429	0.01
Se	82	1	nogas	370	2.19
Mo	95	1	nogas	310	7.50
Sn	118	1	nogas	1100	0.38
Ba	137	1	nogas	340	6.06
Sb	121	2	He	540	4.16
Li	7	1	nogas	101659	0.00
P	31	1	nogas	111302	0.00
La	139	1	nogas	33	103.92

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD
Li	6	1	nogas	1229805	6.80
Ge	72	1	nogas	3541557	2.22
In	115	1	nogas	3006327	3.62
Bi	209	1	nogas	2153140	3.03
Ge	72	2	He	993327	3.11

Calibration Standard Report

Sample Table

Sample Name	2/10/200
Data File Name	020CALS.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\121
Acq Date Time	2018-12-10T17:24:52-06:00
Sample Type	CalStd
Level	2
Dilution	1
Comment	
ISTD Ref File Name	019CALB.d
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD
Be	9	1	nogas	14893	0.02
Na	23	1	nogas	5429107	0.00
Mg	24	1	nogas	3317538	0.00
Al	27	1	nogas	68910	0.00
K	39	1	nogas	12268208	0.00
Ti	47	1	nogas	4361	0.09
V	51	1	nogas	269703	0.00
Cr	52	1	nogas	88517	0.00
Mn	55	1	nogas	80626	0.00
Co	59	1	nogas	51195	0.00
Ni	60	1	nogas	11794	0.01
Cu	63	1	nogas	101635	0.00
Zn	66	1	nogas	10090	0.01
As	75	1	nogas	64022	0.00
Sr	88	1	nogas	59319	0.01
Ag	107	1	nogas	29174	0.01
Cd	111	1	nogas	6048	0.10
Sb	121	1	nogas	26393	0.01
Tl	205	1	nogas	36324	0.01
Pb	208	1	nogas	55171	0.00
[Pb]	206	1	nogas	13526	0.03
[Pb]	207	1	nogas	12215	0.05
Na	23	2	He	399017	0.00
Mg	24	2	He	185807	0.00
Al	27	2	He	1923	0.27
K	39	2	He	419263	0.00
Ca	43	2	He	630	1.53
Ca	44	2	He	13618	0.03
V	51	2	He	16615	0.01
Cr	52	2	He	20985	0.00
Mn	55	2	He	13482	0.03
Fe	56	2	He	1344256	0.00
Co	59	2	He	20799	0.01
Ni	60	2	He	5424	0.07
Cu	63	2	He	38226	0.01
Zn	66	2	He	3537	0.14
As	75	2	He	3559	0.01
Se	78	2	He	426	0.69
B	11	1	nogas	53375	0.00
Si	28	1	nogas	1636137	0.00

Calibration Standard Report

Ca	43	1	nogas	8492	0.03
Ca	44	1	nogas	696122	0.00
Name	Mass	Tune Step	Tune Mode	CPS	%RSD
Fe	56	1	nogas	7072808	0.00
Se	77	1	nogas	17986	0.02
Se	82	1	nogas	827	0.61
Mo	95	1	nogas	11344	0.01
Sn	118	1	nogas	17629	0.03
Ba	137	1	nogas	8085	0.07
Sb	121	2	He	10203	0.03
P	31	1	nogas	127861	0.00
La	139	1	nogas	37	42.94

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	1228957	5.88	1229805	99.93	70	125	
Ge	72	1	nogas	3480522	0.21	3541557	98.28	70	125	
In	115	1	nogas	2961941	1.28	3006327	98.52	70	125	
Bi	209	1	nogas	2160140	3.34	2153140	100.33	70	125	
Ge	72	2	He	926943	0.28	993327	93.32	70	125	

Calibration Standard Report

Sample Table

Sample Name	5/25/500
Data File Name	021CALS.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\121
Acq Date Time	2018-12-10T17:26:55-06:00
Sample Type	CalStd
Level	3
Dilution	1
Comment	
ISTD Ref File Name	019CALB.d
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD
Be	9	1	nogas	37420	0.01
Na	23	1	nogas	13049242	0.00
Mg	24	1	nogas	8403654	0.00
Al	27	1	nogas	127300	0.00
K	39	1	nogas	18204673	0.00
Ti	47	1	nogas	10266	0.03
V	51	1	nogas	354653	0.00
Cr	52	1	nogas	161393	0.00
Mn	55	1	nogas	169729	0.00
Co	59	1	nogas	125137	0.00
Ni	60	1	nogas	29547	0.00
Cu	63	1	nogas	140756	0.00
Zn	66	1	nogas	24006	0.01
As	75	1	nogas	82536	0.00
Sr	88	1	nogas	143555	0.00
Ag	107	1	nogas	73541	0.01
Cd	111	1	nogas	15460	0.00
Sb	121	1	nogas	63368	0.00
Tl	205	1	nogas	91201	0.00
Pb	208	1	nogas	130967	0.00
[Pb]	206	1	nogas	32683	0.01
[Pb]	207	1	nogas	28051	0.01
Na	23	2	He	892709	0.00
Mg	24	2	He	461122	0.00
Al	27	2	He	3390	0.24
K	39	2	He	722631	0.00
Ca	43	2	He	1307	0.62
Ca	44	2	He	28218	0.01
V	51	2	He	36499	0.00
Cr	52	2	He	43953	0.00
Mn	55	2	He	29577	0.01
Fe	56	2	He	3274562	0.00
Co	59	2	He	51178	0.01
Ni	60	2	He	12885	0.06
Cu	63	2	He	57159	0.00
Zn	66	2	He	8409	0.08
As	75	2	He	8213	0.03
Se	78	2	He	760	0.60
B	11	1	nogas	123947	0.00
Si	28	1	nogas	1800666	0.00

Calibration Standard Report

Ca	43	1	nogas	19103	0.01
Ca	44	1	nogas	876898	0.00
Name	Mass	Tune Step	Tune Mode	CPS	%RSD
Fe	56	1	nogas	14507447	0.00
Se	77	1	nogas	18693	0.01
Se	82	1	nogas	1810	0.38
Mo	95	1	nogas	29164	0.01
Sn	118	1	nogas	41811	0.01
Ba	137	1	nogas	19845	0.01
Sb	121	2	He	26170	0.02
P	31	1	nogas	155640	0.00
La	139	1	nogas	50	69.28

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	1224222	3.33	1229805	99.55	70	125	
Ge	72	1	nogas	3443847	0.56	3541557	97.24	70	125	
In	115	1	nogas	2952199	2.28	3006327	98.20	70	125	
Bi	209	1	nogas	2197259	4.09	2153140	102.05	70	125	
Ge	72	2	He	920503	2.36	993327	92.67	70	125	

Calibration Standard Report

Sample Table

Sample Name	10/50/1000
Data File Name	022CALS.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\121
Acq Date Time	2018-12-10T17:28:58-06:00
Sample Type	CalStd
Level	4
Dilution	1
Comment	
ISTD Ref File Name	019CALB.d
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD
Be	9	1	nogas	75655	0.00
Na	23	1	nogas	25117059	0.00
Mg	24	1	nogas	16349977	0.00
Al	27	1	nogas	227124	0.00
K	39	1	nogas	28374235	0.00
Ti	47	1	nogas	20074	0.01
V	51	1	nogas	477473	0.00
Cr	52	1	nogas	277057	0.00
Mn	55	1	nogas	337912	0.00
Co	59	1	nogas	249899	0.00
Ni	60	1	nogas	57634	0.00
Cu	63	1	nogas	210598	0.00
Zn	66	1	nogas	46312	0.00
As	75	1	nogas	111783	0.00
Sr	88	1	nogas	291423	0.00
Ag	107	1	nogas	146315	0.00
Cd	111	1	nogas	31144	0.01
Sb	121	1	nogas	127510	0.00
Tl	205	1	nogas	186692	0.00
Pb	208	1	nogas	258983	0.00
[Pb]	206	1	nogas	64810	0.00
[Pb]	207	1	nogas	57094	0.00
Na	23	2	He	1730790	0.00
Mg	24	2	He	913345	0.00
Al	27	2	He	6008	0.05
K	39	2	He	1206132	0.00
Ca	43	2	He	2694	0.25
Ca	44	2	He	51742	0.00
V	51	2	He	69397	0.00
Cr	52	2	He	79273	0.00
Mn	55	2	He	59817	0.00
Fe	56	2	He	6314221	0.00
Co	59	2	He	100661	0.00
Ni	60	2	He	25798	0.00
Cu	63	2	He	89962	0.00
Zn	66	2	He	16401	0.01
As	75	2	He	15447	0.01
Se	78	2	He	1440	0.29
B	11	1	nogas	239318	0.00
Si	28	1	nogas	2095245	0.00

Calibration Standard Report

Ca	43	1	nogas	37879	0.01
Ca	44	1	nogas	1167137	0.00
Name	Mass	Tune Step	Tune Mode	CPS	%RSD
Fe	56	1	nogas	26396952	0.00
Se	77	1	nogas	20355	0.01
Se	82	1	nogas	3140	0.10
Mo	95	1	nogas	59309	0.00
Sn	118	1	nogas	83693	0.00
Ba	137	1	nogas	39573	0.01
Sb	121	2	He	50737	0.01
P	31	1	nogas	201331	0.00
La	139	1	nogas	103	14.31

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	1251493	3.56	1229805	101.76	70	125	
Ge	72	1	nogas	3442490	2.11	3541557	97.20	70	125	
In	115	1	nogas	2960727	1.83	3006327	98.48	70	125	
Bi	209	1	nogas	2167413	1.08	2153140	100.66	70	125	
Ge	72	2	He	925552	2.24	993327	93.18	70	125	

Calibration Standard Report

Sample Table

Sample Name	100/500/10K
Data File Name	023CALS.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\121
Acq Date Time	2018-12-10T17:31:00-06:00
Sample Type	CalStd
Level	5
Dilution	1
Comment	
ISTD Ref File Name	019CALB.d
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD
Be	9	1	nogas	768211	0.00
Na	23	1	nogas	246379139	0.00
Mg	24	1	nogas	159932991	0.00
Al	27	1	nogas	1950181	0.00
K	39	1	nogas	203139275	0.00
Ti	47	1	nogas	197202	0.00
V	51	1	nogas	2832911	0.00
Cr	52	1	nogas	2326481	0.00
Mn	55	1	nogas	2870602	0.00
Co	59	1	nogas	2427126	0.00
Ni	60	1	nogas	551340	0.00
Cu	63	1	nogas	1415687	0.00
Zn	66	1	nogas	445334	0.00
As	75	1	nogas	603316	0.00
Sr	88	1	nogas	2826181	0.00
Ag	107	1	nogas	1430033	0.00
Cd	111	1	nogas	302145	0.00
Sb	121	1	nogas	1262750	0.00
Tl	205	1	nogas	1878981	0.00
Pb	208	1	nogas	2587797	0.00
[Pb]	206	1	nogas	637153	0.00
[Pb]	207	1	nogas	565156	0.00
Na	23	2	He	16078626	0.00
Mg	24	2	He	8966447	0.00
Al	27	2	He	51494	0.01
K	39	2	He	9576055	0.00
Ca	43	2	He	27834	0.01
Ca	44	2	He	460786	0.00
V	51	2	He	668254	0.00
Cr	52	2	He	732662	0.00
Mn	55	2	He	515346	0.00
Fe	56	2	He	62281096	0.00
Co	59	2	He	978260	0.00
Ni	60	2	He	255072	0.00
Cu	63	2	He	670773	0.00
Zn	66	2	He	160399	0.00
As	75	2	He	155774	0.00
Se	78	2	He	12657	0.01
B	11	1	nogas	2284043	0.00
Si	28	1	nogas	6715268	0.00

Calibration Standard Report

Ca	43	1	nogas	367566	0.00
Ca	44	1	nogas	6358463	0.00
Name	Mass	Tune Step	Tune Mode	CPS	%RSD
Fe	56	1	nogas	246666081	0.00
Se	77	1	nogas	41310	0.00
Se	82	1	nogas	28880	0.02
Mo	95	1	nogas	587620	0.00
Sn	118	1	nogas	814798	0.00
Ba	137	1	nogas	394424	0.00
Sb	121	2	He	508577	0.00
P	31	1	nogas	977118	0.00
La	139	1	nogas	410	1.03

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	1143512	4.14	1229805	92.98	70	125	
Ge	72	1	nogas	3382030	2.47	3541557	95.50	70	125	
In	115	1	nogas	2801397	1.27	3006327	93.18	70	125	
Bi	209	1	nogas	2021585	2.89	2153140	93.89	70	125	
Ge	72	2	He	868492	4.55	993327	87.43	70	125	

Calibration Standard Report

Sample Table

Sample Name	200/1000/20K
Data File Name	024CALS.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\121
Acq Date Time	2018-12-10T17:33:03-06:00
Sample Type	CalStd
Level	6
Dilution	1
Comment	
ISTD Ref File Name	019CALB.d
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD
Be	9	1	nogas	1490339	0.00
Na	23	1	nogas	481847077	0.00
Mg	24	1	nogas	309884790	0.00
Al	27	1	nogas	3782656	0.00
K	39	1	nogas	393096834	0.00
Ti	47	1	nogas	385199	0.00
V	51	1	nogas	5384219	0.00
Cr	52	1	nogas	4472257	0.00
Mn	55	1	nogas	5488765	0.00
Co	59	1	nogas	4848474	0.00
Ni	60	1	nogas	1090402	0.00
Cu	63	1	nogas	2698817	0.00
Zn	66	1	nogas	873086	0.00
As	75	1	nogas	1159609	0.00
Sr	88	1	nogas	5575103	0.00
Ag	107	1	nogas	2808797	0.00
Cd	111	1	nogas	603089	0.00
Sb	121	1	nogas	2499065	0.00
Tl	205	1	nogas	3625414	0.00
Pb	208	1	nogas	5072002	0.00
[Pb]	206	1	nogas	1234604	0.00
[Pb]	207	1	nogas	1107819	0.00
Na	23	2	He	31690890	0.00
Mg	24	2	He	17745286	0.00
Al	27	2	He	101712	0.00
K	39	2	He	18802625	0.00
Ca	43	2	He	52695	0.00
Ca	44	2	He	907691	0.00
V	51	2	He	1307511	0.00
Cr	52	2	He	1393826	0.00
Mn	55	2	He	1018107	0.00
Fe	56	2	He	124153878	0.00
Co	59	2	He	1949277	0.00
Ni	60	2	He	495773	0.00
Cu	63	2	He	1309729	0.00
Zn	66	2	He	311834	0.00
As	75	2	He	305661	0.00
Se	78	2	He	24908	0.01
B	11	1	nogas	4449104	0.00
Si	28	1	nogas	11996351	0.00

Calibration Standard Report

Ca	43	1	nogas	723176	0.00
Ca	44	1	nogas	11798086	0.00
Name	Mass	Tune Step	Tune Mode	CPS	%RSD
Fe	56	1	nogas	477588844	0.00
Se	77	1	nogas	66344	0.00
Se	82	1	nogas	57475	0.01
Mo	95	1	nogas	1162024	0.00
Sn	118	1	nogas	1616222	0.00
Ba	137	1	nogas	780655	0.00
Sb	121	2	He	1035075	0.00
P	31	1	nogas	1920065	0.00
La	139	1	nogas	633	3.08

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	1050150	4.76	1229805	85.39	70	125	
Ge	72	1	nogas	3264970	0.74	3541557	92.19	70	125	
In	115	1	nogas	2753060	2.13	3006327	91.58	70	125	
Bi	209	1	nogas	2058668	3.98	2153140	95.61	70	125	
Ge	72	2	He	890447	1.49	993327	89.64	70	125	

Initial Calibration Verification (ICV) Report

Sample Table

Sample Name	ICV
Data File Name	026_ICV.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\121
Acq Date Time	2018-12-10T17:37:12-06:00
Sample Type	ICV
Dilution	1
Comment	
ISTD Ref File Name	019CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Exp Value	%Rec	%Low	%High	QC Flag
Be	9	1	nogas	98.668	5.839	764317	1.04	100	98.7	90	110	
Na	23	1	nogas	9876.874	1.475	249704689	1.30	10000	98.8	90	110	
Mg	24	1	nogas	10233.348	3.380	166505741	1.72	10000	102.3	90	110	
Al	27	1	nogas	105.006	2.951	2084627	1.19	100	105.0	90	110	
K	39	1	nogas	10117.317	6.983	210400505	3.09	10000	101.2	90	110	
Ti	47	1	nogas	97.416	6.916	195351	3.35	100	97.4	90	110	
V	51	1	nogas	96.943	6.281	2818068	2.60	100	96.9	90	110	
Cr	52	1	nogas	98.485	5.853	2315967	2.61	100	98.5	90	110	
Mn	55	1	nogas	99.374	6.617	2859443	2.67	100	99.4	90	110	
Co	59	1	nogas	99.888	8.556	2507374	4.74	100	99.9	90	110	
Ni	60	1	nogas	99.727	5.764	564200	2.48	100	99.7	90	110	
Cu	63	1	nogas	96.516	8.633	1393108	4.41	100	96.5	90	110	
Zn	66	1	nogas	99.872	5.323	453465	1.65	100	99.9	90	110	
As	75	1	nogas	96.801	4.486	607165	0.06	100	96.8	90	110	
Sr	88	1	nogas	98.272	7.452	2843829	3.79	100	98.3	90	110	
Ag	107	1	nogas	100.903	5.852	1472989	2.59	100	100.9	90	110	
Cd	111	1	nogas	102.808	1.505	315905	2.70	100	102.8	90	110	
Sb	121	1	nogas	102.071	3.290	1325033	1.22	100	102.1	90	110	
Tl	205	1	nogas	103.293	5.373	1923613	1.13	100	103.3	90	110	
Pb	208	1	nogas	101.997	0.818	2598779	0.82	100	102.0	90	110	
U	238	1	nogas	105.673	3.775	2611476	1.00	100	105.7	90	110	
[Pb]	206	1	nogas	102.686	4.118	651054	2.21	100	102.7	90	110	
[Pb]	207	1	nogas	96.564	2.401	548054	1.81	100	96.6	90	110	
Na	23	2	He	9981.526	1.115	16375441	1.53	10000	99.8	90	110	
Mg	24	2	He	10170.413	1.799	9319126	0.66	10000	101.7	90	110	
Al	27	2	He	99.957	1.029	52907	2.13	100	100.0	90	110	
K	39	2	He	10571.692	2.147	10059736	2.10	10000	105.7	90	110	
Ca	43	2	He	10196.777	0.734	28008	1.36	10000	102.0	90	110	
Ca	44	2	He	9999.154	2.979	470594	0.95	10000	100.0	90	110	
V	51	2	He	100.157	1.873	679849	2.27	100	100.2	90	110	
Cr	52	2	He	100.261	1.923	729996	1.90	100	100.3	90	110	
Mn	55	2	He	98.654	1.288	520102	2.62	100	98.7	90	110	
Fe	56	2	He	9979.052	1.788	63904574	2.74	10000	99.8	90	110	
Co	59	2	He	99.178	2.077	997362	2.75	100	99.2	90	110	
Ni	60	2	He	99.159	1.630	255354	0.94	100	99.2	90	110	
Cu	63	2	He	95.297	2.904	657188	1.11	100	95.3	90	110	
Zn	66	2	He	98.071	1.259	158908	1.86	100	98.1	90	110	
As	75	2	He	100.386	1.328	158826	0.95	100	100.4	90	110	
Se	78	2	He	99.138	1.677	12839	0.68	100	99.1	90	110	
B	11	1	nogas	518.611	5.742	2400264	0.60	500	103.7	90	110	
Si	28	1	nogas	5152.038	4.856	7129948	0.54	5000	103.0	90	110	
Ca	43	1	nogas	10200.655	6.275	383524	2.24	10000	102.0	90	110	
Ca	44	1	nogas	10268.047	7.641	6581408	3.28	10000	102.7	90	110	
Fe	56	1	nogas	10050.080	5.092	251084581	1.49	10000	100.5	90	110	
Se	77	1	nogas	79.006	7.470	37295	2.22	100	79.0	90	110	ICV Main CR1 Failed
Se	82	1	nogas	101.383	2.007	30373	2.28	100	101.4	90	110	
Mo	95	1	nogas	96.153	6.045	580020	2.51	100	96.2	90	110	
Sn	118	1	nogas	97.197	1.021	801444	1.66	100	97.2	90	110	
Ba	137	1	nogas	103.050	2.814	410692	2.89	100	103.0	90	110	
Sb	121	2	He	100.124	1.456	532191	0.65	100	100.1	90	110	
Li	7	1	nogas	107.299	4.970	1843467	4.45	100	107.3	90	110	
P	31	1	nogas	475.973	5.655	995927	1.11	500	95.2	90	110	
La	139	1	nogas	158.347	20.217	543	20.69	100	158.3	90	110	ICV Main CR1 Failed
Au	197	1	nogas	-348.485	-43.491	7	86.60	100	-348.5	90	110	ICV Main CR1 Failed

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	1104772	6.21	1229805	89.83	70	125	
Ge	72	1	nogas	3410351	4.12	3541557	96.30	70	125	
In	115	1	nogas	2813400	1.81	3006327	93.58	70	125	
Bi	209	1	nogas	2092814	4.17	2153140	97.20	70	125	

Initial Calibration Verification (ICV) Report

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Ge	72	2	He	912671	2.05	993327	91.88	70	125	

Sample Report

Sample Table

Sample Name	LLICV2
Data File Name	027SMPL.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\121
Acq Date Time	2018-12-10T17:39:16-06:00
Sample Type	Sample
Dilution	1
Comment	
ISTD Ref FileName	019CALB.d
Sample QC Pass/Fail	Pass
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
Be	9	1	nogas	1.812	1.812	5.87	15320	0.01	2000	
Na	23	1	nogas	203.771	203.771	5.95	5555030	0.00	200000	
Mg	24	1	nogas	209.378	209.378	2.32	3371798	0.01	200000	
Al	27	1	nogas	0.950	0.950	10.92	56214	0.00	2000	
K	39	1	nogas	203.705	203.705	8.09	12121727	0.00	200000	
Ti	47	1	nogas	1.965	1.965	2.38	4414	0.04	2000	
V	51	1	nogas	-0.777	-0.777	-13.26	188743	0.00	2000	
Cr	52	1	nogas	1.919	1.919	8.28	85102	0.00	2000	
Mn	55	1	nogas	1.978	1.978	4.68	80107	0.00	2000	
Co	59	1	nogas	2.056	2.056	1.92	53324	0.00	2000	
Ni	60	1	nogas	2.302	2.302	3.25	12281	0.02	2000	
Cu	63	1	nogas	0.988	0.988	3.28	90354	0.00	2000	
Zn	66	1	nogas	2.172	2.172	2.08	10020	0.02	2000	
As	75	1	nogas	0.877	0.877	29.45	55217	0.00	2000	
Sr	88	1	nogas	1.981	1.981	4.60	58589	0.00	2000	
Ag	107	1	nogas	2.020	2.020	2.73	29795	0.01	2000	
Cd	111	1	nogas	1.902	1.902	8.37	6181	0.03	2000	
Sb	121	1	nogas	2.339	2.339	3.45	31826	0.01	2000	
Tl	205	1	nogas	2.268	2.268	7.67	43104	0.01	2000	
Pb	208	1	nogas	2.068	2.068	5.29	56640	0.00	2000	
U	238	1	nogas	2.166	2.166	3.90	54133	0.00	2000	
[Pb]	206	1	nogas	2.078	2.078	4.34	14410	0.01	2000	
[Pb]	207	1	nogas	2.000	2.000	7.80	12312	0.02	2000	
Na	23	2	He	206.374	206.374	1.92	396793	0.05	200000	
Mg	24	2	He	205.334	205.334	2.27	185855	0.11	200000	
Al	27	2	He	1.045	1.045	9.62	1513	0.07	2000	
K	39	2	He	205.610	205.610	4.00	417090	0.05	200000	
Ca	43	2	He	195.061	195.061	10.87	537	36.35	200000	
Ca	44	2	He	206.714	206.714	7.82	13508	1.53	200000	
V	51	2	He	1.500	1.500	5.39	15411	0.01	2000	
Cr	52	2	He	2.091	2.091	1.58	20422	0.01	2000	
Mn	55	2	He	2.045	2.045	5.19	13172	0.02	2000	
Fe	56	2	He	203.900	203.900	1.06	1299629	0.02	200000	
Co	59	2	He	2.010	2.010	2.15	20281	0.01	2000	
Ni	60	2	He	1.465	1.465	4.32	5127	0.03	2000	
Cu	63	2	He	1.267	1.267	4.06	33965	0.00	2000	
Zn	66	2	He	1.512	1.512	2.08	3497	0.04	2000	
As	75	2	He	2.020	2.020	3.55	3455	0.06	2000	
Se	78	2	He	1.944	1.944	22.26	435	0.45	2000	
B	11	1	nogas	24.212	24.212	5.31	130666	0.02	2000	
Si	28	1	nogas	127.935	127.935	33.05	1656655	0.01	2000	
Ca	43	1	nogas	205.298	205.298	2.54	8652	2.37	200000	

Sample Report

Ca	44	1	nogas	223.268	223.268	11.74	694058	0.03	200000	
Fe	56	1	nogas	188.693	188.693	7.75	6874122	0.00	200000	
Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
Se	77	1	nogas	-6.597	-6.597	-35.99	15137	-0.04	2000	
Se	82	1	nogas	2.279	2.279	14.24	1037	0.22	2000	
Mo	95	1	nogas	2.217	2.217	9.18	13739	0.02	2000	
Sn	118	1	nogas	2.093	2.093	4.87	19271	0.01	2000	
Ba	137	1	nogas	1.928	1.928	4.17	8436	0.02	2000	
Sb	121	2	He	2.260	2.260	1.50	12315	0.02	2000	
La	139	1	nogas	5.031	5.031	210.42	50	10.06	2000	
Au	197	1	nogas	-81.620	-81.620	-182.91	17	-489.72	2000	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	1200476	1.44	1229805	97.62	70	125	
Ge	72	1	nogas	3426870	1.73	3541557	96.76	70	125	
In	115	1	nogas	2969199	2.21	3006327	98.76	70	125	
Bi	209	1	nogas	2113303	1.98	2153140	98.15	70	125	
Ge	72	2	He	898939	2.08	993327	90.50	70	125	

Low Level Initial Calibration Verification (LLICV) Report

Sample Table

Sample Name	LLICV5
Data File Name	028LICV.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\121
Acq Date Time	2018-12-10T17:41:19-06:00
Sample Type	LLICV
Dilution	1
Comment	
ISTD Ref File Name	019CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Exp Value	%Rec	%Low	%High	QC Flag
Be	9	1	nogas	4.498	1.691	37717	4.64	5	90.0	70	130	
Na	23	1	nogas	492.068	4.994	12628382	2.16	500	98.4	70	130	
Mg	24	1	nogas	499.715	2.011	7971194	1.93	500	99.9	70	130	
Al	27	1	nogas	3.969	1.761	115911	2.08	5	79.4	70	130	
K	39	1	nogas	494.552	3.414	18055353	1.50	500	98.9	70	130	
Ti	47	1	nogas	4.700	4.099	9963	3.66	5	94.0	70	130	
V	51	1	nogas	2.700	13.806	283964	1.75	5	54.0	70	130	LLICV Main CR1 Failed
Cr	52	1	nogas	5.029	2.500	158125	2.96	5	100.6	70	130	
Mn	55	1	nogas	5.010	1.018	167974	2.98	5	100.2	70	130	
Co	59	1	nogas	4.972	2.818	127516	1.63	5	99.4	70	130	
Ni	60	1	nogas	5.371	2.475	29898	0.66	5	107.4	70	130	
Cu	63	1	nogas	3.887	8.081	130666	1.23	5	77.7	70	130	
Zn	66	1	nogas	5.122	5.255	23595	5.97	5	102.4	70	130	
As	75	1	nogas	4.266	9.122	75127	1.19	5	85.3	70	130	
Sr	88	1	nogas	4.906	1.235	144433	2.69	5	98.1	70	130	
Ag	107	1	nogas	4.860	1.194	71823	2.61	5	97.2	70	130	
Cd	111	1	nogas	4.623	4.178	14870	2.63	5	92.5	70	130	
Sb	121	1	nogas	5.158	3.376	68860	1.12	5	103.2	70	130	
Tl	205	1	nogas	4.938	2.137	92898	2.07	5	98.8	70	130	
Pb	208	1	nogas	5.098	1.088	133707	1.06	5	102.0	70	130	
U	238	1	nogas	4.964	3.662	123355	1.72	5	99.3	70	130	
[Pb]	206	1	nogas	5.035	3.311	33154	1.60	5	100.7	70	130	
[Pb]	207	1	nogas	5.065	2.651	29701	1.12	5	101.3	70	130	
Na	23	2	He	499.259	0.350	882234	3.14	500	99.9	70	130	
Mg	24	2	He	503.232	1.341	461949	1.85	500	100.6	70	130	
Al	27	2	He	3.657	6.859	2897	7.08	5	73.1	70	130	
K	39	2	He	513.004	3.778	703031	2.56	500	102.6	70	130	
Ca	43	2	He	467.022	3.454	1293	5.80	500	93.4	70	130	
Ca	44	2	He	505.189	5.656	27651	2.32	500	101.0	70	130	
V	51	2	He	4.355	1.561	34887	2.35	5	87.1	70	130	
Cr	52	2	He	5.229	1.836	43438	1.63	5	104.6	70	130	
Mn	55	2	He	4.940	2.710	28572	3.41	5	98.8	70	130	
Fe	56	2	He	502.772	0.867	3235540	2.99	500	100.6	70	130	
Co	59	2	He	4.934	1.514	50038	4.40	5	98.7	70	130	
Ni	60	2	He	4.397	1.375	12721	2.14	5	87.9	70	130	
Cu	63	2	He	4.020	5.605	52739	0.98	5	80.4	70	130	
Zn	66	2	He	4.325	4.438	8085	5.48	5	86.5	70	130	
As	75	2	He	4.834	2.861	7955	1.16	5	96.7	70	130	
Se	78	2	He	4.809	5.000	808	3.51	5	96.2	70	130	
B	11	1	nogas	32.634	3.021	171782	4.90	25	130.5	70	130	LLICV Main CR1 Failed
Si	28	1	nogas	251.947	17.243	1800079	1.16	25	1007.8	70	130	LLICV Main CR1 Failed
Ca	43	1	nogas	486.612	1.519	19354	1.81	500	97.3	70	130	
Ca	44	1	nogas	509.655	8.127	866604	0.67	500	101.9	70	130	
Fe	56	1	nogas	472.869	3.504	14015901	2.63	500	94.6	70	130	
Se	77	1	nogas	-3.151	-42.011	16107	1.90	5	-63.0	70	130	LLICV Main CR1 Failed
Se	82	1	nogas	4.998	11.023	1857	11.87	5	100.0	70	130	
Mo	95	1	nogas	4.907	2.221	30196	2.40	5	98.1	70	130	
Sn	118	1	nogas	5.015	3.596	44263	1.97	5	100.3	70	130	
Ba	137	1	nogas	4.672	3.847	19785	1.83	5	93.4	70	130	
Sb	121	2	He	4.917	3.538	26654	6.43	5	98.3	70	130	
Li	7	1	nogas	4.635	6.267	180383	4.02	5	92.7	70	130	
P	31	1	nogas	23.627	6.422	152744	2.22	25	94.5	70	130	
La	139	1	nogas	16.852	49.876	90	33.33	5	337.0	70	130	LLICV Main CR1 Failed
Au	197	1	nogas	266.739	254.935	30	88.19	5	5334.8	70	130	LLICV Main CR1 Failed

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	1191731	3.57	1229805	96.90	70	125	
Ge	72	1	nogas	3441852	3.15	3541557	97.18	70	125	
In	115	1	nogas	2942833	1.94	3006327	97.89	70	125	
Bi	209	1	nogas	2102837	2.49	2153140	97.66	70	125	

Low Level Initial Calibration Verification (LLICV) Report

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Ge	72	2	He	913433	3.14	993327	91.96	70	125	

Initial Calibration Blank (ICB) Report

Sample Table

Sample Name	ICB
Data File Name	029_ICB.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\121
Acq Date Time	2018-12-10T17:43:24-06:00
Sample Type	ICB
Dilution	1
Comment	
ISTD Ref File Name	019CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Be	9	1	nogas	0.012	42.0	140	28.6	1	
Na	23	1	nogas	1.604	25.2	512739	0.8	100	
Mg	24	1	nogas	0.729	18.7	17245	11.7	100	
Al	27	1	nogas	-1.042	-0.4	17698	1.0	5	
K	39	1	nogas	-2.957	-166.6	8202209	0.3	100	
Ti	47	1	nogas	-0.049	-22.2	370	4.7	2.5	
V	51	1	nogas	-2.660	-6.9	141827	2.7	2.5	
Cr	52	1	nogas	-0.169	-4.5	37699	1.2	2.5	
Mn	55	1	nogas	-0.034	-100.7	22994	3.1	2.5	
Co	59	1	nogas	0.004	54.7	1523	2.7	2.5	
Ni	60	1	nogas	0.247	1.4	583	4.3	2.5	
Cu	63	1	nogas	-1.618	-7.8	56199	4.4	2.5	
Zn	66	1	nogas	0.179	11.0	943	10.7	2.5	
As	75	1	nogas	-1.422	-14.7	43165	3.1	2.5	
Sr	88	1	nogas	0.004	148.7	1077	16.9	2.5	
Ag	107	1	nogas	0.001	357.8	150	46.2	2.5	
Cd	111	1	nogas	0.013	57.0	63	36.5	1	
Sb	121	1	nogas	0.215	15.0	4254	9.1	2.5	
Tl	205	1	nogas	0.049	29.0	1343	19.0	1	
Pb	208	1	nogas	0.013	166.6	4354	12.8	2.5	
U	238	1	nogas	0.018	68.4	513	60.4	2.5	
[Pb]	206	1	nogas	-0.003	-730.7	1110	12.4	2.5	
[Pb]	207	1	nogas	0.014	89.0	947	6.0	2.5	
Na	23	2	He	4.837	17.4	73208	0.8	100	
Mg	24	2	He	0.339	39.5	807	16.9	100	
Al	27	2	He	-1.028	-15.4	457	16.4	5	
K	39	2	He	-4.636	-78.7	221516	1.5	100	
Ca	43	2	He	8.757	46.5	33	34.6	100	
Ca	44	2	He	5.297	67.9	4301	2.2	100	
V	51	2	He	-0.509	-0.9	2105	1.3	2.5	
Cr	52	2	He	0.047	98.3	5948	5.7	2.5	
Mn	55	2	He	-0.037	-145.2	2437	12.4	2.5	
Fe	56	2	He	0.505	11.4	17208	3.3	100	
Co	59	2	He	0.001	1008.8	393	19.4	2.5	
Ni	60	2	He	-0.506	-4.1	157	35.2	2.5	
Cu	63	2	He	-1.026	-17.4	19200	4.4	2.5	
Zn	66	2	He	-0.493	-9.1	323	20.6	2.5	
As	75	2	He	0.007	297.0	329	11.7	2.5	
Se	78	2	He	-0.032	-706.8	189	15.4	2.5	
B	11	1	nogas	7.327	9.2	47860	4.3	10	
Si	28	1	nogas	-36.993	-13.0	1520464	1.0	5	
Ca	43	1	nogas	-1.174	-298.3	883	15.1	100	
Ca	44	1	nogas	-8.230	-232.6	574242	0.7	100	
Fe	56	1	nogas	-11.775	-14.7	1938606	1.5	100	
Se	77	1	nogas	-13.263	-12.4	13809	4.6	2.5	
Se	82	1	nogas	-0.048	-383.2	353	14.5	2.5	

Initial Calibration Blank (ICB) Report

Mo	95	1	nogas	0.023	34.2	453	12.1	2.5	
Sn	118	1	nogas	0.827	5.3	8345	2.2	5	
Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Ba	137	1	nogas	-0.028	-42.8	217	21.8	2.5	
Sb	121	2	He	0.167	13.5	1380	10.5	2.5	
P	31	1	nogas	-2.717	-53.8	105687	1.3	10	
La	139	1	nogas	3.921	55.7	47	12.4	2.5	ICB Main CR1 Failed
Au	197	1	nogas	-169.540	-242.0	13	114.6	2.5	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	1253987	3.42	1229805	101.97	70	125	
Ge	72	1	nogas	3530177	1.40	3541557	99.68	70	125	
In	115	1	nogas	2997825	4.08	3006327	99.72	70	125	
Bi	209	1	nogas	2139649	1.88	2153140	99.37	70	125	
Ge	72	2	He	908818	1.85	993327	91.49	70	125	

Interference Check Solution A (ICS-A) Report

Sample Table

Sample Name	ICSA
Data File Name	031ICSA.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\121
Acq Date Time	2018-12-10T17:47:32-06:00
Sample Type	ICSA
Dilution	1
Comment	
ISTD Ref File Name	019CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Be	9	1	nogas	0.003	111.5	57	44.4	0	ICSA Main CR1 Failed
Na	23	1	nogas	95398.972	2.5	2282223584	1.9	0	
Mg	24	1	nogas	96047.019	3.1	1481729300	2.7	0	
Al	27	1	nogas	92432.866	3.5	1755038161	2.4	0	
K	39	1	nogas	96014.257	4.3	1879806842	0.5	0	
Ti	47	1	nogas	1930.602	3.9	3764984	1.5	0	
V	51	1	nogas	-1.535	-31.8	162740	5.2	0	ICSA Main CR1 Failed
Cr	52	1	nogas	0.820	7.4	57730	1.7	0	ICSA Main CR1 Failed
Mn	55	1	nogas	0.094	53.7	25187	1.9	0	ICSA Main CR1 Failed
Co	59	1	nogas	0.370	5.2	10413	7.7	0	ICSA Main CR1 Failed
Ni	60	1	nogas	1.515	2.3	7555	3.2	0	ICSA Main CR1 Failed
Cu	63	1	nogas	-1.732	-6.2	51308	1.6	0	ICSA Main CR1 Failed
Zn	66	1	nogas	1.640	1.5	7352	2.5	0	ICSA Main CR1 Failed
As	75	1	nogas	3.506	14.0	68198	0.4	0	ICSA Main CR1 Failed
Sr	88	1	nogas	0.775	4.9	22745	1.7	0	ICSA Main CR1 Failed
Ag	107	1	nogas	0.064	17.7	1037	12.1	0	ICSA Main CR1 Failed
Cd	111	1	nogas	1.680	5.9	5087	2.9	0	ICSA Main CR1 Failed
Sb	121	1	nogas	0.241	10.5	4324	4.7	0	ICSA Main CR1 Failed
Tl	205	1	nogas	0.021	20.9	737	8.8	0	ICSA Main CR1 Failed
Pb	208	1	nogas	0.028	72.9	4724	10.9	0	ICSA Main CR1 Failed
[Pb]	206	1	nogas	0.040	50.0	1287	8.1	0	ICSA Main CR1 Failed
[Pb]	207	1	nogas	0.049	73.4	1067	19.3	0	ICSA Main CR1 Failed
Na	23	2	He	97705.063	1.6	149635031	0.7	0	
Mg	24	2	He	97691.037	1.6	83870984	0.6	0	
Al	27	2	He	93885.124	1.9	45680329	1.2	0	
K	39	2	He	97502.693	0.4	90923929	0.3	0	
Ca	43	2	He	98063.086	2.1	252275	1.4	0	
Ca	44	2	He	97842.515	2.3	4281768	1.4	0	
V	51	2	He	-0.384	-4.5	2765	2.9	0	ICSA Main CR1 Failed
Cr	52	2	He	0.410	11.2	8055	4.5	0	ICSA Main CR1 Failed
Mn	55	2	He	0.225	7.3	3580	2.7	0	ICSA Main CR1 Failed
Fe	56	2	He	98609.081	2.6	591404978	1.6	0	
Co	59	2	He	0.260	5.6	2810	4.6	0	ICSA Main CR1 Failed
Ni	60	2	He	-0.258	-22.6	743	19.5	0	ICSA Main CR1 Failed
Cu	63	2	He	-1.818	-3.7	13155	2.8	0	ICSA Main CR1 Failed
Zn	66	2	He	-0.065	-66.2	950	5.9	0	ICSA Main CR1 Failed
As	75	2	He	0.165	12.8	542	4.8	0	ICSA Main CR1 Failed
Se	78	2	He	-0.150	-21.9	164	1.2	0	ICSA Main CR1 Failed
B	11	1	nogas	6.232	11.4	35924	5.7	0	ICSA Main CR1 Failed
Si	28	1	nogas	557.025	27.5	2058675	4.8	0	
Ca	43	1	nogas	95762.584	3.0	3502538	2.2	0	
Ca	44	1	nogas	97236.912	3.8	56134807	1.4	0	
Fe	56	1	nogas	95558.050	2.2	2308871918	2.3	0	
Se	77	1	nogas	22.991	14.4	22147	1.3	0	
Se	82	1	nogas	0.032	1068.2	357	29.4	0	ICSA Main CR1 Failed
Mo	95	1	nogas	1859.802	3.7	10926633	0.7	0	
Sn	118	1	nogas	0.095	18.7	1780	4.2	0	ICSA Main CR1 Failed
Ba	137	1	nogas	0.145	36.4	877	20.0	0	ICSA Main CR1 Failed
Sb	121	2	He	0.266	10.0	1787	6.1	0	ICSA Main CR1 Failed

Interference Check Solution A (ICS-A) Report

P	31	1	nogas	88251.140	2.0	160729101	1.7	0	
La	139	1	nogas	42.501	71.6	163	55.2	0	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	1069747	3.48	1229805	86.99	70	125	
Ge	72	1	nogas	3320814	3.69	3541557	93.77	70	125	
In	115	1	nogas	2766475	3.78	3006327	92.02	70	125	
Bi	209	1	nogas	1981850	1.95	2153140	92.04	70	125	
Ge	72	2	He	855083	1.21	993327	86.08	70	125	

Interference Check Solution AB (ICS-AB) Report

Sample Table

Sample Name	ICSAB
Data File Name	032ICSB.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\121
Acq Date Time	2018-12-10T17:49:41-06:00
Sample Type	ICSB
Dilution	1
Comment	
ISTD Ref File Name	019CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Exp Value	%Rec	%Low	%High	QC Flag
Be	9	1	nogas	103.018	5.457	785796	1.30	100	103.0	80	120	
Na	23	1	nogas	113219.149	1.527	2569548591	1.85	100	113219.1	80	120	ICSB Main CR1 Failed
Mg	24	1	nogas	114698.268	2.253	1678442971	1.33	100	114698.3	80	120	ICSB Main CR1 Failed
Al	27	1	nogas	90800.105	0.718	1738287334	0.88	100	90800.1	80	120	ICSB Main CR1 Failed
K	39	1	nogas	103950.648	1.961	2052150913	2.14	100	103950.6	80	120	ICSB Main CR1 Failed
Ti	47	1	nogas	1980.174	1.726	3894488	1.99	100	1980.2	80	120	ICSB Main CR1 Failed
V	51	1	nogas	104.992	2.013	2981980	2.12	100	105.0	80	120	
Cr	52	1	nogas	105.585	2.057	2436872	2.27	100	105.6	80	120	
Mn	55	1	nogas	103.596	2.001	2928992	2.18	100	103.6	80	120	
Co	59	1	nogas	105.775	2.166	2610906	1.95	100	105.8	80	120	
Ni	60	1	nogas	103.996	0.673	578151	0.89	100	104.0	80	120	
Cu	63	1	nogas	101.006	1.140	1430032	0.86	100	101.0	80	120	
Zn	66	1	nogas	105.505	2.324	470688	2.57	100	105.5	80	120	
As	75	1	nogas	108.788	0.616	664168	0.67	100	108.8	80	120	
Sr	88	1	nogas	108.231	2.491	3078802	2.24	100	108.2	80	120	
Ag	107	1	nogas	103.660	6.070	1487030	6.27	100	103.7	80	120	
Cd	111	1	nogas	104.510	1.341	318527	1.91	100	104.5	80	120	
Sb	121	1	nogas	111.838	1.997	1425485	1.76	100	111.8	80	120	
Tl	205	1	nogas	106.640	0.939	1938627	1.69	100	106.6	80	120	
Pb	208	1	nogas	106.221	2.370	2706241	2.37	100	106.2	80	120	
U	238	1	nogas	117.130	3.878	2824878	4.77	100	117.1	80	120	
[Pb]	206	1	nogas	107.808	0.251	666827	0.74	100	107.8	80	120	
[Pb]	207	1	nogas	106.609	1.466	590018	1.14	100	106.6	80	120	
Na	23	2	He	106324.052	0.576	165201531	0.87	100	106324.1	80	120	
Mg	24	2	He	104429.207	1.013	90961875	1.16	100	104429.2	80	120	ICSB Main CR1 Failed
Al	27	2	He	92930.202	0.595	45874751	1.00	100	92930.2	80	120	ICSB Main CR1 Failed
K	39	2	He	106958.169	1.605	99719519	1.60	100	106958.2	80	120	
Ca	43	2	He	106687.376	0.195	278460	0.56	100	106687.4	80	120	
Ca	44	2	He	105279.652	2.715	4673947	2.45	100	105279.7	80	120	ICSB Main CR1 Failed
V	51	2	He	106.523	1.255	686914	0.85	100	106.5	80	120	
Cr	52	2	He	108.967	0.748	753701	1.04	100	109.0	80	120	
Mn	55	2	He	106.466	0.896	533233	0.61	100	106.5	80	120	
Fe	56	2	He	107656.423	1.651	655086017	1.35	100	107656.4	80	120	
Co	59	2	He	106.324	0.765	1016206	0.36	100	106.3	80	120	
Ni	60	2	He	105.589	0.588	258391	0.31	100	105.6	80	120	
Cu	63	2	He	100.497	1.271	657593	1.57	100	100.5	80	120	
Zn	66	2	He	106.752	0.873	164321	1.25	100	106.8	80	120	
As	75	2	He	107.953	0.971	162331	0.56	100	108.0	80	120	
Se	78	2	He	108.921	1.802	13390	1.37	100	108.9	80	120	
B	11	1	nogas	521.050	5.552	2374479	1.22	100	521.0	80	120	
Si	28	1	nogas	5480.898	0.775	7355191	0.88	100	5480.9	80	120	ICSB Main CR1 Failed
Ca	43	1	nogas	102457.422	0.628	3777947	0.37	100	102457.4	80	120	ICSB Main CR1 Failed
Ca	44	1	nogas	105832.615	1.837	61565724	1.94	100	105832.6	80	120	
Fe	56	1	nogas	106158.250	1.700	2585388658	1.90	100	106158.3	80	120	
Se	77	1	nogas	133.319	1.231	50483	0.60	100	133.3	80	120	
Se	82	1	nogas	104.773	1.009	30800	1.05	100	104.8	80	120	
Mo	95	1	nogas	2015.418	2.346	11941575	2.51	100	2015.4	80	120	ICSB Main CR1 Failed
Sn	118	1	nogas	106.649	0.936	872165	0.44	100	106.6	80	120	
Ba	137	1	nogas	103.960	0.404	411001	0.92	100	104.0	80	120	
Sb	121	2	He	108.523	1.161	548297	0.95	100	108.5	80	120	
La	139	1	nogas	137.425	31.482	470	28.62	100	137.4	80	120	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	1087240	5.06	1229805	88.41	70	125	
Ge	72	1	nogas	3345974	0.26	3541557	94.48	70	125	
In	115	1	nogas	2790649	1.12	3006327	92.83	70	125	
Bi	209	1	nogas	2039845	0.99	2153140	94.74	70	125	
Ge	72	2	He	867425	0.41	993327	87.33	70	125	

Continuing Calibration Verification (CCV) Report

Sample Table

Sample Name	CCV
Data File Name	043_CCV.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\121
Acq Date Time	2018-12-10T18:12:17-06:00
Sample Type	CCV
Dilution	1
Comment	
ISTD Ref File Name	019CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Exp Value	%Rec	%Low	%High2	QC Flag
Be	9	1	nogas	98.699	6.026	836563	1.60	100	98.7	90	110	
Na	23	1	nogas	10612.936	5.564	311794049	4.60	10000	106.1	90	110	
Mg	24	1	nogas	10106.182	1.070	191235746	1.88	10000	101.1	90	110	
Al	27	1	nogas	101.846	3.266	2352698	2.57	100	101.8	90	110	
K	39	1	nogas	10115.317	1.949	244908022	1.75	10000	101.2	90	110	
Ti	47	1	nogas	100.092	3.225	233603	1.02	100	100.1	90	110	
V	51	1	nogas	108.444	3.264	3640335	3.11	100	108.4	90	110	
Cr	52	1	nogas	101.693	1.386	2782193	2.53	100	101.7	90	110	
Mn	55	1	nogas	101.739	3.079	3409243	4.84	100	101.7	90	110	
Co	59	1	nogas	100.114	1.514	2927183	0.76	100	100.1	90	110	
Ni	60	1	nogas	101.232	1.313	666764	3.03	100	101.2	90	110	
Cu	63	1	nogas	97.237	1.773	1633922	0.89	100	97.2	90	110	
Zn	66	1	nogas	102.194	1.398	540073	2.14	100	102.2	90	110	
As	75	1	nogas	105.311	2.497	763336	1.16	100	105.3	90	110	
Sr	88	1	nogas	98.975	2.828	3334944	2.27	100	99.0	90	110	
Ag	107	1	nogas	96.334	1.594	1637484	3.84	100	96.3	90	110	
Cd	111	1	nogas	99.103	4.896	355408	1.14	100	99.1	90	110	
Sb	121	1	nogas	100.819	1.191	1522712	2.87	100	100.8	90	110	
Tl	205	1	nogas	103.055	2.474	2018565	3.05	100	103.1	90	110	
Pb	208	1	nogas	108.267	2.643	2758277	2.64	100	108.3	90	110	
U	238	1	nogas	104.245	2.413	2708617	3.54	100	104.2	90	110	
[Pb]	206	1	nogas	101.080	0.931	673665	0.97	100	101.1	90	110	
[Pb]	207	1	nogas	100.656	0.367	600320	1.85	100	100.7	90	110	
Na	23	2	He	10416.228	1.585	19751790	0.46	10000	104.2	90	110	
Mg	24	2	He	10166.372	2.209	10769626	0.65	10000	101.7	90	110	
Al	27	2	He	100.628	1.527	61564	1.14	100	100.6	90	110	
K	39	2	He	12295.806	0.710	11663526	0.70	10000	123.0	90	110	CCV Main CR1-2 Failed
Ca	43	2	He	10291.193	3.164	32679	2.95	10000	102.9	90	110	
Ca	44	2	He	10133.857	2.147	551420	0.58	10000	101.3	90	110	
V	51	2	He	101.801	3.621	798544	2.09	100	101.8	90	110	
Cr	52	2	He	104.605	1.921	880213	1.10	100	104.6	90	110	
Mn	55	2	He	101.137	0.492	616354	2.01	100	101.1	90	110	
Fe	56	2	He	10112.688	2.034	74854524	0.78	10000	101.1	90	110	
Co	59	2	He	101.354	2.615	1178074	1.22	100	101.4	90	110	
Ni	60	2	He	101.713	3.102	302758	2.10	100	101.7	90	110	
Cu	63	2	He	95.674	4.335	762654	2.97	100	95.7	90	110	
Zn	66	2	He	99.802	1.961	186913	0.73	100	99.8	90	110	
As	75	2	He	101.953	2.461	186466	1.05	100	102.0	90	110	
Se	78	2	He	100.058	2.762	14978	1.26	100	100.1	90	110	
B	11	1	nogas	880.690	7.792	4451128	3.40	500	176.1	90	110	CCV Main CR1-2 Failed
Si	28	1	nogas	4855.484	3.074	7917457	1.52	5000	97.1	90	110	
Ca	43	1	nogas	10338.843	3.106	452417	1.68	10000	103.4	90	110	
Ca	44	1	nogas	10173.711	4.111	7595570	1.83	10000	101.7	90	110	
Fe	56	1	nogas	10127.673	3.813	294353582	2.42	10000	101.3	90	110	
Se	77	1	nogas	133.630	6.352	59868	2.31	100	133.6	90	110	CCV Main CR1-2 Failed
Se	82	1	nogas	101.083	4.319	35205	3.28	100	101.1	90	110	
Mo	95	1	nogas	98.132	2.256	688936	0.56	100	98.1	90	110	
Sn	118	1	nogas	98.914	2.597	952638	2.30	100	98.9	90	110	
Ba	137	1	nogas	98.601	3.531	458883	1.01	100	98.6	90	110	
Sb	121	2	He	95.512	1.554	586978	0.22	100	95.5	90	110	
Li	7	1	nogas	98.578	6.355	1859371	1.46	100	98.6	90	110	
P	31	1	nogas	468.593	1.908	1143005	1.77	500	93.7	90	110	
La	139	1	nogas	115.524	21.147	470	16.06	100	115.5	90	110	CCV Main CR1-2 Failed
Au	197	1	nogas	-181.277	-84.637	13	43.30	100	-181.3	90	110	CCV Main CR1-2 Failed

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	1208235	4.75	1229805	98.25	70	125	
Ge	72	1	nogas	3964082	2.27	3541557	111.93	70	125	
In	115	1	nogas	3287961	4.05	3006327	109.37	70	125	
Bi	209	1	nogas	2197918	1.89	2153140	102.08	70	125	

Continuing Calibration Verification (CCV) Report

Ge	72	2	He	1055142	1.57	993327	106.22	70	125	

Continuing Calibration Blank (CCB) Report

Sample Table

Sample Name	CCB
Data File Name	044_CCB.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\121
Acq Date Time	2018-12-10T18:14:22-06:00
Sample Type	CCB
Dilution	1
Comment	
ISTD Ref File Name	019CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Be	9	1	nogas	0.034	46.8	343	45.2	1	
Na	23	1	nogas	182.262	3.6	6021524	3.6	100	CCB Main CR1 Failed
Mg	24	1	nogas	9.989	15.4	199564	15.5	100	
Al	27	1	nogas	-0.391	-26.7	34869	6.2	5	
K	39	1	nogas	-23.471	-31.0	8792232	1.2	100	
Ti	47	1	nogas	0.026	228.9	593	22.8	2.5	
V	51	1	nogas	2.462	7.1	322058	3.1	2.5	
Cr	52	1	nogas	0.000	79206.9	47197	2.8	2.5	
Mn	55	1	nogas	0.241	8.4	35204	2.5	2.5	
Co	59	1	nogas	0.013	152.6	1990	28.0	2.5	
Ni	60	1	nogas	0.573	3.0	2827	3.9	2.5	
Cu	63	1	nogas	-4.517	-1.1	17135	3.5	2.5	
Zn	66	1	nogas	0.761	7.3	4161	6.0	2.5	
As	75	1	nogas	1.388	9.3	67769	2.6	2.5	
Sr	88	1	nogas	0.215	8.8	8382	6.6	2.5	
Ag	107	1	nogas	0.015	31.1	403	18.8	2.5	
Cd	111	1	nogas	0.019	138.0	93	101.8	1	
Sb	121	1	nogas	1.203	25.4	19799	22.7	2.5	
Tl	205	1	nogas	0.375	54.5	7966	53.7	1	
Pb	208	1	nogas	-0.018	-168.4	3557	21.9	2.5	
U	238	1	nogas	0.138	68.1	3747	69.6	2.5	
[Pb]	206	1	nogas	-0.059	-46.8	790	26.3	2.5	
[Pb]	207	1	nogas	-0.016	-181.5	817	23.9	2.5	
Na	23	2	He	201.483	3.4	440726	0.8	100	CCB Main CR1 Failed
Mg	24	2	He	9.228	2.3	9999	3.5	100	
Al	27	2	He	0.464	234.0	1364	41.8	5	
K	39	2	He	17.832	10.5	242416	0.7	100	
Ca	43	2	He	22.648	11.1	80	12.5	100	
Ca	44	2	He	8.205	39.8	4974	2.4	100	
V	51	2	He	-0.209	-8.7	4609	0.9	2.5	
Cr	52	2	He	-0.018	-291.9	6138	4.9	2.5	
Mn	55	2	He	0.127	48.8	3690	8.7	2.5	
Fe	56	2	He	3.084	12.0	37692	4.7	100	
Co	59	2	He	0.004	40.0	483	4.8	2.5	
Ni	60	2	He	-0.452	-8.6	330	33.7	2.5	
Cu	63	2	He	-3.159	-1.7	5754	3.4	2.5	
Zn	66	2	He	-0.363	-13.1	597	12.7	2.5	
As	75	2	He	0.031	89.9	411	15.0	2.5	
Se	78	2	He	-0.182	-74.1	191	9.0	2.5	
B	11	1	nogas	243.026	2.5	1300607	1.4	10	CCB Main CR1 Failed
Si	28	1	nogas	-199.223	-7.4	1511772	2.1	5	
Ca	43	1	nogas	35.124	14.5	2594	7.4	100	
Ca	44	1	nogas	-209.276	-7.4	511020	1.0	100	
Fe	56	1	nogas	25.853	21.1	3283627	4.2	100	
Se	77	1	nogas	8.991	34.5	22387	5.3	2.5	CCB Main CR1 Failed
Se	82	1	nogas	-0.031	-895.2	407	25.2	2.5	
Mo	95	1	nogas	0.300	27.4	2464	22.8	2.5	
Sn	118	1	nogas	0.195	44.7	3177	27.1	5	

Continuing Calibration Blank (CCB) Report

Ba	137	1	nogas	0.016	119.3	460	19.9	2.5	
Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Sb	121	2	He	0.748	8.2	4987	6.7	2.5	
P	31	1	nogas	-14.017	-7.1	94776	1.5	10	
La	139	1	nogas	15.226	62.1	97	36.3	2.5	CCB Main CR1 Failed
Au	197	1	nogas	143.796	102.4	27	21.7	2.5	CCB Main CR1 Failed

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	1270126	3.43	1229805	103.28	70	125	
Ge	72	1	nogas	3991299	1.36	3541557	112.70	70	125	
In	115	1	nogas	3389247	3.95	3006327	112.74	70	125	
Bi	209	1	nogas	2246818	2.76	2153140	104.35	70	125	
Ge	72	2	He	1019296	3.49	993327	102.61	70	125	

Continuing Calibration Verification (CCV) Report

Sample Table

Sample Name	CCV
Data File Name	054_CCV.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\121
Acq Date Time	2018-12-10T18:38:29-06:00
Sample Type	CCV
Dilution	1
Comment	
ISTD Ref File Name	019CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Exp Value	%Rec	%Low	%High2	QC Flag
Be	9	1	nogas	99.535	2.990	751953	4.62	100	99.5	90	110	
Na	23	1	nogas	10204.938	5.628	274127273	3.19	10000	102.0	90	110	
Mg	24	1	nogas	10117.373	6.536	174968612	4.64	10000	101.2	90	110	
Al	27	1	nogas	100.871	4.277	2145487	3.72	100	100.9	90	110	
K	39	1	nogas	10317.252	5.059	229736663	4.04	10000	103.2	90	110	
Ti	47	1	nogas	100.930	2.410	216894	1.86	100	100.9	90	110	
V	51	1	nogas	105.100	3.831	3254447	3.19	100	105.1	90	110	
Cr	52	1	nogas	100.018	3.538	2518634	1.92	100	100.0	90	110	
Mn	55	1	nogas	102.569	5.651	3160295	3.34	100	102.6	90	110	
Co	59	1	nogas	99.902	3.481	2688909	3.05	100	99.9	90	110	
Ni	60	1	nogas	100.056	3.196	606322	0.91	100	100.1	90	110	
Cu	63	1	nogas	95.761	4.693	1481746	1.22	100	95.8	90	110	
Zn	66	1	nogas	101.206	3.102	492294	2.71	100	101.2	90	110	
As	75	1	nogas	100.899	2.599	675525	1.70	100	100.9	90	110	
Sr	88	1	nogas	101.531	2.498	3149284	1.76	100	101.5	90	110	
Ag	107	1	nogas	97.685	8.503	1527528	7.85	100	97.7	90	110	
Cd	111	1	nogas	99.662	4.035	338400	2.27	100	99.7	90	110	
Sb	121	1	nogas	99.746	2.598	1386372	1.73	100	99.7	90	110	
Tl	205	1	nogas	107.470	2.305	1969913	0.79	100	107.5	90	110	
Pb	208	1	nogas	103.228	0.403	2630109	0.40	100	103.2	90	110	
U	238	1	nogas	102.713	3.009	2497158	1.86	100	102.7	90	110	
[Pb]	206	1	nogas	104.686	1.565	653028	1.21	100	104.7	90	110	
[Pb]	207	1	nogas	102.523	1.189	572324	1.92	100	102.5	90	110	
Na	23	2	He	10928.148	4.886	18155069	1.57	10000	109.3	90	110	
Mg	24	2	He	10680.742	4.319	9916008	0.71	10000	106.8	90	110	
Al	27	2	He	100.949	4.405	54118	0.88	100	100.9	90	110	
K	39	2	He	10728.995	2.090	10206061	2.04	10000	107.3	90	110	
Ca	43	2	He	10248.703	3.308	28529	1.84	10000	102.5	90	110	
Ca	44	2	He	10063.225	4.197	479986	1.83	10000	100.6	90	110	
V	51	2	He	103.652	3.509	712747	1.29	100	103.7	90	110	
Cr	52	2	He	107.145	4.891	789825	0.72	100	107.1	90	110	
Mn	55	2	He	103.098	4.097	550528	1.75	100	103.1	90	110	
Fe	56	2	He	10303.453	4.228	66838951	0.55	10000	103.0	90	110	
Co	59	2	He	105.392	3.943	1073794	1.60	100	105.4	90	110	
Ni	60	2	He	106.634	3.039	278221	1.70	100	106.6	90	110	
Cu	63	2	He	102.531	2.955	714804	1.61	100	102.5	90	110	
Zn	66	2	He	104.977	2.654	172322	1.83	100	105.0	90	110	
As	75	2	He	103.150	2.977	165401	1.54	100	103.2	90	110	
Se	78	2	He	99.524	4.231	13059	1.69	100	99.5	90	110	
B	11	1	nogas	595.236	4.410	2683543	3.19	500	119.0	90	110	CCV Main CR1-2 Failed
Si	28	1	nogas	4707.352	2.833	7115951	1.87	5000	94.1	90	110	
Ca	43	1	nogas	10110.884	3.260	407290	1.31	10000	101.1	90	110	
Ca	44	1	nogas	9919.443	3.564	6832624	0.88	10000	99.2	90	110	
Fe	56	1	nogas	10080.888	3.943	269715589	2.26	10000	100.8	90	110	
Se	77	1	nogas	112.114	6.262	49130	1.79	100	112.1	90	110	CCV Main CR1-2 Failed
Se	82	1	nogas	101.437	4.618	32506	1.05	100	101.4	90	110	
Mo	95	1	nogas	99.394	3.078	642284	0.87	100	99.4	90	110	
Sn	118	1	nogas	99.294	4.330	904904	3.37	100	99.3	90	110	
Ba	137	1	nogas	95.425	2.045	420448	1.05	100	95.4	90	110	
Sb	121	2	He	99.383	5.266	535214	3.16	100	99.4	90	110	
Li	7	1	nogas	100.516	6.948	1685240	2.04	100	100.5	90	110	
P	31	1	nogas	470.125	2.873	1055287	2.62	500	94.0	90	110	
La	139	1	nogas	101.300	13.107	397	14.33	100	101.3	90	110	
Au	197	1	nogas	-73.774	-758.335	17	124.90	100	-73.8	90	110	CCV Main CR1-2 Failed

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	1076119	6.90	1229805	87.50	70	125	
Ge	72	1	nogas	3650290	3.77	3541557	103.07	70	125	
In	115	1	nogas	3111071	2.92	3006327	103.48	70	125	
Bi	209	1	nogas	2057298	1.52	2153140	95.55	70	125	

Continuing Calibration Verification (CCV) Report

Ge	72	2	He	925692	4.47	993327	93.19	70	125	

Continuing Calibration Blank (CCB) Report

Sample Table

Sample Name	CCB
Data File Name	055_CCB.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\121
Acq Date Time	2018-12-10T18:41:09-06:00
Sample Type	CCB
Dilution	1
Comment	
ISTD Ref File Name	019CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Be	9	1	nogas	0.014	60.8	150	46.7	1	
Na	23	1	nogas	43.079	9.1	1769505	5.3	100	
Mg	24	1	nogas	2.768	6.9	57266	5.4	100	
Al	27	1	nogas	-0.570	-7.6	28802	6.5	5	
K	39	1	nogas	-4.501	-189.5	8631865	1.4	100	
Ti	47	1	nogas	-0.026	-134.1	443	20.3	2.5	
V	51	1	nogas	1.435	31.5	270483	3.2	2.5	
Cr	52	1	nogas	-0.128	-28.9	40899	4.1	2.5	
Mn	55	1	nogas	0.203	7.9	31754	4.9	2.5	
Co	59	1	nogas	0.004	262.6	1620	18.8	2.5	
Ni	60	1	nogas	0.325	11.2	1097	18.5	2.5	
Cu	63	1	nogas	-3.257	-5.8	34800	4.7	2.5	
Zn	66	1	nogas	0.466	10.5	2424	9.3	2.5	
As	75	1	nogas	0.089	433.1	55097	1.1	2.5	
Sr	88	1	nogas	0.071	11.3	3277	10.3	2.5	
Ag	107	1	nogas	0.015	31.6	373	22.3	2.5	
Cd	111	1	nogas	0.007	91.0	47	49.5	1	
Sb	121	1	nogas	1.045	21.7	16325	21.8	2.5	
Tl	205	1	nogas	0.607	51.6	12112	53.7	1	
Pb	208	1	nogas	-0.022	-136.3	3467	21.8	2.5	
U	238	1	nogas	0.115	68.6	3007	71.4	2.5	
[Pb]	206	1	nogas	-0.054	-46.2	783	25.0	2.5	
[Pb]	207	1	nogas	0.003	1511.1	887	32.7	2.5	
Na	23	2	He	58.622	6.9	172614	1.7	100	
Mg	24	2	He	2.812	5.5	3294	7.8	100	
Al	27	2	He	-0.712	-44.9	663	24.1	5	
K	39	2	He	7.328	55.6	232645	1.6	100	
Ca	43	2	He	13.755	47.4	50	34.6	100	
Ca	44	2	He	-1.211	-413.1	4297	5.6	100	
V	51	2	He	-0.289	-7.9	3842	1.8	2.5	
Cr	52	2	He	0.000	-2746.5	6024	3.5	2.5	
Mn	55	2	He	-0.009	-673.0	2770	11.0	2.5	
Fe	56	2	He	2.656	10.2	33187	1.7	100	
Co	59	2	He	0.009	98.6	507	14.5	2.5	
Ni	60	2	He	-0.486	-4.1	223	27.0	2.5	
Cu	63	2	He	-2.007	-4.3	13675	1.1	2.5	
Zn	66	2	He	-0.254	-26.8	757	12.6	2.5	
As	75	2	He	0.024	70.9	381	9.4	2.5	
Se	78	2	He	-0.058	-262.0	199	6.8	2.5	
B	11	1	nogas	61.920	1.1	311105	3.1	10	CCB Main CR1 Failed
Si	28	1	nogas	27.360	1780.2	1671379	30.9	5	CCB Main CR1 Failed
Ca	43	1	nogas	22.113	25.6	1887	9.3	100	
Ca	44	1	nogas	-202.805	-12.0	481585	0.3	100	
Fe	56	1	nogas	10.395	77.4	2651645	9.4	100	
Se	77	1	nogas	-0.781	-430.4	18123	2.9	2.5	
Se	82	1	nogas	0.138	115.1	433	9.3	2.5	
Mo	95	1	nogas	0.239	37.7	1907	32.5	2.5	
Sn	118	1	nogas	0.378	9.3	4684	8.8	5	

Continuing Calibration Blank (CCB) Report

Ba	137	1	nogas	0.028	76.9	483	20.7	2.5	
Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Sb	121	2	He	0.617	2.1	4041	3.4	2.5	
P	31	1	nogas	-8.689	-11.1	99467	1.7	10	
La	139	1	nogas	12.272	81.6	80	45.1	2.5	CCB Main CR1 Failed
Au	197	1	nogas	-249.832	-189.7	10	173.2	2.5	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	1166516	2.63	1229805	94.85	70	125	
Ge	72	1	nogas	3730988	3.36	3541557	105.35	70	125	
In	115	1	nogas	3175444	1.84	3006327	105.63	70	125	
Bi	209	1	nogas	2133314	4.23	2153140	99.08	70	125	
Ge	72	2	He	976948	4.17	993327	98.35	70	125	

Continuing Calibration Verification (CCV) Report

Sample Table

Sample Name	CCV
Data File Name	064_CCV.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\121
Acq Date Time	2018-12-10T18:59:36-06:00
Sample Type	CCV
Dilution	1
Comment	
ISTD Ref File Name	019CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Exp Value	%Rec	%Low	%High2	QC Flag
Be	9	1	nogas	96.447	2.613	711333	2.10	100	96.4	90	110	
Na	23	1	nogas	9830.502	4.799	268990906	2.32	10000	98.3	90	110	
Mg	24	1	nogas	9708.229	1.229	171122775	1.94	10000	97.1	90	110	
Al	27	1	nogas	99.708	3.875	2139983	3.83	100	99.7	90	110	
K	39	1	nogas	10197.318	5.430	229027513	2.09	10000	102.0	90	110	
Ti	47	1	nogas	105.583	9.025	229336	12.09	100	105.6	90	110	
V	51	1	nogas	100.429	4.385	3145497	0.61	100	100.4	90	110	
Cr	52	1	nogas	99.149	3.990	2518554	1.45	100	99.1	90	110	
Mn	55	1	nogas	104.918	4.966	3260070	1.53	100	104.9	90	110	
Co	59	1	nogas	99.362	7.036	2694741	3.66	100	99.4	90	110	
Ni	60	1	nogas	98.363	6.039	600884	2.90	100	98.4	90	110	
Cu	63	1	nogas	94.437	9.684	1473663	5.82	100	94.4	90	110	
Zn	66	1	nogas	101.139	5.209	495936	2.23	100	101.1	90	110	
As	75	1	nogas	97.235	2.492	658674	2.04	100	97.2	90	110	
Sr	88	1	nogas	100.175	4.930	3132364	1.43	100	100.2	90	110	
Ag	107	1	nogas	99.446	8.966	1566640	5.74	100	99.4	90	110	
Cd	111	1	nogas	100.100	1.038	337329	1.88	100	100.1	90	110	
Sb	121	1	nogas	101.431	1.446	1422895	3.97	100	101.4	90	110	
Tl	205	1	nogas	101.482	2.091	1965777	1.88	100	101.5	90	110	
Pb	208	1	nogas	105.599	1.133	2690420	1.13	100	105.6	90	110	
U	238	1	nogas	101.250	6.938	2598587	3.99	100	101.3	90	110	
[Pb]	206	1	nogas	102.130	2.252	673276	2.78	100	102.1	90	110	
[Pb]	207	1	nogas	99.629	1.195	587818	3.19	100	99.6	90	110	
Na	23	2	He	10403.092	2.393	17746824	3.17	10000	104.0	90	110	
Mg	24	2	He	10038.200	1.377	9565854	1.50	10000	100.4	90	110	
Al	27	2	He	97.496	1.307	53686	1.98	100	97.5	90	110	
K	39	2	He	10726.960	0.740	10204167	0.72	10000	107.3	90	110	
Ca	43	2	He	9985.284	2.699	28522	3.07	10000	99.9	90	110	
Ca	44	2	He	9857.986	1.095	482667	1.66	10000	98.6	90	110	
V	51	2	He	100.361	0.875	708380	1.44	100	100.4	90	110	
Cr	52	2	He	104.120	1.476	788180	2.24	100	104.1	90	110	
Mn	55	2	He	100.033	1.447	548306	1.99	100	100.0	90	110	
Fe	56	2	He	10011.439	1.699	66666181	2.41	10000	100.1	90	110	
Co	59	2	He	101.169	1.049	1057912	1.73	100	101.2	90	110	
Ni	60	2	He	99.437	0.680	266310	1.45	100	99.4	90	110	
Cu	63	2	He	97.903	1.534	701567	2.27	100	97.9	90	110	
Zn	66	2	He	101.690	0.687	171295	1.23	100	101.7	90	110	
As	75	2	He	100.248	2.018	164953	2.56	100	100.2	90	110	
Se	78	2	He	96.431	2.731	12995	3.45	100	96.4	90	110	
B	11	1	nogas	568.948	2.072	2506174	0.59	500	113.8	90	110	CCV Main CR1-2 Failed
Si	28	1	nogas	4541.493	4.895	6979678	0.56	5000	90.8	90	110	
Ca	43	1	nogas	10054.829	4.024	408517	1.68	10000	100.5	90	110	
Ca	44	1	nogas	9836.513	6.685	6836833	3.71	10000	98.4	90	110	
Fe	56	1	nogas	10048.500	4.742	271105081	1.13	10000	100.5	90	110	
Se	77	1	nogas	88.529	4.161	42954	1.27	100	88.5	90	110	CCV Main CR1-2 Failed
Se	82	1	nogas	96.769	3.083	31311	0.58	100	96.8	90	110	
Mo	95	1	nogas	99.007	4.820	645201	2.47	100	99.0	90	110	
Sn	118	1	nogas	97.386	0.672	880856	2.54	100	97.4	90	110	
Ba	137	1	nogas	100.883	2.357	440941	1.76	100	100.9	90	110	
Sb	121	2	He	98.029	1.486	541930	2.24	100	98.0	90	110	
Li	7	1	nogas	97.721	7.875	1604256	6.74	100	97.7	90	110	
P	31	1	nogas	462.284	5.231	1047965	1.27	500	92.5	90	110	
La	139	1	nogas	125.882	3.067	480	5.51	100	125.9	90	110	CCV Main CR1-2 Failed
Au	197	1	nogas	-7.027	-3725.153	20	50.00	100	-7.0	90	110	CCV Main CR1-2 Failed

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	1049527	1.52	1229805	85.34	70	125	
Ge	72	1	nogas	3682061	3.63	3541557	103.97	70	125	
In	115	1	nogas	3086214	2.85	3006327	102.66	70	125	
Bi	209	1	nogas	2174348	3.13	2153140	100.99	70	125	

Continuing Calibration Verification (CCV) Report

Ge	72	2	He	948960	0.79	993327	95.53	70	125	

Continuing Calibration Blank (CCB) Report

Sample Table

Sample Name	CCB
Data File Name	065_CCB.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\121
Acq Date Time	2018-12-10T19:01:41-06:00
Sample Type	CCB
Dilution	1
Comment	
ISTD Ref File Name	019CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Be	9	1	nogas	0.043	28.0	383	26.3	1	
Na	23	1	nogas	27.159	14.8	1236893	4.0	100	
Mg	24	1	nogas	5.785	41.4	105141	35.4	100	
Al	27	1	nogas	-0.608	-17.5	27364	7.5	5	
K	39	1	nogas	2.413	607.3	8599292	1.7	100	
Ti	47	1	nogas	0.045	123.0	587	23.6	2.5	
V	51	1	nogas	-0.798	-30.5	200468	1.1	2.5	
Cr	52	1	nogas	-0.209	-64.8	37989	7.8	2.5	
Mn	55	1	nogas	0.172	36.3	30105	4.5	2.5	
Co	59	1	nogas	0.040	14.9	2554	5.6	2.5	
Ni	60	1	nogas	0.321	15.4	1057	29.3	2.5	
Cu	63	1	nogas	-2.097	-6.9	51088	1.3	2.5	
Zn	66	1	nogas	0.470	9.5	2387	6.4	2.5	
As	75	1	nogas	-1.159	-12.9	46279	1.5	2.5	
Sr	88	1	nogas	0.083	24.4	3567	15.7	2.5	
Ag	107	1	nogas	0.041	50.2	770	40.0	2.5	
Cd	111	1	nogas	0.030	40.9	130	35.3	1	
Sb	121	1	nogas	1.753	20.7	25763	18.8	2.5	
Tl	205	1	nogas	0.722	38.5	14751	42.4	1	
Pb	208	1	nogas	0.003	1422.7	4094	25.5	2.5	
U	238	1	nogas	0.166	65.1	4461	69.7	2.5	
[Pb]	206	1	nogas	-0.015	-178.9	1073	21.6	2.5	
[Pb]	207	1	nogas	0.004	582.8	920	21.0	2.5	
Na	23	2	He	40.129	2.0	136293	1.2	100	
Mg	24	2	He	3.401	8.3	3754	6.6	100	
Al	27	2	He	-0.751	-2.3	627	0.9	5	
K	39	2	He	8.521	43.8	233755	1.5	100	
Ca	43	2	He	12.933	62.0	47	49.5	100	
Ca	44	2	He	0.243	2329.9	4244	6.8	100	
V	51	2	He	-0.387	-1.5	3050	2.0	2.5	
Cr	52	2	He	-0.015	-176.1	5741	4.1	2.5	
Mn	55	2	He	0.003	874.6	2760	4.5	2.5	
Fe	56	2	He	4.005	6.0	41226	3.9	100	
Co	59	2	He	0.023	2.0	640	1.6	2.5	
Ni	60	2	He	-0.448	-7.2	317	25.3	2.5	
Cu	63	2	He	-1.212	-4.8	18760	2.0	2.5	
Zn	66	2	He	-0.303	-8.7	657	8.4	2.5	
As	75	2	He	0.016	68.7	358	3.8	2.5	
Se	78	2	He	-0.029	-873.9	198	17.8	2.5	
B	11	1	nogas	42.625	2.3	215160	2.5	10	CCB Main CR1 Failed
Si	28	1	nogas	-237.020	-14.1	1338815	1.3	5	
Ca	43	1	nogas	39.627	12.1	2554	5.0	100	
Ca	44	1	nogas	-208.748	-16.4	467725	1.3	100	
Fe	56	1	nogas	0.415	3006.2	2327541	12.9	100	
Se	77	1	nogas	-11.910	-6.5	14666	4.0	2.5	
Se	82	1	nogas	0.008	1297.8	383	5.4	2.5	
Mo	95	1	nogas	0.355	29.9	2610	25.0	2.5	
Sn	118	1	nogas	0.375	25.5	4751	20.6	5	

Continuing Calibration Blank (CCB) Report

Ba	137	1	nogas	0.031	53.9	507	16.8	2.5	
Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Sb	121	2	He	1.148	2.5	6848	0.5	2.5	
P	31	1	nogas	-2.900	-52.9	109009	3.0	10	
La	139	1	nogas	11.715	57.2	80	33.1	2.5	CCB Main CR1 Failed
Au	197	1	nogas	-100.092	-139.3	17	34.6	2.5	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	1157608	3.64	1229805	94.13	70	125	
Ge	72	1	nogas	3653766	3.43	3541557	103.17	70	125	
In	115	1	nogas	3240555	2.29	3006327	107.79	70	125	
Bi	209	1	nogas	2200471	5.45	2153140	102.20	70	125	
Ge	72	2	He	948155	1.90	993327	95.45	70	125	

Continuing Calibration Verification (CCV) Report

Sample Table

Sample Name	CCV
Data File Name	076_CCV.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\121
Acq Date Time	2018-12-10T19:24:22-06:00
Sample Type	CCV
Dilution	1
Comment	
ISTD Ref File Name	019CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Exp Value	%Rec	%Low	%High2	QC Flag
Be	9	1	nogas	96.467	5.984	667801	2.48	100	96.5	90	110	
Na	23	1	nogas	9641.679	3.300	248021406	1.41	10000	96.4	90	110	
Mg	24	1	nogas	9750.660	2.934	161471124	1.24	10000	97.5	90	110	
Al	27	1	nogas	100.363	1.654	2000731	3.12	100	100.4	90	110	
K	39	1	nogas	9983.520	1.784	208568967	1.63	10000	99.8	90	110	
Ti	47	1	nogas	97.494	1.552	196393	3.84	100	97.5	90	110	
V	51	1	nogas	99.182	2.870	2889372	2.96	100	99.2	90	110	
Cr	52	1	nogas	98.976	1.634	2335998	1.27	100	99.0	90	110	
Mn	55	1	nogas	100.934	4.774	2914883	3.63	100	100.9	90	110	
Co	59	1	nogas	96.952	4.905	2443559	2.57	100	97.0	90	110	
Ni	60	1	nogas	96.410	3.393	547286	1.09	100	96.4	90	110	
Cu	63	1	nogas	92.670	4.239	1346057	1.57	100	92.7	90	110	
Zn	66	1	nogas	99.910	1.109	455375	2.08	100	99.9	90	110	
As	75	1	nogas	95.880	3.354	603797	1.80	100	95.9	90	110	
Sr	88	1	nogas	101.417	3.026	2946839	1.87	100	101.4	90	110	
Ag	107	1	nogas	97.795	6.281	1431883	3.84	100	97.8	90	110	
Cd	111	1	nogas	97.687	1.372	311134	1.58	100	97.7	90	110	
Sb	121	1	nogas	102.180	0.926	1330855	2.38	100	102.2	90	110	
Tl	205	1	nogas	99.632	6.627	1856577	4.65	100	99.6	90	110	
Pb	208	1	nogas	99.265	0.951	2529288	0.95	100	99.3	90	110	
U	238	1	nogas	99.226	3.510	2453348	1.26	100	99.2	90	110	
[Pb]	206	1	nogas	97.579	3.505	618985	0.23	100	97.6	90	110	
[Pb]	207	1	nogas	96.048	3.194	545213	0.13	100	96.0	90	110	
Na	23	2	He	10513.356	0.228	16217431	2.02	10000	105.1	90	110	
Mg	24	2	He	10116.296	0.652	8718622	2.11	10000	101.2	90	110	
Al	27	2	He	94.982	3.300	47303	1.30	100	95.0	90	110	
K	39	2	He	9600.644	1.485	9156455	1.45	10000	96.0	90	110	
Ca	43	2	He	9839.086	4.909	25401	3.24	10000	98.4	90	110	
Ca	44	2	He	9719.325	2.128	430298	0.31	10000	97.2	90	110	
V	51	2	He	101.740	1.140	649277	1.07	100	101.7	90	110	
Cr	52	2	He	105.198	1.576	719948	0.73	100	105.2	90	110	
Mn	55	2	He	99.022	2.870	490691	0.95	100	99.0	90	110	
Fe	56	2	He	9750.742	4.136	58684817	2.10	10000	97.5	90	110	
Co	59	2	He	100.946	3.165	954232	1.41	100	100.9	90	110	
Ni	60	2	He	101.154	1.688	244921	0.68	100	101.2	90	110	
Cu	63	2	He	99.548	2.269	644503	0.43	100	99.5	90	110	
Zn	66	2	He	100.659	1.270	153350	2.15	100	100.7	90	110	
As	75	2	He	99.439	2.117	147931	0.49	100	99.4	90	110	
Se	78	2	He	95.616	0.415	11652	1.80	100	95.6	90	110	
B	11	1	nogas	533.568	4.904	2207009	0.37	500	106.7	90	110	
Si	28	1	nogas	4570.225	3.496	6515177	0.44	5000	91.4	90	110	
Ca	43	1	nogas	10108.696	0.169	381677	2.50	10000	101.1	90	110	
Ca	44	1	nogas	10026.710	2.324	6466804	2.55	10000	100.3	90	110	
Fe	56	1	nogas	9975.508	2.572	250132439	2.23	10000	99.8	90	110	
Se	77	1	nogas	91.993	6.098	40786	1.11	100	92.0	90	110	
Se	82	1	nogas	98.472	1.691	29598	2.70	100	98.5	90	110	
Mo	95	1	nogas	97.285	0.874	589257	2.73	100	97.3	90	110	
Sn	118	1	nogas	99.220	2.344	847902	0.28	100	99.2	90	110	
Ba	137	1	nogas	96.327	3.060	397874	0.64	100	96.3	90	110	
Sb	121	2	He	97.273	1.303	486285	2.13	100	97.3	90	110	
Li	7	1	nogas	96.273	1.971	1486691	2.86	100	96.3	90	110	
P	31	1	nogas	441.821	1.756	935529	1.00	500	88.4	90	110	CCV Main CR1-2 Failed
La	139	1	nogas	85.766	28.964	320	27.06	100	85.8	90	110	CCV Main CR1-2 Failed
Au	197	1	nogas	-437.277	-34.133	3	173.21	100	-437.3	90	110	CCV Main CR1-2 Failed

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	986637	4.75	1229805	80.23	70	125	
Ge	72	1	nogas	3418839	2.45	3541557	96.53	70	125	
In	115	1	nogas	2916822	2.46	3006327	97.02	70	125	
Bi	209	1	nogas	2093223	3.33	2153140	97.22	70	125	

Continuing Calibration Verification (CCV) Report

Ge	72	2	He	858242	2.13	993327	86.40	70	125	

Continuing Calibration Blank (CCB) Report

Sample Table

Sample Name	CCB
Data File Name	077_CCB.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\121
Acq Date Time	2018-12-10T19:26:27-06:00
Sample Type	CCB
Dilution	1
Comment	
ISTD Ref File Name	019CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Be	9	1	nogas	0.034	28.3	297	25.5	1	
Na	23	1	nogas	46.691	1.4	1725961	1.4	100	
Mg	24	1	nogas	7.376	24.0	130423	21.7	100	
Al	27	1	nogas	-0.469	-11.7	28619	2.6	5	
K	39	1	nogas	-11.180	-36.8	7853599	1.1	100	
Ti	47	1	nogas	0.030	181.0	523	22.1	2.5	
V	51	1	nogas	-0.506	-31.4	197500	2.3	2.5	
Cr	52	1	nogas	-0.274	-15.4	34416	4.8	2.5	
Mn	55	1	nogas	0.264	18.1	31100	3.2	2.5	
Co	59	1	nogas	0.040	50.8	2434	23.8	2.5	
Ni	60	1	nogas	0.332	8.1	1060	16.5	2.5	
Cu	63	1	nogas	-3.248	-4.5	32362	4.3	2.5	
Zn	66	1	nogas	0.523	11.2	2504	11.5	2.5	
As	75	1	nogas	-1.192	-27.2	43529	2.4	2.5	
Sr	88	1	nogas	0.213	1.7	7185	2.9	2.5	
Ag	107	1	nogas	0.031	11.7	587	9.8	2.5	
Cd	111	1	nogas	0.033	33.4	133	28.4	1	
Sb	121	1	nogas	1.102	21.6	15851	21.6	2.5	
Tl	205	1	nogas	0.516	45.0	10424	47.8	1	
Pb	208	1	nogas	-0.027	-104.6	3337	21.4	2.5	
U	238	1	nogas	0.138	48.9	3597	52.8	2.5	
[Pb]	206	1	nogas	-0.048	-25.7	827	14.4	2.5	
[Pb]	207	1	nogas	-0.033	-96.0	683	32.2	2.5	
Na	23	2	He	66.652	3.6	165414	3.4	100	
Mg	24	2	He	5.987	8.7	5674	9.1	100	
Al	27	2	He	-0.510	-57.5	690	20.5	5	
K	39	2	He	-18.862	-13.7	208283	1.2	100	
Ca	43	2	He	50.268	33.7	140	32.7	100	
Ca	44	2	He	59.770	109.5	6482	43.3	100	
V	51	2	He	-0.403	-2.7	2678	1.9	2.5	
Cr	52	2	He	0.029	208.5	5538	8.2	2.5	
Mn	55	2	He	0.083	48.0	2917	6.6	2.5	
Fe	56	2	He	3.842	9.0	36607	5.3	100	
Co	59	2	He	0.029	21.0	643	9.1	2.5	
Ni	60	2	He	-0.433	-1.1	327	4.7	2.5	
Cu	63	2	He	-1.926	-1.3	12631	2.5	2.5	
Zn	66	2	He	-0.322	-15.5	570	14.4	2.5	
As	75	2	He	0.033	29.8	351	5.4	2.5	
Se	78	2	He	0.071	164.8	193	8.4	2.5	
B	11	1	nogas	36.396	5.5	173518	0.8	10	CCB Main CR1 Failed
Si	28	1	nogas	-179.069	-8.8	1329543	1.1	5	
Ca	43	1	nogas	31.739	6.6	2117	5.4	100	
Ca	44	1	nogas	-231.383	-4.1	428825	0.8	100	
Fe	56	1	nogas	10.103	48.4	2446727	6.9	100	
Se	77	1	nogas	-12.319	-23.5	13739	4.0	2.5	
Se	82	1	nogas	0.142	100.2	403	11.7	2.5	
Mo	95	1	nogas	0.273	44.3	1980	39.7	2.5	
Sn	118	1	nogas	0.271	35.3	3574	25.0	5	

Continuing Calibration Blank (CCB) Report

Ba	137	1	nogas	0.031	59.5	483	17.2	2.5	
Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Sb	121	2	He	0.696	10.4	3974	9.3	2.5	
P	31	1	nogas	-10.143	-10.0	89296	1.4	10	
La	139	1	nogas	24.192	28.0	120	22.0	2.5	CCB Main CR1 Failed
Au	197	1	nogas	-13.158	-3919.0	20	100.0	2.5	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	1087537	5.82	1229805	88.43	70	125	
Ge	72	1	nogas	3452021	2.05	3541557	97.47	70	125	
In	115	1	nogas	3078939	2.01	3006327	102.42	70	125	
Bi	209	1	nogas	2148541	5.49	2153140	99.79	70	125	
Ge	72	2	He	864775	1.33	993327	87.06	70	125	

Continuing Calibration Verification (CCV) Report

Sample Table

Sample Name	CCV
Data File Name	088_CCV.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\121
Acq Date Time	2018-12-10T19:49:12-06:00
Sample Type	CCV
Dilution	1
Comment	
ISTD Ref File Name	019CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Exp Value	%Rec	%Low	%High2	QC Flag
Be	9	1	nogas	94.098	3.813	668684	1.19	100	94.1	90	110	
Na	23	1	nogas	9849.023	4.662	242054489	0.48	10000	98.5	90	110	
Mg	24	1	nogas	9808.621	4.385	155212645	1.97	10000	98.1	90	110	
Al	27	1	nogas	99.950	2.216	1954363	2.41	100	99.9	90	110	
K	39	1	nogas	9975.245	2.558	204401821	0.62	10000	99.8	90	110	
Ti	47	1	nogas	96.007	0.926	189660	1.79	100	96.0	90	110	
V	51	1	nogas	98.833	2.849	2825196	2.96	100	98.8	90	110	
Cr	52	1	nogas	98.577	1.191	2283042	2.79	100	98.6	90	110	
Mn	55	1	nogas	100.926	2.942	2861495	4.80	100	100.9	90	110	
Co	59	1	nogas	97.209	1.141	2405021	2.07	100	97.2	90	110	
Ni	60	1	nogas	95.972	1.770	534719	2.99	100	96.0	90	110	
Cu	63	1	nogas	91.457	5.514	1304864	5.45	100	91.5	90	110	
Zn	66	1	nogas	99.632	2.021	445382	1.14	100	99.6	90	110	
As	75	1	nogas	95.563	1.241	590662	1.53	100	95.6	90	110	
Sr	88	1	nogas	102.395	1.344	2920008	3.20	100	102.4	90	110	
Ag	107	1	nogas	98.981	2.067	1422631	0.29	100	99.0	90	110	
Cd	111	1	nogas	97.044	2.815	306947	1.41	100	97.0	90	110	
Sb	121	1	nogas	101.608	2.352	1298202	3.07	100	101.6	90	110	
Tl	205	1	nogas	99.175	1.781	1827507	0.95	100	99.2	90	110	
Pb	208	1	nogas	97.235	1.262	2477648	1.26	100	97.2	90	110	
U	238	1	nogas	99.698	5.566	2437635	6.31	100	99.7	90	110	
[Pb]	206	1	nogas	98.830	2.209	619728	1.40	100	98.8	90	110	
[Pb]	207	1	nogas	96.528	1.680	541672	1.60	100	96.5	90	110	
Na	23	2	He	10239.174	1.778	15389426	1.69	10000	102.4	90	110	
Mg	24	2	He	10065.434	1.929	8451005	1.34	10000	100.7	90	110	
Al	27	2	He	96.720	2.675	46925	1.56	100	96.7	90	110	
K	39	2	He	9230.846	0.584	8812466	0.57	10000	92.3	90	110	
Ca	43	2	He	9952.515	2.744	25044	1.76	10000	99.5	90	110	
Ca	44	2	He	9818.406	0.572	423583	0.85	10000	98.2	90	110	
V	51	2	He	102.373	1.160	636557	1.02	100	102.4	90	110	
Cr	52	2	He	104.258	0.748	695343	1.04	100	104.3	90	110	
Mn	55	2	He	98.406	2.771	475197	1.47	100	98.4	90	110	
Fe	56	2	He	9889.226	3.273	58006177	1.99	10000	98.9	90	110	
Co	59	2	He	102.921	1.906	948153	0.99	100	102.9	90	110	
Ni	60	2	He	102.133	1.786	240948	1.05	100	102.1	90	110	
Cu	63	2	He	98.412	1.416	621187	1.05	100	98.4	90	110	
Zn	66	2	He	101.026	0.686	149951	0.82	100	101.0	90	110	
As	75	2	He	100.254	2.229	145329	1.52	100	100.3	90	110	
Se	78	2	He	94.661	1.366	11241	0.73	100	94.7	90	110	
B	11	1	nogas	518.112	5.579	2199096	2.92	500	103.6	90	110	
Si	28	1	nogas	4562.572	3.082	6384660	2.51	5000	91.3	90	110	
Ca	43	1	nogas	10020.910	2.059	371063	1.29	10000	100.2	90	110	
Ca	44	1	nogas	9757.850	2.279	6187698	1.63	10000	97.6	90	110	
Fe	56	1	nogas	9998.715	1.692	246000847	2.91	10000	100.0	90	110	
Se	77	1	nogas	85.498	5.659	38354	1.46	100	85.5	90	110	CCV Main CR1-2 Failed
Se	82	1	nogas	97.323	1.123	28700	2.28	100	97.3	90	110	
Mo	95	1	nogas	98.683	0.881	586231	1.16	100	98.7	90	110	
Sn	118	1	nogas	96.842	2.732	822040	1.20	100	96.8	90	110	
Ba	137	1	nogas	96.348	4.483	395280	3.08	100	96.3	90	110	
Sb	121	2	He	98.739	2.328	480863	1.35	100	98.7	90	110	
Li	7	1	nogas	99.478	1.720	1573003	1.26	100	99.5	90	110	
P	31	1	nogas	453.905	0.501	940064	1.55	500	90.8	90	110	
La	139	1	nogas	106.611	8.094	387	9.08	100	106.6	90	110	
Au	197	1	nogas	-71.235	-217.668	17	34.64	100	-71.2	90	110	CCV Main CR1-2 Failed

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	1011744	2.61	1229805	82.27	70	125	
Ge	72	1	nogas	3353519	1.86	3541557	94.69	70	125	
In	115	1	nogas	2897871	3.50	3006327	96.39	70	125	
Bi	209	1	nogas	2067903	0.84	2153140	96.04	70	125	

Continuing Calibration Verification (CCV) Report

Ge	72	2	He	836188	1.31	993327	84.18	70	125	

Continuing Calibration Blank (CCB) Report

Sample Table

Sample Name	CCB
Data File Name	089_CCB.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\121
Acq Date Time	2018-12-10T19:51:16-06:00
Sample Type	CCB
Dilution	1
Comment	
ISTD Ref File Name	019CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Be	9	1	nogas	0.041	28.7	340	26.5	1	
Na	23	1	nogas	26.975	3.7	1142520	1.4	100	
Mg	24	1	nogas	4.750	27.1	81329	23.9	100	
Al	27	1	nogas	-0.524	-32.1	26963	12.9	5	
K	39	1	nogas	1.449	316.1	7939518	0.5	100	
Ti	47	1	nogas	0.060	144.9	570	29.5	2.5	
V	51	1	nogas	-1.155	-24.0	176021	4.4	2.5	
Cr	52	1	nogas	-0.307	-22.7	32920	5.2	2.5	
Mn	55	1	nogas	0.218	15.7	29170	3.0	2.5	
Co	59	1	nogas	0.034	43.5	2224	16.5	2.5	
Ni	60	1	nogas	0.309	6.0	910	11.4	2.5	
Cu	63	1	nogas	-3.487	-2.9	28462	4.1	2.5	
Zn	66	1	nogas	0.486	5.5	2284	5.8	2.5	
As	75	1	nogas	-1.409	-14.7	41391	2.4	2.5	
Sr	88	1	nogas	0.141	8.9	4977	6.6	2.5	
Ag	107	1	nogas	0.024	12.9	473	10.0	2.5	
Cd	111	1	nogas	0.031	21.6	123	18.7	1	
Sb	121	1	nogas	1.076	23.2	15147	21.3	2.5	
Tl	205	1	nogas	0.524	43.3	10414	46.0	1	
Pb	208	1	nogas	-0.034	-63.0	3150	17.4	2.5	
U	238	1	nogas	0.124	53.3	3207	56.8	2.5	
[Pb]	206	1	nogas	-0.048	-39.1	817	19.0	2.5	
[Pb]	207	1	nogas	-0.018	-196.7	757	29.1	2.5	
Na	23	2	He	37.587	5.2	117989	2.9	100	
Mg	24	2	He	3.934	3.9	3810	3.4	100	
Al	27	2	He	-0.531	-16.5	667	6.9	5	
K	39	2	He	-20.036	-1.9	207191	0.2	100	
Ca	43	2	He	43.685	9.7	120	8.3	100	
Ca	44	2	He	5.007	57.5	4000	3.9	100	
V	51	2	He	-0.436	-1.6	2418	1.4	2.5	
Cr	52	2	He	-0.016	-694.3	5124	15.2	2.5	
Mn	55	2	He	0.010	244.4	2504	4.5	2.5	
Fe	56	2	He	3.292	8.7	32616	5.4	100	
Co	59	2	He	0.022	43.3	567	15.0	2.5	
Ni	60	2	He	-0.447	-4.6	287	17.6	2.5	
Cu	63	2	He	-2.203	-4.1	10680	5.8	2.5	
Zn	66	2	He	-0.296	-20.4	597	14.6	2.5	
As	75	2	He	0.000	-6286.6	296	11.7	2.5	
Se	78	2	He	0.093	60.2	191	4.2	2.5	
B	11	1	nogas	25.862	1.4	122180	3.0	10	CCB Main CR1 Failed
Si	28	1	nogas	-155.758	-3.2	1326960	0.9	5	
Ca	43	1	nogas	28.281	16.4	1943	9.5	100	
Ca	44	1	nogas	-233.139	-3.1	418816	0.3	100	
Fe	56	1	nogas	4.133	159.6	2246998	7.2	100	
Se	77	1	nogas	-13.549	-7.0	13142	2.4	2.5	
Se	82	1	nogas	-0.032	-933.1	343	24.8	2.5	
Mo	95	1	nogas	0.224	45.5	1633	37.2	2.5	
Sn	118	1	nogas	0.206	22.2	2924	13.1	5	

Continuing Calibration Blank (CCB) Report

Ba	137	1	nogas	0.024	45.6	443	10.2	2.5	
Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Sb	121	2	He	0.685	8.2	3844	7.7	2.5	
P	31	1	nogas	-6.609	-9.7	93986	1.8	10	
La	139	1	nogas	6.650	50.2	57	20.4	2.5	CCB Main CR1 Failed
Au	197	1	nogas	254.776	271.3	30	88.2	2.5	CCB Main CR1 Failed

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	1055027	1.85	1229805	85.79	70	125	
Ge	72	1	nogas	3379263	0.82	3541557	95.42	70	125	
In	115	1	nogas	3020267	0.73	3006327	100.46	70	125	
Bi	209	1	nogas	2117873	4.86	2153140	98.36	70	125	
Ge	72	2	He	847531	0.83	993327	85.32	70	125	

Sample Report

Sample Table

Sample Name	MBLKF1-135382
Data File Name	093SMPL.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\121
Acq Date Time	2018-12-10T19:59:33-06:00
Sample Type	Sample
Dilution	1
Comment	DISS B135382
ISTD Ref FileName	019CALB.d
Sample QC Pass/Fail	Pass
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
Be	9	1	nogas	0.002	0.002	114.60	53	0.00	2000	
Na	23	1	nogas	30.232	30.232	5.40	1237170	0.00	200000	
Mg	24	1	nogas	18.418	18.418	5.70	302850	0.01	200000	
Al	27	1	nogas	4.482	4.482	5.43	122750	0.00	2000	
K	39	1	nogas	11.236	11.236	92.08	8069587	0.00	200000	
Ti	47	1	nogas	-0.050	-0.050	-35.25	350	-0.01	2000	
V	51	1	nogas	-1.088	-1.088	-28.72	176324	0.00	2000	
Cr	52	1	nogas	-0.193	-0.193	-26.07	35260	0.00	2000	
Mn	55	1	nogas	2.340	2.340	3.81	88575	0.00	2000	
Co	59	1	nogas	-0.021	-0.021	-22.30	847	0.00	2000	
Ni	60	1	nogas	0.299	0.299	3.75	843	0.04	2000	
Cu	63	1	nogas	-3.557	-3.557	-5.47	27261	-0.01	2000	
Zn	66	1	nogas	0.730	0.730	11.81	3357	0.02	2000	
As	75	1	nogas	-1.514	-1.514	-7.89	40475	0.00	2000	
Sr	88	1	nogas	0.093	0.093	5.55	3550	0.00	2000	
Ag	107	1	nogas	-0.003	-0.003	-105.19	83	0.00	2000	
Cd	111	1	nogas	0.002	0.002	174.15	27	0.01	2000	
Sb	121	1	nogas	0.010	0.010	149.31	1420	0.00	2000	
Tl	205	1	nogas	0.004	0.004	93.79	470	0.00	2000	
Pb	208	1	nogas	-0.076	-0.076	-21.90	2093	0.00	2000	
U	238	1	nogas	0.003	0.003	50.55	120	0.00	2000	
[Pb]	206	1	nogas	-0.088	-0.088	-6.29	563	-0.02	2000	
[Pb]	207	1	nogas	-0.074	-0.074	-22.56	437	-0.02	2000	
Na	23	2	He	45.002	45.002	4.79	129509	0.03	200000	
Mg	24	2	He	18.889	18.889	9.36	16561	0.11	200000	
Al	27	2	He	4.752	4.752	11.02	3224	0.15	2000	
K	39	2	He	-14.957	-14.957	-5.75	211916	-0.01	200000	
Ca	43	2	He	25.454	25.454	38.71	73	34.71	200000	
Ca	44	2	He	4.307	4.307	111.69	3980	0.11	200000	
V	51	2	He	-0.434	-0.434	-5.25	2433	-0.02	2000	
Cr	52	2	He	0.100	0.100	51.50	5908	0.00	2000	
Mn	55	2	He	2.260	2.260	2.97	13492	0.02	2000	
Fe	56	2	He	1.697	1.697	6.17	23178	0.01	200000	
Co	59	2	He	-0.017	-0.017	-43.05	197	-0.01	2000	
Ni	60	2	He	-0.433	-0.433	-9.99	317	-0.14	2000	
Cu	63	2	He	-2.267	-2.267	-2.09	10300	-0.02	2000	
Zn	66	2	He	0.050	0.050	174.63	1113	0.00	2000	
As	75	2	He	-0.017	-0.017	-128.25	271	-0.01	2000	
Se	78	2	He	0.271	0.271	78.11	213	0.13	2000	
B	11	1	nogas	18.550	18.550	9.64	96629	0.02	2000	
Si	28	1	nogas	837.009	837.009	12.21	2381632	0.04	2000	
Ca	43	1	nogas	24.167	24.167	26.38	1773	1.36	200000	

Sample Report

Ca	44	1	nogas	-208.518	-208.518	-7.75	429748	-0.05	200000	
Fe	56	1	nogas	-2.744	-2.744	-137.50	2060769	0.00	200000	
Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
Se	77	1	nogas	-14.453	-14.453	-1.57	12811	-0.11	2000	
Se	82	1	nogas	0.063	0.063	727.82	367	0.02	2000	
Mo	95	1	nogas	-0.016	-0.016	-25.37	197	-0.01	2000	
Sn	118	1	nogas	0.047	0.047	22.28	1503	0.00	2000	
Ba	137	1	nogas	0.046	0.046	32.17	530	0.01	2000	
Sb	121	2	He	0.021	0.021	123.52	563	0.00	2000	
La	139	1	nogas	4.886	4.886	116.41	50	9.77	2000	
Au	197	1	nogas	5.558	5.558	5008.52	20	27.79	2000	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	1138532	6.45	1229805	92.58	70	125	
Ge	72	1	nogas	3353735	2.47	3541557	94.70	70	125	
In	115	1	nogas	2985157	3.32	3006327	99.30	70	125	
Bi	209	1	nogas	2133461	6.25	2153140	99.09	70	125	
Ge	72	2	He	849697	3.16	993327	85.54	70	125	

Sample Report

Sample Table

Sample Name	MBLK-135382
Data File Name	094SMPL.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\121
Acq Date Time	2018-12-10T20:01:38-06:00
Sample Type	Sample
Dilution	1
Comment	DISS B135382
ISTD Ref FileName	019CALB.d
Sample QC Pass/Fail	Pass
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
Be	9	1	nogas	0.000	0.000	-3010.98	33	0.00	2000	
Na	23	1	nogas	23.223	23.223	9.09	1090000	0.00	200000	
Mg	24	1	nogas	18.732	18.732	1.08	316381	0.01	200000	
Al	27	1	nogas	4.270	4.270	5.04	121198	0.00	2000	
K	39	1	nogas	-3.120	-3.120	-190.86	7951441	0.00	200000	
Ti	47	1	nogas	0.005	0.005	965.17	467	0.00	2000	
V	51	1	nogas	-1.535	-1.535	-13.87	168038	0.00	2000	
Cr	52	1	nogas	-0.393	-0.393	-12.65	31357	0.00	2000	
Mn	55	1	nogas	1.491	1.491	2.55	66072	0.00	2000	
Co	59	1	nogas	-0.028	-0.028	-10.97	690	0.00	2000	
Ni	60	1	nogas	0.288	0.288	10.40	800	0.04	2000	
Cu	63	1	nogas	-3.766	-3.766	-1.69	25011	-0.02	2000	
Zn	66	1	nogas	0.388	0.388	5.31	1867	0.02	2000	
As	75	1	nogas	-1.744	-1.744	-13.10	40001	0.00	2000	
Sr	88	1	nogas	0.083	0.083	9.59	3357	0.00	2000	
Ag	107	1	nogas	-0.004	-0.004	-22.21	73	0.00	2000	
Cd	111	1	nogas	0.003	0.003	98.82	30	0.01	2000	
Sb	121	1	nogas	-0.004	-0.004	-60.78	1273	0.00	2000	
Tl	205	1	nogas	-0.002	-0.002	-78.34	360	0.00	2000	
Pb	208	1	nogas	-0.073	-0.073	-13.94	2153	0.00	2000	
U	238	1	nogas	0.003	0.003	26.00	137	0.00	2000	
[Pb]	206	1	nogas	-0.090	-0.090	-24.49	550	-0.02	2000	
[Pb]	207	1	nogas	-0.066	-0.066	-7.47	480	-0.01	2000	
Na	23	2	He	37.108	37.108	6.65	115296	0.03	200000	
Mg	24	2	He	18.936	18.936	6.18	16294	0.12	200000	
Al	27	2	He	4.484	4.484	13.72	3040	0.15	2000	
K	39	2	He	-18.921	-18.921	-4.24	208228	-0.01	200000	
Ca	43	2	He	22.287	22.287	112.71	63	35.19	200000	
Ca	44	2	He	-4.158	-4.158	-112.60	3547	-0.12	200000	
V	51	2	He	-0.446	-0.446	-1.03	2315	-0.02	2000	
Cr	52	2	He	0.006	0.006	869.02	5181	0.00	2000	
Mn	55	2	He	1.521	1.521	9.56	9689	0.02	2000	
Fe	56	2	He	1.176	1.176	17.96	19687	0.01	200000	
Co	59	2	He	-0.021	-0.021	-28.82	163	-0.01	2000	
Ni	60	2	He	-0.456	-0.456	-1.92	260	-0.18	2000	
Cu	63	2	He	-2.381	-2.381	-5.90	9409	-0.03	2000	
Zn	66	2	He	-0.332	-0.332	-22.93	533	-0.06	2000	
As	75	2	He	-0.022	-0.022	-62.73	259	-0.01	2000	
Se	78	2	He	0.135	0.135	158.46	193	0.07	2000	
B	11	1	nogas	16.620	16.620	3.41	84493	0.02	2000	
Si	28	1	nogas	683.487	683.487	4.51	2264505	0.03	2000	
Ca	43	1	nogas	16.765	16.765	13.89	1533	1.09	200000	
Ca	44	1	nogas	-225.486	-225.486	-11.40	428773	-0.05	200000	
Fe	56	1	nogas	-7.368	-7.368	-4.28	1989974	0.00	200000	

Sample Report

Se	77	1	nogas	-17.044	-17.044	-6.28	12401	-0.14	2000	
Se	82	1	nogas	-0.137	-0.137	-96.95	317	-0.04	2000	
Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
Mo	95	1	nogas	-0.018	-0.018	-24.48	190	-0.01	2000	
Sn	118	1	nogas	0.025	0.025	41.25	1313	0.00	2000	
Ba	137	1	nogas	-0.014	-0.014	-63.81	277	-0.01	2000	
Sb	121	2	He	-0.009	-0.009	-119.17	410	0.00	2000	
La	139	1	nogas	1.902	1.902	296.72	40	4.75	2000	
Au	197	1	nogas	-155.100	-155.100	-283.58	13	-1163.25	2000	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	1095891	2.73	1229805	89.11	70	125	
Ge	72	1	nogas	3423393	0.52	3541557	96.66	70	125	
In	115	1	nogas	2986352	1.73	3006327	99.34	70	125	
Bi	209	1	nogas	2133351	6.82	2153140	99.08	70	125	
Ge	72	2	He	833848	2.75	993327	83.94	70	125	

Sample Report

Sample Table

Sample Name	LCS-135382
Data File Name	095SMPL.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\121
Acq Date Time	2018-12-10T20:03:42-06:00
Sample Type	Sample
Dilution	1
Comment	DISS B135382
ISTD Ref FileName	019CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
Be	9	1	nogas	47.699	47.699	2.87	351641	0.01	2000	
Na	23	1	nogas	4974.632	4974.632	4.82	127574207	0.00	200000	
Mg	24	1	nogas	4954.696	4954.696	4.03	81649677	0.01	200000	
Al	27	1	nogas	103.270	103.270	1.64	2024905	0.01	2000	
K	39	1	nogas	5286.586	5286.586	3.36	112423232	0.00	200000	
Ti	47	1	nogas	144.458	144.458	2.97	286100	0.05	2000	
V	51	1	nogas	48.205	48.205	1.31	1488118	0.00	2000	
Cr	52	1	nogas	49.532	49.532	1.57	1170649	0.00	2000	
Mn	55	1	nogas	53.817	53.817	1.12	1541033	0.00	2000	
Co	59	1	nogas	48.949	48.949	2.81	1215784	0.00	2000	
Ni	60	1	nogas	49.264	49.264	3.01	274971	0.02	2000	
Cu	63	1	nogas	44.991	44.991	1.41	682351	0.01	2000	
Zn	66	1	nogas	51.159	51.159	0.56	229551	0.02	2000	
As	75	1	nogas	46.089	46.089	1.56	311326	0.01	2000	
Sr	88	1	nogas	101.284	101.284	4.36	2897508	0.00	2000	
Ag	107	1	nogas	50.635	50.635	1.48	730431	0.01	2000	
Cd	111	1	nogas	47.938	47.938	5.36	158685	0.03	2000	
Sb	121	1	nogas	51.213	51.213	2.43	657133	0.01	2000	
Tl	205	1	nogas	48.249	48.249	3.25	896194	0.01	2000	
Pb	208	1	nogas	49.329	49.329	2.10	1258926	0.00	2000	
U	238	1	nogas	94.115	94.115	3.82	2317818	0.00	2000	
[Pb]	206	1	nogas	49.857	49.857	3.86	315565	0.02	2000	
[Pb]	207	1	nogas	48.458	48.458	3.26	274410	0.02	2000	
Na	23	2	He	5170.099	5170.099	3.61	7959716	0.06	200000	
Mg	24	2	He	5108.818	5108.818	2.34	4378239	0.12	200000	
Al	27	2	He	97.128	97.128	1.63	48091	0.20	2000	
K	39	2	He	4867.770	4867.770	3.51	4753883	0.10	200000	
Ca	43	2	He	5232.965	5232.965	2.27	13448	38.91	200000	
Ca	44	2	He	5003.463	5003.463	1.23	222141	2.25	200000	
V	51	2	He	49.526	49.526	2.29	316889	0.02	2000	
Cr	52	2	He	51.327	51.327	2.16	351975	0.01	2000	
Mn	55	2	He	50.622	50.622	2.31	250670	0.02	2000	
Fe	56	2	He	5000.984	5000.984	2.46	29942622	0.02	200000	
Co	59	2	He	50.628	50.628	2.32	476120	0.01	2000	
Ni	60	2	He	50.268	50.268	2.47	121704	0.04	2000	
Cu	63	2	He	47.692	47.692	1.97	319748	0.01	2000	
Zn	66	2	He	50.664	50.664	2.82	77257	0.07	2000	
As	75	2	He	49.438	49.438	2.59	73277	0.07	2000	
Se	78	2	He	47.992	47.992	2.69	5904	0.81	2000	
B	11	1	nogas	501.847	501.847	2.99	2210758	0.02	2000	
Si	28	1	nogas	5395.549	5395.549	2.74	7304141	0.07	2000	>LDR
Ca	43	1	nogas	5229.314	5229.314	1.07	194742	2.69	200000	
Ca	44	1	nogas	5140.113	5140.113	2.98	3532171	0.15	200000	
Fe	56	1	nogas	5140.911	5140.911	3.07	127934645	0.00	200000	

Sample Report

Se	77	1	nogas	28.511	28.511	9.34	23876	0.12	2000	
Se	82	1	nogas	50.236	50.236	1.08	15033	0.33	2000	
Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
Mo	95	1	nogas	49.061	49.061	3.00	292593	0.02	2000	
Sn	118	1	nogas	91.301	91.301	3.44	811476	0.01	2000	
Ba	137	1	nogas	46.181	46.181	4.60	198522	0.02	2000	
Sb	121	2	He	49.609	49.609	2.37	246768	0.02	2000	
La	139	1	nogas	33.450	33.450	10.36	150	22.30	2000	
Au	197	1	nogas	-77.395	-77.395	-523.88	17	-464.37	2000	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	1049167	1.52	1229805	85.31	70	125	
Ge	72	1	nogas	3364657	0.13	3541557	95.01	70	125	
In	115	1	nogas	3034205	3.22	3006327	100.93	70	125	
Bi	209	1	nogas	2084356	1.79	2153140	96.81	70	125	
Ge	72	2	He	853375	1.87	993327	85.91	70	125	

Sample Report

Sample Table

Sample Name	LCSD-135382
Data File Name	096SMPL.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\121
Acq Date Time	2018-12-10T20:05:42-06:00
Sample Type	Sample
Dilution	1
Comment	DISS B135382
ISTD Ref FileName	019CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
Be	9	1	nogas	46.924	46.924	6.29	344552	0.01	2000	
Na	23	1	nogas	4765.929	4765.929	0.64	120610282	0.00	200000	
Mg	24	1	nogas	4876.339	4876.339	4.48	79269081	0.01	200000	
Al	27	1	nogas	103.856	103.856	2.56	2067429	0.01	2000	
K	39	1	nogas	5007.095	5007.095	2.30	108529136	0.00	200000	
Ti	47	1	nogas	140.309	140.309	0.95	282166	0.05	2000	
V	51	1	nogas	47.794	47.794	3.20	1500007	0.00	2000	
Cr	52	1	nogas	47.881	47.881	2.00	1150446	0.00	2000	
Mn	55	1	nogas	50.056	50.056	2.82	1457094	0.00	2000	
Co	59	1	nogas	47.054	47.054	1.86	1186639	0.00	2000	
Ni	60	1	nogas	48.073	48.073	3.19	272393	0.02	2000	
Cu	63	1	nogas	43.722	43.722	2.83	675448	0.01	2000	
Zn	66	1	nogas	49.867	49.867	2.24	227191	0.02	2000	
As	75	1	nogas	44.716	44.716	1.71	308165	0.01	2000	
Sr	88	1	nogas	96.728	96.728	2.48	2809540	0.00	2000	
Ag	107	1	nogas	49.673	49.673	1.75	727616	0.01	2000	
Cd	111	1	nogas	48.529	48.529	3.29	156658	0.03	2000	
Sb	121	1	nogas	50.951	50.951	1.84	663850	0.01	2000	
Tl	205	1	nogas	47.682	47.682	6.30	881966	0.01	2000	
Pb	208	1	nogas	48.267	48.267	1.17	1231924	0.00	2000	
U	238	1	nogas	95.698	95.698	4.69	2348817	0.00	2000	
[Pb]	206	1	nogas	49.086	49.086	5.86	309567	0.02	2000	
[Pb]	207	1	nogas	47.655	47.655	5.08	268886	0.02	2000	
Na	23	2	He	5276.148	5276.148	1.64	8021540	0.07	200000	
Mg	24	2	He	5124.078	5124.078	4.31	4336171	0.12	200000	
Al	27	2	He	99.846	99.846	2.96	48803	0.20	2000	
K	39	2	He	4736.858	4736.858	1.58	4632107	0.10	200000	
Ca	43	2	He	4764.740	4764.740	2.79	12087	39.42	200000	
Ca	44	2	He	4920.630	4920.630	1.86	215799	2.28	200000	
V	51	2	He	48.906	48.906	0.08	309136	0.02	2000	
Cr	52	2	He	50.235	50.235	0.87	340325	0.01	2000	
Mn	55	2	He	50.482	50.482	1.19	246896	0.02	2000	
Fe	56	2	He	5082.093	5082.093	1.32	30055327	0.02	200000	
Co	59	2	He	51.064	51.064	2.23	474278	0.01	2000	
Ni	60	2	He	50.711	50.711	1.67	121242	0.04	2000	
Cu	63	2	He	47.204	47.204	1.30	312795	0.02	2000	
Zn	66	2	He	49.309	49.309	0.91	74291	0.07	2000	
As	75	2	He	49.059	49.059	1.36	71825	0.07	2000	
Se	78	2	He	46.953	46.953	3.59	5710	0.82	2000	
B	11	1	nogas	496.377	496.377	6.17	2177919	0.02	2000	
Si	28	1	nogas	5262.520	5262.520	1.20	7271146	0.07	2000	>LDR
Ca	43	1	nogas	5019.671	5019.671	3.92	189827	2.64	200000	
Ca	44	1	nogas	4776.470	4776.470	3.89	3371955	0.14	200000	
Fe	56	1	nogas	4912.829	4912.829	1.42	124237390	0.00	200000	
Se	77	1	nogas	25.684	25.684	14.03	23502	0.11	2000	
Se	82	1	nogas	48.635	48.635	1.01	14790	0.33	2000	

Sample Report

Mo	95	1	nogas	46.296	46.296	3.90	280334	0.02	2000	
Sn	118	1	nogas	93.578	93.578	4.36	810450	0.01	2000	
Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
Ba	137	1	nogas	46.831	46.831	6.73	196100	0.02	2000	
Sb	121	2	He	49.812	49.812	1.87	244750	0.02	2000	
La	139	1	nogas	25.501	25.501	24.69	120	21.25	2000	
Au	197	1	nogas	-261.060	-261.060	-97.56	10	-2610.60	2000	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	1046368	3.90	1229805	85.08	70	125	
Ge	72	1	nogas	3416360	0.64	3541557	96.46	70	125	
In	115	1	nogas	2958123	3.98	3006327	98.40	70	125	
Bi	209	1	nogas	2079628	5.38	2153140	96.59	70	125	
Ge	72	2	He	842652	0.87	993327	84.83	70	125	

Continuing Calibration Verification (CCV) Report

Sample Table

Sample Name	CCV
Data File Name	097_CCV.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\121
Acq Date Time	2018-12-10T20:07:42-06:00
Sample Type	CCV
Dilution	1
Comment	
ISTD Ref File Name	019CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Exp Value	%Rec	%Low	%High2	QC Flag
Be	9	1	nogas	94.864	2.522	660318	0.72	100	94.9	90	110	
Na	23	1	nogas	10120.066	4.104	236684514	6.02	10000	101.2	90	110	
Mg	24	1	nogas	10087.715	3.981	151717245	0.86	10000	100.9	90	110	
Al	27	1	nogas	97.407	3.713	1852741	3.13	100	97.4	90	110	
K	39	1	nogas	9872.360	1.082	196910596	3.65	10000	98.7	90	110	
Ti	47	1	nogas	97.193	3.004	186657	2.00	100	97.2	90	110	
V	51	1	nogas	99.416	3.954	2761116	1.53	100	99.4	90	110	
Cr	52	1	nogas	100.162	4.587	2253716	2.82	100	100.2	90	110	
Mn	55	1	nogas	100.624	3.469	2771903	0.14	100	100.6	90	110	
Co	59	1	nogas	97.050	2.169	2334597	1.98	100	97.1	90	110	
Ni	60	1	nogas	94.207	2.347	510224	1.10	100	94.2	90	110	
Cu	63	1	nogas	91.088	5.808	1263547	4.61	100	91.1	90	110	
Zn	66	1	nogas	98.807	0.792	429651	2.71	100	98.8	90	110	
As	75	1	nogas	95.645	2.619	574723	1.20	100	95.6	90	110	
Sr	88	1	nogas	101.520	3.426	2814554	3.59	100	101.5	90	110	
Ag	107	1	nogas	97.846	3.493	1367175	0.15	100	97.8	90	110	
Cd	111	1	nogas	96.268	0.948	296618	0.40	100	96.3	90	110	
Sb	121	1	nogas	100.335	1.676	1246519	2.17	100	100.3	90	110	
Tl	205	1	nogas	100.235	8.035	1799760	4.85	100	100.2	90	110	
Pb	208	1	nogas	95.893	1.350	2443494	1.35	100	95.9	90	110	
U	238	1	nogas	97.967	4.419	2335178	2.45	100	98.0	90	110	
[Pb]	206	1	nogas	97.765	6.614	597568	3.50	100	97.8	90	110	
[Pb]	207	1	nogas	98.611	3.384	539685	1.33	100	98.6	90	110	
Na	23	2	He	10227.032	0.982	14747178	1.80	10000	102.3	90	110	
Mg	24	2	He	10146.477	3.152	8171736	2.33	10000	101.5	90	110	
Al	27	2	He	96.971	2.521	45131	1.35	100	97.0	90	110	
K	39	2	He	9105.387	0.598	8695762	0.58	10000	91.1	90	110	
Ca	43	2	He	9832.954	2.036	23739	1.63	10000	98.3	90	110	
Ca	44	2	He	9802.504	0.233	405718	1.39	10000	98.0	90	110	
V	51	2	He	102.105	2.081	609003	0.69	100	102.1	90	110	
Cr	52	2	He	103.865	1.566	664499	0.18	100	103.9	90	110	
Mn	55	2	He	98.686	2.583	457177	1.65	100	98.7	90	110	
Fe	56	2	He	9920.947	2.078	55833303	1.51	10000	99.2	90	110	
Co	59	2	He	102.717	2.128	907744	0.97	100	102.7	90	110	
Ni	60	2	He	103.151	1.688	233434	0.32	100	103.2	90	110	
Cu	63	2	He	99.080	2.695	599716	1.26	100	99.1	90	110	
Zn	66	2	He	99.770	3.306	142044	2.07	100	99.8	90	110	
As	75	2	He	100.787	1.781	140162	1.39	100	100.8	90	110	
Se	78	2	He	94.656	1.596	10785	2.35	100	94.7	90	110	
B	11	1	nogas	509.825	3.477	2120084	1.49	500	102.0	90	110	
Si	28	1	nogas	4480.946	5.469	6119998	1.44	5000	89.6	90	110	CCV Main CR1-2 Failed
Ca	43	1	nogas	9712.607	2.350	349812	2.75	10000	97.1	90	110	
Ca	44	1	nogas	9615.344	3.364	5936003	1.65	10000	96.2	90	110	
Fe	56	1	nogas	9853.206	4.352	235597305	1.78	10000	98.5	90	110	
Se	77	1	nogas	83.984	8.154	36924	4.05	100	84.0	90	110	CCV Main CR1-2 Failed
Se	82	1	nogas	95.499	7.663	27361	5.41	100	95.5	90	110	
Mo	95	1	nogas	99.236	2.840	573476	4.41	100	99.2	90	110	
Sn	118	1	nogas	96.672	1.214	799400	1.14	100	96.7	90	110	
Ba	137	1	nogas	96.784	3.479	386813	2.92	100	96.8	90	110	
Sb	121	2	He	98.877	0.541	462044	1.74	100	98.9	90	110	
Li	7	1	nogas	96.781	0.459	1501313	2.79	100	96.8	90	110	
P	31	1	nogas	447.957	2.863	903279	1.06	500	89.6	90	110	CCV Main CR1-2 Failed
La	139	1	nogas	102.601	2.898	363	3.18	100	102.6	90	110	
Au	197	1	nogas	39.870	1224.713	20	86.60	100	39.9	90	110	CCV Main CR1-2 Failed

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	990879	3.11	1229805	80.57	70	125	
Ge	72	1	nogas	3261943	3.43	3541557	92.10	70	125	
In	115	1	nogas	2821323	0.59	3006327	93.85	70	125	
Bi	209	1	nogas	2018111	3.12	2153140	93.73	70	125	

Continuing Calibration Verification (CCV) Report

Ge	72	2	He	802175	1.38	993327	80.76	70	125	

Continuing Calibration Blank (CCB) Report

Sample Table

Sample Name	CCB
Data File Name	098_CCB.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\121
Acq Date Time	2018-12-10T20:09:46-06:00
Sample Type	CCB
Dilution	1
Comment	
ISTD Ref File Name	019CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Be	9	1	nogas	0.047	15.5	370	15.0	1	
Na	23	1	nogas	18.760	4.7	888798	4.3	100	
Mg	24	1	nogas	5.050	24.9	81464	22.3	100	
Al	27	1	nogas	-0.679	-7.6	22984	2.0	5	
K	39	1	nogas	6.745	178.0	7718225	0.7	100	
Ti	47	1	nogas	0.066	128.8	557	26.7	2.5	
V	51	1	nogas	-1.930	-5.0	149085	3.3	2.5	
Cr	52	1	nogas	-0.333	-24.6	30996	3.6	2.5	
Mn	55	1	nogas	0.173	25.4	26766	2.3	2.5	
Co	59	1	nogas	0.042	41.6	2314	16.0	2.5	
Ni	60	1	nogas	0.313	1.8	893	1.3	2.5	
Cu	63	1	nogas	-3.532	-0.5	26733	2.9	2.5	
Zn	66	1	nogas	0.410	1.9	1867	4.0	2.5	
As	75	1	nogas	-1.708	-9.9	38093	3.5	2.5	
Sr	88	1	nogas	0.102	7.0	3690	3.6	2.5	
Ag	107	1	nogas	0.035	6.1	600	2.9	2.5	
Cd	111	1	nogas	0.034	51.8	127	43.5	1	
Sb	121	1	nogas	1.080	27.8	14527	23.2	2.5	
Tl	205	1	nogas	0.681	37.6	12966	40.4	1	
Pb	208	1	nogas	-0.027	-100.9	3344	20.4	2.5	
U	238	1	nogas	0.173	60.2	4304	63.7	2.5	
[Pb]	206	1	nogas	-0.042	-82.1	833	30.1	2.5	
[Pb]	207	1	nogas	-0.006	-148.8	797	9.8	2.5	
Na	23	2	He	30.846	4.1	104679	1.5	100	
Mg	24	2	He	3.958	12.7	3720	10.7	100	
Al	27	2	He	-0.589	-35.7	620	15.4	5	
K	39	2	He	-27.894	-9.9	199881	1.3	100	
Ca	43	2	He	30.216	33.1	83	30.2	100	
Ca	44	2	He	3.999	103.1	3844	4.9	100	
V	51	2	He	-0.449	-1.9	2267	1.9	2.5	
Cr	52	2	He	-0.009	-873.1	5021	10.2	2.5	
Mn	55	2	He	-0.002	-227.6	2374	0.9	2.5	
Fe	56	2	He	3.738	7.7	34269	5.3	100	
Co	59	2	He	0.036	32.0	677	15.7	2.5	
Ni	60	2	He	-0.479	-4.2	203	23.2	2.5	
Cu	63	2	He	-2.283	-0.9	9889	0.8	2.5	
Zn	66	2	He	-0.317	-9.4	550	8.3	2.5	
As	75	2	He	-0.017	-142.6	263	12.8	2.5	
Se	78	2	He	0.048	260.4	181	7.9	2.5	
B	11	1	nogas	27.158	4.3	125002	3.9	10	CCB Main CR1 Failed
Si	28	1	nogas	-63.908	-73.9	1368306	1.5	5	
Ca	43	1	nogas	23.900	16.1	1707	7.0	100	
Ca	44	1	nogas	-180.780	-13.3	431062	1.0	100	
Fe	56	1	nogas	0.376	2695.7	2064519	9.3	100	
Se	77	1	nogas	-14.657	-14.1	12344	6.0	2.5	
Se	82	1	nogas	0.327	67.0	430	12.3	2.5	
Mo	95	1	nogas	0.287	52.4	1920	42.7	2.5	
Sn	118	1	nogas	0.359	21.0	4074	16.6	5	

Continuing Calibration Blank (CCB) Report

Ba	137	1	nogas	0.051	29.9	530	11.8	2.5	
Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Sb	121	2	He	0.652	4.7	3574	3.8	2.5	
P	31	1	nogas	-3.363	-57.3	95935	2.3	10	
La	139	1	nogas	13.405	51.6	77	32.8	2.5	CCB Main CR1 Failed
Au	197	1	nogas	-343.992	-45.2	7	86.6	2.5	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	1031367	1.55	1229805	83.86	70	125	
Ge	72	1	nogas	3243368	2.23	3541557	91.58	70	125	
In	115	1	nogas	2873569	3.34	3006327	95.58	70	125	
Bi	209	1	nogas	2053010	4.19	2153140	95.35	70	125	
Ge	72	2	He	823380	0.47	993327	82.89	70	125	

Sample Report

Sample Table

Sample Name	HS18111440-01
Data File Name	099SMPL.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\121
Acq Date Time	2018-12-10T20:11:51-06:00
Sample Type	Sample
Dilution	1
Comment	DISS B135382
ISTD Ref FileName	019CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
Be	9	1	nogas	0.093	0.093	18.84	677	0.01	2000	
Na	23	1	nogas	55913.869	55913.869	4.66	1461713699	0.00	200000	
Mg	24	1	nogas	2474.922	2474.922	4.05	41733342	0.01	200000	
Al	27	1	nogas	663.578	663.578	2.21	12967392	0.01	2000	
K	39	1	nogas	410.782	410.782	2.60	16196080	0.00	200000	
Ti	47	1	nogas	17.189	17.189	3.61	34863	0.05	2000	
V	51	1	nogas	1.362	1.362	25.22	245131	0.00	2000	
Cr	52	1	nogas	1.813	1.813	2.80	82179	0.00	2000	
Mn	55	1	nogas	38.844	38.844	2.56	1132314	0.00	2000	
Co	59	1	nogas	1.323	1.323	3.68	34606	0.00	2000	
Ni	60	1	nogas	3.924	3.924	1.75	21406	0.02	2000	
Cu	63	1	nogas	-2.586	-2.586	-2.85	40986	-0.01	2000	
Zn	66	1	nogas	5.833	5.833	3.69	26576	0.02	2000	
As	75	1	nogas	1.103	1.103	29.74	56166	0.00	2000	
Sr	88	1	nogas	166.745	166.745	1.85	4828204	0.00	2000	
Ag	107	1	nogas	0.010	0.010	23.58	273	0.00	2000	
Cd	111	1	nogas	0.065	0.065	16.51	227	0.03	2000	
Sb	121	1	nogas	0.335	0.335	9.96	5654	0.01	2000	
Tl	205	1	nogas	0.090	0.090	11.92	2013	0.00	2000	
Pb	208	1	nogas	0.905	0.905	0.92	27043	0.00	2000	
U	238	1	nogas	0.199	0.199	7.57	4861	0.00	2000	
[Pb]	206	1	nogas	0.957	0.957	7.53	7008	0.01	2000	
[Pb]	207	1	nogas	0.888	0.888	8.92	5734	0.02	2000	
Na	23	2	He	61885.438	61885.438	0.59	91839535	0.07	200000	
Mg	24	2	He	2715.516	2715.516	2.33	2259140	0.12	200000	
Al	27	2	He	701.367	701.367	4.62	331464	0.21	2000	
K	39	2	He	379.337	379.337	2.22	578693	0.07	200000	
Ca	43	2	He	6859.857	6859.857	1.82	17105	40.10	200000	
Ca	44	2	He	6750.275	6750.275	2.00	289620	2.33	200000	
V	51	2	He	2.558	2.558	3.26	20659	0.01	2000	
Cr	52	2	He	2.305	2.305	3.02	20228	0.01	2000	
Mn	55	2	He	38.511	38.511	1.84	185704	0.02	2000	
Fe	56	2	He	1553.394	1553.394	2.18	9038315	0.02	200000	
Co	59	2	He	1.375	1.375	3.50	12898	0.01	2000	
Ni	60	2	He	2.717	2.717	8.10	7632	0.04	2000	
Cu	63	2	He	-1.518	-1.518	-0.48	14553	-0.01	2000	
Zn	66	2	He	5.250	5.250	2.25	8682	0.06	2000	
As	75	2	He	1.571	1.571	3.70	2540	0.06	2000	
Se	78	2	He	0.337	0.337	68.82	215	0.16	2000	
B	11	1	nogas	67.004	67.004	13.74	282153	0.02	2000	
Si	28	1	nogas	278609.943	278609.943	2.19	305497882	0.09	2000	>LDR
Ca	43	1	nogas	6604.582	6604.582	0.57	248748	2.66	200000	
Ca	44	1	nogas	6554.636	6554.636	2.89	4406154	0.15	200000	
Fe	56	1	nogas	1508.509	1508.509	0.21	39530699	0.00	200000	

Sample Report

Se	77	1	nogas	-5.954	-5.954	-13.81	15217	-0.04	2000	
Se	82	1	nogas	0.152	0.152	185.94	400	0.04	2000	
Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
Mo	95	1	nogas	0.844	0.844	5.24	5388	0.02	2000	
Sn	118	1	nogas	0.241	0.241	5.73	3139	0.01	2000	
Ba	137	1	nogas	55.134	55.134	1.97	228540	0.02	2000	
Sb	121	2	He	0.345	0.345	3.51	2117	0.02	2000	
La	139	1	nogas	7188.954	7188.954	1.25	24137	29.78	2000	>LDR
Au	197	1	nogas	275.305	275.305	275.35	30	917.68	2000	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	989093	10.76	1229805	80.43	70	125	
Ge	72	1	nogas	3406228	1.49	3541557	96.18	70	125	
In	115	1	nogas	2925225	3.46	3006327	97.30	70	125	
Bi	209	1	nogas	2049357	8.34	2153140	95.18	70	125	
Ge	72	2	He	828284	0.39	993327	83.38	70	125	

Sample Report

Sample Table

Sample Name	HS18111440-01SD
Data File Name	100SMPL.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\121
Acq Date Time	2018-12-10T20:13:56-06:00
Sample Type	Sample
Dilution	5
Comment	DISS B135382
ISTD Ref FileName	019CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
Be	9	1	nogas	0.018	0.089	36.25	170	0.01	2000	
Na	23	1	nogas	12491.798	62458.989	4.17	298660507	0.00	200000	
Mg	24	1	nogas	550.884	2754.420	1.41	8493254	0.01	200000	
Al	27	1	nogas	142.066	710.329	3.18	2709563	0.01	2000	
K	39	1	nogas	87.724	438.618	10.78	9397756	0.00	200000	
Ti	47	1	nogas	3.605	18.024	3.41	7408	0.05	2000	
V	51	1	nogas	0.753	3.765	48.46	220891	0.00	2000	
Cr	52	1	nogas	0.222	1.108	22.73	43849	0.00	2000	
Mn	55	1	nogas	9.924	49.619	4.26	296001	0.00	2000	
Co	59	1	nogas	0.266	1.328	8.24	7772	0.00	2000	
Ni	60	1	nogas	1.007	5.035	6.24	4701	0.02	2000	
Cu	63	1	nogas	-3.698	-18.489	-3.88	24907	-0.01	2000	
Zn	66	1	nogas	1.991	9.953	2.40	8822	0.02	2000	
As	75	1	nogas	0.412	2.060	69.79	50413	0.00	2000	
Sr	88	1	nogas	34.916	174.582	3.63	977013	0.00	2000	
Ag	107	1	nogas	0.002	0.010	111.43	150	0.00	2000	
Cd	111	1	nogas	0.010	0.049	61.60	50	0.02	2000	
Sb	121	1	nogas	0.189	0.944	6.50	3637	0.01	2000	
Tl	205	1	nogas	0.055	0.273	13.29	1353	0.00	2000	
Pb	208	1	nogas	0.112	0.562	3.11	6881	0.00	2000	
U	238	1	nogas	0.050	0.251	3.49	1237	0.00	2000	
[Pb]	206	1	nogas	0.128	0.639	20.40	1837	0.01	2000	
[Pb]	207	1	nogas	0.108	0.542	7.39	1400	0.01	2000	
Na	23	2	He	12733.075	63665.377	2.21	18880526	0.07	200000	
Mg	24	2	He	545.529	2727.645	2.09	452674	0.12	200000	
Al	27	2	He	140.946	704.731	3.95	67116	0.21	2000	
K	39	2	He	51.338	256.690	0.88	273584	0.02	200000	
Ca	43	2	He	1488.614	7443.072	2.52	3707	40.16	200000	
Ca	44	2	He	1341.620	6708.100	2.92	60328	2.22	200000	
V	51	2	He	0.212	1.059	7.51	6300	0.00	2000	
Cr	52	2	He	0.468	2.340	13.52	8152	0.01	2000	
Mn	55	2	He	9.387	46.935	2.77	46923	0.02	2000	
Fe	56	2	He	328.469	1642.346	3.72	1914988	0.02	200000	
Co	59	2	He	0.295	1.476	6.43	3037	0.01	2000	
Ni	60	2	He	0.096	0.482	56.79	1537	0.01	2000	
Cu	63	2	He	-2.364	-11.818	-1.45	9436	-0.03	2000	
Zn	66	2	He	1.240	6.198	10.59	2817	0.04	2000	
As	75	2	He	0.293	1.464	3.39	707	0.04	2000	
Se	78	2	He	0.180	0.902	109.45	197	0.09	2000	
B	11	1	nogas	27.101	135.505	5.16	131075	0.02	2000	
Si	28	1	nogas	57028.653	285143.263	2.51	61545757	0.09	2000	>LDR
Ca	43	1	nogas	1390.757	6953.787	7.94	51231	2.71	200000	
Ca	44	1	nogas	1244.030	6220.148	4.81	1244911	0.10	200000	
Fe	56	1	nogas	305.961	1529.806	3.88	9407010	0.00	200000	

Sample Report

Se	77	1	nogas	-2.327	-11.633	-74.32	15610	-0.01	2000	
Se	82	1	nogas	0.431	2.154	5.44	467	0.09	2000	
Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
Mo	95	1	nogas	0.184	0.920	4.21	1360	0.01	2000	
Sn	118	1	nogas	0.122	0.609	17.90	2070	0.01	2000	
Ba	137	1	nogas	11.105	55.526	1.78	45427	0.02	2000	
Sb	121	2	He	0.174	0.871	11.79	1287	0.01	2000	
La	139	1	nogas	1525.763	7628.815	2.16	5054	30.19	2000	
Au	197	1	nogas	-54.161	-270.804	-609.64	17	-324.96	2000	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	1084495	2.98	1229805	88.18	70	125	
Ge	72	1	nogas	3290696	2.28	3541557	92.92	70	125	
In	115	1	nogas	2869992	2.77	3006327	95.47	70	125	
Bi	209	1	nogas	2004244	1.00	2153140	93.08	70	125	
Ge	72	2	He	825701	1.49	993327	83.12	70	125	

Sample Report

Sample Table

Sample Name	HS18111440-01MS
Data File Name	101SMPL.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\121
Acq Date Time	2018-12-10T20:16:02-06:00
Sample Type	Sample
Dilution	1
Comment	DISS B135382
ISTD Ref FileName	019CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
Be	9	1	nogas	50.112	50.112	2.28	349505	0.01	2000	
Na	23	1	nogas	58498.145	58498.145	3.95	1540927234	0.00	200000	
Mg	24	1	nogas	7096.463	7096.463	2.50	120572082	0.01	200000	
Al	27	1	nogas	834.165	834.165	4.75	15996525	0.01	2000	
K	39	1	nogas	5256.191	5256.191	1.02	111203623	0.00	200000	
Ti	47	1	nogas	153.613	153.613	2.96	302439	0.05	2000	
V	51	1	nogas	50.113	50.113	2.27	1530477	0.00	2000	
Cr	52	1	nogas	48.969	48.969	2.69	1151228	0.00	2000	
Mn	55	1	nogas	82.866	82.866	3.76	2346393	0.00	2000	
Co	59	1	nogas	48.898	48.898	5.01	1206967	0.00	2000	
Ni	60	1	nogas	51.196	51.196	3.94	284066	0.02	2000	
Cu	63	1	nogas	44.464	44.464	3.08	671367	0.01	2000	
Zn	66	1	nogas	55.195	55.195	3.09	246243	0.02	2000	
As	75	1	nogas	48.147	48.147	3.71	321129	0.01	2000	
Sr	88	1	nogas	260.262	260.262	3.71	7399482	0.00	2000	
Ag	107	1	nogas	48.312	48.312	2.87	692897	0.01	2000	
Cd	111	1	nogas	47.503	47.503	0.28	152024	0.03	2000	
Sb	121	1	nogas	51.259	51.259	3.14	653914	0.01	2000	
Tl	205	1	nogas	48.120	48.120	5.06	896953	0.01	2000	
Pb	208	1	nogas	50.375	50.375	1.43	1285531	0.00	2000	
U	238	1	nogas	96.857	96.857	4.02	2395104	0.00	2000	
[Pb]	206	1	nogas	51.091	51.091	3.16	324595	0.02	2000	
[Pb]	207	1	nogas	50.244	50.244	3.51	285551	0.02	2000	
Na	23	2	He	65031.762	65031.762	1.77	98111009	0.07	200000	
Mg	24	2	He	7563.644	7563.644	1.16	6396276	0.12	200000	
Al	27	2	He	825.544	825.544	3.57	396478	0.21	2000	
K	39	2	He	4926.667	4926.667	0.94	4808670	0.10	200000	
Ca	43	2	He	11745.845	11745.845	4.25	29764	39.46	200000	
Ca	44	2	He	11271.728	11271.728	1.90	489158	2.30	200000	
V	51	2	He	51.075	51.075	1.18	322426	0.02	2000	
Cr	52	2	He	51.194	51.194	2.37	346502	0.01	2000	
Mn	55	2	He	81.374	81.374	1.08	396240	0.02	2000	
Fe	56	2	He	6273.884	6273.884	0.99	37075034	0.02	200000	
Co	59	2	He	51.099	51.099	1.72	474304	0.01	2000	
Ni	60	2	He	51.701	51.701	2.09	123507	0.04	2000	
Cu	63	2	He	47.153	47.153	1.95	312296	0.02	2000	
Zn	66	2	He	53.499	53.499	1.28	80464	0.07	2000	
As	75	2	He	50.174	50.174	0.59	73406	0.07	2000	
Se	78	2	He	45.407	45.407	2.23	5524	0.82	2000	
B	11	1	nogas	571.637	571.637	1.15	2381096	0.02	2000	
Si	28	1	nogas	276290.466	276290.466	2.52	297535622	0.09	2000	>LDR
Ca	43	1	nogas	11573.147	11573.147	2.88	427407	2.71	200000	
Ca	44	1	nogas	11641.943	11641.943	2.88	7259249	0.16	200000	
Fe	56	1	nogas	6232.382	6232.382	5.58	153668949	0.00	200000	

Sample Report

Se	77	1	nogas	41.279	41.279	8.85	26990	0.15	2000	
Se	82	1	nogas	47.709	47.709	1.13	14216	0.34	2000	
Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
Mo	95	1	nogas	47.332	47.332	3.41	280619	0.02	2000	
Sn	118	1	nogas	89.701	89.701	2.91	770441	0.01	2000	
Ba	137	1	nogas	99.352	99.352	1.44	412416	0.02	2000	
Sb	121	2	He	48.612	48.612	1.52	238701	0.02	2000	
La	139	1	nogas	7008.716	7008.716	1.46	23577	29.73	2000	>LDR
Au	197	1	nogas	199.312	199.312	396.47	27	747.42	2000	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	992272	0.58	1229805	80.69	70	125	
Ge	72	1	nogas	3346594	2.48	3541557	94.49	70	125	
In	115	1	nogas	2930165	0.67	3006327	97.47	70	125	
Bi	209	1	nogas	2092353	2.17	2153140	97.18	70	125	
Ge	72	2	He	842140	0.86	993327	84.78	70	125	

Sample Report

Sample Table

Sample Name	HS18111440-01MSD
Data File Name	102SMPL.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\121
Acq Date Time	2018-12-10T20:18:05-06:00
Sample Type	Sample
Dilution	1
Comment	DISS B135382
ISTD Ref FileName	019CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
Be	9	1	nogas	47.343	47.343	3.44	355054	0.01	2000	
Na	23	1	nogas	61429.984	61429.984	4.04	1627259336	0.00	200000	
Mg	24	1	nogas	7073.555	7073.555	0.32	120877961	0.01	200000	
Al	27	1	nogas	786.296	786.296	1.63	15514019	0.01	2000	
K	39	1	nogas	5385.379	5385.379	2.21	116938615	0.00	200000	
Ti	47	1	nogas	154.279	154.279	1.26	312404	0.05	2000	
V	51	1	nogas	52.238	52.238	1.28	1631357	0.00	2000	
Cr	52	1	nogas	50.213	50.213	1.86	1212833	0.00	2000	
Mn	55	1	nogas	82.635	82.635	1.96	2406957	0.00	2000	
Co	59	1	nogas	48.829	48.829	2.73	1239946	0.00	2000	
Ni	60	1	nogas	50.158	50.158	1.13	286260	0.02	2000	
Cu	63	1	nogas	44.360	44.360	2.59	688993	0.01	2000	
Zn	66	1	nogas	55.260	55.260	2.00	253537	0.02	2000	
As	75	1	nogas	50.171	50.171	0.40	342069	0.01	2000	
Sr	88	1	nogas	264.387	264.387	3.29	7732083	0.00	2000	
Ag	107	1	nogas	49.175	49.175	2.95	725367	0.01	2000	
Cd	111	1	nogas	48.502	48.502	1.35	161319	0.03	2000	
Sb	121	1	nogas	51.104	51.104	1.29	670536	0.01	2000	
Tl	205	1	nogas	48.155	48.155	6.36	930260	0.01	2000	
Pb	208	1	nogas	52.078	52.078	1.96	1328853	0.00	2000	
U	238	1	nogas	102.502	102.502	2.76	2630455	0.00	2000	
[Pb]	206	1	nogas	50.044	50.044	6.65	329457	0.02	2000	
[Pb]	207	1	nogas	49.416	49.416	6.16	291103	0.02	2000	
Na	23	2	He	68411.732	68411.732	0.84	102035612	0.07	200000	
Mg	24	2	He	7993.318	7993.318	2.10	6682034	0.12	200000	
Al	27	2	He	817.637	817.637	0.92	388255	0.21	2000	
K	39	2	He	5004.310	5004.310	1.17	4880894	0.10	200000	
Ca	43	2	He	12274.397	12274.397	4.76	30749	39.92	200000	
Ca	44	2	He	12028.358	12028.358	0.78	515811	2.33	200000	
V	51	2	He	53.557	53.557	1.41	333961	0.02	2000	
Cr	52	2	He	54.821	54.821	2.11	366453	0.01	2000	
Mn	55	2	He	82.015	82.015	2.11	394780	0.02	2000	
Fe	56	2	He	6289.311	6289.311	0.14	36742885	0.02	200000	
Co	59	2	He	52.020	52.020	0.56	477351	0.01	2000	
Ni	60	2	He	54.424	54.424	0.20	128465	0.04	2000	
Cu	63	2	He	50.061	50.061	0.47	326316	0.02	2000	
Zn	66	2	He	55.847	55.847	2.46	82984	0.07	2000	
As	75	2	He	52.653	52.653	1.04	76136	0.07	2000	
Se	78	2	He	49.599	49.599	2.16	5949	0.83	2000	
B	11	1	nogas	547.760	547.760	4.80	2452211	0.02	2000	
Si	28	1	nogas	284304.455	284304.455	1.49	314809069	0.09	2000	>LDR
Ca	43	1	nogas	11799.008	11799.008	0.64	448156	2.63	200000	
Ca	44	1	nogas	11811.759	11811.759	1.52	7566480	0.16	200000	
Fe	56	1	nogas	6251.367	6251.367	2.18	158590320	0.00	200000	

Sample Report

Se	77	1	nogas	43.975	43.975	3.06	28469	0.15	2000	
Se	82	1	nogas	49.211	49.211	2.99	15066	0.33	2000	
Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
Mo	95	1	nogas	47.917	47.917	4.54	292171	0.02	2000	
Sn	118	1	nogas	91.418	91.418	1.84	815966	0.01	2000	
Ba	137	1	nogas	100.172	100.172	3.47	432044	0.02	2000	
Sb	121	2	He	50.678	50.678	0.78	245988	0.02	2000	
La	139	1	nogas	7145.695	7145.695	2.67	24982	28.60	2000	>LDR
Au	197	1	nogas	260.445	260.445	112.56	30	868.15	2000	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	1068504	6.48	1229805	86.88	70	125	
Ge	72	1	nogas	3440397	0.78	3541557	97.14	70	125	
In	115	1	nogas	3045795	2.52	3006327	101.31	70	125	
Bi	209	1	nogas	2171056	4.28	2153140	100.83	70	125	
Ge	72	2	He	832500	0.59	993327	83.81	70	125	

Sample Report

Sample Table

Sample Name	HS18111440-01PDS
Data File Name	103SMPL.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\121
Acq Date Time	2018-12-10T20:20:08-06:00
Sample Type	Sample
Dilution	1
Comment	DISS B135382
ISTD Ref FileName	019CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
Be	9	1	nogas	96.245	96.245	2.71	706029	0.01	2000	
Na	23	1	nogas	63998.755	63998.755	5.54	1632931737	0.00	200000	
Mg	24	1	nogas	12087.066	12087.066	4.30	198951334	0.01	200000	
Al	27	1	nogas	727.606	727.606	1.13	14264068	0.01	2000	
K	39	1	nogas	10179.926	10179.926	4.23	212379592	0.00	200000	
Ti	47	1	nogas	109.686	109.686	3.94	220690	0.05	2000	
V	51	1	nogas	100.193	100.193	0.70	2916059	0.00	2000	
Cr	52	1	nogas	96.870	96.870	1.38	2286920	0.00	2000	
Mn	55	1	nogas	129.918	129.918	2.31	3745393	0.00	2000	
Co	59	1	nogas	94.211	94.211	2.38	2375441	0.00	2000	
Ni	60	1	nogas	94.537	94.537	3.62	536565	0.02	2000	
Cu	63	1	nogas	89.596	89.596	3.62	1303798	0.01	2000	
Zn	66	1	nogas	104.685	104.685	1.85	476934	0.02	2000	
As	75	1	nogas	97.721	97.721	3.00	614280	0.02	2000	
Sr	88	1	nogas	157.983	157.983	1.64	4589619	0.00	2000	
Ag	107	1	nogas	98.694	98.694	2.66	1445579	0.01	2000	
Cd	111	1	nogas	99.672	99.672	1.23	319936	0.03	2000	
Sb	121	1	nogas	94.308	94.308	3.22	1227578	0.01	2000	
Tl	205	1	nogas	101.045	101.045	1.98	1912959	0.01	2000	
Pb	208	1	nogas	101.850	101.850	2.22	2595043	0.00	2000	
U	238	1	nogas	0.448	0.448	36.78	11365	0.00	2000	
[Pb]	206	1	nogas	98.667	98.667	2.91	635455	0.02	2000	
[Pb]	207	1	nogas	98.021	98.021	2.52	564800	0.02	2000	
Na	23	2	He	68198.715	68198.715	2.82	101679568	0.07	200000	
Mg	24	2	He	12590.069	12590.069	1.33	10522701	0.12	200000	
Al	27	2	He	743.982	743.982	4.58	353278	0.21	2000	
K	39	2	He	9741.899	9741.899	0.49	9287853	0.10	200000	
Ca	43	2	He	16514.960	16514.960	2.44	41373	39.92	200000	
Ca	44	2	He	16230.439	16230.439	1.98	694515	2.34	200000	
V	51	2	He	104.665	104.665	0.42	647766	0.02	2000	
Cr	52	2	He	105.032	105.032	1.15	697243	0.02	2000	
Mn	55	2	He	131.377	131.377	3.37	630689	0.02	2000	
Fe	56	2	He	11443.976	11443.976	2.93	66820229	0.02	200000	
Co	59	2	He	102.351	102.351	0.59	938709	0.01	2000	
Ni	60	2	He	105.128	105.128	1.38	246851	0.04	2000	
Cu	63	2	He	102.085	102.085	1.81	640517	0.02	2000	
Zn	66	2	He	107.703	107.703	1.72	159053	0.07	2000	
As	75	2	He	104.080	104.080	0.95	150193	0.07	2000	
Se	78	2	He	99.023	99.023	0.74	11698	0.85	2000	
B	11	1	nogas	65.214	65.214	3.58	292728	0.02	2000	
Si	28	1	nogas	264232.105	264232.105	2.63	290761916	0.09	2000	>LDR
Ca	43	1	nogas	15895.784	15895.784	3.24	599221	2.65	200000	
Ca	44	1	nogas	16072.068	16072.068	2.64	10022570	0.16	200000	
Fe	56	1	nogas	11088.503	11088.503	1.48	277740806	0.00	200000	

Sample Report

Se	77	1	nogas	87.732	87.732	5.81	39670	0.22	2000	
Se	82	1	nogas	97.439	97.439	2.21	29277	0.33	2000	
Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
Mo	95	1	nogas	96.101	96.101	1.67	581808	0.02	2000	
Sn	118	1	nogas	0.515	0.515	18.09	5508	0.01	2000	
Ba	137	1	nogas	149.442	149.442	2.65	622021	0.02	2000	
Sb	121	2	He	98.279	98.279	3.12	476408	0.02	2000	
La	139	1	nogas	6880.575	6880.575	5.38	23209	29.65	2000	>LDR
Au	197	1	nogas	-81.701	-81.701	-191.04	17	-490.20	2000	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	1044214	2.96	1229805	84.91	70	125	
Ge	72	1	nogas	3417851	2.07	3541557	96.51	70	125	
In	115	1	nogas	2939130	1.10	3006327	97.76	70	125	
Bi	209	1	nogas	2124061	2.59	2153140	98.65	70	125	
Ge	72	2	He	832388	1.31	993327	83.80	70	125	

Sample Report

Sample Table

Sample Name	HS18111440-02
Data File Name	104SMPL.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\121
Acq Date Time	2018-12-10T20:22:15-06:00
Sample Type	Sample
Dilution	1
Comment	DISS B135382
ISTD Ref FileName	019CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
Be	9	1	nogas	0.100	0.100	23.41	737	0.01	2000	
Na	23	1	nogas	OR	OR	#VALUE!	OR	#VALUE!	200000	
Mg	24	1	nogas	45450.344	45450.344	3.65	736442733	0.01	200000	
Al	27	1	nogas	372.348	372.348	3.37	6838630	0.01	2000	
K	39	1	nogas	1400.895	1400.895	2.60	33773518	0.00	200000	
Ti	47	1	nogas	12.312	12.312	1.12	23542	0.05	2000	
V	51	1	nogas	1.893	1.893	6.70	243337	0.00	2000	
Cr	52	1	nogas	1.299	1.299	11.39	65921	0.00	2000	
Mn	55	1	nogas	89.300	89.300	4.14	2412252	0.00	2000	
Co	59	1	nogas	2.010	2.010	1.61	48641	0.00	2000	
Ni	60	1	nogas	6.437	6.437	0.75	33431	0.02	2000	
Cu	63	1	nogas	-2.694	-2.694	-1.37	37068	-0.01	2000	
Zn	66	1	nogas	5.622	5.622	0.93	24033	0.02	2000	
As	75	1	nogas	5.539	5.539	4.42	76651	0.01	2000	
Sr	88	1	nogas	1259.395	1259.395	2.93	34184708	0.00	2000	
Ag	107	1	nogas	0.032	0.032	10.27	557	0.01	2000	
Cd	111	1	nogas	0.269	0.269	4.26	830	0.03	2000	
Sb	121	1	nogas	3.292	3.292	23.75	41224	0.01	2000	
Tl	205	1	nogas	0.249	0.249	25.25	5004	0.00	2000	
Pb	208	1	nogas	0.644	0.644	5.93	20412	0.00	2000	
U	238	1	nogas	3.634	3.634	3.97	88913	0.00	2000	
[Pb]	206	1	nogas	0.663	0.663	4.56	5251	0.01	2000	
[Pb]	207	1	nogas	0.620	0.620	8.49	4317	0.01	2000	
Na	23	2	He	254374.213	254374.213	2.08	376049794	0.07	200000	>LDR
Mg	24	2	He	46878.552	46878.552	2.88	38861505	0.12	200000	
Al	27	2	He	347.287	347.287	0.06	164065	0.21	2000	
K	39	2	He	1264.235	1264.235	2.46	1401834	0.09	200000	
Ca	43	2	He	94367.653	94367.653	2.15	234401	40.26	200000	
Ca	44	2	He	92291.701	92291.701	2.55	3899826	2.37	200000	
V	51	2	He	1.266	1.266	2.74	12720	0.01	2000	
Cr	52	2	He	1.420	1.420	7.24	14376	0.01	2000	
Mn	55	2	He	85.043	85.043	0.75	405876	0.02	2000	
Fe	56	2	He	1104.688	1104.688	1.90	6411486	0.02	200000	
Co	59	2	He	1.907	1.907	2.12	17692	0.01	2000	
Ni	60	2	He	3.653	3.653	5.04	9776	0.04	2000	
Cu	63	2	He	-2.350	-2.350	-1.39	9519	-0.02	2000	
Zn	66	2	He	3.865	3.865	4.80	6638	0.06	2000	
As	75	2	He	0.790	0.790	3.65	1417	0.06	2000	
Se	78	2	He	0.360	0.360	64.86	217	0.17	2000	
B	11	1	nogas	56.227	56.227	7.08	246052	0.02	2000	
Si	28	1	nogas	234699.761	234699.761	1.61	241536336	0.10	2000	>LDR
Ca	43	1	nogas	99666.852	99666.852	2.87	3507937	2.84	200000	
Ca	44	1	nogas	99512.030	99512.030	2.44	55289889	0.18	200000	
Fe	56	1	nogas	1125.400	1125.400	2.89	28165085	0.00	200000	
Se	77	1	nogas	29.145	29.145	5.51	22818	0.13	2000	
Se	82	1	nogas	1.691	1.691	10.12	803	0.21	2000	

Sample Report

Mo	95	1	nogas	0.681	0.681	25.36	4127	0.02	2000	
Sn	118	1	nogas	0.189	0.189	12.84	2540	0.01	2000	
Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
Ba	137	1	nogas	31.732	31.732	0.79	124468	0.03	2000	
Sb	121	2	He	1.911	1.911	8.62	9629	0.02	2000	
La	139	1	nogas	5531.424	5531.424	2.14	17556	31.51	2000	>LDR
Au	197	1	nogas	18.939	18.939	1444.55	20	94.69	2000	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	1015715	5.77	1229805	82.59	70	125	
Ge	72	1	nogas	3194539	1.83	3541557	90.20	70	125	
In	115	1	nogas	2764034	1.76	3006327	91.94	70	125	
Bi	209	1	nogas	2069918	2.25	2153140	96.13	70	125	
Ge	72	2	He	825608	0.98	993327	83.12	70	125	

Sample Report

Sample Table

Sample Name	HS18111440-03
Data File Name	105SMPL.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\121
Acq Date Time	2018-12-10T20:24:18-06:00
Sample Type	Sample
Dilution	1
Comment	DISS B135382
ISTD Ref FileName	019CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
Be	9	1	nogas	0.072	0.072	8.56	510	0.01	2000	
Na	23	1	nogas	OR	OR	#VALUE!	OR	#VALUE!	200000	
Mg	24	1	nogas	43628.897	43628.897	0.77	696740416	0.01	200000	
Al	27	1	nogas	262.672	262.672	0.62	4712215	0.01	2000	
K	39	1	nogas	1314.697	1314.697	3.21	31306342	0.00	200000	
Ti	47	1	nogas	8.753	8.753	1.97	16428	0.05	2000	
V	51	1	nogas	1.120	1.120	20.80	218232	0.00	2000	
Cr	52	1	nogas	0.734	0.734	10.67	52274	0.00	2000	
Mn	55	1	nogas	86.490	86.490	3.71	2278714	0.00	2000	
Co	59	1	nogas	1.739	1.739	1.72	41183	0.00	2000	
Ni	60	1	nogas	5.499	5.499	2.55	27738	0.02	2000	
Cu	63	1	nogas	-3.129	-3.129	-2.35	30652	-0.01	2000	
Zn	66	1	nogas	4.069	4.069	2.01	16958	0.02	2000	
As	75	1	nogas	4.957	4.957	4.69	71570	0.01	2000	
Sr	88	1	nogas	1209.746	1209.746	2.83	31968506	0.00	2000	
Ag	107	1	nogas	0.007	0.007	110.49	200	0.00	2000	
Cd	111	1	nogas	0.130	0.130	17.31	407	0.03	2000	
Sb	121	1	nogas	0.812	0.812	11.07	10794	0.01	2000	
Tl	205	1	nogas	0.066	0.066	6.27	1453	0.00	2000	
Pb	208	1	nogas	0.377	0.377	13.62	13599	0.00	2000	
U	238	1	nogas	3.697	3.697	9.33	81975	0.00	2000	
[Pb]	206	1	nogas	0.472	0.472	19.45	3670	0.01	2000	
[Pb]	207	1	nogas	0.429	0.429	11.60	2940	0.01	2000	
Na	23	2	He	247854.441	247854.441	0.55	318178189	0.08	200000	>LDR
Mg	24	2	He	46576.597	46576.597	2.26	33554192	0.14	200000	
Al	27	2	He	257.047	257.047	2.15	105708	0.24	2000	
K	39	2	He	1043.476	1043.476	6.18	1196481	0.09	200000	
Ca	43	2	He	96169.042	96169.042	2.35	207368	46.38	200000	
Ca	44	2	He	92347.140	92347.140	2.09	3387392	2.73	200000	
V	51	2	He	0.990	0.990	0.76	9590	0.01	2000	
Cr	52	2	He	1.088	1.088	4.89	10593	0.01	2000	
Mn	55	2	He	80.746	80.746	1.82	334590	0.02	2000	
Fe	56	2	He	798.519	798.519	1.42	4027902	0.02	200000	
Co	59	2	He	1.788	1.788	3.95	14406	0.01	2000	
Ni	60	2	He	3.145	3.145	4.39	7458	0.04	2000	
Cu	63	2	He	-2.502	-2.502	-2.86	7465	-0.03	2000	
Zn	66	2	He	2.976	2.976	0.54	4641	0.06	2000	
As	75	2	He	0.632	0.632	8.63	1033	0.06	2000	
Se	78	2	He	0.592	0.592	57.45	212	0.28	2000	
B	11	1	nogas	55.449	55.449	1.81	226738	0.02	2000	
Si	28	1	nogas	219583.137	219583.137	1.41	220209143	0.10	2000	>LDR
Ca	43	1	nogas	93655.180	93655.180	3.49	3208114	2.92	200000	
Ca	44	1	nogas	95710.578	95710.578	2.45	51793469	0.18	200000	
Fe	56	1	nogas	778.808	778.808	2.64	19588002	0.00	200000	
Se	77	1	nogas	27.594	27.594	11.80	21853	0.13	2000	
Se	82	1	nogas	1.164	1.164	33.82	643	0.18	2000	

Sample Report

Mo	95	1	nogas	0.272	0.272	12.41	1767	0.02	2000	
Sn	118	1	nogas	0.062	0.062	77.58	1483	0.00	2000	
Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
Ba	137	1	nogas	28.746	28.746	2.02	111360	0.03	2000	
Sb	121	2	He	0.754	0.754	3.61	3534	0.02	2000	
La	139	1	nogas	4637.183	4637.183	2.79	14536	31.90	2000	>LDR
Au	197	1	nogas	-26.420	-26.420	-649.01	17	-158.52	2000	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	946231	2.42	1229805	76.94	70	125	
Ge	72	1	nogas	3112377	5.99	3541557	87.88	70	125	
In	115	1	nogas	2731069	5.76	3006327	90.84	70	125	
Bi	209	1	nogas	1883078	7.44	2153140	87.46	70	125	
Ge	72	2	He	716918	4.73	993327	72.17	70	125	

Sample Report

Sample Table

Sample Name	HS18111440-04
Data File Name	106SMPL.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\121
Acq Date Time	2018-12-10T20:26:24-06:00
Sample Type	Sample
Dilution	1
Comment	DISS B135382
ISTD Ref FileName	019CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
Be	9	1	nogas	0.143	0.143	21.76	990	0.01	2000	
Na	23	1	nogas	OR	OR	#VALUE!	OR	#VALUE!	200000	
Mg	24	1	nogas	133190.291	133190.291	4.25	2170585515	0.01	200000	
Al	27	1	nogas	620.312	620.312	1.47	11319518	0.01	2000	
K	39	1	nogas	2436.166	2436.166	2.72	52967227	0.00	200000	
Ti	47	1	nogas	14.764	14.764	5.25	28008	0.05	2000	
V	51	1	nogas	3.505	3.505	10.44	282736	0.00	2000	
Cr	52	1	nogas	1.463	1.463	1.20	69176	0.00	2000	
Mn	55	1	nogas	64.207	64.207	1.41	1733189	0.00	2000	
Co	59	1	nogas	2.078	2.078	3.14	49992	0.00	2000	
Ni	60	1	nogas	14.007	14.007	2.80	73316	0.02	2000	
Cu	63	1	nogas	-2.324	-2.324	-4.09	41604	-0.01	2000	
Zn	66	1	nogas	8.944	8.944	4.67	37996	0.02	2000	
As	75	1	nogas	9.934	9.934	2.40	99905	0.01	2000	
Sr	88	1	nogas	3239.181	3239.181	2.14	87534382	0.00	2000	>LDR
Ag	107	1	nogas	0.010	0.010	75.39	260	0.00	2000	
Cd	111	1	nogas	0.309	0.309	8.83	933	0.03	2000	
Sb	121	1	nogas	0.550	0.550	3.98	7889	0.01	2000	
Tl	205	1	nogas	0.037	0.037	4.71	1027	0.00	2000	
Pb	208	1	nogas	1.201	1.201	0.35	34578	0.00	2000	
U	238	1	nogas	2.563	2.563	2.88	60074	0.00	2000	
[Pb]	206	1	nogas	1.346	1.346	6.73	9119	0.01	2000	
[Pb]	207	1	nogas	1.193	1.193	3.52	7205	0.02	2000	
Na	23	2	He	390656.907	390656.907	5.11	558464352	0.07	200000	>LDR
Mg	24	2	He	145302.264	145302.264	4.17	116510015	0.12	200000	
Al	27	2	He	626.306	626.306	4.56	285422	0.22	2000	
K	39	2	He	2241.736	2241.736	3.05	2311117	0.10	200000	
Ca	43	2	He	324087.958	324087.958	4.01	778638	41.62	200000	>LDR
Ca	44	2	He	317643.821	317643.821	3.67	12975674	2.45	200000	>LDR
V	51	2	He	2.055	2.055	8.73	16940	0.01	2000	
Cr	52	2	He	1.740	1.740	9.54	15920	0.01	2000	
Mn	55	2	He	64.541	64.541	3.16	298549	0.02	2000	
Fe	56	2	He	1461.461	1461.461	4.84	8198089	0.02	200000	
Co	59	2	He	1.766	1.766	2.89	15887	0.01	2000	
Ni	60	2	He	10.467	10.467	6.15	24720	0.04	2000	
Cu	63	2	He	-2.123	-2.123	-8.27	10506	-0.02	2000	
Zn	66	2	He	7.323	7.323	6.76	11280	0.06	2000	
As	75	2	He	1.106	1.106	11.63	1805	0.06	2000	
Se	78	2	He	0.381	0.381	3.87	213	0.18	2000	
B	11	1	nogas	77.849	77.849	3.18	319471	0.02	2000	
Si	28	1	nogas	239365.001	239365.001	2.07	245179630	0.10	2000	>LDR
Ca	43	1	nogas	321990.036	321990.036	4.18	11279748	2.85	200000	>LDR
Ca	44	1	nogas	328831.640	328831.640	3.00	180660404	0.18	200000	>LDR
Fe	56	1	nogas	1434.596	1434.596	1.90	35190030	0.00	200000	
Se	77	1	nogas	58.656	58.656	6.75	29868	0.20	2000	
Se	82	1	nogas	3.891	3.891	7.91	1407	0.28	2000	

Sample Report

Mo	95	1	nogas	0.114	0.114	10.80	917	0.01	2000	
Sn	118	1	nogas	0.097	0.097	14.23	1760	0.01	2000	
Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
Ba	137	1	nogas	35.793	35.793	3.57	137414	0.03	2000	
Sb	121	2	He	0.471	0.471	6.36	2624	0.02	2000	
La	139	1	nogas	15177.436	15177.436	7.47	47058	32.25	2000	>LDR
Au	197	1	nogas	39.106	39.106	697.34	20	195.53	2000	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	959500	5.57	1229805	78.02	70	125	
Ge	72	1	nogas	3179601	0.52	3541557	89.78	70	125	
In	115	1	nogas	2709069	4.83	3006327	90.11	70	125	
Bi	209	1	nogas	1982630	2.63	2153140	92.08	70	125	
Ge	72	2	He	799351	4.12	993327	80.47	70	125	

Sample Report

Sample Table

Sample Name	HS18111440-05
Data File Name	107SMPL.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\121
Acq Date Time	2018-12-10T20:28:26-06:00
Sample Type	Sample
Dilution	1
Comment	DISS B135382
ISTD Ref FileName	019CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
Be	9	1	nogas	0.038	0.038	41.20	297	0.01	2000	
Na	23	1	nogas	OR	OR	#VALUE!	OR	#VALUE!	200000	
Mg	24	1	nogas	56906.625	56906.625	6.84	929633687	0.01	200000	
Al	27	1	nogas	40.654	40.654	2.88	795897	0.01	2000	
K	39	1	nogas	890.598	890.598	1.64	24756841	0.00	200000	
Ti	47	1	nogas	2.504	2.504	1.63	5248	0.05	2000	
V	51	1	nogas	3.371	3.371	12.60	287088	0.00	2000	
Cr	52	1	nogas	0.364	0.364	22.83	46699	0.00	2000	
Mn	55	1	nogas	86.583	86.583	2.49	2394268	0.00	2000	
Co	59	1	nogas	0.944	0.944	4.58	24063	0.00	2000	
Ni	60	1	nogas	4.400	4.400	2.46	23121	0.02	2000	
Cu	63	1	nogas	-3.389	-3.389	-1.47	28803	-0.01	2000	
Zn	66	1	nogas	2.540	2.540	2.58	11160	0.02	2000	
As	75	1	nogas	6.270	6.270	6.97	82432	0.01	2000	
Sr	88	1	nogas	1565.559	1565.559	2.37	43486114	0.00	2000	
Ag	107	1	nogas	0.005	0.005	17.42	197	0.00	2000	
Cd	111	1	nogas	0.068	0.068	26.92	230	0.03	2000	
Sb	121	1	nogas	0.292	0.292	9.43	4891	0.01	2000	
Tl	205	1	nogas	0.021	0.021	14.15	753	0.00	2000	
Pb	208	1	nogas	-0.029	-0.029	-38.02	3284	0.00	2000	
U	238	1	nogas	21.914	21.914	0.94	521920	0.00	2000	
[Pb]	206	1	nogas	-0.029	-0.029	-77.13	890	0.00	2000	
[Pb]	207	1	nogas	-0.015	-0.015	-153.71	730	0.00	2000	
Na	23	2	He	353855.414	353855.414	1.35	528538565	0.07	200000	>LDR
Mg	24	2	He	60955.716	60955.716	2.08	51061163	0.12	200000	
Al	27	2	He	41.714	41.714	2.78	20718	0.20	2000	
K	39	2	He	823.388	823.388	0.78	991753	0.08	200000	
Ca	43	2	He	106755.838	106755.838	2.56	267912	39.85	200000	
Ca	44	2	He	104397.690	104397.690	1.11	4457821	2.34	200000	
V	51	2	He	1.314	1.314	1.79	13151	0.01	2000	
Cr	52	2	He	0.597	0.597	11.17	9082	0.01	2000	
Mn	55	2	He	84.439	84.439	3.02	407076	0.02	2000	
Fe	56	2	He	55.869	55.869	0.94	339782	0.02	200000	
Co	59	2	He	0.863	0.863	1.22	8285	0.01	2000	
Ni	60	2	He	1.161	1.161	14.57	4041	0.03	2000	
Cu	63	2	He	-3.166	-3.166	-1.29	4677	-0.07	2000	
Zn	66	2	He	1.171	1.171	6.38	2744	0.04	2000	
As	75	2	He	0.533	0.533	0.78	1060	0.05	2000	
Se	78	2	He	0.418	0.418	49.72	226	0.18	2000	
B	11	1	nogas	47.070	47.070	3.68	202839	0.02	2000	
Si	28	1	nogas	210868.933	210868.933	2.21	222167250	0.09	2000	>LDR
Ca	43	1	nogas	104323.506	104323.506	2.15	3756864	2.78	200000	
Ca	44	1	nogas	106480.031	106480.031	3.61	60484296	0.18	200000	
Fe	56	1	nogas	48.880	48.880	12.53	3236344	0.00	200000	
Se	77	1	nogas	36.828	36.828	10.49	25258	0.15	2000	
Se	82	1	nogas	1.901	1.901	17.14	880	0.22	2000	

Sample Report

Mo	95	1	nogas	0.332	0.332	8.84	2204	0.02	2000	
Sn	118	1	nogas	0.053	0.053	24.72	1483	0.00	2000	
Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
Ba	137	1	nogas	31.914	31.914	4.97	128847	0.02	2000	
Sb	121	2	He	0.285	0.285	20.09	1840	0.02	2000	
La	139	1	nogas	1074.365	1074.365	10.86	3530	30.43	2000	
Au	197	1	nogas	-151.748	-151.748	-212.25	13	-1138.11	2000	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	992454	3.67	1229805	80.70	70	125	
Ge	72	1	nogas	3268348	1.43	3541557	92.29	70	125	
In	115	1	nogas	2847336	3.37	3006327	94.71	70	125	
Bi	209	1	nogas	2014547	1.91	2153140	93.56	70	125	
Ge	72	2	He	834252	2.26	993327	83.99	70	125	

Continuing Calibration Verification (CCV) Report

Sample Table

Sample Name	CCV
Data File Name	109_CCV.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\121
Acq Date Time	2018-12-10T20:32:35-06:00
Sample Type	CCV
Dilution	1
Comment	
ISTD Ref File Name	019CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Exp Value	%Rec	%Low	%High2	QC Flag
Be	9	1	nogas	97.258	3.093	705423	2.00	100	97.3	90	110	
Na	23	1	nogas	10284.823	1.339	250654556	0.97	10000	102.8	90	110	
Mg	24	1	nogas	10345.633	4.032	162266920	2.16	10000	103.5	90	110	
Al	27	1	nogas	107.333	2.538	2053027	4.09	100	107.3	90	110	
K	39	1	nogas	10326.573	5.033	206861975	2.96	10000	103.3	90	110	
Ti	47	1	nogas	100.826	2.614	194981	2.05	100	100.8	90	110	
V	51	1	nogas	103.892	2.217	2897139	0.24	100	103.9	90	110	
Cr	52	1	nogas	99.869	3.797	2263187	2.36	100	99.9	90	110	
Mn	55	1	nogas	101.880	4.889	2825477	3.02	100	101.9	90	110	
Co	59	1	nogas	100.851	3.283	2442539	2.49	100	100.9	90	110	
Ni	60	1	nogas	100.571	2.160	548566	1.46	100	100.6	90	110	
Cu	63	1	nogas	93.657	6.315	1305993	4.80	100	93.7	90	110	
Zn	66	1	nogas	101.748	0.467	445497	2.40	100	101.7	90	110	
As	75	1	nogas	99.446	2.907	599768	0.88	100	99.4	90	110	
Sr	88	1	nogas	106.665	4.655	2976528	3.31	100	106.7	90	110	
Ag	107	1	nogas	100.209	5.608	1409776	4.03	100	100.2	90	110	
Cd	111	1	nogas	94.772	2.731	309848	2.22	100	94.8	90	110	
Sb	121	1	nogas	108.137	6.162	1351716	4.33	100	108.1	90	110	
Tl	205	1	nogas	100.419	2.694	1909550	4.79	100	100.4	90	110	
Pb	208	1	nogas	103.303	4.741	2632004	4.73	100	103.3	90	110	
U	238	1	nogas	103.343	3.094	2604366	0.60	100	103.3	90	110	
[Pb]	206	1	nogas	101.313	1.720	655236	1.59	100	101.3	90	110	
[Pb]	207	1	nogas	100.130	1.696	579688	3.81	100	100.1	90	110	
Na	23	2	He	10517.554	3.234	15822541	2.36	10000	105.2	90	110	
Mg	24	2	He	10138.375	1.722	8522250	0.86	10000	101.4	90	110	
Al	27	2	He	98.695	1.674	47934	2.52	100	98.7	90	110	
K	39	2	He	9373.680	1.298	8945331	1.27	10000	93.7	90	110	
Ca	43	2	He	9935.931	3.207	25040	4.05	10000	99.4	90	110	
Ca	44	2	He	9789.361	1.136	422850	1.49	10000	97.9	90	110	
V	51	2	He	102.068	1.519	635393	0.72	100	102.1	90	110	
Cr	52	2	He	104.132	0.434	695331	0.73	100	104.1	90	110	
Mn	55	2	He	98.597	1.396	476742	0.62	100	98.6	90	110	
Fe	56	2	He	10029.326	1.563	58910224	1.49	10000	100.3	90	110	
Co	59	2	He	103.153	1.192	951461	0.43	100	103.2	90	110	
Ni	60	2	He	102.911	1.398	243070	0.95	100	102.9	90	110	
Cu	63	2	He	98.005	1.838	619426	1.11	100	98.0	90	110	
Zn	66	2	He	100.549	1.896	149413	1.08	100	100.5	90	110	
As	75	2	He	101.152	0.861	146825	1.71	100	101.2	90	110	
Se	78	2	He	97.822	2.503	11624	2.01	100	97.8	90	110	
B	11	1	nogas	536.201	0.314	2323936	1.40	500	107.2	90	110	
Si	28	1	nogas	4933.993	0.826	6643236	2.19	5000	98.7	90	110	
Ca	43	1	nogas	10252.944	3.509	371661	1.94	10000	102.5	90	110	
Ca	44	1	nogas	10159.877	2.887	6285447	0.99	10000	101.6	90	110	
Fe	56	1	nogas	9920.854	1.536	238966889	1.07	10000	99.2	90	110	
Se	77	1	nogas	104.621	5.244	42343	1.59	100	104.6	90	110	
Se	82	1	nogas	100.212	5.979	28907	4.32	100	100.2	90	110	
Mo	95	1	nogas	101.640	1.972	591166	1.14	100	101.6	90	110	
Sn	118	1	nogas	96.621	2.269	847698	0.56	100	96.6	90	110	
Ba	137	1	nogas	96.396	2.395	408832	1.67	100	96.4	90	110	
Sb	121	2	He	100.501	1.168	490057	0.30	100	100.5	90	110	
Li	7	1	nogas	95.967	2.152	1551722	2.74	100	96.0	90	110	
P	31	1	nogas	472.684	0.965	954298	1.56	500	94.5	90	110	
La	139	1	nogas	110.643	6.759	413	7.39	100	110.6	90	110	CCV Main CR1-2 Failed
Au	197	1	nogas	436.736	87.224	37	41.66	100	436.7	90	110	CCV Main CR1-2 Failed

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	1032226	1.30	1229805	83.93	70	125	
Ge	72	1	nogas	3283762	1.94	3541557	92.72	70	125	
In	115	1	nogas	2994114	1.75	3006327	99.59	70	125	
Bi	209	1	nogas	2133336	3.10	2153140	99.08	70	125	

Continuing Calibration Verification (CCV) Report

Ge	72	2	He	837154	0.88	993327	84.28	70	125	

Continuing Calibration Blank (CCB) Report

Sample Table

Sample Name	CCB
Data File Name	110_CCB.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\121
Acq Date Time	2018-12-10T20:34:40-06:00
Sample Type	CCB
Dilution	1
Comment	
ISTD Ref File Name	019CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Be	9	1	nogas	0.051	19.1	463	21.6	1	
Na	23	1	nogas	40.546	6.0	1496793	2.0	100	
Mg	24	1	nogas	7.830	23.4	131927	20.4	100	
Al	27	1	nogas	-0.649	-6.1	24623	2.5	5	
K	39	1	nogas	4.403	147.5	8025481	1.5	100	
Ti	47	1	nogas	0.022	159.8	497	14.1	2.5	
V	51	1	nogas	0.576	66.4	223018	4.8	2.5	
Cr	52	1	nogas	-0.223	-33.4	34973	4.7	2.5	
Mn	55	1	nogas	0.156	17.1	27487	2.0	2.5	
Co	59	1	nogas	0.039	52.8	2344	22.5	2.5	
Ni	60	1	nogas	0.331	5.5	1037	10.3	2.5	
Cu	63	1	nogas	-4.091	-1.3	20351	3.6	2.5	
Zn	66	1	nogas	0.474	5.5	2240	5.0	2.5	
As	75	1	nogas	-0.072	-387.8	49187	2.1	2.5	
Sr	88	1	nogas	0.166	9.8	5701	8.2	2.5	
Ag	107	1	nogas	0.039	25.7	690	21.1	2.5	
Cd	111	1	nogas	0.043	29.6	163	24.7	1	
Sb	121	1	nogas	1.116	23.1	15721	21.3	2.5	
Tl	205	1	nogas	0.577	52.9	11832	51.6	1	
Pb	208	1	nogas	-0.017	-217.1	3587	26.2	2.5	
U	238	1	nogas	0.160	67.9	4241	67.8	2.5	
[Pb]	206	1	nogas	-0.041	-109.2	900	32.9	2.5	
[Pb]	207	1	nogas	-0.016	-286.8	800	35.3	2.5	
Na	23	2	He	50.139	4.4	139300	1.1	100	
Mg	24	2	He	6.841	3.4	6391	4.6	100	
Al	27	2	He	-0.493	-44.7	697	16.6	5	
K	39	2	He	-23.637	-12.7	203842	1.4	100	
Ca	43	2	He	28.761	43.0	83	38.6	100	
Ca	44	2	He	-4.433	-278.8	3644	12.8	100	
V	51	2	He	-0.360	-1.9	2943	3.4	2.5	
Cr	52	2	He	-0.068	-43.2	4851	5.2	2.5	
Mn	55	2	He	-0.008	-269.9	2454	4.5	2.5	
Fe	56	2	He	4.034	7.1	37632	2.9	100	
Co	59	2	He	0.034	27.9	687	12.6	2.5	
Ni	60	2	He	-0.454	-1.5	273	7.6	2.5	
Cu	63	2	He	-2.746	-2.4	7465	7.4	2.5	
Zn	66	2	He	-0.299	-13.7	603	12.2	2.5	
As	75	2	He	0.046	37.1	370	8.6	2.5	
Se	78	2	He	-0.077	-122.2	174	5.3	2.5	
B	11	1	nogas	17.401	1.2	95028	3.8	10	CCB Main CR1 Failed
Si	28	1	nogas	-118.144	-17.4	1372195	0.8	5	
Ca	43	1	nogas	21.766	42.1	1707	20.6	100	
Ca	44	1	nogas	-259.640	-3.6	404749	0.7	100	
Fe	56	1	nogas	6.025	168.7	2301580	11.2	100	
Se	77	1	nogas	-3.780	-26.4	15710	1.2	2.5	
Se	82	1	nogas	0.380	63.3	467	16.2	2.5	
Mo	95	1	nogas	0.246	32.9	1773	27.8	2.5	
Sn	118	1	nogas	0.254	24.0	3384	16.2	5	

Continuing Calibration Blank (CCB) Report

Ba	137	1	nogas	0.065	24.3	623	9.3	2.5	
Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Sb	121	2	He	0.716	7.5	4057	4.6	2.5	
P	31	1	nogas	-3.511	-27.1	100049	0.7	10	
La	139	1	nogas	18.812	65.0	100	43.6	2.5	CCB Main CR1 Failed
Au	197	1	nogas	-180.898	-220.0	13	114.6	2.5	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	1182414	4.55	1229805	96.15	70	125	
Ge	72	1	nogas	3390805	1.15	3541557	95.74	70	125	
In	115	1	nogas	3045852	1.99	3006327	101.31	70	125	
Bi	209	1	nogas	2220064	2.27	2153140	103.11	70	125	
Ge	72	2	He	861816	2.05	993327	86.76	70	125	

Continuing Calibration Verification (CCV) Report

Sample Table

Sample Name	CCV
Data File Name	121_CCV.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\121
Acq Date Time	2018-12-10T20:57:29-06:00
Sample Type	CCV
Dilution	1
Comment	
ISTD Ref File Name	019CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Exp Value	%Rec	%Low	%High2	QC Flag
Be	9	1	nogas	96.453	2.139	715199	0.55	100	96.5	90	110	
Na	23	1	nogas	10959.459	4.109	259099772	2.10	10000	109.6	90	110	
Mg	24	1	nogas	10082.589	3.415	153486933	0.38	10000	100.8	90	110	
Al	27	1	nogas	97.953	1.554	1906094	2.66	100	98.0	90	110	
K	39	1	nogas	10093.231	2.546	205640150	1.42	10000	100.9	90	110	
Ti	47	1	nogas	96.795	0.602	190201	1.80	100	96.8	90	110	
V	51	1	nogas	102.897	1.021	2917663	2.49	100	102.9	90	110	
Cr	52	1	nogas	95.066	2.436	2190587	0.84	100	95.1	90	110	
Mn	55	1	nogas	97.625	2.658	2752072	0.93	100	97.6	90	110	
Co	59	1	nogas	94.673	2.760	2329114	1.02	100	94.7	90	110	
Ni	60	1	nogas	95.365	3.235	528257	1.48	100	95.4	90	110	
Cu	63	1	nogas	89.147	2.479	1266744	1.29	100	89.1	90	110	CCV Main CR1-2 Failed
Zn	66	1	nogas	100.225	1.547	445702	1.67	100	100.2	90	110	
As	75	1	nogas	101.433	1.770	620556	0.93	100	101.4	90	110	
Sr	88	1	nogas	102.907	1.590	2917942	0.32	100	102.9	90	110	
Ag	107	1	nogas	97.884	3.598	1399197	2.10	100	97.9	90	110	
Cd	111	1	nogas	96.665	1.819	306423	0.59	100	96.7	90	110	
Sb	121	1	nogas	101.729	3.210	1292383	1.95	100	101.7	90	110	
Tl	205	1	nogas	100.844	6.376	1893917	5.69	100	100.8	90	110	
Pb	208	1	nogas	100.427	1.197	2558847	1.19	100	100.4	90	110	
U	238	1	nogas	105.152	1.953	2619777	0.82	100	105.2	90	110	
[Pb]	206	1	nogas	100.622	4.226	643101	3.34	100	100.6	90	110	
[Pb]	207	1	nogas	98.526	2.645	563488	1.31	100	98.5	90	110	
Na	23	2	He	10574.949	2.044	15523230	1.22	10000	105.7	90	110	
Mg	24	2	He	9796.298	3.257	8033579	2.09	10000	98.0	90	110	
Al	27	2	He	97.392	3.461	46153	2.84	100	97.4	90	110	
K	39	2	He	9102.344	0.228	8692931	0.22	10000	91.0	90	110	
Ca	43	2	He	10026.309	3.919	24643	2.85	10000	100.3	90	110	
Ca	44	2	He	9916.817	2.325	417845	1.49	10000	99.2	90	110	
V	51	2	He	99.013	0.740	601604	1.12	100	99.0	90	110	
Cr	52	2	He	100.570	1.375	655414	1.57	100	100.6	90	110	
Mn	55	2	He	97.804	2.990	461429	2.62	100	97.8	90	110	
Fe	56	2	He	9913.873	3.298	56808189	2.42	10000	99.1	90	110	
Co	59	2	He	100.473	3.001	904148	2.26	100	100.5	90	110	
Ni	60	2	He	100.744	1.485	232192	0.33	100	100.7	90	110	
Cu	63	2	He	94.674	2.699	584595	1.70	100	94.7	90	110	
Zn	66	2	He	96.363	1.045	139764	0.74	100	96.4	90	110	
As	75	2	He	101.008	2.005	143034	1.39	100	101.0	90	110	
Se	78	2	He	97.073	1.727	11256	1.34	100	97.1	90	110	
B	11	1	nogas	560.097	1.327	2481446	2.52	500	112.0	90	110	CCV Main CR1-2 Failed
Si	28	1	nogas	4905.002	2.853	6715519	0.98	5000	98.1	90	110	
Ca	43	1	nogas	10018.531	2.178	369020	1.83	10000	100.2	90	110	
Ca	44	1	nogas	9919.917	2.336	6248565	2.40	10000	99.2	90	110	
Fe	56	1	nogas	9545.600	1.446	233678547	2.22	10000	95.5	90	110	
Se	77	1	nogas	126.312	2.845	48545	2.40	100	126.3	90	110	CCV Main CR1-2 Failed
Se	82	1	nogas	96.721	1.831	28366	0.12	100	96.7	90	110	
Mo	95	1	nogas	98.106	2.136	579666	1.69	100	98.1	90	110	
Sn	118	1	nogas	96.399	0.585	820184	0.68	100	96.4	90	110	
Ba	137	1	nogas	97.285	1.830	400074	1.32	100	97.3	90	110	
Sb	121	2	He	99.552	3.239	473603	2.63	100	99.6	90	110	
Li	7	1	nogas	97.965	5.098	1616512	2.96	100	98.0	90	110	
P	31	1	nogas	453.271	2.050	933747	0.51	500	90.7	90	110	
La	139	1	nogas	223.997	71.570	777	68.67	100	224.0	90	110	CCV Main CR1-2 Failed
Au	197	1	nogas	188.562	297.953	27	78.06	100	188.6	90	110	CCV Main CR1-2 Failed

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	1055374	2.49	1229805	85.82	70	125	
Ge	72	1	nogas	3335671	1.79	3541557	94.19	70	125	
In	115	1	nogas	2902955	1.26	3006327	96.56	70	125	
Bi	209	1	nogas	2108148	1.71	2153140	97.91	70	125	

Continuing Calibration Verification (CCV) Report

Ge	72	2	He	816833	1.18	993327	82.23	70	125	

Continuing Calibration Blank (CCB) Report

Sample Table

Sample Name	CCB
Data File Name	122_CCB.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\121
Acq Date Time	2018-12-10T20:59:34-06:00
Sample Type	CCB
Dilution	1
Comment	
ISTD Ref File Name	019CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Be	9	1	nogas	0.046	34.2	423	32.2	1	
Na	23	1	nogas	230.614	6.9	6308068	1.0	100	CCB Main CR1 Failed
Mg	24	1	nogas	12.014	20.8	200523	14.6	100	
Al	27	1	nogas	-0.594	-16.8	26028	5.4	5	
K	39	1	nogas	3.041	330.0	8111079	1.0	100	
Ti	47	1	nogas	0.005	978.1	470	22.2	2.5	
V	51	1	nogas	2.990	8.5	291764	0.9	2.5	CCB Main CR1 Failed
Cr	52	1	nogas	-0.046	-187.3	39576	2.9	2.5	
Mn	55	1	nogas	0.206	33.3	29307	4.5	2.5	
Co	59	1	nogas	0.043	49.6	2477	19.6	2.5	
Ni	60	1	nogas	0.556	8.3	2337	12.4	2.5	
Cu	63	1	nogas	-4.973	-0.5	8482	4.8	2.5	
Zn	66	1	nogas	0.569	7.5	2707	8.1	2.5	
As	75	1	nogas	2.472	11.9	64675	1.5	2.5	
Sr	88	1	nogas	0.303	15.1	9776	11.5	2.5	
Ag	107	1	nogas	0.028	30.4	543	21.6	2.5	
Cd	111	1	nogas	0.040	40.8	153	35.9	1	
Sb	121	1	nogas	1.022	24.3	14663	20.0	2.5	
Tl	205	1	nogas	0.542	52.0	11298	51.7	1	
Pb	208	1	nogas	-0.021	-142.0	3477	22.2	2.5	
U	238	1	nogas	0.165	64.5	4438	65.2	2.5	
[Pb]	206	1	nogas	-0.035	-133.7	953	35.0	2.5	
[Pb]	207	1	nogas	-0.020	-23.9	787	6.3	2.5	
Na	23	2	He	249.835	1.6	434100	0.4	100	CCB Main CR1 Failed
Mg	24	2	He	10.930	6.9	9626	5.1	100	
Al	27	2	He	-0.602	-20.6	623	8.8	5	
K	39	2	He	-25.860	-7.2	201773	0.9	100	
Ca	43	2	He	36.284	27.5	100	26.5	100	
Ca	44	2	He	24.610	28.0	4784	6.3	100	
V	51	2	He	-0.255	-4.2	3502	3.1	2.5	
Cr	52	2	He	-0.016	-373.5	5051	5.8	2.5	
Mn	55	2	He	-0.027	-172.7	2287	8.1	2.5	
Fe	56	2	He	4.347	2.3	38377	3.3	100	
Co	59	2	He	0.038	34.5	707	15.5	2.5	
Ni	60	2	He	-0.467	-5.0	237	24.4	2.5	
Cu	63	2	He	-3.486	-1.5	2740	10.6	2.5	
Zn	66	2	He	-0.254	-27.0	650	14.8	2.5	
As	75	2	He	0.073	5.6	398	3.2	2.5	
Se	78	2	He	0.353	87.9	219	17.3	2.5	
B	11	1	nogas	45.279	2.4	235203	3.1	10	CCB Main CR1 Failed
Si	28	1	nogas	-40.857	-55.9	1476874	0.9	5	
Ca	43	1	nogas	52.811	11.3	2904	5.5	100	
Ca	44	1	nogas	-294.188	-8.4	389920	1.7	100	
Fe	56	1	nogas	15.654	70.3	2571482	8.5	100	
Se	77	1	nogas	14.569	9.7	20745	1.0	2.5	CCB Main CR1 Failed
Se	82	1	nogas	0.013	554.9	363	7.9	2.5	
Mo	95	1	nogas	0.252	40.9	1823	31.8	2.5	
Sn	118	1	nogas	0.256	14.6	3417	11.0	5	

Continuing Calibration Blank (CCB) Report

Ba	137	1	nogas	0.043	13.5	533	5.7	2.5	
Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Sb	121	2	He	0.601	9.5	3384	9.3	2.5	
P	31	1	nogas	-9.374	-20.4	90395	2.1	10	
La	139	1	nogas	14.909	46.3	87	29.0	2.5	CCB Main CR1 Failed
Au	197	1	nogas	-20.525	-68.5	20	0.0	2.5	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	1193515	1.01	1229805	97.05	70	125	
Ge	72	1	nogas	3439553	2.22	3541557	97.12	70	125	
In	115	1	nogas	3063882	1.13	3006327	101.91	70	125	
Bi	209	1	nogas	2234904	2.75	2153140	103.80	70	125	
Ge	72	2	He	836160	1.81	993327	84.18	70	125	

Continuing Calibration Verification (CCV) Report

Sample Table

Sample Name	CCV
Data File Name	127_CCV.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\121
Acq Date Time	2018-12-10T21:09:56-06:00
Sample Type	CCV
Dilution	1
Comment	
ISTD Ref File Name	019CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Exp Value	%Rec	%Low	%High2	QC Flag
Be	9	1	nogas	94.883	5.414	687543	0.49	100	94.9	90	110	
Na	23	1	nogas	10503.197	2.018	238904322	1.67	10000	105.0	90	110	
Mg	24	1	nogas	10293.178	4.718	150650120	1.96	10000	102.9	90	110	
Al	27	1	nogas	101.831	4.205	1854474	2.77	100	101.8	90	110	
K	39	1	nogas	10230.289	1.924	195206696	0.47	10000	102.3	90	110	
Ti	47	1	nogas	100.040	3.791	184094	1.87	100	100.0	90	110	
V	51	1	nogas	105.300	4.081	2792038	2.58	100	105.3	90	110	
Cr	52	1	nogas	102.194	5.032	2202992	3.13	100	102.2	90	110	
Mn	55	1	nogas	107.865	4.687	2846480	3.22	100	107.9	90	110	
Co	59	1	nogas	100.062	4.691	2305954	2.79	100	100.1	90	110	
Ni	60	1	nogas	98.381	3.315	510648	1.42	100	98.4	90	110	
Cu	63	1	nogas	92.061	2.132	1223550	1.67	100	92.1	90	110	
Zn	66	1	nogas	99.601	1.191	415065	2.23	100	99.6	90	110	
As	75	1	nogas	100.044	2.084	574104	0.99	100	100.0	90	110	
Sr	88	1	nogas	103.765	3.027	2757468	3.55	100	103.8	90	110	
Ag	107	1	nogas	103.561	5.684	1387018	4.81	100	103.6	90	110	
Cd	111	1	nogas	96.918	1.842	296614	2.73	100	96.9	90	110	
Sb	121	1	nogas	106.833	3.003	1271661	1.60	100	106.8	90	110	
Tl	205	1	nogas	102.854	0.884	1853401	1.37	100	102.9	90	110	
Pb	208	1	nogas	97.739	0.623	2490452	0.62	100	97.7	90	110	
U	238	1	nogas	103.663	2.372	2477424	2.03	100	103.7	90	110	
[Pb]	206	1	nogas	102.225	1.849	626787	1.55	100	102.2	90	110	
[Pb]	207	1	nogas	100.063	1.838	549008	1.80	100	100.1	90	110	
Na	23	2	He	10189.196	2.943	14149079	2.98	10000	101.9	90	110	
Mg	24	2	He	9906.923	2.000	7685222	2.00	10000	99.1	90	110	
Al	27	2	He	96.196	1.994	43133	2.51	100	96.2	90	110	
K	39	2	He	8632.386	0.189	8255772	0.18	10000	86.3	90	110	CCV Main CR1-2 Failed
Ca	43	2	He	10029.144	1.104	23318	0.57	10000	100.3	90	110	
Ca	44	2	He	9805.633	2.061	390804	1.49	10000	98.1	90	110	
V	51	2	He	100.422	1.919	576957	1.46	100	100.4	90	110	
Cr	52	2	He	102.747	1.737	633140	1.40	100	102.7	90	110	
Mn	55	2	He	100.520	1.319	448486	1.22	100	100.5	90	110	
Fe	56	2	He	10059.449	1.328	54525074	1.36	10000	100.6	90	110	
Co	59	2	He	101.639	1.688	865129	1.54	100	101.6	90	110	
Ni	60	2	He	101.388	1.972	220999	1.59	100	101.4	90	110	
Cu	63	2	He	95.362	2.949	556762	2.27	100	95.4	90	110	
Zn	66	2	He	98.239	1.766	134732	1.18	100	98.2	90	110	
As	75	2	He	99.630	0.643	133443	0.07	100	99.6	90	110	
Se	78	2	He	94.225	1.434	10338	1.13	100	94.2	90	110	
B	11	1	nogas	514.622	5.677	2227925	1.21	500	102.9	90	110	
Si	28	1	nogas	4830.276	2.276	6217884	0.52	5000	96.6	90	110	
Ca	43	1	nogas	10195.923	3.584	351776	1.66	10000	102.0	90	110	
Ca	44	1	nogas	9876.418	3.162	5829775	0.92	10000	98.8	90	110	
Fe	56	1	nogas	10335.634	3.272	236820189	1.22	10000	103.4	90	110	
Se	77	1	nogas	104.834	0.905	40368	1.72	100	104.8	90	110	
Se	82	1	nogas	98.354	3.524	27040	5.43	100	98.4	90	110	
Mo	95	1	nogas	100.797	2.261	558000	1.11	100	100.8	90	110	
Sn	118	1	nogas	97.685	4.133	801779	0.59	100	97.7	90	110	
Ba	137	1	nogas	98.296	4.967	389906	1.40	100	98.3	90	110	
Sb	121	2	He	100.715	2.417	453163	1.90	100	100.7	90	110	
Li	7	1	nogas	99.910	4.405	1610694	1.65	100	99.9	90	110	
P	31	1	nogas	466.250	2.542	897140	1.20	500	93.3	90	110	
La	139	1	nogas	86.252	27.522	307	21.71	100	86.3	90	110	CCV Main CR1-2 Failed
Au	197	1	nogas	-153.291	-209.130	13	86.60	100	-153.3	90	110	CCV Main CR1-2 Failed

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	1033109	5.68	1229805	84.01	70	125	
Ge	72	1	nogas	3125617	2.02	3541557	88.26	70	125	
In	115	1	nogas	2803726	4.39	3006327	93.26	70	125	
Bi	209	1	nogas	2021944	0.49	2153140	93.91	70	125	

Continuing Calibration Verification (CCV) Report

Ge	72	2	He	772499	0.58	993327	77.77	70	125	

Continuing Calibration Blank (CCB) Report

Sample Table

Sample Name	CCB
Data File Name	128_CCB.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\121
Acq Date Time	2018-12-10T21:12:00-06:00
Sample Type	CCB
Dilution	1
Comment	
ISTD Ref File Name	019CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Be	9	1	nogas	0.050	46.1	413	34.9	1	
Na	23	1	nogas	94.466	5.8	2664505	2.4	100	
Mg	24	1	nogas	8.110	20.3	127729	17.1	100	
Al	27	1	nogas	-0.613	-11.3	23839	5.3	5	
K	39	1	nogas	8.253	56.0	7625610	0.4	100	
Ti	47	1	nogas	0.030	66.6	483	7.8	2.5	
V	51	1	nogas	1.164	18.9	224774	3.5	2.5	
Cr	52	1	nogas	-0.206	-34.6	33280	5.2	2.5	
Mn	55	1	nogas	1.145	4.5	52344	1.7	2.5	
Co	59	1	nogas	0.051	42.9	2500	20.4	2.5	
Ni	60	1	nogas	0.381	3.7	1240	6.5	2.5	
Cu	63	1	nogas	-4.662	-1.3	11844	6.0	2.5	
Zn	66	1	nogas	0.519	5.8	2300	5.8	2.5	
As	75	1	nogas	0.887	43.7	51463	3.1	2.5	
Sr	88	1	nogas	0.192	4.9	6061	3.2	2.5	
Ag	107	1	nogas	0.032	23.3	557	18.0	2.5	
Cd	111	1	nogas	0.056	23.8	193	20.9	1	
Sb	121	1	nogas	1.038	26.2	13856	24.3	2.5	
Tl	205	1	nogas	0.558	50.9	10771	49.5	1	
Pb	208	1	nogas	-0.020	-141.6	3504	20.9	2.5	
U	238	1	nogas	0.170	58.6	4234	58.3	2.5	
[Pb]	206	1	nogas	-0.036	-86.7	877	22.9	2.5	
[Pb]	207	1	nogas	-0.021	-148.6	727	24.2	2.5	
Na	23	2	He	114.942	2.4	217177	0.5	100	CCB Main CR1 Failed
Mg	24	2	He	6.997	4.7	5921	4.3	100	
Al	27	2	He	-0.586	-28.7	590	11.7	5	
K	39	2	He	-36.940	-0.2	191466	0.0	100	
Ca	43	2	He	29.106	32.5	77	30.1	100	
Ca	44	2	He	5.517	89.0	3710	4.5	100	
V	51	2	He	-0.355	-6.6	2697	4.2	2.5	
Cr	52	2	He	-0.017	-251.2	4724	6.7	2.5	
Mn	55	2	He	0.919	5.8	6395	3.6	2.5	
Fe	56	2	He	4.875	10.2	38765	5.9	100	
Co	59	2	He	0.040	15.0	677	8.9	2.5	
Ni	60	2	He	-0.444	-3.9	270	14.8	2.5	
Cu	63	2	He	-3.149	-1.0	4481	5.2	2.5	
Zn	66	2	He	-0.264	-25.5	593	14.3	2.5	
As	75	2	He	0.031	133.4	314	16.3	2.5	
Se	78	2	He	0.316	99.3	201	16.0	2.5	
B	11	1	nogas	32.827	10.6	159291	3.0	10	CCB Main CR1 Failed
Si	28	1	nogas	6.937	383.0	1419309	0.8	5	CCB Main CR1 Failed
Ca	43	1	nogas	32.993	3.1	2000	1.0	100	
Ca	44	1	nogas	-297.313	-1.9	360253	1.0	100	
Fe	56	1	nogas	10.356	70.5	2266876	7.8	100	
Se	77	1	nogas	3.308	93.2	16508	3.6	2.5	CCB Main CR1 Failed
Se	82	1	nogas	0.421	28.0	450	8.0	2.5	
Mo	95	1	nogas	0.255	39.9	1720	33.7	2.5	
Sn	118	1	nogas	0.247	26.3	3104	18.2	5	

Continuing Calibration Blank (CCB) Report

Ba	137	1	nogas	0.076	44.0	627	19.7	2.5	
Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Sb	121	2	He	0.624	13.7	3267	12.1	2.5	
P	31	1	nogas	-4.244	-6.3	92893	0.6	10	
La	139	1	nogas	115.380	148.7	407	137.0	2.5	CCB Main CR1 Failed
Au	197	1	nogas	-73.336	-215.3	17	34.6	2.5	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	1104108	7.03	1229805	89.78	70	125	
Ge	72	1	nogas	3191404	1.11	3541557	90.11	70	125	
In	115	1	nogas	2848650	2.84	3006327	94.76	70	125	
Bi	209	1	nogas	2082868	0.93	2153140	96.74	70	125	
Ge	72	2	He	782135	1.35	993327	78.74	70	125	

Calibration Blank Report

Sample Table

Sample Name	CAL BLK
Data File Name	132CALB.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\121
Acq Date Time	2018-12-10T21:20:18-06:00
Sample Type	CalBlk
Level	1
Dilution	1
Comment	

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD
Be	9	1	nogas	50	40.00
Na	23	1	nogas	1656557	0.00
Mg	24	1	nogas	41989	0.03
Al	27	1	nogas	20989	0.01
K	39	1	nogas	7714378	0.00
Ti	47	1	nogas	437	1.32
V	51	1	nogas	230344	0.00
Cr	52	1	nogas	33153	0.00
Mn	55	1	nogas	35551	0.01
Co	59	1	nogas	1110	0.57
Ni	60	1	nogas	810	0.40
Cu	63	1	nogas	15116	0.03
Zn	66	1	nogas	1340	0.28
As	75	1	nogas	50721	0.01
Sr	88	1	nogas	3567	0.10
Ag	107	1	nogas	83	8.31
Cd	111	1	nogas	30	111.11
Sb	121	1	nogas	1053	0.76
Tl	205	1	nogas	417	4.62
Pb	208	1	nogas	1603	0.56
[Pb]	206	1	nogas	380	5.41
[Pb]	207	1	nogas	363	3.15
Na	23	2	He	152547	0.00
Mg	24	2	He	2397	0.28
Al	27	2	He	577	1.06
K	39	2	He	190057	0.00
Ca	43	2	He	70	40.82
Ca	44	2	He	3160	0.35
V	51	2	He	2636	0.11
Cr	52	2	He	4597	0.05
Mn	55	2	He	3757	0.10
Fe	56	2	He	13091	0.05
Co	59	2	He	310	3.75
Ni	60	2	He	103	53.25
Cu	63	2	He	5818	0.06
Zn	66	2	He	343	11.58
As	75	2	He	266	4.92
Se	78	2	He	217	3.23
B	11	1	nogas	118775	0.00
Si	28	1	nogas	1375551	0.00
Ca	43	1	nogas	1570	1.04
Ca	44	1	nogas	346445	0.00

Calibration Blank Report

Name	Mass	Tune Step	Tune Mode	CPS	%RSD
Fe	56	1	nogas	1956414	0.00
Se	77	1	nogas	16564	0.03
Se	82	1	nogas	480	2.64
Mo	95	1	nogas	150	23.52
Sn	118	1	nogas	1000	0.70
Ba	137	1	nogas	727	1.70
Sb	121	2	He	380	6.04
Li	7	1	nogas	98157	0.00
P	31	1	nogas	98907	0.00
La	139	1	nogas	43	134.02

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD
Li	6	1	nogas	1171766	2.42
Ge	72	1	nogas	3233065	0.97
In	115	1	nogas	2958353	2.40
Bi	209	1	nogas	2061475	3.55
Ge	72	2	He	810035	0.70

Calibration Standard Report

Sample Table

Sample Name	2/10/200
Data File Name	133CALS.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\121
Acq Date Time	2018-12-10T21:22:20-06:00
Sample Type	CalStd
Level	2
Dilution	1
Comment	
ISTD Ref File Name	132CALB.d
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD
Be	9	1	nogas	13375	0.02
Na	23	1	nogas	6369549	0.00
Mg	24	1	nogas	3260445	0.00
Al	27	1	nogas	54395	0.00
K	39	1	nogas	11651533	0.00
Ti	47	1	nogas	4010	0.08
V	51	1	nogas	274564	0.00
Cr	52	1	nogas	77756	0.00
Mn	55	1	nogas	91652	0.00
Co	59	1	nogas	48424	0.00
Ni	60	1	nogas	11384	0.04
Cu	63	1	nogas	41895	0.01
Zn	66	1	nogas	10180	0.02
As	75	1	nogas	61908	0.00
Sr	88	1	nogas	60018	0.00
Ag	107	1	nogas	28710	0.00
Cd	111	1	nogas	6195	0.05
Sb	121	1	nogas	27475	0.01
Tl	205	1	nogas	37504	0.01
Pb	208	1	nogas	52381	0.00
[Pb]	206	1	nogas	12935	0.02
[Pb]	207	1	nogas	11264	0.03
Na	23	2	He	443743	0.00
Mg	24	2	He	168330	0.00
Al	27	2	He	1317	0.15
K	39	2	He	363906	0.00
Ca	43	2	He	520	2.43
Ca	44	2	He	10993	0.02
V	51	2	He	14390	0.02
Cr	52	2	He	17258	0.01
Mn	55	2	He	12791	0.03
Fe	56	2	He	1161662	0.00
Co	59	2	He	18389	0.01
Ni	60	2	He	4781	0.11
Cu	63	2	He	17682	0.00
Zn	66	2	He	3204	0.05
As	75	2	He	3046	0.07
Se	78	2	He	401	2.52
B	11	1	nogas	155757	0.00
Si	28	1	nogas	1516523	0.00

Calibration Standard Report

Ca	43	1	nogas	8499	0.06
Ca	44	1	nogas	464419	0.00
Name	Mass	Tune Step	Tune Mode	CPS	%RSD
Fe	56	1	nogas	6643367	0.00
Se	77	1	nogas	17072	0.01
Se	82	1	nogas	837	1.15
Mo	95	1	nogas	11607	0.03
Sn	118	1	nogas	17506	0.02
Ba	137	1	nogas	8285	0.04
Sb	121	2	He	9763	0.04
P	31	1	nogas	114597	0.00
La	139	1	nogas	53	101.49

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	1148787	4.67	1171766	98.04	70	125	
Ge	72	1	nogas	3290283	2.66	3233065	101.77	70	125	
In	115	1	nogas	2997832	2.44	2958353	101.33	70	125	
Bi	209	1	nogas	2126686	5.16	2061475	103.16	70	125	
Ge	72	2	He	804889	1.09	810035	99.36	70	125	

Calibration Standard Report

Sample Table

Sample Name	5/25/500
Data File Name	134CALS.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\121
Acq Date Time	2018-12-10T21:24:24-06:00
Sample Type	CalStd
Level	3
Dilution	1
Comment	
ISTD Ref File Name	132CALB.d
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD
Be	9	1	nogas	34832	0.01
Na	23	1	nogas	13348913	0.00
Mg	24	1	nogas	7899016	0.00
Al	27	1	nogas	112157	0.00
K	39	1	nogas	17375545	0.00
Ti	47	1	nogas	10827	0.11
V	51	1	nogas	358841	0.00
Cr	52	1	nogas	148632	0.00
Mn	55	1	nogas	172193	0.00
Co	59	1	nogas	117743	0.00
Ni	60	1	nogas	27327	0.00
Cu	63	1	nogas	79210	0.00
Zn	66	1	nogas	22157	0.01
As	75	1	nogas	79255	0.00
Sr	88	1	nogas	145268	0.00
Ag	107	1	nogas	69336	0.00
Cd	111	1	nogas	15097	0.01
Sb	121	1	nogas	65500	0.00
Tl	205	1	nogas	92531	0.00
Pb	208	1	nogas	131803	0.00
[Pb]	206	1	nogas	32025	0.01
[Pb]	207	1	nogas	29150	0.01
Na	23	2	He	894829	0.00
Mg	24	2	He	422787	0.00
Al	27	2	He	2800	0.18
K	39	2	He	619491	0.00
Ca	43	2	He	1110	1.62
Ca	44	2	He	23669	0.01
V	51	2	He	32247	0.00
Cr	52	2	He	37114	0.01
Mn	55	2	He	26586	0.01
Fe	56	2	He	2808440	0.00
Co	59	2	He	44962	0.00
Ni	60	2	He	11577	0.03
Cu	63	2	He	35247	0.00
Zn	66	2	He	7265	0.04
As	75	2	He	6981	0.04
Se	78	2	He	736	0.30
B	11	1	nogas	211892	0.00
Si	28	1	nogas	1673937	0.00

Calibration Standard Report

Ca	43	1	nogas	21573	0.11
Ca	44	1	nogas	640199	0.00
Name	Mass	Tune Step	Tune Mode	CPS	%RSD
Fe	56	1	nogas	13592324	0.00
Se	77	1	nogas	18263	0.01
Se	82	1	nogas	1760	0.14
Mo	95	1	nogas	28874	0.01
Sn	118	1	nogas	42255	0.01
Ba	137	1	nogas	19852	0.01
Sb	121	2	He	22788	0.00
P	31	1	nogas	142256	0.00
La	139	1	nogas	73	42.94

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	1162133	2.42	1171766	99.18	70	125	
Ge	72	1	nogas	3279639	1.90	3233065	101.44	70	125	
In	115	1	nogas	2943060	3.20	2958353	99.48	70	125	
Bi	209	1	nogas	2155140	4.78	2061475	104.54	70	125	
Ge	72	2	He	808101	1.44	810035	99.76	70	125	

Calibration Standard Report

Sample Table

Sample Name	10/50/1000
Data File Name	135CALS.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\121
Acq Date Time	2018-12-10T21:26:28-06:00
Sample Type	CalStd
Level	4
Dilution	1
Comment	
ISTD Ref File Name	132CALB.d
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD
Be	9	1	nogas	67130	0.00
Na	23	1	nogas	24792705	0.00
Mg	24	1	nogas	15278293	0.00
Al	27	1	nogas	209579	0.00
K	39	1	nogas	27168466	0.00
Ti	47	1	nogas	18226	0.00
V	51	1	nogas	491727	0.00
Cr	52	1	nogas	252244	0.00
Mn	55	1	nogas	330636	0.00
Co	59	1	nogas	231885	0.00
Ni	60	1	nogas	53318	0.01
Cu	63	1	nogas	140775	0.00
Zn	66	1	nogas	43923	0.00
As	75	1	nogas	105469	0.00
Sr	88	1	nogas	286095	0.00
Ag	107	1	nogas	142153	0.00
Cd	111	1	nogas	30236	0.01
Sb	121	1	nogas	125700	0.00
Tl	205	1	nogas	182926	0.00
Pb	208	1	nogas	257144	0.00
[Pb]	206	1	nogas	62458	0.00
[Pb]	207	1	nogas	56646	0.00
Na	23	2	He	1617547	0.00
Mg	24	2	He	812313	0.00
Al	27	2	He	5001	0.09
K	39	2	He	1066041	0.00
Ca	43	2	He	2314	0.49
Ca	44	2	He	42776	0.00
V	51	2	He	62291	0.00
Cr	52	2	He	68286	0.00
Mn	55	2	He	52237	0.00
Fe	56	2	He	5530173	0.00
Co	59	2	He	88516	0.00
Ni	60	2	He	22871	0.01
Cu	63	2	He	64527	0.00
Zn	66	2	He	14699	0.04
As	75	2	He	13963	0.01
Se	78	2	He	1233	0.39
B	11	1	nogas	313967	0.00
Si	28	1	nogas	1904501	0.00

Calibration Standard Report

Ca	43	1	nogas	36840	0.00
Ca	44	1	nogas	916610	0.00
Name	Mass	Tune Step	Tune Mode	CPS	%RSD
Fe	56	1	nogas	24853691	0.00
Se	77	1	nogas	20198	0.01
Se	82	1	nogas	2990	0.27
Mo	95	1	nogas	56343	0.01
Sn	118	1	nogas	81259	0.00
Ba	137	1	nogas	40358	0.01
Sb	121	2	He	45780	0.00
P	31	1	nogas	186095	0.00
La	139	1	nogas	87	33.51

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	1141882	2.78	1171766	97.45	70	125	
Ge	72	1	nogas	3303478	3.55	3233065	102.18	70	125	
In	115	1	nogas	2901413	3.19	2958353	98.08	70	125	
Bi	209	1	nogas	2144168	3.55	2061475	104.01	70	125	
Ge	72	2	He	813900	0.93	810035	100.48	70	125	

Calibration Standard Report

Sample Table

Sample Name	100/500/10K
Data File Name	136CALS.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\121
Acq Date Time	2018-12-10T21:28:31-06:00
Sample Type	CalStd
Level	5
Dilution	1
Comment	
ISTD Ref File Name	132CALB.d
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD
Be	9	1	nogas	708918	0.00
Na	23	1	nogas	239318264	0.00
Mg	24	1	nogas	154747316	0.00
Al	27	1	nogas	1913956	0.00
K	39	1	nogas	201423455	0.00
Ti	47	1	nogas	189011	0.00
V	51	1	nogas	2778563	0.00
Cr	52	1	nogas	2183332	0.00
Mn	55	1	nogas	2768287	0.00
Co	59	1	nogas	2277159	0.00
Ni	60	1	nogas	510058	0.00
Cu	63	1	nogas	1250824	0.00
Zn	66	1	nogas	428575	0.00
As	75	1	nogas	582611	0.00
Sr	88	1	nogas	2869078	0.00
Ag	107	1	nogas	1379275	0.00
Cd	111	1	nogas	300914	0.00
Sb	121	1	nogas	1270308	0.00
Tl	205	1	nogas	1889794	0.00
Pb	208	1	nogas	2541099	0.00
[Pb]	206	1	nogas	634318	0.00
[Pb]	207	1	nogas	559409	0.00
Na	23	2	He	14853822	0.00
Mg	24	2	He	8216399	0.00
Al	27	2	He	44112	0.00
K	39	2	He	8638587	0.00
Ca	43	2	He	23936	0.00
Ca	44	2	He	406490	0.00
V	51	2	He	602343	0.00
Cr	52	2	He	671834	0.00
Mn	55	2	He	464117	0.00
Fe	56	2	He	55464134	0.00
Co	59	2	He	891455	0.00
Ni	60	2	He	227321	0.00
Cu	63	2	He	584011	0.00
Zn	66	2	He	141569	0.00
As	75	2	He	138886	0.00
Se	78	2	He	10844	0.03
B	11	1	nogas	2242263	0.00
Si	28	1	nogas	6461019	0.00

Calibration Standard Report

Ca	43	1	nogas	360667	0.00
Ca	44	1	nogas	6066129	0.00
Name	Mass	Tune Step	Tune Mode	CPS	%RSD
Fe	56	1	nogas	232052289	0.00
Se	77	1	nogas	41097	0.01
Se	82	1	nogas	28953	0.00
Mo	95	1	nogas	570258	0.00
Sn	118	1	nogas	801582	0.00
Ba	137	1	nogas	394072	0.00
Sb	121	2	He	467969	0.00
P	31	1	nogas	934022	0.00
La	139	1	nogas	380	4.99

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	1076082	5.70	1171766	91.83	70	125	
Ge	72	1	nogas	3250742	2.71	3233065	100.55	70	125	
In	115	1	nogas	2793850	3.47	2958353	94.44	70	125	
Bi	209	1	nogas	2094723	2.41	2061475	101.61	70	125	
Ge	72	2	He	806515	0.80	810035	99.57	70	125	

Calibration Standard Report

Sample Table

Sample Name	200/1000/20K
Data File Name	137CALS.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\121
Acq Date Time	2018-12-10T21:30:36-06:00
Sample Type	CalStd
Level	6
Dilution	1
Comment	
ISTD Ref File Name	132CALB.d
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD
Be	9	1	nogas	1380233	0.00
Na	23	1	nogas	469382227	0.00
Mg	24	1	nogas	303328815	0.00
Al	27	1	nogas	3591851	0.00
K	39	1	nogas	378799533	0.00
Ti	47	1	nogas	370955	0.00
V	51	1	nogas	5226243	0.00
Cr	52	1	nogas	4337629	0.00
Mn	55	1	nogas	5412668	0.00
Co	59	1	nogas	4463821	0.00
Ni	60	1	nogas	1017117	0.00
Cu	63	1	nogas	2464249	0.00
Zn	66	1	nogas	833502	0.00
As	75	1	nogas	1113067	0.00
Sr	88	1	nogas	5595267	0.00
Ag	107	1	nogas	2686315	0.00
Cd	111	1	nogas	578781	0.00
Sb	121	1	nogas	2589195	0.00
Tl	205	1	nogas	3701900	0.00
Pb	208	1	nogas	5023409	0.00
[Pb]	206	1	nogas	1247924	0.00
[Pb]	207	1	nogas	1103283	0.00
Na	23	2	He	28601453	0.00
Mg	24	2	He	15719288	0.00
Al	27	2	He	87066	0.00
K	39	2	He	16782509	0.00
Ca	43	2	He	46702	0.00
Ca	44	2	He	782865	0.00
V	51	2	He	1191175	0.00
Cr	52	2	He	1281351	0.00
Mn	55	2	He	880471	0.00
Fe	56	2	He	107109075	0.00
Co	59	2	He	1791767	0.00
Ni	60	2	He	450978	0.00
Cu	63	2	He	1140342	0.00
Zn	66	2	He	273886	0.00
As	75	2	He	276043	0.00
Se	78	2	He	21561	0.01
B	11	1	nogas	4305824	0.00
Si	28	1	nogas	11340207	0.00

Calibration Standard Report

Ca	43	1	nogas	702064	0.00
Ca	44	1	nogas	11360077	0.00
Name	Mass	Tune Step	Tune Mode	CPS	%RSD
Fe	56	1	nogas	470600377	0.00
Se	77	1	nogas	66812	0.00
Se	82	1	nogas	54810	0.00
Mo	95	1	nogas	1119556	0.00
Sn	118	1	nogas	1667640	0.00
Ba	137	1	nogas	780756	0.00
Sb	121	2	He	956851	0.00
P	31	1	nogas	1758777	0.00
La	139	1	nogas	613	1.62

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	975980	4.46	1171766	83.29	70	125	
Ge	72	1	nogas	3169936	2.57	3233065	98.05	70	125	
In	115	1	nogas	2770190	0.14	2958353	93.64	70	125	
Bi	209	1	nogas	2022181	2.47	2061475	98.09	70	125	
Ge	72	2	He	794815	1.98	810035	98.12	70	125	

Initial Calibration Verification (ICV) Report

Sample Table

Sample Name	ICCV
Data File Name	138_ICV.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\121
Acq Date Time	2018-12-10T21:32:42-06:00
Sample Type	ICV
Dilution	1
Comment	
ISTD Ref File Name	132CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Exp Value	%Rec	%Low	%High	QC Flag
Be	9	1	nogas	97.438	0.729	699995	0.97	100	97.4	90	110	
Na	23	1	nogas	9988.377	2.167	245334747	0.65	10000	99.9	90	110	
Mg	24	1	nogas	9938.051	2.893	157344954	1.45	10000	99.4	90	110	
Al	27	1	nogas	103.918	1.585	1906100	0.78	100	103.9	90	110	
K	39	1	nogas	10526.700	0.892	205447805	0.21	10000	105.3	90	110	
Ti	47	1	nogas	101.236	2.141	189344	2.21	100	101.2	90	110	
V	51	1	nogas	99.140	1.264	2725907	1.92	100	99.1	90	110	
Cr	52	1	nogas	101.264	0.479	2220685	1.26	100	101.3	90	110	
Mn	55	1	nogas	100.661	4.909	2762592	4.91	100	100.7	90	110	
Co	59	1	nogas	103.765	1.460	2335581	2.24	100	103.8	90	110	
Ni	60	1	nogas	102.878	0.863	525681	1.65	100	102.9	90	110	
Cu	63	1	nogas	100.263	1.038	1250305	1.55	100	100.3	90	110	
Zn	66	1	nogas	100.623	1.323	423737	1.77	100	100.6	90	110	
As	75	1	nogas	99.897	0.982	582669	0.76	100	99.9	90	110	
Sr	88	1	nogas	98.817	1.104	2791110	1.81	100	98.8	90	110	
Ag	107	1	nogas	106.276	1.627	1440872	1.92	100	106.3	90	110	
Cd	111	1	nogas	103.925	1.459	306987	0.39	100	103.9	90	110	
Sb	121	1	nogas	103.053	2.414	1334974	2.00	100	103.1	90	110	
Tl	205	1	nogas	101.969	1.609	1971832	1.89	100	102.0	90	110	
Pb	208	1	nogas	102.511	2.583	2581537	2.58	100	102.5	90	110	
U	238	1	nogas	104.054	3.218	2566553	3.12	100	104.1	90	110	
[Pb]	206	1	nogas	101.152	0.768	659000	1.00	100	101.2	90	110	
[Pb]	207	1	nogas	96.992	0.800	558410	0.90	100	97.0	90	110	
Na	23	2	He	10087.057	0.683	14898063	0.50	10000	100.9	90	110	
Mg	24	2	He	10221.451	1.095	8274930	1.49	10000	102.2	90	110	
Al	27	2	He	102.291	2.116	45775	2.51	100	102.3	90	110	
K	39	2	He	10447.143	2.553	8890135	2.50	10000	104.5	90	110	
Ca	43	2	He	10214.093	1.684	24493	2.25	10000	102.1	90	110	
Ca	44	2	He	10342.728	2.421	417557	1.72	10000	103.4	90	110	
V	51	2	He	98.953	1.044	603696	0.49	100	99.0	90	110	
Cr	52	2	He	98.692	0.563	653524	1.04	100	98.7	90	110	
Mn	55	2	He	101.305	1.677	461639	1.85	100	101.3	90	110	
Fe	56	2	He	10364.522	2.744	57059781	2.54	10000	103.6	90	110	
Co	59	2	He	97.825	1.781	893843	1.51	100	97.8	90	110	
Ni	60	2	He	98.593	1.411	227296	1.94	100	98.6	90	110	
Cu	63	2	He	99.499	0.628	584626	1.30	100	99.5	90	110	
Zn	66	2	He	101.394	1.077	142931	0.88	100	101.4	90	110	
As	75	2	He	99.759	0.815	140823	0.27	100	99.8	90	110	
Se	78	2	He	99.530	0.753	11031	1.32	100	99.5	90	110	
B	11	1	nogas	502.526	1.389	2301317	0.47	500	100.5	90	110	
Si	28	1	nogas	5352.194	2.072	6747588	1.08	5000	107.0	90	110	
Ca	43	1	nogas	10466.918	0.821	371450	0.75	10000	104.7	90	110	
Ca	44	1	nogas	10590.543	2.495	6243783	1.97	10000	105.9	90	110	
Fe	56	1	nogas	10064.944	3.235	237897030	2.86	10000	100.6	90	110	
Se	77	1	nogas	81.358	3.883	36911	2.50	100	81.4	90	110	ICV Main CR1 Failed
Se	82	1	nogas	102.278	4.761	28616	3.90	100	102.3	90	110	
Mo	95	1	nogas	98.496	0.807	555738	1.07	100	98.5	90	110	
Sn	118	1	nogas	95.250	0.506	798518	1.31	100	95.2	90	110	
Ba	137	1	nogas	101.629	1.749	402782	0.50	100	101.6	90	110	
Sb	121	2	He	100.567	1.493	489105	1.13	100	100.6	90	110	
Li	7	1	nogas	106.443	3.503	1739938	4.00	100	106.4	90	110	
P	31	1	nogas	511.297	1.340	951690	0.48	500	102.3	90	110	
La	139	1	nogas	151.090	1.628	497	3.08	100	151.1	90	110	ICV Main CR1 Failed
Au	197	1	nogas	-63.299	-276.050	17	124.90	100	-63.3	90	110	ICV Main CR1 Failed

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	1029828	1.11	1171766	87.89	70	125	
Ge	72	1	nogas	3197054	0.79	3233065	98.89	70	125	
In	115	1	nogas	2810505	1.77	2958353	95.00	70	125	
Bi	209	1	nogas	2118262	0.28	2061475	102.75	70	125	

Initial Calibration Verification (ICV) Report

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Ge	72	2	He	813508	0.69	810035	100.43	70	125	

Sample Report

Sample Table

Sample Name	LLCCV2
Data File Name	139SMPL.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\121
Acq Date Time	2018-12-10T21:34:46-06:00
Sample Type	Sample
Dilution	1
Comment	
ISTD Ref FileName	132CALB.d
Sample QC Pass/Fail	Pass
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
Be	9	1	nogas	1.771	1.771	4.64	13892	0.01	2000	
Na	23	1	nogas	183.391	183.391	6.76	6023329	0.00	200000	
Mg	24	1	nogas	204.609	204.609	5.43	3225413	0.01	200000	
Al	27	1	nogas	1.808	1.808	2.12	55489	0.00	2000	
K	39	1	nogas	181.876	181.876	2.92	11442276	0.00	200000	
Ti	47	1	nogas	1.932	1.932	3.16	4181	0.05	2000	
V	51	1	nogas	0.003	0.003	10094.18	235942	0.00	2000	
Cr	52	1	nogas	1.928	1.928	6.12	77091	0.00	2000	
Mn	55	1	nogas	1.657	1.657	3.76	82909	0.00	2000	
Co	59	1	nogas	2.037	2.037	1.54	48604	0.00	2000	
Ni	60	1	nogas	2.131	2.131	2.64	10947	0.02	2000	
Cu	63	1	nogas	1.939	1.939	1.37	40234	0.00	2000	
Zn	66	1	nogas	2.100	2.100	1.67	10236	0.02	2000	
As	75	1	nogas	1.134	1.134	24.70	56447	0.00	2000	
Sr	88	1	nogas	1.941	1.941	3.12	60345	0.00	2000	
Ag	107	1	nogas	1.971	1.971	1.37	27759	0.01	2000	
Cd	111	1	nogas	1.889	1.889	6.78	5801	0.03	2000	
Sb	121	1	nogas	2.255	2.255	1.14	31312	0.01	2000	
Tl	205	1	nogas	2.388	2.388	8.57	47443	0.01	2000	
Pb	208	1	nogas	2.134	2.134	0.95	55311	0.00	2000	
U	238	1	nogas	2.111	2.111	1.91	53130	0.00	2000	
[Pb]	206	1	nogas	2.047	2.047	3.53	13946	0.01	2000	
[Pb]	207	1	nogas	2.033	2.033	4.24	12275	0.02	2000	
Na	23	2	He	177.240	177.240	2.64	415544	0.04	200000	
Mg	24	2	He	198.949	198.949	2.09	164718	0.12	200000	
Al	27	2	He	1.828	1.828	4.92	1337	0.14	2000	
K	39	2	He	207.420	207.420	0.09	362790	0.06	200000	
Ca	43	2	He	171.985	171.985	29.88	487	35.34	200000	
Ca	44	2	He	193.697	193.697	2.09	11023	1.76	200000	
V	51	2	He	2.011	2.011	1.14	14165	0.01	2000	
Cr	52	2	He	2.062	2.062	11.11	18309	0.01	2000	
Mn	55	2	He	1.686	1.686	8.55	11480	0.01	2000	
Fe	56	2	He	208.916	208.916	1.70	1172233	0.02	200000	
Co	59	2	He	2.002	2.002	1.89	18743	0.01	2000	
Ni	60	2	He	2.101	2.101	2.64	4791	0.04	2000	
Cu	63	2	He	1.858	1.858	1.26	17372	0.01	2000	
Zn	66	2	He	1.605	1.605	9.79	2940	0.05	2000	
As	75	2	He	1.911	1.911	7.39	2984	0.06	2000	
Se	78	2	He	2.291	2.291	5.21	421	0.54	2000	
B	11	1	nogas	16.422	16.422	9.71	191735	0.01	2000	
Si	28	1	nogas	112.656	112.656	32.12	1526204	0.01	2000	
Ca	43	1	nogas	188.155	188.155	8.42	8492	2.22	200000	

Sample Report

Ca	44	1	nogas	184.272	184.272	6.37	461171	0.04	200000	
Fe	56	1	nogas	187.789	187.789	4.51	6563454	0.00	200000	
Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
Se	77	1	nogas	-6.173	-6.173	-38.63	15347	-0.04	2000	
Se	82	1	nogas	1.482	1.482	15.21	913	0.16	2000	
Mo	95	1	nogas	2.271	2.271	11.62	13412	0.02	2000	
Sn	118	1	nogas	2.192	2.192	7.20	19962	0.01	2000	
Ba	137	1	nogas	1.870	1.870	9.12	8366	0.02	2000	
Sb	121	2	He	2.303	2.303	4.32	11661	0.02	2000	
La	139	1	nogas	6.636	6.636	64.65	63	10.48	2000	
Au	197	1	nogas	17.858	17.858	988.47	27	66.97	2000	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	1121388	3.06	1171766	95.70	70	125	
Ge	72	1	nogas	3311616	1.42	3233065	102.43	70	125	
In	115	1	nogas	2911810	4.41	2958353	98.43	70	125	
Bi	209	1	nogas	2154941	2.58	2061475	104.53	70	125	
Ge	72	2	He	820041	1.62	810035	101.24	70	125	

Low Level Initial Calibration Verification (LLICV) Report

Sample Table

Sample Name	LLCCV5
Data File Name	140LICV.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\121
Acq Date Time	2018-12-10T21:36:51-06:00
Sample Type	LLICV
Dilution	1
Comment	
ISTD Ref File Name	132CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Exp Value	%Rec	%Low	%High	QC Flag
Be	9	1	nogas	4.265	7.820	33570	2.49	5	85.3	70	130	
Na	23	1	nogas	470.946	4.980	12863929	2.06	500	94.2	70	130	
Mg	24	1	nogas	501.487	3.597	7812636	1.05	500	100.3	70	130	
Al	27	1	nogas	4.982	2.960	112189	1.32	5	99.6	70	130	
K	39	1	nogas	512.584	2.044	17424367	0.59	500	102.5	70	130	
Ti	47	1	nogas	4.873	7.315	9609	5.84	5	97.5	70	130	
V	51	1	nogas	3.271	18.003	312942	3.52	5	65.4	70	130	LLICV Main CR1 Failed
Cr	52	1	nogas	4.941	4.645	140823	2.73	5	98.8	70	130	
Mn	55	1	nogas	4.779	2.501	166196	1.71	5	95.6	70	130	
Co	59	1	nogas	5.188	1.944	118911	1.15	5	103.8	70	130	
Ni	60	1	nogas	5.316	1.775	27104	0.90	5	106.3	70	130	
Cu	63	1	nogas	5.129	2.290	78872	0.75	5	102.6	70	130	
Zn	66	1	nogas	5.009	2.794	22307	1.82	5	100.2	70	130	
As	75	1	nogas	4.447	5.939	72885	0.77	5	88.9	70	130	
Sr	88	1	nogas	4.968	0.912	145012	1.28	5	99.4	70	130	
Ag	107	1	nogas	5.119	2.428	70133	2.02	5	102.4	70	130	
Cd	111	1	nogas	4.841	3.665	14957	3.53	5	96.8	70	130	
Sb	121	1	nogas	5.065	0.770	67240	1.96	5	101.3	70	130	
Tl	205	1	nogas	4.870	2.966	93261	2.10	5	97.4	70	130	
Pb	208	1	nogas	5.049	0.630	128669	0.62	5	101.0	70	130	
U	238	1	nogas	4.965	3.393	120903	1.56	5	99.3	70	130	
[Pb]	206	1	nogas	4.934	5.460	32055	4.33	5	98.7	70	130	
[Pb]	207	1	nogas	5.043	2.586	28983	1.09	5	100.9	70	130	
Na	23	2	He	467.496	2.630	843270	0.83	500	93.5	70	130	
Mg	24	2	He	492.286	3.198	403987	1.94	500	98.5	70	130	
Al	27	2	He	4.686	8.142	2610	5.18	5	93.7	70	130	
K	39	2	He	519.302	0.806	622516	0.56	500	103.9	70	130	
Ca	43	2	He	453.210	0.311	1163	1.31	500	90.6	70	130	
Ca	44	2	He	474.049	1.514	22350	1.35	500	94.8	70	130	
V	51	2	He	4.885	3.661	31783	2.20	5	97.7	70	130	
Cr	52	2	He	4.695	4.557	35778	4.52	5	93.9	70	130	
Mn	55	2	He	4.676	2.032	25114	2.87	5	93.5	70	130	
Fe	56	2	He	520.890	2.181	2903399	1.46	500	104.2	70	130	
Co	59	2	He	4.995	1.161	46305	0.26	5	99.9	70	130	
Ni	60	2	He	5.073	5.985	11697	4.79	5	101.5	70	130	
Cu	63	2	He	4.864	2.257	34983	1.71	5	97.3	70	130	
Zn	66	2	He	4.549	9.508	7105	8.63	5	91.0	70	130	
As	75	2	He	4.843	3.598	7146	2.21	5	96.9	70	130	
Se	78	2	He	5.325	6.064	755	4.86	5	106.5	70	130	
B	11	1	nogas	23.499	14.558	226685	2.02	25	94.0	70	130	
Si	28	1	nogas	297.914	15.264	1675577	1.50	25	1191.7	70	130	LLICV Main CR1 Failed
Ca	43	1	nogas	490.212	2.410	19053	1.00	500	98.0	70	130	
Ca	44	1	nogas	502.667	2.481	628552	0.54	500	100.5	70	130	
Fe	56	1	nogas	481.556	1.025	13349975	0.76	500	96.3	70	130	
Se	77	1	nogas	-1.134	-227.864	16237	2.90	5	-22.7	70	130	LLICV Main CR1 Failed
Se	82	1	nogas	4.797	13.552	1810	8.77	5	95.9	70	130	
Mo	95	1	nogas	5.041	2.370	28850	2.21	5	100.8	70	130	
Sn	118	1	nogas	4.677	3.266	41864	0.39	5	93.5	70	130	
Ba	137	1	nogas	4.736	4.726	20272	2.12	5	94.7	70	130	
Sb	121	2	He	4.983	2.429	24798	2.27	5	99.7	70	130	
Li	7	1	nogas	4.365	9.600	168841	3.23	5	87.3	70	130	
P	31	1	nogas	27.616	6.316	145272	0.91	25	110.5	70	130	
La	139	1	nogas	0.093	11515.726	43	81.04	5	1.9	70	130	LLICV Main CR1 Failed
Au	197	1	nogas	-145.673	-34.076	7	86.60	5	-2913.5	70	130	LLICV Main CR1 Failed

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	1129836	5.43	1171766	96.42	70	125	
Ge	72	1	nogas	3227352	1.30	3233065	99.82	70	125	
In	115	1	nogas	2934755	3.00	2958353	99.20	70	125	
Bi	209	1	nogas	2089612	2.41	2061475	101.36	70	125	

Low Level Initial Calibration Verification (LLICV) Report

Ge	72	2	He	820154	1.34	810035	101.25	70	125	

Initial Calibration Blank (ICB) Report

Sample Table

Sample Name	ICCB
Data File Name	141_ICB.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\121
Acq Date Time	2018-12-10T21:38:55-06:00
Sample Type	ICB
Dilution	1
Comment	
ISTD Ref File Name	132CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Be	9	1	nogas	0.012	30.7	143	21.3	1	
Na	23	1	nogas	-23.075	-12.3	1070804	2.4	100	
Mg	24	1	nogas	-0.593	-47.9	32066	14.4	100	
Al	27	1	nogas	-0.256	-25.9	16701	5.6	5	
K	39	1	nogas	-15.278	-95.9	7614174	0.6	100	
Ti	47	1	nogas	-0.077	-51.1	297	21.9	2.5	
V	51	1	nogas	-2.202	-3.5	178737	2.9	2.5	
Cr	52	1	nogas	-0.114	-34.5	31450	3.2	2.5	
Mn	55	1	nogas	-0.325	-12.4	27320	1.2	2.5	
Co	59	1	nogas	0.018	65.8	1550	13.9	2.5	
Ni	60	1	nogas	0.167	14.5	547	23.2	2.5	
Cu	63	1	nogas	-0.065	-19.8	14673	2.9	2.5	
Zn	66	1	nogas	-0.034	-45.2	950	4.6	2.5	
As	75	1	nogas	-1.271	-24.2	43171	0.2	2.5	
Sr	88	1	nogas	-0.037	-23.7	2580	6.5	2.5	
Ag	107	1	nogas	0.010	8.2	233	8.9	2.5	
Cd	111	1	nogas	-0.003	-111.5	20	50.0	1	
Sb	121	1	nogas	0.128	14.8	2790	5.6	2.5	
Tl	205	1	nogas	0.064	33.6	1687	25.7	1	
Pb	208	1	nogas	0.038	27.1	2560	10.1	2.5	
U	238	1	nogas	0.018	78.2	610	58.5	2.5	
[Pb]	206	1	nogas	0.041	18.0	667	7.7	2.5	
[Pb]	207	1	nogas	0.027	25.4	537	7.8	2.5	
Na	23	2	He	-29.613	-6.8	109559	2.1	100	
Mg	24	2	He	-0.475	-76.5	2020	16.1	100	
Al	27	2	He	-0.163	-76.5	443	10.7	5	
K	39	2	He	4.871	52.5	194114	1.1	100	
Ca	43	2	He	-16.866	-42.6	30	57.7	100	
Ca	44	2	He	-5.999	-76.8	2927	7.3	100	
V	51	2	He	0.075	30.8	2266	3.7	2.5	
Cr	52	2	He	-0.008	-281.2	4547	1.0	2.5	
Mn	55	2	He	-0.380	-10.9	2047	6.5	2.5	
Fe	56	2	He	0.615	13.5	16471	0.4	100	
Co	59	2	He	0.013	5.8	427	1.4	2.5	
Ni	60	2	He	0.092	27.0	120	50.0	2.5	
Cu	63	2	He	-0.111	-59.0	5771	4.6	2.5	
Zn	66	2	He	-0.279	-12.2	273	20.1	2.5	
As	75	2	He	0.014	64.0	287	7.3	2.5	
Se	78	2	He	-0.115	-194.8	154	13.6	2.5	
B	11	1	nogas	-0.032	-758.0	115463	0.7	10	
Si	28	1	nogas	5.400	1101.6	1416206	1.5	5	ICB Main CR1 Failed
Ca	43	1	nogas	-9.606	-41.7	1257	8.0	100	
Ca	44	1	nogas	-7.975	-214.0	350768	1.6	100	
Fe	56	1	nogas	-5.743	-68.1	1866287	1.8	100	

Initial Calibration Blank (ICB) Report

Se	77	1	nogas	-12.595	-17.0	13709	7.1	2.5	
Se	82	1	nogas	-0.489	-30.6	353	14.5	2.5	
Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Mo	95	1	nogas	0.043	34.8	403	17.6	2.5	
Sn	118	1	nogas	0.912	8.5	8882	5.7	5	
Ba	137	1	nogas	-0.107	-6.9	277	12.7	2.5	
Sb	121	2	He	0.131	4.3	1017	2.0	2.5	
P	31	1	nogas	-0.597	-430.2	100388	1.7	10	
La	139	1	nogas	2.507	230.5	50	34.6	2.5	ICB Main CR1 Failed
Au	197	1	nogas	-92.685	-137.0	13	114.6	2.5	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	1140366	1.63	1171766	97.32	70	125	
Ge	72	1	nogas	3318721	3.95	3233065	102.65	70	125	
In	115	1	nogas	2909978	2.00	2958353	98.36	70	125	
Bi	209	1	nogas	2148885	0.82	2061475	104.24	70	125	
Ge	72	2	He	811091	2.80	810035	100.13	70	125	

Continuing Calibration Verification (CCV) Report

Sample Table

Sample Name	CCV
Data File Name	150_CCV.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\121
Acq Date Time	2018-12-10T21:57:43-06:00
Sample Type	CCV
Dilution	1
Comment	
ISTD Ref File Name	132CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Exp Value	%Rec	%Low	%High2	QC Flag
Be	9	1	nogas	95.145	1.191	668950	1.80	100	95.1	90	110	
Na	23	1	nogas	9986.877	4.742	234375314	4.25	10000	99.9	90	110	
Mg	24	1	nogas	9801.065	1.766	148295445	1.60	10000	98.0	90	110	
Al	27	1	nogas	103.992	3.205	1855741	1.21	100	104.0	90	110	
K	39	1	nogas	9949.552	2.624	189464425	4.54	10000	99.5	90	110	
Ti	47	1	nogas	99.641	3.029	181326	1.99	100	99.6	90	110	
V	51	1	nogas	96.665	0.539	2592181	2.33	100	96.7	90	110	
Cr	52	1	nogas	95.950	2.958	2049453	3.55	100	95.9	90	110	
Mn	55	1	nogas	96.771	0.966	2586409	3.06	100	96.8	90	110	
Co	59	1	nogas	102.012	1.183	2234178	1.03	100	102.0	90	110	
Ni	60	1	nogas	101.216	1.965	503201	0.99	100	101.2	90	110	
Cu	63	1	nogas	99.786	2.913	1210623	1.07	100	99.8	90	110	
Zn	66	1	nogas	101.510	1.644	415923	0.48	100	101.5	90	110	
As	75	1	nogas	98.243	0.813	558430	1.39	100	98.2	90	110	
Sr	88	1	nogas	99.807	3.576	2742291	2.09	100	99.8	90	110	
Ag	107	1	nogas	101.320	1.667	1336604	0.70	100	101.3	90	110	
Cd	111	1	nogas	100.107	1.367	296167	2.09	100	100.1	90	110	
Sb	121	1	nogas	101.953	1.828	1285270	1.49	100	102.0	90	110	
Tl	205	1	nogas	97.201	1.511	1859453	0.65	100	97.2	90	110	
Pb	208	1	nogas	99.631	2.008	2509052	2.01	100	99.6	90	110	
U	238	1	nogas	99.746	2.750	2433958	2.31	100	99.7	90	110	
[Pb]	206	1	nogas	96.667	0.870	623134	1.84	100	96.7	90	110	
[Pb]	207	1	nogas	96.829	1.032	551592	2.08	100	96.8	90	110	
Na	23	2	He	10137.511	0.831	13937705	1.31	10000	101.4	90	110	
Mg	24	2	He	10122.552	1.195	7628839	1.91	10000	101.2	90	110	
Al	27	2	He	104.003	7.763	43334	8.54	100	104.0	90	110	
K	39	2	He	9436.293	2.670	8048328	2.61	10000	94.4	90	110	
Ca	43	2	He	10282.768	3.528	22948	2.75	10000	102.8	90	110	
Ca	44	2	He	10076.270	3.581	378694	2.06	10000	100.8	90	110	
V	51	2	He	98.400	1.498	558831	0.91	100	98.4	90	110	
Cr	52	2	He	100.969	0.648	622288	0.90	100	101.0	90	110	
Mn	55	2	He	102.954	1.856	436619	0.68	100	103.0	90	110	
Fe	56	2	He	10240.425	2.912	52476631	2.27	10000	102.4	90	110	
Co	59	2	He	98.316	2.675	836154	1.71	100	98.3	90	110	
Ni	60	2	He	99.485	3.604	213429	2.09	100	99.5	90	110	
Cu	63	2	He	100.134	3.034	547511	1.50	100	100.1	90	110	
Zn	66	2	He	101.559	2.274	133279	2.71	100	101.6	90	110	
As	75	2	He	98.384	2.046	129273	0.54	100	98.4	90	110	
Se	78	2	He	98.735	3.535	10186	2.76	100	98.7	90	110	
B	11	1	nogas	486.990	3.535	2185333	2.23	500	97.4	90	110	
Si	28	1	nogas	5050.085	3.630	6269021	0.79	5000	101.0	90	110	
Ca	43	1	nogas	10093.415	1.049	348679	2.45	10000	100.9	90	110	
Ca	44	1	nogas	10097.997	2.987	5810321	3.69	10000	101.0	90	110	
Fe	56	1	nogas	9683.304	2.242	222781847	0.96	10000	96.8	90	110	
Se	77	1	nogas	91.761	2.921	38474	2.22	100	91.8	90	110	
Se	82	1	nogas	98.746	3.331	26904	2.55	100	98.7	90	110	
Mo	95	1	nogas	104.401	1.932	573167	1.28	100	104.4	90	110	
Sn	118	1	nogas	95.172	0.954	799080	2.42	100	95.2	90	110	
Ba	137	1	nogas	97.811	2.710	388239	2.43	100	97.8	90	110	
Sb	121	2	He	100.322	4.726	454030	3.21	100	100.3	90	110	
Li	7	1	nogas	95.302	2.785	1533851	4.56	100	95.3	90	110	
P	31	1	nogas	485.132	0.841	883662	1.38	500	97.0	90	110	
La	139	1	nogas	111.984	20.946	380	20.55	100	112.0	90	110	CCV Main CR1-2 Failed
Au	197	1	nogas	-6.374	-2741.415	23	89.21	100	-6.4	90	110	CCV Main CR1-2 Failed

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	1007928	2.09	1171766	86.02	70	125	
Ge	72	1	nogas	3111524	2.14	3233065	96.24	70	125	
In	115	1	nogas	2814689	2.39	2958353	95.14	70	125	
Bi	209	1	nogas	2095772	1.08	2061475	101.66	70	125	

Continuing Calibration Verification (CCV) Report

Ge	72	2	He	757331	1.48	810035	93.49	70	125	

Continuing Calibration Blank (CCB) Report

Sample Table

Sample Name	CCB
Data File Name	151_CCB.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\121
Acq Date Time	2018-12-10T21:59:46-06:00
Sample Type	CCB
Dilution	1
Comment	
ISTD Ref File Name	132CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Be	9	1	nogas	0.066	32.0	517	30.6	1	
Na	23	1	nogas	-1.498	-248.7	1471668	6.4	100	
Mg	24	1	nogas	6.171	29.1	126895	18.7	100	
Al	27	1	nogas	0.115	64.2	21790	5.5	5	
K	39	1	nogas	5.917	401.9	7376519	2.9	100	
Ti	47	1	nogas	0.020	97.6	447	3.4	2.5	
V	51	1	nogas	-1.832	-5.0	173537	8.2	2.5	
Cr	52	1	nogas	-0.083	-119.7	29537	5.2	2.5	
Mn	55	1	nogas	-0.284	-20.9	26192	6.3	2.5	
Co	59	1	nogas	0.068	20.0	2500	4.5	2.5	
Ni	60	1	nogas	0.257	9.7	947	15.1	2.5	
Cu	63	1	nogas	0.080	83.7	15190	3.6	2.5	
Zn	66	1	nogas	0.294	12.9	2187	5.3	2.5	
As	75	1	nogas	-0.645	-64.5	42894	4.6	2.5	
Sr	88	1	nogas	0.065	25.9	5127	10.4	2.5	
Ag	107	1	nogas	0.070	18.5	977	9.2	2.5	
Cd	111	1	nogas	0.082	48.2	260	40.7	1	
Sb	121	1	nogas	1.272	25.1	16618	21.0	2.5	
Tl	205	1	nogas	0.681	53.1	13053	52.2	1	
Pb	208	1	nogas	0.084	26.1	3707	14.8	2.5	
U	238	1	nogas	0.166	58.9	4084	57.7	2.5	
[Pb]	206	1	nogas	0.088	31.6	920	17.8	2.5	
[Pb]	207	1	nogas	0.075	37.7	773	18.9	2.5	
Na	23	2	He	-4.243	-85.1	128557	4.9	100	
Mg	24	2	He	4.334	2.8	5181	7.8	100	
Al	27	2	He	0.017	1397.0	463	25.9	5	
K	39	2	He	-13.583	-78.4	178745	5.0	100	
Ca	43	2	He	-10.572	-80.1	40	50.0	100	
Ca	44	2	He	14.629	87.4	3274	7.9	100	
V	51	2	He	0.119	11.3	2226	8.4	2.5	
Cr	52	2	He	0.006	286.6	4074	5.6	2.5	
Mn	55	2	He	-0.282	-18.4	2180	4.1	2.5	
Fe	56	2	He	5.310	6.8	37175	11.6	100	
Co	59	2	He	0.063	34.6	780	24.7	2.5	
Ni	60	2	He	0.139	4.9	200	0.0	2.5	
Cu	63	2	He	0.051	102.6	5891	6.4	2.5	
Zn	66	2	He	-0.097	-23.4	463	13.2	2.5	
As	75	2	He	0.055	26.8	301	2.3	2.5	
Se	78	2	He	0.467	46.2	192	17.3	2.5	
B	11	1	nogas	9.255	20.8	144016	2.4	10	
Si	28	1	nogas	115.756	119.9	1404861	3.7	5	CCB Main CR1 Failed
Ca	43	1	nogas	5.150	69.1	1653	4.2	100	
Ca	44	1	nogas	32.787	152.7	343496	1.1	100	
Fe	56	1	nogas	2.854	391.7	1905466	10.8	100	
Se	77	1	nogas	-8.278	-25.1	13639	6.3	2.5	
Se	82	1	nogas	-0.352	-90.9	357	15.4	2.5	
Mo	95	1	nogas	0.966	16.2	5324	13.3	2.5	
Sn	118	1	nogas	0.282	39.4	3197	25.8	5	

Continuing Calibration Blank (CCB) Report

Ba	137	1	nogas	-0.013	-137.3	620	10.6	2.5	
Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Sb	121	2	He	0.875	6.9	4064	11.8	2.5	
P	31	1	nogas	-1.133	-145.3	91558	5.7	10	
La	139	1	nogas	11.618	50.1	73	20.8	2.5	CCB Main CR1 Failed
Au	197	1	nogas	-174.324	-28.5	3	173.2	2.5	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	1025417	4.74	1171766	87.51	70	125	
Ge	72	1	nogas	3056551	8.50	3233065	94.54	70	125	
In	115	1	nogas	2724134	4.75	2958353	92.08	70	125	
Bi	209	1	nogas	2037955	5.77	2061475	98.86	70	125	
Ge	72	2	He	712315	7.13	810035	87.94	70	125	

Continuing Calibration Verification (CCV) Report

Sample Table

Sample Name	CCV
Data File Name	162_CCV.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\121
Acq Date Time	2018-12-10T22:22:40-06:00
Sample Type	CCV
Dilution	1
Comment	
ISTD Ref File Name	132CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Exp Value	%Rec	%Low	%High2	QC Flag
Be	9	1	nogas	94.178	7.271	677060	1.69	100	94.2	90	110	
Na	23	1	nogas	10299.714	1.921	234210539	1.37	10000	103.0	90	110	
Mg	24	1	nogas	10234.097	3.267	150021612	1.82	10000	102.3	90	110	
Al	27	1	nogas	103.346	3.017	1795334	1.15	100	103.3	90	110	
K	39	1	nogas	10272.614	2.488	190069846	1.72	10000	102.7	90	110	
Ti	47	1	nogas	99.308	1.072	175953	1.78	100	99.3	90	110	
V	51	1	nogas	101.113	1.490	2628898	1.18	100	101.1	90	110	
Cr	52	1	nogas	101.678	5.984	2110602	4.15	100	101.7	90	110	
Mn	55	1	nogas	102.748	2.962	2670173	2.64	100	102.7	90	110	
Co	59	1	nogas	103.411	3.006	2205277	4.34	100	103.4	90	110	
Ni	60	1	nogas	103.206	2.287	499419	0.74	100	103.2	90	110	
Cu	63	1	nogas	101.287	1.938	1196093	0.74	100	101.3	90	110	
Zn	66	1	nogas	100.633	0.312	401432	1.66	100	100.6	90	110	
As	75	1	nogas	99.906	0.975	551975	1.01	100	99.9	90	110	
Sr	88	1	nogas	100.046	4.425	2675322	2.64	100	100.0	90	110	
Ag	107	1	nogas	101.433	1.768	1302472	0.53	100	101.4	90	110	
Cd	111	1	nogas	100.253	2.282	285173	4.28	100	100.3	90	110	
Sb	121	1	nogas	100.201	2.020	1229470	0.46	100	100.2	90	110	
Tl	205	1	nogas	99.196	1.812	1815608	1.78	100	99.2	90	110	
Pb	208	1	nogas	98.884	1.908	2490267	1.91	100	98.9	90	110	
U	238	1	nogas	105.323	4.706	2457897	2.85	100	105.3	90	110	
[Pb]	206	1	nogas	101.276	2.158	624593	2.80	100	101.3	90	110	
[Pb]	207	1	nogas	100.022	1.275	545132	2.39	100	100.0	90	110	
Na	23	2	He	10088.780	3.070	14236746	0.59	10000	100.9	90	110	
Mg	24	2	He	10024.802	2.330	7754968	0.89	10000	100.2	90	110	
Al	27	2	He	103.627	1.710	44309	1.24	100	103.6	90	110	
K	39	2	He	9628.457	1.405	8208357	1.37	10000	96.3	90	110	
Ca	43	2	He	9882.517	2.785	22644	0.89	10000	98.8	90	110	
Ca	44	2	He	10090.599	2.971	389342	0.44	10000	100.9	90	110	
V	51	2	He	97.002	1.987	565594	1.28	100	97.0	90	110	
Cr	52	2	He	98.351	1.809	622378	0.80	100	98.4	90	110	
Mn	55	2	He	101.083	2.799	440120	0.36	100	101.1	90	110	
Fe	56	2	He	10153.735	3.322	53410099	1.31	10000	101.5	90	110	
Co	59	2	He	96.814	3.756	845115	1.24	100	96.8	90	110	
Ni	60	2	He	97.344	4.230	214365	1.95	100	97.3	90	110	
Cu	63	2	He	97.065	3.161	545057	1.33	100	97.1	90	110	
Zn	66	2	He	98.767	2.057	133071	1.44	100	98.8	90	110	
As	75	2	He	97.507	1.686	131553	1.30	100	97.5	90	110	
Se	78	2	He	96.627	2.766	10238	1.19	100	96.6	90	110	
B	11	1	nogas	495.039	5.621	2272066	0.73	500	99.0	90	110	
Si	28	1	nogas	5198.939	1.393	6245824	1.34	5000	104.0	90	110	
Ca	43	1	nogas	10081.013	1.185	338921	0.76	10000	100.8	90	110	
Ca	44	1	nogas	10166.942	2.183	5690222	0.33	10000	101.7	90	110	
Fe	56	1	nogas	9945.528	3.942	222634605	2.35	10000	99.5	90	110	
Se	77	1	nogas	94.653	2.692	38147	2.93	100	94.7	90	110	
Se	82	1	nogas	99.141	2.642	26289	0.99	100	99.1	90	110	
Mo	95	1	nogas	102.247	1.830	546414	1.30	100	102.2	90	110	
Sn	118	1	nogas	96.310	3.568	776773	1.31	100	96.3	90	110	
Ba	137	1	nogas	99.197	3.331	378334	1.47	100	99.2	90	110	
Sb	121	2	He	97.804	2.862	454519	1.01	100	97.8	90	110	
Li	7	1	nogas	94.932	7.811	1561964	1.92	100	94.9	90	110	
P	31	1	nogas	506.697	1.628	894169	0.47	500	101.3	90	110	
La	139	1	nogas	103.849	24.880	343	26.27	100	103.8	90	110	
Au	197	1	nogas	30.976	582.239	27	78.06	100	31.0	90	110	CCV Main CR1-2 Failed

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	1033427	5.78	1171766	88.19	70	125	
Ge	72	1	nogas	3028634	1.90	3233065	93.68	70	125	
In	115	1	nogas	2706701	4.62	2958353	91.49	70	125	
Bi	209	1	nogas	2005241	1.82	2061475	97.27	70	125	

Continuing Calibration Verification (CCV) Report

Ge	72	2	He	777636	2.48	810035	96.00	70	125	

Continuing Calibration Blank (CCB) Report

Sample Table

Sample Name	CCB
Data File Name	163_CCB.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\121
Acq Date Time	2018-12-10T22:24:42-06:00
Sample Type	CCB
Dilution	1
Comment	
ISTD Ref File Name	132CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Be	9	1	nogas	0.049	35.6	417	33.1	1	
Na	23	1	nogas	30.835	7.3	2246289	1.6	100	
Mg	24	1	nogas	5.116	28.9	114981	19.7	100	
Al	27	1	nogas	0.192	24.0	23081	2.5	5	
K	39	1	nogas	9.641	69.5	7439469	0.6	100	
Ti	47	1	nogas	-0.006	-227.2	400	7.5	2.5	
V	51	1	nogas	-1.810	-13.7	173526	4.4	2.5	
Cr	52	1	nogas	-0.020	-389.4	30813	4.4	2.5	
Mn	55	1	nogas	-0.222	-12.6	27764	1.8	2.5	
Co	59	1	nogas	0.071	19.9	2557	11.0	2.5	
Ni	60	1	nogas	0.287	7.9	1090	11.1	2.5	
Cu	63	1	nogas	-0.234	-23.0	11490	6.5	2.5	
Zn	66	1	nogas	0.230	7.2	1930	3.2	2.5	
As	75	1	nogas	-0.474	-30.5	43723	2.7	2.5	
Sr	88	1	nogas	0.035	39.5	4287	7.9	2.5	
Ag	107	1	nogas	0.051	24.9	730	21.4	2.5	
Cd	111	1	nogas	0.051	48.0	173	38.4	1	
Sb	121	1	nogas	0.883	24.7	11868	21.7	2.5	
Tl	205	1	nogas	0.556	48.1	10758	48.8	1	
Pb	208	1	nogas	0.071	20.8	3394	11.0	2.5	
U	238	1	nogas	0.152	54.5	3764	55.2	2.5	
[Pb]	206	1	nogas	0.080	34.7	870	21.1	2.5	
[Pb]	207	1	nogas	0.069	15.1	740	8.9	2.5	
Na	23	2	He	21.202	10.4	174381	0.6	100	
Mg	24	2	He	3.139	9.4	4684	4.1	100	
Al	27	2	He	0.185	96.9	567	11.7	5	
K	39	2	He	-4.463	-78.4	186341	1.6	100	
Ca	43	2	He	-1.423	-211.4	63	9.1	100	
Ca	44	2	He	-0.652	-641.2	2984	6.8	100	
V	51	2	He	0.133	20.8	2490	5.1	2.5	
Cr	52	2	He	0.022	156.6	4514	6.7	2.5	
Mn	55	2	He	-0.251	-20.3	2497	8.2	2.5	
Fe	56	2	He	5.083	7.6	38925	4.2	100	
Co	59	2	He	0.044	12.8	673	8.7	2.5	
Ni	60	2	He	0.167	5.7	277	7.5	2.5	
Cu	63	2	He	-0.269	-15.3	4614	3.7	2.5	
Zn	66	2	He	-0.032	-144.4	587	10.0	2.5	
As	75	2	He	0.041	72.4	307	11.3	2.5	
Se	78	2	He	0.219	73.7	181	11.0	2.5	
B	11	1	nogas	16.768	4.6	186333	3.2	10	CCB Main CR1 Failed
Si	28	1	nogas	154.672	26.6	1443948	1.9	5	CCB Main CR1 Failed
Ca	43	1	nogas	6.848	29.6	1710	3.1	100	
Ca	44	1	nogas	22.638	31.4	338344	0.4	100	
Fe	56	1	nogas	3.638	223.1	1923368	8.6	100	
Se	77	1	nogas	-5.360	-44.3	14313	4.3	2.5	
Se	82	1	nogas	-0.058	-499.7	437	17.5	2.5	

Continuing Calibration Blank (CCB) Report

Mo	95	1	nogas	0.282	27.2	1653	24.0	2.5	
Sn	118	1	nogas	0.262	25.3	3050	15.1	5	
Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Ba	137	1	nogas	-0.003	-1230.5	660	18.4	2.5	
Sb	121	2	He	0.558	12.7	2930	11.7	2.5	
P	31	1	nogas	0.507	262.8	93965	1.3	10	
La	139	1	nogas	19.456	30.9	97	15.8	2.5	CCB Main CR1 Failed
Au	197	1	nogas	30.851	444.4	27	57.3	2.5	CCB Main CR1 Failed

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	1079580	2.17	1171766	92.13	70	125	
Ge	72	1	nogas	3045493	1.00	3233065	94.20	70	125	
In	115	1	nogas	2738002	2.91	2958353	92.55	70	125	
Bi	209	1	nogas	2027203	3.11	2061475	98.34	70	125	
Ge	72	2	He	770274	1.84	810035	95.09	70	125	

Continuing Calibration Verification (CCV) Report

Sample Table

Sample Name	CCV
Data File Name	171_CCV.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\121
Acq Date Time	2018-12-10T22:41:25-06:00
Sample Type	CCV
Dilution	1
Comment	
ISTD Ref File Name	132CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Exp Value	%Rec	%Low	%High2	QC Flag
Be	9	1	nogas	94.847	4.040	669799	2.38	100	94.8	90	110	
Na	23	1	nogas	10342.700	6.449	233945897	3.18	10000	103.4	90	110	
Mg	24	1	nogas	9987.701	5.594	145693257	2.43	10000	99.9	90	110	
Al	27	1	nogas	105.445	2.742	1892475	4.66	100	105.4	90	110	
K	39	1	nogas	9975.401	2.628	190786296	1.04	10000	99.8	90	110	
Ti	47	1	nogas	97.203	1.005	177880	2.97	100	97.2	90	110	
V	51	1	nogas	101.110	0.891	2714847	1.98	100	101.1	90	110	
Cr	52	1	nogas	99.202	2.642	2127923	0.68	100	99.2	90	110	
Mn	55	1	nogas	99.236	2.643	2663688	0.72	100	99.2	90	110	
Co	59	1	nogas	102.374	3.708	2252766	1.65	100	102.4	90	110	
Ni	60	1	nogas	99.344	2.019	496401	0.55	100	99.3	90	110	
Cu	63	1	nogas	96.651	3.187	1178991	1.09	100	96.7	90	110	
Zn	66	1	nogas	98.405	1.729	405295	0.68	100	98.4	90	110	
As	75	1	nogas	98.334	0.707	561790	1.80	100	98.3	90	110	
Sr	88	1	nogas	100.149	2.525	2766247	1.71	100	100.1	90	110	
Ag	107	1	nogas	99.434	3.766	1318044	1.76	100	99.4	90	110	
Cd	111	1	nogas	100.258	1.254	293972	1.34	100	100.3	90	110	
Sb	121	1	nogas	98.201	1.747	1244355	1.48	100	98.2	90	110	
Tl	205	1	nogas	97.714	3.871	1811496	2.45	100	97.7	90	110	
Pb	208	1	nogas	98.618	1.298	2483573	1.30	100	98.6	90	110	
U	238	1	nogas	104.444	5.914	2468886	3.76	100	104.4	90	110	
[Pb]	206	1	nogas	99.272	4.270	619996	2.55	100	99.3	90	110	
[Pb]	207	1	nogas	99.141	4.163	547126	1.95	100	99.1	90	110	
Na	23	2	He	10332.458	0.706	14350725	1.41	10000	103.3	90	110	
Mg	24	2	He	9884.567	0.464	7526681	1.22	10000	98.8	90	110	
Al	27	2	He	101.228	2.046	42615	2.82	100	101.2	90	110	
K	39	2	He	9445.282	0.803	8055814	0.78	10000	94.5	90	110	
Ca	43	2	He	10138.935	1.770	22868	2.17	10000	101.4	90	110	
Ca	44	2	He	10143.766	1.139	385270	0.88	10000	101.4	90	110	
V	51	2	He	99.291	0.535	569785	1.31	100	99.3	90	110	
Cr	52	2	He	98.386	0.994	612813	1.70	100	98.4	90	110	
Mn	55	2	He	101.031	0.097	433034	0.86	100	101.0	90	110	
Fe	56	2	He	10132.344	0.849	52468788	1.04	10000	101.3	90	110	
Co	59	2	He	98.629	2.350	847687	2.67	100	98.6	90	110	
Ni	60	2	He	99.645	2.544	216055	2.58	100	99.6	90	110	
Cu	63	2	He	100.713	1.336	556460	0.64	100	100.7	90	110	
Zn	66	2	He	99.657	1.512	132137	0.82	100	99.7	90	110	
As	75	2	He	99.667	1.991	132329	1.76	100	99.7	90	110	
Se	78	2	He	99.032	1.644	10324	1.13	100	99.0	90	110	
B	11	1	nogas	477.536	5.095	2154319	2.11	500	95.5	90	110	
Si	28	1	nogas	5085.829	3.589	6336431	1.03	5000	101.7	90	110	
Ca	43	1	nogas	9807.787	0.835	340567	1.92	10000	98.1	90	110	
Ca	44	1	nogas	9822.155	2.165	5687970	0.96	10000	98.2	90	110	
Fe	56	1	nogas	9739.144	2.625	225186980	0.84	10000	97.4	90	110	
Se	77	1	nogas	92.041	7.293	38721	2.39	100	92.0	90	110	
Se	82	1	nogas	98.132	4.179	26874	3.07	100	98.1	90	110	
Mo	95	1	nogas	100.594	2.747	555017	1.01	100	100.6	90	110	
Sn	118	1	nogas	96.932	1.281	806619	2.33	100	96.9	90	110	
Ba	137	1	nogas	98.757	3.228	388517	2.86	100	98.8	90	110	
Sb	121	2	He	98.896	0.811	452415	1.04	100	98.9	90	110	
Li	7	1	nogas	98.660	1.449	1591996	2.36	100	98.7	90	110	
P	31	1	nogas	489.098	3.297	894382	0.79	500	97.8	90	110	
La	139	1	nogas	87.638	9.522	303	10.60	100	87.6	90	110	CCV Main CR1-2 Failed
Au	197	1	nogas	0.797	6523.070	23	24.74	100	0.8	90	110	CCV Main CR1-2 Failed

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	1013037	3.45	1171766	86.45	70	125	
Ge	72	1	nogas	3127476	2.19	3233065	96.73	70	125	
In	115	1	nogas	2789868	2.49	2958353	94.30	70	125	
Bi	209	1	nogas	2031780	2.28	2061475	98.56	70	125	

Continuing Calibration Verification (CCV) Report

Ge	72	2	He	765158	0.81	810035	94.46	70	125	

Continuing Calibration Blank (CCB) Report

Sample Table

Sample Name	CCB
Data File Name	172_CCB.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\121
Acq Date Time	2018-12-10T22:43:29-06:00
Sample Type	CCB
Dilution	1
Comment	
ISTD Ref File Name	132CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Be	9	1	nogas	0.059	17.3	500	16.4	1	
Na	23	1	nogas	9.637	15.7	1790454	0.5	100	
Mg	24	1	nogas	5.128	23.9	116722	14.8	100	
Al	27	1	nogas	0.147	28.8	23021	1.8	5	
K	39	1	nogas	6.413	113.2	7620339	1.1	100	
Ti	47	1	nogas	0.036	140.2	490	17.7	2.5	
V	51	1	nogas	-1.438	-30.8	188273	5.5	2.5	
Cr	52	1	nogas	-0.066	-47.9	30843	1.8	2.5	
Mn	55	1	nogas	-0.288	-2.3	26900	1.2	2.5	
Co	59	1	nogas	0.067	5.6	2567	4.3	2.5	
Ni	60	1	nogas	0.258	16.9	977	22.5	2.5	
Cu	63	1	nogas	0.044	59.7	15226	2.4	2.5	
Zn	66	1	nogas	0.304	9.5	2300	6.8	2.5	
As	75	1	nogas	-0.362	-50.5	45728	3.1	2.5	
Sr	88	1	nogas	0.067	21.6	5314	7.5	2.5	
Ag	107	1	nogas	0.047	13.3	707	10.6	2.5	
Cd	111	1	nogas	0.050	18.6	177	14.2	1	
Sb	121	1	nogas	0.857	26.0	11938	23.8	2.5	
Tl	205	1	nogas	0.781	48.3	15486	50.0	1	
Pb	208	1	nogas	0.075	40.3	3500	21.9	2.5	
U	238	1	nogas	0.146	53.3	3764	54.0	2.5	
[Pb]	206	1	nogas	0.086	47.4	940	31.4	2.5	
[Pb]	207	1	nogas	0.084	30.2	847	19.8	2.5	
Na	23	2	He	5.680	18.5	155003	1.6	100	
Mg	24	2	He	3.932	17.4	5364	10.1	100	
Al	27	2	He	0.182	126.5	573	16.6	5	
K	39	2	He	3.355	19.9	192851	0.3	100	
Ca	43	2	He	15.828	96.3	103	31.1	100	
Ca	44	2	He	2.898	115.3	3160	5.5	100	
V	51	2	He	0.134	16.6	2526	3.7	2.5	
Cr	52	2	He	0.012	280.1	4507	3.8	2.5	
Mn	55	2	He	-0.291	-7.4	2357	2.2	2.5	
Fe	56	2	He	5.258	7.9	40361	3.5	100	
Co	59	2	He	0.059	20.6	813	10.7	2.5	
Ni	60	2	He	0.159	6.2	263	7.9	2.5	
Cu	63	2	He	-0.130	-33.5	5451	4.7	2.5	
Zn	66	2	He	-0.008	-1512.5	630	26.4	2.5	
As	75	2	He	0.043	69.9	314	14.7	2.5	
Se	78	2	He	0.287	30.2	191	3.2	2.5	
B	11	1	nogas	8.920	16.2	154140	2.9	10	
Si	28	1	nogas	141.193	18.9	1477333	0.8	5	CCB Main CR1 Failed
Ca	43	1	nogas	9.907	56.9	1870	8.9	100	
Ca	44	1	nogas	-0.013	-55968.6	336872	0.8	100	
Fe	56	1	nogas	4.031	182.3	1995271	8.2	100	
Se	77	1	nogas	-4.849	-40.6	14900	3.0	2.5	
Se	82	1	nogas	-0.035	-694.9	457	13.2	2.5	

Continuing Calibration Blank (CCB) Report

Mo	95	1	nogas	0.353	20.0	2103	18.5	2.5	
Sn	118	1	nogas	0.585	24.4	5914	18.8	5	
Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Ba	137	1	nogas	0.045	46.2	880	9.0	2.5	
Sb	121	2	He	0.563	6.2	2990	2.9	2.5	
P	31	1	nogas	0.056	1022.0	96277	1.4	10	
La	139	1	nogas	11.764	183.8	77	83.9	2.5	CCB Main CR1 Failed
Au	197	1	nogas	17.985	1163.3	27	94.4	2.5	CCB Main CR1 Failed

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	1107536	3.13	1171766	94.52	70	125	
Ge	72	1	nogas	3144094	1.61	3233065	97.25	70	125	
In	115	1	nogas	2846886	1.58	2958353	96.23	70	125	
Bi	209	1	nogas	2090052	4.29	2061475	101.39	70	125	
Ge	72	2	He	780823	2.45	810035	96.39	70	125	

Continuing Calibration Verification (CCV) Report

Sample Table

Sample Name	CCV
Data File Name	183_CCV.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\121
Acq Date Time	2018-12-10T23:06:20-06:00
Sample Type	CCV
Dilution	1
Comment	
ISTD Ref File Name	132CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Exp Value	%Rec	%Low	%High2	QC Flag
Be	9	1	nogas	92.905	3.317	709941	0.10	100	92.9	90	110	
Na	23	1	nogas	9838.130	1.061	240551180	1.39	10000	98.4	90	110	
Mg	24	1	nogas	9576.027	2.324	150929749	2.72	10000	95.8	90	110	
Al	27	1	nogas	97.662	2.684	1835934	4.19	100	97.7	90	110	
K	39	1	nogas	9896.578	2.781	198210996	2.77	10000	99.0	90	110	
Ti	47	1	nogas	97.679	1.936	187019	0.31	100	97.7	90	110	
V	51	1	nogas	96.970	1.911	2734683	2.38	100	97.0	90	110	
Cr	52	1	nogas	97.356	3.880	2186366	2.81	100	97.4	90	110	
Mn	55	1	nogas	96.230	2.155	2704824	0.56	100	96.2	90	110	
Co	59	1	nogas	102.817	0.769	2369206	1.89	100	102.8	90	110	
Ni	60	1	nogas	99.839	1.079	522224	1.21	100	99.8	90	110	
Cu	63	1	nogas	97.227	1.903	1241494	0.26	100	97.2	90	110	
Zn	66	1	nogas	98.600	0.798	425085	0.92	100	98.6	90	110	
As	75	1	nogas	96.448	0.608	577643	1.11	100	96.4	90	110	
Sr	88	1	nogas	97.994	1.029	2833917	2.50	100	98.0	90	110	
Ag	107	1	nogas	99.691	4.988	1383670	5.08	100	99.7	90	110	
Cd	111	1	nogas	98.573	3.229	302892	1.91	100	98.6	90	110	
Sb	121	1	nogas	98.257	1.125	1303462	2.68	100	98.3	90	110	
Tl	205	1	nogas	99.395	2.753	1891703	1.35	100	99.4	90	110	
Pb	208	1	nogas	102.760	2.976	2587808	2.97	100	102.8	90	110	
U	238	1	nogas	103.008	1.957	2500922	0.53	100	103.0	90	110	
[Pb]	206	1	nogas	100.292	3.271	643046	1.75	100	100.3	90	110	
[Pb]	207	1	nogas	100.241	4.077	567936	2.72	100	100.2	90	110	
Na	23	2	He	9950.161	0.882	14937930	0.77	10000	99.5	90	110	
Mg	24	2	He	9924.521	1.758	8165949	2.18	10000	99.2	90	110	
Al	27	2	He	99.997	2.053	45492	2.51	100	100.0	90	110	
K	39	2	He	10268.160	1.121	8741084	1.10	10000	102.7	90	110	
Ca	43	2	He	9803.686	2.180	23896	2.65	10000	98.0	90	110	
Ca	44	2	He	9883.166	1.528	405736	2.23	10000	98.8	90	110	
V	51	2	He	98.336	2.048	609710	1.40	100	98.3	90	110	
Cr	52	2	He	98.246	2.997	661126	2.32	100	98.2	90	110	
Mn	55	2	He	99.843	1.781	462422	1.15	100	99.8	90	110	
Fe	56	2	He	10062.185	0.497	56304424	1.20	10000	100.6	90	110	
Co	59	2	He	97.405	1.584	904644	2.28	100	97.4	90	110	
Ni	60	2	He	99.148	1.618	232315	2.32	100	99.1	90	110	
Cu	63	2	He	98.665	1.437	589235	1.68	100	98.7	90	110	
Zn	66	2	He	99.300	1.420	142276	1.05	100	99.3	90	110	
As	75	2	He	99.960	0.622	143417	1.07	100	100.0	90	110	
Se	78	2	He	101.073	2.791	11381	2.10	100	101.1	90	110	
B	11	1	nogas	456.268	2.437	2233477	1.33	500	91.3	90	110	
Si	28	1	nogas	4964.232	1.598	6508045	0.37	5000	99.3	90	110	
Ca	43	1	nogas	9910.259	1.501	360106	0.32	10000	99.1	90	110	
Ca	44	1	nogas	9915.994	3.279	6006115	1.49	10000	99.2	90	110	
Fe	56	1	nogas	9563.794	1.273	231523014	0.37	10000	95.6	90	110	
Se	77	1	nogas	83.797	3.703	38411	0.77	100	83.8	90	110	CCV Main CR1-2 Failed
Se	82	1	nogas	100.642	2.778	28850	4.03	100	100.6	90	110	
Mo	95	1	nogas	100.173	0.591	578663	1.79	100	100.2	90	110	
Sn	118	1	nogas	94.723	2.213	826106	1.90	100	94.7	90	110	
Ba	137	1	nogas	97.646	3.833	402503	0.80	100	97.6	90	110	
Sb	121	2	He	98.225	0.243	485546	0.75	100	98.2	90	110	
Li	7	1	nogas	97.838	4.270	1708032	0.67	100	97.8	90	110	
P	31	1	nogas	487.339	0.898	933413	1.49	500	97.5	90	110	
La	139	1	nogas	116.594	27.850	407	22.04	100	116.6	90	110	CCV Main CR1-2 Failed
Au	197	1	nogas	21.068	1206.990	27	114.56	100	21.1	90	110	CCV Main CR1-2 Failed

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	1096195	3.31	1171766	93.55	70	125	
Ge	72	1	nogas	3273180	1.62	3233065	101.24	70	125	
In	115	1	nogas	2925384	4.16	2958353	98.89	70	125	
Bi	209	1	nogas	2085444	1.63	2061475	101.16	70	125	

Continuing Calibration Verification (CCV) Report

Ge	72	2	He	826791	0.72	810035	102.07	70	125	

Continuing Calibration Blank (CCB) Report

Sample Table

Sample Name	CCB
Data File Name	184_CCB.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\121
Acq Date Time	2018-12-10T23:08:24-06:00
Sample Type	CCB
Dilution	1
Comment	
ISTD Ref File Name	132CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Be	9	1	nogas	0.072	27.0	647	21.9	1	
Na	23	1	nogas	7.470	29.3	1851405	3.1	100	
Mg	24	1	nogas	3.942	37.6	105320	22.7	100	
Al	27	1	nogas	-0.080	-49.4	20445	1.5	5	
K	39	1	nogas	-1.718	-753.2	8044221	1.1	100	
Ti	47	1	nogas	0.090	65.0	633	16.4	2.5	
V	51	1	nogas	-2.308	-9.8	179551	1.4	2.5	
Cr	52	1	nogas	0.062	197.4	36099	5.1	2.5	
Mn	55	1	nogas	-0.237	-30.1	30409	3.7	2.5	
Co	59	1	nogas	0.066	34.6	2740	18.2	2.5	
Ni	60	1	nogas	0.249	9.7	1003	13.8	2.5	
Cu	63	1	nogas	0.083	23.6	16918	1.8	2.5	
Zn	66	1	nogas	0.176	26.5	1900	8.1	2.5	
As	75	1	nogas	-0.881	-38.0	46283	2.1	2.5	
Sr	88	1	nogas	0.022	126.2	4374	16.7	2.5	
Ag	107	1	nogas	0.048	19.9	777	15.7	2.5	
Cd	111	1	nogas	0.054	35.4	200	27.8	1	
Sb	121	1	nogas	1.217	25.5	17730	21.9	2.5	
Tl	205	1	nogas	0.705	37.9	15162	40.6	1	
Pb	208	1	nogas	0.072	35.3	3414	18.7	2.5	
U	238	1	nogas	0.136	48.6	3804	50.2	2.5	
[Pb]	206	1	nogas	0.065	45.8	873	27.9	2.5	
[Pb]	207	1	nogas	0.051	15.3	717	10.3	2.5	
Na	23	2	He	0.662	496.6	153357	1.8	100	
Mg	24	2	He	2.294	32.3	4237	12.7	100	
Al	27	2	He	-0.018	-159.0	507	2.3	5	
K	39	2	He	10.906	28.4	199140	1.3	100	
Ca	43	2	He	2.874	348.3	77	30.1	100	
Ca	44	2	He	-5.027	-122.5	2957	7.0	100	
V	51	2	He	0.116	9.5	2514	4.0	2.5	
Cr	52	2	He	0.066	34.3	5027	3.2	2.5	
Mn	55	2	He	-0.202	-10.2	2847	4.5	2.5	
Fe	56	2	He	4.641	2.3	38497	2.6	100	
Co	59	2	He	0.051	17.3	777	11.0	2.5	
Ni	60	2	He	0.150	27.3	253	37.5	2.5	
Cu	63	2	He	-0.056	-63.5	6081	3.5	2.5	
Zn	66	2	He	-0.089	-113.5	537	26.5	2.5	
As	75	2	He	0.052	44.6	338	8.4	2.5	
Se	78	2	He	0.372	76.3	207	13.8	2.5	
B	11	1	nogas	-0.426	-399.9	119024	4.1	10	
Si	28	1	nogas	97.199	41.0	1544126	0.7	5	CCB Main CR1 Failed
Ca	43	1	nogas	3.372	89.2	1770	3.5	100	
Ca	44	1	nogas	-35.499	-60.8	341758	0.6	100	
Fe	56	1	nogas	-2.129	-393.6	1994185	8.7	100	
Se	77	1	nogas	-7.319	-2.7	15393	2.8	2.5	
Se	82	1	nogas	-0.328	-34.7	407	7.5	2.5	
Mo	95	1	nogas	0.305	41.3	1970	36.6	2.5	
Sn	118	1	nogas	0.349	29.2	4124	20.1	5	

Continuing Calibration Blank (CCB) Report

Ba	137	1	nogas	-0.047	-43.6	537	14.0	2.5	
Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Sb	121	2	He	0.883	1.6	4647	0.1	2.5	
P	31	1	nogas	5.694	45.6	113615	1.3	10	
La	139	1	nogas	10.341	79.4	77	32.8	2.5	CCB Main CR1 Failed
Au	197	1	nogas	-123.122	-64.6	10	100.0	2.5	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	1196915	3.07	1171766	102.15	70	125	
Ge	72	1	nogas	3387392	3.17	3233065	104.77	70	125	
In	115	1	nogas	2999763	2.18	2958353	101.40	70	125	
Bi	209	1	nogas	2263409	3.76	2061475	109.80	70	125	
Ge	72	2	He	809386	1.34	810035	99.92	70	125	

Continuing Calibration Verification (CCV) Report

Sample Table

Sample Name	CCV
Data File Name	195_CCV.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\121
Acq Date Time	2018-12-10T23:31:22-06:00
Sample Type	CCV
Dilution	1
Comment	
ISTD Ref File Name	132CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Exp Value	%Rec	%Low	%High2	QC Flag
Be	9	1	nogas	98.145	3.285	759827	1.62	100	98.1	90	110	
Na	23	1	nogas	9896.205	3.990	258337689	1.42	10000	99.0	90	110	
Mg	24	1	nogas	9770.217	5.908	164298908	1.12	10000	97.7	90	110	
Al	27	1	nogas	99.408	5.422	2023636	2.77	100	99.4	90	110	
K	39	1	nogas	9778.360	3.346	212383088	1.49	10000	97.8	90	110	
Ti	47	1	nogas	96.545	2.887	200404	1.10	100	96.5	90	110	
V	51	1	nogas	96.015	1.631	2938135	1.55	100	96.0	90	110	
Cr	52	1	nogas	97.396	1.954	2371825	0.79	100	97.4	90	110	
Mn	55	1	nogas	96.945	2.308	2954171	0.77	100	96.9	90	110	
Co	59	1	nogas	102.296	4.605	2554149	2.13	100	102.3	90	110	
Ni	60	1	nogas	97.703	2.506	553982	0.20	100	97.7	90	110	
Cu	63	1	nogas	95.128	3.691	1317043	1.33	100	95.1	90	110	
Zn	66	1	nogas	97.573	2.583	456052	1.78	100	97.6	90	110	
As	75	1	nogas	96.158	2.418	624513	1.43	100	96.2	90	110	
Sr	88	1	nogas	96.164	3.772	3014087	2.55	100	96.2	90	110	
Ag	107	1	nogas	97.630	1.717	1469108	1.09	100	97.6	90	110	
Cd	111	1	nogas	99.805	3.220	324954	3.36	100	99.8	90	110	
Sb	121	1	nogas	97.368	2.834	1399939	1.37	100	97.4	90	110	
Tl	205	1	nogas	95.893	3.401	1984203	2.53	100	95.9	90	110	
Pb	208	1	nogas	109.504	0.919	2757551	0.92	100	109.5	90	110	
U	238	1	nogas	103.380	3.854	2728169	2.07	100	103.4	90	110	
[Pb]	206	1	nogas	97.273	2.142	678280	2.38	100	97.3	90	110	
[Pb]	207	1	nogas	97.310	2.377	599524	1.52	100	97.3	90	110	
Na	23	2	He	9823.545	2.560	15718255	2.18	10000	98.2	90	110	
Mg	24	2	He	9793.081	0.234	8586868	0.40	10000	97.9	90	110	
Al	27	2	He	99.658	2.040	48312	1.40	100	99.7	90	110	
K	39	2	He	11105.898	1.115	9438728	1.09	10000	111.1	90	110	CCV Main CR1-2 Failed
Ca	43	2	He	9951.290	3.620	25848	3.95	10000	99.5	90	110	
Ca	44	2	He	9976.902	0.289	436431	0.65	10000	99.8	90	110	
V	51	2	He	98.378	1.284	650070	0.66	100	98.4	90	110	
Cr	52	2	He	98.667	0.221	707657	0.82	100	98.7	90	110	
Mn	55	2	He	100.340	1.059	495255	0.61	100	100.3	90	110	
Fe	56	2	He	10152.363	1.854	60535724	1.27	10000	101.5	90	110	
Co	59	2	He	98.004	1.702	969869	1.08	100	98.0	90	110	
Ni	60	2	He	99.007	2.283	247187	1.76	100	99.0	90	110	
Cu	63	2	He	98.333	1.390	625821	0.76	100	98.3	90	110	
Zn	66	2	He	98.786	0.735	150845	0.28	100	98.8	90	110	
As	75	2	He	99.637	0.351	152344	0.45	100	99.6	90	110	
Se	78	2	He	103.219	0.904	12384	1.45	100	103.2	90	110	
B	11	1	nogas	467.993	2.975	2317603	1.14	500	93.6	90	110	
Si	28	1	nogas	4916.391	5.598	6999542	1.88	5000	98.3	90	110	
Ca	43	1	nogas	9741.677	2.254	383807	0.90	10000	97.4	90	110	
Ca	44	1	nogas	9666.065	2.972	6357559	0.69	10000	96.7	90	110	
Fe	56	1	nogas	9497.481	1.151	249358056	2.52	10000	95.0	90	110	
Se	77	1	nogas	76.966	1.274	39744	2.13	100	77.0	90	110	CCV Main CR1-2 Failed
Se	82	1	nogas	97.039	2.559	30172	2.80	100	97.0	90	110	
Mo	95	1	nogas	98.277	2.022	615417	0.72	100	98.3	90	110	
Sn	118	1	nogas	96.240	3.082	889074	2.56	100	96.2	90	110	
Ba	137	1	nogas	97.733	4.599	426686	1.10	100	97.7	90	110	
Sb	121	2	He	97.154	1.647	511777	1.04	100	97.2	90	110	
Li	7	1	nogas	98.101	4.020	1735071	2.27	100	98.1	90	110	
P	31	1	nogas	493.648	3.484	1023399	1.01	500	98.7	90	110	
La	139	1	nogas	121.306	15.077	447	8.48	100	121.3	90	110	CCV Main CR1-2 Failed
Au	197	1	nogas	187.874	3.749	50	0.00	100	187.9	90	110	CCV Main CR1-2 Failed

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	1110184	1.71	1171766	94.74	70	125	
Ge	72	1	nogas	3549444	2.60	3233065	109.79	70	125	
In	115	1	nogas	3100416	5.59	2958353	104.80	70	125	
Bi	209	1	nogas	2267301	1.78	2061475	109.98	70	125	

Continuing Calibration Verification (CCV) Report

Ge	72	2	He	881115	0.61	810035	108.77	70	125	

Continuing Calibration Blank (CCB) Report

Sample Table

Sample Name	CCB
Data File Name	196_CCB.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\121
Acq Date Time	2018-12-10T23:33:27-06:00
Sample Type	CCB
Dilution	1
Comment	
ISTD Ref File Name	132CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Be	9	1	nogas	0.070	31.9	623	27.3	1	
Na	23	1	nogas	5.430	37.0	1790450	3.3	100	
Mg	24	1	nogas	5.483	32.5	129178	22.2	100	
Al	27	1	nogas	0.140	17.1	24072	1.7	5	
K	39	1	nogas	26.883	26.1	8408513	0.6	100	
Ti	47	1	nogas	0.058	68.8	557	12.2	2.5	
V	51	1	nogas	-2.195	-15.0	178175	3.5	2.5	
Cr	52	1	nogas	0.164	35.2	37548	2.3	2.5	
Mn	55	1	nogas	-0.094	-46.9	33708	2.8	2.5	
Co	59	1	nogas	0.086	34.1	3120	21.1	2.5	
Ni	60	1	nogas	0.278	12.1	1130	15.4	2.5	
Cu	63	1	nogas	0.140	20.9	17235	3.2	2.5	
Zn	66	1	nogas	0.294	22.9	2370	11.0	2.5	
As	75	1	nogas	-0.706	-7.8	46162	1.0	2.5	
Sr	88	1	nogas	0.055	38.7	5248	10.9	2.5	
Ag	107	1	nogas	0.056	17.7	867	15.0	2.5	
Cd	111	1	nogas	0.059	61.3	217	50.6	1	
Sb	121	1	nogas	1.044	26.8	15024	24.2	2.5	
Tl	205	1	nogas	0.724	51.6	15546	49.2	1	
Pb	208	1	nogas	0.087	30.3	3797	17.5	2.5	
U	238	1	nogas	0.143	43.6	3961	40.9	2.5	
[Pb]	206	1	nogas	0.080	16.8	980	9.2	2.5	
[Pb]	207	1	nogas	0.065	74.0	807	36.1	2.5	
Na	23	2	He	-10.720	-25.7	147434	1.3	100	
Mg	24	2	He	2.729	14.6	4947	6.1	100	
Al	27	2	He	0.173	32.1	637	3.6	5	
K	39	2	He	22.200	5.1	208545	0.4	100	
Ca	43	2	He	-7.394	-75.7	57	27.0	100	
Ca	44	2	He	-4.903	-186.0	3190	10.6	100	
V	51	2	He	0.099	4.9	2598	1.1	2.5	
Cr	52	2	He	0.019	349.8	5087	9.6	2.5	
Mn	55	2	He	-0.191	-5.2	3120	3.1	2.5	
Fe	56	2	He	4.948	10.0	43268	5.0	100	
Co	59	2	He	0.047	39.5	793	22.4	2.5	
Ni	60	2	He	0.146	21.2	263	29.5	2.5	
Cu	63	2	He	-0.143	-19.5	6011	1.3	2.5	
Zn	66	2	He	-0.061	-40.1	620	4.3	2.5	
As	75	2	He	0.051	97.6	363	20.7	2.5	
Se	78	2	He	0.096	206.2	191	11.5	2.5	
B	11	1	nogas	-6.198	-13.2	88554	3.2	10	
Si	28	1	nogas	117.121	56.9	1527691	3.4	5	CCB Main CR1 Failed
Ca	43	1	nogas	9.660	33.0	1960	7.2	100	
Ca	44	1	nogas	-14.543	-119.9	345705	1.5	100	
Fe	56	1	nogas	4.661	121.4	2112445	5.7	100	
Se	77	1	nogas	-9.606	-19.1	14423	3.1	2.5	
Se	82	1	nogas	0.105	94.0	520	3.8	2.5	
Mo	95	1	nogas	0.277	45.4	1763	41.0	2.5	
Sn	118	1	nogas	0.300	21.5	3720	14.0	5	

Continuing Calibration Blank (CCB) Report

Ba	137	1	nogas	-0.010	-612.3	697	34.7	2.5	
Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Sb	121	2	He	0.688	8.1	3991	5.9	2.5	
P	31	1	nogas	12.282	17.3	122288	1.5	10	CCB Main CR1 Failed
La	139	1	nogas	15.146	100.3	93	53.9	2.5	CCB Main CR1 Failed
Au	197	1	nogas	-150.948	-59.7	7	173.2	2.5	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	1180096	2.60	1171766	100.71	70	125	
Ge	72	1	nogas	3305257	1.59	3233065	102.23	70	125	
In	115	1	nogas	3024791	2.16	2958353	102.25	70	125	
Bi	209	1	nogas	2289681	1.03	2061475	111.07	70	125	
Ge	72	2	He	872311	1.79	810035	107.69	70	125	

Continuing Calibration Blank (CCB) Report

Sample Table

Sample Name	CCB
Data File Name	206_CCB.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\121
Acq Date Time	2018-12-10T23:54:16-06:00
Sample Type	CCB
Dilution	1
Comment	
ISTD Ref File Name	132CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Be	9	1	nogas	0.067	51.6	630	44.5	1	
Na	23	1	nogas	-23.391	-13.8	1164603	4.9	100	
Mg	24	1	nogas	4.884	41.6	128116	24.7	100	
Al	27	1	nogas	-0.018	-205.7	22404	1.9	5	
K	39	1	nogas	-2.278	-877.4	8314310	0.8	100	
Ti	47	1	nogas	0.050	15.4	577	6.6	2.5	
V	51	1	nogas	-2.575	-7.8	178774	6.2	2.5	
Cr	52	1	nogas	0.018	633.3	36346	4.7	2.5	
Mn	55	1	nogas	-0.213	-21.3	32208	0.4	2.5	
Co	59	1	nogas	0.072	40.1	2960	19.8	2.5	
Ni	60	1	nogas	0.235	9.9	957	10.7	2.5	
Cu	63	1	nogas	0.049	70.9	17065	6.0	2.5	
Zn	66	1	nogas	0.205	20.1	2103	5.2	2.5	
As	75	1	nogas	-1.293	-17.4	45524	1.7	2.5	
Sr	88	1	nogas	0.017	155.1	4364	14.1	2.5	
Ag	107	1	nogas	0.050	17.5	837	11.5	2.5	
Cd	111	1	nogas	0.060	51.1	230	42.8	1	
Sb	121	1	nogas	0.972	28.5	14840	22.3	2.5	
Tl	205	1	nogas	0.660	46.3	14611	45.7	1	
Pb	208	1	nogas	0.082	44.0	3677	24.8	2.5	
U	238	1	nogas	0.130	54.8	3717	53.1	2.5	
[Pb]	206	1	nogas	0.068	33.9	920	19.2	2.5	
[Pb]	207	1	nogas	0.063	58.7	817	30.0	2.5	
Na	23	2	He	-35.691	-7.2	110018	1.5	100	
Mg	24	2	He	2.574	7.2	4891	1.8	100	
Al	27	2	He	-0.126	-86.4	503	11.6	5	
K	39	2	He	20.607	5.7	207218	0.5	100	
Ca	43	2	He	1.295	300.5	80	12.5	100	
Ca	44	2	He	-10.178	-33.6	3014	3.6	100	
V	51	2	He	0.094	10.7	2602	1.5	2.5	
Cr	52	2	He	0.028	213.6	5227	6.2	2.5	
Mn	55	2	He	-0.237	-10.0	2944	1.7	2.5	
Fe	56	2	He	4.693	5.2	42482	5.5	100	
Co	59	2	He	0.050	28.3	833	15.2	2.5	
Ni	60	2	He	0.122	6.5	207	10.1	2.5	
Cu	63	2	He	-0.185	-10.1	5838	3.4	2.5	
Zn	66	2	He	-0.092	-13.2	583	5.2	2.5	
As	75	2	He	0.048	77.3	363	13.9	2.5	
Se	78	2	He	0.209	35.9	207	6.4	2.5	
B	11	1	nogas	-10.720	-8.6	68991	3.3	10	
Si	28	1	nogas	4.521	1715.7	1495478	1.5	5	
Ca	43	1	nogas	0.115	2520.6	1707	3.7	100	
Ca	44	1	nogas	-66.204	-42.8	335010	1.2	100	
Fe	56	1	nogas	0.038	24259.8	2117724	7.1	100	
Se	77	1	nogas	-11.355	-5.4	14830	4.8	2.5	
Se	82	1	nogas	-0.390	-73.4	403	22.2	2.5	

Continuing Calibration Blank (CCB) Report

Mo	95	1	nogas	0.279	44.9	1870	37.3	2.5	
Sn	118	1	nogas	0.267	33.8	3570	23.6	5	
Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Ba	137	1	nogas	-0.015	-152.1	707	14.2	2.5	
Sb	121	2	He	0.598	5.0	3580	4.6	2.5	
P	31	1	nogas	10.349	27.7	126163	0.4	10	CCB Main CR1 Failed
La	139	1	nogas	1.154	410.5	50	34.6	2.5	
Au	197	1	nogas	-0.843	-5350.2	27	21.7	2.5	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	1237108	5.17	1171766	105.58	70	125	
Ge	72	1	nogas	3509032	4.62	3233065	108.54	70	125	
In	115	1	nogas	3153382	2.18	2958353	106.59	70	125	
Bi	209	1	nogas	2340428	1.42	2061475	113.53	70	125	
Ge	72	2	He	886277	2.21	810035	109.41	70	125	

Continuing Calibration Verification (CCV) Report

Sample Table

Sample Name	CCV
Data File Name	208_CCV.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\121
Acq Date Time	2018-12-11T00:02:39-06:00
Sample Type	CCV
Dilution	1
Comment	
ISTD Ref File Name	132CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Exp Value	%Rec	%Low	%High2	QC Flag
Be	9	1	nogas	91.289	3.533	752632	0.97	100	91.3	90	110	
Na	23	1	nogas	10139.757	7.373	256520931	2.36	10000	101.4	90	110	
Mg	24	1	nogas	9839.533	9.513	160278474	1.40	10000	98.4	90	110	
Al	27	1	nogas	100.122	6.890	2084019	7.04	100	100.1	90	110	
K	39	1	nogas	9781.373	2.920	217104738	2.10	10000	97.8	90	110	
Ti	47	1	nogas	95.942	1.108	203552	1.75	100	95.9	90	110	
V	51	1	nogas	90.626	6.320	2847499	5.21	100	90.6	90	110	
Cr	52	1	nogas	91.469	5.261	2278200	4.83	100	91.5	90	110	
Mn	55	1	nogas	94.524	3.575	2944122	2.85	100	94.5	90	110	
Co	59	1	nogas	98.702	4.767	2519218	4.45	100	98.7	90	110	
Ni	60	1	nogas	96.778	0.655	560805	0.91	100	96.8	90	110	
Cu	63	1	nogas	96.258	1.710	1362156	2.49	100	96.3	90	110	
Zn	66	1	nogas	97.143	1.863	463987	1.87	100	97.1	90	110	
As	75	1	nogas	94.447	2.005	627755	1.35	100	94.4	90	110	
Sr	88	1	nogas	94.594	0.838	3030315	1.21	100	94.6	90	110	
Ag	107	1	nogas	94.957	4.013	1459878	3.45	100	95.0	90	110	
Cd	111	1	nogas	101.890	0.691	331716	1.13	100	101.9	90	110	
Sb	121	1	nogas	100.487	3.180	1476461	3.10	100	100.5	90	110	
Tl	205	1	nogas	95.498	5.221	1983565	4.20	100	95.5	90	110	
Pb	208	1	nogas	108.173	0.593	2724030	0.59	100	108.2	90	110	
U	238	1	nogas	104.538	3.159	2771252	4.14	100	104.5	90	110	
[Pb]	206	1	nogas	98.543	0.331	689842	0.99	100	98.5	90	110	
[Pb]	207	1	nogas	97.085	0.939	600636	2.00	100	97.1	90	110	
Na	23	2	He	9616.876	2.742	15732919	2.06	10000	96.2	90	110	
Mg	24	2	He	9803.993	3.149	8786793	2.57	10000	98.0	90	110	
Al	27	2	He	102.768	1.378	50916	1.71	100	102.8	90	110	
K	39	2	He	10989.336	2.012	9341658	1.97	10000	109.9	90	110	
Ca	43	2	He	9895.416	1.926	26272	1.39	10000	99.0	90	110	
Ca	44	2	He	9931.023	1.847	444086	1.41	10000	99.3	90	110	
V	51	2	He	96.596	1.254	652568	1.19	100	96.6	90	110	
Cr	52	2	He	97.745	1.846	716650	1.39	100	97.7	90	110	
Mn	55	2	He	99.111	1.337	500124	0.60	100	99.1	90	110	
Fe	56	2	He	9829.612	1.909	59916171	1.29	10000	98.3	90	110	
Co	59	2	He	95.121	2.544	962337	2.38	100	95.1	90	110	
Ni	60	2	He	96.926	1.760	247385	1.43	100	96.9	90	110	
Cu	63	2	He	97.890	1.450	636909	1.00	100	97.9	90	110	
Zn	66	2	He	100.497	0.926	156862	0.76	100	100.5	90	110	
As	75	2	He	98.417	0.400	153835	0.78	100	98.4	90	110	
Se	78	2	He	100.390	1.097	12318	1.11	100	100.4	90	110	
B	11	1	nogas	446.841	2.287	2363392	3.63	500	89.4	90	110	CCV Main CR1-2 Failed
Si	28	1	nogas	4696.105	2.648	6903535	1.18	5000	93.9	90	110	
Ca	43	1	nogas	9540.466	2.537	384111	1.81	10000	95.4	90	110	
Ca	44	1	nogas	9534.556	4.047	6413521	3.20	10000	95.3	90	110	
Fe	56	1	nogas	9340.308	3.931	250509989	2.96	10000	93.4	90	110	
Se	77	1	nogas	75.190	3.611	40094	1.83	100	75.2	90	110	CCV Main CR1-2 Failed
Se	82	1	nogas	97.488	4.851	30960	3.95	100	97.5	90	110	
Mo	95	1	nogas	96.977	1.024	620556	0.59	100	97.0	90	110	
Sn	118	1	nogas	96.654	0.427	892907	0.50	100	96.7	90	110	
Ba	137	1	nogas	97.956	1.991	427869	1.23	100	98.0	90	110	
Sb	121	2	He	96.308	2.253	518611	1.75	100	96.3	90	110	
Li	7	1	nogas	95.534	2.096	1803897	4.89	100	95.5	90	110	
P	31	1	nogas	483.118	2.280	1025943	1.23	500	96.6	90	110	
La	139	1	nogas	92.617	33.011	353	29.46	100	92.6	90	110	
Au	197	1	nogas	-48.196	-319.192	20	100.00	100	-48.2	90	110	CCV Main CR1-2 Failed

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	1182604	2.91	1171766	100.92	70	125	
Ge	72	1	nogas	3625992	0.96	3233065	112.15	70	125	
In	115	1	nogas	3097029	0.92	2958353	104.69	70	125	
Bi	209	1	nogas	2276123	1.06	2061475	110.41	70	125	

Continuing Calibration Verification (CCV) Report

Ge	72	2	He	900735	0.73	810035	111.20	70	125	

Continuing Calibration Verification (CCV) Report

Sample Table

Sample Name	CCV
Data File Name	218_CCV.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\121
Acq Date Time	2018-12-11T00:23:17-06:00
Sample Type	CCV
Dilution	1
Comment	
ISTD Ref File Name	132CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Exp Value	%Rec	%Low	%High2	QC Flag
Be	9	1	nogas	96.283	5.166	779490	3.69	100	96.3	90	110	
Na	23	1	nogas	10027.597	2.694	264950373	0.85	10000	100.3	90	110	
Mg	24	1	nogas	9959.523	4.274	169593370	1.70	10000	99.6	90	110	
Al	27	1	nogas	102.925	4.600	2080150	1.97	100	102.9	90	110	
K	39	1	nogas	10657.078	2.115	229193188	2.77	10000	106.6	90	110	
Ti	47	1	nogas	100.807	1.210	207840	1.90	100	100.8	90	110	
V	51	1	nogas	102.325	1.819	3094147	3.85	100	102.3	90	110	
Cr	52	1	nogas	102.125	3.331	2468289	3.48	100	102.1	90	110	
Mn	55	1	nogas	102.871	1.133	3111474	2.30	100	102.9	90	110	
Co	59	1	nogas	103.762	3.001	2573545	1.42	100	103.8	90	110	
Ni	60	1	nogas	102.660	3.849	577913	0.99	100	102.7	90	110	
Cu	63	1	nogas	101.327	0.860	1393204	3.80	100	101.3	90	110	
Zn	66	1	nogas	101.649	0.362	471926	2.76	100	101.6	90	110	
As	75	1	nogas	101.407	1.610	651172	1.54	100	101.4	90	110	
Sr	88	1	nogas	100.874	4.460	3138735	2.20	100	100.9	90	110	
Ag	107	1	nogas	103.504	3.689	1546080	0.68	100	103.5	90	110	
Cd	111	1	nogas	102.253	1.114	329453	1.17	100	102.3	90	110	
Sb	121	1	nogas	104.743	3.930	1495368	2.88	100	104.7	90	110	
Tl	205	1	nogas	96.902	5.970	2065558	1.26	100	96.9	90	110	
Pb	208	1	nogas	112.171	2.926	2824650	2.92	100	112.2	90	110	CCV Main CR1-2 Failed
U	238	1	nogas	102.227	4.616	2783393	5.48	100	102.2	90	110	
[Pb]	206	1	nogas	96.146	5.812	690554	1.60	100	96.1	90	110	
[Pb]	207	1	nogas	97.791	5.649	620797	2.68	100	97.8	90	110	
Na	23	2	He	10187.379	1.423	16121514	1.79	10000	101.9	90	110	
Mg	24	2	He	10213.699	2.347	8860315	2.73	10000	102.1	90	110	
Al	27	2	He	101.889	0.800	48857	0.93	100	101.9	90	110	
K	39	2	He	11441.069	1.769	9717848	1.73	10000	114.4	90	110	CCV Main CR1-2 Failed
Ca	43	2	He	10419.838	2.540	26769	2.40	10000	104.2	90	110	
Ca	44	2	He	10415.786	1.543	450618	1.87	10000	104.2	90	110	
V	51	2	He	100.781	1.947	658777	1.61	100	100.8	90	110	
Cr	52	2	He	101.228	1.223	718105	1.08	100	101.2	90	110	
Mn	55	2	He	104.855	0.408	511835	0.37	100	104.9	90	110	
Fe	56	2	He	10373.839	1.099	61196679	0.74	10000	103.7	90	110	
Co	59	2	He	101.000	1.396	988856	1.11	100	101.0	90	110	
Ni	60	2	He	103.941	0.841	256750	0.59	100	103.9	90	110	
Cu	63	2	He	102.668	1.498	646138	1.40	100	102.7	90	110	
Zn	66	2	He	102.762	1.519	155218	1.88	100	102.8	90	110	
As	75	2	He	102.891	0.794	155624	0.44	100	102.9	90	110	
Se	78	2	He	104.322	0.662	12380	0.55	100	104.3	90	110	
B	11	1	nogas	464.305	2.579	2405915	1.05	500	92.9	90	110	
Si	28	1	nogas	5418.429	4.922	7507971	1.03	5000	108.4	90	110	
Ca	43	1	nogas	10253.317	2.564	401098	2.21	10000	102.5	90	110	
Ca	44	1	nogas	10193.265	2.611	6637961	1.64	10000	101.9	90	110	
Fe	56	1	nogas	9956.528	0.425	259502847	2.61	10000	99.6	90	110	
Se	77	1	nogas	97.646	3.572	45210	1.01	100	97.6	90	110	
Se	82	1	nogas	102.829	3.734	31705	1.24	100	102.8	90	110	
Mo	95	1	nogas	101.418	2.773	630633	1.67	100	101.4	90	110	
Sn	118	1	nogas	99.107	0.899	906109	1.22	100	99.1	90	110	
Ba	137	1	nogas	101.196	1.732	437438	0.91	100	101.2	90	110	
Sb	121	2	He	102.241	1.599	532816	1.53	100	102.2	90	110	
Li	7	1	nogas	96.323	2.033	1783906	0.39	100	96.3	90	110	
P	31	1	nogas	527.009	3.488	1077678	1.09	500	105.4	90	110	
La	139	1	nogas	136.366	27.542	493	25.18	100	136.4	90	110	CCV Main CR1-2 Failed
Au	197	1	nogas	-2.001	-4106.545	27	43.30	100	-2.0	90	110	CCV Main CR1-2 Failed

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	1161104	1.57	1171766	99.09	70	125	
Ge	72	1	nogas	3525021	3.00	3233065	109.03	70	125	
In	115	1	nogas	3065391	2.02	2958353	103.62	70	125	
Bi	209	1	nogas	2339423	4.77	2061475	113.48	70	125	

Continuing Calibration Verification (CCV) Report

Ge	72	2	He	871683	0.38	810035	107.61	70	125	

Continuing Calibration Blank (CCB) Report

Sample Table

Sample Name	CCB
Data File Name	219_CCB.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\121
Acq Date Time	2018-12-11T00:25:20-06:00
Sample Type	CCB
Dilution	1
Comment	
ISTD Ref File Name	132CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Be	9	1	nogas	0.078	3.3	757	5.3	1	
Na	23	1	nogas	8.289	73.0	2078181	6.1	100	
Mg	24	1	nogas	33.908	13.5	648219	10.6	100	
Al	27	1	nogas	-0.025	-141.5	23585	2.6	5	
K	39	1	nogas	91.231	32.0	10843941	1.9	100	
Ti	47	1	nogas	0.059	87.2	627	14.7	2.5	
V	51	1	nogas	-0.632	-66.7	245880	2.5	2.5	
Cr	52	1	nogas	0.068	97.3	39776	2.1	2.5	
Mn	55	1	nogas	0.975	18.6	71417	4.0	2.5	
Co	59	1	nogas	0.111	26.8	4157	14.5	2.5	
Ni	60	1	nogas	0.427	3.9	2153	0.7	2.5	
Cu	63	1	nogas	-0.119	-11.4	15674	5.1	2.5	
Zn	66	1	nogas	0.275	11.8	2570	6.0	2.5	
As	75	1	nogas	0.043	568.0	56538	3.6	2.5	
Sr	88	1	nogas	0.316	15.4	14406	7.0	2.5	
Ag	107	1	nogas	0.075	24.9	1267	21.1	2.5	
Cd	111	1	nogas	0.073	18.4	290	15.0	1	
Sb	121	1	nogas	1.267	21.4	20169	16.1	2.5	
Tl	205	1	nogas	0.759	47.2	16980	43.9	1	
Pb	208	1	nogas	0.097	22.5	4050	13.6	2.5	
U	238	1	nogas	0.152	40.9	4397	37.3	2.5	
[Pb]	206	1	nogas	0.082	29.9	1040	15.3	2.5	
[Pb]	207	1	nogas	0.067	46.9	853	21.8	2.5	
Na	23	2	He	-11.283	-23.6	156438	1.6	100	
Mg	24	2	He	28.197	2.3	28869	1.2	100	
Al	27	2	He	0.000	96450.4	593	21.1	5	
K	39	2	He	133.316	1.8	301078	0.7	100	CCB Main CR1 Failed
Ca	43	2	He	43.542	44.9	200	27.8	100	
Ca	44	2	He	24.129	38.0	4737	7.6	100	
V	51	2	He	0.196	5.0	3448	0.6	2.5	
Cr	52	2	He	0.011	113.5	5368	2.2	2.5	
Mn	55	2	He	0.795	7.4	8432	4.1	2.5	
Fe	56	2	He	6.992	6.2	59075	3.7	100	
Co	59	2	He	0.078	14.0	1170	9.2	2.5	
Ni	60	2	He	0.258	8.9	577	11.5	2.5	
Cu	63	2	He	-0.263	-10.5	5621	4.3	2.5	
Zn	66	2	He	-0.057	-94.8	670	14.2	2.5	
As	75	2	He	0.096	11.8	460	3.3	2.5	
Se	78	2	He	0.072	223.1	201	10.6	2.5	
B	11	1	nogas	-8.006	-7.2	87194	2.3	10	
Si	28	1	nogas	10.225	615.2	1591244	1.0	5	CCB Main CR1 Failed
Ca	43	1	nogas	38.469	14.7	3384	6.6	100	
Ca	44	1	nogas	-73.524	-45.8	350011	2.3	100	
Fe	56	1	nogas	5.836	115.1	2403172	3.6	100	
Se	77	1	nogas	-4.217	-97.3	17776	4.8	2.5	
Se	82	1	nogas	-0.056	-211.2	533	7.8	2.5	
Mo	95	1	nogas	0.367	30.7	2557	25.0	2.5	
Sn	118	1	nogas	0.293	28.7	4061	19.4	5	

Continuing Calibration Blank (CCB) Report

Ba	137	1	nogas	-0.003	-314.0	810	4.5	2.5	
Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Sb	121	2	He	0.850	10.2	5157	8.2	2.5	
P	31	1	nogas	10.059	35.3	133035	1.5	10	CCB Main CR1 Failed
La	139	1	nogas	2.114	321.7	57	44.4	2.5	
Au	197	1	nogas	-53.656	-281.8	20	100.0	2.5	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	1294101	2.42	1171766	110.44	70	125	
Ge	72	1	nogas	3715996	3.90	3233065	114.94	70	125	
In	115	1	nogas	3361493	1.48	2958353	113.63	70	125	
Bi	209	1	nogas	2395128	1.90	2061475	116.19	70	125	
Ge	72	2	He	931073	1.39	810035	114.94	70	125	

Continuing Calibration Verification (CCV) Report

Sample Table

Sample Name	CCV
Data File Name	220_CCV.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\121
Acq Date Time	2018-12-11T00:27:23-06:00
Sample Type	CCV
Dilution	1
Comment	
ISTD Ref File Name	132CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Exp Value	%Rec	%Low	%High2	QC Flag
Be	9	1	nogas	94.133	3.482	764444	1.44	100	94.1	90	110	
Na	23	1	nogas	9722.091	4.057	262542573	1.62	10000	97.2	90	110	
Mg	24	1	nogas	9735.550	4.139	169433283	0.71	10000	97.4	90	110	
Al	27	1	nogas	98.958	2.075	2082894	1.62	100	99.0	90	110	
K	39	1	nogas	9808.657	0.890	220163105	1.36	10000	98.1	90	110	
Ti	47	1	nogas	98.115	2.796	210499	3.36	100	98.1	90	110	
V	51	1	nogas	97.982	2.177	3092569	1.88	100	98.0	90	110	
Cr	52	1	nogas	97.372	3.050	2450225	2.79	100	97.4	90	110	
Mn	55	1	nogas	98.158	1.718	3090293	0.83	100	98.2	90	110	
Co	59	1	nogas	100.767	1.023	2601209	1.71	100	100.8	90	110	
Ni	60	1	nogas	97.722	1.623	572694	2.49	100	97.7	90	110	
Cu	63	1	nogas	96.758	1.864	1384522	2.63	100	96.8	90	110	
Zn	66	1	nogas	98.491	1.602	475715	2.04	100	98.5	90	110	
As	75	1	nogas	97.873	0.595	655853	0.72	100	97.9	90	110	
Sr	88	1	nogas	97.724	1.943	3165252	1.10	100	97.7	90	110	
Ag	107	1	nogas	100.548	1.520	1563572	2.39	100	100.5	90	110	
Cd	111	1	nogas	99.458	1.495	340073	2.54	100	99.5	90	110	
Sb	121	1	nogas	98.704	2.912	1466641	3.08	100	98.7	90	110	
Tl	205	1	nogas	96.968	4.530	2089169	2.74	100	97.0	90	110	
Pb	208	1	nogas	112.387	1.410	2830087	1.41	100	112.4	90	110	CCV Main CR1-2 Failed
U	238	1	nogas	102.906	4.305	2828586	3.35	100	102.9	90	110	
[Pb]	206	1	nogas	95.030	3.570	689890	1.70	100	95.0	90	110	
[Pb]	207	1	nogas	95.092	2.322	610151	1.00	100	95.1	90	110	
Na	23	2	He	9678.230	2.608	15862979	1.65	10000	96.8	90	110	
Mg	24	2	He	9806.402	2.104	8806090	0.63	10000	98.1	90	110	
Al	27	2	He	98.494	2.846	48907	1.31	100	98.5	90	110	
K	39	2	He	11167.787	1.886	9490267	1.85	10000	111.7	90	110	CCV Main CR1-2 Failed
Ca	43	2	He	9946.807	1.832	26459	0.57	10000	99.5	90	110	
Ca	44	2	He	9931.163	2.834	444899	1.37	10000	99.3	90	110	
V	51	2	He	98.183	1.047	664551	0.69	100	98.2	90	110	
Cr	52	2	He	96.947	2.838	712128	1.32	100	96.9	90	110	
Mn	55	2	He	99.510	2.776	503033	1.27	100	99.5	90	110	
Fe	56	2	He	10078.685	2.880	61546896	1.48	10000	100.8	90	110	
Co	59	2	He	97.160	2.600	984779	1.54	100	97.2	90	110	
Ni	60	2	He	99.397	3.770	254144	2.65	100	99.4	90	110	
Cu	63	2	He	98.557	3.536	642329	2.16	100	98.6	90	110	
Zn	66	2	He	100.120	2.227	156567	1.04	100	100.1	90	110	
As	75	2	He	99.023	1.658	155071	0.66	100	99.0	90	110	
Se	78	2	He	99.784	1.942	12267	1.11	100	99.8	90	110	
B	11	1	nogas	453.040	7.002	2354582	2.04	500	90.6	90	110	
Si	28	1	nogas	4783.361	2.578	7081805	1.21	5000	95.7	90	110	
Ca	43	1	nogas	9753.157	0.671	397093	1.12	10000	97.5	90	110	
Ca	44	1	nogas	9742.767	2.225	6620220	2.78	10000	97.4	90	110	
Fe	56	1	nogas	9519.412	1.112	258186872	0.83	10000	95.2	90	110	
Se	77	1	nogas	87.082	1.115	43987	0.31	100	87.1	90	110	CCV Main CR1-2 Failed
Se	82	1	nogas	96.509	1.825	31007	1.98	100	96.5	90	110	
Mo	95	1	nogas	98.308	0.753	636158	1.10	100	98.3	90	110	
Sn	118	1	nogas	94.535	1.244	917585	3.94	100	94.5	90	110	
Ba	137	1	nogas	96.142	2.601	440969	0.76	100	96.1	90	110	
Sb	121	2	He	98.514	2.378	531494	1.35	100	98.5	90	110	
Li	7	1	nogas	94.838	2.634	1763823	3.74	100	94.8	90	110	
P	31	1	nogas	493.067	1.058	1056576	0.13	500	98.6	90	110	
La	139	1	nogas	95.189	10.976	380	11.47	100	95.2	90	110	
Au	197	1	nogas	25.652	1080.245	30	120.19	100	25.7	90	110	CCV Main CR1-2 Failed

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	1165442	5.00	1171766	99.46	70	125	
Ge	72	1	nogas	3666674	0.87	3233065	113.41	70	125	
In	115	1	nogas	3253086	2.78	2958353	109.96	70	125	
Bi	209	1	nogas	2361399	1.91	2061475	114.55	70	125	

Continuing Calibration Verification (CCV) Report

Ge	72	2	He	902562	1.49	810035	111.42	70	125	

Continuing Calibration Blank (CCB) Report

Sample Table

Sample Name	CCB
Data File Name	221_CCB.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\121
Acq Date Time	2018-12-11T00:29:27-06:00
Sample Type	CCB
Dilution	1
Comment	
ISTD Ref File Name	132CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Be	9	1	nogas	0.090	11.6	817	8.3	1	
Na	23	1	nogas	-11.343	-17.0	1514133	3.5	100	
Mg	24	1	nogas	21.713	17.1	424647	15.2	100	
Al	27	1	nogas	0.004	659.0	23188	2.9	5	
K	39	1	nogas	48.652	12.6	9513922	1.6	100	
Ti	47	1	nogas	0.075	19.7	637	4.0	2.5	
V	51	1	nogas	-1.070	-25.7	223519	2.5	2.5	
Cr	52	1	nogas	0.108	51.0	39091	3.0	2.5	
Mn	55	1	nogas	0.501	5.8	54266	1.9	2.5	
Co	59	1	nogas	0.107	12.0	3900	8.3	2.5	
Ni	60	1	nogas	0.382	9.9	1810	11.8	2.5	
Cu	63	1	nogas	0.030	121.5	17051	2.3	2.5	
Zn	66	1	nogas	0.271	23.6	2447	11.4	2.5	
As	75	1	nogas	-0.130	-363.0	53138	4.4	2.5	
Sr	88	1	nogas	0.196	16.2	10103	10.4	2.5	
Ag	107	1	nogas	0.078	17.0	1263	16.2	2.5	
Cd	111	1	nogas	0.096	27.9	360	25.5	1	
Sb	121	1	nogas	1.087	21.1	16849	20.2	2.5	
Tl	205	1	nogas	0.716	47.7	15916	45.2	1	
Pb	208	1	nogas	0.106	23.5	4277	14.7	2.5	
U	238	1	nogas	0.158	42.9	4531	40.1	2.5	
[Pb]	206	1	nogas	0.090	35.9	1090	20.8	2.5	
[Pb]	207	1	nogas	0.069	53.0	860	26.2	2.5	
Na	23	2	He	-27.484	-7.6	127878	1.8	100	
Mg	24	2	He	17.036	6.5	18319	4.7	100	
Al	27	2	He	0.075	254.2	623	15.4	5	
K	39	2	He	77.523	2.3	254616	0.6	100	
Ca	43	2	He	13.579	124.8	117	40.5	100	
Ca	44	2	He	6.625	38.4	3894	3.4	100	
V	51	2	He	0.167	10.2	3210	2.7	2.5	
Cr	52	2	He	0.012	335.4	5311	5.7	2.5	
Mn	55	2	He	0.326	25.9	5934	6.5	2.5	
Fe	56	2	He	7.230	8.6	59874	5.5	100	
Co	59	2	He	0.088	17.3	1260	13.3	2.5	
Ni	60	2	He	0.219	7.4	467	10.1	2.5	
Cu	63	2	He	-0.125	-13.1	6461	2.4	2.5	
Zn	66	2	He	-0.074	-106.8	633	19.7	2.5	
As	75	2	He	0.087	63.2	440	19.1	2.5	
Se	78	2	He	0.054	560.7	196	18.6	2.5	
B	11	1	nogas	-8.360	-1.1	80241	3.2	10	
Si	28	1	nogas	-14.785	-70.9	1498213	0.6	5	
Ca	43	1	nogas	31.748	46.0	2980	19.5	100	
Ca	44	1	nogas	-73.124	-10.9	336114	1.5	100	
Fe	56	1	nogas	6.511	95.6	2325083	7.5	100	
Se	77	1	nogas	-5.895	-19.6	16578	1.0	2.5	
Se	82	1	nogas	-0.441	-56.4	393	19.7	2.5	
Mo	95	1	nogas	0.319	18.2	2167	17.2	2.5	
Sn	118	1	nogas	0.302	22.1	4004	15.3	5	

Continuing Calibration Blank (CCB) Report

Ba	137	1	nogas	0.012	217.0	850	13.4	2.5	
Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Sb	121	2	He	0.693	7.3	4241	5.7	2.5	
P	31	1	nogas	10.777	7.3	128952	0.4	10	CCB Main CR1 Failed
La	139	1	nogas	13.285	66.1	93	32.7	2.5	CCB Main CR1 Failed
Au	197	1	nogas	-153.139	-56.4	7	173.2	2.5	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	1217401	2.67	1171766	103.89	70	125	
Ge	72	1	nogas	3560142	0.92	3233065	110.12	70	125	
In	115	1	nogas	3238876	1.29	2958353	109.48	70	125	
Bi	209	1	nogas	2370337	1.12	2061475	114.98	70	125	
Ge	72	2	He	920480	1.03	810035	113.63	70	125	

Continuing Calibration Verification (CCV) Report

Sample Table

Sample Name	CCV
Data File Name	232_CCV.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\121
Acq Date Time	2018-12-11T00:52:30-06:00
Sample Type	CCV
Dilution	1
Comment	
ISTD Ref File Name	132CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Exp Value	%Rec	%Low	%High2	QC Flag
Be	9	1	nogas	91.987	2.874	752329	0.79	100	92.0	90	110	
Na	23	1	nogas	9931.300	3.723	257547639	2.93	10000	99.3	90	110	
Mg	24	1	nogas	9808.005	2.700	163950099	0.75	10000	98.1	90	110	
Al	27	1	nogas	102.198	0.478	2046366	3.65	100	102.2	90	110	
K	39	1	nogas	10061.621	4.052	214487046	0.41	10000	100.6	90	110	
Ti	47	1	nogas	98.783	1.904	201581	2.54	100	98.8	90	110	
V	51	1	nogas	100.512	4.364	3010298	2.70	100	100.5	90	110	
Cr	52	1	nogas	96.947	3.113	2320026	0.81	100	96.9	90	110	
Mn	55	1	nogas	95.771	6.282	2866115	2.78	100	95.8	90	110	
Co	59	1	nogas	99.696	6.220	2445607	3.55	100	99.7	90	110	
Ni	60	1	nogas	100.713	3.969	561087	1.21	100	100.7	90	110	
Cu	63	1	nogas	95.244	7.787	1294765	4.67	100	95.2	90	110	
Zn	66	1	nogas	98.496	3.064	452357	0.60	100	98.5	90	110	
As	75	1	nogas	101.804	2.468	646719	1.63	100	101.8	90	110	
Sr	88	1	nogas	97.246	3.706	2995909	3.13	100	97.2	90	110	
Ag	107	1	nogas	97.095	6.251	1434491	2.79	100	97.1	90	110	
Cd	111	1	nogas	99.431	2.940	318332	2.18	100	99.4	90	110	
Sb	121	1	nogas	97.911	1.815	1383804	1.79	100	97.9	90	110	
Tl	205	1	nogas	97.850	1.846	2010177	2.72	100	97.9	90	110	
Pb	208	1	nogas	109.045	1.523	2745975	1.52	100	109.0	90	110	
U	238	1	nogas	107.079	2.665	2806202	3.71	100	107.1	90	110	
[Pb]	206	1	nogas	99.918	0.831	691617	2.62	100	99.9	90	110	
[Pb]	207	1	nogas	99.378	0.794	607757	1.04	100	99.4	90	110	
Na	23	2	He	9981.512	0.396	15932810	0.74	10000	99.8	90	110	
Mg	24	2	He	9712.212	1.415	8496823	1.85	10000	97.1	90	110	
Al	27	2	He	98.952	1.754	47871	2.34	100	99.0	90	110	
K	39	2	He	10857.288	1.325	9231693	1.30	10000	108.6	90	110	
Ca	43	2	He	10110.759	2.769	26202	3.36	10000	101.1	90	110	
Ca	44	2	He	9903.513	0.072	432254	0.68	10000	99.0	90	110	
V	51	2	He	97.976	1.238	645944	0.75	100	98.0	90	110	
Cr	52	2	He	97.042	2.349	694419	1.76	100	97.0	90	110	
Mn	55	2	He	98.678	1.672	485989	1.05	100	98.7	90	110	
Fe	56	2	He	9722.227	2.005	57846396	2.50	10000	97.2	90	110	
Co	59	2	He	96.312	1.941	951027	2.16	100	96.3	90	110	
Ni	60	2	He	97.244	0.986	242240	0.68	100	97.2	90	110	
Cu	63	2	He	96.955	1.026	615775	1.32	100	97.0	90	110	
Zn	66	2	He	98.212	0.346	149631	0.27	100	98.2	90	110	
As	75	2	He	99.027	0.830	151063	0.51	100	99.0	90	110	
Se	78	2	He	99.851	1.086	11958	0.86	100	99.9	90	110	
B	11	1	nogas	473.833	2.973	2477781	2.53	500	94.8	90	110	
Si	28	1	nogas	5121.190	2.304	7108412	2.49	5000	102.4	90	110	
Ca	43	1	nogas	10060.493	4.388	389337	1.58	10000	100.6	90	110	
Ca	44	1	nogas	9986.305	5.764	6438845	1.91	10000	99.9	90	110	
Fe	56	1	nogas	9678.845	2.740	249612089	0.89	10000	96.8	90	110	
Se	77	1	nogas	103.887	4.500	46460	1.71	100	103.9	90	110	
Se	82	1	nogas	101.289	2.903	30920	0.74	100	101.3	90	110	
Mo	95	1	nogas	100.414	2.732	618189	3.70	100	100.4	90	110	
Sn	118	1	nogas	97.427	3.444	884917	1.22	100	97.4	90	110	
Ba	137	1	nogas	100.305	3.254	430814	1.44	100	100.3	90	110	
Sb	121	2	He	97.347	2.201	511638	2.13	100	97.3	90	110	
Li	7	1	nogas	94.146	3.123	1763601	3.17	100	94.1	90	110	
P	31	1	nogas	505.040	3.158	1026680	1.77	500	101.0	90	110	
La	139	1	nogas	124.653	12.098	453	15.02	100	124.7	90	110	CCV Main CR1-2 Failed
Au	197	1	nogas	-19.373	-229.365	23	24.74	100	-19.4	90	110	CCV Main CR1-2 Failed

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	1172845	2.12	1171766	100.09	70	125	
Ge	72	1	nogas	3489100	3.58	3233065	107.92	70	125	
In	115	1	nogas	3048154	4.62	2958353	103.04	70	125	
Bi	209	1	nogas	2250347	1.80	2061475	109.16	70	125	

Continuing Calibration Verification (CCV) Report

Ge	72	2	He	879094	0.61	810035	108.53	70	125	

Continuing Calibration Blank (CCB) Report

Sample Table

Sample Name	CCB
Data File Name	233_CCB.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\121
Acq Date Time	2018-12-11T00:54:33-06:00
Sample Type	CCB
Dilution	1
Comment	
ISTD Ref File Name	132CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Be	9	1	nogas	0.082	30.5	780	22.5	1	
Na	23	1	nogas	30.568	5.1	2662793	1.2	100	
Mg	24	1	nogas	10.940	11.7	238606	7.1	100	
Al	27	1	nogas	0.032	16.5	23622	1.9	5	
K	39	1	nogas	23.581	39.5	8938071	0.5	100	
Ti	47	1	nogas	0.035	47.2	550	7.9	2.5	
V	51	1	nogas	1.355	54.5	289756	5.3	2.5	
Cr	52	1	nogas	0.236	7.9	41958	1.0	2.5	
Mn	55	1	nogas	-0.094	-32.9	36122	1.8	2.5	
Co	59	1	nogas	0.100	12.9	3704	10.4	2.5	
Ni	60	1	nogas	0.341	4.8	1573	6.8	2.5	
Cu	63	1	nogas	-0.131	-53.7	14753	4.7	2.5	
Zn	66	1	nogas	0.266	10.3	2414	7.1	2.5	
As	75	1	nogas	1.580	36.1	62952	3.6	2.5	
Sr	88	1	nogas	0.101	20.7	7068	8.2	2.5	
Ag	107	1	nogas	0.057	11.9	947	12.3	2.5	
Cd	111	1	nogas	0.097	45.1	360	36.7	1	
Sb	121	1	nogas	0.993	21.0	15424	21.3	2.5	
Tl	205	1	nogas	0.754	50.2	17151	49.2	1	
Pb	208	1	nogas	0.101	35.9	4144	22.0	2.5	
U	238	1	nogas	0.177	55.3	5181	53.9	2.5	
[Pb]	206	1	nogas	0.082	48.0	1053	28.2	2.5	
[Pb]	207	1	nogas	0.076	30.2	927	16.8	2.5	
Na	23	2	He	26.219	7.6	205028	0.2	100	
Mg	24	2	He	12.164	4.8	13118	4.4	100	
Al	27	2	He	0.145	83.7	623	10.4	5	
K	39	2	He	55.674	6.4	236420	1.2	100	
Ca	43	2	He	-7.278	-33.4	57	10.2	100	
Ca	44	2	He	-4.123	-107.0	3224	6.7	100	
V	51	2	He	0.291	8.5	3843	2.7	2.5	
Cr	52	2	He	0.059	3.8	5358	1.6	2.5	
Mn	55	2	He	-0.139	-11.7	3367	1.2	2.5	
Fe	56	2	He	5.973	8.0	49246	4.3	100	
Co	59	2	He	0.085	26.3	1167	19.6	2.5	
Ni	60	2	He	0.182	6.7	350	7.6	2.5	
Cu	63	2	He	-0.314	-13.2	4941	6.2	2.5	
Zn	66	2	He	-0.075	-112.9	600	22.0	2.5	
As	75	2	He	0.085	36.8	413	10.1	2.5	
Se	78	2	He	0.183	6.9	201	2.1	2.5	
B	11	1	nogas	2.330	147.7	141678	6.6	10	
Si	28	1	nogas	28.793	252.4	1538100	4.3	5	CCB Main CR1 Failed
Ca	43	1	nogas	20.842	28.4	2534	7.4	100	
Ca	44	1	nogas	-122.697	-8.8	303619	0.5	100	
Fe	56	1	nogas	14.881	35.0	2530797	7.1	100	
Se	77	1	nogas	6.925	48.1	20061	2.8	2.5	CCB Main CR1 Failed
Se	82	1	nogas	-0.323	-74.7	427	16.5	2.5	
Mo	95	1	nogas	0.336	46.6	2274	45.0	2.5	
Sn	118	1	nogas	0.305	24.8	4024	13.3	5	

Continuing Calibration Blank (CCB) Report

Ba	137	1	nogas	0.043	73.7	990	11.6	2.5	
Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Sb	121	2	He	0.579	15.1	3424	14.1	2.5	
P	31	1	nogas	4.860	14.3	117300	0.9	10	
La	139	1	nogas	5.755	214.9	67	60.6	2.5	CCB Main CR1 Failed
Au	197	1	nogas	66.062	170.3	37	41.7	2.5	CCB Main CR1 Failed

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	1280951	7.13	1171766	109.32	70	125	
Ge	72	1	nogas	3540785	1.85	3233065	109.52	70	125	
In	115	1	nogas	3249571	5.17	2958353	109.84	70	125	
Bi	209	1	nogas	2417001	0.46	2061475	117.25	70	125	
Ge	72	2	He	870924	1.47	810035	107.52	70	125	

Continuing Calibration Verification (CCV) Report

Sample Table

Sample Name	CCV
Data File Name	242_CCV.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\121
Acq Date Time	2018-12-11T01:13:03-06:00
Sample Type	CCV
Dilution	1
Comment	
ISTD Ref File Name	132CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Exp Value	%Rec	%Low	%High2	QC Flag
Be	9	1	nogas	102.024	1.949	725892	1.01	100	102.0	90	110	
Na	23	1	nogas	10004.515	2.965	265310431	1.61	10000	100.0	90	110	
Mg	24	1	nogas	9786.170	2.946	167299512	1.62	10000	97.9	90	110	
Al	27	1	nogas	99.707	3.591	2053234	3.12	100	99.7	90	110	
K	39	1	nogas	10013.417	0.689	219741105	1.03	10000	100.1	90	110	
Ti	47	1	nogas	99.027	3.144	207846	2.91	100	99.0	90	110	
V	51	1	nogas	100.616	1.136	3100652	1.43	100	100.6	90	110	
Cr	52	1	nogas	98.004	1.626	2412811	1.14	100	98.0	90	110	
Mn	55	1	nogas	97.165	3.083	2993885	3.16	100	97.2	90	110	
Co	59	1	nogas	99.318	1.397	2508626	1.90	100	99.3	90	110	
Ni	60	1	nogas	99.302	0.797	569389	1.31	100	99.3	90	110	
Cu	63	1	nogas	97.243	1.416	1361238	1.01	100	97.2	90	110	
Zn	66	1	nogas	99.178	0.734	468707	1.20	100	99.2	90	110	
As	75	1	nogas	98.641	1.041	646356	1.21	100	98.6	90	110	
Sr	88	1	nogas	101.395	5.880	3213001	5.35	100	101.4	90	110	
Ag	107	1	nogas	101.800	1.489	1548816	1.59	100	101.8	90	110	
Cd	111	1	nogas	101.934	3.846	331948	0.33	100	101.9	90	110	
Sb	121	1	nogas	102.495	2.258	1490059	1.98	100	102.5	90	110	
Tl	205	1	nogas	99.294	0.443	2021255	0.68	100	99.3	90	110	
Pb	208	1	nogas	109.415	1.910	2755311	1.91	100	109.4	90	110	
U	238	1	nogas	103.382	3.515	2684280	3.29	100	103.4	90	110	
[Pb]	206	1	nogas	99.995	2.196	685811	2.41	100	100.0	90	110	
[Pb]	207	1	nogas	100.190	2.093	607224	2.29	100	100.2	90	110	
Na	23	2	He	10094.779	1.450	16003968	2.45	10000	100.9	90	110	
Mg	24	2	He	9876.854	2.572	8582750	3.25	10000	98.8	90	110	
Al	27	2	He	96.907	1.046	46571	1.38	100	96.9	90	110	
K	39	2	He	10593.351	1.856	9011893	1.82	10000	105.9	90	110	
Ca	43	2	He	9671.940	3.293	24887	1.45	10000	96.7	90	110	
Ca	44	2	He	9718.049	2.539	421266	1.32	10000	97.2	90	110	
V	51	2	He	97.351	1.329	637461	0.75	100	97.4	90	110	
Cr	52	2	He	97.795	1.334	695031	0.69	100	97.8	90	110	
Mn	55	2	He	97.977	1.740	479272	0.72	100	98.0	90	110	
Fe	56	2	He	9746.941	1.329	57594536	1.34	10000	97.5	90	110	
Co	59	2	He	97.092	3.511	951914	2.02	100	97.1	90	110	
Ni	60	2	He	99.856	2.907	247014	1.63	100	99.9	90	110	
Cu	63	2	He	99.729	3.793	628666	2.09	100	99.7	90	110	
Zn	66	2	He	99.910	2.087	151149	0.08	100	99.9	90	110	
As	75	2	He	97.756	1.458	148106	0.56	100	97.8	90	110	
Se	78	2	He	98.562	3.664	11723	2.48	100	98.6	90	110	
B	11	1	nogas	669.332	3.182	3001017	0.81	500	133.9	90	110	CCV Main CR1-2 Failed
Si	28	1	nogas	4913.337	2.949	7076413	1.84	5000	98.3	90	110	
Ca	43	1	nogas	9963.644	1.449	396878	1.18	10000	99.6	90	110	
Ca	44	1	nogas	9755.292	2.510	6484659	2.11	10000	97.6	90	110	
Fe	56	1	nogas	9440.985	2.008	250571922	1.96	10000	94.4	90	110	
Se	77	1	nogas	95.331	4.228	45373	2.00	100	95.3	90	110	
Se	82	1	nogas	99.863	3.488	31374	3.33	100	99.9	90	110	
Mo	95	1	nogas	97.456	1.462	617038	0.95	100	97.5	90	110	
Sn	118	1	nogas	97.471	3.417	900806	0.37	100	97.5	90	110	
Ba	137	1	nogas	101.001	2.331	441511	2.07	100	101.0	90	110	
Sb	121	2	He	96.756	2.262	505002	0.76	100	96.8	90	110	
Li	7	1	nogas	96.185	1.984	1566070	4.30	100	96.2	90	110	
P	31	1	nogas	477.863	1.447	1005346	0.82	500	95.6	90	110	
La	139	1	nogas	115.726	14.313	430	12.95	100	115.7	90	110	CCV Main CR1-2 Failed
Au	197	1	nogas	-44.154	-179.558	20	50.00	100	-44.2	90	110	CCV Main CR1-2 Failed

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	1020278	2.88	1171766	87.07	70	125	
Ge	72	1	nogas	3587727	0.51	3233065	110.97	70	125	
In	115	1	nogas	3100722	3.61	2958353	104.81	70	125	
Bi	209	1	nogas	2229901	0.31	2061475	108.17	70	125	

Continuing Calibration Verification (CCV) Report

Ge	72	2	He	873220	2.03	810035	107.80	70	125	

Continuing Calibration Blank (CCB) Report

Sample Table

Sample Name	CCB
Data File Name	243_CCB.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\121
Acq Date Time	2018-12-11T01:15:08-06:00
Sample Type	CCB
Dilution	1
Comment	
ISTD Ref File Name	132CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Be	9	1	nogas	0.075	18.7	627	15.1	1	
Na	23	1	nogas	85.023	10.5	4018580	3.5	100	
Mg	24	1	nogas	10.139	26.3	217783	18.2	100	
Al	27	1	nogas	-0.005	-606.8	23318	3.3	5	
K	39	1	nogas	-13.472	-29.0	8319407	0.5	100	
Ti	47	1	nogas	0.043	122.5	577	19.0	2.5	
V	51	1	nogas	0.209	199.4	262752	3.9	2.5	
Cr	52	1	nogas	0.042	59.4	38002	1.3	2.5	
Mn	55	1	nogas	-0.237	-11.2	32415	1.7	2.5	
Co	59	1	nogas	0.061	12.0	2777	7.4	2.5	
Ni	60	1	nogas	0.462	3.4	2297	4.8	2.5	
Cu	63	1	nogas	-0.338	-5.3	12158	2.5	2.5	
Zn	66	1	nogas	0.502	12.6	3574	8.5	2.5	
As	75	1	nogas	0.358	110.8	56768	3.3	2.5	
Sr	88	1	nogas	0.167	14.9	9309	9.1	2.5	
Ag	107	1	nogas	0.056	33.1	947	30.6	2.5	
Cd	111	1	nogas	0.044	13.9	180	9.6	1	
Sb	121	1	nogas	1.274	14.8	19788	14.6	2.5	
Tl	205	1	nogas	0.764	46.2	16991	44.6	1	
Pb	208	1	nogas	0.067	46.1	3294	23.7	2.5	
U	238	1	nogas	0.138	52.5	3991	49.9	2.5	
[Pb]	206	1	nogas	0.063	68.3	893	34.8	2.5	
[Pb]	207	1	nogas	0.041	42.7	683	16.3	2.5	
Na	23	2	He	76.666	1.4	283688	1.3	100	
Mg	24	2	He	8.965	9.8	10326	5.8	100	
Al	27	2	He	-0.037	-420.1	537	15.5	5	
K	39	2	He	24.184	12.7	210197	1.2	100	
Ca	43	2	He	1.859	913.4	80	54.5	100	
Ca	44	2	He	-4.094	-88.5	3220	4.9	100	
V	51	2	He	0.177	6.5	3100	2.9	2.5	
Cr	52	2	He	0.016	102.4	5054	3.0	2.5	
Mn	55	2	He	-0.222	-29.3	2957	8.8	2.5	
Fe	56	2	He	5.013	4.2	43558	1.9	100	
Co	59	2	He	0.048	32.4	807	19.8	2.5	
Ni	60	2	He	0.171	3.2	323	4.7	2.5	
Cu	63	2	He	-0.432	-4.2	4201	3.6	2.5	
Zn	66	2	He	-0.053	-59.0	630	5.7	2.5	
As	75	2	He	0.080	20.9	406	5.0	2.5	
Se	78	2	He	0.253	49.1	209	8.2	2.5	
B	11	1	nogas	98.632	7.9	573741	2.2	10	CCB Main CR1 Failed
Si	28	1	nogas	-67.556	-57.2	1457523	2.6	5	
Ca	43	1	nogas	76.032	5.2	4784	4.1	100	
Ca	44	1	nogas	-112.556	-1.0	315669	0.7	100	
Fe	56	1	nogas	3.929	112.9	2286615	5.7	100	
Se	77	1	nogas	0.291	1545.9	18550	6.4	2.5	
Se	82	1	nogas	-0.383	-47.5	417	14.5	2.5	
Mo	95	1	nogas	0.359	35.0	2457	33.4	2.5	
Sn	118	1	nogas	0.257	29.2	3534	15.9	5	

Continuing Calibration Blank (CCB) Report

Ba	137	1	nogas	-0.015	-234.8	720	20.6	2.5	
Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Sb	121	2	He	0.877	3.4	4964	2.2	2.5	
P	31	1	nogas	-1.168	-95.7	108110	1.0	10	
La	139	1	nogas	11.675	63.2	87	26.6	2.5	CCB Main CR1 Failed
Au	197	1	nogas	-153.294	-28.1	7	86.6	2.5	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	1104958	4.07	1171766	94.30	70	125	
Ge	72	1	nogas	3606069	0.93	3233065	111.54	70	125	
In	115	1	nogas	3221972	4.13	2958353	108.91	70	125	
Bi	209	1	nogas	2367875	1.10	2061475	114.86	70	125	
Ge	72	2	He	870009	1.87	810035	107.40	70	125	

Continuing Calibration Verification (CCV) Report

Sample Table

Sample Name	CCV
Data File Name	254_CCV.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\121
Acq Date Time	2018-12-11T01:37:45-06:00
Sample Type	CCV
Dilution	1
Comment	
ISTD Ref File Name	132CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Exp Value	%Rec	%Low	%High2	QC Flag
Be	9	1	nogas	92.786	1.796	793890	2.36	100	92.8	90	110	
Na	23	1	nogas	9619.936	1.878	284311648	1.59	10000	96.2	90	110	
Mg	24	1	nogas	9574.556	2.536	182357196	1.91	10000	95.7	90	110	
Al	27	1	nogas	98.098	2.054	2246181	2.18	100	98.1	90	110	
K	39	1	nogas	9778.312	3.005	238724155	2.45	10000	97.8	90	110	
Ti	47	1	nogas	97.860	1.754	228349	2.35	100	97.9	90	110	
V	51	1	nogas	99.382	2.998	3407662	2.68	100	99.4	90	110	
Cr	52	1	nogas	95.339	0.725	2610318	0.69	100	95.3	90	110	
Mn	55	1	nogas	95.641	2.884	3276142	2.50	100	95.6	90	110	
Co	59	1	nogas	99.957	0.488	2806355	0.80	100	100.0	90	110	
Ni	60	1	nogas	97.978	0.104	624462	0.52	100	98.0	90	110	
Cu	63	1	nogas	94.573	2.276	1472117	2.16	100	94.6	90	110	
Zn	66	1	nogas	97.483	1.900	512092	1.70	100	97.5	90	110	
As	75	1	nogas	98.178	3.008	715334	2.42	100	98.2	90	110	
Sr	88	1	nogas	96.786	0.900	3410136	1.49	100	96.8	90	110	
Ag	107	1	nogas	98.284	2.130	1662082	1.81	100	98.3	90	110	
Cd	111	1	nogas	98.427	0.781	369294	3.76	100	98.4	90	110	
Sb	121	1	nogas	96.815	2.064	1564545	1.50	100	96.8	90	110	
Tl	205	1	nogas	97.876	3.058	2220834	1.21	100	97.9	90	110	
Pb	208	1	nogas	119.290	0.460	3003823	0.46	100	119.3	90	110	CCV Main CR1-2 Failed
U	238	1	nogas	101.436	5.938	2934927	4.26	100	101.4	90	110	
[Pb]	206	1	nogas	98.779	2.678	755169	0.84	100	98.8	90	110	
[Pb]	207	1	nogas	98.610	3.198	666152	1.36	100	98.6	90	110	
Na	23	2	He	9890.632	1.373	17244147	2.05	10000	98.9	90	110	
Mg	24	2	He	9592.861	0.339	9164899	0.81	10000	95.9	90	110	
Al	27	2	He	94.595	1.026	50003	1.79	100	94.6	90	110	
K	39	2	He	11607.027	1.057	9856053	1.04	10000	116.1	90	110	CCV Main CR1-2 Failed
Ca	43	2	He	9671.331	1.439	27370	1.10	10000	96.7	90	110	
Ca	44	2	He	9882.518	1.080	471036	0.32	10000	98.8	90	110	
V	51	2	He	98.251	1.826	707418	1.89	100	98.3	90	110	
Cr	52	2	He	98.191	0.469	767360	1.16	100	98.2	90	110	
Mn	55	2	He	99.233	1.446	533732	1.50	100	99.2	90	110	
Fe	56	2	He	9899.631	0.807	64319024	0.32	10000	99.0	90	110	
Co	59	2	He	97.326	0.758	1049500	0.78	100	97.3	90	110	
Ni	60	2	He	99.283	1.008	270091	0.57	100	99.3	90	110	
Cu	63	2	He	97.777	1.179	678067	0.66	100	97.8	90	110	
Zn	66	2	He	100.133	1.024	166600	1.77	100	100.1	90	110	
As	75	2	He	98.908	1.033	164773	0.65	100	98.9	90	110	
Se	78	2	He	97.809	1.635	12796	1.40	100	97.8	90	110	
B	11	1	nogas	591.585	4.261	3203473	2.67	500	118.3	90	110	CCV Main CR1-2 Failed
Si	28	1	nogas	4590.880	1.650	7462001	1.83	5000	91.8	90	110	
Ca	43	1	nogas	9776.573	0.784	432926	0.88	10000	97.8	90	110	
Ca	44	1	nogas	9566.997	1.003	7077944	1.56	10000	95.7	90	110	
Fe	56	1	nogas	9443.498	3.806	278577098	3.35	10000	94.4	90	110	
Se	77	1	nogas	102.907	4.181	52827	2.76	100	102.9	90	110	
Se	82	1	nogas	99.626	0.636	34794	0.00	100	99.6	90	110	
Mo	95	1	nogas	97.440	1.245	685832	1.73	100	97.4	90	110	
Sn	118	1	nogas	94.259	2.057	1003141	2.09	100	94.3	90	110	
Ba	137	1	nogas	95.827	2.339	482177	1.24	100	95.8	90	110	
Sb	121	2	He	96.335	1.431	552964	1.75	100	96.3	90	110	
Li	7	1	nogas	103.919	3.277	2025448	3.89	100	103.9	90	110	
P	31	1	nogas	468.633	1.426	1098319	1.19	500	93.7	90	110	
La	139	1	nogas	104.766	7.040	453	7.75	100	104.8	90	110	
Au	197	1	nogas	-38.691	-412.991	23	98.97	100	-38.7	90	110	CCV Main CR1-2 Failed

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	1226490	1.61	1171766	104.67	70	125	
Ge	72	1	nogas	3988047	0.62	3233065	123.35	70	125	
In	115	1	nogas	3569030	3.49	2958353	120.64	70	125	
Bi	209	1	nogas	2486520	1.88	2061475	120.62	70	125	

Continuing Calibration Verification (CCV) Report

Ge	72	2	He	960044	0.79	810035	118.52	70	125	

Continuing Calibration Blank (CCB) Report

Sample Table

Sample Name	CCB
Data File Name	255_CCB.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\121
Acq Date Time	2018-12-11T01:39:49-06:00
Sample Type	CCB
Dilution	1
Comment	
ISTD Ref File Name	132CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Fail

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Be	9	1	nogas	0.059	37.0	570	35.0	1	
Na	23	1	nogas	82.670	17.3	4282269	4.8	100	
Mg	24	1	nogas	9.080	26.4	215850	15.3	100	
Al	27	1	nogas	-0.020	-293.7	26209	5.5	5	
K	39	1	nogas	-30.933	-23.8	9055825	1.0	100	
Ti	47	1	nogas	1.713	158.1	4645	139.1	2.5	
V	51	1	nogas	1.501	27.0	341254	4.1	2.5	
Cr	52	1	nogas	0.120	29.7	45463	1.5	2.5	
Mn	55	1	nogas	0.028	113.9	46161	1.5	2.5	
Co	59	1	nogas	0.060	14.5	3130	7.4	2.5	
Ni	60	1	nogas	0.529	8.3	3054	8.7	2.5	
Cu	63	1	nogas	-0.191	-11.3	16177	2.8	2.5	
Zn	66	1	nogas	0.479	13.1	3944	7.9	2.5	
As	75	1	nogas	0.976	31.3	68943	3.3	2.5	
Sr	88	1	nogas	0.187	4.2	11304	2.3	2.5	
Ag	107	1	nogas	0.049	22.2	957	19.3	2.5	
Cd	111	1	nogas	0.058	39.9	253	33.6	1	
Sb	121	1	nogas	0.897	26.1	16245	23.3	2.5	
Tl	205	1	nogas	0.735	48.6	18353	47.9	1	
Pb	208	1	nogas	0.079	37.7	3594	20.9	2.5	
U	238	1	nogas	0.158	61.7	5074	59.8	2.5	
[Pb]	206	1	nogas	0.059	30.9	967	15.1	2.5	
[Pb]	207	1	nogas	0.042	54.8	767	22.4	2.5	
Na	23	2	He	72.652	4.8	308085	0.9	100	
Mg	24	2	He	7.624	4.0	10186	1.5	100	
Al	27	2	He	-0.042	-307.5	593	13.1	5	
K	39	2	He	39.213	5.2	222712	0.8	100	
Ca	43	2	He	15.163	11.2	127	4.6	100	
Ca	44	2	He	-16.732	-17.3	2977	6.1	100	
V	51	2	He	0.264	10.1	4068	4.0	2.5	
Cr	52	2	He	-0.008	-134.1	5421	3.2	2.5	
Mn	55	2	He	0.082	33.0	4924	3.6	2.5	
Fe	56	2	He	4.850	2.2	47334	3.0	100	
Co	59	2	He	0.037	15.6	770	8.1	2.5	
Ni	60	2	He	0.160	11.0	330	13.2	2.5	
Cu	63	2	He	-0.322	-6.9	5421	4.2	2.5	
Zn	66	2	He	-0.023	-373.1	750	17.3	2.5	
As	75	2	He	0.067	16.3	430	5.4	2.5	
Se	78	2	He	-0.067	-615.4	190	27.5	2.5	
B	11	1	nogas	103.302	4.0	670112	2.6	10	CCB Main CR1 Failed
Si	28	1	nogas	-230.217	-3.3	1450322	1.4	5	
Ca	43	1	nogas	94.148	6.5	6271	4.0	100	
Ca	44	1	nogas	-175.647	-4.9	314423	1.0	100	
Fe	56	1	nogas	6.655	127.9	2685715	8.9	100	
Se	77	1	nogas	6.389	39.0	23118	3.9	2.5	CCB Main CR1 Failed
Se	82	1	nogas	-0.630	-36.1	387	20.7	2.5	
Mo	95	1	nogas	0.356	40.2	2764	36.9	2.5	
Sn	118	1	nogas	0.272	30.5	4101	20.6	5	

Continuing Calibration Blank (CCB) Report

Ba	137	1	nogas	-0.017	-110.4	790	12.5	2.5	
Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Sb	121	2	He	0.543	3.1	3590	3.2	2.5	
P	31	1	nogas	-3.314	-25.0	118565	0.8	10	
La	139	1	nogas	7.364	66.8	80	21.7	2.5	CCB Main CR1 Failed
Au	197	1	nogas	-113.370	-68.5	13	86.6	2.5	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	1241620	3.26	1171766	105.96	70	125	
Ge	72	1	nogas	4108358	1.02	3233065	127.07	70	125	ISTD Failed
In	115	1	nogas	3573576	1.97	2958353	120.80	70	125	
Bi	209	1	nogas	2644695	1.99	2061475	128.29	70	125	ISTD Failed
Ge	72	2	He	966318	1.60	810035	119.29	70	125	

Continuing Calibration Verification (CCV) Report

Sample Table

Sample Name	CCV
Data File Name	256_CCV.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\121
Acq Date Time	2018-12-11T01:41:54-06:00
Sample Type	CCV
Dilution	1
Comment	
ISTD Ref File Name	132CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Exp Value	%Rec	%Low	%High2	QC Flag
Be	9	1	nogas	96.838	4.003	743961	4.86	100	96.8	90	110	
Na	23	1	nogas	9684.649	4.497	267003381	3.54	10000	96.8	90	110	
Mg	24	1	nogas	9656.405	6.246	171569341	5.28	10000	96.6	90	110	
Al	27	1	nogas	98.506	4.304	2125784	6.55	100	98.5	90	110	
K	39	1	nogas	9820.236	0.485	226021280	6.00	10000	98.2	90	110	
Ti	47	1	nogas	97.450	3.160	214263	5.34	100	97.4	90	110	
V	51	1	nogas	100.865	3.966	3255201	5.70	100	100.9	90	110	
Cr	52	1	nogas	96.601	3.099	2495014	8.19	100	96.6	90	110	
Mn	55	1	nogas	97.558	2.224	3147723	4.09	100	97.6	90	110	
Co	59	1	nogas	98.207	4.646	2595556	3.17	100	98.2	90	110	
Ni	60	1	nogas	97.695	3.008	586363	2.98	100	97.7	90	110	
Cu	63	1	nogas	93.960	4.826	1376498	1.27	100	94.0	90	110	
Zn	66	1	nogas	96.229	2.812	476146	3.47	100	96.2	90	110	
As	75	1	nogas	99.296	1.753	681151	4.68	100	99.3	90	110	
Sr	88	1	nogas	97.241	5.731	3222903	0.86	100	97.2	90	110	
Ag	107	1	nogas	99.934	3.208	1591507	2.98	100	99.9	90	110	
Cd	111	1	nogas	99.228	1.759	347942	3.67	100	99.2	90	110	
Sb	121	1	nogas	96.931	4.170	1475793	5.24	100	96.9	90	110	
Tl	205	1	nogas	96.123	5.658	2117096	2.39	100	96.1	90	110	
Pb	208	1	nogas	115.995	4.316	2920895	4.31	100	116.0	90	110	CCV Main CR1-2 Failed
U	238	1	nogas	100.156	3.515	2816467	3.80	100	100.2	90	110	
[Pb]	206	1	nogas	97.815	3.798	726294	2.61	100	97.8	90	110	
[Pb]	207	1	nogas	98.572	1.795	647479	5.28	100	98.6	90	110	
Na	23	2	He	9825.205	3.564	15675542	0.83	10000	98.3	90	110	
Mg	24	2	He	9672.650	0.395	8464283	4.06	10000	96.7	90	110	
Al	27	2	He	96.952	3.615	46939	6.28	100	97.0	90	110	
K	39	2	He	10671.591	5.928	9077049	5.80	10000	106.7	90	110	
Ca	43	2	He	9850.020	1.761	25541	5.45	10000	98.5	90	110	
Ca	44	2	He	9781.222	3.697	427112	5.77	10000	97.8	90	110	
V	51	2	He	97.426	1.940	642693	5.26	100	97.4	90	110	
Cr	52	2	He	96.643	2.832	692151	6.18	100	96.6	90	110	
Mn	55	2	He	98.904	3.985	487704	7.71	100	98.9	90	110	
Fe	56	2	He	9954.743	4.563	59280926	7.60	10000	99.5	90	110	
Co	59	2	He	97.181	3.624	959844	5.46	100	97.2	90	110	
Ni	60	2	He	98.253	4.257	244672	3.95	100	98.3	90	110	
Cu	63	2	He	99.292	3.102	630529	4.71	100	99.3	90	110	
Zn	66	2	He	99.240	0.974	151206	3.41	100	99.2	90	110	
As	75	2	He	97.743	3.300	149167	5.55	100	97.7	90	110	
Se	78	2	He	95.998	3.524	11517	7.39	100	96.0	90	110	
B	11	1	nogas	586.959	7.489	2851251	3.09	500	117.4	90	110	CCV Main CR1-2 Failed
Si	28	1	nogas	4677.262	3.859	7131930	4.61	5000	93.5	90	110	
Ca	43	1	nogas	9904.277	3.060	413006	3.13	10000	99.0	90	110	
Ca	44	1	nogas	9543.968	4.833	6645987	1.52	10000	95.4	90	110	
Fe	56	1	nogas	9540.750	1.241	265236298	4.79	10000	95.4	90	110	
Se	77	1	nogas	103.516	2.581	49995	6.64	100	103.5	90	110	
Se	82	1	nogas	100.209	3.245	32954	2.98	100	100.2	90	110	
Mo	95	1	nogas	97.552	5.941	645921	2.23	100	97.6	90	110	
Sn	118	1	nogas	95.826	4.430	953214	4.56	100	95.8	90	110	
Ba	137	1	nogas	95.363	0.855	448661	2.78	100	95.4	90	110	
Sb	121	2	He	97.430	2.063	512283	4.93	100	97.4	90	110	
Li	7	1	nogas	103.111	5.060	1804975	5.39	100	103.1	90	110	
P	31	1	nogas	473.048	2.051	1043642	4.71	500	94.6	90	110	
La	139	1	nogas	102.949	8.403	417	6.04	100	102.9	90	110	
Au	197	1	nogas	-155.832	-26.207	7	86.60	100	-155.8	90	110	CCV Main CR1-2 Failed

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	1103083	7.64	1171766	94.14	70	125	
Ge	72	1	nogas	3760109	6.04	3233065	116.30	70	125	
In	115	1	nogas	3335107	2.28	2958353	112.74	70	125	
Bi	209	1	nogas	2418001	6.25	2061475	117.29	70	125	

Continuing Calibration Verification (CCV) Report

Ge	72	2	He	879401	4.29	810035	108.56	70	125	

Continuing Calibration Blank (CCB) Report

Sample Table

Sample Name	CCB
Data File Name	257_CCB.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\121
Acq Date Time	2018-12-11T01:43:58-06:00
Sample Type	CCB
Dilution	1
Comment	
ISTD Ref File Name	132CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Fail

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Be	9	1	nogas	0.061	20.6	600	10.9	1	
Na	23	1	nogas	56.790	12.0	3591299	3.2	100	
Mg	24	1	nogas	7.733	23.6	194028	15.5	100	
Al	27	1	nogas	-0.012	-365.4	26115	3.0	5	
K	39	1	nogas	-27.472	-12.5	9047246	0.8	100	
Ti	47	1	nogas	0.029	152.7	617	16.2	2.5	
V	51	1	nogas	1.778	17.0	346641	3.1	2.5	
Cr	52	1	nogas	0.071	36.9	43655	1.2	2.5	
Mn	55	1	nogas	0.013	193.5	45158	1.1	2.5	
Co	59	1	nogas	0.050	24.8	2830	12.5	2.5	
Ni	60	1	nogas	0.430	5.2	2384	5.5	2.5	
Cu	63	1	nogas	-0.134	-40.5	16915	5.1	2.5	
Zn	66	1	nogas	0.391	6.5	3437	3.1	2.5	
As	75	1	nogas	1.066	34.0	68850	3.7	2.5	
Sr	88	1	nogas	0.153	17.0	9966	9.1	2.5	
Ag	107	1	nogas	0.053	13.6	1023	11.7	2.5	
Cd	111	1	nogas	0.056	33.8	250	28.0	1	
Sb	121	1	nogas	0.938	24.9	16755	22.3	2.5	
Tl	205	1	nogas	0.661	45.1	16663	44.0	1	
Pb	208	1	nogas	0.065	27.5	3234	13.9	2.5	
U	238	1	nogas	0.127	52.6	4161	50.7	2.5	
[Pb]	206	1	nogas	0.046	43.9	867	19.5	2.5	
[Pb]	207	1	nogas	0.042	24.9	773	7.8	2.5	
Na	23	2	He	44.784	3.1	259948	1.0	100	
Mg	24	2	He	5.678	2.1	8325	2.2	100	
Al	27	2	He	-0.028	-425.7	600	8.7	5	
K	39	2	He	37.480	1.5	221269	0.2	100	
Ca	43	2	He	-6.010	-166.4	67	43.3	100	
Ca	44	2	He	-13.468	-20.6	3134	4.6	100	
V	51	2	He	0.269	6.3	4106	3.9	2.5	
Cr	52	2	He	-0.020	-113.8	5328	2.2	2.5	
Mn	55	2	He	0.036	51.6	4681	3.3	2.5	
Fe	56	2	He	4.358	5.1	44133	2.8	100	
Co	59	2	He	0.045	19.8	860	10.1	2.5	
Ni	60	2	He	0.160	4.5	330	5.2	2.5	
Cu	63	2	He	-0.219	-7.7	6138	2.1	2.5	
Zn	66	2	He	-0.136	-14.6	563	5.1	2.5	
As	75	2	He	0.069	33.8	433	10.0	2.5	
Se	78	2	He	-0.081	-184.1	189	11.6	2.5	
B	11	1	nogas	67.648	12.5	502348	0.9	10	CCB Main CR1 Failed
Si	28	1	nogas	-213.356	-15.4	1457114	3.0	5	
Ca	43	1	nogas	83.176	3.3	5714	1.3	100	
Ca	44	1	nogas	-177.123	-4.4	310183	0.9	100	
Fe	56	1	nogas	2.036	338.4	2521178	7.7	100	
Se	77	1	nogas	3.935	77.6	22090	4.0	2.5	CCB Main CR1 Failed
Se	82	1	nogas	-0.724	-32.0	350	22.9	2.5	
Mo	95	1	nogas	0.283	39.7	2217	35.9	2.5	
Sn	118	1	nogas	0.219	30.0	3600	18.5	5	

Continuing Calibration Blank (CCB) Report

Ba	137	1	nogas	-0.024	-150.6	770	22.8	2.5	
Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Sb	121	2	He	0.580	7.1	3804	6.9	2.5	
P	31	1	nogas	-1.030	-62.1	122218	1.0	10	
La	139	1	nogas	4.387	104.7	70	24.7	2.5	CCB Main CR1 Failed
Au	197	1	nogas	-71.246	-89.8	20	50.0	2.5	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	1299409	8.41	1171766	110.89	70	125	
Ge	72	1	nogas	4066536	0.92	3233065	125.78	70	125	ISTD Failed
In	115	1	nogas	3642715	1.23	2958353	123.13	70	125	
Bi	209	1	nogas	2673338	2.04	2061475	129.68	70	125	ISTD Failed
Ge	72	2	He	967118	1.58	810035	119.39	70	125	

Low Level Initial Calibration Verification (LLICV) Report

Sample Table

Sample Name	LLCCV5
Data File Name	258LICV.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\121
Acq Date Time	2018-12-11T01:46:01-06:00
Sample Type	LLICV
Dilution	1
Comment	
ISTD Ref File Name	132CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Fail

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Exp Value	%Rec	%Low	%High	QC Flag
Be	9	1	nogas	4.589	9.228	40303	4.18	5	91.8	70	130	
Na	23	1	nogas	501.735	4.012	17022063	1.43	500	100.3	70	130	
Mg	24	1	nogas	491.697	2.725	9595167	4.37	500	98.3	70	130	
Al	27	1	nogas	4.640	2.686	133084	2.15	5	92.8	70	130	
K	39	1	nogas	463.085	7.276	20701210	0.87	500	92.6	70	130	
Ti	47	1	nogas	4.799	3.229	11904	2.77	5	96.0	70	130	
V	51	1	nogas	6.407	5.322	493553	2.87	5	128.1	70	130	
Cr	52	1	nogas	4.918	2.695	176306	1.32	5	98.4	70	130	
Mn	55	1	nogas	4.730	7.569	206934	3.04	5	94.6	70	130	
Co	59	1	nogas	5.038	4.734	145031	1.70	5	100.8	70	130	
Ni	60	1	nogas	5.304	3.450	33965	1.72	5	106.1	70	130	
Cu	63	1	nogas	4.759	3.732	93276	0.29	5	95.2	70	130	
Zn	66	1	nogas	5.177	2.417	28916	1.95	5	103.5	70	130	
As	75	1	nogas	5.983	8.623	101953	0.84	5	119.7	70	130	
Sr	88	1	nogas	4.974	4.122	182321	1.89	5	99.5	70	130	
Ag	107	1	nogas	4.974	4.330	85581	2.00	5	99.5	70	130	
Cd	111	1	nogas	4.815	2.649	18480	2.44	5	96.3	70	130	
Sb	121	1	nogas	5.102	1.868	85077	1.25	5	102.0	70	130	
Tl	205	1	nogas	4.872	5.194	115974	0.91	5	97.4	70	130	
Pb	208	1	nogas	6.237	1.565	158572	1.55	5	124.7	70	130	
U	238	1	nogas	4.932	6.739	149223	1.19	5	98.6	70	130	
[Pb]	206	1	nogas	4.865	6.778	39278	1.53	5	97.3	70	130	
[Pb]	207	1	nogas	4.925	7.118	35172	2.80	5	98.5	70	130	
Na	23	2	He	507.742	1.335	1084091	1.24	500	101.5	70	130	
Mg	24	2	He	491.209	0.686	484211	0.54	500	98.2	70	130	
Al	27	2	He	4.984	9.283	3297	8.04	5	99.7	70	130	
K	39	2	He	651.000	1.234	732191	0.91	500	130.2	70	130	LLICV Main CR1 Failed
Ca	43	2	He	473.744	8.526	1457	8.30	500	94.7	70	130	
Ca	44	2	He	441.042	1.066	25241	1.28	500	88.2	70	130	
V	51	2	He	5.023	1.696	39190	1.58	5	100.5	70	130	
Cr	52	2	He	4.746	0.880	43371	0.67	5	94.9	70	130	
Mn	55	2	He	4.632	2.215	29918	2.43	5	92.6	70	130	
Fe	56	2	He	502.871	2.093	3367285	2.55	500	100.6	70	130	
Co	59	2	He	4.862	1.671	54147	2.22	5	97.2	70	130	
Ni	60	2	He	5.071	2.600	14046	2.11	5	101.4	70	130	
Cu	63	2	He	4.626	3.357	40331	2.22	5	92.5	70	130	
Zn	66	2	He	4.739	9.178	8852	7.97	5	94.8	70	130	
As	75	2	He	4.894	1.884	8672	2.04	5	97.9	70	130	
Se	78	2	He	4.474	8.384	794	6.71	5	89.5	70	130	
B	11	1	nogas	80.320	11.596	556293	3.44	25	321.3	70	130	LLICV Main CR1 Failed
Si	28	1	nogas	43.042	56.050	1780193	2.42	25	172.2	70	130	LLICV Main CR1 Failed
Ca	43	1	nogas	560.147	3.771	27063	0.88	500	112.0	70	130	
Ca	44	1	nogas	308.291	8.145	652164	0.96	500	61.7	70	130	LLICV Main CR1 Failed
Fe	56	1	nogas	468.635	7.508	16373194	3.94	500	93.7	70	130	
Se	77	1	nogas	9.863	15.583	23929	3.29	5	197.3	70	130	LLICV Main CR1 Failed
Se	82	1	nogas	4.221	6.537	2073	1.55	5	84.4	70	130	
Mo	95	1	nogas	4.925	3.338	35409	1.21	5	98.5	70	130	
Sn	118	1	nogas	4.789	3.383	53212	2.15	5	95.8	70	130	
Ba	137	1	nogas	4.667	2.335	24838	1.07	5	93.3	70	130	
Sb	121	2	He	4.792	4.901	28660	5.35	5	95.8	70	130	
Li	7	1	nogas	10.399	8.817	302963	0.65	5	208.0	70	130	LLICV Main CR1 Failed
P	31	1	nogas	24.181	10.416	175193	0.05	25	96.7	70	130	
La	139	1	nogas	3.509	47.648	67	8.66	5	70.2	70	130	
Au	197	1	nogas	51.122	229.212	37	41.66	5	1022.4	70	130	LLICV Main CR1 Failed

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	1261761	5.72	1171766	107.68	70	125	
Ge	72	1	nogas	4055496	3.05	3233065	125.44	70	125	ISTD Failed
In	115	1	nogas	3644026	1.22	2958353	123.18	70	125	
Bi	209	1	nogas	2601427	5.65	2061475	126.19	70	125	ISTD Failed

Low Level Initial Calibration Verification (LLICV) Report

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Ge	72	2	He	984911	0.56	810035	121.59	70	125	

Sample Report

Sample Table

Sample Name	LLCCV2
Data File Name	259SMPL.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\121
Acq Date Time	2018-12-11T01:48:05-06:00
Sample Type	Sample
Dilution	1
Comment	
ISTD Ref FileName	132CALB.d
Sample QC Pass/Fail	Pass
ISTD Pass/Fail	Fail

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
Be	9	1	nogas	1.780	1.780	7.15	15857	0.01	2000	
Na	23	1	nogas	206.462	206.462	2.20	8178375	0.00	200000	
Mg	24	1	nogas	203.364	203.364	3.05	3987138	0.01	200000	
Al	27	1	nogas	1.755	1.755	8.48	66899	0.00	2000	
K	39	1	nogas	180.349	180.349	8.57	14019148	0.00	200000	
Ti	47	1	nogas	1.975	1.975	4.41	5237	0.04	2000	
V	51	1	nogas	3.677	3.677	10.83	407713	0.00	2000	
Cr	52	1	nogas	2.049	2.049	6.92	98012	0.00	2000	
Mn	55	1	nogas	1.764	1.764	4.42	105559	0.00	2000	
Co	59	1	nogas	2.068	2.068	1.72	60607	0.00	2000	
Ni	60	1	nogas	2.368	2.368	2.25	14993	0.02	2000	
Cu	63	1	nogas	1.818	1.818	4.86	47525	0.00	2000	
Zn	66	1	nogas	2.077	2.077	7.15	12444	0.02	2000	
As	75	1	nogas	2.958	2.958	9.15	81766	0.00	2000	
Sr	88	1	nogas	2.032	2.032	3.74	77394	0.00	2000	
Ag	107	1	nogas	2.102	2.102	4.51	36348	0.01	2000	
Cd	111	1	nogas	1.896	1.896	5.53	7362	0.03	2000	
Sb	121	1	nogas	2.097	2.097	4.62	35854	0.01	2000	
Tl	205	1	nogas	1.944	1.944	3.56	46989	0.00	2000	
Pb	208	1	nogas	2.512	2.512	0.73	64832	0.00	2000	
U	238	1	nogas	1.952	1.952	0.77	59697	0.00	2000	
[Pb]	206	1	nogas	1.964	1.964	4.12	16272	0.01	2000	
[Pb]	207	1	nogas	1.961	1.961	6.30	14393	0.01	2000	
Na	23	2	He	197.631	197.631	1.86	541513	0.04	200000	
Mg	24	2	He	199.651	199.651	0.98	200837	0.10	200000	
Al	27	2	He	1.746	1.746	3.14	1580	0.11	2000	
K	39	2	He	285.442	285.442	0.33	427765	0.07	200000	
Ca	43	2	He	189.992	189.992	19.66	643	29.53	200000	
Ca	44	2	He	179.855	179.855	3.10	12714	1.41	200000	
V	51	2	He	2.184	2.184	1.13	18501	0.01	2000	
Cr	52	2	He	1.787	1.787	2.90	20045	0.01	2000	
Mn	55	2	He	1.812	1.812	7.75	14646	0.01	2000	
Fe	56	2	He	195.956	195.956	2.43	1337122	0.01	200000	
Co	59	2	He	1.918	1.918	3.44	21843	0.01	2000	
Ni	60	2	He	2.149	2.149	6.84	5961	0.04	2000	
Cu	63	2	He	1.672	1.672	6.33	19778	0.01	2000	
Zn	66	2	He	1.815	1.815	4.28	3934	0.05	2000	
As	75	2	He	1.908	1.908	2.13	3620	0.05	2000	
Se	78	2	He	1.808	1.808	9.45	447	0.40	2000	
B	11	1	nogas	59.612	59.612	8.23	451408	0.01	2000	
Si	28	1	nogas	-126.870	-126.870	-34.91	1567992	-0.01	2000	
Ca	43	1	nogas	282.938	282.938	3.24	14707	1.92	200000	
Ca	44	1	nogas	13.307	13.307	113.58	445344	0.00	200000	
Fe	56	1	nogas	187.265	187.265	4.68	8047015	0.00	200000	

Sample Report

Se	77	1	nogas	5.260	5.260	40.95	22524	0.02	2000	
Se	82	1	nogas	1.460	1.460	35.49	1113	0.13	2000	
Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
Mo	95	1	nogas	1.967	1.967	2.56	14309	0.01	2000	
Sn	118	1	nogas	1.887	1.887	3.25	21907	0.01	2000	
Ba	137	1	nogas	1.857	1.857	3.11	10510	0.02	2000	
Sb	121	2	He	2.024	2.024	2.03	12511	0.02	2000	
La	139	1	nogas	1.611	1.611	402.79	60	2.68	2000	
Au	197	1	nogas	-22.202	-22.202	-356.49	27	-83.26	2000	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	1275158	3.69	1171766	108.82	70	125	
Ge	72	1	nogas	4069770	2.96	3233065	125.88	70	125	ISTD Failed
In	115	1	nogas	3674762	1.19	2958353	124.22	70	125	
Bi	209	1	nogas	2617752	2.35	2061475	126.98	70	125	ISTD Failed
Ge	72	2	He	996381	1.20	810035	123.00	70	125	

Interference Check Solution A (ICS-A) Report

Sample Table

Sample Name	ICSA
Data File Name	260ICSA.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\121
Acq Date Time	2018-12-11T01:50:11-06:00
Sample Type	ICSA
Dilution	1
Comment	
ISTD Ref File Name	132CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Be	9	1	nogas	0.003	178.0	73	51.6	0	ICSA Main CR1 Failed
Na	23	1	nogas	97369.000	3.9	2800552129	3.4	0	
Mg	24	1	nogas	95712.912	1.3	1785455640	2.5	0	
Al	27	1	nogas	93385.081	4.4	2106294155	0.4	0	
K	39	1	nogas	97335.947	6.9	2281618251	2.1	0	
Ti	47	1	nogas	1951.882	7.3	4524255	2.5	0	
V	51	1	nogas	0.268	298.2	291202	5.1	0	ICSA Main CR1 Failed
Cr	52	1	nogas	0.894	17.1	64719	1.5	0	ICSA Main CR1 Failed
Mn	55	1	nogas	-0.305	-29.8	33377	4.9	0	ICSA Main CR1 Failed
Co	59	1	nogas	0.411	6.1	12861	0.7	0	ICSA Main CR1 Failed
Ni	60	1	nogas	1.590	4.6	9699	1.6	0	ICSA Main CR1 Failed
Cu	63	1	nogas	0.420	9.6	25027	2.3	0	ICSA Main CR1 Failed
Zn	66	1	nogas	1.901	3.0	11250	2.1	0	ICSA Main CR1 Failed
As	75	1	nogas	3.610	22.4	84150	1.9	0	ICSA Main CR1 Failed
Sr	88	1	nogas	0.803	10.7	32560	8.6	0	ICSA Main CR1 Failed
Ag	107	1	nogas	0.059	10.9	1087	5.1	0	ICSA Main CR1 Failed
Cd	111	1	nogas	1.863	0.5	6721	4.5	0	ICSA Main CR1 Failed
Sb	121	1	nogas	0.232	7.0	5034	2.5	0	ICSA Main CR1 Failed
Tl	205	1	nogas	0.044	39.5	1490	25.5	0	ICSA Main CR1 Failed
Pb	208	1	nogas	0.074	9.9	3474	5.3	0	ICSA Main CR1 Failed
[Pb]	206	1	nogas	0.048	8.5	820	2.4	0	ICSA Main CR1 Failed
[Pb]	207	1	nogas	0.043	12.2	727	3.5	0	ICSA Main CR1 Failed
Na	23	2	He	97981.037	2.3	166567398	1.5	0	
Mg	24	2	He	97117.199	3.9	91300342	3.0	0	
Al	27	2	He	93342.694	1.9	47977431	1.3	0	
K	39	2	He	114743.746	1.0	95745329	1.0	0	
Ca	43	2	He	95373.433	0.5	265018	0.8	0	
Ca	44	2	He	96646.872	1.8	4502556	0.9	0	
V	51	2	He	0.177	3.9	3364	2.1	0	ICSA Main CR1 Failed
Cr	52	2	He	0.194	7.8	6848	0.9	0	ICSA Main CR1 Failed
Mn	55	2	He	-0.157	-16.1	3560	3.7	0	ICSA Main CR1 Failed
Fe	56	2	He	100332.252	2.5	641658110	2.6	0	
Co	59	2	He	0.261	0.7	3127	1.3	0	ICSA Main CR1 Failed
Ni	60	2	He	0.344	11.8	813	12.4	0	ICSA Main CR1 Failed
Cu	63	2	He	-0.365	-14.6	5014	7.5	0	ICSA Main CR1 Failed
Zn	66	2	He	0.211	57.8	1117	18.5	0	ICSA Main CR1 Failed
As	75	2	He	0.119	16.3	506	7.3	0	ICSA Main CR1 Failed
Se	78	2	He	0.054	241.5	201	8.1	0	ICSA Main CR1 Failed
B	11	1	nogas	45.389	3.0	359125	0.8	0	
Si	28	1	nogas	243.540	36.5	1995040	0.8	0	
Ca	43	1	nogas	97229.770	3.5	4274724	1.7	0	
Ca	44	1	nogas	97493.968	3.2	67989066	1.8	0	
Fe	56	1	nogas	95635.347	4.3	2790294262	2.4	0	
Se	77	1	nogas	23.128	32.4	27578	3.7	0	
Se	82	1	nogas	-0.634	-60.8	370	32.8	0	ICSA Main CR1 Failed
Mo	95	1	nogas	1911.729	5.3	13404042	2.4	0	
Sn	118	1	nogas	0.091	37.5	2070	12.6	0	ICSA Main CR1 Failed
Ba	137	1	nogas	0.119	33.6	1413	16.3	0	ICSA Main CR1 Failed
Sb	121	2	He	0.242	2.0	1810	0.6	0	ICSA Main CR1 Failed

Interference Check Solution A (ICS-A) Report

P	31	1	nogas	92844.168	6.3	192765257	1.5	0	
La	139	1	nogas	44.722	4.6	213	2.7	0	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	1221334	1.49	1171766	104.23	70	125	
Ge	72	1	nogas	3979676	4.70	3233065	123.09	70	125	
In	115	1	nogas	3414393	4.74	2958353	115.42	70	125	
Bi	209	1	nogas	2477747	1.98	2061475	120.19	70	125	
Ge	72	2	He	945180	0.98	810035	116.68	70	125	

Interference Check Solution AB (ICS-AB) Report

Sample Table

Sample Name	ICSAB
Data File Name	261ICSB.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\121
Acq Date Time	2018-12-11T01:52:19-06:00
Sample Type	ICSB
Dilution	1
Comment	
ISTD Ref File Name	132CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Exp Value	%Rec	%Low	%High	QC Flag
Be	9	1	nogas	108.380	1.704	848545	0.53	100	108.4	80	120	
Na	23	1	nogas	105661.204	2.922	3015503267	1.10	100	105661.2	80	120	
Mg	24	1	nogas	106518.615	3.629	1970925244	1.08	100	106518.6	80	120	
Al	27	1	nogas	93450.228	3.840	2075126956	1.64	100	93450.2	80	120	ICSB Main CR1 Failed
K	39	1	nogas	109913.407	3.833	2537295857	1.64	100	109913.4	80	120	ICSB Main CR1 Failed
Ti	47	1	nogas	2109.133	0.807	4819824	2.05	100	2109.1	80	120	ICSB Main CR1 Failed
V	51	1	nogas	107.679	3.455	3599506	0.86	100	107.7	80	120	
Cr	52	1	nogas	105.919	1.153	2843113	3.76	100	105.9	80	120	
Mn	55	1	nogas	104.935	3.128	3524219	3.22	100	104.9	80	120	
Co	59	1	nogas	107.231	2.579	2954269	1.27	100	107.2	80	120	
Ni	60	1	nogas	105.790	1.749	661772	1.21	100	105.8	80	120	
Cu	63	1	nogas	104.266	2.972	1591250	3.26	100	104.3	80	120	
Zn	66	1	nogas	108.750	2.586	560477	1.08	100	108.7	80	120	
As	75	1	nogas	109.817	2.691	778200	0.37	100	109.8	80	120	
Sr	88	1	nogas	106.493	2.992	3681141	0.70	100	106.5	80	120	
Ag	107	1	nogas	103.861	3.280	1723662	2.20	100	103.9	80	120	
Cd	111	1	nogas	112.821	1.948	392262	1.30	100	112.8	80	120	
Sb	121	1	nogas	107.715	2.958	1708075	1.29	100	107.7	80	120	
Tl	205	1	nogas	104.044	4.721	2300523	5.54	100	104.0	80	120	
Pb	208	1	nogas	129.514	0.804	3261135	0.80	100	129.5	80	120	ICSB Main CR1 Failed
U	238	1	nogas	113.390	1.842	3196870	0.67	100	113.4	80	120	
[Pb]	206	1	nogas	108.487	1.017	807942	1.46	100	108.5	80	120	
[Pb]	207	1	nogas	108.958	1.379	717015	1.02	100	109.0	80	120	
Na	23	2	He	106098.753	1.373	181702617	1.71	100	106098.8	80	120	
Mg	24	2	He	103852.459	1.814	98360735	0.45	100	103852.5	80	120	ICSB Main CR1 Failed
Al	27	2	He	91613.570	2.291	47435379	1.92	100	91613.6	80	120	ICSB Main CR1 Failed
K	39	2	He	126463.654	0.726	105505328	0.73	100	126463.7	80	120	
Ca	43	2	He	103849.167	2.869	290631	1.77	100	103849.2	80	120	
Ca	44	2	He	103159.067	4.300	4840746	3.72	100	103159.1	80	120	ICSB Main CR1 Failed
V	51	2	He	105.943	1.749	756260	0.33	100	105.9	80	120	
Cr	52	2	He	106.017	1.577	821167	0.64	100	106.0	80	120	
Mn	55	2	He	106.751	1.215	569230	3.01	100	106.8	80	120	
Fe	56	2	He	109818.907	2.818	707587723	3.55	100	109818.9	80	120	
Co	59	2	He	103.509	3.314	1107145	4.06	100	103.5	80	120	
Ni	60	2	He	104.108	2.451	280873	2.01	100	104.1	80	120	
Cu	63	2	He	104.131	4.402	715456	2.92	100	104.1	80	120	
Zn	66	2	He	108.051	2.693	178208	2.33	100	108.1	80	120	
As	75	2	He	108.618	1.363	179419	0.43	100	108.6	80	120	
Se	78	2	He	107.953	0.889	13987	1.26	100	108.0	80	120	
B	11	1	nogas	586.779	1.475	2909768	0.62	100	586.8	80	120	
Si	28	1	nogas	5401.616	4.215	8320391	1.62	100	5401.6	80	120	ICSB Main CR1 Failed
Ca	43	1	nogas	108089.874	3.447	4677215	1.37	100	108089.9	80	120	
Ca	44	1	nogas	107927.342	1.425	74054672	1.38	100	107927.3	80	120	
Fe	56	1	nogas	108702.975	1.169	3123015403	1.89	100	108703.0	80	120	ICSB Main CR1 Failed
Se	77	1	nogas	119.051	2.344	56835	1.26	100	119.1	80	120	
Se	82	1	nogas	111.954	1.607	38304	1.40	100	112.0	80	120	
Mo	95	1	nogas	2068.824	2.247	14285598	0.54	100	2068.8	80	120	ICSB Main CR1 Failed
Sn	118	1	nogas	108.596	1.845	1071270	0.65	100	108.6	80	120	
Ba	137	1	nogas	110.359	1.782	514851	2.51	100	110.4	80	120	
Sb	121	2	He	108.695	2.292	618619	1.45	100	108.7	80	120	
La	139	1	nogas	160.960	10.953	620	11.17	100	161.0	80	120	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	1122479	1.33	1171766	95.79	70	125	
Ge	72	1	nogas	3915209	2.71	3233065	121.10	70	125	
In	115	1	nogas	3307980	1.50	2958353	111.82	70	125	
Bi	209	1	nogas	2421591	1.34	2061475	117.47	70	125	
Ge	72	2	He	952202	1.80	810035	117.55	70	125	

Tune Report

Batch Folder C:\Agilent\ICPMH\1\DATA\121018B.b
Report Comment
Instrument Name G3281A JP11080910

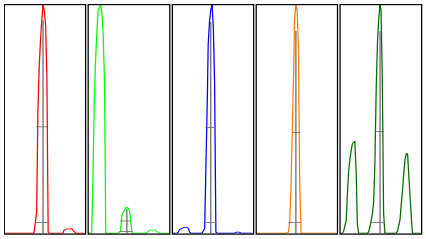
[nogas]

Mass	Range	Count (Actual)	Response (Actual) [cps/ug/l]	Response (Required) [cps/ug/l]	Response (Flag)	Resp Ratio (Actual)	Resp Ratio (Required)	Resp Ratio (Flag)
9		16595				NaN	-	
24		38290				NaN	-	
59		46234				NaN	-	
115		28041				NaN	-	
208		20209				NaN	-	

Mass	RSD% (Actual)	RSD% (Required)	RSD% (Flag)	Background (Actual)	Background (Required)	Background (Flag)
9	0.37	5.00				
24	0.56	5.00				
59	0.80	5.00				
115	1.51	5.00				
208	1.71	5.00				

Mass	Replicate 1 Count	Replicate 2 Count	Replicate 3 Count	Replicate 4 Count	Replicate 5 Count
9	16647	16597	16654	16572	16503
24	38476	38129	38064	38229	38553
59	46623	46531	46065	46247	45706
115	28025	27627	28754	27901	27900
208	20020	20210	20331	19780	20704

Integration Time [sec] 0.1



Mass	Peak Height	Axis (Actual)	Axis (Required)	Axis (Flag)	W-50%	W-X% (Actual)	W-X% (Required)	W-X% (Flag)
9	4605.49	8.95	8.9 - 9.1		0.37	0.473	0.750	
24	10713.44	23.95	23.9 - 24.1		0.37	0.458	0.750	
59	13838.50	58.95	58.9 - 59.1		0.34	0.442	0.750	
115	9219.73	115.00	114.9 - 115.1		0.29	0.449	0.750	
208	6251.17	208.00	207.9 - 208.1		0.30	0.508	0.750	

X = 5 **Integration Time [sec]** 0.1 **Acquisition Time [sec]** 168.5 **Y Axis** Linear

Tune Parameters

Plasma Paramters

RF Power	1600 W	Carrier Gas	0.36 L/min	S/C Temp	2 ℃
RF Matching	1.70 V	Option Gas	0.0 %	Makeup/Dilution Gas	0.40 L/min
Smpl Depth	8.0 mm	Nebulizer Pump	0.10 rps	Gas Switch	Dilution Gas

Lenses Parameters

Extract 1	0.0 V	Omega Lens	8.0 V	Deflect	15.0 V
Extract 2	-200.0 V	Cell Entrance	-30 V	Plate Bias	-50 V
Omega Bias	-100 V	Cell Exit	-58 V		

Cell Parameters

OctP Bias	-8.0 V	He Flow	0.0 mL/min	Energy Discrimination	5.0 V
OctP RF	190 V	H2 Flow	0.0 mL/min		
Use Gas	true	3rd Gas Flow	0 %		

[He]

Mass	Range	Count (Actual)	Response (Actual) [cps/ug/l]	Response (Required) [cps/ug/l]	Response (Flag)	Resp Ratio (Actual)	Resp Ratio (Required)	Resp Ratio (Flag)
9		332				NaN	-	
24		2381				NaN	-	
59		18960				NaN	-	

Tune Report

Mass	RSD% (Actual)	RSD% (Required)	RSD% (Flag)	Background (Actual)	Background (Required)	Background (Flag)
9	4.90	5.00				
24	1.82	5.00				
59	0.62	5.00				

Mass	Replicate 1 Count	Replicate 2 Count	Replicate 3 Count	Replicate 4 Count	Replicate 5 Count
9	310	354	340	327	333
24	2411	2312	2389	2422	2369
59	19110	19016	18952	18792	18933

Integration Time [sec] 0.1

Mass	Peak Height	Axis (Actual)	Axis (Required)	Axis (Flag)	W-50%	W-X% (Actual)	W-X% (Required)	W-X% (Flag)
9	91.40	8.95	8.9 - 9.1		0.37	0.483	0.750	
24	654.00	23.95	23.9 - 24.1		0.38	0.446	0.750	
59	5805.22	58.95	58.9 - 59.1		0.32	0.439	0.750	

X = 5 **Integration Time [sec]** 0.1 **Acquisition Time [sec]** 100.6 **Y Axis** Linear

Tune Parameters

Plasma Paramters

RF Power	1600 W	Carrier Gas	0.36 L/min	S/C Temp	2 ℃
RF Matching	1.70 V	Option Gas	0.0 %	Makeup/Dilution Gas	0.40 L/min
Smpl Depth	8.0 mm	Nebulizer Pump	0.10 rps	Gas Switch	Dilution Gas

Lenses Parameters

Extract 1	0.0 V	Omega Lens	8.0 V	Deflect	2.0 V
Extract 2	-200.0 V	Cell Entrance	-32 V	Plate Bias	-60 V
Omega Bias	-100 V	Cell Exit	-70 V		

Cell Parameters

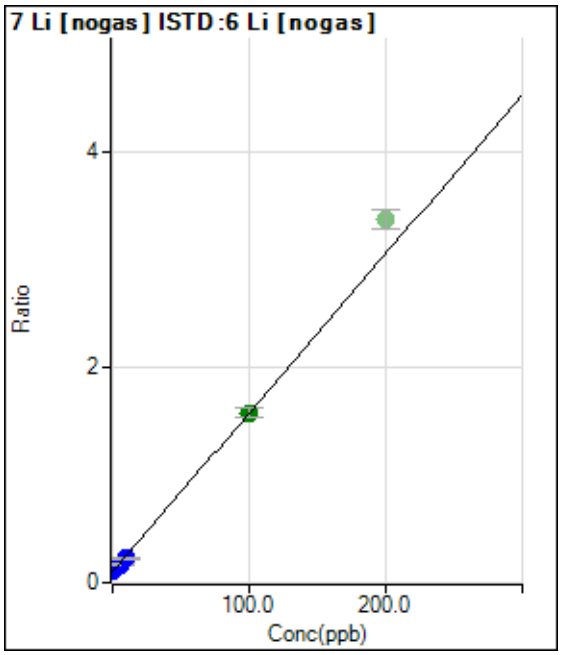
OctP Bias	-18.0 V	He Flow	4.0 mL/min	Energy Discrimination	5.0 V
OctP RF	190 V	H2 Flow	0.0 mL/min		
Use Gas	true	3rd Gas Flow	0 %		

Calibration for 012_ICV.d

Batch Folder: C:\Agilent\ICPMH\1\DATA\121118A.b\
Analysis File: 121118A.batch.bin
DA Date-Time: 2018-12-11 20:02:13
Calibration Title:
Calibration Method: External Calibration
VIS Interpolation Fit:

Level	Standard Data File	Sample Name	Acq. Date-Time
1	005CALB.d	CAL BLK	2018-12-11 13:43:11
2	006CALS.d	2/10/200	2018-12-11 13:45:15
3	007CALS.d	5/25/500	2018-12-11 13:47:19
4	008CALS.d	10/50/1000	2018-12-11 13:49:25
5	009CALS.d	100/500/10K	2018-12-11 13:51:29
6	010CALS.d	200/1000/20K	2018-12-11 13:53:34
7			

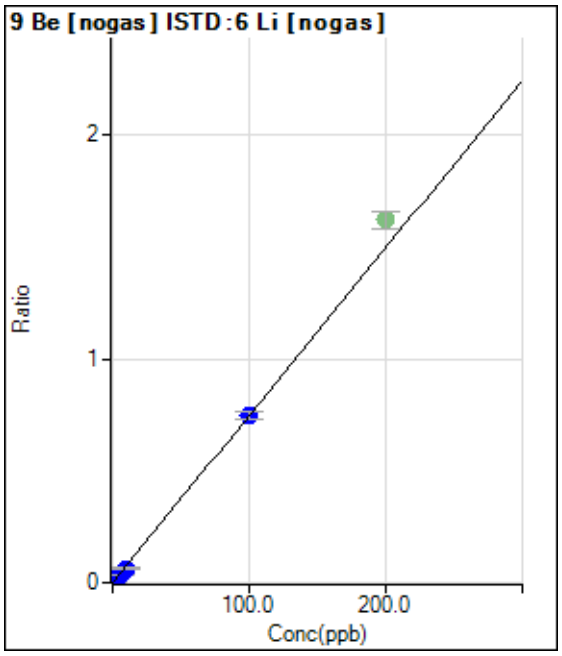
Calibration for 012_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	124754.41	0.1003	P	0.4
2	☐	2.000	1.749	155923.29	0.1260	P	4.8
3	☐	5.000	4.663	202345.61	0.1690	P	2.3
4	☐	10.000	8.402	292841.87	0.2241	P	5.7
5	☐	100.000	100.182	1770974.82	1.5773	A	5.5
6	☑	200.000		3511305.47	3.3637	A	5.3
7	☐	1.000					

y = 0.0147 * x + 0.1003
R = 0.9999
DL = 0.07865
BEC = 6.801

Weight: <None>
Min Conc: <None>

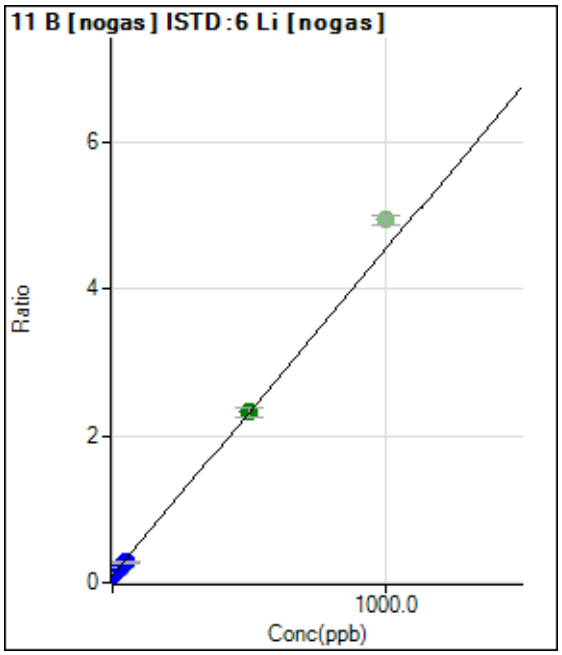


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	30.00	0.0000	P	67.1
2	☐	2.000	1.780	16493.92	0.0133	P	5.1
3	☐	5.000	4.560	40833.79	0.0341	P	4.3
4	☐	10.000	8.361	81565.36	0.0625	P	8.7
5	☐	100.000	100.190	841413.55	0.7491	P	4.0
6	☑	200.000		1692802.32	1.6213	A	4.7
7	☐	1.000					

y = 0.0075 * x + 2.4152E-005
R = 0.9999
DL = 0.006505
BEC = 0.00323

Weight: <None>
Min Conc: <None>

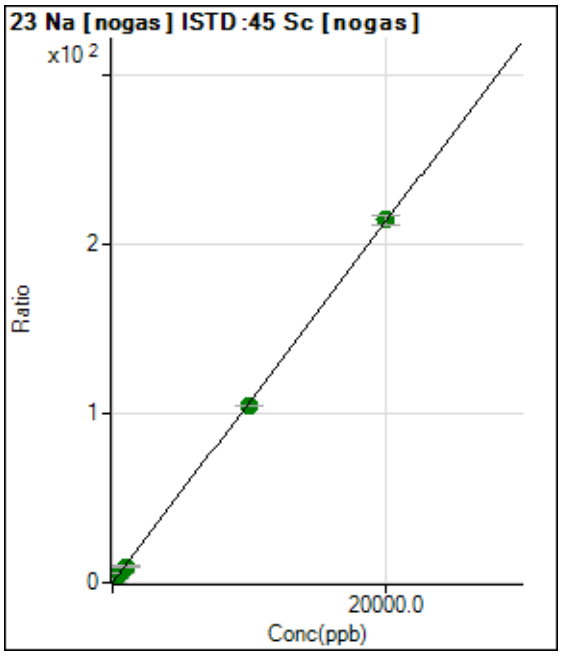
Calibration for 012_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	125735.94	0.1011	P	1.8
2	☐	10.000	9.322	176240.69	0.1424	P	2.3
3	☐	25.000	23.980	248292.04	0.2074	P	2.1
4	☐	50.000	41.054	369181.07	0.2830	P	8.3
5	☐	500.000	500.959	2607137.36	2.3217	A	5.1
6	☑	1000.000		5156286.70	4.9361	A	2.6
7	☐	5.000					

y = 0.0044 * x + 0.1011
R = 0.9998
DL = 1.237
BEC = 22.8

Weight: <None>
Min Conc: <None>

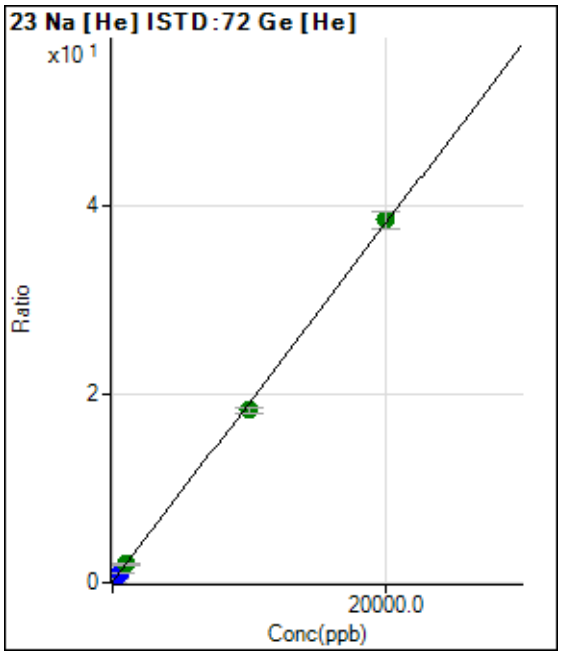


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	451540.80	0.1801	P	3.7
2	☐	200.000	188.575	5538932.29	2.1884	A	1.4
3	☐	500.000	494.047	13259517.23	5.4417	A	2.7
4	☐	1000.000	857.316	25987065.68	9.3105	A	7.9
5	☐	10000.00	9774.942	257198505.7	104.283	A	0.4
6	☐	20000.00	20119.926	516261878.2	214.457	A	2.9
7	☐	100.000					

y = 0.0106 * x + 0.1801
R = 0.9999
DL = 1.9
BEC = 16.91

Weight: <None>
Min Conc: <None>

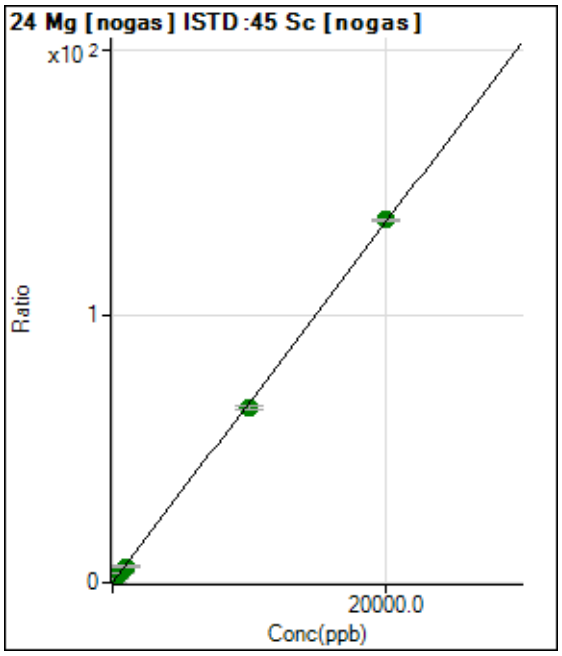
Calibration for 012_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	63603.29	0.0683	P	2.5
2	☐	200.000	197.667	405135.20	0.4440	P	0.1
3	☐	500.000	476.472	908851.84	0.9739	P	1.8
4	☐	1000.000	987.632	1800769.24	1.9455	A	3.4
5	☐	10000.00	9586.527	16649875.59	18.2892	A	2.8
6	☐	20000.00	20207.966	33472884.50	38.4770	A	4.5
7	☐	100.000					

y = 0.0019 * x + 0.0683
R = 0.9997
DL = 2.747
BEC = 35.93

Weight: <None>
Min Conc: <None>

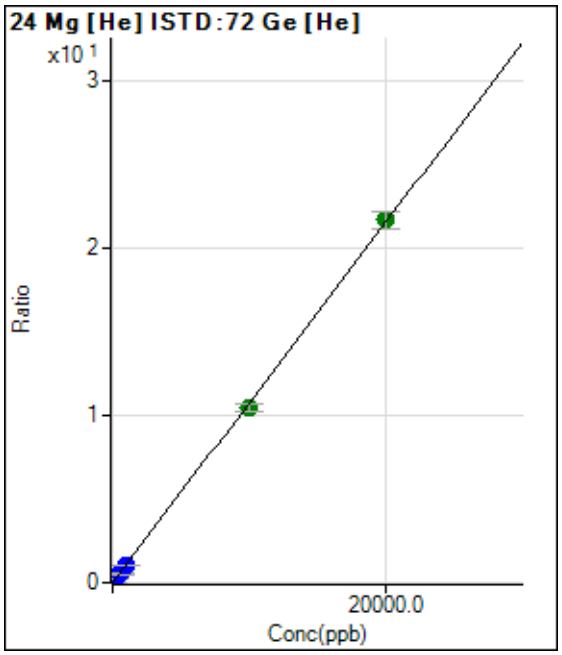


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	10904.79	0.0044	P	5.6
2	☐	200.000	202.513	3474042.39	1.3726	A	3.0
3	☐	500.000	513.699	8464967.90	3.4751	A	4.3
4	☐	1000.000	894.998	16864580.59	6.0513	A	10.3
5	☐	10000.00	9703.152	161688041.1	65.5627	A	1.5
6	☐	20000.00	20153.306	327911449.0	136.168	A	0.3
7	☐	100.000					

y = 0.0068 * x + 0.0044
R = 0.9998
DL = 0.1078
BEC = 0.6442

Weight: <None>
Min Conc: <None>

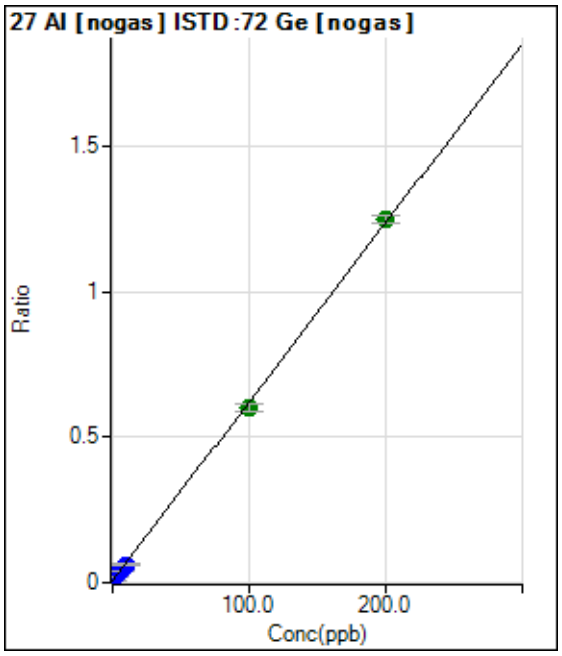
Calibration for 012_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	713.36	0.0008	P	15.8
2	☐	200.000	198.727	195481.12	0.2142	P	2.0
3	☐	500.000	483.179	484989.09	0.5197	P	2.3
4	☐	1000.000	959.718	955012.67	1.0316	P	1.3
5	☐	10000.00	9679.408	9465261.94	10.3972	A	4.5
6	☐	20000.00	20162.743	18843176.80	21.6571	A	4.7
7	☐	100.000					

y = 0.0011 * x + 7.6688E-004
R = 0.9998
DL = 0.3376
BEC = 0.714

Weight: <None>
Min Conc: <None>

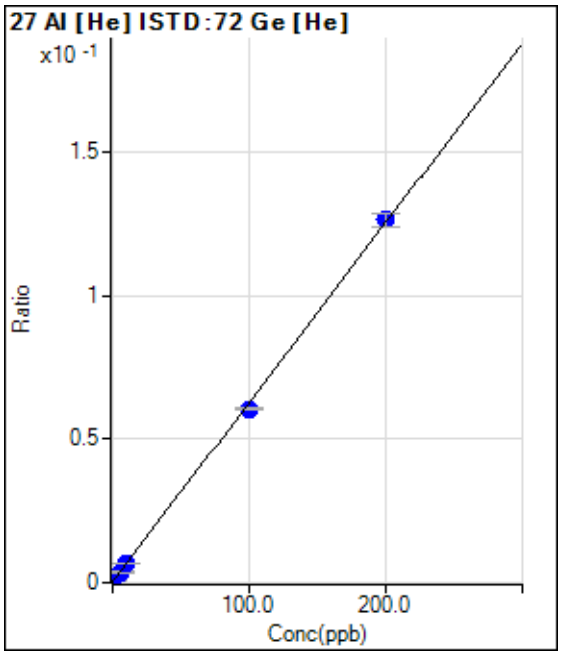


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	23147.72	0.0068	P	2.9
2	☐	2.000	1.757	59798.00	0.0176	P	3.1
3	☐	5.000	4.942	124735.03	0.0371	P	0.8
4	☐	10.000	8.721	220968.88	0.0604	P	10.8
5	☐	100.000	96.621	2036700.54	0.6008	A	4.1
6	☐	200.000	201.757	4124966.40	1.2471	A	2.3
7	☐	1.000					

y = 0.0061 * x + 0.0068
R = 0.9998
DL = 0.09696
BEC = 1.099

Weight: <None>
Min Conc: <None>

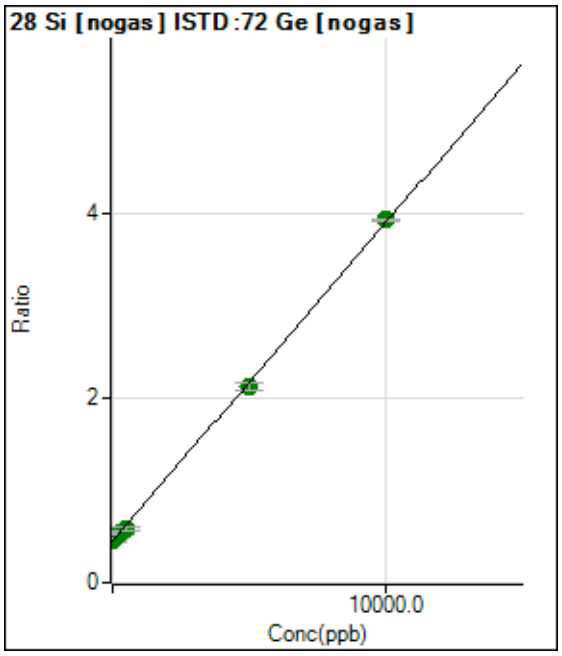
Calibration for 012_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.668	640.02	0.0007	P	14.0
2	☐	2.000	2.538	1693.43	0.0019	P	15.7
3	☐	5.000	5.364	3380.36	0.0036	P	7.0
4	☐	10.000	10.199	6154.41	0.0066	P	4.0
5	☐	100.000	96.511	55220.78	0.0606	P	1.1
6	☐	200.000	201.720	110048.93	0.1265	P	3.4
7	☐	1.000					

y = 6.2563E-004 * x + 2.6865E-004
R = 0.9998
DL = 0.4604
BEC = 0.4294

Weight: <None>
Min Conc: <None>

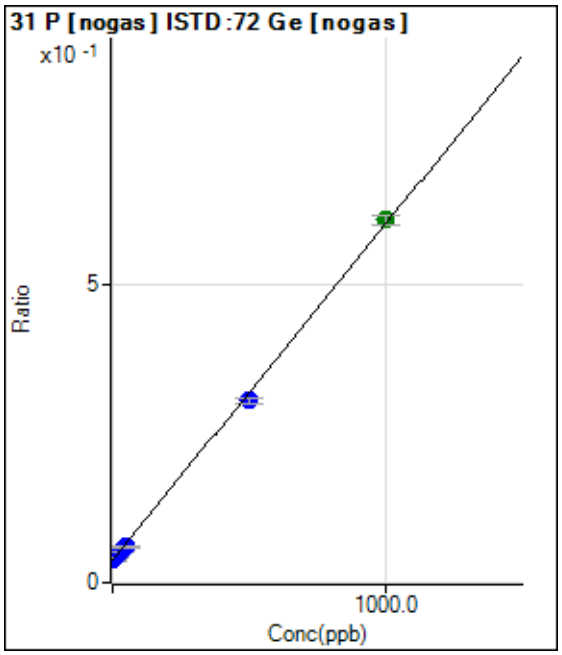


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	1541733.00	0.4502	A	3.8
2	☐	100.000	75.245	1622027.27	0.4762	A	2.2
3	☐	250.000	260.731	1813223.57	0.5401	A	3.6
4	☐	500.000	374.834	2123306.32	0.5794	A	9.0
5	☐	5000.000	4829.170	7169477.39	2.1148	A	3.9
6	☐	10000.00	10091.653	12997202.72	3.9287	A	0.6
7	☐	5.000					

y = 3.4469E-004 * x + 0.4502
R = 0.9998
DL = 147.8
BEC = 1306

Weight: <None>
Min Conc: <None>

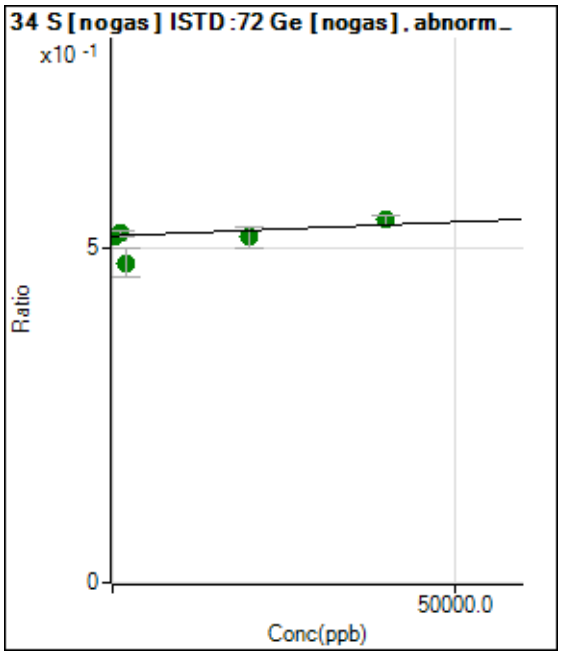
Calibration for 012_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	128659.85	0.0376	P	2.6
2	☐	10.000	7.585	142528.68	0.0418	P	2.1
3	☐	25.000	26.305	175918.36	0.0524	P	2.6
4	☐	50.000	39.733	219648.82	0.0600	P	9.4
5	☐	500.000	475.096	1035224.07	0.3053	P	3.2
6	☐	1000.000	1012.957	2012512.78	0.6084	A	2.5
7	☐	5.000					

y = 5.6358E-004 * x + 0.0376
R = 0.9995
DL = 5.274
BEC = 66.65

Weight: <None>
Min Conc: <None>

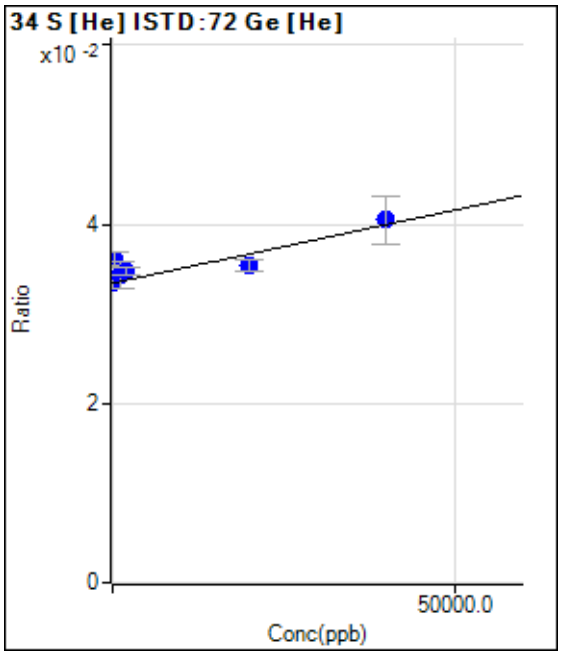


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	1779142.36	0.5194	A	2.5
2	☐	400.000	380.722	1769885.91	0.5195	A	0.5
3	☐	1000.000	9396.162	1757147.89	0.5233	A	1.7
4	☐	2000.000	-97817.414	1754082.59	0.4787	A	8.9
5	☐	20000.00	-5436.968	1752205.31	0.5171	A	6.2
6	☐	40000.00	57499.644	1797057.07	0.5433	A	2.4
7	☐	100.000					

y = 4.1611E-007 * x + 0.5194
R = 0.5775
DL = 9.527E+04
BEC = 1.248E+06

Weight: <None>
Min Conc: <None>

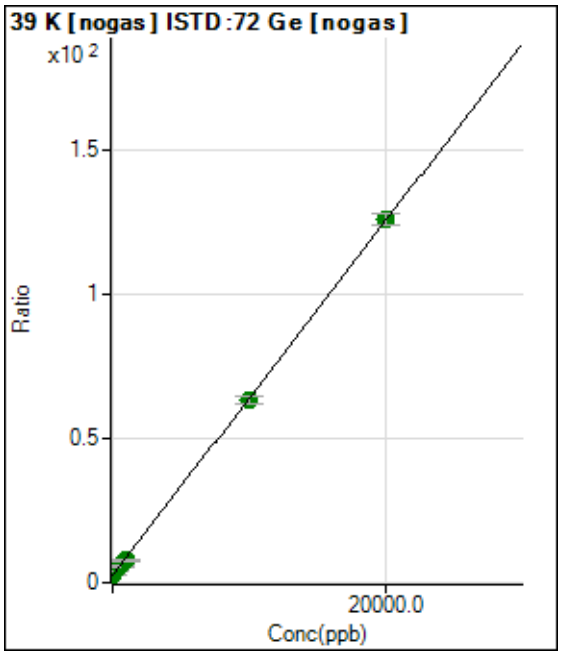
Calibration for 012_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	31130.71	0.0334	P	3.3
2	☐	400.000	16320.644	32934.47	0.0361	P	4.0
3	☐	1000.000	5728.531	32032.93	0.0344	P	8.9
4	☐	2000.000	7834.647	32132.33	0.0347	P	2.8
5	☐	20000.00	12320.207	32266.39	0.0354	P	3.2
6	☐	40000.00	43270.745	35239.72	0.0405	P	13.1
7	☐	100.000					

y = 1.6308E-007 * x + 0.0334
R = 0.8828
DL = 2.057E+04
BEC = 2.049E+05

Weight: <None>
Min Conc: <None>

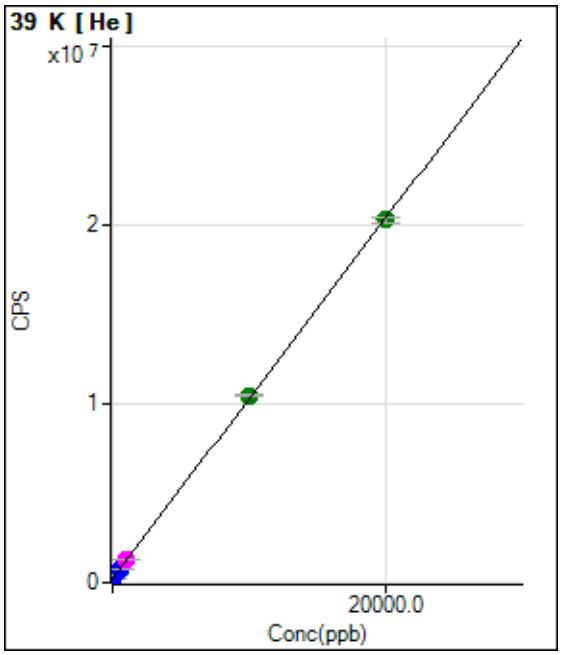


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	8726094.99	2.5475	A	2.2
2	☐	200.000	200.668	12879220.34	3.7805	A	0.4
3	☐	500.000	509.599	19071315.53	5.6787	A	0.8
4	☐	1000.000	875.617	29029457.94	7.9277	A	10.1
5	☐	10000.00	9885.931	214529788.1	63.2907	A	4.7
6	☐	20000.00	20063.007	416169734.3	125.822	A	3.1
7	☐	100.000					

y = 0.0061 * x + 2.5475
R = 1.0000
DL = 26.88
BEC = 414.6

Weight: <None>
Min Conc: <None>

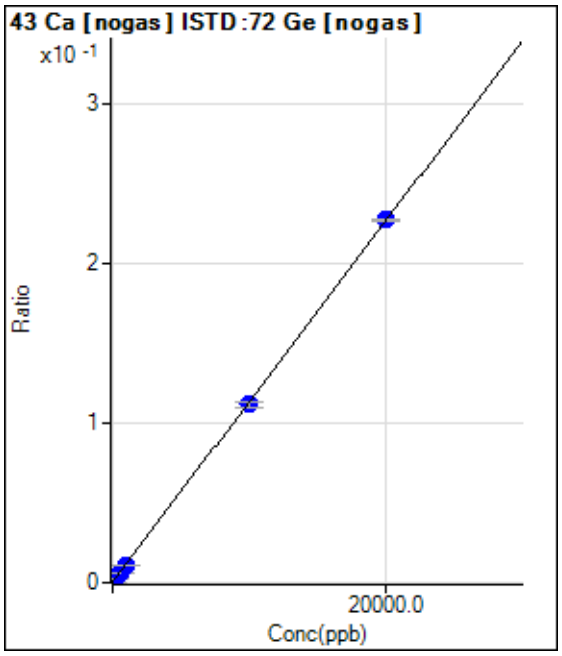
Calibration for 012_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	231641.61		P	1.5
2	☐	200.000	208.793	442088.33		P	1.4
3	☐	500.000	519.352	755105.85		P	0.5
4	☐	1000.000	1057.583	1297598.99		M	2.4
5	☐	10000.00	10151.154	10463175.26		A	1.2
6	☐	20000.00	19920.972	20310353.03		A	1.3
7	☐	100.000					

y = 1007.9183 * x + 231641.6100
R = 1.0000
DL = 10.56
BEC = 229.8

Weight: <None>
Min Conc: <None>

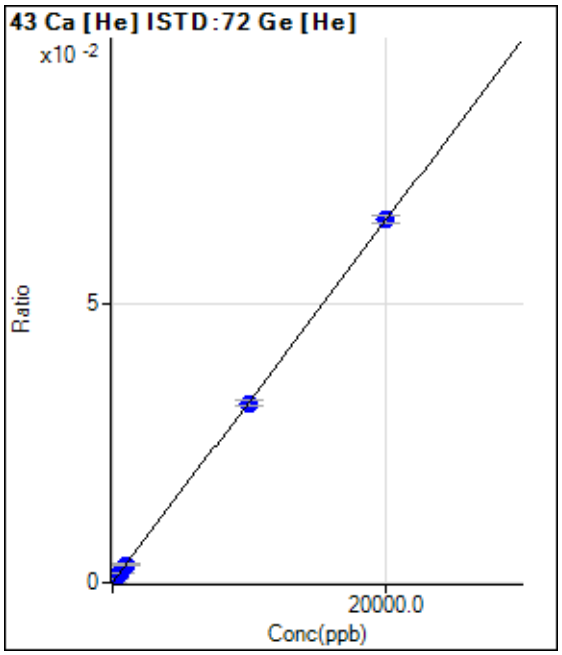


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	1240.07	0.0004	P	3.5
2	☐	200.000	199.403	8925.60	0.0026	P	3.3
3	☐	500.000	511.791	20675.03	0.0062	P	2.9
4	☐	1000.000	924.769	39699.28	0.0108	P	8.7
5	☐	10000.00	9855.044	379563.31	0.1119	P	3.2
6	☐	20000.00	20075.951	753105.64	0.2277	P	0.6
7	☐	100.000					

y = 1.1322E-005 * x + 3.6207E-004
R = 1.0000
DL = 3.36
BEC = 31.98

Weight: <None>
Min Conc: <None>

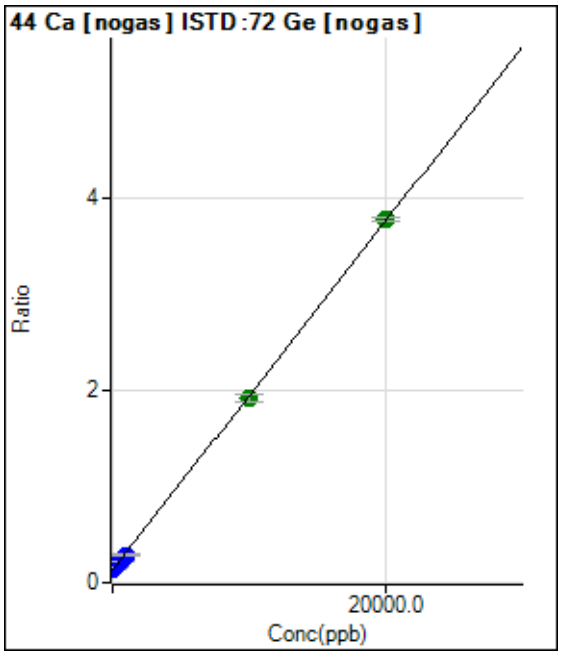
Calibration for 012_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	43.33	0.0000	P	34.7
2	☐	200.000	205.544	650.02	0.0007	P	22.6
3	☐	500.000	499.567	1550.09	0.0017	P	10.9
4	☐	1000.000	977.179	2970.30	0.0032	P	6.2
5	☐	10000.00	9918.518	29263.25	0.0321	P	2.5
6	☐	20000.00	20041.837	56488.80	0.0649	P	2.0
7	☐	100.000					

y = 3.2361E-006 * x + 4.6492E-005
R = 1.0000
DL = 14.95
BEC = 14.37

Weight: <None>
Min Conc: <None>

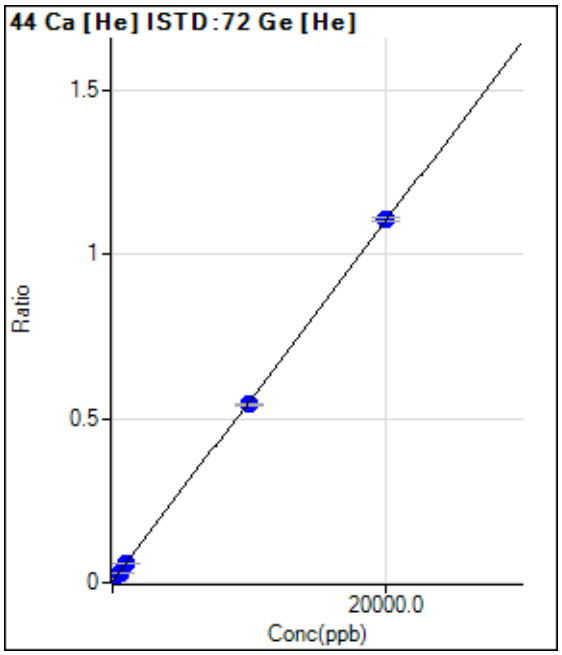


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	452774.63	0.1322	P	3.0
2	☐	200.000	195.397	570905.68	0.1676	P	1.6
3	☐	500.000	508.587	753301.24	0.2243	P	1.2
4	☐	1000.000	857.487	1052940.38	0.2875	P	9.8
5	☐	10000.00	9855.055	6498990.32	1.9171	A	4.0
6	☐	20000.00	20079.430	12467718.57	3.7688	A	1.1
7	☐	100.000					

y = 1.8111E-004 * x + 0.1322
R = 0.9999
DL = 65.45
BEC = 730

Weight: <None>
Min Conc: <None>

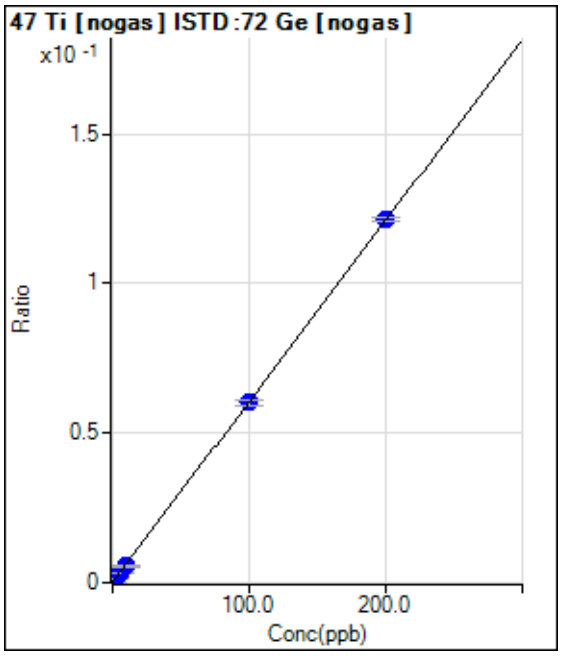
Calibration for 012_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	3873.81	0.0042	P	4.4
2	☐	200.000	192.709	13421.65	0.0147	P	2.8
3	☐	500.000	466.846	27730.83	0.0297	P	3.1
4	☐	1000.000	976.395	53346.50	0.0576	P	1.9
5	☐	10000.00	9819.670	493321.65	0.5418	P	1.9
6	☐	20000.00	20092.247	961308.42	1.1043	P	1.0
7	☐	100.000					

y = 5.4754E-005 * x + 0.0042
R = 0.9999
DL = 9.923
BEC = 75.97

Weight: <None>
Min Conc: <None>

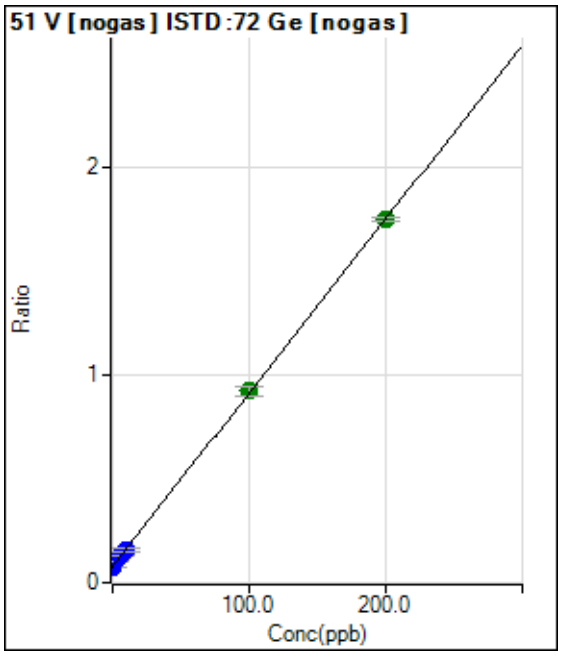


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	473.35	0.0001	P	26.0
2	☐	2.000	2.005	4597.32	0.0013	P	10.6
3	☐	5.000	4.808	10216.31	0.0030	P	7.6
4	☐	10.000	8.943	20284.63	0.0055	P	11.0
5	☐	100.000	99.321	203958.10	0.0602	P	4.0
6	☐	200.000	200.397	401087.71	0.1212	P	1.1
7	☐	1.000					

y = 6.0435E-004 * x + 1.3805E-004
R = 1.0000
DL = 0.178
BEC = 0.2284

Weight: <None>
Min Conc: <None>

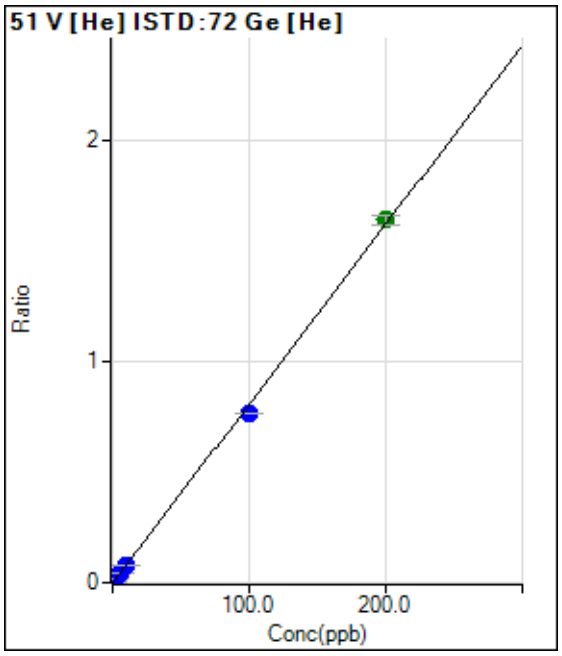
Calibration for 012_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	266969.47	0.0779	P	1.8
2	☐	2.000	2.496	336609.55	0.0988	P	2.5
3	☐	5.000	6.033	431037.09	0.1284	P	2.9
4	☐	10.000	9.527	577057.78	0.1576	P	10.2
5	☐	100.000	100.853	3122675.66	0.9213	A	4.8
6	☐	200.000	199.566	5778226.04	1.7468	A	1.2
7	☐	1.000					

y = 0.0084 * x + 0.0779
R = 1.0000
DL = 0.5167
BEC = 9.32

Weight: <None>
Min Conc: <None>

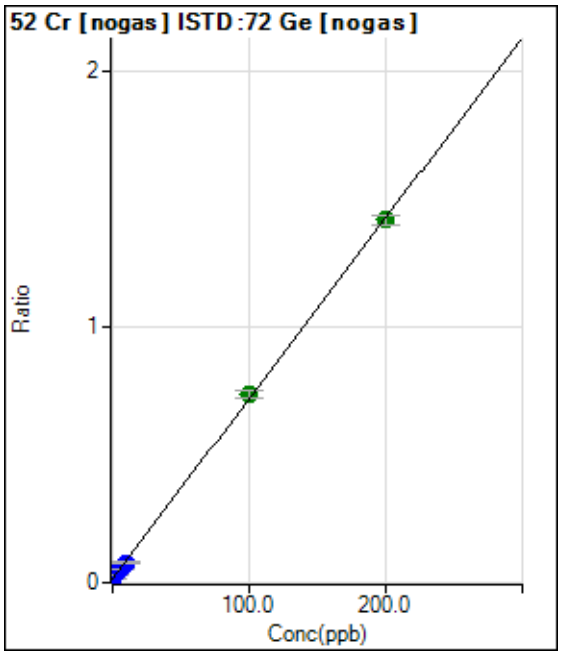


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.955	3985.10	0.0043	P	3.3
2	☐	2.000	2.891	18226.25	0.0200	P	2.0
3	☐	5.000	5.650	39517.08	0.0423	P	1.2
4	☐	10.000	10.301	74112.45	0.0800	P	1.1
5	☐	100.000	94.487	694365.33	0.7625	P	0.2
6	☐	200.000	202.716	1427357.37	1.6400	A	2.4
7	☐	1.000					

y = 0.0081 * x - 0.0035
R = 0.9994
DL = 0.05192
BEC = -0.427

Weight: <None>
Min Conc: <None>

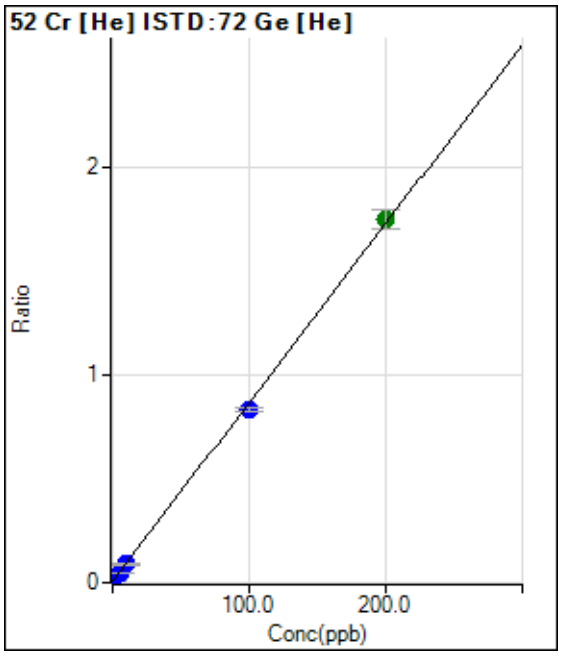
Calibration for 012_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	51671.86	0.0151	P	3.2
2	☐	2.000	2.044	100467.76	0.0295	P	0.6
3	☐	5.000	5.038	169831.86	0.0506	P	2.7
4	☐	10.000	8.930	285570.55	0.0780	P	10.2
5	☐	100.000	102.080	2489589.23	0.7342	A	3.6
6	☐	200.000	199.012	4687289.10	1.4171	A	2.7
7	☐	1.000					

y = 0.0070 * x + 0.0151
R = 0.9999
DL = 0.2067
BEC = 2.142

Weight: <None>
Min Conc: <None>

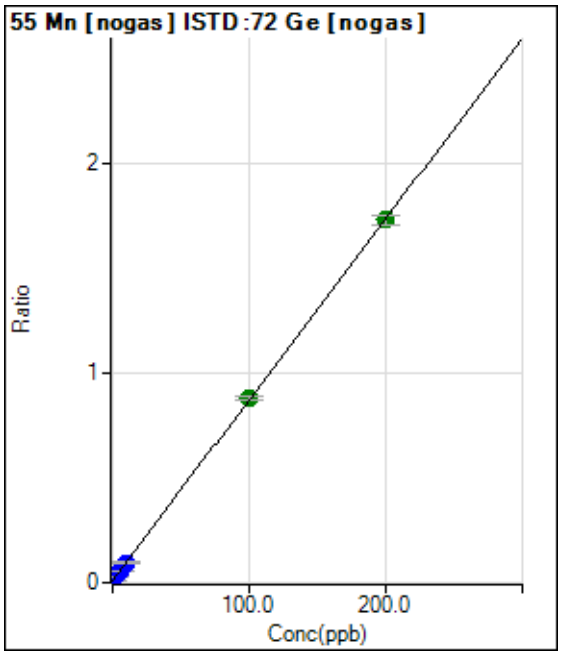


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	6277.82	0.0067	P	3.7
2	☐	2.000	2.022	22013.26	0.0241	P	4.5
3	☐	5.000	4.807	44858.00	0.0481	P	2.8
4	☐	10.000	9.447	81448.97	0.0880	P	0.6
5	☐	100.000	95.686	755242.36	0.8295	P	1.9
6	☐	200.000	202.189	1518998.15	1.7453	A	5.4
7	☐	1.000					

y = 0.0086 * x + 0.0067
R = 0.9997
DL = 0.08808
BEC = 0.7839

Weight: <None>
Min Conc: <None>

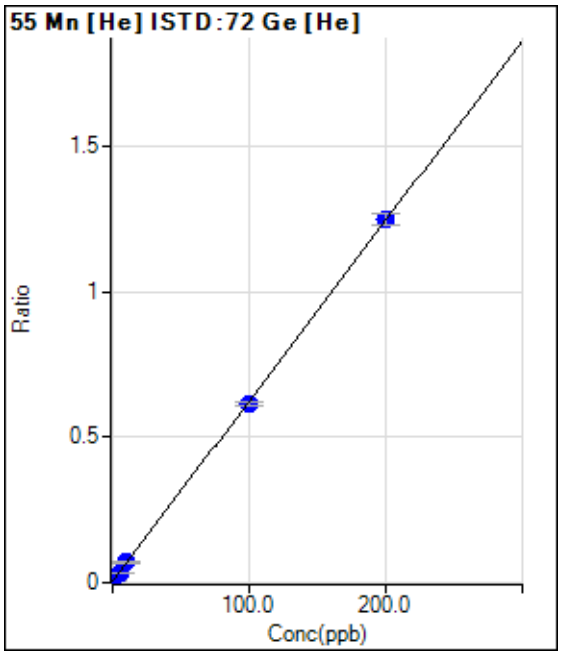
Calibration for 012_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	33871.33	0.0099	P	3.9
2	☐	2.000	1.942	90725.38	0.0266	P	1.2
3	☐	5.000	5.109	181110.86	0.0539	P	1.7
4	☐	10.000	9.813	345782.46	0.0945	P	11.1
5	☐	100.000	100.786	2981065.27	0.8789	A	2.1
6	☐	200.000	199.614	5725478.66	1.7310	A	3.0
7	☐	1.000					

y = 0.0086 * x + 0.0099
R = 1.0000
DL = 0.1347
BEC = 1.147

Weight: <None>
Min Conc: <None>

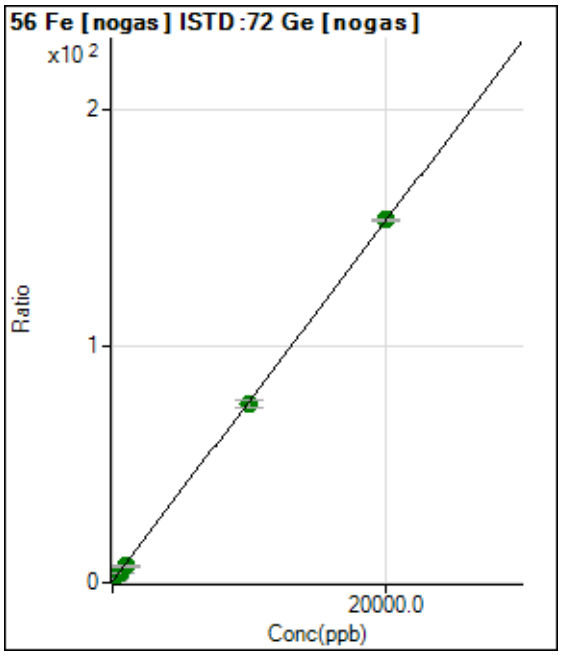


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	4704.00	0.0051	P	7.1
2	☐	2.000	1.974	15743.62	0.0173	P	0.8
3	☐	5.000	4.799	32402.13	0.0347	P	2.5
4	☐	10.000	10.615	65426.06	0.0707	P	4.3
5	☐	100.000	98.771	560626.22	0.6158	P	2.1
6	☐	200.000	200.589	1083686.10	1.2454	P	3.3
7	☐	1.000					

y = 0.0062 * x + 0.0051
R = 1.0000
DL = 0.1751
BEC = 0.8168

Weight: <None>
Min Conc: <None>

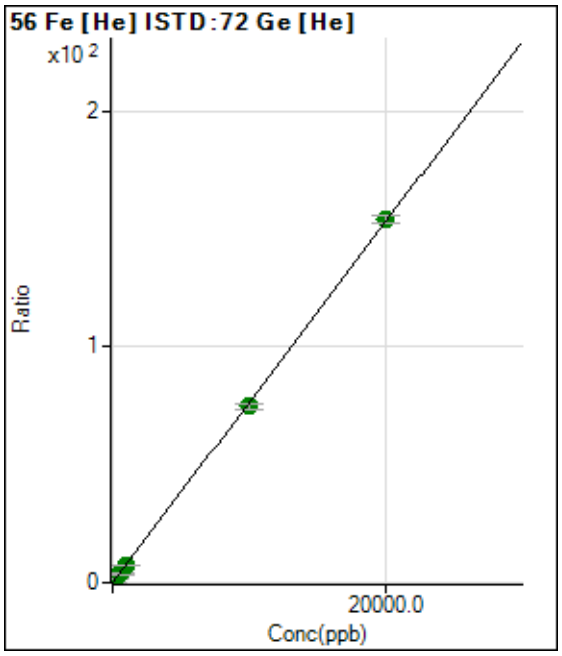
Calibration for 012_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	1874628.30	0.5472	A	1.8
2	☐	200.000	196.121	6956358.75	2.0417	A	2.2
3	☐	500.000	500.886	14657144.08	4.3640	A	1.2
4	☐	1000.000	886.470	26730468.83	7.3022	A	10.8
5	☐	10000.00	9864.372	256675572.4	75.7141	A	4.4
6	☐	20000.00	20073.507	507804894.6	153.508	A	0.7
7	☐	100.000					

y = 0.0076 * x + 0.5472
R = 1.0000
DL = 3.968
BEC = 71.81

Weight: <None>
Min Conc: <None>

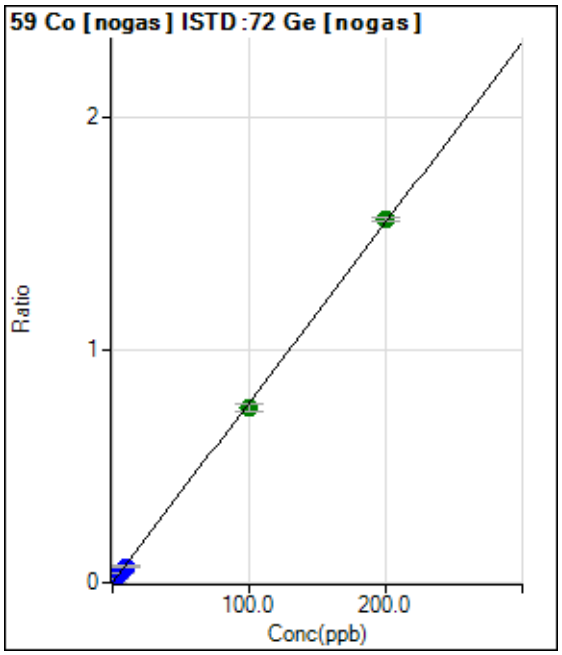


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	14926.21	0.0160	P	3.3
2	☐	200.000	197.781	1394317.01	1.5281	A	1.0
3	☐	500.000	483.983	3467169.84	3.7161	A	3.2
4	☐	1000.000	954.643	6770902.19	7.3144	A	2.4
5	☐	10000.00	9780.207	68081153.99	74.7866	A	3.1
6	☐	20000.00	20112.587	133835681.3	153.778	A	2.2
7	☐	100.000					

y = 0.0076 * x + 0.0160
R = 0.9999
DL = 0.205
BEC = 2.095

Weight: <None>
Min Conc: <None>

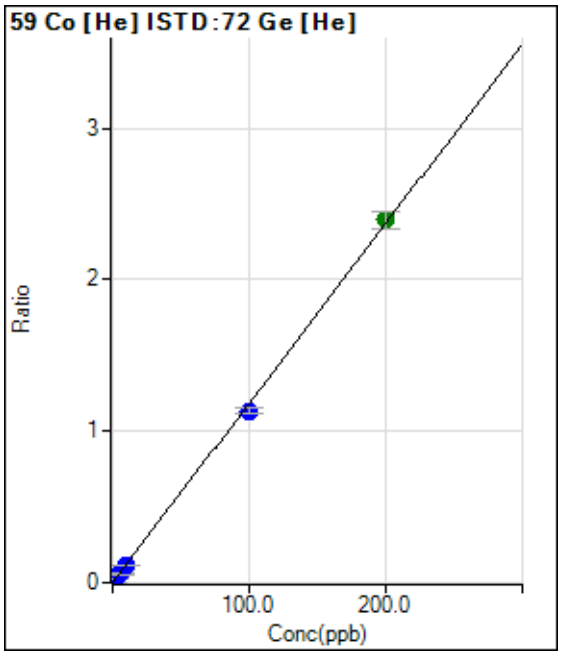
Calibration for 012_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	1583.42	0.0005	P	6.8
2	☐	2.000	1.929	52528.51	0.0154	P	1.8
3	☐	5.000	5.004	131829.87	0.0392	P	1.7
4	☐	10.000	8.959	255809.83	0.0699	P	11.1
5	☐	100.000	97.131	2554175.48	0.7534	A	3.6
6	☐	200.000	201.487	5167836.80	1.5623	A	1.0
7	☐	1.000					

y = 0.0078 * x + 4.6266E-004
R = 0.9999
DL = 0.01212
BEC = 0.05969

Weight: <None>
Min Conc: <None>

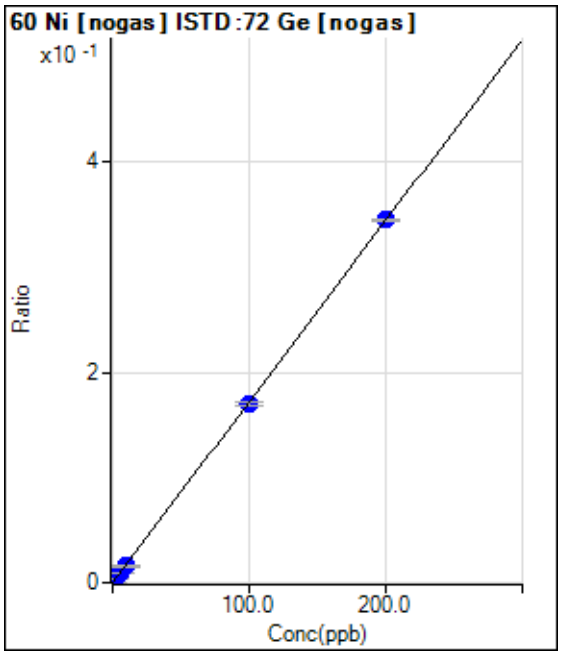


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	500.01	0.0005	P	9.5
2	☐	2.000	1.960	21659.67	0.0237	P	3.3
3	☐	5.000	4.781	53311.06	0.0571	P	2.4
4	☐	10.000	9.545	105082.37	0.1135	P	3.0
5	☐	100.000	95.646	1031210.19	1.1327	P	2.9
6	☐	200.000	202.205	2082806.79	2.3941	A	4.5
7	☐	1.000					

y = 0.0118 * x + 5.3694E-004
R = 0.9997
DL = 0.01299
BEC = 0.04536

Weight: <None>
Min Conc: <None>

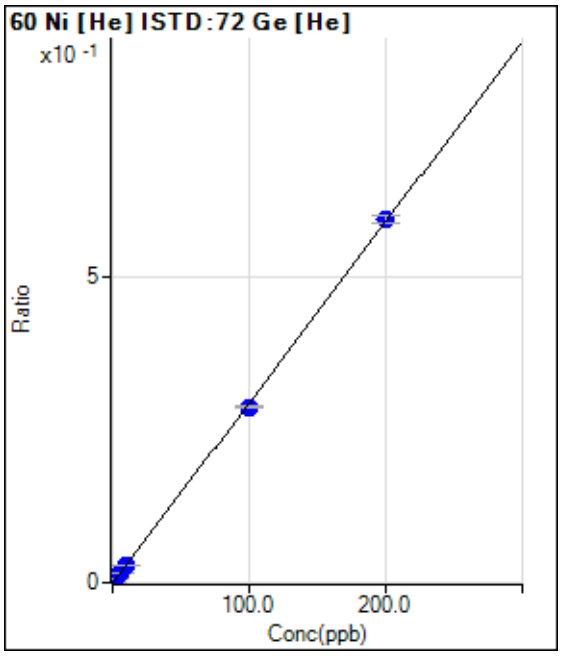
Calibration for 012_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.265	976.71	0.0003	P	13.2
2	☐	2.000	2.318	12998.11	0.0038	P	2.2
3	☐	5.000	5.446	30852.94	0.0092	P	5.9
4	☐	10.000	9.512	59232.21	0.0162	P	10.7
5	☐	100.000	98.898	575944.25	0.1699	P	3.0
6	☐	200.000	200.561	1140103.16	0.3446	P	0.3
7	☐	1.000					

y = 0.0017 * x - 1.7080E-004
R = 1.0000
DL = 0.06548
BEC = -0.09935

Weight: <None>
Min Conc: <None>

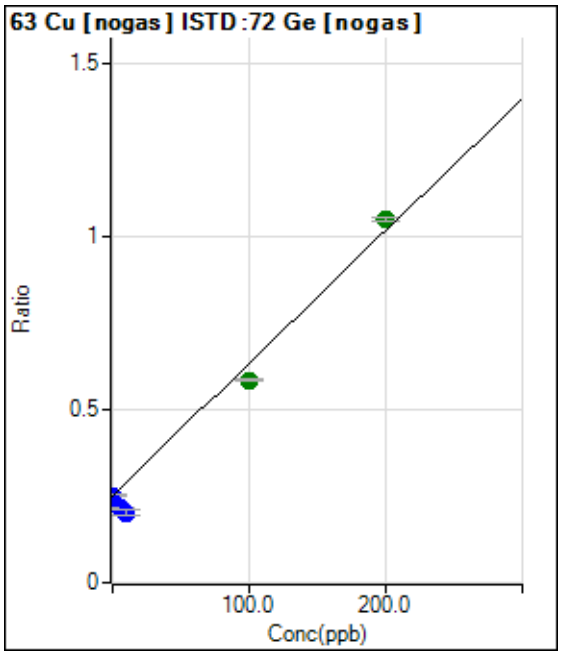


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.486	296.68	0.0003	P	22.1
2	☐	2.000	2.334	5267.50	0.0058	P	2.4
3	☐	5.000	5.409	13858.76	0.0148	P	2.6
4	☐	10.000	10.022	26355.91	0.0285	P	2.9
5	☐	100.000	97.527	261098.02	0.2868	P	1.0
6	☐	200.000	201.222	515993.06	0.5928	P	2.0
7	☐	1.000					

y = 0.0030 * x - 0.0011
R = 0.9999
DL = 0.07156
BEC = -0.3782

Weight: <None>
Min Conc: <None>

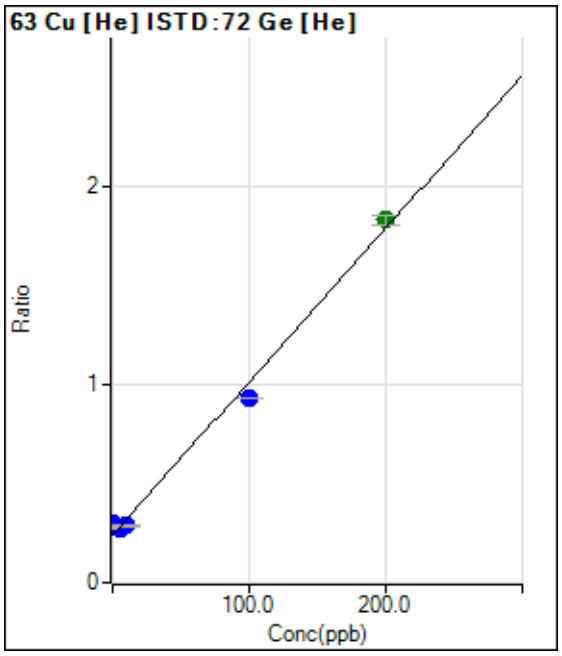
Calibration for 012_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	865808.92	0.2528	P	2.9
2	☐	2.000	-6.928	770990.51	0.2263	P	1.2
3	☐	5.000	-9.445	727605.77	0.2167	P	2.3
4	☐	10.000	-13.252	740192.23	0.2021	P	10.0
5	☐	100.000	87.152	1988424.81	0.5861	A	0.3
6	☐	200.000	208.037	3467919.43	1.0483	A	1.0
7	☐	1.000					

y = 0.0038 * x + 0.2528
R = 0.9950
DL = 5.817
BEC = 66.11

Weight: <None>
Min Conc: <None>

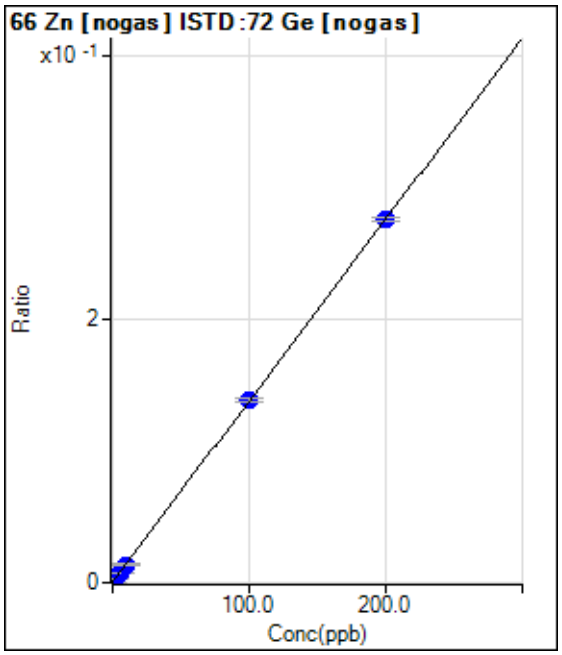


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	7.723	279628.50	0.3002	P	1.8
2	☐	2.000	4.622	252070.20	0.2763	P	1.4
3	☐	5.000	3.783	251770.81	0.2698	P	2.1
4	☐	10.000	6.096	266280.15	0.2876	P	1.9
5	☐	100.000	89.152	845808.66	0.9288	P	0.2
6	☐	200.000	205.624	1590812.06	1.8280	A	2.7
7	☐	1.000					

y = 0.0077 * x + 0.2406
R = 0.9965
DL = 2.06
BEC = 31.16

Weight: <None>
Min Conc: <None>

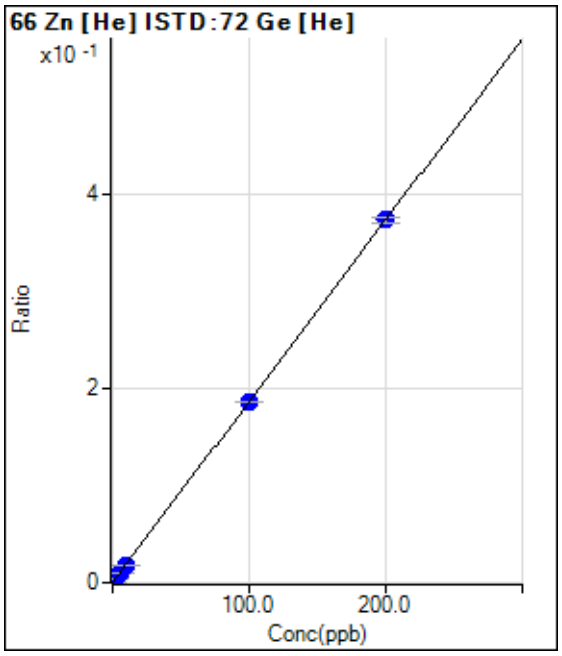
Calibration for 012_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.041	1223.39	0.0004	P	0.6
2	☐	2.000	2.158	11156.90	0.0033	P	4.8
3	☐	5.000	5.047	24369.75	0.0073	P	2.5
4	☐	10.000	9.504	49035.79	0.0134	P	11.2
5	☐	100.000	100.454	470556.45	0.1388	P	2.8
6	☐	200.000	199.795	912116.29	0.2757	P	0.9
7	☐	1.000					

y = 0.0014 * x + 3.0042E-004
R = 1.0000
DL = 0.004532
BEC = 0.2179

Weight: <None>
Min Conc: <None>

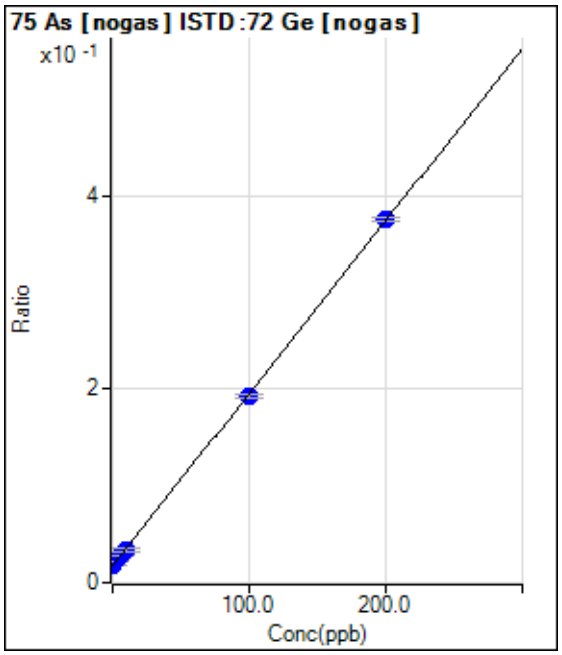


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.128	466.68	0.0005	P	18.2
2	☐	2.000	2.115	3847.14	0.0042	P	4.6
3	☐	5.000	5.176	9272.51	0.0099	P	2.9
4	☐	10.000	9.807	17204.92	0.0186	P	1.9
5	☐	100.000	99.539	169579.11	0.1862	P	0.5
6	☐	200.000	200.235	325830.68	0.3743	P	1.7
7	☐	1.000					

y = 0.0019 * x + 2.6309E-004
R = 1.0000
DL = 0.1463
BEC = 0.1408

Weight: <None>
Min Conc: <None>

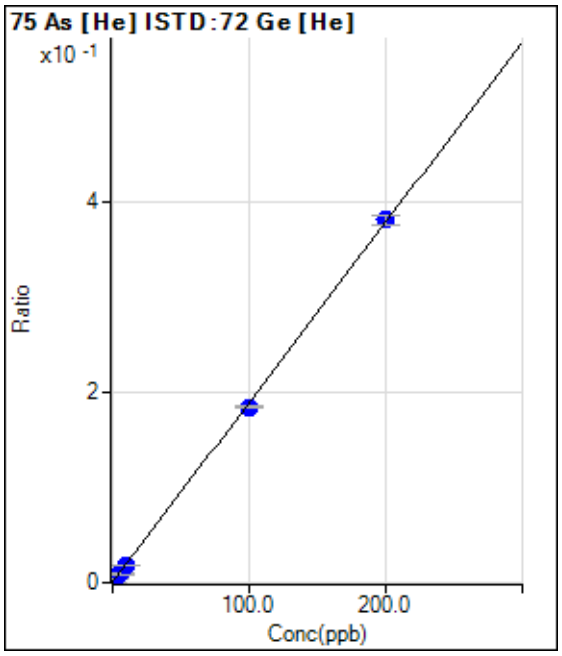
Calibration for 012_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.064	59932.05	0.0175	P	4.1
2	☐	2.000	2.355	73541.63	0.0216	P	1.4
3	☐	5.000	5.772	92952.27	0.0277	P	2.5
4	☐	10.000	9.507	125743.18	0.0343	P	10.1
5	☐	100.000	98.598	655222.92	0.1932	P	2.4
6	☐	200.000	200.703	1241403.65	0.3753	P	0.9
7	☐	1.000					

y = 0.0018 * x + 0.0174
R = 0.9999
DL = 1.207
BEC = 9.751

Weight: <None>
Min Conc: <None>

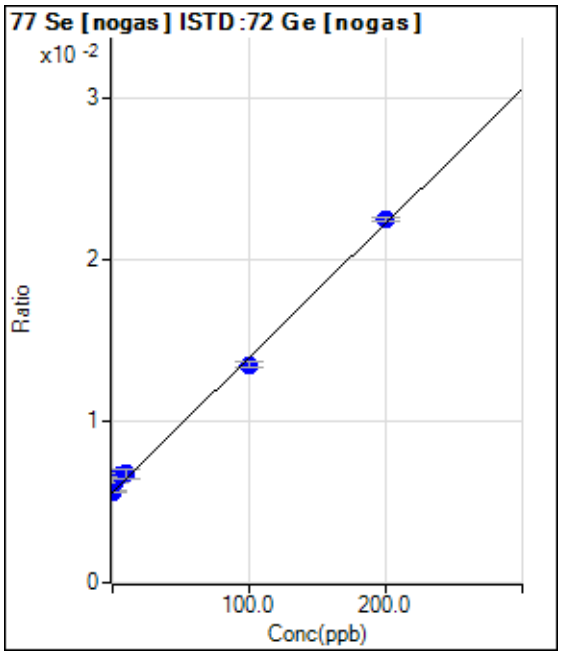


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	370.00	0.0004	P	18.3
2	☐	2.000	1.973	3767.08	0.0041	P	1.5
3	☐	5.000	4.702	8666.53	0.0093	P	5.0
4	☐	10.000	9.651	17265.96	0.0187	P	2.9
5	☐	100.000	97.254	167851.20	0.1843	P	1.0
6	☐	200.000	201.398	331837.00	0.3813	P	2.9
7	☐	1.000					

y = 0.0019 * x + 3.9743E-004
R = 0.9999
DL = 0.1151
BEC = 0.2101

Weight: <None>
Min Conc: <None>

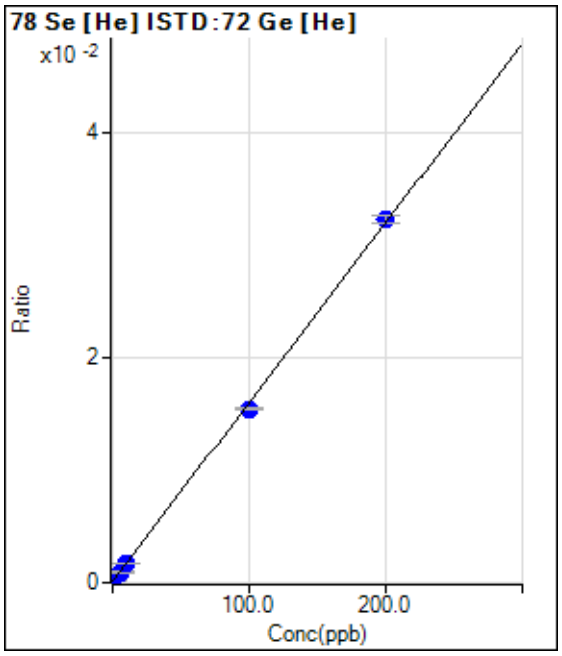
Calibration for 012_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	19353.93	0.0057	P	3.2
2	☐	2.000	6.954	21226.01	0.0062	P	1.0
3	☐	5.000	12.494	22467.44	0.0067	P	2.5
4	☐	10.000	13.503	24833.95	0.0068	P	8.7
5	☐	100.000	94.527	45847.75	0.0135	P	2.7
6	☐	200.000	202.325	74414.80	0.0225	P	1.1
7	☐	1.000					

y = 8.3248E-005 * x + 0.0057
R = 0.9986
DL = 6.57
BEC = 67.89

Weight: <None>
Min Conc: <None>

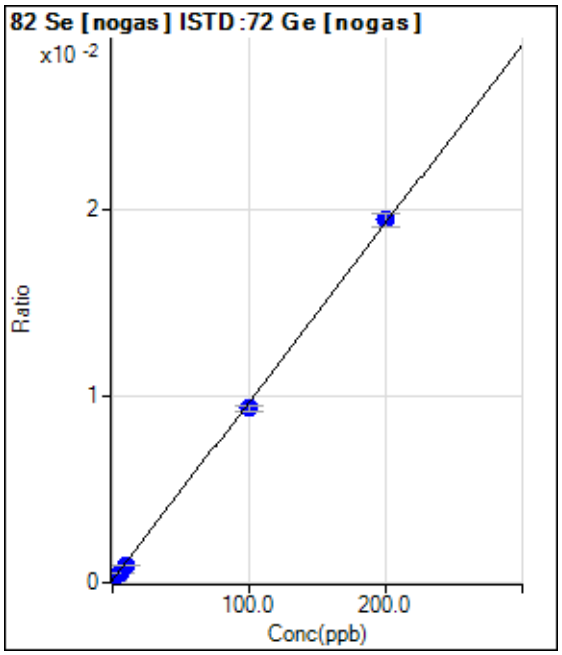


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.701	192.67	0.0002	P	14.0
2	☐	2.000	2.896	507.34	0.0006	P	3.2
3	☐	5.000	5.116	849.36	0.0009	P	11.2
4	☐	10.000	10.110	1578.07	0.0017	P	4.9
5	☐	100.000	96.387	14063.44	0.0154	P	0.7
6	☐	200.000	201.789	28050.86	0.0322	P	2.1
7	☐	1.000					

y = 1.5924E-004 * x + 9.4813E-005
R = 0.9997
DL = 0.5454
BEC = 0.5954

Weight: <None>
Min Conc: <None>

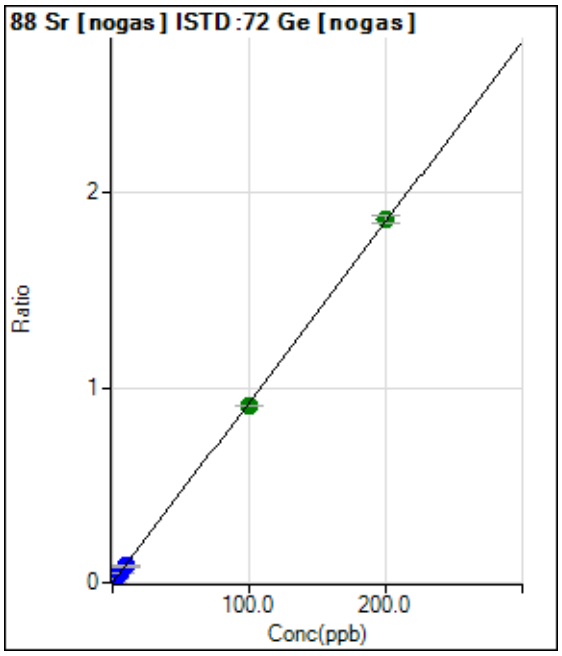
Calibration for 012_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	446.68	0.0001	P	5.8
2	☐	2.000	1.628	973.38	0.0003	P	14.9
3	☐	5.000	4.432	1860.13	0.0006	P	4.4
4	☐	10.000	8.389	3420.38	0.0009	P	5.9
5	☐	100.000	96.270	31614.53	0.0093	P	3.2
6	☐	200.000	201.963	64224.11	0.0194	P	3.4
7	☐	1.000					

y = 9.5502E-005 * x + 1.3023E-004
R = 0.9998
DL = 0.2356
BEC = 1.364

Weight: <None>
Min Conc: <None>

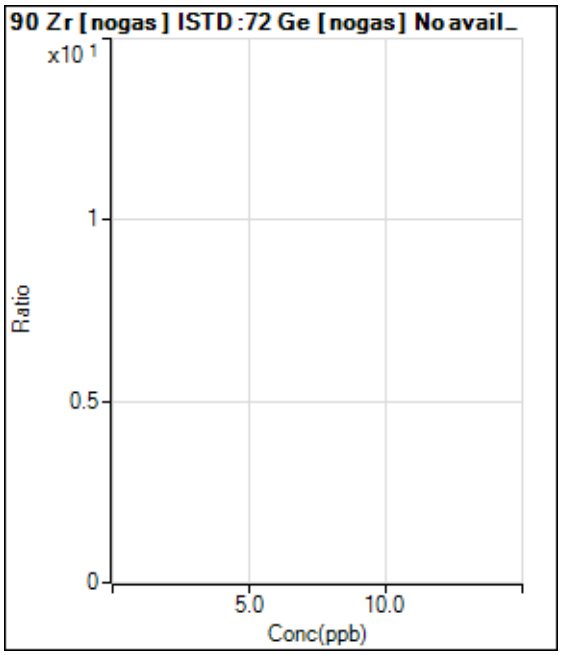


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	1920.13	0.0006	P	5.1
2	☐	2.000	1.972	64017.55	0.0188	P	1.7
3	☐	5.000	4.925	154726.58	0.0461	P	2.9
4	☐	10.000	9.032	307967.82	0.0840	P	9.1
5	☐	100.000	97.871	3071343.29	0.9053	A	0.4
6	☐	200.000	201.115	6151052.41	1.8596	A	2.2
7	☐	1.000					

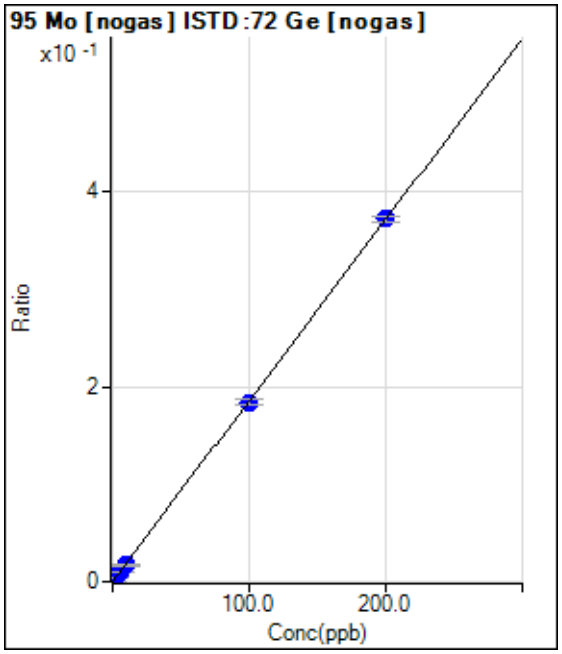
y = 0.0092 * x + 5.6024E-004
R = 0.9999
DL = 0.0093
BEC = 0.06061

Weight: <None>
Min Conc: <None>

Calibration for 012_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000					
2	☐	2.000					
3	☐	5.000					
4	☐	10.000					
5	☐	100.000					
6	☐	200.000					
7	☐	1.000					

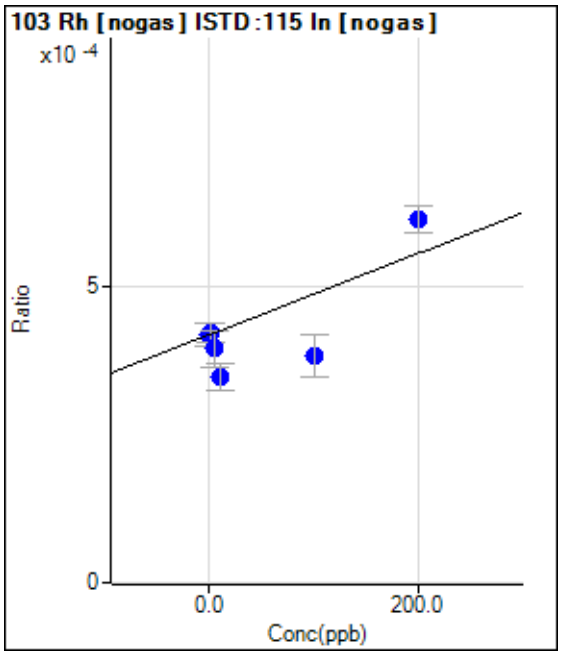


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	170.00	0.0000	P	33.6
2	☐	2.000	1.885	12087.56	0.0035	P	3.2
3	☐	5.000	4.999	31341.24	0.0093	P	3.2
4	☐	10.000	9.275	63252.10	0.0173	P	9.4
5	☐	100.000	99.157	624213.75	0.1841	P	3.1
6	☐	200.000	200.459	1230922.09	0.3721	P	1.4
7	☐	1.000					

y = 0.0019 * x + 4.9286E-005
R = 1.0000
DL = 0.02678
BEC = 0.02655

Weight: <None>
Min Conc: <None>

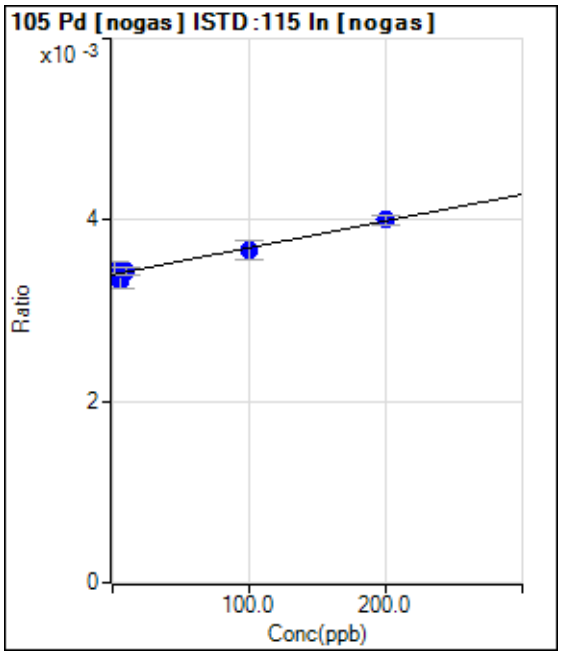
Calibration for 012_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	1293.40	0.0004	P	9.5
2	☐	2.000	5.041	1310.07	0.0004	P	8.2
3	☐	5.000	-35.230	1206.73	0.0004	P	15.4
4	☐	10.000	-103.821	1176.73	0.0003	P	12.6
5	☐	100.000	-51.715	1150.05	0.0004	P	18.5
6	☐	200.000	282.524	1750.11	0.0006	P	7.5
7	☐	1.000					

y = 6.8388E-007 * x + 4.1787E-004
R = 0.8080
DL = 173.6
BEC = 611

Weight: <None>
Min Conc: <None>

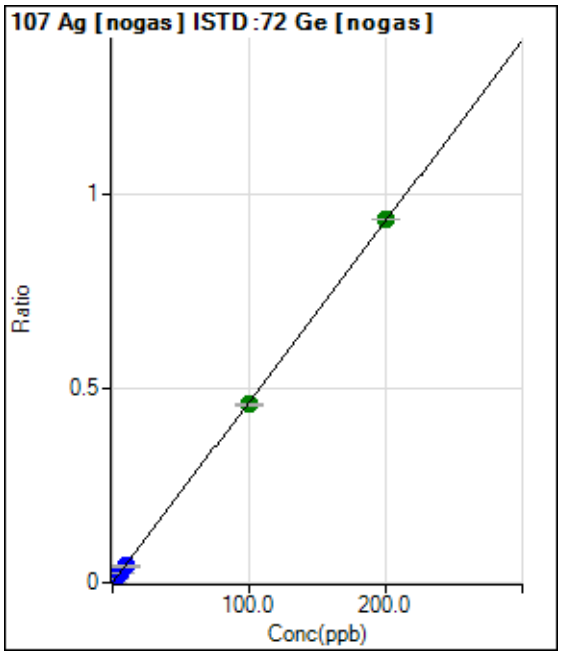


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	10539.95	0.0034	P	4.2
2	☐	2.000	19.855	10730.11	0.0035	P	4.6
3	☐	5.000	-23.524	10223.10	0.0033	P	5.6
4	☐	10.000	13.887	11764.16	0.0034	P	2.2
5	☐	100.000	93.031	11050.32	0.0037	P	5.9
6	☐	200.000	203.825	11473.89	0.0040	P	2.5
7	☐	1.000					

y = 2.9556E-006 * x + 0.0034
R = 0.9832
DL = 145.8
BEC = 1151

Weight: <None>
Min Conc: <None>

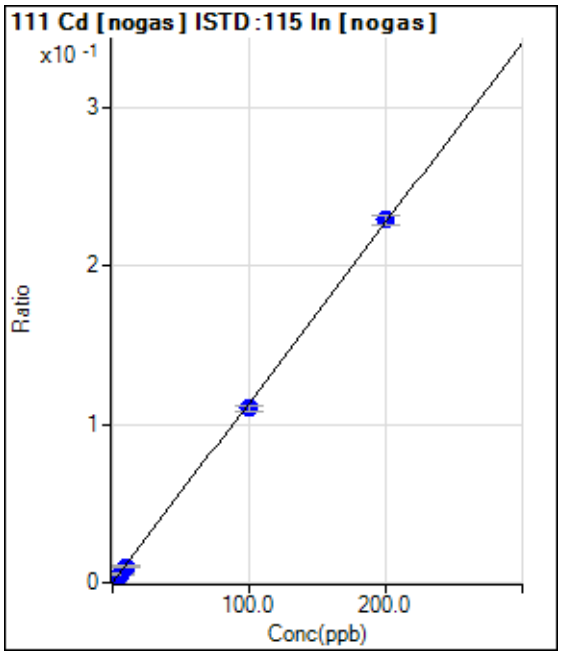
Calibration for 012_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	113.33	0.0000	P	24.8
2	☐	2.000	1.988	31611.98	0.0093	P	1.0
3	☐	5.000	5.123	80121.26	0.0239	P	1.4
4	☐	10.000	9.293	158277.20	0.0433	P	11.0
5	☐	100.000	98.638	1556317.42	0.4588	A	1.6
6	☐	200.000	200.714	3088224.33	0.9335	A	0.1
7	☐	1.000					

y = 0.0047 * x + 3.3224E-005
R = 1.0000
DL = 0.005314
BEC = 0.007144

Weight: <None>
Min Conc: <None>

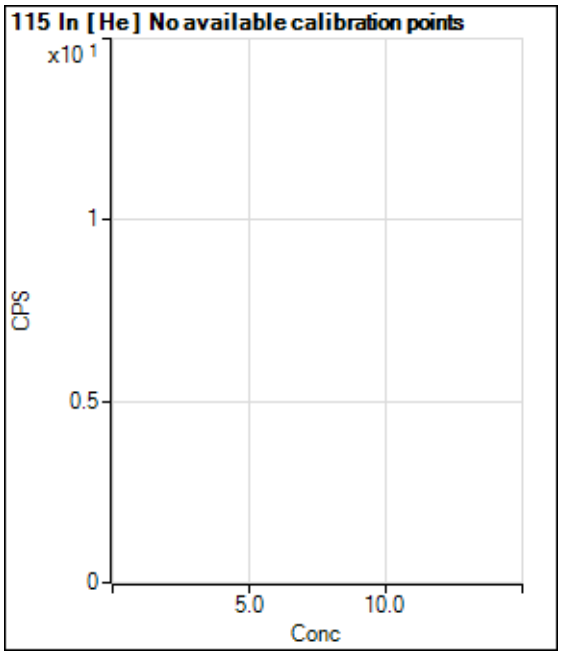


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	13.33	0.0000	P	116.
2	☐	2.000	1.834	6474.62	0.0021	P	6.2
3	☐	5.000	4.760	16618.00	0.0054	P	3.5
4	☐	10.000	8.612	33191.56	0.0098	P	12.5
5	☐	100.000	97.010	331574.49	0.1102	P	3.7
6	☐	200.000	201.572	656458.87	0.2291	P	2.4
7	☐	1.000					

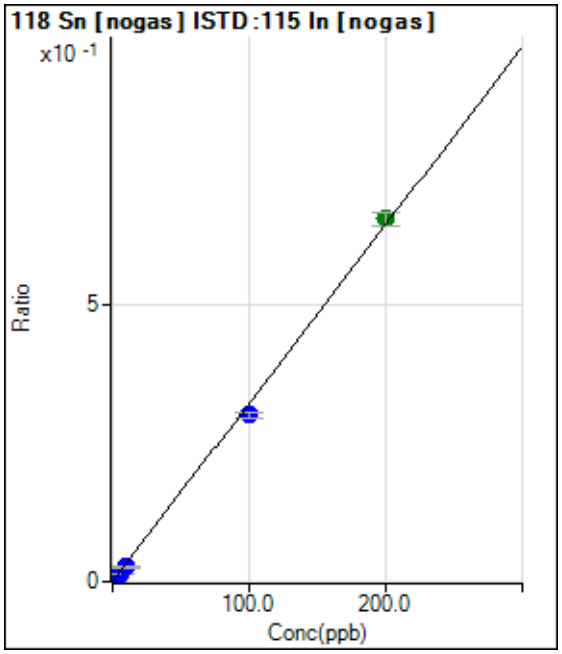
y = 0.0011 * x + 4.3735E-006
R = 0.9998
DL = 0.0135
BEC = 0.003849

Weight: <None>
Min Conc: <None>

Calibration for 012_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐			1115692.33		P	0.6
2	☐			1133338.64		P	0.2
3	☐			1116370.60		P	1.5
4	☐			1118705.85		P	2.0
5	☐			1098775.48		P	0.4
6	☐			1054474.90		P	1.2
7	☐						

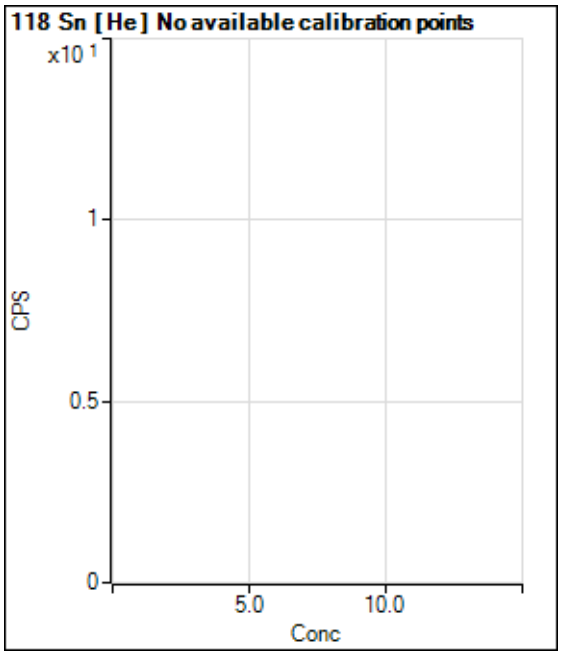


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	1270.06	0.0004	P	9.1
2	☐	2.000	1.762	18820.44	0.0061	P	2.9
3	☐	5.000	4.608	46675.83	0.0152	P	2.8
4	☐	10.000	8.200	90641.05	0.0267	P	12.2
5	☐	100.000	93.315	902375.98	0.2999	P	3.0
6	☐	200.000	203.445	1872564.03	0.6534	A	3.7
7	☐	1.000					

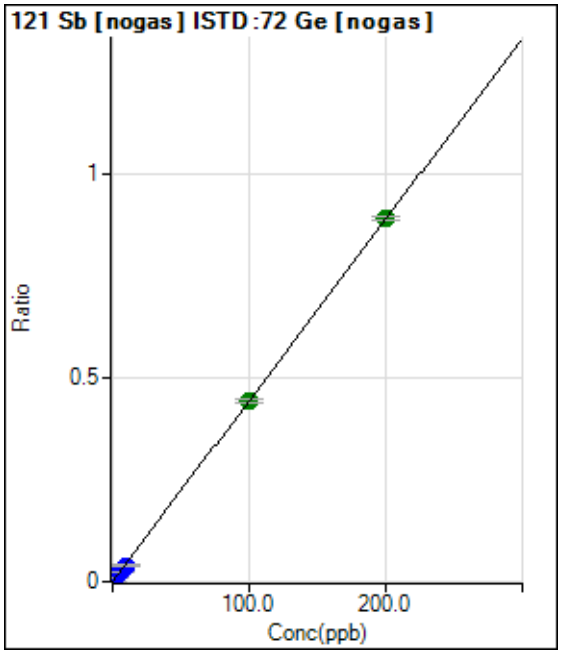
y = 0.0032 * x + 4.1024E-004
R = 0.9992
DL = 0.03484
BEC = 0.1278

Weight: <None>
Min Conc: <None>

Calibration for 012_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐			560.02		P	27.7
2	☐			8325.42		P	2.0
3	☐			19864.90		P	1.8
4	☐			37851.30		P	3.6
5	☐			379540.27		P	1.0
6	☐			747958.14		P	0.5
7	☐						

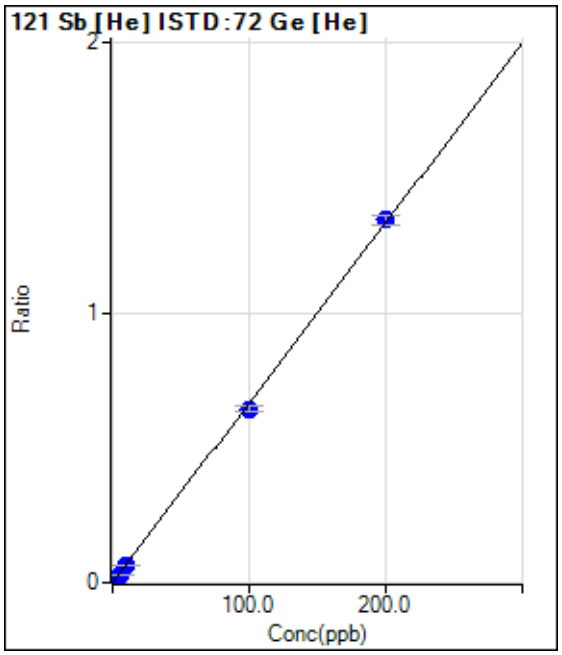


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	450.01	0.0001	P	10.8
2	☐	2.000	1.932	29675.36	0.0087	P	2.2
3	☐	5.000	4.921	73785.85	0.0220	P	4.2
4	☐	10.000	8.934	145606.08	0.0398	P	11.3
5	☐	100.000	99.347	1496395.86	0.4412	A	2.2
6	☐	200.000	200.382	2943444.96	0.8898	A	1.2
7	☐	1.000					

y = 0.0044 * x + 1.3160E-004
R = 1.0000
DL = 0.009609
BEC = 0.02964

Weight: <None>
Min Conc: <None>

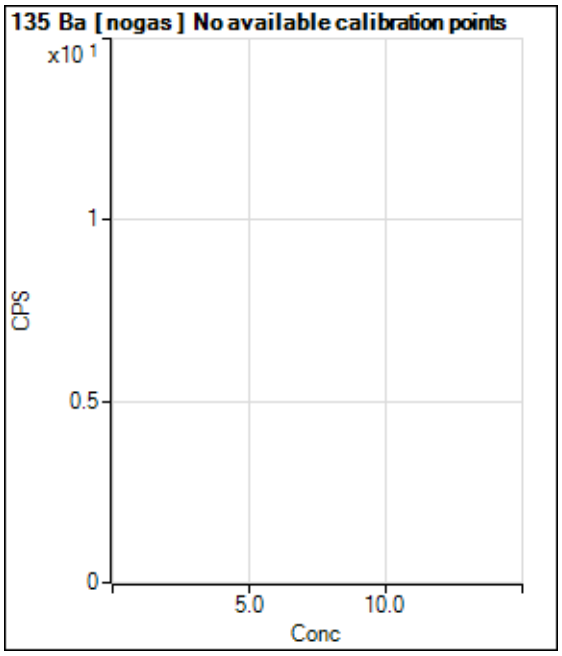
Calibration for 012_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	260.01	0.0003	P	5.0
2	☐	2.000	1.897	11774.12	0.0129	P	4.8
3	☐	5.000	4.647	29121.14	0.0312	P	3.3
4	☐	10.000	9.603	59434.78	0.0642	P	3.2
5	☐	100.000	96.549	585404.48	0.6430	P	3.3
6	☐	200.000	201.755	1169166.13	1.3434	P	2.4
7	☐	1.000					

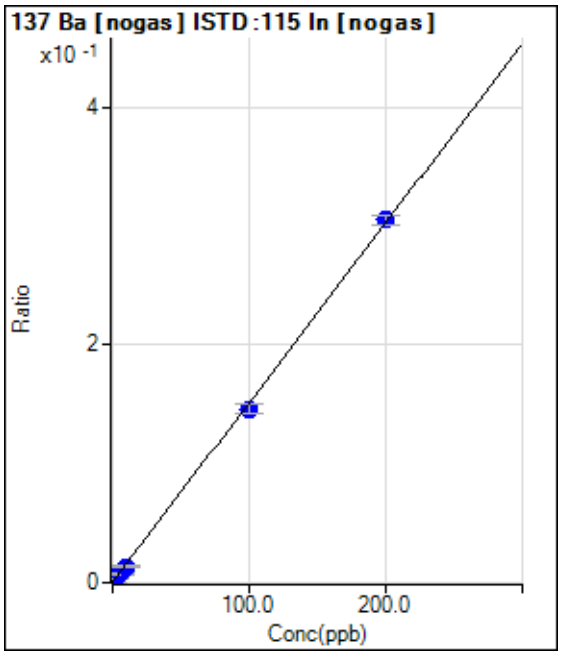
y = 0.0067 * x + 2.7894E-004
R = 0.9998
DL = 0.006225
BEC = 0.0419

Weight: <None>
Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐			693.36		P	12.3
2	☐			5791.09		P	5.7
3	☐			13161.90		P	1.6
4	☐			27188.48		P	3.4
5	☐			260654.36		P	3.0
6	☐			509750.03		P	0.7
7	☐						

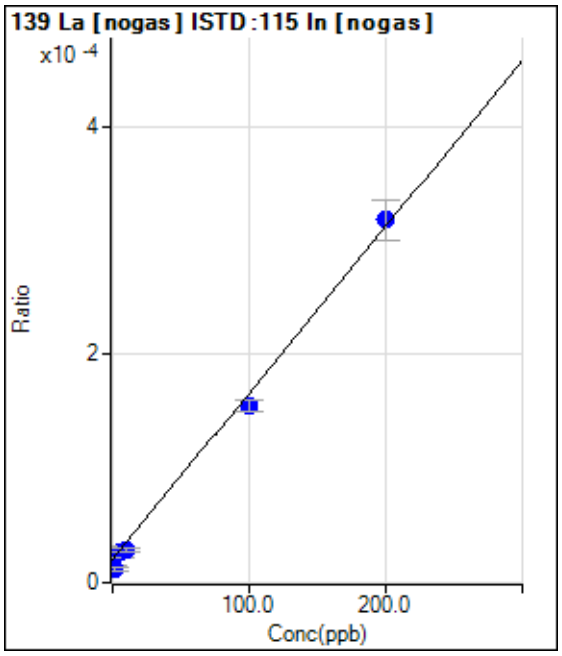
Calibration for 012_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	1256.73	0.0004	P	5.6
2	☐	2.000	1.851	9929.68	0.0032	P	4.9
3	☐	5.000	4.572	22441.54	0.0073	P	5.1
4	☐	10.000	8.393	44361.07	0.0131	P	12.6
5	☐	100.000	96.576	439822.01	0.1463	P	5.8
6	☐	200.000	201.805	874798.84	0.3052	P	2.9
7	☐	1.000					

y = 0.0015 * x + 4.0485E-004
R = 0.9998
DL = 0.04509
BEC = 0.268

Weight: <None>
Min Conc: <None>

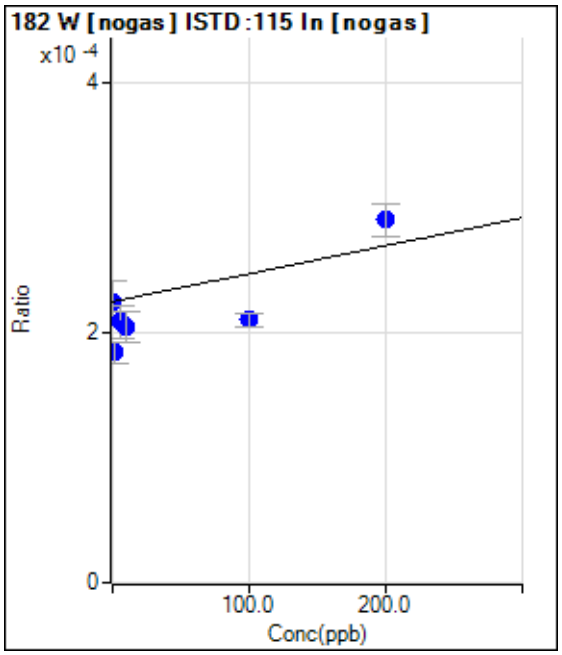


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	63.33	0.0000	P	50.6
2	☐	2.000	-6.116	36.67	0.0000	P	40.6
3	☐	5.000	4.301	83.33	0.0000	P	39.4
4	☐	10.000	5.106	96.67	0.0000	P	11.8
5	☐	100.000	92.446	466.68	0.0002	P	6.8
6	☐	200.000	204.120	910.04	0.0003	P	10.8
7	☐	1.000					

y = 1.4563E-006 * x + 2.0646E-005
R = 0.9987
DL = 21.52
BEC = 14.18

Weight: <None>
Min Conc: <None>

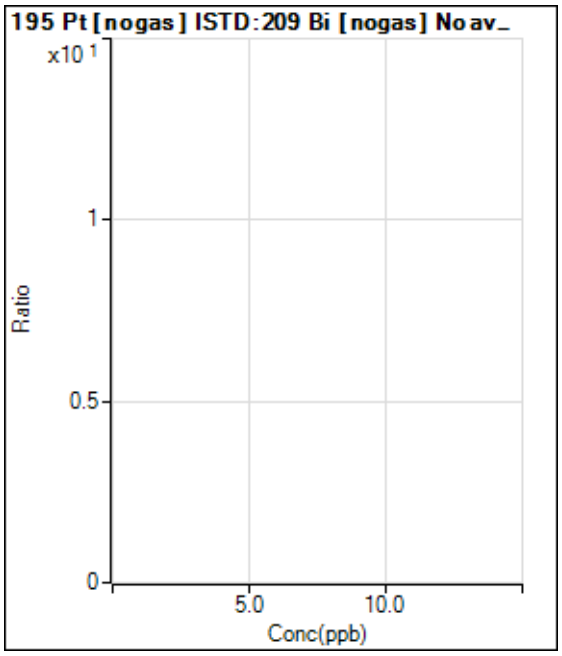
Calibration for 012_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	696.70	0.0002	P	14.8
2	☐	2.000	-182.824	570.02	0.0002	P	9.8
3	☐	5.000	-73.406	640.02	0.0002	P	12.0
4	☐	10.000	-90.196	696.69	0.0002	P	11.4
5	☐	100.000	-66.471	633.36	0.0002	P	5.2
6	☐	200.000	292.054	833.37	0.0003	P	8.8
7	☐	1.000					

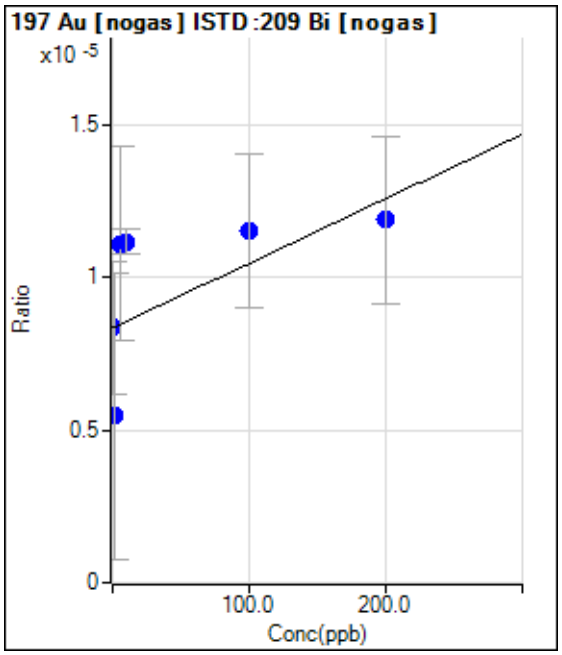
y = 2.2378E-007 * x + 2.2497E-004
R = 0.8443
DL = 445.9
BEC = 1005

Weight: <None>
Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000					
2	☐	2.000					
3	☐	5.000					
4	☐	10.000					
5	☐	100.000					
6	☐	200.000					
7	☐	1.000					

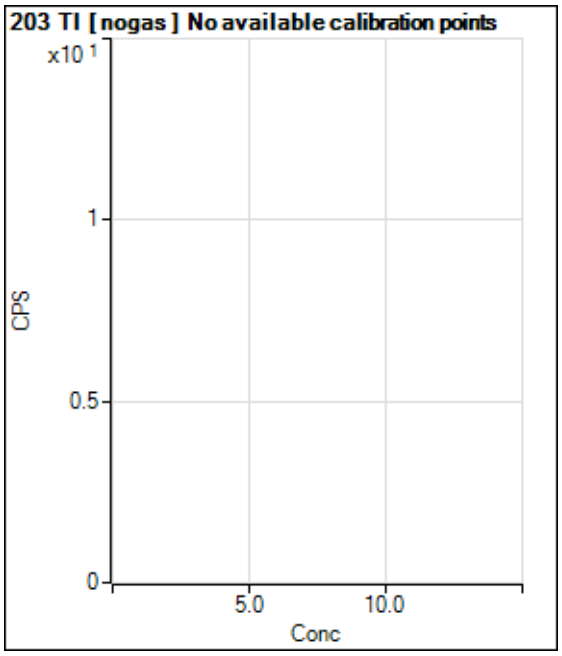
Calibration for 012_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	20.00	0.0000	P	52.8
2	☐	2.000	-136.857	13.33	0.0000	P	173.
3	☐	5.000	130.781	26.67	0.0000	P	56.8
4	☐	10.000	133.504	30.00	0.0000	P	7.3
5	☐	100.000	150.029	26.67	0.0000	P	43.3
6	☐	200.000	167.054	26.67	0.0000	P	46.3
7	☐	1.000					

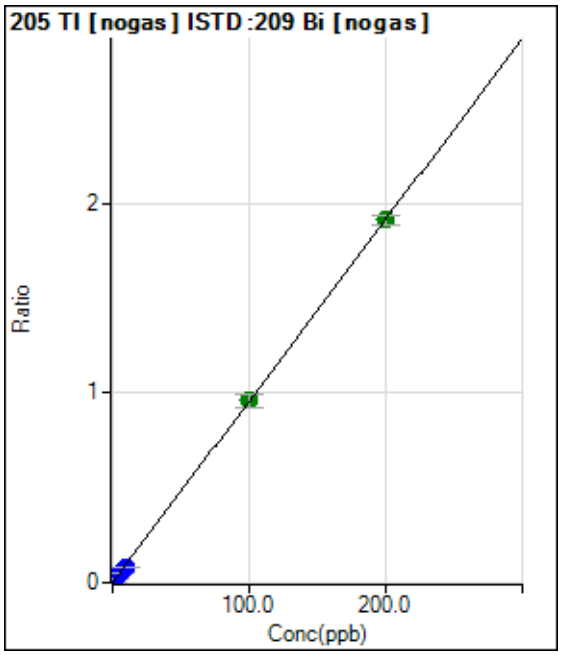
y = 2.1140E-008 * x + 8.3381E-006
R = 0.5468
DL = 624.2
BEC = 394.4

Weight: <None>
Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐			1320.08		P	3.0
2	☐			19274.99		P	3.4
3	☐			46900.99		P	0.6
4	☐			92430.39		P	1.4
5	☐			902989.44		P	1.1
6	☐			1857653.56		A	0.2
7	☐						

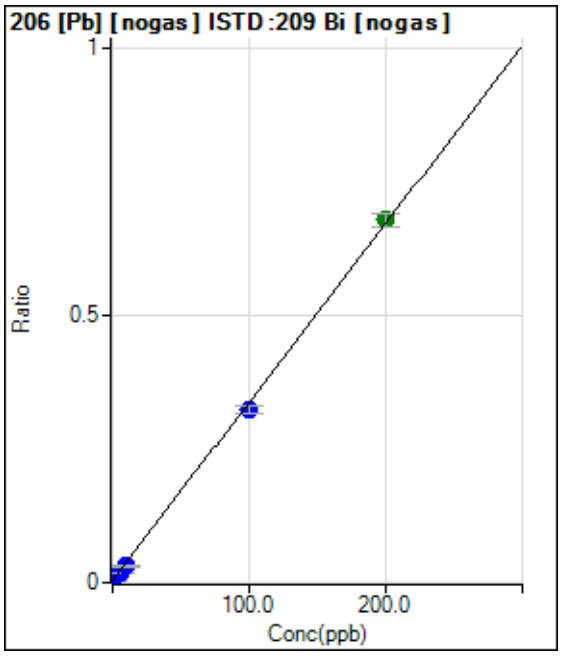
Calibration for 012_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	3093.68	0.0013	P	5.0
2	☐	2.000	1.871	47078.48	0.0192	P	2.1
3	☐	5.000	4.753	111573.45	0.0468	P	4.2
4	☐	10.000	8.430	220494.78	0.0820	P	6.2
5	☐	100.000	100.276	2224731.69	0.9611	A	7.2
6	☐	200.000	199.948	4335635.98	1.9152	A	3.0
7	☐	1.000					

y = 0.0096 * x + 0.0013
R = 1.0000
DL = 0.01999
BEC = 0.1338

Weight: <None>
Min Conc: <None>

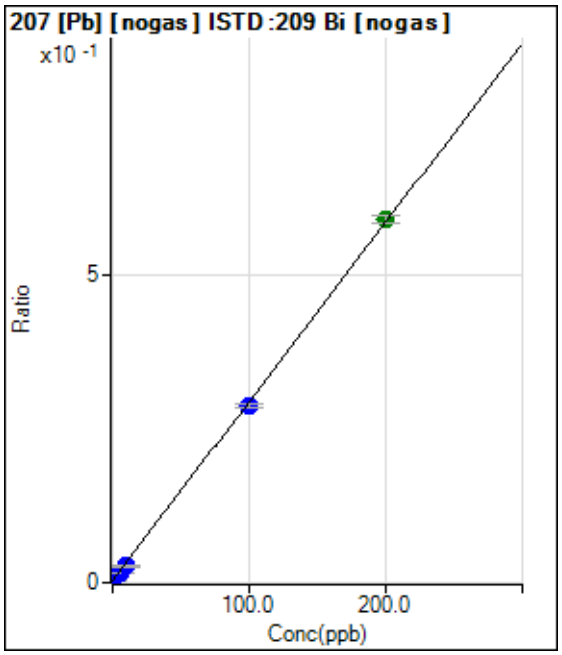


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	9849.82	0.0041	P	1.8
2	☐	2.000	1.814	24836.01	0.0101	P	1.0
3	☐	5.000	4.545	45868.38	0.0192	P	2.9
4	☐	10.000	8.169	84113.33	0.0313	P	8.1
5	☐	100.000	95.756	748797.46	0.3232	P	4.0
6	☐	200.000	202.227	1535018.57	0.6781	A	3.4
7	☐	1.000					

y = 0.0033 * x + 0.0041
R = 0.9997
DL = 0.06675
BEC = 1.223

Weight: <None>
Min Conc: <None>

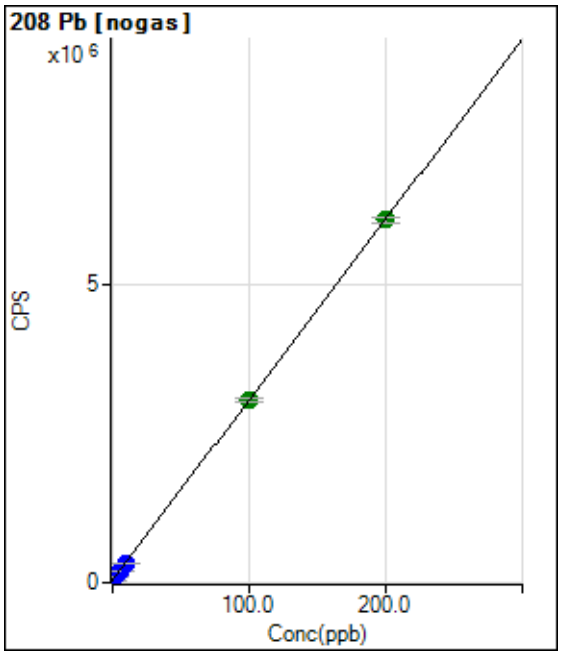
Calibration for 012_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	8228.87	0.0034	P	2.2
2	☐	2.000	1.885	21788.08	0.0089	P	3.2
3	☐	5.000	4.614	40092.80	0.0168	P	3.5
4	☐	10.000	8.151	72628.85	0.0271	P	11.1
5	☐	100.000	97.327	662705.47	0.2859	P	2.3
6	☐	200.000	201.440	1332083.13	0.5882	A	2.3
7	☐	1.000					

y = 0.0029 * x + 0.0034
R = 0.9999
DL = 0.07748
BEC = 1.173

Weight: <None>
Min Conc: <None>

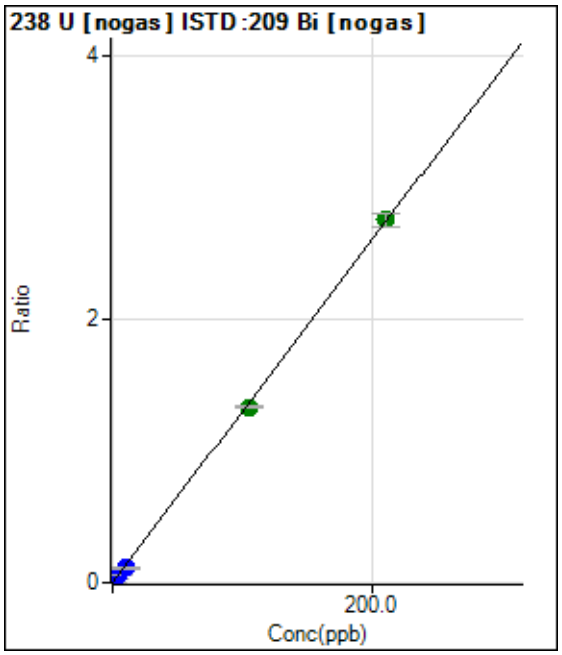


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	38785.42		P	2.4
2	☐	2.000	1.961	98062.30		P	2.1
3	☐	5.000	4.788	183503.32		P	1.9
4	☐	10.000	9.732	332940.35		P	2.6
5	☐	100.000	100.248	3068945.67		A	1.8
6	☐	200.000	199.895	6080914.67		A	1.4
7	☐	1.000					

y = 30226.5269 * x + 38785.4167
R = 1.0000
DL = 0.09386
BEC = 1.283

Weight: <None>
Min Conc: <None>

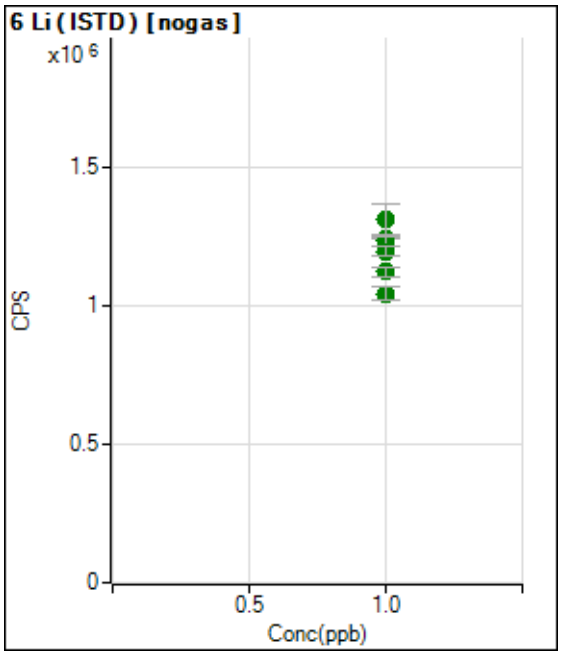
Calibration for 012_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	340.01	0.0001	P	9.3
2	☐	2.000	1.923	61890.52	0.0252	P	1.5
3	☐	5.000	4.871	151864.12	0.0637	P	3.6
4	☐	10.000	8.476	297444.23	0.1107	P	7.7
5	☐	105.000	102.384	3095467.97	1.3352	A	0.6
6	☐	210.000	211.384	6239484.28	2.7566	A	3.8
7	☐	1.000					

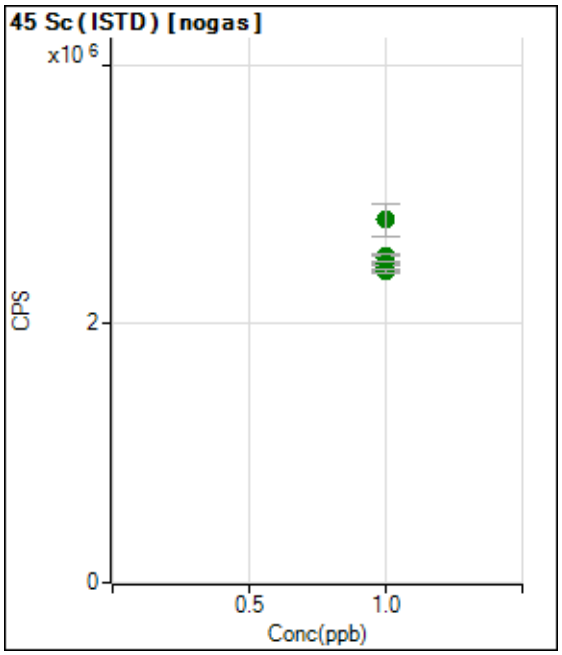
y = 0.0130 * x + 1.4038E-004
R = 0.9999
DL = 0.003009
BEC = 0.01077

Weight: <None>
Min Conc: <None>

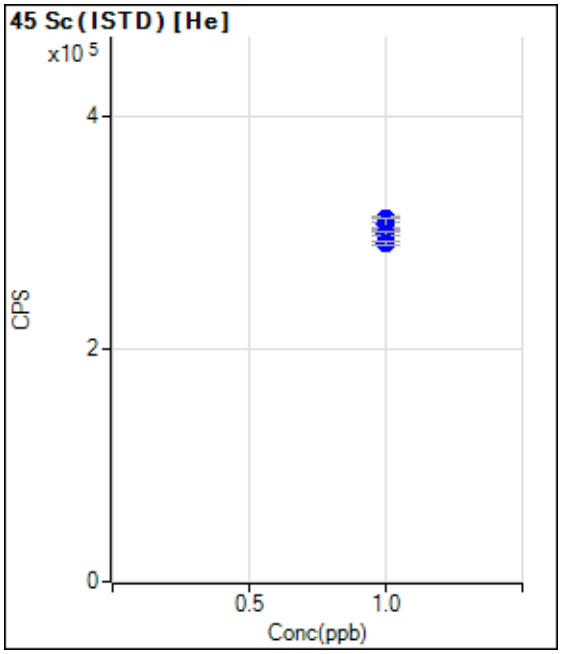


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	1.000		1244232.26		A	0.6
2	☐	1.000		1238409.64		A	3.4
3	☐	1.000		1197729.80		A	2.8
4	☐	1.000		1310847.60		A	9.1
5	☐	1.000		1124095.44		A	3.1
6	☐	1.000		1045360.04		A	4.3
7	☐	1.000					

Calibration for 012_ICV.d

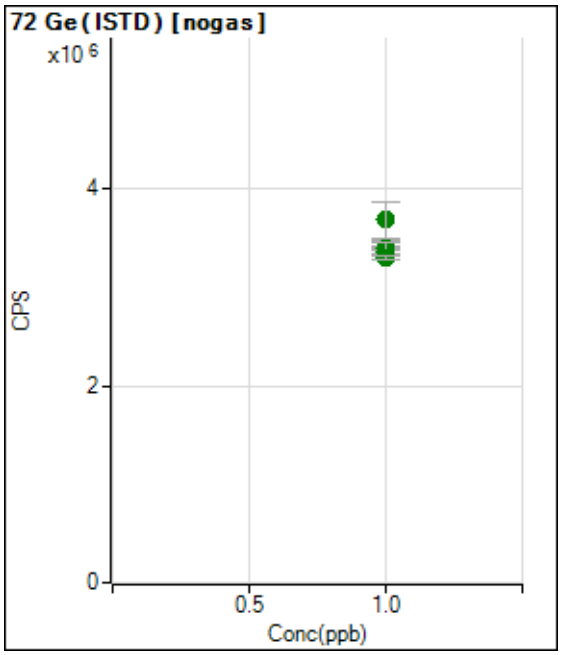


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	1.000		2507915.43		A	2.7
2	☐	1.000		2531115.48		A	0.9
3	☐	1.000		2437688.14		A	2.8
4	☐	1.000		2804420.90		A	9.2
5	☐	1.000		2466325.27		A	1.5
6	☐	1.000		2408085.38		A	1.7
7	☐	1.000					

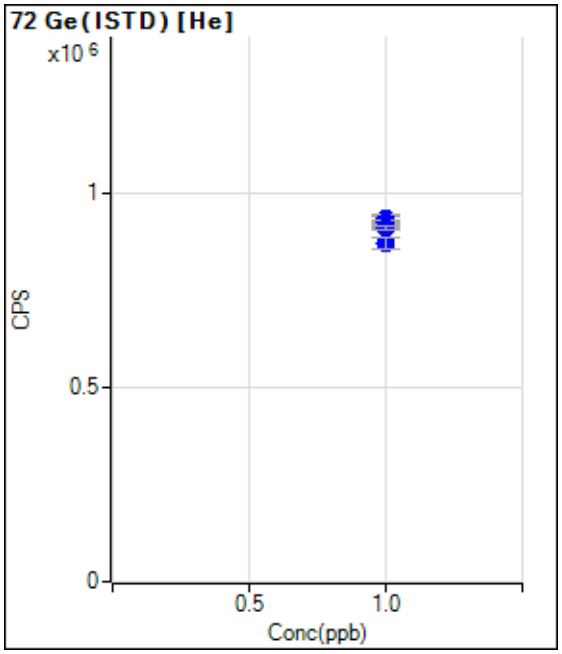


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	1.000		302811.39		P	1.1
2	☐	1.000		311802.29		P	1.8
3	☐	1.000		301191.43		P	0.7
4	☐	1.000		307938.45		P	2.7
5	☐	1.000		299140.08		P	1.2
6	☐	1.000		291060.14		P	0.7
7	☐	1.000					

Calibration for 012_ICV.d

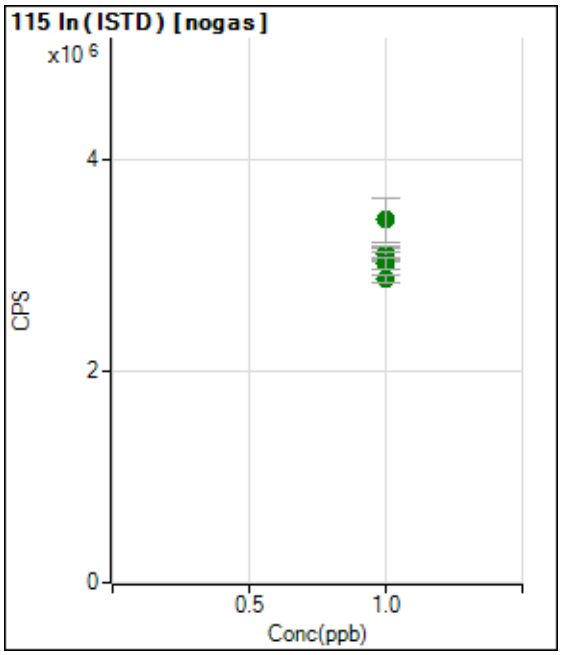


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	1.000		3426752.97		A	2.9
2	☐	1.000		3406829.84		A	1.0
3	☐	1.000		3358692.97		A	1.9
4	☐	1.000		3686578.59		A	10.1
5	☐	1.000		3393032.87		A	3.3
6	☐	1.000		3308130.89		A	1.0
7	☐	1.000					

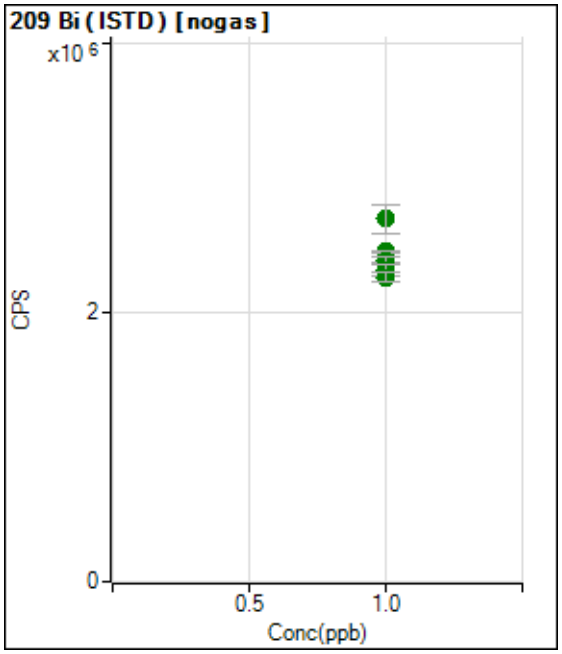


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	1.000		931586.86		P	1.8
2	☐	1.000		912488.66		P	0.8
3	☐	1.000		933448.35		P	2.2
4	☐	1.000		925868.01		P	1.1
5	☐	1.000		910595.51		P	1.4
6	☐	1.000		870690.48		P	2.9
7	☐	1.000					

Calibration for 012_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	1.000		3101048.01		A	3.2
2	☐	1.000		3105120.43		A	4.1
3	☐	1.000		3072102.12		A	3.1
4	☐	1.000		3424010.77		A	12.0
5	☐	1.000		3010637.94		A	3.8
6	☐	1.000		2866939.69		A	2.1
7	☐	1.000					



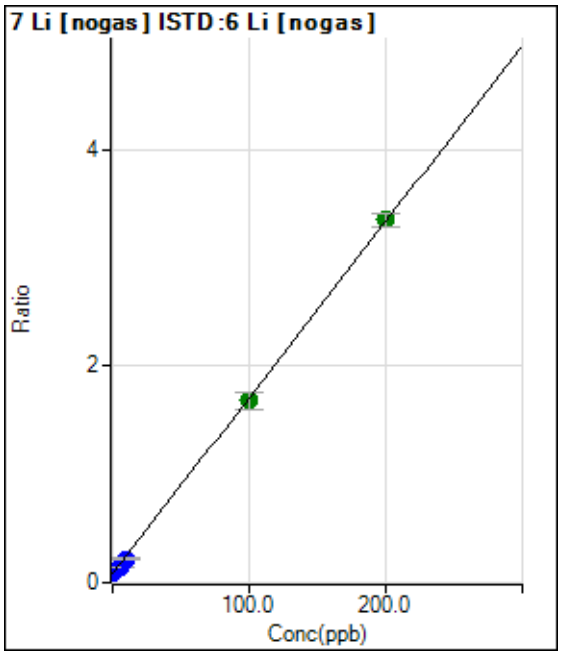
	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	1.000		2417267.99		A	3.8
2	☐	1.000		2453924.39		A	0.2
3	☐	1.000		2387037.46		A	2.6
4	☐	1.000		2698155.53		A	7.6
5	☐	1.000		2318613.14		A	3.6
6	☐	1.000		2265027.31		A	2.7
7	☐	1.000					

Calibration for 120_ICV.d

Batch Folder: C:\Agilent\ICPMH\1\DATA\121118A.b\
Analysis File: 121118A.batch.bin
DA Date-Time: 2018-12-11 20:03:31
Calibration Title:
Calibration Method: External Calibration
VIS Interpolation Fit:

Level	Standard Data File	Sample Name	Acq. Date-Time
1	113CALB.d	CAL BLK	2018-12-11 19:47:47
2	114CALS.d	2/10/200	2018-12-11 19:49:49
3	115CALS.d	5/25/500	2018-12-11 19:51:53
4	116CALS.d	10/50/1000	2018-12-11 19:53:56
5	117CALS.d	100/500/10K	2018-12-11 19:55:59
6	118CALS.d	200/1000/20K	2018-12-11 19:58:03
7			

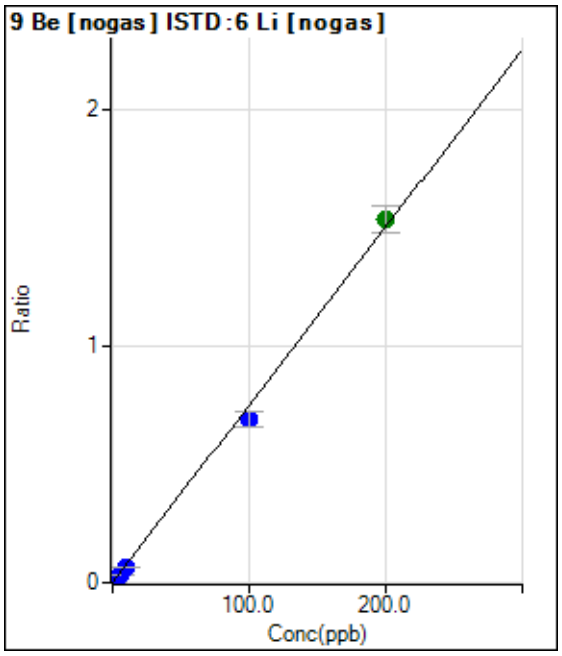
Calibration for 120_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	109109.23	0.0830	P	3.6
2	☐	2.000	1.520	141779.02	0.1077	P	3.9
3	☐	5.000	4.008	204112.13	0.1482	P	1.9
4	☐	10.000	8.441	291072.77	0.2202	P	3.5
5	☐	100.000	98.154	2152275.96	1.6789	A	9.9
6	☐	200.000	201.030	3699464.53	3.3515	A	3.5
7	☐	1.000					

y = 0.0163 * x + 0.0830
R = 0.9999
DL = 0.5453
BEC = 5.106

Weight: <None>
Min Conc: <None>

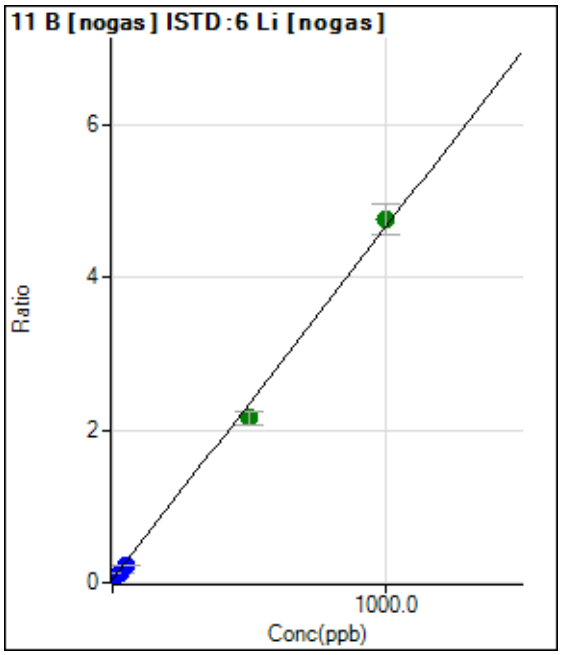


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	36.67	0.0000	P	95.8
2	☐	2.000	1.729	17131.19	0.0130	P	3.6
3	☐	5.000	4.111	42517.47	0.0309	P	4.4
4	☐	10.000	8.478	84096.79	0.0637	P	5.1
5	☐	100.000	91.828	883971.21	0.6892	P	9.2
6	☐	200.000	204.187	1689364.19	1.5326	A	7.5
7	☐	1.000					

y = 0.0075 * x + 2.7963E-005
R = 0.9989
DL = 0.01071
BEC = 0.003726

Weight: <None>
Min Conc: <None>

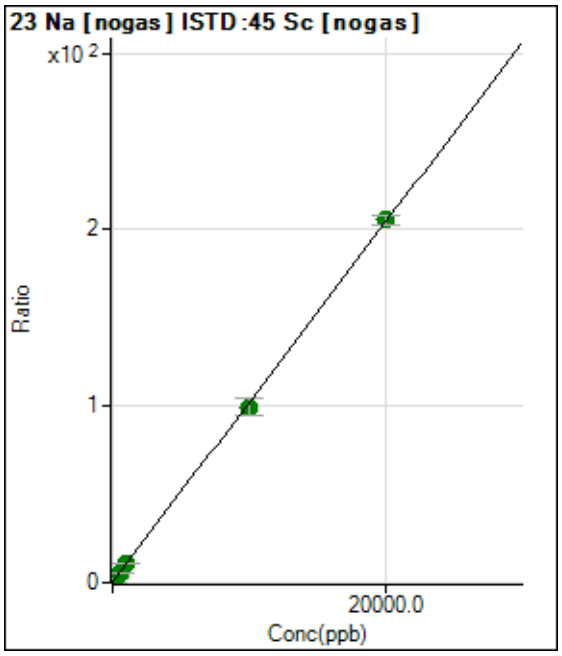
Calibration for 120_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	56597.28	0.0431	P	3.9
2	☐	10.000	8.425	107801.47	0.0819	P	3.3
3	☐	25.000	20.092	186834.36	0.1357	P	2.8
4	☐	50.000	41.377	308857.05	0.2338	P	4.6
5	☐	500.000	458.447	2768458.61	2.1562	A	7.8
6	☐	1000.000	1021.346	5235129.82	4.7509	A	8.3
7	☐	5.000					

y = 0.0046 * x + 0.0431
R = 0.9988
DL = 1.091
BEC = 9.342

Weight: <None>
Min Conc: <None>

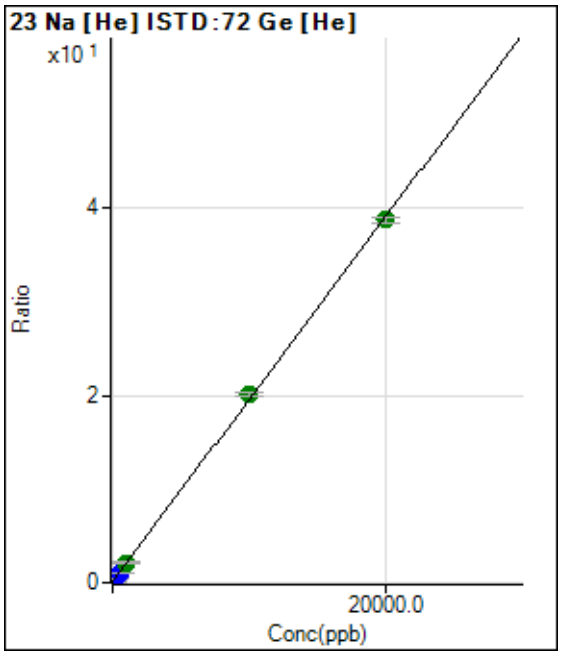


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	955381.57	0.3432	M	0.4
2	☐	200.000	204.938	6814648.33	2.4326	A	0.6
3	☐	500.000	508.591	15349424.30	5.5284	A	3.1
4	☐	1000.000	1017.101	29961614.21	10.7128	A	4.2
5	☐	10000.00	9729.917	296183048.2	99.5417	A	9.4
6	☐	20000.00	20133.922	564011495.9	205.612	A	2.3
7	☐	100.000					

y = 0.0102 * x + 0.3432
R = 0.9999
DL = 0.4039
BEC = 33.66

Weight: <None>
Min Conc: <None>

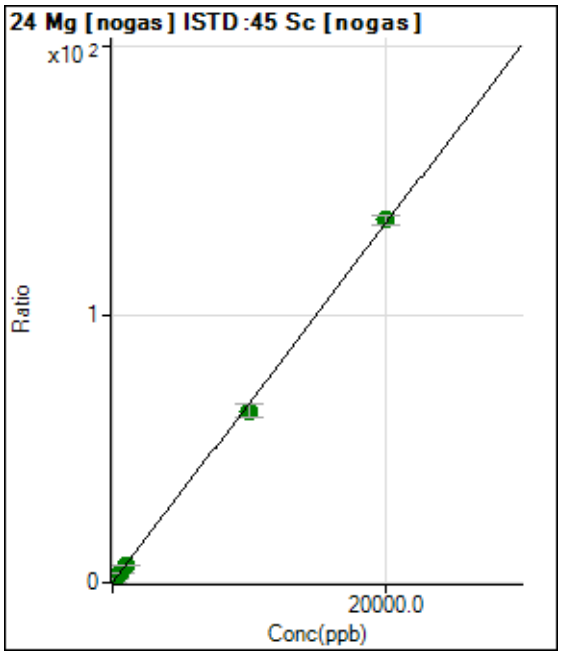
Calibration for 120_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	95356.93	0.1023	P	0.9
2	☐	200.000	200.155	420201.89	0.4920	P	1.8
3	☐	500.000	489.416	965444.07	1.0552	P	0.4
4	☐	1000.000	1053.394	1978153.20	2.1534	A	1.6
5	☐	10000.00	10313.199	18299818.06	20.1834	A	2.2
6	☐	20000.00	19840.994	34607217.82	38.7353	A	1.8
7	☐	100.000					

y = 0.0019 * x + 0.1023
R = 0.9998
DL = 1.417
BEC = 52.53

Weight: <None>
Min Conc: <None>

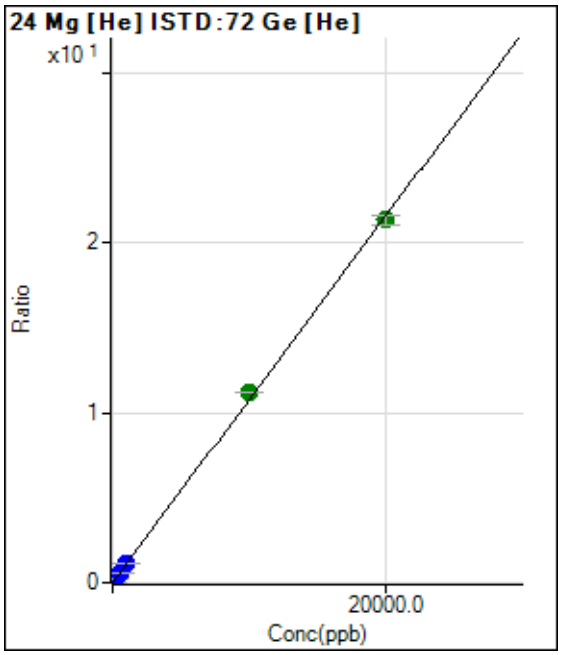


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	36219.01	0.0130	P	4.3
2	☐	200.000	203.580	3858286.28	1.3773	A	1.9
3	☐	500.000	531.311	9913508.55	3.5736	A	5.9
4	☐	1000.000	999.841	18780270.21	6.7134	A	2.3
5	☐	10000.00	9567.753	191048470.9	64.1308	A	7.3
6	☐	20000.00	20215.313	371556574.9	135.484	A	2.9
7	☐	100.000					

y = 0.0067 * x + 0.0130
R = 0.9997
DL = 0.2495
BEC = 1.94

Weight: <None>
Min Conc: <None>

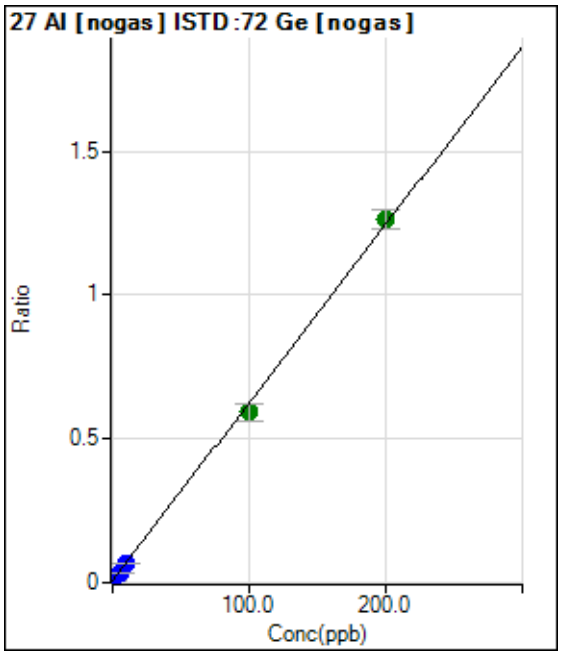
Calibration for 120_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	1900.13	0.0020	P	10.3
2	☐	200.000	199.441	185517.98	0.2172	P	1.9
3	☐	500.000	496.545	491989.15	0.5377	P	0.8
4	☐	1000.000	1000.887	993801.31	1.0818	P	0.9
5	☐	10000.00	10385.159	10162188.60	11.2057	A	0.7
6	☐	20000.00	19807.468	19092421.80	21.3707	A	2.5
7	☐	100.000					

y = 0.0011 * x + 0.0020
R = 0.9997
DL = 0.5831
BEC = 1.889

Weight: <None>
Min Conc: <None>

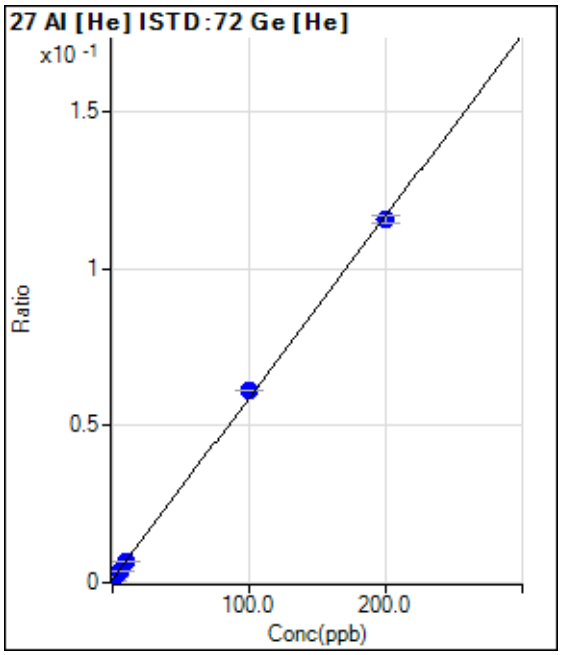


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	27860.83	0.0074	P	1.5
2	☐	2.000	1.615	65597.28	0.0174	P	1.2
3	☐	5.000	4.644	137717.23	0.0362	P	1.4
4	☐	10.000	9.759	251216.84	0.0678	P	3.7
5	☐	100.000	94.589	2351945.54	0.5923	A	10.7
6	☐	200.000	202.730	4545170.14	1.2610	A	5.3
7	☐	1.000					

y = 0.0062 * x + 0.0074
R = 0.9995
DL = 0.05561
BEC = 1.202

Weight: <None>
Min Conc: <None>

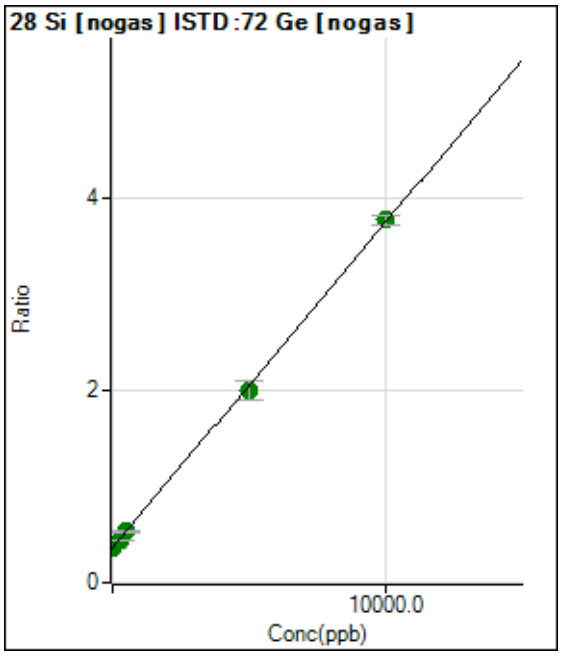
Calibration for 120_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	-0.475	770.02	0.0008	P	3.1
2	☐	2.000	1.099	1483.42	0.0017	P	3.6
3	☐	5.000	4.632	3457.04	0.0038	P	0.2
4	☐	10.000	9.615	6117.75	0.0067	P	4.3
5	☐	100.000	104.181	55618.65	0.0613	P	0.5
6	☐	200.000	197.947	103233.30	0.1155	P	2.1
7	☐	1.000					

y = 5.7817E-004 * x + 0.0011
R = 0.9997
DL = 0.1314
BEC = 1.903

Weight: <None>
Min Conc: <None>

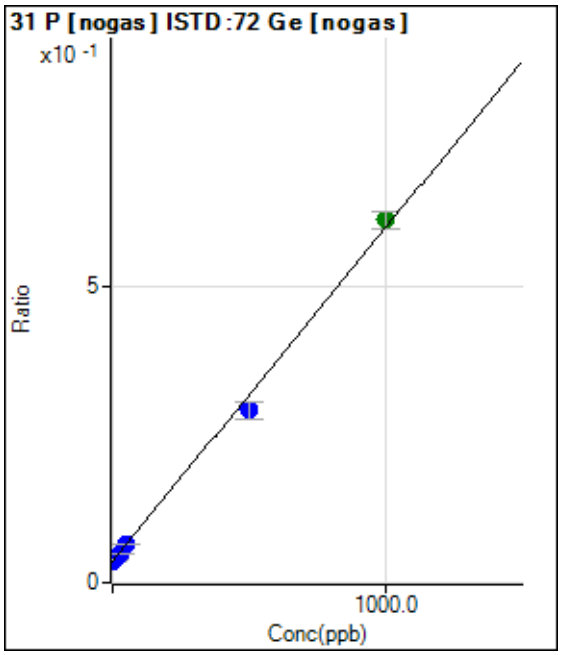


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	1373243.26	0.3663	A	1.6
2	☐	100.000	97.675	1504138.42	0.3994	A	2.3
3	☐	250.000	210.033	1666771.33	0.4375	A	0.4
4	☐	500.000	495.487	1980383.41	0.5342	A	3.2
5	☐	5000.000	4842.927	7975692.17	2.0071	A	9.5
6	☐	10000.00	10079.784	13637966.05	3.7814	A	2.9
7	☐	5.000					

y = 3.3880E-004 * x + 0.3663
R = 0.9998
DL = 51.52
BEC = 1081

Weight: <None>
Min Conc: <None>

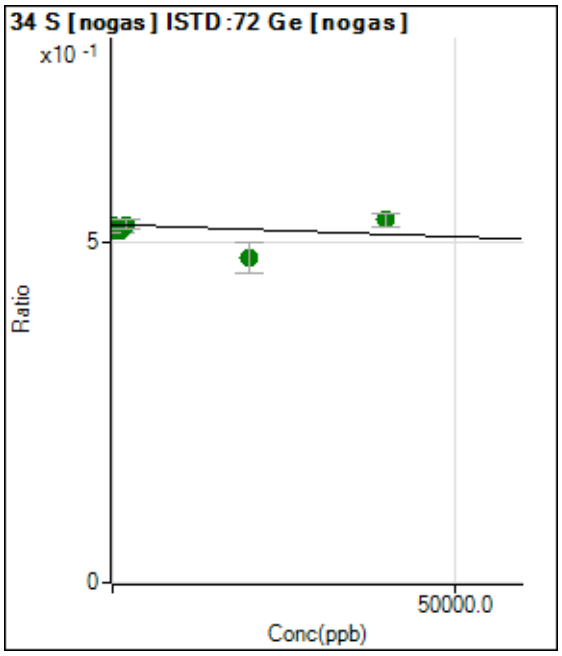
Calibration for 120_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	136403.64	0.0364	P	1.7
2	☐	10.000	7.417	152757.47	0.0406	P	2.6
3	☐	25.000	23.290	188700.56	0.0495	P	0.1
4	☐	50.000	50.625	240816.85	0.0650	P	3.0
5	☐	500.000	452.379	1159000.24	0.2917	P	9.3
6	☐	1000.000	1023.848	2214509.03	0.6141	A	4.9
7	☐	5.000					

y = 5.6430E-004 * x + 0.0364
R = 0.9984
DL = 3.374
BEC = 64.49

Weight: <None>
Min Conc: <None>

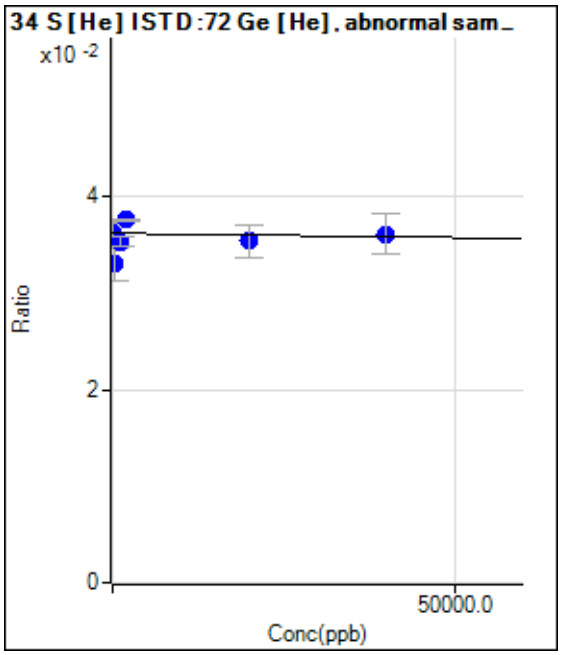


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	1974582.40	0.5267	A	1.2
2	☐	400.000	22905.893	1952475.17	0.5185	A	1.1
3	☐	1000.000	25938.742	1971044.51	0.5174	A	1.5
4	☐	2000.000	-1351.190	1954747.05	0.5272	A	2.7
5	☐	20000.00	135831.27	1898475.24	0.4779	A	9.8
6	☐	40000.00	-18596.603	1923327.00	0.5334	A	4.0
7	☐	100.000					

y = -3.5961E-007 * x + 0.5267
R = -0.0582
DL = -5.075E+04
BEC = -1.465E+06

Weight: <None>
Min Conc: <None>

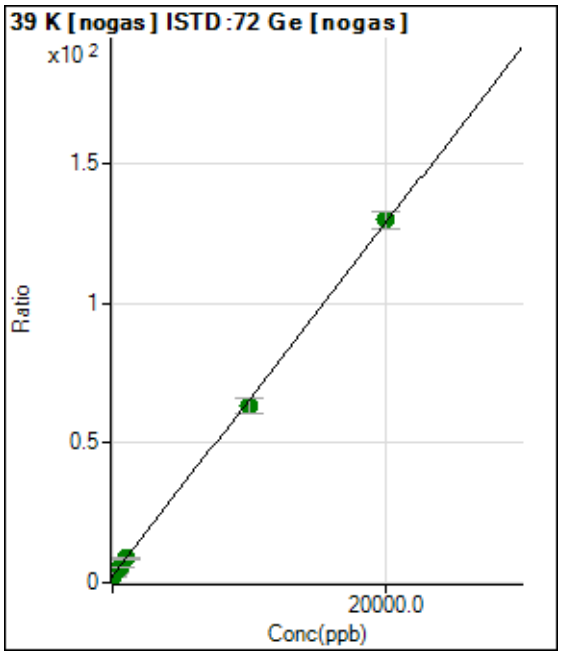
Calibration for 120_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	33735.74	0.0362	P	6.0
2	☐	400.000	361052.61	28125.49	0.0330	P	9.9
3	☐	1000.000	99180.716	32298.13	0.0353	P	2.5
4	☐	2000.000	-154932.67	34505.24	0.0376	P	0.3
5	☐	20000.00	92800.708	32034.24	0.0354	P	9.5
6	☐	40000.00	5385.236	32266.45	0.0361	P	11.1
7	☐	100.000					

y = -8.9176E-009 * x + 0.0362
R = 0.1619
DL = -7.301E+05
BEC = -4.057E+06

Weight: <None>
Min Conc: <None>

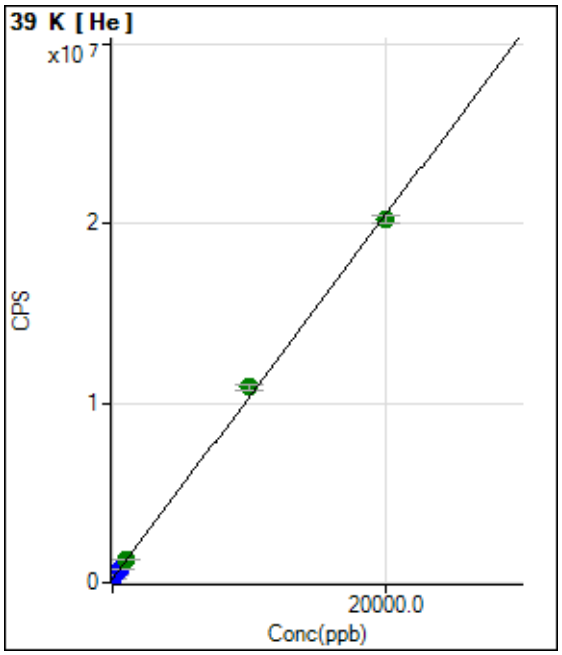


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	8960180.15	2.3906	A	2.8
2	☐	200.000	194.377	13616420.10	3.6170	A	2.4
3	☐	500.000	481.969	20692178.59	5.4315	A	0.4
4	☐	1000.000	1013.030	32542367.39	8.7822	A	5.0
5	☐	10000.00	9620.891	250840538.9	63.0923	A	8.4
6	☐	20000.00	20189.410	467838510.4	129.772	A	4.8
7	☐	100.000					

y = 0.0063 * x + 2.3906
R = 0.9997
DL = 32.05
BEC = 378.9

Weight: <None>
Min Conc: <None>

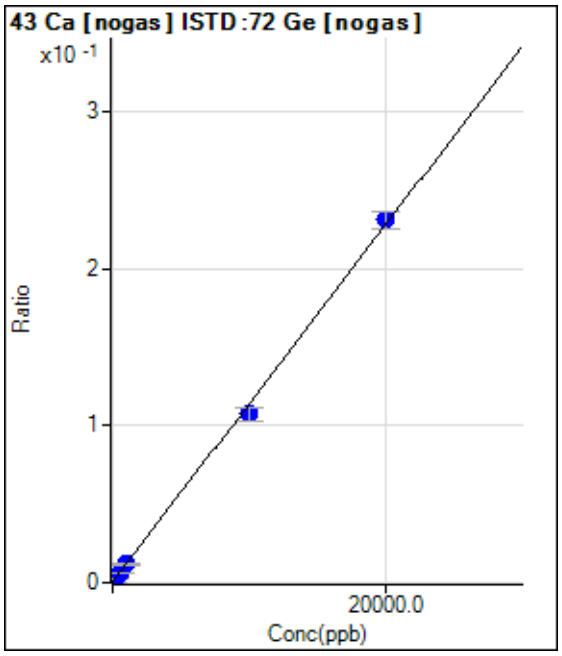
Calibration for 120_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	216284.79		P	0.9
2	☐	200.000	181.974	400885.47		P	1.1
3	☐	500.000	511.836	735510.30		P	0.3
4	☐	1000.000	1054.818	1286330.66		A	1.5
5	☐	10000.00	10538.911	10907343.17		A	3.0
6	☐	20000.00	19727.688	20228775.12		A	2.1
7	☐	100.000					

y = 1014.4367 * x + 216284.7867
R = 0.9995
DL = 5.782
BEC = 213.2

Weight: <None>
Min Conc: <None>

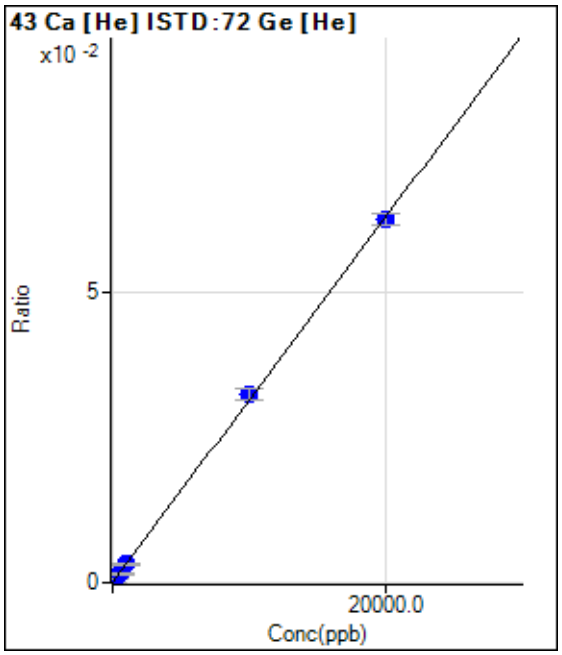


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	1380.08	0.0004	P	18.0
2	☐	200.000	201.355	10019.54	0.0027	P	4.4
3	☐	500.000	471.141	21853.11	0.0057	P	2.0
4	☐	1000.000	1011.487	44072.30	0.0119	P	4.3
5	☐	10000.00	9425.065	428369.57	0.1077	P	8.3
6	☐	20000.00	20287.601	834491.01	0.2315	P	4.7
7	☐	100.000					

y = 1.1392E-005 * x + 3.6862E-004
R = 0.9994
DL = 17.47
BEC = 32.36

Weight: <None>
Min Conc: <None>

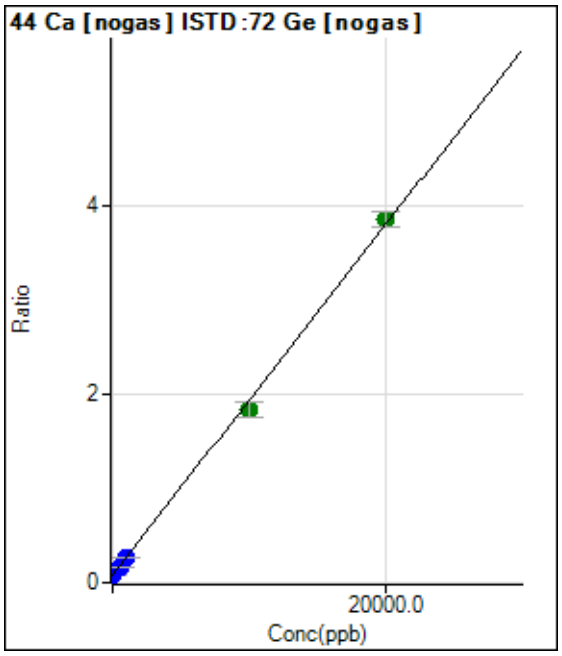
Calibration for 120_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	36.67	0.0000	P	62.8
2	☐	200.000	219.645	623.36	0.0007	P	4.6
3	☐	500.000	463.698	1370.07	0.0015	P	2.3
4	☐	1000.000	989.033	2893.61	0.0032	P	8.8
5	☐	10000.00	10282.837	29353.56	0.0324	P	5.8
6	☐	20000.00	19859.841	55843.54	0.0625	P	3.3
7	☐	100.000					

y = 3.1454E-006 * x + 3.9229E-005
R = 0.9999
DL = 23.48
BEC = 12.47

Weight: <None>
Min Conc: <None>

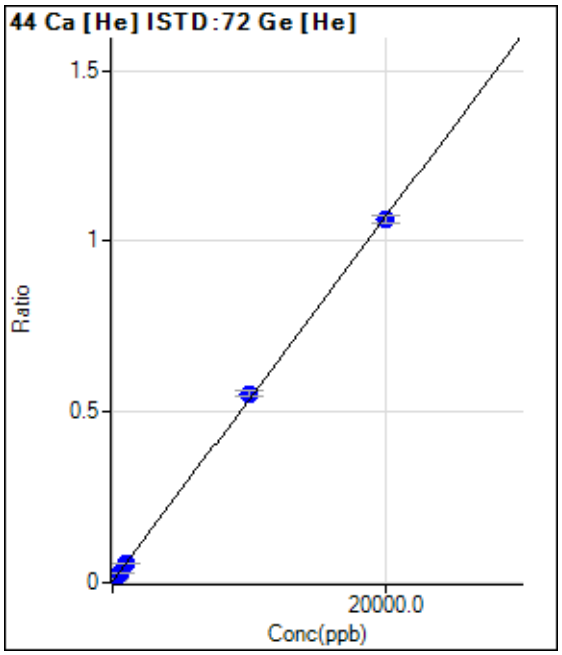


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	301161.32	0.0803	P	0.6
2	☐	200.000	185.778	432355.20	0.1149	P	2.9
3	☐	500.000	460.684	632194.39	0.1660	P	0.9
4	☐	1000.000	989.027	979107.12	0.2641	P	3.5
5	☐	10000.00	9441.981	7293635.31	1.8351	A	9.0
6	☐	20000.00	20280.683	13881329.79	3.8494	A	4.1
7	☐	100.000					

y = 1.8585E-004 * x + 0.0803
R = 0.9995
DL = 7.977
BEC = 432.3

Weight: <None>
Min Conc: <None>

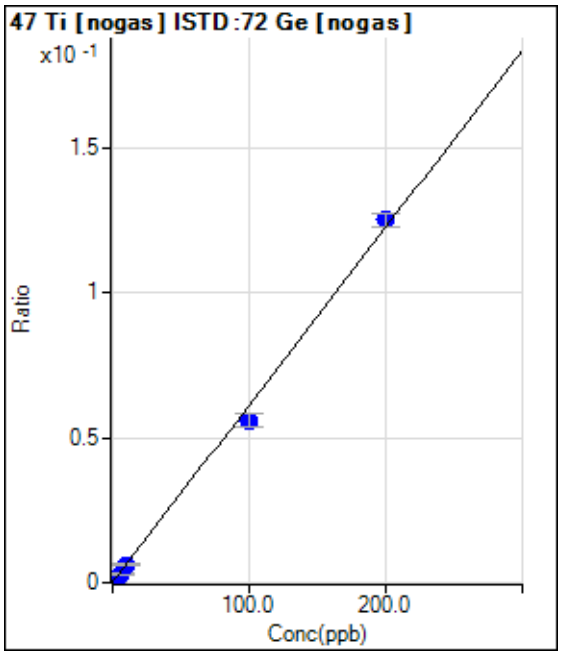
Calibration for 120_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	2933.61	0.0031	P	3.4
2	☐	200.000	199.041	11773.86	0.0138	P	4.5
3	☐	500.000	482.818	26452.53	0.0289	P	1.9
4	☐	1000.000	966.615	50287.95	0.0547	P	2.9
5	☐	10000.00	10313.725	501950.40	0.5536	P	3.1
6	☐	20000.00	19845.246	949220.35	1.0624	P	2.0
7	☐	100.000					

y = 5.3375E-005 * x + 0.0031
R = 0.9998
DL = 6.097
BEC = 58.96

Weight: <None>
Min Conc: <None>

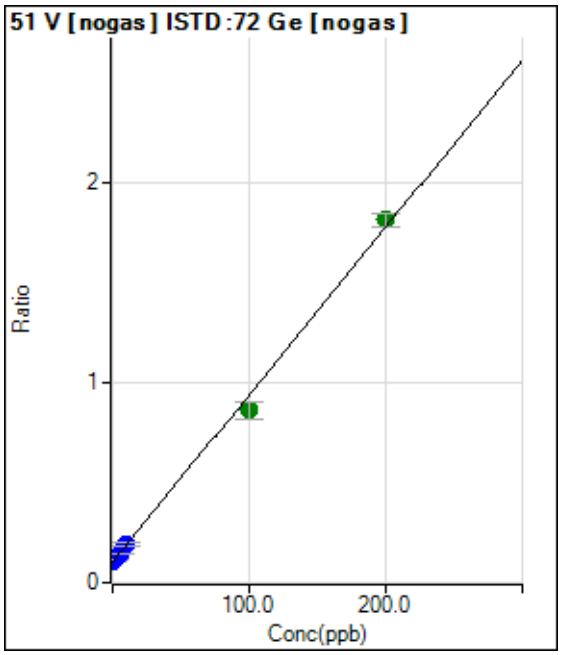


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	513.35	0.0001	P	6.6
2	☐	2.000	1.920	4927.40	0.0013	P	5.5
3	☐	5.000	4.654	11350.26	0.0030	P	3.0
4	☐	10.000	9.935	23001.19	0.0062	P	4.6
5	☐	100.000	91.215	222035.00	0.0558	P	8.5
6	☐	200.000	204.405	450664.60	0.1250	P	4.0
7	☐	1.000					

y = 6.1076E-004 * x + 1.3699E-004
R = 0.9987
DL = 0.04445
BEC = 0.2243

Weight: <None>
Min Conc: <None>

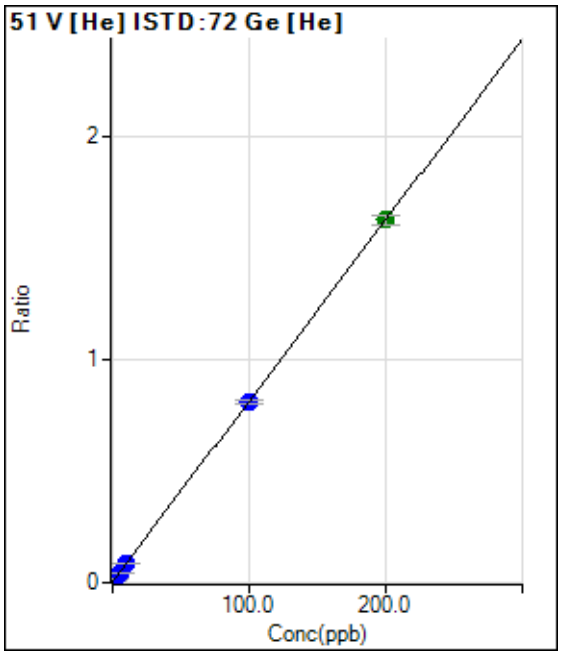
Calibration for 120_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	390468.94	0.1042	P	2.1
2	☐	2.000	1.699	445768.25	0.1184	P	0.7
3	☐	5.000	5.053	557849.80	0.1464	P	0.3
4	☐	10.000	10.619	714982.18	0.1930	P	6.1
5	☐	100.000	90.865	3433683.15	0.8644	A	9.8
6	☐	200.000	204.538	6545610.30	1.8154	A	3.9
7	☐	1.000					

y = 0.0084 * x + 0.1042
R = 0.9985
DL = 0.7708
BEC = 12.45

Weight: <None>
Min Conc: <None>

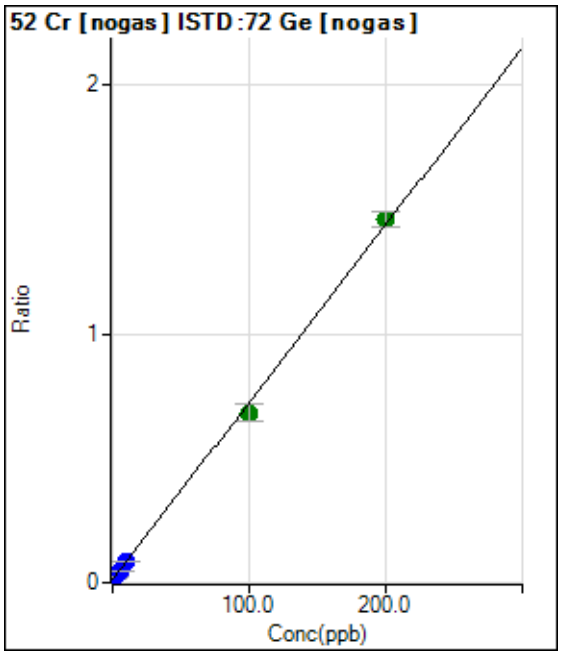


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.195	4834.64	0.0052	P	4.7
2	☐	2.000	2.130	17836.55	0.0209	P	2.9
3	☐	5.000	4.958	40083.61	0.0438	P	2.3
4	☐	10.000	9.848	76698.30	0.0835	P	1.4
5	☐	100.000	99.723	736699.65	0.8125	P	1.6
6	☐	200.000	200.146	1454043.54	1.6271	A	2.5
7	☐	1.000					

y = 0.0081 * x + 0.0036
R = 1.0000
DL = 0.09037
BEC = 0.4448

Weight: <None>
Min Conc: <None>

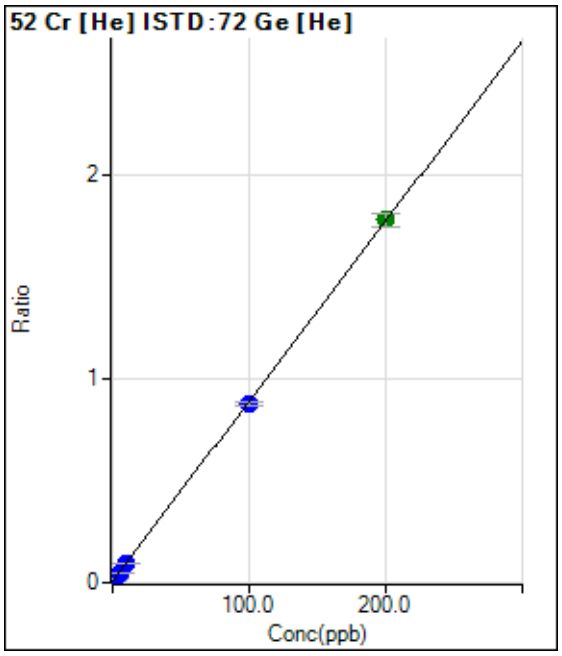
Calibration for 120_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	46411.60	0.0124	P	0.7
2	☐	2.000	1.964	99278.16	0.0264	P	1.9
3	☐	5.000	4.908	180318.16	0.0473	P	1.0
4	☐	10.000	10.008	310087.36	0.0837	P	3.3
5	☐	100.000	94.163	2713335.38	0.6829	A	9.7
6	☐	200.000	202.921	5254645.13	1.4574	A	4.3
7	☐	1.000					

y = 0.0071 * x + 0.0124
R = 0.9994
DL = 0.03781
BEC = 1.739

Weight: <None>
Min Conc: <None>

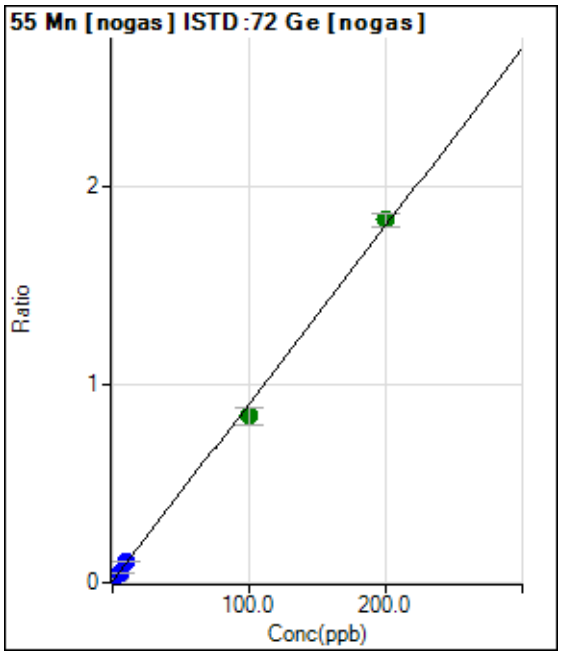


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	5744.31	0.0062	P	4.2
2	☐	2.000	1.969	20097.86	0.0235	P	5.1
3	☐	5.000	4.896	45155.45	0.0494	P	1.2
4	☐	10.000	9.701	84292.10	0.0918	P	1.2
5	☐	100.000	98.617	794536.68	0.8763	P	2.3
6	☐	200.000	200.709	1587653.10	1.7771	A	3.9
7	☐	1.000					

y = 0.0088 * x + 0.0062
R = 1.0000
DL = 0.08835
BEC = 0.6985

Weight: <None>
Min Conc: <None>

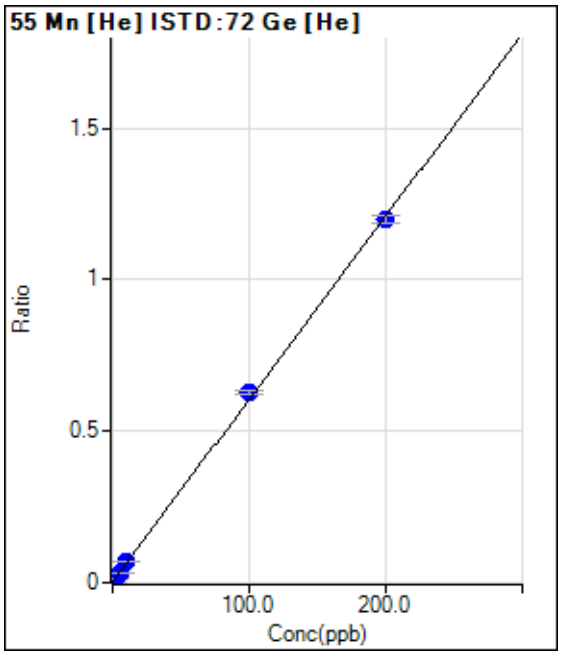
Calibration for 120_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	28946.44	0.0077	P	0.8
2	☐	2.000	1.879	92625.28	0.0246	P	2.4
3	☐	5.000	4.951	198876.17	0.0522	P	2.0
4	☐	10.000	10.829	389211.13	0.1050	P	4.3
5	☐	100.000	93.054	3350817.24	0.8438	A	10.7
6	☐	200.000	203.434	6618474.07	1.8356	A	4.0
7	☐	1.000					

y = 0.0090 * x + 0.0077
R = 0.9991
DL = 0.02142
BEC = 0.8593

Weight: <None>
Min Conc: <None>

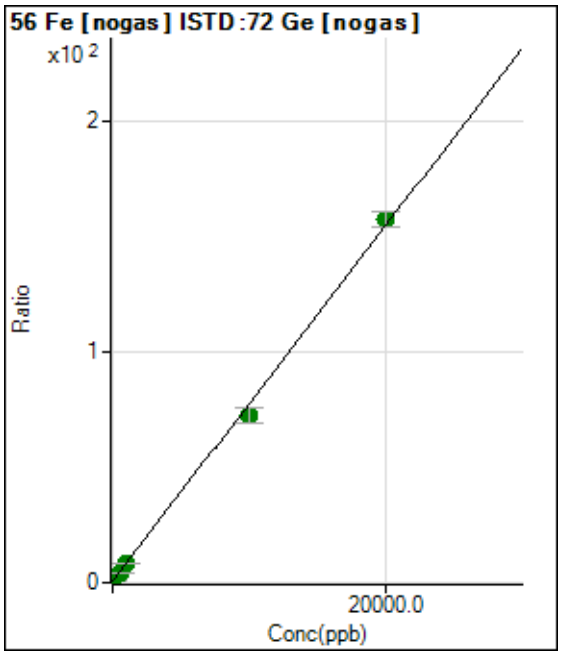


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	2173.50	0.0023	P	10.4
2	☐	2.000	2.076	12684.55	0.0149	P	1.9
3	☐	5.000	5.116	30362.08	0.0332	P	2.6
4	☐	10.000	10.898	62529.00	0.0681	P	2.2
5	☐	100.000	103.605	568776.03	0.6273	P	1.4
6	☐	200.000	198.149	1069925.74	1.1976	P	2.0
7	☐	1.000					

y = 0.0060 * x + 0.0023
R = 0.9998
DL = 0.121
BEC = 0.3866

Weight: <None>
Min Conc: <None>

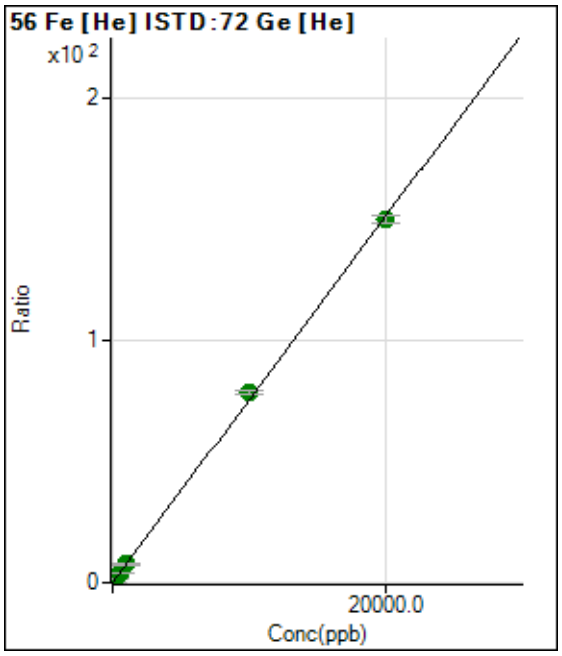
Calibration for 120_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	2440603.05	0.6510	A	1.0
2	☐	200.000	194.436	8082193.15	2.1472	A	3.3
3	☐	500.000	503.136	17229725.39	4.5227	A	0.6
4	☐	1000.000	986.717	30554820.48	8.2438	A	4.0
5	☐	10000.00	9329.922	287871864.7	72.4445	A	9.5
6	☐	20000.00	20335.681	566581329.3	157.133	A	4.3
7	☐	100.000					

y = 0.0077 * x + 0.6510
R = 0.9992
DL = 2.551
BEC = 84.61

Weight: <None>
Min Conc: <None>

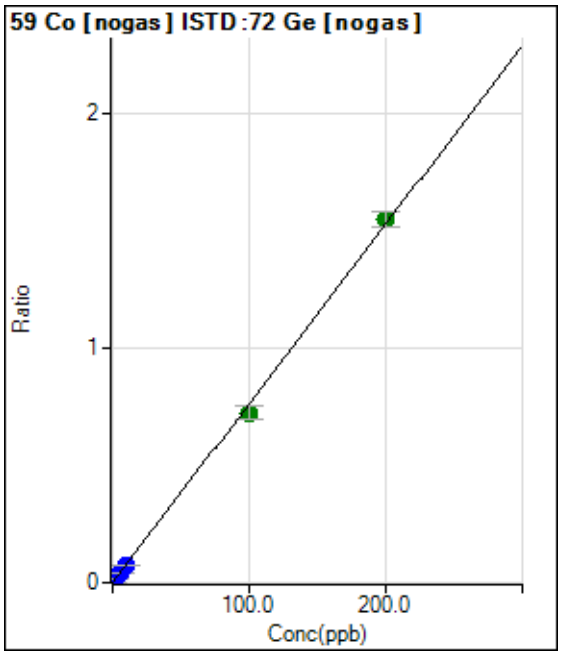


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	18089.07	0.0194	P	2.1
2	☐	200.000	209.452	1366374.77	1.6003	A	2.9
3	☐	500.000	510.953	3545643.59	3.8758	A	1.5
4	☐	1000.000	1000.346	6953900.52	7.5695	A	4.0
5	☐	10000.00	10352.782	70864088.94	78.1574	A	2.1
6	☐	20000.00	19823.223	133687834.6	149.635	A	2.2
7	☐	100.000					

y = 0.0075 * x + 0.0194
R = 0.9998
DL = 0.1616
BEC = 2.571

Weight: <None>
Min Conc: <None>

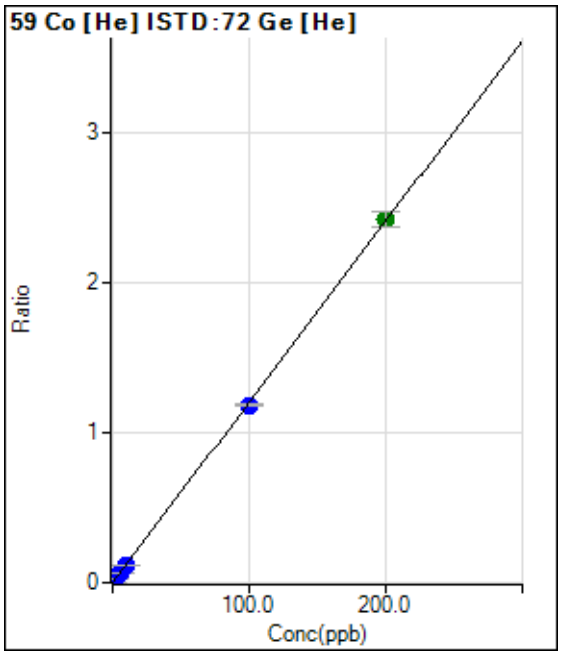
Calibration for 120_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	1140.05	0.0003	P	11.1
2	☐	2.000	1.936	56767.82	0.0151	P	4.9
3	☐	5.000	4.907	143916.84	0.0378	P	1.2
4	☐	10.000	9.949	282799.65	0.0763	P	2.9
5	☐	100.000	94.728	2877411.31	0.7237	A	8.4
6	☐	200.000	202.641	5579979.09	1.5477	A	4.3
7	☐	1.000					

y = 0.0076 * x + 3.0381E-004
R = 0.9995
DL = 0.01327
BEC = 0.03978

Weight: <None>
Min Conc: <None>

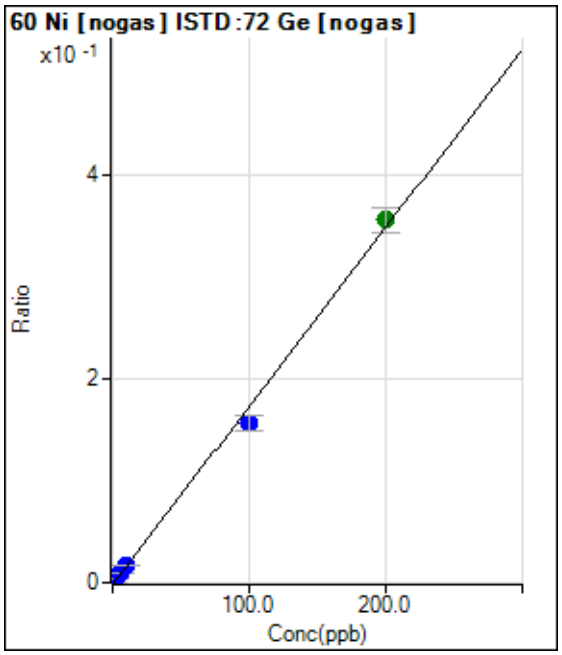


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	243.34	0.0003	P	14.7
2	☐	2.000	1.954	20351.57	0.0238	P	2.7
3	☐	5.000	4.918	54517.60	0.0596	P	3.0
4	☐	10.000	9.903	110010.82	0.1198	P	1.6
5	☐	100.000	98.319	1075832.38	1.1865	P	1.9
6	☐	200.000	200.848	2165043.72	2.4236	A	4.3
7	☐	1.000					

y = 0.0121 * x + 2.6108E-004
R = 1.0000
DL = 0.009572
BEC = 0.02164

Weight: <None>
Min Conc: <None>

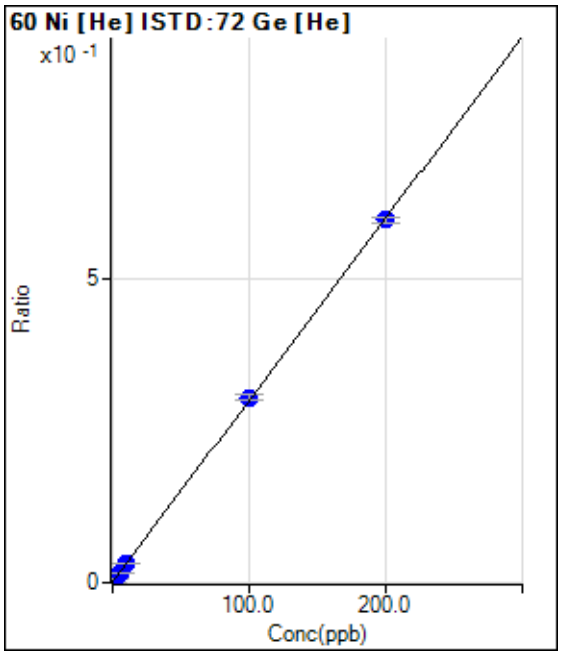
Calibration for 120_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	1.281	730.03	0.0002	P	10.0
2	☐	2.000	3.190	13315.05	0.0035	P	3.1
3	☐	5.000	6.100	32879.65	0.0086	P	0.9
4	☐	10.000	11.101	64466.88	0.0174	P	2.0
5	☐	100.000	90.847	623853.68	0.1570	P	9.2
6	☐	200.000	204.482	1282591.18	0.3559	A	6.8
7	☐	1.000					

y = 0.0018 * x - 0.0020
R = 0.9984
DL = 0.0334
BEC = -1.17

Weight: <None>
Min Conc: <None>

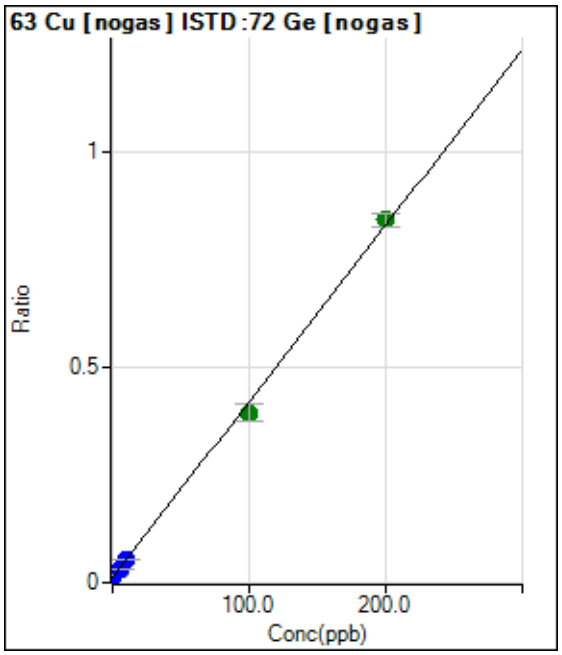


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	-0.249	200.00	0.0002	P	22.2
2	☐	2.000	1.718	5197.47	0.0061	P	4.6
3	☐	5.000	4.907	14282.36	0.0156	P	2.4
4	☐	10.000	9.865	27948.29	0.0304	P	1.6
5	☐	100.000	101.496	275719.77	0.3041	P	3.1
6	☐	200.000	199.264	532628.17	0.5962	P	1.7
7	☐	1.000					

y = 0.0030 * x + 9.5795E-004
R = 1.0000
DL = 0.04792
BEC = 0.3207

Weight: <None>
Min Conc: <None>

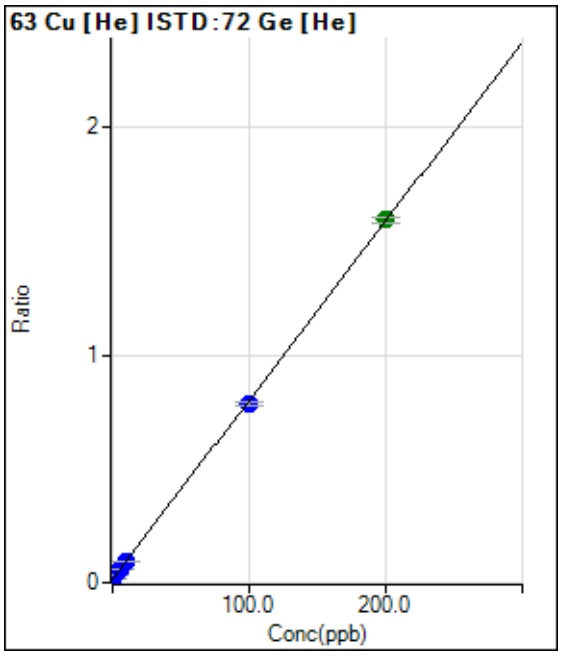
Calibration for 120_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	45296.12	0.0121	P	3.1
2	☐	2.000	1.969	75815.47	0.0201	P	3.8
3	☐	5.000	4.737	119820.48	0.0315	P	0.6
4	☐	10.000	10.184	199051.66	0.0537	P	5.1
5	☐	100.000	93.597	1568715.71	0.3947	A	10.0
6	☐	200.000	203.199	3039026.21	0.8428	A	3.9
7	☐	1.000					

y = 0.0041 * x + 0.0121
R = 0.9993
DL = 0.2722
BEC = 2.956

Weight: <None>
Min Conc: <None>

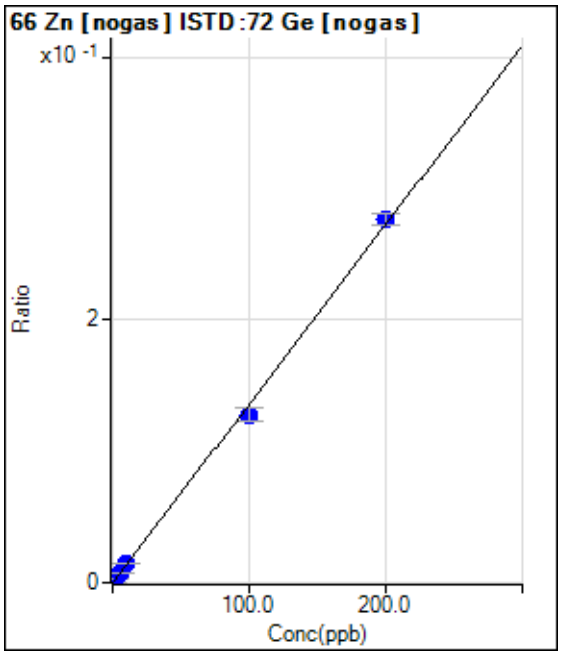


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.161	15613.46	0.0167	P	3.9
2	☐	2.000	2.280	28522.31	0.0334	P	1.9
3	☐	5.000	5.309	52327.70	0.0572	P	0.7
4	☐	10.000	10.056	86804.74	0.0945	P	1.4
5	☐	100.000	98.412	715138.40	0.7887	P	2.1
6	☐	200.000	200.781	1423386.23	1.5931	A	1.4
7	☐	1.000					

y = 0.0079 * x + 0.0155
R = 1.0000
DL = 0.2481
BEC = 1.97

Weight: <None>
Min Conc: <None>

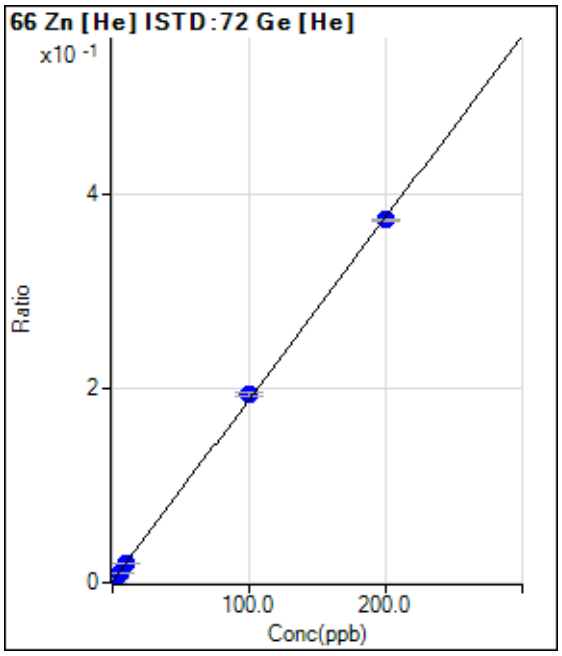
Calibration for 120_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.636	1760.11	0.0005	P	4.0
2	☐	2.000	2.666	12197.53	0.0032	P	3.1
3	☐	5.000	5.611	27657.82	0.0073	P	4.0
4	☐	10.000	11.057	54467.97	0.0147	P	3.1
5	☐	100.000	94.211	510019.78	0.1282	P	7.4
6	☐	200.000	202.820	996846.03	0.2764	P	3.3
7	☐	1.000					

y = 0.0014 * x - 3.9796E-004
R = 0.9993
DL = 0.04122
BEC = -0.2916

Weight: <None>
Min Conc: <None>

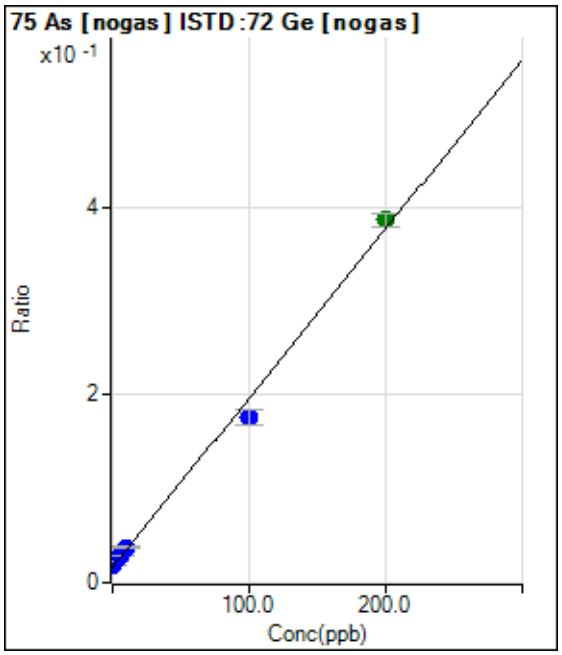


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	-0.433	563.35	0.0006	P	6.5
2	☐	2.000	1.652	3853.80	0.0045	P	4.1
3	☐	5.000	4.737	9412.56	0.0103	P	4.2
4	☐	10.000	9.705	18005.79	0.0196	P	2.3
5	☐	100.000	102.628	175642.15	0.1937	P	1.9
6	☐	200.000	198.711	333956.58	0.3738	P	0.2
7	☐	1.000					

y = 0.0019 * x + 0.0014
R = 0.9999
DL = 0.06244
BEC = 0.7554

Weight: <None>
Min Conc: <None>

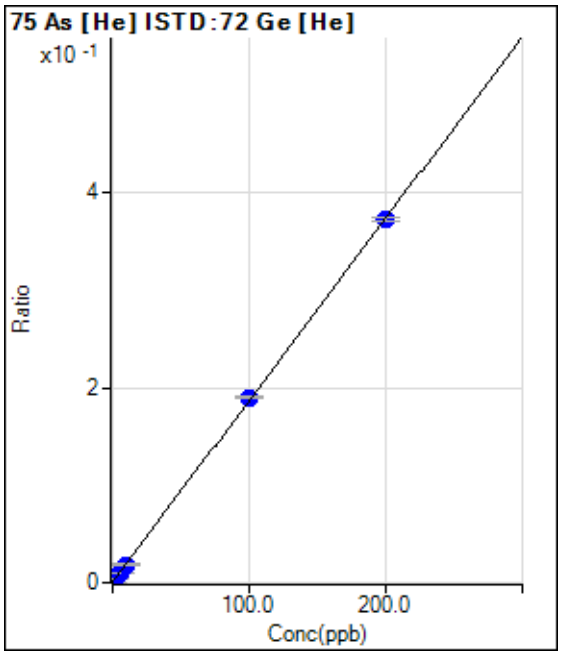
Calibration for 120_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	1.469	71607.15	0.0191	P	3.5
2	☐	2.000	3.150	83312.91	0.0221	P	3.0
3	☐	5.000	6.401	106612.70	0.0280	P	0.4
4	☐	10.000	11.644	138678.96	0.0374	P	5.1
5	☐	100.000	88.929	701969.65	0.1766	P	8.7
6	☐	200.000	205.407	1393140.50	0.3863	A	3.4
7	☐	1.000					

y = 0.0018 * x + 0.0165
R = 0.9976
DL = 1.114
BEC = 9.141

Weight: <None>
Min Conc: <None>

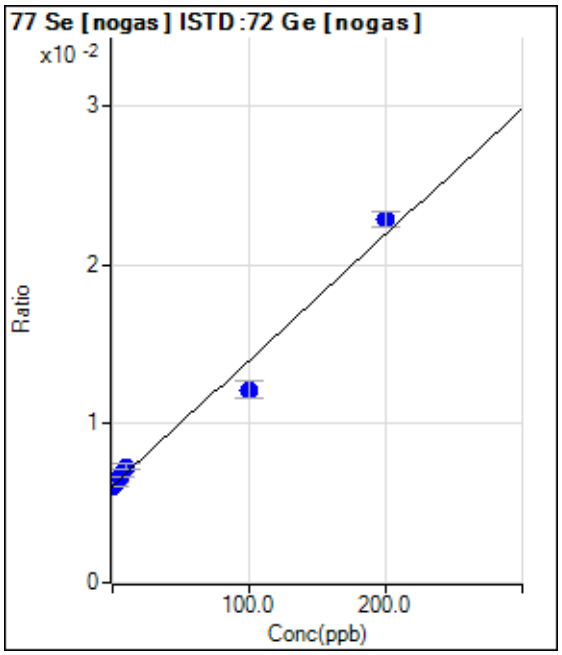


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	385.56	0.0004	P	4.4
2	☐	2.000	1.952	3460.34	0.0041	P	3.9
3	☐	5.000	4.737	8465.32	0.0092	P	3.8
4	☐	10.000	9.772	17122.49	0.0186	P	1.3
5	☐	100.000	101.405	171865.06	0.1895	P	1.1
6	☐	200.000	199.316	332505.81	0.3722	P	1.1
7	☐	1.000					

y = 0.0019 * x + 4.1343E-004
R = 1.0000
DL = 0.02958
BEC = 0.2217

Weight: <None>
Min Conc: <None>

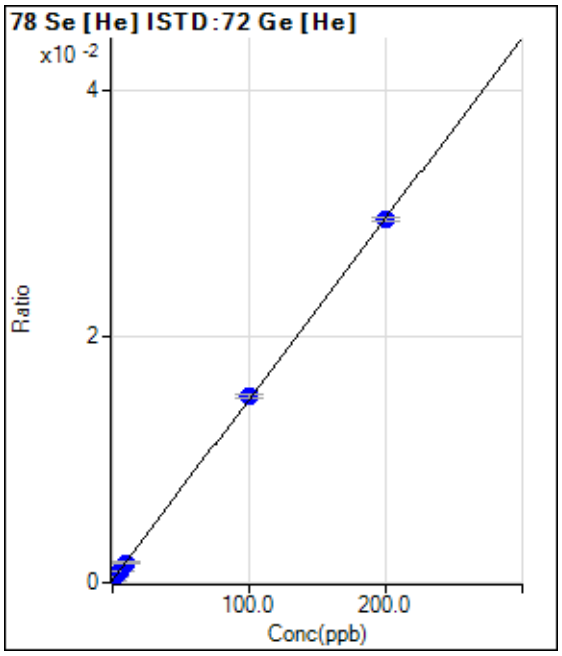
Calibration for 120_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	22877.96	0.0061	P	2.9
2	☐	2.000	0.819	23221.78	0.0062	P	3.3
3	☐	5.000	7.307	25454.81	0.0067	P	0.9
4	☐	10.000	15.311	27110.42	0.0073	P	4.3
5	☐	100.000	76.444	48290.73	0.0122	P	9.3
6	☐	200.000	211.467	82331.80	0.0228	P	4.4
7	☐	1.000					

y = 7.9131E-005 * x + 0.0061
R = 0.9897
DL = 6.723
BEC = 77.13

Weight: <None>
Min Conc: <None>

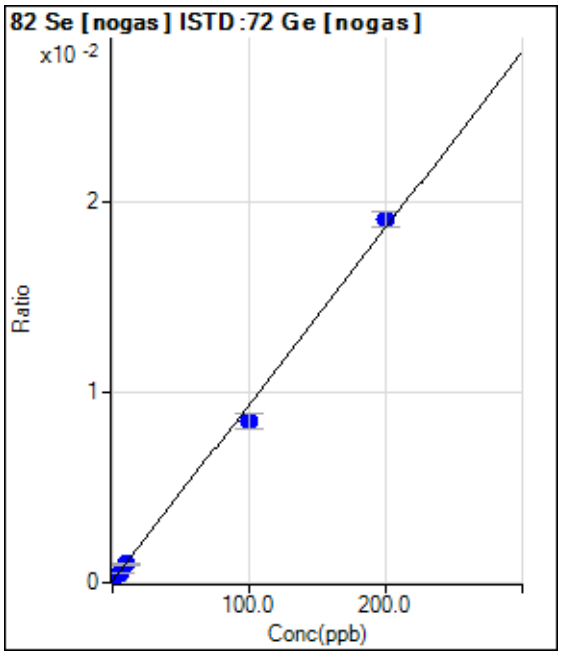


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	-0.082	191.33	0.0002	P	6.3
2	☐	2.000	1.925	426.67	0.0005	P	14.0
3	☐	5.000	4.874	853.36	0.0009	P	9.0
4	☐	10.000	9.454	1476.06	0.0016	P	4.3
5	☐	100.000	101.596	13734.52	0.0151	P	2.0
6	☐	200.000	199.233	26353.67	0.0295	P	1.2
7	☐	1.000					

y = 1.4696E-004 * x + 2.1735E-004
R = 0.9999
DL = 0.266
BEC = 1.479

Weight: <None>
Min Conc: <None>

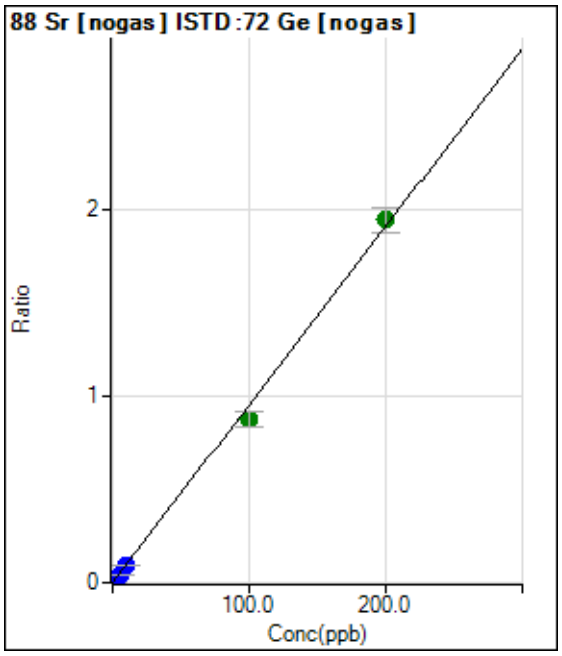
Calibration for 120_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	353.34	0.0001	P	31.1
2	☐	2.000	2.119	1093.38	0.0003	P	10.6
3	☐	5.000	4.562	1970.15	0.0005	P	2.1
4	☐	10.000	9.524	3623.75	0.0010	P	3.6
5	☐	100.000	90.818	33835.25	0.0085	P	9.2
6	☐	200.000	204.625	68730.39	0.0191	P	4.3
7	☐	1.000					

y = 9.2689E-005 * x + 9.4294E-005
R = 0.9985
DL = 0.9485
BEC = 1.017

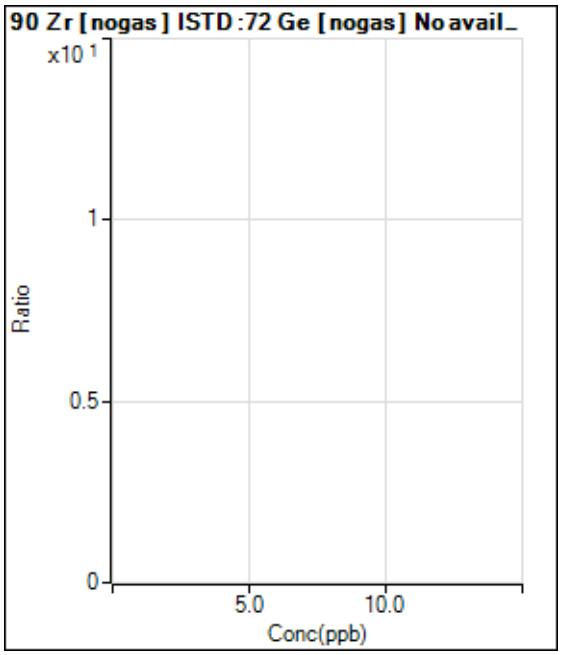
Weight: <None>
Min Conc: <None>



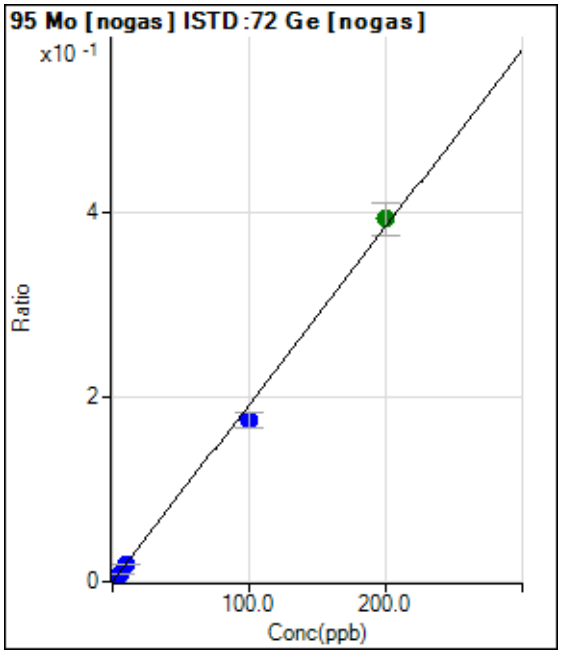
	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	3113.64	0.0008	P	2.2
2	☐	2.000	1.824	68611.58	0.0182	P	1.7
3	☐	5.000	4.737	175195.21	0.0460	P	0.4
4	☐	10.000	9.731	346853.76	0.0936	P	4.8
5	☐	100.000	92.207	3496361.41	0.8799	A	9.3
6	☐	200.000	203.918	7007486.15	1.9449	A	7.1
7	☐	1.000					

y = 0.0095 * x + 8.3061E-004
R = 0.9990
DL = 0.005765
BEC = 0.08712

Weight: <None>
Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000					
2	☐	2.000					
3	☐	5.000					
4	☐	10.000					
5	☐	100.000					
6	☐	200.000					
7	☐	1.000					

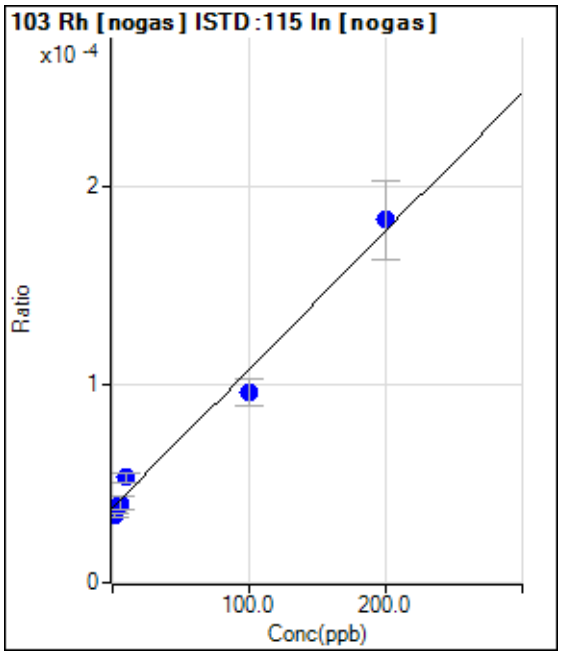


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	193.34	0.0001	P	15.6
2	☐	2.000	1.936	14202.57	0.0038	P	1.6
3	☐	5.000	4.731	34830.89	0.0091	P	0.5
4	☐	10.000	9.736	69478.79	0.0188	P	6.9
5	☐	100.000	90.796	693516.47	0.1745	P	9.2
6	☐	200.000	204.623	1416099.25	0.3932	A	8.7
7	☐	1.000					

y = 0.0019 * x + 5.1517E-005
R = 0.9985
DL = 0.01253
BEC = 0.02681

Weight: <None>
Min Conc: <None>

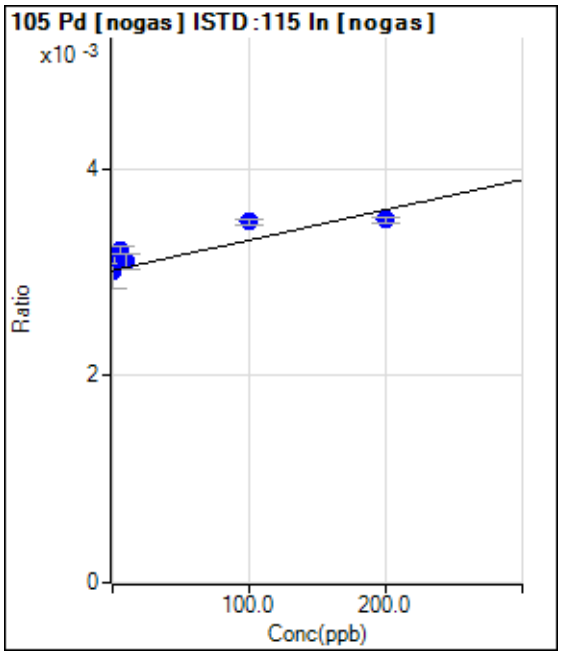
Calibration for 120_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	130.00	0.0000	P	10.8
2	☐	2.000	-5.488	113.33	0.0000	P	6.3
3	☐	5.000	2.891	136.67	0.0000	P	16.3
4	☐	10.000	21.752	180.00	0.0001	P	9.5
5	☐	100.000	83.379	340.01	0.0001	P	14.7
6	☐	200.000	207.850	610.02	0.0002	P	21.5
7	☐	1.000					

y = 6.9945E-007 * x + 3.8001E-005
R = 0.9924
DL = 17.55
BEC = 54.33

Weight: <None>
Min Conc: <None>

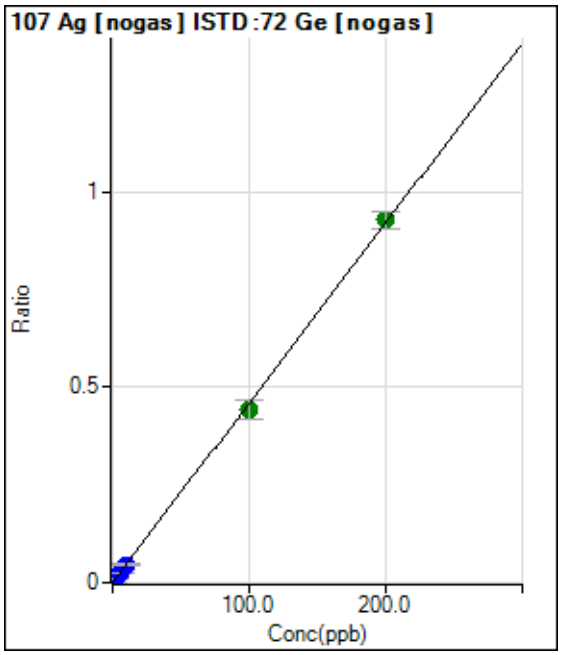


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	10329.82	0.0030	P	11.9
2	☐	2.000	39.020	10403.23	0.0031	P	2.5
3	☐	5.000	65.520	10956.87	0.0032	P	2.2
4	☐	10.000	29.807	10493.29	0.0031	P	4.5
5	☐	100.000	161.174	12351.24	0.0035	P	1.5
6	☐	200.000	166.540	11697.43	0.0035	P	1.5
7	☐	1.000					

y = 2.9266E-006 * x + 0.0030
R = 0.8932
DL = 369.8
BEC = 1032

Weight: <None>
Min Conc: <None>

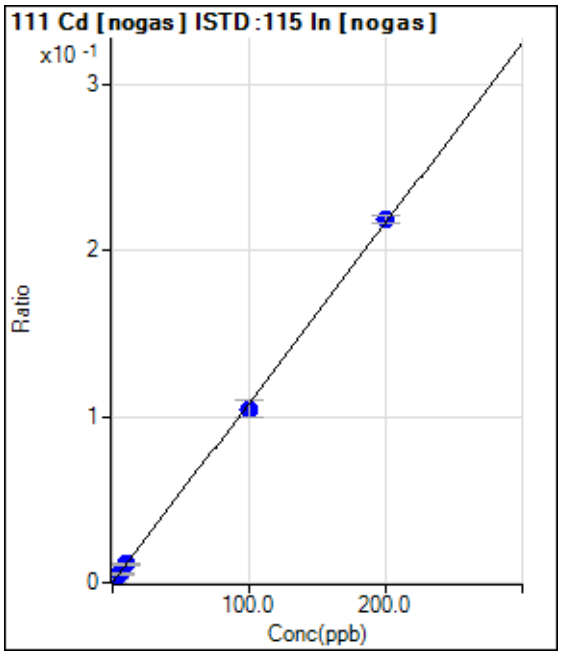
Calibration for 120_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	116.67	0.0000	P	30.1
2	☐	2.000	1.967	34217.02	0.0091	P	1.6
3	☐	5.000	4.963	87175.16	0.0229	P	1.9
4	☐	10.000	10.076	171954.85	0.0464	P	6.3
5	☐	100.000	96.394	1761628.46	0.4438	A	11.4
6	☐	200.000	201.801	3348880.89	0.9291	A	5.1
7	☐	1.000					

y = 0.0046 * x + 3.1138E-005
R = 0.9998
DL = 0.0061
BEC = 0.006764

Weight: <None>
Min Conc: <None>

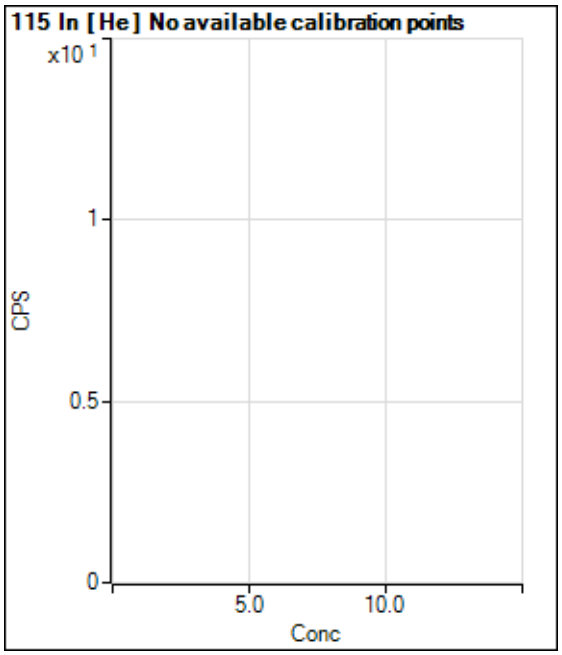


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	23.33	0.0000	P	66.0
2	☐	2.000	2.024	7304.97	0.0022	P	3.6
3	☐	5.000	4.929	18243.11	0.0053	P	5.5
4	☐	10.000	10.168	37249.93	0.0110	P	3.0
5	☐	100.000	96.502	367423.54	0.1046	P	9.9
6	☐	200.000	201.742	729108.50	0.2186	P	2.1
7	☐	1.000					

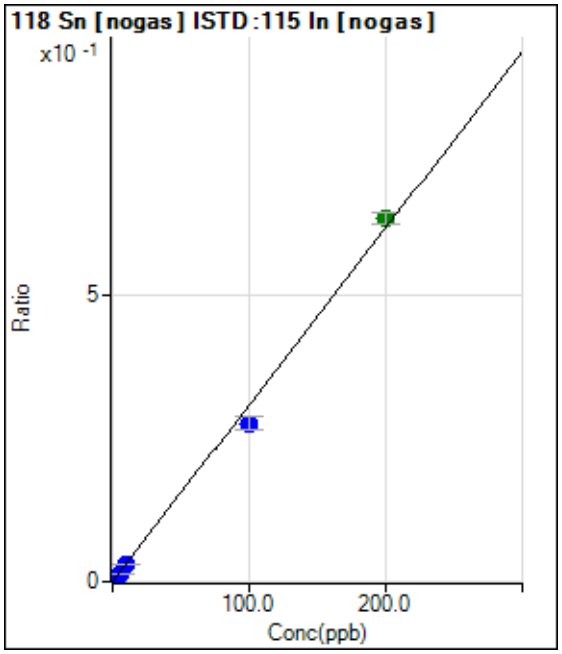
y = 0.0011 * x + 6.8687E-006
R = 0.9998
DL = 0.01255
BEC = 0.006339

Weight: <None>
Min Conc: <None>

Calibration for 120_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐			1119817.26		P	2.7
2	☐			997405.39		P	2.7
3	☐			1143242.06		P	1.4
4	☐			1101180.29		P	0.8
5	☐			1059772.03		P	2.6
6	☐			1037878.15		P	1.7
7	☐						

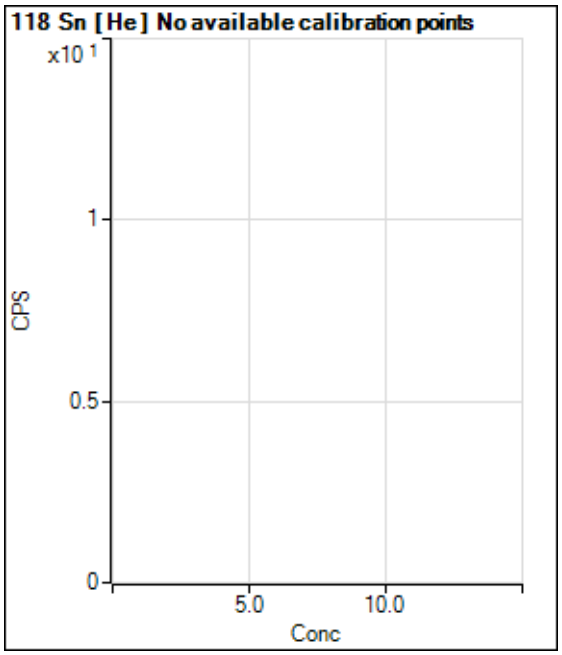


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	1260.07	0.0004	P	2.0
2	☐	2.000	1.926	20869.41	0.0063	P	2.2
3	☐	5.000	4.680	50346.25	0.0148	P	1.2
4	☐	10.000	9.416	99042.75	0.0293	P	3.5
5	☐	100.000	89.529	969438.42	0.2756	P	8.2
6	☐	200.000	205.274	2105469.29	0.6314	A	3.1
7	☐	1.000					

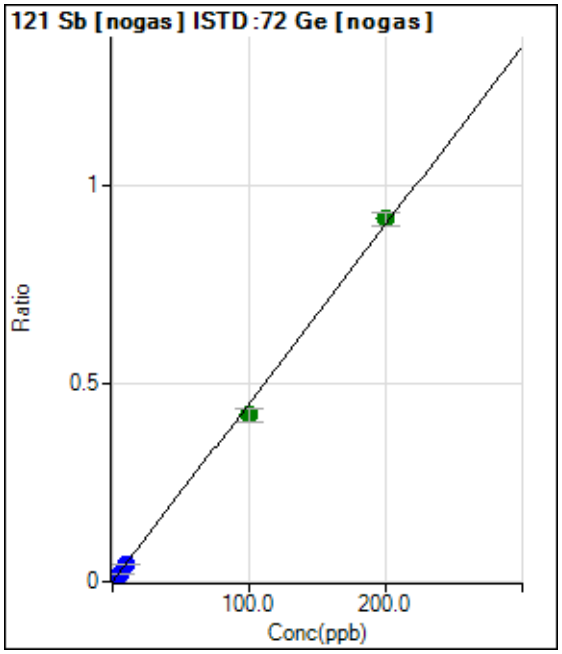
y = 0.0031 * x + 3.6719E-004
R = 0.9981
DL = 0.007118
BEC = 0.1194

Weight: <None>
Min Conc: <None>

Calibration for 120_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐			550.02		P	22.0
2	☐			7508.41		P	0.2
3	☐			18863.76		P	5.4
4	☐			38372.49		P	1.3
5	☐			375523.80		P	2.4
6	☐			743804.91		P	2.5
7	☐						

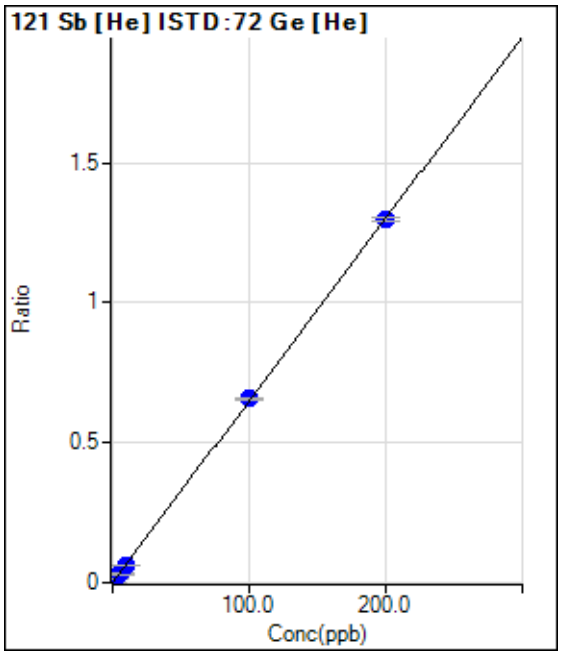


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	496.68	0.0001	P	19.6
2	☐	2.000	1.898	32754.43	0.0087	P	0.9
3	☐	5.000	4.615	79808.51	0.0209	P	0.9
4	☐	10.000	9.449	158452.70	0.0428	P	4.7
5	☐	100.000	93.412	1677415.81	0.4215	A	7.4
6	☐	200.000	203.332	3308210.16	0.9174	A	3.5
7	☐	1.000					

y = 0.0045 * x + 1.3222E-004
R = 0.9993
DL = 0.01727
BEC = 0.02931

Weight: <None>
Min Conc: <None>

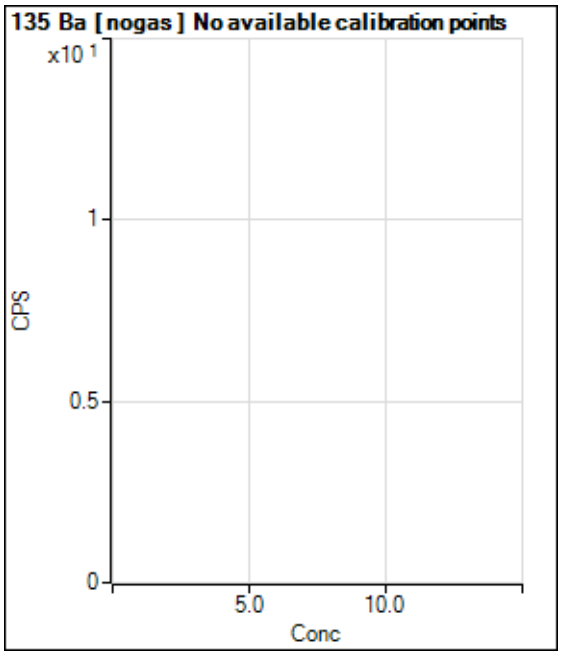
Calibration for 120_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	220.01	0.0002	P	10.0
2	☐	2.000	2.033	11497.23	0.0135	P	2.8
3	☐	5.000	4.767	28567.06	0.0312	P	2.0
4	☐	10.000	9.900	59330.96	0.0646	P	0.6
5	☐	100.000	101.175	596552.09	0.6579	P	1.4
6	☐	200.000	199.423	1158491.02	1.2965	P	0.9
7	☐	1.000					

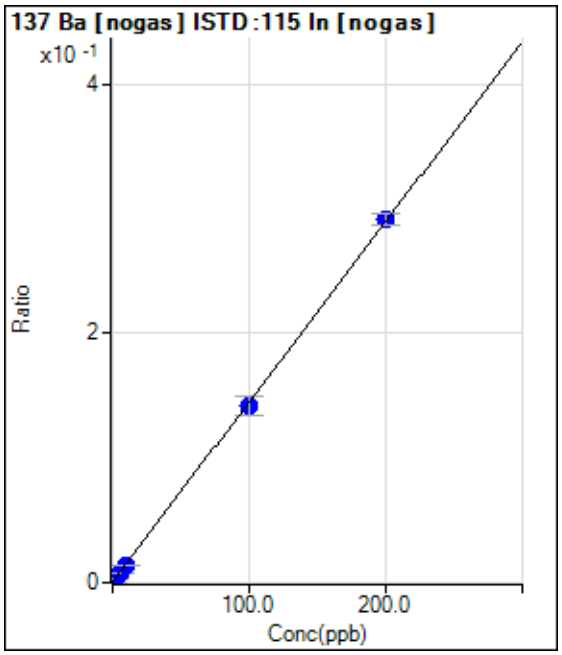
y = 0.0065 * x + 2.3614E-004
R = 1.0000
DL = 0.01095
BEC = 0.03633

Weight: <None>
Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐			990.05		P	14.9
2	☐			6321.27		P	2.8
3	☐			14696.42		P	1.8
4	☐			29271.78		P	2.1
5	☐			283891.69		P	0.7
6	☐			565658.60		P	1.8
7	☐						

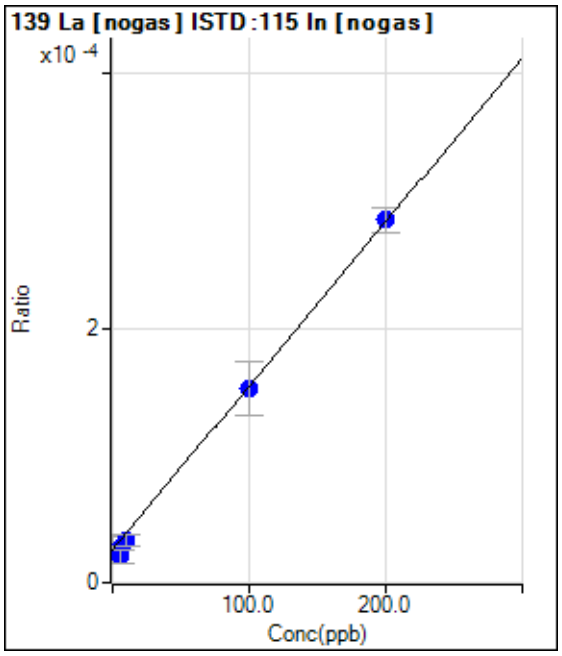
Calibration for 120_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	1686.78	0.0005	P	2.5
2	☐	2.000	1.912	10813.60	0.0033	P	5.3
3	☐	5.000	4.771	25225.51	0.0074	P	3.5
4	☐	10.000	9.715	49133.82	0.0145	P	1.7
5	☐	100.000	97.821	498152.86	0.1420	P	11.7
6	☐	200.000	201.111	971636.57	0.2913	P	3.1
7	☐	1.000					

y = 0.0014 * x + 4.9203E-004
R = 0.9999
DL = 0.02561
BEC = 0.3402

Weight: <None>
Min Conc: <None>

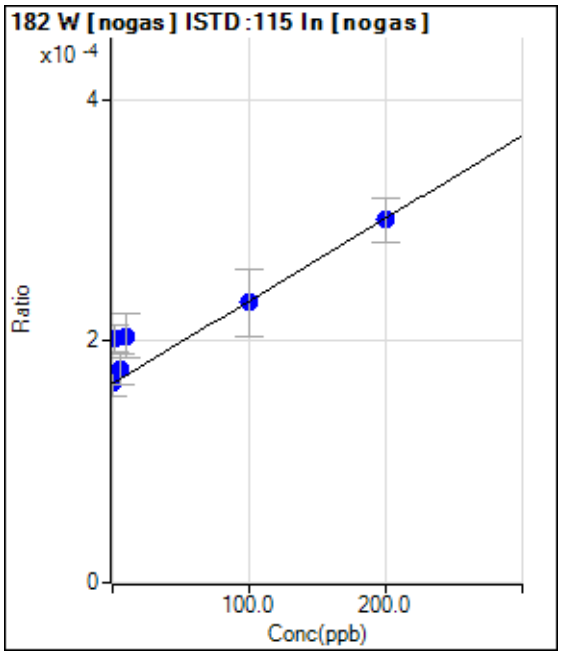


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	90.00	0.0000	P	80.3
2	☐	2.000	-1.375	80.00	0.0000	P	32.0
3	☐	5.000	-4.151	70.00	0.0000	P	48.8
4	☐	10.000	6.053	113.33	0.0000	P	27.9
5	☐	100.000	98.375	530.02	0.0002	P	27.1
6	☐	200.000	201.273	950.04	0.0003	P	7.2
7	☐	1.000					

y = 1.2882E-006 * x + 2.5823E-005
R = 0.9994
DL = 48.29
BEC = 20.05

Weight: <None>
Min Conc: <None>

Calibration for 120_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	563.35	0.0002	P	12.6
2	☐	2.000	54.285	670.03	0.0002	P	11.0
3	☐	5.000	17.529	603.35	0.0002	P	14.3
4	☐	10.000	58.015	690.03	0.0002	P	17.8
5	☐	100.000	97.655	813.36	0.0002	P	24.3
6	☐	200.000	197.936	1000.04	0.0003	P	12.1
7	☐	1.000					

y = 6.8409E-007 * x + 1.6472E-004

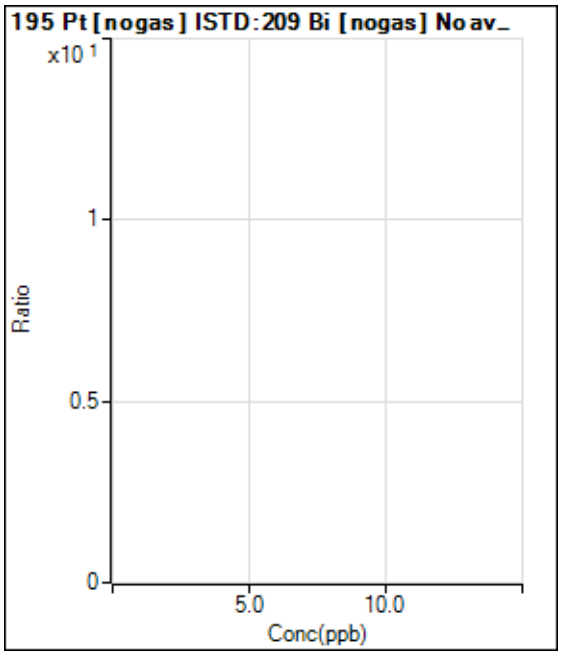
R = 0.9540

DL = 90.68

BEC = 240.8

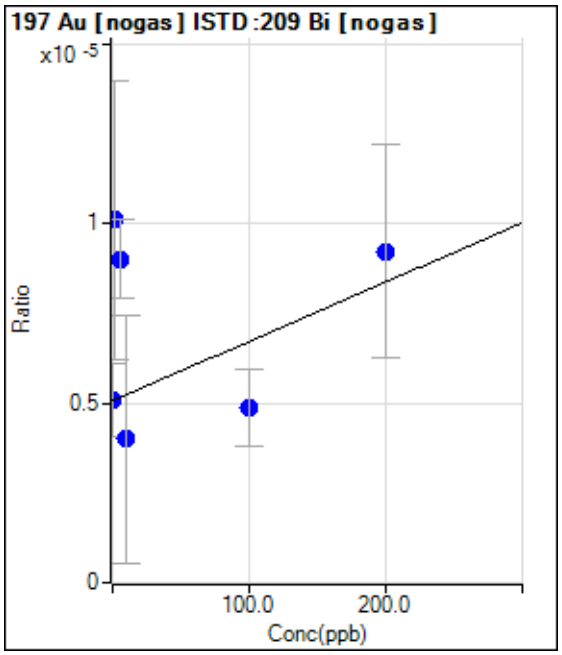
Weight: <None>

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000					
2	☐	2.000					
3	☐	5.000					
4	☐	10.000					
5	☐	100.000					
6	☐	200.000					
7	☐	1.000					

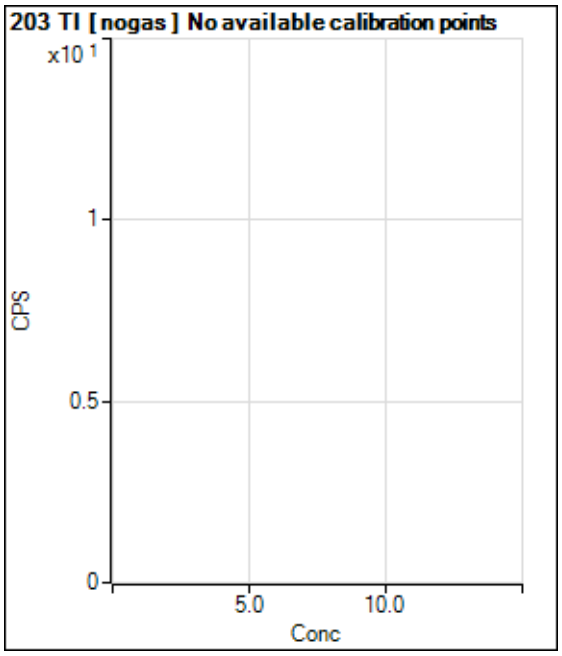
Calibration for 120_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	13.33	0.0000	P	40.0
2	☐	2.000	304.516	26.67	0.0000	P	76.7
3	☐	5.000	238.379	23.33	0.0000	P	24.2
4	☐	10.000	-64.698	10.00	0.0000	P	173.
5	☐	100.000	-12.180	13.33	0.0000	P	44.6
6	☐	200.000	250.965	23.33	0.0000	P	64.6
7	☐	1.000					

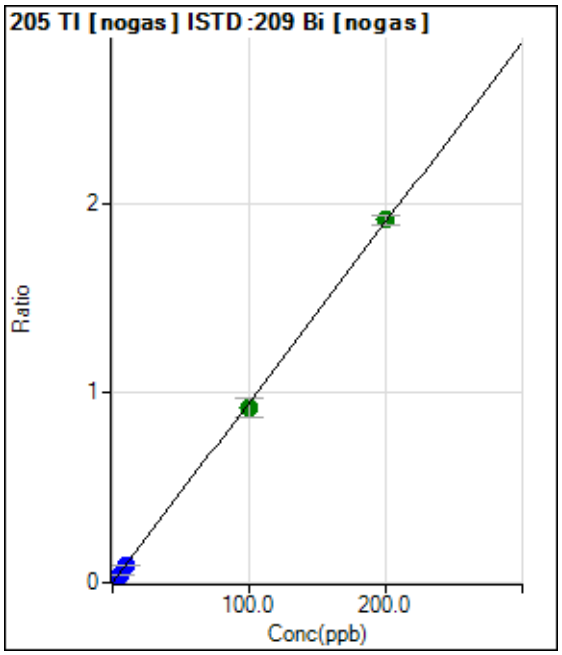
y = 1.6529E-008 * x + 5.0671E-006
R = 0.1851
DL = 367.5
BEC = 306.6

Weight: <None>
Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐			273.34		P	42.4
2	☐			18113.71		P	6.8
3	☐			49371.57		P	1.4
4	☐			98121.63		P	3.3
5	☐			1021839.10		P	4.3
6	☐			1982980.75		A	4.3
7	☐						

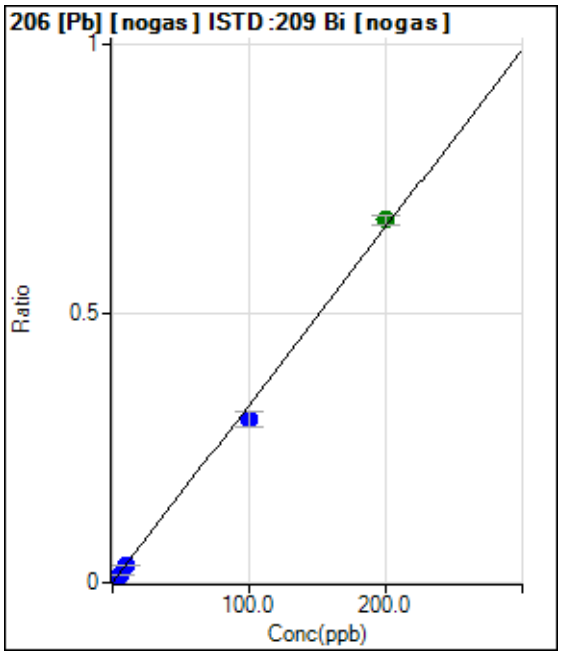
Calibration for 120_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	576.69	0.0002	P	10.3
2	☐	2.000	1.802	45752.05	0.0173	P	8.7
3	☐	5.000	4.629	114309.66	0.0442	P	2.9
4	☐	10.000	9.410	232892.85	0.0896	P	6.4
5	☐	100.000	97.373	2535757.72	0.9248	A	11.5
6	☐	200.000	201.354	4814085.24	1.9121	A	2.9
7	☐	1.000					

y = 0.0095 * x + 2.2048E-004
R = 0.9999
DL = 0.00718
BEC = 0.02322

Weight: <None>
Min Conc: <None>

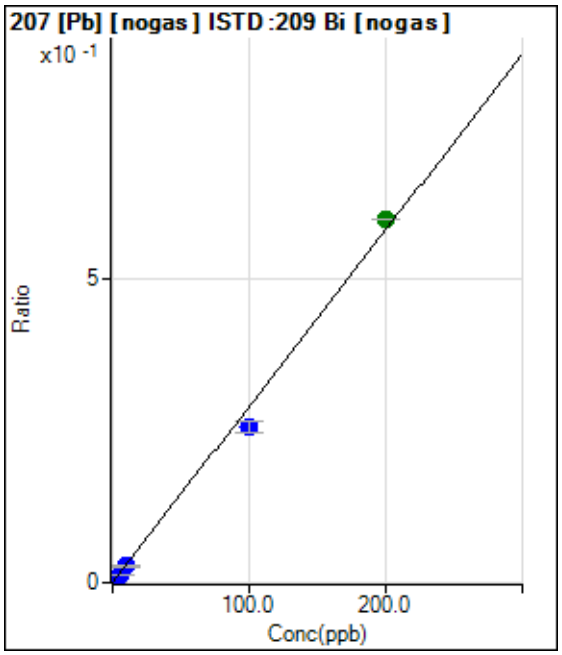


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	1390.08	0.0005	P	12.8
2	☐	2.000	1.853	17499.68	0.0066	P	9.9
3	☐	5.000	4.622	40774.71	0.0158	P	2.2
4	☐	10.000	9.296	81042.41	0.0311	P	3.7
5	☐	100.000	91.758	830877.57	0.3027	P	9.3
6	☐	200.000	204.167	1693524.24	0.6729	A	2.8
7	☐	1.000					

y = 0.0033 * x + 5.3120E-004
R = 0.9988
DL = 0.06195
BEC = 0.1613

Weight: <None>
Min Conc: <None>

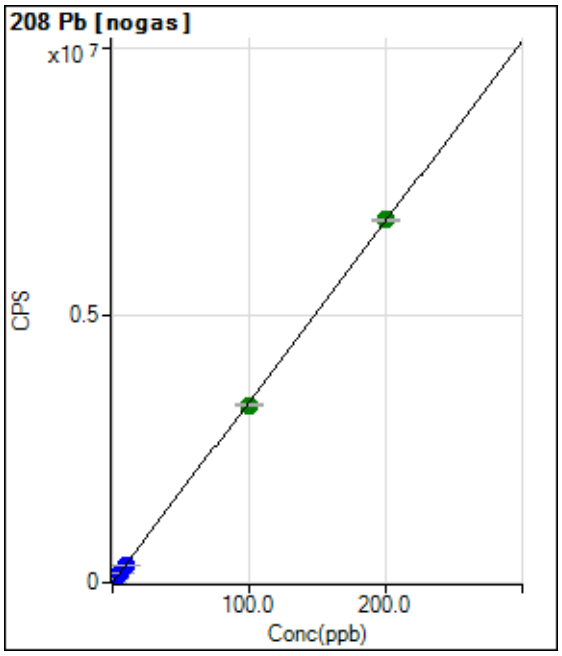
Calibration for 120_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	1186.73	0.0005	P	5.8
2	☐	2.000	1.881	15557.67	0.0059	P	4.1
3	☐	5.000	4.628	35799.60	0.0138	P	0.5
4	☐	10.000	9.209	70449.70	0.0271	P	2.2
5	☐	100.000	88.385	702776.71	0.2559	P	7.9
6	☐	200.000	205.858	1498847.69	0.5953	A	0.1
7	☐	1.000					

y = 0.0029 * x + 4.5427E-004
R = 0.9977
DL = 0.02749
BEC = 0.1572

Weight: <None>
Min Conc: <None>

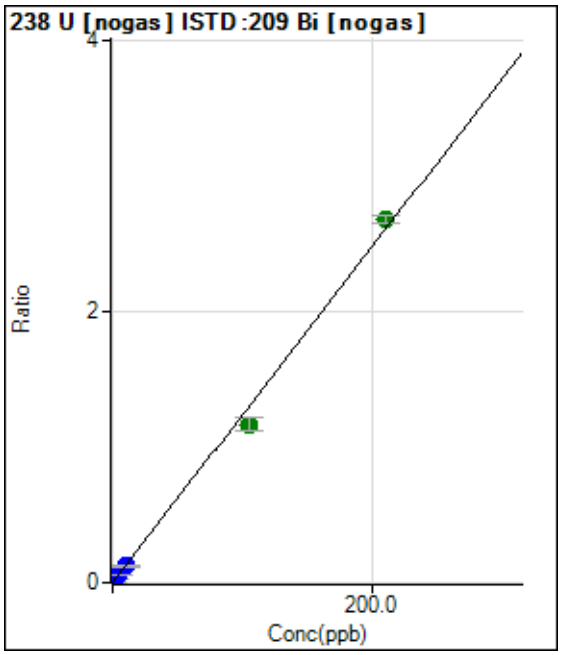


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	5393.77		P	7.9
2	☐	2.000	1.938	70805.11		P	3.5
3	☐	5.000	4.739	165350.08		P	1.4
4	☐	10.000	9.457	324581.78		P	0.1
5	☐	100.000	98.307	3323551.85		A	0.8
6	☐	200.000	200.881	6785737.08		A	0.7
7	☐	1.000					

y = 33753.0562 * x + 5393.7733
R = 1.0000
DL = 0.03782
BEC = 0.1598

Weight: <None>
Min Conc: <None>

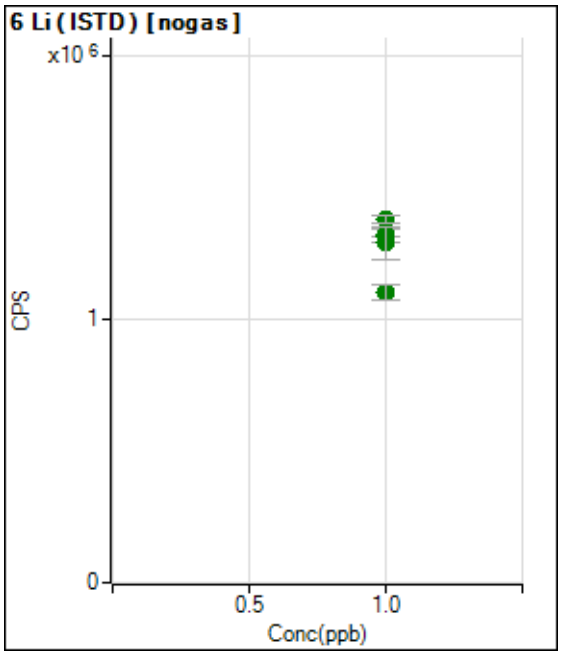
Calibration for 120_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	100.00	0.0000	P	51.6
2	☐	2.000	1.927	63363.11	0.0240	P	5.3
3	☐	5.000	4.770	153552.16	0.0593	P	1.6
4	☐	10.000	9.724	314491.64	0.1209	P	4.4
5	☐	105.000	93.854	3202947.66	1.1664	A	8.8
6	☐	210.000	215.592	6744279.48	2.6793	A	2.0
7	☐	1.000					

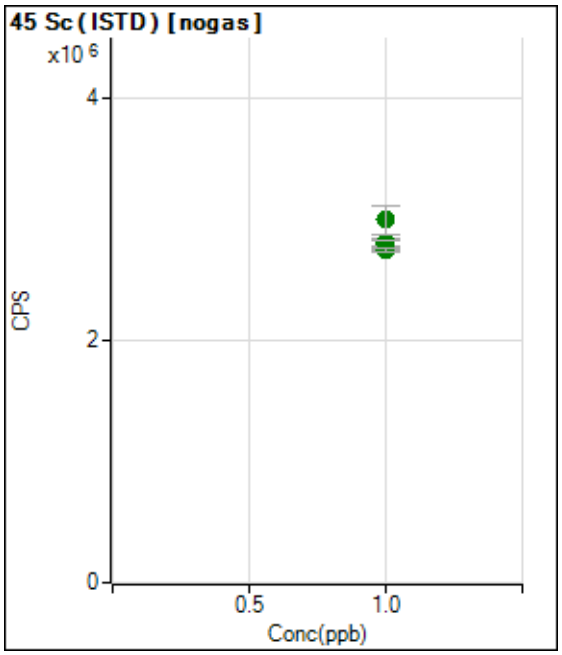
y = 0.0124 * x + 3.8643E-005
R = 0.9981
DL = 0.004811
BEC = 0.003109

Weight: <None>
Min Conc: <None>

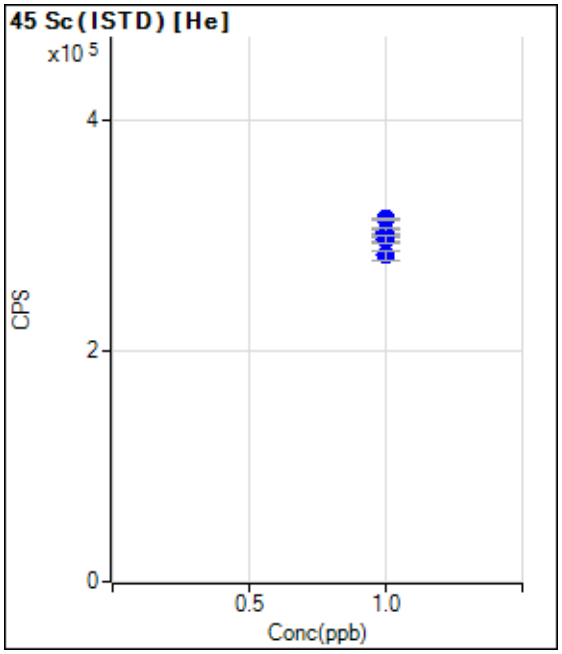


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	1.000		1314390.37		A	0.4
2	☐	1.000		1317270.38		A	3.7
3	☐	1.000		1377626.17		A	2.1
4	☐	1.000		1322917.80		A	4.4
5	☐	1.000		1290237.47		A	9.7
6	☐	1.000		1105158.47		A	5.3
7	☐	1.000					

Calibration for 120_ICV.d

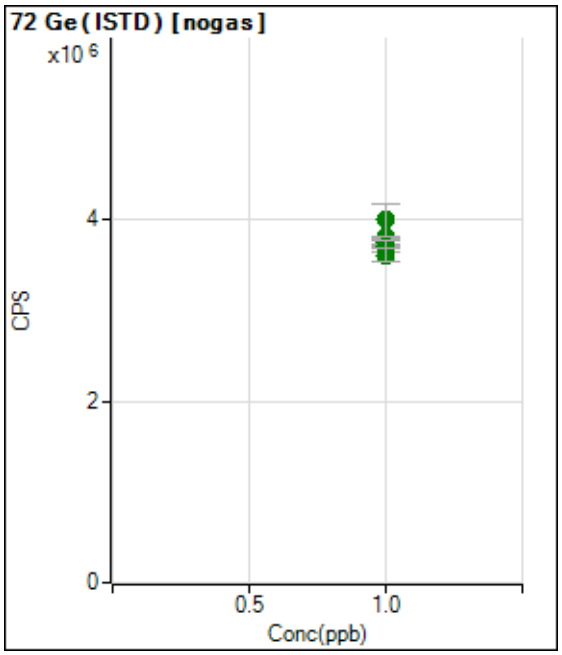


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	1.000		2783978.19		A	3.5
2	☐	1.000		2800984.86		A	4.4
3	☐	1.000		2778315.17		A	4.0
4	☐	1.000		2798131.52		A	1.7
5	☐	1.000		2990310.06		A	7.9
6	☐	1.000		2743023.40		A	1.6
7	☐	1.000					

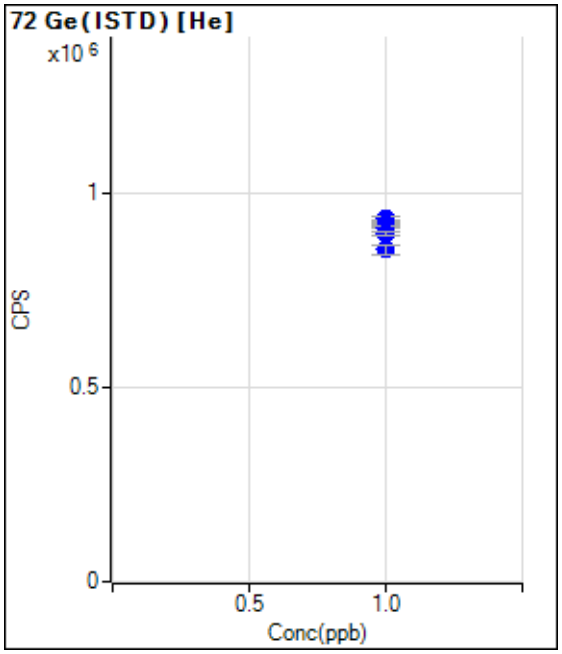


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	1.000		313970.13		P	0.2
2	☐	1.000		282729.39		P	2.9
3	☐	1.000		303592.29		P	1.0
4	☐	1.000		301539.11		P	2.3
5	☐	1.000		299904.75		P	4.1
6	☐	1.000		296129.82		P	2.7
7	☐	1.000					

Calibration for 120_ICV.d

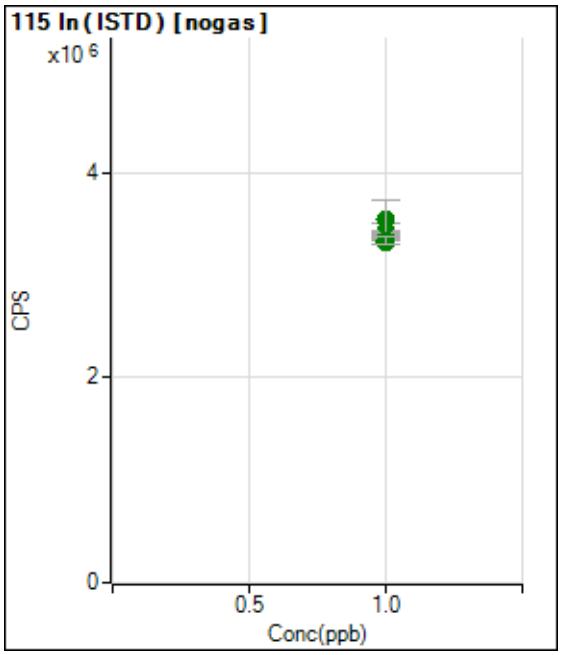


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	1.000		3749087.44		A	1.6
2	☐	1.000		3766342.55		A	3.0
3	☐	1.000		3809638.17		A	0.6
4	☐	1.000		3709870.36		A	3.6
5	☐	1.000		3995709.21		A	8.9
6	☐	1.000		3609329.84		A	3.9
7	☐	1.000					

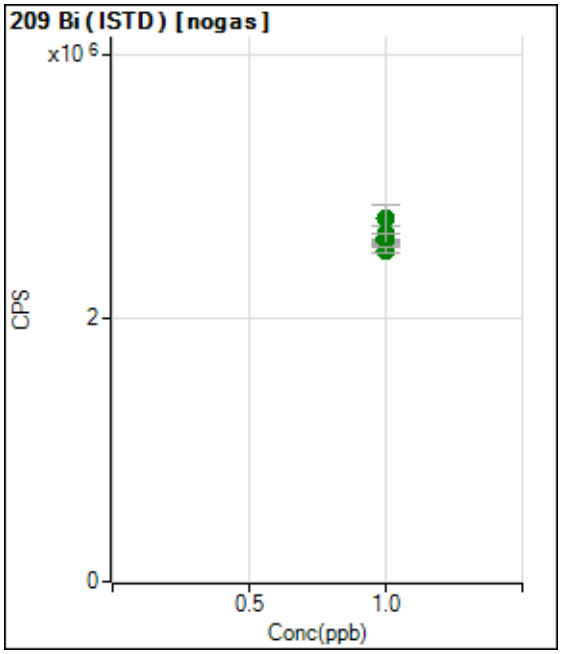


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	1.000		932298.29		P	1.1
2	☐	1.000		854328.66		P	2.9
3	☐	1.000		914940.19		P	1.5
4	☐	1.000		918643.08		P	0.2
5	☐	1.000		906835.79		P	1.2
6	☐	1.000		893528.81		P	0.9
7	☐	1.000					

Calibration for 120_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	1.000		3430302.93		A	4.5
2	☐	1.000		3319063.40		A	1.2
3	☐	1.000		3412253.64		A	0.7
4	☐	1.000		3379106.06		A	1.6
5	☐	1.000		3538119.58		A	10.6
6	☐	1.000		3336138.38		A	2.5
7	☐	1.000					



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	1.000		2610543.76		A	3.0
2	☐	1.000		2645255.58		A	4.8
3	☐	1.000		2588801.37		A	1.6
4	☐	1.000		2604429.80		A	3.7
5	☐	1.000		2758706.88		A	8.2
6	☐	1.000		2517695.38		A	1.8
7	☐	1.000					

Calibration Blank Report

Sample Table

Sample Name	CAL BLK
Data File Name	005CALB.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\121
Acq Date Time	2018-12-11T13:43:11-06:00
Sample Type	CalBlk
Level	1
Dilution	1
Comment	

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD
Be	9	1	nogas	30	222.22
Na	23	1	nogas	451541	0.00
Mg	24	1	nogas	10905	0.03
Al	27	1	nogas	23148	0.02
K	39	1	nogas	8726095	0.00
Ti	47	1	nogas	473	5.54
V	51	1	nogas	266969	0.00
Cr	52	1	nogas	51672	0.00
Mn	55	1	nogas	33871	0.01
Co	59	1	nogas	1583	0.27
Ni	60	1	nogas	977	1.60
Cu	63	1	nogas	865809	0.00
Zn	66	1	nogas	1223	0.23
As	75	1	nogas	59932	0.00
Sr	88	1	nogas	1920	0.33
Ag	107	1	nogas	113	19.59
Cd	111	1	nogas	13	859.23
Sb	121	1	nogas	450	1.78
Tl	205	1	nogas	3094	0.13
Pb	208	1	nogas	38785	0.01
[Pb]	206	1	nogas	9850	0.03
[Pb]	207	1	nogas	8229	0.02
Na	23	2	He	63603	0.00
Mg	24	2	He	713	2.02
Al	27	2	He	640	2.33
K	39	2	He	231642	0.00
Ca	43	2	He	43	81.35
Ca	44	2	He	3874	0.09
V	51	2	He	3985	0.05
Cr	52	2	He	6278	0.05
Mn	55	2	He	4704	0.15
Fe	56	2	He	14926	0.03
Co	59	2	He	500	1.83
Ni	60	2	He	297	6.85
Cu	63	2	He	279628	0.00
Zn	66	2	He	467	3.51
As	75	2	He	370	4.86
Se	78	2	He	193	8.11
B	11	1	nogas	125736	0.00
Si	28	1	nogas	1541733	0.00
Ca	43	1	nogas	1240	0.17
Ca	44	1	nogas	452775	0.00

Calibration Blank Report

Name	Mass	Tune Step	Tune Mode	CPS	%RSD
Fe	56	1	nogas	1874628	0.00
Se	77	1	nogas	19354	0.00
Se	82	1	nogas	447	1.90
Mo	95	1	nogas	170	21.61
Sn	118	1	nogas	1270	0.51
Ba	137	1	nogas	1257	0.68
Sb	121	2	He	260	2.56
Li	7	1	nogas	124754	0.00
P	31	1	nogas	128660	0.00
La	139	1	nogas	63	76.16

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD
Li	6	1	nogas	1244232	0.62
Ge	72	1	nogas	3426753	2.94
In	115	1	nogas	3101048	3.24
Bi	209	1	nogas	2417268	3.82
Ge	72	2	He	931587	1.76

Calibration Standard Report

Sample Table

Sample Name	2/10/200
Data File Name	006CALS.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\121
Acq Date Time	2018-12-11T13:45:15-06:00
Sample Type	CalStd
Level	2
Dilution	1
Comment	
ISTD Ref File Name	005CALB.d
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD
Be	9	1	nogas	16494	0.02
Na	23	1	nogas	5538932	0.00
Mg	24	1	nogas	3474042	0.00
Al	27	1	nogas	59798	0.00
K	39	1	nogas	12879220	0.00
Ti	47	1	nogas	4597	0.22
V	51	1	nogas	336610	0.00
Cr	52	1	nogas	100468	0.00
Mn	55	1	nogas	90725	0.00
Co	59	1	nogas	52529	0.00
Ni	60	1	nogas	12998	0.02
Cu	63	1	nogas	770991	0.00
Zn	66	1	nogas	11157	0.04
As	75	1	nogas	73542	0.00
Sr	88	1	nogas	64018	0.00
Ag	107	1	nogas	31612	0.01
Cd	111	1	nogas	6475	0.04
Sb	121	1	nogas	29675	0.01
Tl	205	1	nogas	47078	0.00
Pb	208	1	nogas	98062	0.00
[Pb]	206	1	nogas	24836	0.00
[Pb]	207	1	nogas	21788	0.01
Na	23	2	He	405135	0.00
Mg	24	2	He	195481	0.00
Al	27	2	He	1693	0.90
K	39	2	He	442088	0.00
Ca	43	2	He	650	3.57
Ca	44	2	He	13422	0.01
V	51	2	He	18226	0.01
Cr	52	2	He	22013	0.02
Mn	55	2	He	15744	0.00
Fe	56	2	He	1394317	0.00
Co	59	2	He	21660	0.01
Ni	60	2	He	5267	0.06
Cu	63	2	He	252070	0.00
Zn	66	2	He	3847	0.14
As	75	2	He	3767	0.04
Se	78	2	He	507	0.63
B	11	1	nogas	176241	0.00
Si	28	1	nogas	1622027	0.00

Calibration Standard Report

Ca	43	1	nogas	8926	0.04
Ca	44	1	nogas	570906	0.00
Name	Mass	Tune Step	Tune Mode	CPS	%RSD
Fe	56	1	nogas	6956359	0.00
Se	77	1	nogas	21226	0.01
Se	82	1	nogas	973	1.54
Mo	95	1	nogas	12088	0.02
Sn	118	1	nogas	18820	0.01
Ba	137	1	nogas	9930	0.02
Sb	121	2	He	11774	0.04
P	31	1	nogas	142529	0.00
La	139	1	nogas	37	113.62

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	1238410	3.40	1244232	99.53	70	125	
Ge	72	1	nogas	3406830	1.05	3426753	99.42	70	125	
In	115	1	nogas	3105120	4.14	3101048	100.13	70	125	
Bi	209	1	nogas	2453924	0.19	2417268	101.52	70	125	
Ge	72	2	He	912489	0.84	931587	97.95	70	125	

Calibration Standard Report

Sample Table

Sample Name	5/25/500
Data File Name	007CALS.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\121
Acq Date Time	2018-12-11T13:47:19-06:00
Sample Type	CalStd
Level	3
Dilution	1
Comment	
ISTD Ref File Name	005CALB.d
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD
Be	9	1	nogas	40834	0.00
Na	23	1	nogas	13259517	0.00
Mg	24	1	nogas	8464968	0.00
Al	27	1	nogas	124735	0.00
K	39	1	nogas	19071316	0.00
Ti	47	1	nogas	10216	0.06
V	51	1	nogas	431037	0.00
Cr	52	1	nogas	169832	0.00
Mn	55	1	nogas	181111	0.00
Co	59	1	nogas	131830	0.00
Ni	60	1	nogas	30853	0.01
Cu	63	1	nogas	727606	0.00
Zn	66	1	nogas	24370	0.01
As	75	1	nogas	92952	0.00
Sr	88	1	nogas	154727	0.00
Ag	107	1	nogas	80121	0.00
Cd	111	1	nogas	16618	0.01
Sb	121	1	nogas	73786	0.00
Tl	205	1	nogas	111573	0.00
Pb	208	1	nogas	183503	0.00
[Pb]	206	1	nogas	45868	0.00
[Pb]	207	1	nogas	40093	0.01
Na	23	2	He	908852	0.00
Mg	24	2	He	484989	0.00
Al	27	2	He	3380	0.16
K	39	2	He	755106	0.00
Ca	43	2	He	1550	0.56
Ca	44	2	He	27731	0.00
V	51	2	He	39517	0.00
Cr	52	2	He	44858	0.00
Mn	55	2	He	32402	0.00
Fe	56	2	He	3467170	0.00
Co	59	2	He	53311	0.00
Ni	60	2	He	13859	0.02
Cu	63	2	He	251771	0.00
Zn	66	2	He	9273	0.04
As	75	2	He	8667	0.03
Se	78	2	He	849	1.42
B	11	1	nogas	248292	0.00
Si	28	1	nogas	1813224	0.00

Calibration Standard Report

Ca	43	1	nogas	20675	0.01
Ca	44	1	nogas	753301	0.00
Name	Mass	Tune Step	Tune Mode	CPS	%RSD
Fe	56	1	nogas	14657144	0.00
Se	77	1	nogas	22467	0.00
Se	82	1	nogas	1860	0.34
Mo	95	1	nogas	31341	0.02
Sn	118	1	nogas	46676	0.00
Ba	137	1	nogas	22442	0.01
Sb	121	2	He	29121	0.00
P	31	1	nogas	175918	0.00
La	139	1	nogas	83	50.57

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	1197730	2.75	1244232	96.26	70	125	
Ge	72	1	nogas	3358693	1.92	3426753	98.01	70	125	
In	115	1	nogas	3072102	3.12	3101048	99.07	70	125	
Bi	209	1	nogas	2387037	2.60	2417268	98.75	70	125	
Ge	72	2	He	933448	2.20	931587	100.20	70	125	

Calibration Standard Report

Sample Table

Sample Name	10/50/1000
Data File Name	008CALS.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\121
Acq Date Time	2018-12-11T13:49:25-06:00
Sample Type	CalStd
Level	4
Dilution	1
Comment	
ISTD Ref File Name	005CALB.d
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD
Be	9	1	nogas	81565	0.00
Na	23	1	nogas	25987066	0.00
Mg	24	1	nogas	16864581	0.00
Al	27	1	nogas	220969	0.00
K	39	1	nogas	29029458	0.00
Ti	47	1	nogas	20285	0.01
V	51	1	nogas	577058	0.00
Cr	52	1	nogas	285571	0.00
Mn	55	1	nogas	345782	0.00
Co	59	1	nogas	255810	0.00
Ni	60	1	nogas	59232	0.00
Cu	63	1	nogas	740192	0.00
Zn	66	1	nogas	49036	0.00
As	75	1	nogas	125743	0.00
Sr	88	1	nogas	307968	0.00
Ag	107	1	nogas	158277	0.00
Cd	111	1	nogas	33192	0.01
Sb	121	1	nogas	145606	0.00
Tl	205	1	nogas	220495	0.00
Pb	208	1	nogas	332940	0.00
[Pb]	206	1	nogas	84113	0.00
[Pb]	207	1	nogas	72629	0.01
Na	23	2	He	1800769	0.00
Mg	24	2	He	955013	0.00
Al	27	2	He	6154	0.05
K	39	2	He	1297599	0.00
Ca	43	2	He	2970	0.20
Ca	44	2	He	53347	0.00
V	51	2	He	74112	0.00
Cr	52	2	He	81449	0.00
Mn	55	2	He	65426	0.00
Fe	56	2	He	6770902	0.00
Co	59	2	He	105082	0.00
Ni	60	2	He	26356	0.01
Cu	63	2	He	266280	0.00
Zn	66	2	He	17205	0.01
As	75	2	He	17266	0.01
Se	78	2	He	1578	0.27
B	11	1	nogas	369181	0.00
Si	28	1	nogas	2123306	0.00

Calibration Standard Report

Ca	43	1	nogas	39699	0.00
Ca	44	1	nogas	1052940	0.00
Name	Mass	Tune Step	Tune Mode	CPS	%RSD
Fe	56	1	nogas	26730469	0.00
Se	77	1	nogas	24834	0.01
Se	82	1	nogas	3420	0.12
Mo	95	1	nogas	63252	0.00
Sn	118	1	nogas	90641	0.00
Ba	137	1	nogas	44361	0.01
Sb	121	2	He	59435	0.00
P	31	1	nogas	219649	0.00
La	139	1	nogas	97	22.28

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	1310848	9.09	1244232	105.35	70	125	
Ge	72	1	nogas	3686579	10.08	3426753	107.58	70	125	
In	115	1	nogas	3424011	12.03	3101048	110.41	70	125	
Bi	209	1	nogas	2698156	7.64	2417268	111.62	70	125	
Ge	72	2	He	925868	1.15	931587	99.39	70	125	

Calibration Standard Report

Sample Table

Sample Name	100/500/10K
Data File Name	009CALS.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\121
Acq Date Time	2018-12-11T13:51:29-06:00
Sample Type	CalStd
Level	5
Dilution	1
Comment	
ISTD Ref File Name	005CALB.d
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD
Be	9	1	nogas	841414	0.00
Na	23	1	nogas	257198506	0.00
Mg	24	1	nogas	161688041	0.00
Al	27	1	nogas	2036701	0.00
K	39	1	nogas	214529788	0.00
Ti	47	1	nogas	203958	0.00
V	51	1	nogas	3122676	0.00
Cr	52	1	nogas	2489589	0.00
Mn	55	1	nogas	2981065	0.00
Co	59	1	nogas	2554175	0.00
Ni	60	1	nogas	575944	0.00
Cu	63	1	nogas	1988425	0.00
Zn	66	1	nogas	470556	0.00
As	75	1	nogas	655223	0.00
Sr	88	1	nogas	3071343	0.00
Ag	107	1	nogas	1556317	0.00
Cd	111	1	nogas	331574	0.00
Sb	121	1	nogas	1496396	0.00
Tl	205	1	nogas	2224732	0.00
Pb	208	1	nogas	3068946	0.00
[Pb]	206	1	nogas	748797	0.00
[Pb]	207	1	nogas	662705	0.00
Na	23	2	He	16649876	0.00
Mg	24	2	He	9465262	0.00
Al	27	2	He	55221	0.00
K	39	2	He	10463175	0.00
Ca	43	2	He	29263	0.00
Ca	44	2	He	493322	0.00
V	51	2	He	694365	0.00
Cr	52	2	He	755242	0.00
Mn	55	2	He	560626	0.00
Fe	56	2	He	68081154	0.00
Co	59	2	He	1031210	0.00
Ni	60	2	He	261098	0.00
Cu	63	2	He	845809	0.00
Zn	66	2	He	169579	0.00
As	75	2	He	167851	0.00
Se	78	2	He	14063	0.01
B	11	1	nogas	2607137	0.00
Si	28	1	nogas	7169477	0.00

Calibration Standard Report

Ca	43	1	nogas	379563	0.00
Ca	44	1	nogas	6498990	0.00
Name	Mass	Tune Step	Tune Mode	CPS	%RSD
Fe	56	1	nogas	256675572	0.00
Se	77	1	nogas	45848	0.00
Se	82	1	nogas	31615	0.00
Mo	95	1	nogas	624214	0.00
Sn	118	1	nogas	902376	0.00
Ba	137	1	nogas	439822	0.00
Sb	121	2	He	585404	0.00
P	31	1	nogas	1035224	0.00
La	139	1	nogas	467	0.70

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	1124095	3.09	1244232	90.34	70	125	
Ge	72	1	nogas	3393033	3.34	3426753	99.02	70	125	
In	115	1	nogas	3010638	3.79	3101048	97.08	70	125	
Bi	209	1	nogas	2318613	3.61	2417268	95.92	70	125	
Ge	72	2	He	910596	1.36	931587	97.75	70	125	

Calibration Standard Report

Sample Table

Sample Name	200/1000/20K
Data File Name	010CALS.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\121
Acq Date Time	2018-12-11T13:53:34-06:00
Sample Type	CalStd
Level	6
Dilution	1
Comment	
ISTD Ref File Name	005CALB.d
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD
Be	9	1	nogas	1692802	0.00
Na	23	1	nogas	516261878	0.00
Mg	24	1	nogas	327911449	0.00
Al	27	1	nogas	4124966	0.00
K	39	1	nogas	416169734	0.00
Ti	47	1	nogas	401088	0.00
V	51	1	nogas	5778226	0.00
Cr	52	1	nogas	4687289	0.00
Mn	55	1	nogas	5725479	0.00
Co	59	1	nogas	5167837	0.00
Ni	60	1	nogas	1140103	0.00
Cu	63	1	nogas	3467919	0.00
Zn	66	1	nogas	912116	0.00
As	75	1	nogas	1241404	0.00
Sr	88	1	nogas	6151052	0.00
Ag	107	1	nogas	3088224	0.00
Cd	111	1	nogas	656459	0.00
Sb	121	1	nogas	2943445	0.00
Tl	205	1	nogas	4335636	0.00
Pb	208	1	nogas	6080915	0.00
[Pb]	206	1	nogas	1535019	0.00
[Pb]	207	1	nogas	1332083	0.00
Na	23	2	He	33472885	0.00
Mg	24	2	He	18843177	0.00
Al	27	2	He	110049	0.00
K	39	2	He	20310353	0.00
Ca	43	2	He	56489	0.00
Ca	44	2	He	961308	0.00
V	51	2	He	1427357	0.00
Cr	52	2	He	1518998	0.00
Mn	55	2	He	1083686	0.00
Fe	56	2	He	133835681	0.00
Co	59	2	He	2082807	0.00
Ni	60	2	He	515993	0.00
Cu	63	2	He	1590812	0.00
Zn	66	2	He	325831	0.00
As	75	2	He	331837	0.00
Se	78	2	He	28051	0.01
B	11	1	nogas	5156287	0.00
Si	28	1	nogas	12997203	0.00

Calibration Standard Report

Ca	43	1	nogas	753106	0.00
Ca	44	1	nogas	12467719	0.00
Name	Mass	Tune Step	Tune Mode	CPS	%RSD
Fe	56	1	nogas	507804895	0.00
Se	77	1	nogas	74415	0.00
Se	82	1	nogas	64224	0.00
Mo	95	1	nogas	1230922	0.00
Sn	118	1	nogas	1872564	0.00
Ba	137	1	nogas	874799	0.00
Sb	121	2	He	1169166	0.00
P	31	1	nogas	2012513	0.00
La	139	1	nogas	910	0.97

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	1045360	4.28	1244232	84.02	70	125	
Ge	72	1	nogas	3308131	0.97	3426753	96.54	70	125	
In	115	1	nogas	2866940	2.08	3101048	92.45	70	125	
Bi	209	1	nogas	2265027	2.68	2417268	93.70	70	125	
Ge	72	2	He	870690	2.90	931587	93.46	70	125	

Sample Report

Sample Table

Sample Name	LLICV2
Data File Name	013SMPL.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\121
Acq Date Time	2018-12-11T13:59:45-06:00
Sample Type	Sample
Dilution	1
Comment	
ISTD Ref FileName	005CALB.d
Sample QC Pass/Fail	Pass
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
Be	9	1	nogas	1.827	1.827	14.78	16551	0.01	2000	
Na	23	1	nogas	190.892	190.892	6.42	5713746	0.00	200000	
Mg	24	1	nogas	198.748	198.748	6.26	3477980	0.01	200000	
Al	27	1	nogas	1.697	1.697	7.50	60176	0.00	2000	
K	39	1	nogas	194.118	194.118	20.31	13082816	0.00	200000	
Ti	47	1	nogas	1.999	1.999	14.99	4694	0.04	2000	
V	51	1	nogas	-0.439	-0.439	-103.48	259926	0.00	2000	
Cr	52	1	nogas	1.749	1.749	13.39	95900	0.00	2000	
Mn	55	1	nogas	1.794	1.794	13.49	88622	0.00	2000	
Co	59	1	nogas	1.937	1.937	6.91	54126	0.00	2000	
Ni	60	1	nogas	2.192	2.192	6.09	12584	0.02	2000	
Cu	63	1	nogas	-33.955	-33.955	-5.76	430215	-0.01	2000	
Zn	66	1	nogas	2.169	2.169	4.42	11530	0.02	2000	
As	75	1	nogas	0.653	0.653	99.43	64926	0.00	2000	
Sr	88	1	nogas	1.959	1.959	6.02	65329	0.00	2000	
Ag	107	1	nogas	1.978	1.978	5.44	32316	0.01	2000	
Cd	111	1	nogas	2.000	2.000	5.32	7198	0.03	2000	
Sb	121	1	nogas	1.973	1.973	5.80	31111	0.01	2000	
Tl	205	1	nogas	2.417	2.417	9.44	57995	0.00	2000	
Pb	208	1	nogas	1.568	1.568	2.61	86177	0.00	2000	
U	238	1	nogas	2.068	2.068	5.35	64094	0.00	2000	
[Pb]	206	1	nogas	1.572	1.572	6.12	22039	0.01	2000	
[Pb]	207	1	nogas	1.558	1.558	5.62	18758	0.01	2000	
Na	23	2	He	190.686	190.686	0.28	406838	0.05	200000	
Mg	24	2	He	192.585	192.585	1.81	196098	0.10	200000	
Al	27	2	He	2.143	2.143	2.74	1520	0.14	2000	
K	39	2	He	207.172	207.172	1.46	440454	0.05	200000	
Ca	43	2	He	186.279	186.279	8.65	613	30.37	200000	
Ca	44	2	He	181.808	181.808	2.77	13332	1.36	200000	
V	51	2	He	2.655	2.655	2.72	17062	0.02	2000	
Cr	52	2	He	1.869	1.869	0.77	21543	0.01	2000	
Mn	55	2	He	1.742	1.742	6.07	14943	0.01	2000	
Fe	56	2	He	201.920	201.920	2.75	1473141	0.01	200000	
Co	59	2	He	1.951	1.951	2.61	22320	0.01	2000	
Ni	60	2	He	2.378	2.378	7.76	5574	0.04	2000	
Cu	63	2	He	-10.639	-10.639	-1.42	149657	-0.01	2000	
Zn	66	2	He	1.999	1.999	2.73	3777	0.05	2000	
As	75	2	He	1.927	1.927	0.44	3818	0.05	2000	
Se	78	2	He	2.733	2.733	7.71	501	0.55	2000	
B	11	1	nogas	19.194	19.194	32.93	217761	0.01	2000	
Si	28	1	nogas	101.379	101.379	163.94	1693069	0.01	2000	
Ca	43	1	nogas	200.851	200.851	10.14	9212	2.18	200000	
Ca	44	1	nogas	148.680	148.680	43.28	556393	0.03	200000	
Fe	56	1	nogas	197.231	197.231	8.35	7174937	0.00	200000	
Se	77	1	nogas	-6.127	-6.127	-34.11	18016	-0.03	2000	
Se	82	1	nogas	1.483	1.483	45.73	947	0.16	2000	

Sample Report

Mo	95	1	nogas	2.143	2.143	8.26	14079	0.02	2000	
Sn	118	1	nogas	1.983	1.983	3.73	21407	0.01	2000	
Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
Ba	137	1	nogas	1.797	1.797	2.34	9860	0.02	2000	
Sb	121	2	He	1.916	1.916	0.92	12311	0.02	2000	
La	139	1	nogas	1.029	1.029	210.35	70	1.47	2000	
Au	197	1	nogas	-194.322	-194.322	-5.35	10	-1943.22	2000	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	1149990	14.71	1244232	92.43	70	125	
Ge	72	1	nogas	3508304	6.96	3426753	102.38	70	125	
In	115	1	nogas	3160639	0.87	3101048	101.92	70	125	
Bi	209	1	nogas	2368284	5.22	2417268	97.97	70	125	
Ge	72	2	He	944557	0.44	931587	101.39	70	125	

Low Level Initial Calibration Verification (LLICV) Report

Sample Table

Sample Name	LLICV5
Data File Name	014LICV.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\121
Acq Date Time	2018-12-11T14:01:49-06:00
Sample Type	LLICV
Dilution	1
Comment	
ISTD Ref File Name	005CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Exp Value	%Rec	%Low	%High	QC Flag
Be	9	1	nogas	3.996	0.561	39591	2.25	5	79.9	70	130	
Na	23	1	nogas	482.020	2.009	13463271	1.85	500	96.4	70	130	
Mg	24	1	nogas	501.900	2.591	8601841	1.55	500	100.4	70	130	
Al	27	1	nogas	4.555	5.694	120505	2.62	5	91.1	70	130	
K	39	1	nogas	488.265	4.688	19239698	0.85	500	97.7	70	130	
Ti	47	1	nogas	4.792	5.572	10516	2.12	5	95.8	70	130	
V	51	1	nogas	2.731	25.060	349495	5.15	5	54.6	70	130	LLICV Main CR1 Failed
Cr	52	1	nogas	4.735	4.800	168016	1.90	5	94.7	70	130	
Mn	55	1	nogas	4.729	2.834	175703	1.43	5	94.6	70	130	
Co	59	1	nogas	4.808	5.027	130786	1.69	5	96.2	70	130	
Ni	60	1	nogas	5.215	6.007	30479	3.58	5	104.3	70	130	
Cu	63	1	nogas	-30.879	-3.077	467283	1.61	5	-617.6	70	130	LLICV Main CR1 Failed
Zn	66	1	nogas	4.878	2.879	24366	2.88	5	97.6	70	130	
As	75	1	nogas	3.718	4.613	83326	2.28	5	74.4	70	130	
Sr	88	1	nogas	4.830	1.482	156820	1.97	5	96.6	70	130	
Ag	107	1	nogas	4.818	3.257	77812	0.45	5	96.4	70	130	
Cd	111	1	nogas	4.587	1.947	16555	2.37	5	91.7	70	130	
Sb	121	1	nogas	4.703	3.089	72868	1.61	5	94.1	70	130	
Tl	205	1	nogas	4.681	4.237	111603	4.61	5	93.6	70	130	
Pb	208	1	nogas	4.423	0.604	172473	0.47	5	88.5	70	130	
U	238	1	nogas	4.744	1.206	150117	2.00	5	94.9	70	130	
[Pb]	206	1	nogas	4.134	0.779	43231	1.31	5	82.7	70	130	
[Pb]	207	1	nogas	4.104	2.425	37093	2.54	5	82.1	70	130	
Na	23	2	He	477.354	2.543	908734	1.00	500	95.5	70	130	
Mg	24	2	He	480.563	2.372	481512	1.08	500	96.1	70	130	
Al	27	2	He	5.428	7.512	3414	6.72	5	108.6	70	130	
K	39	2	He	521.781	1.893	757554	1.31	500	104.4	70	130	
Ca	43	2	He	476.034	10.397	1480	11.70	500	95.2	70	130	
Ca	44	2	He	483.937	3.684	28555	2.17	500	96.8	70	130	
V	51	2	He	5.535	1.989	38570	0.46	5	110.7	70	130	
Cr	52	2	He	4.820	2.841	44888	2.51	5	96.4	70	130	
Mn	55	2	He	4.657	4.365	31537	4.41	5	93.1	70	130	
Fe	56	2	He	486.123	2.373	3477183	2.24	500	97.2	70	130	
Co	59	2	He	4.717	2.631	52509	1.44	5	94.3	70	130	
Ni	60	2	He	5.342	4.504	13642	2.91	5	106.8	70	130	
Cu	63	2	He	-7.855	-8.833	167588	1.05	5	-157.1	70	130	LLICV Main CR1 Failed
Zn	66	2	He	4.876	4.777	8732	4.73	5	97.5	70	130	
As	75	2	He	4.834	2.277	8889	2.00	5	96.7	70	130	
Se	78	2	He	5.475	11.817	900	9.77	5	109.5	70	130	
B	11	1	nogas	22.675	5.069	259065	1.02	25	90.7	70	130	
Si	28	1	nogas	280.474	29.433	1895751	2.27	25	1121.9	70	130	LLICV Main CR1 Failed
Ca	43	1	nogas	498.011	1.890	20815	2.12	500	99.6	70	130	
Ca	44	1	nogas	448.384	8.685	740011	0.21	500	89.7	70	130	
Fe	56	1	nogas	480.246	2.900	14590918	2.00	500	96.0	70	130	
Se	77	1	nogas	-1.842	-184.861	19057	1.93	5	-36.8	70	130	LLICV Main CR1 Failed
Se	82	1	nogas	4.156	4.516	1830	6.21	5	83.1	70	130	
Mo	95	1	nogas	4.894	2.877	31675	2.25	5	97.9	70	130	
Sn	118	1	nogas	4.534	3.100	47481	2.27	5	90.7	70	130	
Ba	137	1	nogas	4.545	3.994	23069	3.45	5	90.9	70	130	
Sb	121	2	He	4.791	4.533	29966	3.38	5	95.8	70	130	
Li	7	1	nogas	3.652	10.764	196815	2.24	5	73.0	70	130	
P	31	1	nogas	20.938	6.928	171237	1.71	25	83.8	70	130	
La	139	1	nogas	7.442	48.214	100	17.32	5	148.8	70	130	LLICV Main CR1 Failed
Au	197	1	nogas	-264.758	-42.413	7	86.60	5	-5295.2	70	130	LLICV Main CR1 Failed

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	1240786	1.75	1244232	99.72	70	125	
Ge	72	1	nogas	3470039	3.34	3426753	101.26	70	125	
In	115	1	nogas	3173480	1.35	3101048	102.34	70	125	
Bi	209	1	nogas	2421211	0.80	2417268	100.16	70	125	

Low Level Initial Calibration Verification (LLICV) Report

Ge	72	2	He	931735	1.92	931587	100.02	70	125	

Initial Calibration Blank (ICB) Report

Sample Table

Sample Name	ICB
Data File Name	015_ICB.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\121
Acq Date Time	2018-12-11T14:03:53-06:00
Sample Type	ICB
Dilution	1
Comment	
ISTD Ref File Name	005CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Be	9	1	nogas	0.011	30.1	140	25.8	1	
Na	23	1	nogas	1.024	14.0	467467	2.5	100	
Mg	24	1	nogas	0.503	30.6	18980	14.4	100	
Al	27	1	nogas	-0.178	-21.0	19160	3.7	5	
K	39	1	nogas	0.035	26593.7	8617875	0.6	100	
Ti	47	1	nogas	0.026	86.1	520	10.2	2.5	
V	51	1	nogas	-1.854	-6.1	211256	3.0	2.5	
Cr	52	1	nogas	-0.178	-29.8	46792	2.7	2.5	
Mn	55	1	nogas	-0.213	-26.7	27227	5.5	2.5	
Co	59	1	nogas	0.001	1920.7	1577	15.9	2.5	
Ni	60	1	nogas	0.278	3.0	1040	5.1	2.5	
Cu	63	1	nogas	-39.068	-1.2	349846	0.4	2.5	
Zn	66	1	nogas	0.057	28.9	1283	5.7	2.5	
As	75	1	nogas	-1.378	-15.1	50507	1.3	2.5	
Sr	88	1	nogas	-0.005	-75.3	1753	5.2	2.5	
Ag	107	1	nogas	0.006	73.4	213	33.3	2.5	
Cd	111	1	nogas	0.012	68.9	57	50.9	1	
Sb	121	1	nogas	0.036	29.2	983	17.4	2.5	
Tl	205	1	nogas	0.031	94.3	3814	19.6	1	
Pb	208	1	nogas	-0.537	-2.5	22566	1.8	2.5	
U	238	1	nogas	0.005	72.4	507	25.5	2.5	
[Pb]	206	1	nogas	-0.494	-7.5	5841	4.4	2.5	
[Pb]	207	1	nogas	-0.480	-12.1	4841	6.4	2.5	
Na	23	2	He	1.366	44.5	65349	2.2	100	
Mg	24	2	He	0.433	47.2	1133	15.5	100	
Al	27	2	He	0.668	11.4	633	8.1	5	
K	39	2	He	-2.874	-95.9	228745	1.2	100	
Ca	43	2	He	-11.022	-29.9	10	100.0	100	
Ca	44	2	He	-9.257	-18.6	3367	2.1	100	
V	51	2	He	0.868	1.8	3294	1.4	2.5	
Cr	52	2	He	-0.043	-149.1	5871	9.2	2.5	
Mn	55	2	He	-0.139	-21.8	3864	4.1	2.5	
Fe	56	2	He	0.513	20.5	18383	4.1	100	
Co	59	2	He	-0.002	-555.5	473	29.6	2.5	
Ni	60	2	He	0.490	5.9	303	23.4	2.5	
Cu	63	2	He	-14.499	-1.3	118603	1.8	2.5	
Zn	66	2	He	0.091	53.8	400	22.9	2.5	
As	75	2	He	-0.004	-95.9	360	2.8	2.5	
Se	78	2	He	0.866	18.1	215	11.5	2.5	
B	11	1	nogas	1.301	123.0	129132	2.0	10	
Si	28	1	nogas	21.202	71.9	1548112	2.3	5	ICB Main CR1 Failed
Ca	43	1	nogas	2.588	89.2	1323	5.6	100	
Ca	44	1	nogas	-21.853	-76.3	433840	1.8	100	
Fe	56	1	nogas	2.361	147.6	1911313	3.0	100	

Initial Calibration Blank (ICB) Report

Se	77	1	nogas	-7.990	-5.6	16871	2.3	2.5	
Se	82	1	nogas	-0.322	-17.4	337	6.2	2.5	
Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Mo	95	1	nogas	0.044	29.9	443	18.2	2.5	
Sn	118	1	nogas	0.964	2.6	10844	3.1	5	
Ba	137	1	nogas	-0.167	-3.3	473	4.4	2.5	
Sb	121	2	He	0.021	33.7	387	12.2	2.5	
P	31	1	nogas	-2.984	-75.0	121369	2.4	10	
La	139	1	nogas	-11.204	-11.9	13	43.3	2.5	
Au	197	1	nogas	195.588	199.0	30	66.7	2.5	ICB Main CR1 Failed

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	1206978	5.14	1244232	97.01	70	125	
Ge	72	1	nogas	3383404	1.73	3426753	98.73	70	125	
In	115	1	nogas	3092694	1.48	3101048	99.73	70	125	
Bi	209	1	nogas	2406828	2.02	2417268	99.57	70	125	
Ge	72	2	He	922008	2.25	931587	98.97	70	125	

Initial Calibration Verification (ICV) Report

Sample Table

Sample Name	ICV
Data File Name	017_ICV.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\121
Acq Date Time	2018-12-11T14:15:03-06:00
Sample Type	ICV
Dilution	1
Comment	
ISTD Ref File Name	005CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Exp Value	%Rec	%Low	%High	QC Flag
Be	9	1	nogas	97.109	3.321	822171	1.32	100	97.1	90	110	
Na	23	1	nogas	9927.493	0.615	258018589	0.88	10000	99.3	90	110	
Mg	24	1	nogas	10194.618	1.131	167824029	1.69	10000	101.9	90	110	
Al	27	1	nogas	102.397	4.210	2131135	1.50	100	102.4	90	110	
K	39	1	nogas	10194.976	3.732	218439188	3.27	10000	101.9	90	110	
Ti	47	1	nogas	100.485	5.032	203842	2.46	100	100.5	90	110	
V	51	1	nogas	100.524	2.785	3077481	0.33	100	100.5	90	110	
Cr	52	1	nogas	101.573	3.995	2447588	1.84	100	101.6	90	110	
Mn	55	1	nogas	103.130	4.779	3011877	3.37	100	103.1	90	110	
Co	59	1	nogas	100.844	1.986	2620818	1.11	100	100.8	90	110	
Ni	60	1	nogas	100.607	2.083	578991	1.01	100	100.6	90	110	
Cu	63	1	nogas	75.389	8.211	1812282	1.90	100	75.4	90	110	ICV Main CR1 Failed
Zn	66	1	nogas	101.935	2.444	471785	0.47	100	101.9	90	110	
As	75	1	nogas	99.716	2.477	654064	1.28	100	99.7	90	110	
Sr	88	1	nogas	99.880	6.286	3093187	3.60	100	99.9	90	110	
Ag	107	1	nogas	104.025	5.594	1620191	2.98	100	104.0	90	110	
Cd	111	1	nogas	102.231	2.069	333396	1.24	100	102.2	90	110	
Sb	121	1	nogas	98.222	3.834	1461243	1.26	100	98.2	90	110	
Tl	205	1	nogas	100.944	0.588	2217228	1.08	100	100.9	90	110	
Pb	208	1	nogas	98.917	1.336	3028693	1.32	100	98.9	90	110	
U	238	1	nogas	104.474	3.418	3121958	2.96	100	104.5	90	110	
[Pb]	206	1	nogas	96.972	0.734	750014	0.34	100	97.0	90	110	
[Pb]	207	1	nogas	97.641	1.754	657324	1.37	100	97.6	90	110	
Na	23	2	He	9482.022	0.750	16905565	0.63	10000	94.8	90	110	
Mg	24	2	He	9489.005	2.403	9524222	1.72	10000	94.9	90	110	
Al	27	2	He	96.510	1.552	56675	1.30	100	96.5	90	110	
K	39	2	He	10198.592	1.603	10510989	1.57	10000	102.0	90	110	
Ca	43	2	He	9640.604	2.918	29197	2.71	10000	96.4	90	110	
Ca	44	2	He	9525.709	0.833	491316	1.40	10000	95.3	90	110	
V	51	2	He	94.035	2.033	709124	1.35	100	94.0	90	110	
Cr	52	2	He	93.875	1.397	760585	0.60	100	93.9	90	110	
Mn	55	2	He	96.348	2.157	561395	1.22	100	96.3	90	110	
Fe	56	2	He	9403.401	2.534	67186592	1.43	10000	94.0	90	110	
Co	59	2	He	93.476	0.904	1034517	0.31	100	93.5	90	110	
Ni	60	2	He	95.342	1.473	261946	1.31	100	95.3	90	110	
Cu	63	2	He	76.536	1.614	776959	0.25	100	76.5	90	110	ICV Main CR1 Failed
Zn	66	2	He	96.416	2.061	168558	1.22	100	96.4	90	110	
As	75	2	He	94.971	0.211	168249	1.41	100	95.0	90	110	
Se	78	2	He	95.298	2.401	14268	1.19	100	95.3	90	110	
B	11	1	nogas	503.221	3.736	2639908	0.76	500	100.6	90	110	
Si	28	1	nogas	4970.433	1.449	7250337	1.53	5000	99.4	90	110	
Ca	43	1	nogas	10084.107	3.774	383652	1.11	10000	100.8	90	110	
Ca	44	1	nogas	10029.748	3.976	6528141	1.95	10000	100.3	90	110	
Fe	56	1	nogas	9935.297	2.454	255527139	2.20	10000	99.4	90	110	
Se	77	1	nogas	93.112	4.119	44906	0.42	100	93.1	90	110	
Se	82	1	nogas	96.622	3.521	31347	0.89	100	96.6	90	110	
Mo	95	1	nogas	100.084	6.776	622136	4.32	100	100.1	90	110	
Sn	118	1	nogas	96.509	1.486	890303	1.42	100	96.5	90	110	
Ba	137	1	nogas	102.111	0.780	443896	1.67	100	102.1	90	110	
Sb	121	2	He	94.851	2.733	590276	1.92	100	94.9	90	110	
Li	7	1	nogas	98.729	2.089	1762253	2.10	100	98.7	90	110	
P	31	1	nogas	485.350	2.784	1042331	0.64	500	97.1	90	110	
La	139	1	nogas	118.256	8.873	553	7.30	100	118.3	90	110	ICV Main CR1 Failed
Au	197	1	nogas	224.246	90.733	30	33.33	100	224.2	90	110	ICV Main CR1 Failed

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	1132990	3.02	1244232	91.06	70	125	
Ge	72	1	nogas	3351875	2.61	3426753	97.81	70	125	
In	115	1	nogas	2870294	1.13	3101048	92.56	70	125	
Bi	209	1	nogas	2291622	0.49	2417268	94.80	70	125	

Initial Calibration Verification (ICV) Report

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Ge	72	2	He	934549	1.20	931587	100.32	70	125	

Interference Check Solution A (ICS-A) Report

Sample Table

Sample Name	ICSA
Data File Name	018ICSA.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\121
Acq Date Time	2018-12-11T14:28:38-06:00
Sample Type	ICSA
Dilution	1
Comment	
ISTD Ref File Name	005CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Be	9	1	nogas	0.000	-1760.9	27	108.3	0	ICSA Main CR1 Failed
Na	23	1	nogas	94769.417	1.2	2463916322	2.1	0	
Mg	24	1	nogas	97267.903	1.1	1603962903	1.6	0	
Al	27	1	nogas	98935.324	0.8	1934004825	1.9	0	
K	39	1	nogas	104463.479	4.1	2048176779	2.7	0	
Ti	47	1	nogas	2146.997	3.3	4125942	3.4	0	
V	51	1	nogas	-0.048	-400.0	246515	2.4	0	ICSA Main CR1 Failed
Cr	52	1	nogas	1.003	6.6	70436	0.9	0	ICSA Main CR1 Failed
Mn	55	1	nogas	0.391	20.4	42162	5.3	0	ICSA Main CR1 Failed
Co	59	1	nogas	0.407	6.8	11497	4.3	0	ICSA Main CR1 Failed
Ni	60	1	nogas	1.844	2.8	9536	2.3	0	ICSA Main CR1 Failed
Cu	63	1	nogas	-46.053	-0.6	243888	1.2	0	ICSA Main CR1 Failed
Zn	66	1	nogas	1.947	1.4	9489	0.5	0	ICSA Main CR1 Failed
As	75	1	nogas	4.031	13.9	78130	3.6	0	ICSA Main CR1 Failed
Sr	88	1	nogas	0.816	2.7	25762	0.9	0	ICSA Main CR1 Failed
Ag	107	1	nogas	0.057	2.7	943	3.2	0	ICSA Main CR1 Failed
Cd	111	1	nogas	2.207	8.6	7058	8.8	0	
Sb	121	1	nogas	0.422	8.6	6371	7.4	0	ICSA Main CR1 Failed
Tl	205	1	nogas	0.326	76.2	11215	65.7	0	ICSA Main CR1 Failed
Pb	208	1	nogas	-0.157	-79.9	34028	11.2	0	ICSA Main CR1 Failed
[Pb]	206	1	nogas	-0.144	-11.3	8809	13.1	0	ICSA Main CR1 Failed
[Pb]	207	1	nogas	-0.162	-6.2	7182	11.4	0	ICSA Main CR1 Failed
Na	23	2	He	92943.585	4.8	163852388	0.3	0	
Mg	24	2	He	92793.649	5.1	92407289	1.6	0	
Al	27	2	He	89415.545	5.2	51860591	0.8	0	
K	39	2	He	101067.849	2.2	102099772	2.2	0	
Ca	43	2	He	90641.257	4.6	272023	1.0	0	
Ca	44	2	He	92110.579	6.0	4679060	2.9	0	
V	51	2	He	0.968	2.3	4065	2.3	0	ICSA Main CR1 Failed
Cr	52	2	He	0.316	9.7	8776	2.0	0	ICSA Main CR1 Failed
Mn	55	2	He	0.164	25.7	5634	8.0	0	ICSA Main CR1 Failed
Fe	56	2	He	91539.236	5.8	648676990	1.0	0	
Co	59	2	He	0.246	11.1	3194	5.3	0	ICSA Main CR1 Failed
Ni	60	2	He	0.665	12.1	780	24.0	0	ICSA Main CR1 Failed
Cu	63	2	He	-20.831	-2.5	73952	1.4	0	ICSA Main CR1 Failed
Zn	66	2	He	0.577	16.0	1240	7.9	0	ICSA Main CR1 Failed
As	75	2	He	0.123	27.6	586	10.6	0	ICSA Main CR1 Failed
Se	78	2	He	0.670	11.1	187	9.1	0	ICSA Main CR1 Failed
B	11	1	nogas	1.988	78.0	129457	3.8	0	ICSA Main CR1 Failed
Si	28	1	nogas	647.173	14.7	2140159	4.0	0	
Ca	43	1	nogas	106722.237	0.5	3842979	1.2	0	
Ca	44	1	nogas	103530.640	0.5	60041537	1.8	0	
Fe	56	1	nogas	102429.167	1.7	2483121656	0.9	0	
Se	77	1	nogas	27.050	11.8	25131	3.9	0	
Se	82	1	nogas	-0.080	-135.2	390	8.9	0	ICSA Main CR1 Failed
Mo	95	1	nogas	2083.756	3.2	12294608	2.1	0	
Sn	118	1	nogas	0.194	18.8	2907	14.1	0	ICSA Main CR1 Failed
Ba	137	1	nogas	0.087	10.5	1507	5.6	0	ICSA Main CR1 Failed
Sb	121	2	He	0.309	8.0	2167	2.7	0	ICSA Main CR1 Failed

Interference Check Solution A (ICS-A) Report

P	31	1	nogas	99217.018	2.6	177865837	1.0	0	
La	139	1	nogas	38.872	18.5	217	11.6	0	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	1179463	2.52	1244232	94.79	70	125	
Ge	72	1	nogas	3179682	1.69	3426753	92.79	70	125	
In	115	1	nogas	2810921	3.48	3101048	90.64	70	125	
Bi	209	1	nogas	2447874	11.57	2417268	101.27	70	125	
Ge	72	2	He	928585	4.78	931587	99.68	70	125	

Interference Check Solution AB (ICS-AB) Report

Sample Table

Sample Name	ICSAB
Data File Name	019ICSB.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\121
Acq Date Time	2018-12-11T14:30:46-06:00
Sample Type	ICSB
Dilution	1
Comment	
ISTD Ref File Name	005CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Exp Value	%Rec	%Low	%High	QC Flag
Be	9	1	nogas	105.065	2.148	911079	1.56	100	105.1	80	120	
Na	23	1	nogas	104370.101	3.887	2798789863	3.25	100	104370.1	80	120	
Mg	24	1	nogas	108178.017	0.830	1840341308	0.83	100	108178.0	80	120	
Al	27	1	nogas	91299.783	1.602	1927491225	1.72	100	91299.8	80	120	ICSB Main CR1 Failed
K	39	1	nogas	107540.336	0.879	2277867851	1.13	100	107540.3	80	120	ICSB Main CR1 Failed
Ti	47	1	nogas	2122.915	0.605	4406271	0.78	100	2122.9	80	120	ICSB Main CR1 Failed
V	51	1	nogas	108.826	1.474	3392583	1.03	100	108.8	80	120	
Cr	52	1	nogas	108.508	1.701	2676891	1.63	100	108.5	80	120	
Mn	55	1	nogas	107.480	2.275	3216384	2.39	100	107.5	80	120	
Co	59	1	nogas	104.776	3.869	2790356	3.60	100	104.8	80	120	
Ni	60	1	nogas	106.247	1.924	626671	1.94	100	106.2	80	120	
Cu	63	1	nogas	67.987	3.239	1760926	1.97	100	68.0	80	120	
Zn	66	1	nogas	107.279	1.883	508852	2.03	100	107.3	80	120	
As	75	1	nogas	109.976	0.878	733133	0.48	100	110.0	80	120	
Sr	88	1	nogas	106.115	3.129	3370563	3.44	100	106.1	80	120	
Ag	107	1	nogas	104.692	1.398	1672185	1.71	100	104.7	80	120	
Cd	111	1	nogas	109.176	1.210	362048	2.37	100	109.2	80	120	
Sb	121	1	nogas	106.831	0.760	1629323	1.09	100	106.8	80	120	
Tl	205	1	nogas	103.839	5.885	2285563	2.67	100	103.8	80	120	
Pb	208	1	nogas	104.991	2.864	3212292	2.83	100	105.0	80	120	
U	238	1	nogas	110.037	3.567	3297413	1.16	100	110.0	80	120	
[Pb]	206	1	nogas	100.428	6.673	777948	3.33	100	100.4	80	120	
[Pb]	207	1	nogas	102.692	4.877	692592	1.58	100	102.7	80	120	
Na	23	2	He	105221.513	1.211	178926904	1.02	100	105221.5	80	120	ICSB Main CR1 Failed
Mg	24	2	He	104047.606	0.680	99950939	0.25	100	104047.6	80	120	
Al	27	2	He	91403.165	1.206	51143429	0.78	100	91403.2	80	120	ICSB Main CR1 Failed
K	39	2	He	110329.135	1.194	111434392	1.19	100	110329.1	80	120	
Ca	43	2	He	106265.649	1.266	307596	1.00	100	106265.6	80	120	ICSB Main CR1 Failed
Ca	44	2	He	107160.057	2.153	5251152	1.77	100	107160.1	80	120	ICSB Main CR1 Failed
V	51	2	He	103.604	0.969	748093	0.55	100	103.6	80	120	
Cr	52	2	He	104.020	1.563	805971	1.44	100	104.0	80	120	
Mn	55	2	He	104.786	2.169	583997	1.96	100	104.8	80	120	
Fe	56	2	He	106533.205	1.349	728435589	1.17	100	106533.2	80	120	ICSB Main CR1 Failed
Co	59	2	He	104.344	2.397	1105108	1.97	100	104.3	80	120	
Ni	60	2	He	105.665	2.724	277937	2.39	100	105.7	80	120	
Cu	63	2	He	80.575	2.577	771492	1.58	100	80.6	80	120	
Zn	66	2	He	107.008	2.273	179028	2.09	100	107.0	80	120	
As	75	2	He	106.006	1.254	179677	0.87	100	106.0	80	120	
Se	78	2	He	105.134	1.316	15058	1.22	100	105.1	80	120	
B	11	1	nogas	521.171	2.304	2796644	2.26	100	521.2	80	120	
Si	28	1	nogas	5757.746	2.006	8361566	1.89	100	5757.7	80	120	ICSB Main CR1 Failed
Ca	43	1	nogas	107981.808	1.809	4199460	1.69	100	107981.8	80	120	ICSB Main CR1 Failed
Ca	44	1	nogas	107339.471	1.054	67210651	0.73	100	107339.5	80	120	ICSB Main CR1 Failed
Fe	56	1	nogas	107818.114	1.347	2823098996	1.02	100	107818.1	80	120	ICSB Main CR1 Failed
Se	77	1	nogas	134.454	2.365	57842	1.28	100	134.5	80	120	
Se	82	1	nogas	104.423	1.940	34693	2.02	100	104.4	80	120	
Mo	95	1	nogas	2051.672	1.882	13077688	2.16	100	2051.7	80	120	ICSB Main CR1 Failed
Sn	118	1	nogas	102.774	2.606	963607	0.98	100	102.8	80	120	
Ba	137	1	nogas	108.754	1.813	480522	1.71	100	108.8	80	120	
Sb	121	2	He	105.915	0.802	630872	0.37	100	105.9	80	120	
La	139	1	nogas	131.898	8.902	620	5.59	100	131.9	80	120	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	1159865	1.16	1244232	93.22	70	125	
Ge	72	1	nogas	3434002	0.33	3426753	100.21	70	125	
In	115	1	nogas	2919104	3.49	3101048	94.13	70	125	
Bi	209	1	nogas	2299557	3.39	2417268	95.13	70	125	
Ge	72	2	He	894384	0.43	931587	96.01	70	125	

Continuing Calibration Blank (CCB) Report

Sample Table

Sample Name	CCB
Data File Name	031_CCB.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\121
Acq Date Time	2018-12-11T15:03:11-06:00
Sample Type	CCB
Dilution	1
Comment	
ISTD Ref File Name	005CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Be	9	1	nogas	0.098	19.1	947	24.6	1	
Na	23	1	nogas	16.207	25.0	907840	16.2	100	
Mg	24	1	nogas	11.266	24.4	207876	27.1	100	
Al	27	1	nogas	0.304	6.1	30007	3.5	5	
K	39	1	nogas	13.023	24.7	9141788	3.1	100	
Ti	47	1	nogas	0.315	38.2	1147	24.5	2.5	
V	51	1	nogas	-2.012	-11.8	212569	3.5	2.5	
Cr	52	1	nogas	-0.125	-57.8	49456	5.9	2.5	
Mn	55	1	nogas	0.020	388.4	35033	8.9	2.5	
Co	59	1	nogas	0.090	40.1	4057	26.5	2.5	
Ni	60	1	nogas	0.357	5.3	1540	9.6	2.5	
Cu	63	1	nogas	-51.504	-1.4	194204	2.8	2.5	
Zn	66	1	nogas	0.360	13.1	2774	9.8	2.5	
As	75	1	nogas	-1.822	-14.4	49177	2.7	2.5	
Sr	88	1	nogas	0.083	37.0	4644	23.5	2.5	
Ag	107	1	nogas	0.174	29.9	2937	31.0	2.5	
Cd	111	1	nogas	0.103	31.7	373	31.0	1	
Sb	121	1	nogas	6.318	38.7	98623	40.8	2.5	CCB Main CR1 Failed
Tl	205	1	nogas	0.054	95.4	4381	31.8	1	
Pb	208	1	nogas	-0.556	-18.9	21980	14.5	2.5	
U	238	1	nogas	0.426	69.9	14089	73.8	2.5	
[Pb]	206	1	nogas	-0.518	-15.2	5694	14.4	2.5	
[Pb]	207	1	nogas	-0.500	-18.5	4737	16.0	2.5	
Na	23	2	He	11.561	8.4	82850	4.6	100	
Mg	24	2	He	6.389	17.0	7018	17.5	100	
Al	27	2	He	0.887	10.1	757	9.0	5	
K	39	2	He	9.236	54.3	240951	2.1	100	
Ca	43	2	He	19.326	112.9	100	65.6	100	
Ca	44	2	He	-0.500	-1318.4	3797	11.1	100	
V	51	2	He	0.976	2.7	4082	6.0	2.5	
Cr	52	2	He	0.107	20.9	7028	2.6	2.5	
Mn	55	2	He	-0.144	-8.2	3817	4.2	2.5	
Fe	56	2	He	13.634	13.3	110526	13.8	100	
Co	59	2	He	0.062	17.2	1163	8.5	2.5	
Ni	60	2	He	0.520	5.8	383	18.5	2.5	
Cu	63	2	He	-21.493	-1.1	68471	0.4	2.5	
Zn	66	2	He	0.354	33.1	847	22.4	2.5	
As	75	2	He	0.114	25.5	561	7.4	2.5	
Se	78	2	He	0.874	14.3	215	8.4	2.5	
B	11	1	nogas	2.122	36.1	136526	4.5	10	
Si	28	1	nogas	-17.272	-132.4	1545178	0.8	5	
Ca	43	1	nogas	9.332	64.7	1630	16.7	100	
Ca	44	1	nogas	-41.197	-45.2	433792	0.9	100	
Fe	56	1	nogas	41.250	60.8	3007181	24.6	100	
Se	77	1	nogas	-14.580	-17.2	15427	2.6	2.5	
Se	82	1	nogas	-0.106	-294.7	417	23.3	2.5	

Continuing Calibration Blank (CCB) Report

Mo	95	1	nogas	3.090	40.5	20244	42.5	2.5	CCB Main CR1 Failed
Sn	118	1	nogas	5.089	18.2	51578	20.3	5	CCB Main CR1 Failed
Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Ba	137	1	nogas	-0.021	-90.0	1147	10.2	2.5	
Sb	121	2	He	3.234	8.3	20035	10.3	2.5	CCB Main CR1 Failed
P	31	1	nogas	-6.904	-5.5	117147	2.4	10	
La	139	1	nogas	6.689	170.5	93	53.9	2.5	CCB Main CR1 Failed
Au	197	1	nogas	-76.070	-265.1	17	69.3	2.5	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	1237787	7.54	1244232	99.48	70	125	
Ge	72	1	nogas	3478797	2.30	3426753	101.52	70	125	
In	115	1	nogas	3071654	2.51	3101048	99.05	70	125	
Bi	209	1	nogas	2420614	5.91	2417268	100.14	70	125	
Ge	72	2	He	917570	2.53	931587	98.50	70	125	

Continuing Calibration Verification (CCV) Report

Sample Table

Sample Name	CCV
Data File Name	033_CCV.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\121
Acq Date Time	2018-12-11T15:15:20-06:00
Sample Type	CCV
Dilution	1
Comment	
ISTD Ref File Name	005CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Exp Value	%Rec	%Low	%High2	QC Flag
Be	9	1	nogas	104.375	2.984	880573	1.98	100	104.4	90	110	
Na	23	1	nogas	10150.003	3.793	280558048	1.04	10000	101.5	90	110	
Mg	24	1	nogas	10387.358	4.817	181819179	2.04	10000	103.9	90	110	
Al	27	1	nogas	102.598	2.101	2274078	2.81	100	102.6	90	110	
K	39	1	nogas	10385.341	1.117	236711889	2.09	10000	103.9	90	110	
Ti	47	1	nogas	99.074	1.149	214046	0.57	100	99.1	90	110	
V	51	1	nogas	97.224	0.652	3177856	1.07	100	97.2	90	110	
Cr	52	1	nogas	100.249	2.627	2572541	1.71	100	100.2	90	110	
Mn	55	1	nogas	101.175	2.054	3146657	1.78	100	101.2	90	110	
Co	59	1	nogas	98.937	2.493	2736676	1.64	100	98.9	90	110	
Ni	60	1	nogas	100.056	1.407	612961	1.82	100	100.1	90	110	
Cu	63	1	nogas	57.850	2.224	1690766	1.63	100	57.8	90	110	CCV Main CR1-2 Failed
Zn	66	1	nogas	100.588	1.261	495593	0.57	100	100.6	90	110	
As	75	1	nogas	97.464	2.196	681840	0.94	100	97.5	90	110	
Sr	88	1	nogas	101.201	4.281	3339662	5.25	100	101.2	90	110	
Ag	107	1	nogas	99.589	1.113	1652178	1.50	100	99.6	90	110	
Cd	111	1	nogas	100.156	3.977	353046	2.26	100	100.2	90	110	
Sb	121	1	nogas	99.550	3.046	1576713	2.04	100	99.6	90	110	
Tl	205	1	nogas	103.877	2.492	2376672	2.38	100	103.9	90	110	
Pb	208	1	nogas	101.644	0.968	3111131	0.96	100	101.6	90	110	
U	238	1	nogas	101.309	5.262	3152952	4.12	100	101.3	90	110	
[Pb]	206	1	nogas	96.867	3.944	780174	1.86	100	96.9	90	110	
[Pb]	207	1	nogas	94.082	2.949	659947	1.01	100	94.1	90	110	
Na	23	2	He	10085.390	1.077	18117040	1.82	10000	100.9	90	110	
Mg	24	2	He	10315.314	1.743	10434977	2.28	10000	103.2	90	110	
Al	27	2	He	100.338	0.539	59370	1.26	100	100.3	90	110	
K	39	2	He	11191.420	1.700	11511678	1.67	10000	111.9	90	110	CCV Main CR1-2 Failed
Ca	43	2	He	10355.062	2.434	31604	3.11	10000	103.6	90	110	
Ca	44	2	He	10234.374	1.446	531591	0.78	10000	102.3	90	110	
V	51	2	He	99.200	1.136	754088	1.50	100	99.2	90	110	
Cr	52	2	He	98.664	1.151	805309	1.83	100	98.7	90	110	
Mn	55	2	He	100.959	0.496	592645	1.07	100	101.0	90	110	
Fe	56	2	He	10182.802	0.834	73326422	1.18	10000	101.8	90	110	
Co	59	2	He	97.950	2.094	1092280	1.33	100	98.0	90	110	
Ni	60	2	He	99.652	1.777	275926	1.07	100	99.7	90	110	
Cu	63	2	He	72.850	0.316	756182	0.60	100	72.9	90	110	CCV Main CR1-2 Failed
Zn	66	2	He	99.943	1.653	176083	1.96	100	99.9	90	110	
As	75	2	He	100.508	0.364	179396	0.50	100	100.5	90	110	
Se	78	2	He	98.508	1.836	14861	1.39	100	98.5	90	110	
B	11	1	nogas	533.381	2.308	2781869	1.22	500	106.7	90	110	
Si	28	1	nogas	5218.604	0.809	8022250	1.53	5000	104.4	90	110	
Ca	43	1	nogas	10276.956	1.050	416286	0.07	10000	102.8	90	110	
Ca	44	1	nogas	10156.500	0.557	7032478	0.76	10000	101.6	90	110	
Fe	56	1	nogas	10251.393	2.109	280546006	1.26	10000	102.5	90	110	
Se	77	1	nogas	78.947	3.003	43596	0.88	100	78.9	90	110	CCV Main CR1-2 Failed
Se	82	1	nogas	97.956	0.970	33832	1.25	100	98.0	90	110	
Mo	95	1	nogas	99.075	0.881	656143	1.93	100	99.1	90	110	
Sn	118	1	nogas	92.429	2.607	921741	0.86	100	92.4	90	110	
Ba	137	1	nogas	99.849	2.010	469222	0.27	100	99.8	90	110	
Sb	121	2	He	100.091	0.686	627745	0.55	100	100.1	90	110	
Li	7	1	nogas	118.528	2.632	2084929	1.69	100	118.5	90	110	CCV Main CR1-2 Failed
P	31	1	nogas	484.797	0.581	1108544	1.23	500	97.0	90	110	
La	139	1	nogas	150.428	7.873	743	5.60	100	150.4	90	110	CCV Main CR1-2 Failed
Au	197	1	nogas	66.046	152.297	23	24.74	100	66.0	90	110	CCV Main CR1-2 Failed

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	1128836	3.00	1244232	90.73	70	125	
Ge	72	1	nogas	3566879	1.06	3426753	104.09	70	125	
In	115	1	nogas	3103500	1.98	3101048	100.08	70	125	
Bi	209	1	nogas	2387829	2.76	2417268	98.78	70	125	

Continuing Calibration Verification (CCV) Report

Ge	72	2	He	941715	0.77	931587	101.09	70	125	

Continuing Calibration Verification (CCV) Report

Sample Table

Sample Name	CCV
Data File Name	039_CCV.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\121
Acq Date Time	2018-12-11T15:42:56-06:00
Sample Type	CCV
Dilution	1
Comment	
ISTD Ref File Name	005CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Exp Value	%Rec	%Low	%High2	QC Flag
Be	9	1	nogas	104.953	2.932	874866	1.38	100	105.0	90	110	
Na	23	1	nogas	10163.941	0.538	283746315	0.05	10000	101.6	90	110	
Mg	24	1	nogas	10281.933	2.519	181796942	2.03	10000	102.8	90	110	
Al	27	1	nogas	103.950	2.650	2305795	3.10	100	103.9	90	110	
K	39	1	nogas	10370.480	3.040	236561130	2.44	10000	103.7	90	110	
Ti	47	1	nogas	101.150	2.087	218728	1.94	100	101.2	90	110	
V	51	1	nogas	98.249	2.848	3211391	2.67	100	98.2	90	110	
Cr	52	1	nogas	101.679	3.285	2611270	3.29	100	101.7	90	110	
Mn	55	1	nogas	104.218	4.677	3242922	4.18	100	104.2	90	110	
Co	59	1	nogas	99.956	1.645	2767725	1.65	100	100.0	90	110	
Ni	60	1	nogas	99.320	1.344	609022	1.82	100	99.3	90	110	
Cu	63	1	nogas	54.088	1.267	1640889	0.08	100	54.1	90	110	CCV Main CR1-2 Failed
Zn	66	1	nogas	100.801	0.717	497139	1.16	100	100.8	90	110	
As	75	1	nogas	97.278	0.289	681362	0.23	100	97.3	90	110	
Sr	88	1	nogas	100.895	2.045	3331431	1.57	100	100.9	90	110	
Ag	107	1	nogas	100.030	1.962	1660980	1.87	100	100.0	90	110	
Cd	111	1	nogas	100.945	2.409	347311	1.81	100	100.9	90	110	
Sb	121	1	nogas	100.729	3.251	1597025	2.87	100	100.7	90	110	
Tl	205	1	nogas	106.339	7.323	2373317	5.30	100	106.3	90	110	
Pb	208	1	nogas	102.420	2.971	3134587	2.93	100	102.4	90	110	
U	238	1	nogas	102.929	3.496	3127574	1.13	100	102.9	90	110	
[Pb]	206	1	nogas	99.527	6.803	781848	3.59	100	99.5	90	110	
[Pb]	207	1	nogas	95.552	6.214	653796	2.66	100	95.6	90	110	
Na	23	2	He	10346.080	1.016	18324107	1.39	10000	103.5	90	110	
Mg	24	2	He	10473.846	0.786	10447219	1.08	10000	104.7	90	110	
Al	27	2	He	101.617	0.984	59283	0.73	100	101.6	90	110	
K	39	2	He	11225.606	1.094	11546135	1.07	10000	112.3	90	110	CCV Main CR1-2 Failed
Ca	43	2	He	10350.289	0.844	31146	1.29	10000	103.5	90	110	
Ca	44	2	He	10330.356	0.609	529116	1.29	10000	103.3	90	110	
V	51	2	He	98.818	1.223	740671	0.79	100	98.8	90	110	
Cr	52	2	He	98.710	0.837	794392	0.20	100	98.7	90	110	
Mn	55	2	He	100.510	0.455	581828	1.35	100	100.5	90	110	
Fe	56	2	He	10138.336	2.202	71998571	3.05	10000	101.4	90	110	
Co	59	2	He	98.028	0.508	1078044	0.98	100	98.0	90	110	
Ni	60	2	He	100.878	2.530	275454	2.31	100	100.9	90	110	
Cu	63	2	He	72.236	3.482	741153	1.55	100	72.2	90	110	CCV Main CR1-2 Failed
Zn	66	2	He	101.925	1.150	177056	0.50	100	101.9	90	110	
As	75	2	He	102.041	1.885	179575	0.99	100	102.0	90	110	
Se	78	2	He	99.113	0.502	14745	1.35	100	99.1	90	110	
B	11	1	nogas	552.438	3.349	2842379	0.95	500	110.5	90	110	CCV Main CR1-2 Failed
Si	28	1	nogas	5271.040	2.093	8093581	1.49	5000	105.4	90	110	
Ca	43	1	nogas	10069.974	1.513	408319	1.41	10000	100.7	90	110	
Ca	44	1	nogas	10122.776	0.709	7017286	0.98	10000	101.2	90	110	
Fe	56	1	nogas	10335.007	2.188	283093965	1.79	10000	103.4	90	110	
Se	77	1	nogas	79.050	6.013	43669	3.22	100	79.0	90	110	CCV Main CR1-2 Failed
Se	82	1	nogas	95.674	1.469	33084	1.14	100	95.7	90	110	
Mo	95	1	nogas	98.640	1.304	653793	0.95	100	98.6	90	110	
Sn	118	1	nogas	94.216	2.656	916874	1.75	100	94.2	90	110	
Ba	137	1	nogas	103.085	4.404	472493	2.03	100	103.1	90	110	
Sb	121	2	He	100.109	0.513	619115	0.45	100	100.1	90	110	
Li	7	1	nogas	119.872	3.730	2081630	0.85	100	119.9	90	110	CCV Main CR1-2 Failed
P	31	1	nogas	484.283	0.547	1108505	0.64	500	96.9	90	110	
La	139	1	nogas	158.371	13.935	760	11.24	100	158.4	90	110	CCV Main CR1-2 Failed
Au	197	1	nogas	218.284	186.458	30	66.67	100	218.3	90	110	CCV Main CR1-2 Failed

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	1115558	3.65	1244232	89.66	70	125	
Ge	72	1	nogas	3570104	0.49	3426753	104.18	70	125	
In	115	1	nogas	3028637	2.46	3101048	97.66	70	125	
Bi	209	1	nogas	2331727	3.45	2417268	96.46	70	125	

Continuing Calibration Verification (CCV) Report

Ge	72	2	He	928609	0.92	931587	99.68	70	125	

Continuing Calibration Blank (CCB) Report

Sample Table

Sample Name	CCB
Data File Name	040_CCB.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\121
Acq Date Time	2018-12-11T15:45:00-06:00
Sample Type	CCB
Dilution	1
Comment	
ISTD Ref File Name	005CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Be	9	1	nogas	0.080	48.2	777	44.1	1	
Na	23	1	nogas	13.272	16.4	844644	7.6	100	
Mg	24	1	nogas	8.651	25.8	165075	24.3	100	
Al	27	1	nogas	0.132	19.7	26836	4.0	5	
K	39	1	nogas	-2.588	-219.0	8972754	0.8	100	
Ti	47	1	nogas	0.107	42.1	717	11.4	2.5	
V	51	1	nogas	-1.721	-10.2	225179	0.8	2.5	
Cr	52	1	nogas	-0.172	-35.7	49199	4.3	2.5	
Mn	55	1	nogas	-0.171	-24.0	29811	4.1	2.5	
Co	59	1	nogas	0.059	34.3	3254	16.9	2.5	
Ni	60	1	nogas	0.332	4.5	1420	7.5	2.5	
Cu	63	1	nogas	-53.567	-0.8	170021	2.6	2.5	
Zn	66	1	nogas	0.268	4.6	2377	4.3	2.5	
As	75	1	nogas	-1.409	-33.2	52700	3.9	2.5	
Sr	88	1	nogas	0.083	22.8	4714	14.0	2.5	
Ag	107	1	nogas	0.067	36.0	1230	33.6	2.5	
Cd	111	1	nogas	0.070	22.1	270	22.2	1	
Sb	121	1	nogas	0.133	25.0	2564	20.6	2.5	
Tl	205	1	nogas	0.493	66.4	14498	55.7	1	
Pb	208	1	nogas	-0.801	-4.7	14583	7.9	2.5	
U	238	1	nogas	0.142	49.1	4811	49.5	2.5	
[Pb]	206	1	nogas	-0.764	-1.6	3670	7.4	2.5	
[Pb]	207	1	nogas	-0.719	-6.8	3164	10.0	2.5	
Na	23	2	He	11.620	7.8	84343	2.6	100	
Mg	24	2	He	5.113	2.0	5841	2.5	100	
Al	27	2	He	0.769	15.0	700	10.0	5	
K	39	2	He	6.409	49.8	238101	1.4	100	
Ca	43	2	He	6.554	232.4	63	72.9	100	
Ca	44	2	He	1.465	190.4	3957	4.3	100	
V	51	2	He	0.902	2.7	3593	6.0	2.5	
Cr	52	2	He	0.061	52.0	6778	3.9	2.5	
Mn	55	2	He	-0.245	-7.4	3297	2.6	2.5	
Fe	56	2	He	6.229	9.4	59386	7.0	100	
Co	59	2	He	0.034	8.5	877	3.7	2.5	
Ni	60	2	He	0.511	6.6	367	24.7	2.5	
Cu	63	2	He	-23.059	-0.5	58379	0.8	2.5	
Zn	66	2	He	0.339	20.4	837	15.1	2.5	
As	75	2	He	0.033	122.2	430	16.8	2.5	
Se	78	2	He	0.760	30.8	201	17.1	2.5	
B	11	1	nogas	1.067	95.8	133384	3.9	10	
Si	28	1	nogas	-46.249	-143.5	1538658	3.9	5	
Ca	43	1	nogas	11.185	22.1	1733	7.3	100	
Ca	44	1	nogas	-64.366	-10.4	427273	1.0	100	
Fe	56	1	nogas	12.571	30.3	2279678	5.3	100	
Se	77	1	nogas	-10.580	-9.0	16915	3.6	2.5	
Se	82	1	nogas	-0.283	-105.4	367	28.6	2.5	

Continuing Calibration Blank (CCB) Report

Mo	95	1	nogas	0.315	38.1	2254	36.2	2.5	
Sn	118	1	nogas	1.106	5.1	12665	5.3	5	
Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Ba	137	1	nogas	-0.057	-66.6	1020	16.7	2.5	
Sb	121	2	He	0.084	18.3	783	11.6	2.5	
P	31	1	nogas	-5.286	-23.2	122574	0.9	10	
La	139	1	nogas	4.375	107.3	87	26.6	2.5	CCB Main CR1 Failed
Au	197	1	nogas	71.906	336.1	23	49.5	2.5	CCB Main CR1 Failed

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	1261493	3.59	1244232	101.39	70	125	
Ge	72	1	nogas	3544863	1.97	3426753	103.45	70	125	
In	115	1	nogas	3198800	2.11	3101048	103.15	70	125	
Bi	209	1	nogas	2401205	5.68	2417268	99.34	70	125	
Ge	72	2	He	933188	0.75	931587	100.17	70	125	

Continuing Calibration Verification (CCV) Report

Sample Table

Sample Name	CCV
Data File Name	044_CCV.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\121
Acq Date Time	2018-12-11T17:17:05-06:00
Sample Type	CCV
Dilution	1
Comment	
ISTD Ref File Name	005CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Exp Value	%Rec	%Low	%High2	QC Flag
Be	9	1	nogas	96.878	5.633	868928	0.91	100	96.9	90	110	
Na	23	1	nogas	10485.418	1.525	279890965	2.94	10000	104.9	90	110	
Mg	24	1	nogas	10520.516	2.753	177828087	2.15	10000	105.2	90	110	
Al	27	1	nogas	99.715	3.450	2189686	1.85	100	99.7	90	110	
K	39	1	nogas	10175.357	1.795	229939597	1.06	10000	101.8	90	110	
Ti	47	1	nogas	97.195	2.103	208063	1.68	100	97.2	90	110	
V	51	1	nogas	98.461	2.784	3184642	1.21	100	98.5	90	110	
Cr	52	1	nogas	98.972	0.755	2517707	1.94	100	99.0	90	110	
Mn	55	1	nogas	101.708	2.262	3134076	2.17	100	101.7	90	110	
Co	59	1	nogas	97.970	4.560	2683846	1.98	100	98.0	90	110	
Ni	60	1	nogas	97.180	3.729	589582	1.14	100	97.2	90	110	
Cu	63	1	nogas	54.965	10.477	1635467	3.06	100	55.0	90	110	CCV Main CR1-2 Failed
Zn	66	1	nogas	100.218	1.703	489256	1.54	100	100.2	90	110	
As	75	1	nogas	97.064	2.731	673005	0.83	100	97.1	90	110	
Sr	88	1	nogas	101.031	4.519	3300943	2.71	100	101.0	90	110	
Ag	107	1	nogas	101.240	2.792	1663710	0.85	100	101.2	90	110	
Cd	111	1	nogas	100.068	1.105	348444	2.41	100	100.1	90	110	
Sb	121	1	nogas	102.964	5.872	1614757	3.26	100	103.0	90	110	
Tl	205	1	nogas	106.911	6.427	2397347	1.89	100	106.9	90	110	
Pb	208	1	nogas	103.321	0.814	3161806	0.80	100	103.3	90	110	
U	238	1	nogas	104.188	2.297	3183168	2.64	100	104.2	90	110	
[Pb]	206	1	nogas	99.272	5.861	783819	0.79	100	99.3	90	110	
[Pb]	207	1	nogas	96.345	4.669	662697	0.52	100	96.3	90	110	
Na	23	2	He	10599.561	1.652	17695181	0.54	10000	106.0	90	110	
Mg	24	2	He	10691.098	2.060	10052659	1.42	10000	106.9	90	110	
Al	27	2	He	104.122	1.359	57270	2.42	100	104.1	90	110	
K	39	2	He	10486.083	1.903	10800756	1.86	10000	104.9	90	110	
Ca	43	2	He	10478.891	2.001	29731	2.76	10000	104.8	90	110	
Ca	44	2	He	10252.430	1.382	495058	0.86	10000	102.5	90	110	
V	51	2	He	101.471	2.421	717012	1.10	100	101.5	90	110	
Cr	52	2	He	101.424	2.626	769238	1.22	100	101.4	90	110	
Mn	55	2	He	103.430	2.240	564290	2.08	100	103.4	90	110	
Fe	56	2	He	10404.677	1.502	69646712	0.80	10000	104.0	90	110	
Co	59	2	He	100.683	1.892	1043736	0.94	100	100.7	90	110	
Ni	60	2	He	104.201	3.011	268229	1.74	100	104.2	90	110	
Cu	63	2	He	76.304	2.725	726236	0.72	100	76.3	90	110	CCV Main CR1-2 Failed
Zn	66	2	He	103.553	1.439	169580	0.50	100	103.6	90	110	
As	75	2	He	102.101	1.045	169406	0.53	100	102.1	90	110	
Se	78	2	He	100.381	1.322	14076	0.21	100	100.4	90	110	
B	11	1	nogas	500.977	5.381	2785465	0.52	500	100.2	90	110	
Si	28	1	nogas	4999.554	6.034	7676910	2.44	5000	100.0	90	110	
Ca	43	1	nogas	10220.177	3.559	410073	1.65	10000	102.2	90	110	
Ca	44	1	nogas	10138.255	3.914	6955323	3.07	10000	101.4	90	110	
Fe	56	1	nogas	10104.249	3.225	273954356	1.24	10000	101.0	90	110	
Se	77	1	nogas	83.567	6.104	44541	0.82	100	83.6	90	110	CCV Main CR1-2 Failed
Se	82	1	nogas	96.133	4.916	32887	2.57	100	96.1	90	110	
Mo	95	1	nogas	98.218	3.569	644175	0.96	100	98.2	90	110	
Sn	118	1	nogas	94.187	0.916	927533	0.97	100	94.2	90	110	
Ba	137	1	nogas	100.246	2.955	465065	1.25	100	100.2	90	110	
Sb	121	2	He	101.306	1.634	590612	0.60	100	101.3	90	110	
Li	7	1	nogas	111.096	2.520	2087198	2.59	100	111.1	90	110	CCV Main CR1-2 Failed
P	31	1	nogas	474.932	2.954	1078431	0.14	500	95.0	90	110	
La	139	1	nogas	118.494	30.635	593	28.82	100	118.5	90	110	CCV Main CR1-2 Failed
Au	197	1	nogas	80.965	176.949	23	24.74	100	81.0	90	110	CCV Main CR1-2 Failed

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	1201641	4.67	1244232	96.58	70	125	
Ge	72	1	nogas	3534848	2.69	3426753	103.15	70	125	
In	115	1	nogas	3064088	1.72	3101048	98.81	70	125	
Bi	209	1	nogas	2344453	4.86	2417268	96.99	70	125	

Continuing Calibration Verification (CCV) Report

Ge	72	2	He	875495	1.41	931587	93.98	70	125	

Continuing Calibration Blank (CCB) Report

Sample Table

Sample Name	CCB
Data File Name	045_CCB.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\121
Acq Date Time	2018-12-11T17:19:10-06:00
Sample Type	CCB
Dilution	1
Comment	
ISTD Ref File Name	005CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Be	9	1	nogas	0.077	31.0	850	32.6	1	
Na	23	1	nogas	8.831	11.8	754974	7.8	100	
Mg	24	1	nogas	9.167	11.1	183977	20.0	100	
Al	27	1	nogas	0.094	82.8	26909	1.9	5	
K	39	1	nogas	-15.920	-190.0	8985103	0.7	100	
Ti	47	1	nogas	0.067	21.7	660	13.5	2.5	
V	51	1	nogas	-1.572	-47.1	237394	2.2	2.5	
Cr	52	1	nogas	-0.307	-40.4	47431	1.6	2.5	
Mn	55	1	nogas	-0.023	-446.3	35511	1.8	2.5	
Co	59	1	nogas	0.066	7.7	3577	9.5	2.5	
Ni	60	1	nogas	0.324	10.0	1433	23.1	2.5	
Cu	63	1	nogas	-55.597	-1.8	147355	1.6	2.5	
Zn	66	1	nogas	0.305	18.1	2644	6.7	2.5	
As	75	1	nogas	-1.239	-59.5	55638	0.9	2.5	
Sr	88	1	nogas	0.074	18.2	4591	17.3	2.5	
Ag	107	1	nogas	0.095	12.9	1757	16.7	2.5	
Cd	111	1	nogas	0.093	4.3	380	7.0	1	
Sb	121	1	nogas	0.165	14.6	3200	21.2	2.5	
Tl	205	1	nogas	0.453	64.7	15456	59.4	1	
Pb	208	1	nogas	-0.672	-5.0	18488	5.4	2.5	
U	238	1	nogas	0.119	25.8	4577	33.3	2.5	
[Pb]	206	1	nogas	-0.704	-7.4	4587	1.2	2.5	
[Pb]	207	1	nogas	-0.662	-2.5	3957	8.0	2.5	
Na	23	2	He	8.972	5.8	76834	1.9	100	
Mg	24	2	He	6.073	6.5	6565	6.7	100	
Al	27	2	He	0.861	26.5	727	17.7	5	
K	39	2	He	-5.463	-7.7	226136	0.2	100	
Ca	43	2	He	-0.598	-1020.9	40	43.3	100	
Ca	44	2	He	2.095	141.6	3847	2.8	100	
V	51	2	He	0.953	0.8	3842	2.4	2.5	
Cr	52	2	He	0.097	28.7	6815	2.3	2.5	
Mn	55	2	He	-0.036	-50.4	4344	1.8	2.5	
Fe	56	2	He	6.867	9.0	61710	7.8	100	
Co	59	2	He	0.048	8.8	990	3.6	2.5	
Ni	60	2	He	0.502	5.9	330	24.8	2.5	
Cu	63	2	He	-23.976	-0.5	49948	1.4	2.5	
Zn	66	2	He	0.390	4.2	893	3.6	2.5	
As	75	2	He	0.048	43.1	439	7.9	2.5	
Se	78	2	He	0.750	20.9	193	10.6	2.5	
B	11	1	nogas	-7.219	-7.5	97560	4.2	10	
Si	28	1	nogas	-168.371	-48.8	1438959	1.8	5	
Ca	43	1	nogas	8.216	30.4	1677	10.7	100	
Ca	44	1	nogas	-123.359	-40.7	402804	0.5	100	
Fe	56	1	nogas	7.123	41.8	2211163	4.9	100	
Se	77	1	nogas	-9.828	-42.1	17732	1.2	2.5	
Se	82	1	nogas	-0.404	-50.5	337	20.2	2.5	
Mo	95	1	nogas	0.284	30.5	2157	37.2	2.5	
Sn	118	1	nogas	1.033	11.5	12842	4.7	5	

Continuing Calibration Blank (CCB) Report

Ba	137	1	nogas	-0.014	-111.2	1327	7.6	2.5	
Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Sb	121	2	He	0.112	16.3	923	12.5	2.5	
P	31	1	nogas	-5.032	-101.1	127331	0.3	10	
La	139	1	nogas	3.123	246.4	87	40.5	2.5	CCB Main CR1 Failed
Au	197	1	nogas	-220.760	-81.8	10	100.0	2.5	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	1415153	7.72	1244232	113.74	70	125	
Ge	72	1	nogas	3683947	8.66	3426753	107.51	70	125	
In	115	1	nogas	3468839	11.22	3101048	111.86	70	125	
Bi	209	1	nogas	2671176	9.45	2417268	110.50	70	125	
Ge	72	2	He	900286	0.98	931587	96.64	70	125	

Continuing Calibration Verification (CCV) Report

Sample Table

Sample Name	CCV
Data File Name	054_CCV.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\121
Acq Date Time	2018-12-11T17:37:46-06:00
Sample Type	CCV
Dilution	1
Comment	
ISTD Ref File Name	005CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Exp Value	%Rec	%Low	%High2	QC Flag
Be	9	1	nogas	97.184	1.652	878782	1.71	100	97.2	90	110	
Na	23	1	nogas	10377.108	4.244	292584607	0.80	10000	103.8	90	110	
Mg	24	1	nogas	10507.281	2.764	187714229	0.77	10000	105.1	90	110	
Al	27	1	nogas	103.239	2.871	2337492	3.72	100	103.2	90	110	
K	39	1	nogas	10334.998	1.738	240670605	2.36	10000	103.3	90	110	
Ti	47	1	nogas	97.020	0.968	214126	0.36	100	97.0	90	110	
V	51	1	nogas	97.775	1.225	3262767	0.18	100	97.8	90	110	
Cr	52	1	nogas	101.233	1.847	2653588	2.27	100	101.2	90	110	
Mn	55	1	nogas	103.265	2.349	3279820	1.74	100	103.3	90	110	
Co	59	1	nogas	99.132	1.283	2801377	1.45	100	99.1	90	110	
Ni	60	1	nogas	98.932	2.058	619014	1.10	100	98.9	90	110	
Cu	63	1	nogas	50.005	2.287	1617747	1.05	100	50.0	90	110	CCV Main CR1-2 Failed
Zn	66	1	nogas	99.884	1.070	502715	0.07	100	99.9	90	110	
As	75	1	nogas	96.461	0.771	690068	1.10	100	96.5	90	110	
Sr	88	1	nogas	100.564	1.039	3388984	1.17	100	100.6	90	110	
Ag	107	1	nogas	102.012	2.004	1728775	2.30	100	102.0	90	110	
Cd	111	1	nogas	99.649	0.783	358081	2.12	100	99.6	90	110	
Sb	121	1	nogas	100.136	2.837	1620121	1.86	100	100.1	90	110	
Tl	205	1	nogas	101.226	4.589	2337946	2.73	100	101.2	90	110	
Pb	208	1	nogas	102.644	0.706	3141366	0.70	100	102.6	90	110	
U	238	1	nogas	101.109	3.836	3177425	1.11	100	101.1	90	110	
[Pb]	206	1	nogas	94.248	4.242	766737	1.41	100	94.2	90	110	
[Pb]	207	1	nogas	92.866	2.351	658050	1.48	100	92.9	90	110	
Na	23	2	He	10233.617	0.791	18098592	0.28	10000	102.3	90	110	
Mg	24	2	He	10397.930	2.372	10356849	2.65	10000	104.0	90	110	
Al	27	2	He	99.946	1.031	58230	1.21	100	99.9	90	110	
K	39	2	He	11156.146	1.870	11476125	1.83	10000	111.6	90	110	CCV Main CR1-2 Failed
Ca	43	2	He	10525.023	1.567	31627	2.19	10000	105.3	90	110	
Ca	44	2	He	10445.654	2.010	534221	2.45	10000	104.5	90	110	
V	51	2	He	99.136	1.440	741975	0.76	100	99.1	90	110	
Cr	52	2	He	99.058	2.216	795958	1.39	100	99.1	90	110	
Mn	55	2	He	100.762	1.928	582354	1.17	100	100.8	90	110	
Fe	56	2	He	10228.767	1.416	72522707	0.98	10000	102.3	90	110	
Co	59	2	He	98.444	0.717	1081047	1.00	100	98.4	90	110	
Ni	60	2	He	102.046	0.850	278257	0.37	100	102.0	90	110	
Cu	63	2	He	71.306	2.460	733460	0.79	100	71.3	90	110	CCV Main CR1-2 Failed
Zn	66	2	He	101.413	1.478	175910	0.67	100	101.4	90	110	
As	75	2	He	101.302	0.377	178037	0.64	100	101.3	90	110	
Se	78	2	He	97.088	0.935	14424	1.01	100	97.1	90	110	
B	11	1	nogas	520.715	2.692	2912980	0.84	500	104.1	90	110	
Si	28	1	nogas	5630.670	1.161	8711614	0.77	5000	112.6	90	110	CCV Main CR1-2 Failed
Ca	43	1	nogas	10518.340	2.271	435164	1.43	10000	105.2	90	110	
Ca	44	1	nogas	10329.260	2.784	7296627	1.64	10000	103.3	90	110	
Fe	56	1	nogas	10071.724	1.576	281618540	1.65	10000	100.7	90	110	
Se	77	1	nogas	77.249	1.438	44020	0.40	100	77.2	90	110	CCV Main CR1-2 Failed
Se	82	1	nogas	94.670	1.158	33414	0.79	100	94.7	90	110	
Mo	95	1	nogas	98.145	1.530	663847	0.52	100	98.1	90	110	
Sn	118	1	nogas	93.421	1.471	949440	1.44	100	93.4	90	110	
Ba	137	1	nogas	99.732	1.865	477572	1.10	100	99.7	90	110	
Sb	121	2	He	99.571	0.644	614910	0.94	100	99.6	90	110	
Li	7	1	nogas	109.057	4.681	2066015	5.00	100	109.1	90	110	
P	31	1	nogas	480.950	0.572	1124446	0.78	500	96.2	90	110	
La	139	1	nogas	129.150	9.082	660	8.44	100	129.1	90	110	CCV Main CR1-2 Failed
Au	197	1	nogas	246.653	268.261	33	105.36	100	246.7	90	110	CCV Main CR1-2 Failed

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	1209767	3.32	1244232	97.23	70	125	
Ge	72	1	nogas	3643562	1.03	3426753	106.33	70	125	
In	115	1	nogas	3162560	2.61	3101048	101.98	70	125	
Bi	209	1	nogas	2411692	3.38	2417268	99.77	70	125	

Continuing Calibration Verification (CCV) Report

Ge	72	2	He	927275	1.01	931587	99.54	70	125	

Continuing Calibration Blank (CCB) Report

Sample Table

Sample Name	CCB
Data File Name	055_CCB.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\121
Acq Date Time	2018-12-11T17:39:50-06:00
Sample Type	CCB
Dilution	1
Comment	
ISTD Ref File Name	005CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Be	9	1	nogas	0.080	34.8	847	33.6	1	
Na	23	1	nogas	28.203	17.5	1291697	8.8	100	
Mg	24	1	nogas	24.850	15.6	463008	13.6	100	
Al	27	1	nogas	0.155	16.7	28281	1.5	5	
K	39	1	nogas	-4.877	-99.5	9233222	0.5	100	
Ti	47	1	nogas	0.091	87.1	707	23.9	2.5	
V	51	1	nogas	-1.669	-7.1	234696	2.6	2.5	
Cr	52	1	nogas	-0.258	-25.0	48677	2.9	2.5	
Mn	55	1	nogas	-0.015	-333.2	35795	4.0	2.5	
Co	59	1	nogas	0.068	25.8	3640	13.1	2.5	
Ni	60	1	nogas	0.342	10.9	1527	14.7	2.5	
Cu	63	1	nogas	-59.407	-0.2	94079	2.8	2.5	
Zn	66	1	nogas	0.336	21.7	2800	12.3	2.5	
As	75	1	nogas	-1.009	-19.1	57180	2.7	2.5	
Sr	88	1	nogas	0.354	11.4	14066	8.9	2.5	
Ag	107	1	nogas	0.084	34.6	1553	31.2	2.5	
Cd	111	1	nogas	0.113	33.0	433	32.8	1	
Sb	121	1	nogas	0.419	12.0	7305	10.3	2.5	
Tl	205	1	nogas	0.550	65.2	16534	55.3	1	
Pb	208	1	nogas	-0.856	-4.6	12919	9.2	2.5	
U	238	1	nogas	0.131	42.4	4644	42.1	2.5	
[Pb]	206	1	nogas	-0.829	-2.7	3287	8.6	2.5	
[Pb]	207	1	nogas	-0.788	-4.4	2797	9.1	2.5	
Na	23	2	He	20.580	1.2	102014	1.0	100	
Mg	24	2	He	19.043	2.1	20158	2.6	100	
Al	27	2	He	0.760	17.9	707	11.0	5	
K	39	2	He	4.655	36.0	236334	0.7	100	
Ca	43	2	He	49.607	19.7	197	15.5	100	
Ca	44	2	He	29.604	14.0	5491	4.3	100	
V	51	2	He	0.906	1.4	3688	3.1	2.5	
Cr	52	2	He	0.033	65.8	6675	3.2	2.5	
Mn	55	2	He	-0.142	-15.2	3964	3.0	2.5	
Fe	56	2	He	14.225	5.8	118509	5.1	100	
Co	59	2	He	0.041	12.0	973	5.2	2.5	
Ni	60	2	He	0.518	7.3	393	27.4	2.5	
Cu	63	2	He	-26.606	-0.3	33417	1.7	2.5	
Zn	66	2	He	0.389	15.5	940	12.0	2.5	
As	75	2	He	0.076	29.3	513	7.5	2.5	
Se	78	2	He	0.718	24.7	199	13.6	2.5	
B	11	1	nogas	3.845	27.8	160285	4.6	10	
Si	28	1	nogas	-9.063	-501.9	1639663	2.9	5	
Ca	43	1	nogas	47.586	12.6	3304	7.3	100	
Ca	44	1	nogas	-147.160	-8.0	387097	1.0	100	
Fe	56	1	nogas	30.258	23.0	2851906	6.2	100	
Se	77	1	nogas	-7.668	-22.9	18390	3.8	2.5	
Se	82	1	nogas	-0.240	-112.8	393	23.5	2.5	
Mo	95	1	nogas	0.324	37.2	2384	33.8	2.5	
Sn	118	1	nogas	1.170	3.9	13519	4.8	5	

Continuing Calibration Blank (CCB) Report

Ba	137	1	nogas	0.226	7.9	2420	3.3	2.5	
Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Sb	121	2	He	0.355	1.9	2510	1.6	2.5	
P	31	1	nogas	-5.156	-22.6	127116	1.8	10	
La	139	1	nogas	-0.796	-288.1	63	18.2	2.5	
Au	197	1	nogas	52.228	1190.6	23	137.8	2.5	CCB Main CR1 Failed

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	1356940	1.21	1244232	109.06	70	125	
Ge	72	1	nogas	3667796	1.06	3426753	107.03	70	125	
In	115	1	nogas	3245319	1.30	3101048	104.65	70	125	
Bi	209	1	nogas	2500552	2.87	2417268	103.45	70	125	
Ge	72	2	He	949822	0.68	931587	101.96	70	125	

Continuing Calibration Blank (CCB) Report

Sample Table

Sample Name	CCB
Data File Name	067_CCB.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\121
Acq Date Time	2018-12-11T18:04:29-06:00
Sample Type	CCB
Dilution	1
Comment	
ISTD Ref File Name	005CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Be	9	1	nogas	0.059	44.1	673	41.6	1	
Na	23	1	nogas	61.670	5.5	2395218	7.9	100	
Mg	24	1	nogas	10.449	15.9	215964	22.2	100	
Al	27	1	nogas	0.093	19.8	28715	4.9	5	
K	39	1	nogas	-31.113	-53.9	9221047	1.4	100	
Ti	47	1	nogas	0.062	97.5	693	26.3	2.5	
V	51	1	nogas	-0.677	-60.7	282792	0.6	2.5	
Cr	52	1	nogas	-0.432	-17.2	47127	2.0	2.5	
Mn	55	1	nogas	-0.025	-203.5	37892	6.4	2.5	
Co	59	1	nogas	0.039	39.8	3004	20.5	2.5	
Ni	60	1	nogas	0.308	11.2	1403	14.3	2.5	
Cu	63	1	nogas	-60.475	-0.9	84229	5.4	2.5	
Zn	66	1	nogas	0.406	1.4	3370	6.3	2.5	
As	75	1	nogas	-1.178	-53.1	59762	2.0	2.5	
Sr	88	1	nogas	0.703	6.6	27709	10.6	2.5	
Ag	107	1	nogas	0.060	12.0	1223	16.2	2.5	
Cd	111	1	nogas	0.065	35.6	290	42.4	1	
Sb	121	1	nogas	0.143	6.9	3010	10.7	2.5	
Tl	205	1	nogas	0.495	71.1	16909	66.5	1	
Pb	208	1	nogas	-0.922	-3.6	10912	9.1	2.5	
U	238	1	nogas	0.126	38.4	4924	45.9	2.5	
[Pb]	206	1	nogas	-0.929	-1.0	2644	7.3	2.5	
[Pb]	207	1	nogas	-0.871	-1.3	2380	12.0	2.5	
Na	23	2	He	58.383	2.5	161144	4.5	100	
Mg	24	2	He	7.834	7.1	8239	1.9	100	
Al	27	2	He	3.053	127.9	1997	114.2	5	
K	39	2	He	-7.710	-65.8	223871	2.3	100	
Ca	43	2	He	60.054	8.6	217	9.6	100	
Ca	44	2	He	43.759	1.2	5894	4.9	100	
V	51	2	He	0.957	1.1	3861	4.6	2.5	
Cr	52	2	He	0.063	83.4	6548	7.1	2.5	
Mn	55	2	He	-0.155	-10.4	3677	5.9	2.5	
Fe	56	2	He	7.305	3.0	64620	5.6	100	
Co	59	2	He	0.027	57.0	773	24.5	2.5	
Ni	60	2	He	0.497	5.8	313	19.2	2.5	
Cu	63	2	He	-26.779	-0.6	30395	1.8	2.5	
Zn	66	2	He	0.348	11.8	823	13.3	2.5	
As	75	2	He	0.043	61.9	430	12.1	2.5	
Se	78	2	He	0.843	15.8	205	3.7	2.5	
B	11	1	nogas	-1.501	-70.5	136697	3.0	10	
Si	28	1	nogas	-214.434	-19.3	1472993	2.1	5	
Ca	43	1	nogas	76.429	7.1	4817	10.0	100	
Ca	44	1	nogas	-199.208	-12.3	376160	1.7	100	
Fe	56	1	nogas	19.207	15.4	2715913	3.6	100	
Se	77	1	nogas	-7.302	-46.0	19728	0.3	2.5	
Se	82	1	nogas	-0.401	-29.6	360	12.1	2.5	
Mo	95	1	nogas	0.274	19.5	2194	20.7	2.5	
Sn	118	1	nogas	0.990	9.3	12998	0.9	5	

Continuing Calibration Blank (CCB) Report

Ba	137	1	nogas	0.060	37.0	1797	5.8	2.5	
Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Sb	121	2	He	0.135	15.2	1057	12.7	2.5	
P	31	1	nogas	-7.377	-36.0	130725	1.2	10	
La	139	1	nogas	0.314	257.0	77	7.5	2.5	
Au	197	1	nogas	52.397	583.9	27	78.1	2.5	CCB Main CR1 Failed

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	1451801	8.04	1244232	116.68	70	125	
Ge	72	1	nogas	3919269	5.39	3426753	114.37	70	125	
In	115	1	nogas	3637814	8.39	3101048	117.31	70	125	
Bi	209	1	nogas	2707019	10.06	2417268	111.99	70	125	
Ge	72	2	He	899280	5.33	931587	96.53	70	125	

Continuing Calibration Verification (CCV) Report

Sample Table

Sample Name	CCV
Data File Name	069_CCV.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\121
Acq Date Time	2018-12-11T18:17:29-06:00
Sample Type	CCV
Dilution	1
Comment	
ISTD Ref File Name	005CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Exp Value	%Rec	%Low	%High2	QC Flag
Be	9	1	nogas	98.171	4.371	899434	1.70	100	98.2	90	110	
Na	23	1	nogas	10258.311	1.297	301737498	2.48	10000	102.6	90	110	
Mg	24	1	nogas	10413.399	1.673	193970092	1.08	10000	104.1	90	110	
Al	27	1	nogas	103.035	2.882	2412516	2.52	100	103.0	90	110	
K	39	1	nogas	10343.027	1.084	249120272	1.63	10000	103.4	90	110	
Ti	47	1	nogas	98.530	0.677	224936	0.94	100	98.5	90	110	
V	51	1	nogas	99.114	2.660	3417087	2.07	100	99.1	90	110	
Cr	52	1	nogas	101.652	1.799	2755680	1.44	100	101.7	90	110	
Mn	55	1	nogas	102.362	2.098	3363185	1.28	100	102.4	90	110	
Co	59	1	nogas	98.613	1.041	2882483	1.08	100	98.6	90	110	
Ni	60	1	nogas	96.913	1.071	627280	1.21	100	96.9	90	110	
Cu	63	1	nogas	50.519	6.606	1680813	3.02	100	50.5	90	110	CCV Main CR1-2 Failed
Zn	66	1	nogas	99.469	2.131	517886	2.44	100	99.5	90	110	
As	75	1	nogas	95.311	1.964	705994	0.93	100	95.3	90	110	
Sr	88	1	nogas	99.941	0.673	3483952	1.48	100	99.9	90	110	
Ag	107	1	nogas	99.113	0.516	1737364	0.90	100	99.1	90	110	
Cd	111	1	nogas	97.702	2.611	373978	0.66	100	97.7	90	110	
Sb	121	1	nogas	100.906	2.680	1689153	3.28	100	100.9	90	110	
Tl	205	1	nogas	105.520	3.375	2470351	1.53	100	105.5	90	110	
Pb	208	1	nogas	108.082	1.571	3305720	1.55	100	108.1	90	110	
U	238	1	nogas	100.414	2.440	3199330	1.41	100	100.4	90	110	
[Pb]	206	1	nogas	98.402	2.660	811285	2.06	100	98.4	90	110	
[Pb]	207	1	nogas	95.350	2.555	684524	1.01	100	95.3	90	110	
Na	23	2	He	10661.652	2.188	18377749	2.55	10000	106.6	90	110	
Mg	24	2	He	10659.559	2.349	10349538	2.89	10000	106.6	90	110	
Al	27	2	He	100.119	0.594	56856	0.91	100	100.1	90	110	
K	39	2	He	10574.222	3.079	10889593	3.01	10000	105.7	90	110	
Ca	43	2	He	10240.310	2.790	29991	2.53	10000	102.4	90	110	
Ca	44	2	He	9950.897	2.032	496165	1.45	10000	99.5	90	110	
V	51	2	He	101.036	0.913	737199	1.31	100	101.0	90	110	
Cr	52	2	He	100.893	1.168	790222	1.72	100	100.9	90	110	
Mn	55	2	He	100.189	1.168	564481	1.25	100	100.2	90	110	
Fe	56	2	He	10064.325	0.650	69556901	0.97	10000	100.6	90	110	
Co	59	2	He	99.557	1.419	1065636	1.63	100	99.6	90	110	
Ni	60	2	He	104.000	1.663	276433	1.37	100	104.0	90	110	
Cu	63	2	He	75.483	2.239	744081	1.01	100	75.5	90	110	CCV Main CR1-2 Failed
Zn	66	2	He	102.148	1.309	172715	1.37	100	102.1	90	110	
As	75	2	He	100.546	0.341	172243	0.31	100	100.5	90	110	
Se	78	2	He	93.567	1.481	13552	1.00	100	93.6	90	110	
B	11	1	nogas	492.839	1.729	2803721	4.40	500	98.6	90	110	
Si	28	1	nogas	4840.815	0.713	7985256	0.87	5000	96.8	90	110	
Ca	43	1	nogas	10054.045	0.814	430353	0.51	10000	100.5	90	110	
Ca	44	1	nogas	10131.420	2.273	7412699	1.24	10000	101.3	90	110	
Fe	56	1	nogas	10173.978	1.373	294223348	0.89	10000	101.7	90	110	
Se	77	1	nogas	75.337	1.313	44936	1.20	100	75.3	90	110	CCV Main CR1-2 Failed
Se	82	1	nogas	94.269	1.889	34423	2.52	100	94.3	90	110	
Mo	95	1	nogas	98.028	1.369	685865	0.54	100	98.0	90	110	
Sn	118	1	nogas	91.322	1.591	988941	0.82	100	91.3	90	110	
Ba	137	1	nogas	95.635	0.233	488152	2.14	100	95.6	90	110	
Sb	121	2	He	97.301	1.013	585684	0.48	100	97.3	90	110	
Li	7	1	nogas	117.866	6.794	2250252	0.37	100	117.9	90	110	CCV Main CR1-2 Failed
P	31	1	nogas	471.835	1.174	1143714	0.86	500	94.4	90	110	
La	139	1	nogas	124.155	31.352	680	29.30	100	124.2	90	110	CCV Main CR1-2 Failed
Au	197	1	nogas	387.732	184.148	40	90.14	100	387.7	90	110	CCV Main CR1-2 Failed

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	1227428	5.94	1244232	98.65	70	125	
Ge	72	1	nogas	3768786	0.90	3426753	109.98	70	125	
In	115	1	nogas	3369710	2.17	3101048	108.66	70	125	
Bi	209	1	nogas	2444066	2.79	2417268	101.11	70	125	

Continuing Calibration Verification (CCV) Report

Ge	72	2	He	903815	0.57	931587	97.02	70	125	

Continuing Calibration Verification (CCV) Report

Sample Table

Sample Name	CCV
Data File Name	074_CCV.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\121
Acq Date Time	2018-12-11T18:27:43-06:00
Sample Type	CCV
Dilution	1
Comment	
ISTD Ref File Name	005CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Exp Value	%Rec	%Low	%High2	QC Flag
Be	9	1	nogas	95.379	8.847	857702	1.55	100	95.4	90	110	
Na	23	1	nogas	9611.004	6.731	296335148	0.58	10000	96.1	90	110	
Mg	24	1	nogas	9983.957	7.873	194860025	1.49	10000	99.8	90	110	
Al	27	1	nogas	100.741	7.136	2330443	1.45	100	100.7	90	110	
K	39	1	nogas	10359.787	6.936	246444997	0.37	10000	103.6	90	110	
Ti	47	1	nogas	98.084	7.841	221071	1.74	100	98.1	90	110	
V	51	1	nogas	97.437	8.199	3322156	1.49	100	97.4	90	110	
Cr	52	1	nogas	100.156	8.650	2680781	2.25	100	100.2	90	110	
Mn	55	1	nogas	100.650	7.125	3266884	0.77	100	100.7	90	110	
Co	59	1	nogas	96.384	8.568	2780669	2.30	100	96.4	90	110	
Ni	60	1	nogas	96.128	8.177	614183	1.88	100	96.1	90	110	
Cu	63	1	nogas	45.920	16.186	1594781	0.41	100	45.9	90	110	CCV Main CR1-2 Failed
Zn	66	1	nogas	98.775	8.357	507610	2.22	100	98.8	90	110	
As	75	1	nogas	95.552	6.736	699220	1.59	100	95.6	90	110	
Sr	88	1	nogas	102.493	9.714	3524846	3.70	100	102.5	90	110	
Ag	107	1	nogas	99.020	5.456	1715816	2.86	100	99.0	90	110	
Cd	111	1	nogas	95.177	6.794	361478	1.10	100	95.2	90	110	
Sb	121	1	nogas	98.089	4.559	1623206	1.86	100	98.1	90	110	
Tl	205	1	nogas	100.313	9.727	2387725	2.44	100	100.3	90	110	
Pb	208	1	nogas	104.279	1.693	3190792	1.67	100	104.3	90	110	
U	238	1	nogas	98.536	8.036	3194455	2.34	100	98.5	90	110	
[Pb]	206	1	nogas	94.152	10.620	789137	3.28	100	94.2	90	110	
[Pb]	207	1	nogas	91.153	10.228	665463	2.94	100	91.2	90	110	
Na	23	2	He	10877.014	1.831	18394929	1.81	10000	108.8	90	110	
Mg	24	2	He	10726.769	1.845	10218503	1.91	10000	107.3	90	110	
Al	27	2	He	99.531	1.254	55462	1.27	100	99.5	90	110	
K	39	2	He	10401.175	2.129	10715176	2.08	10000	104.0	90	110	
Ca	43	2	He	10238.144	3.270	29423	3.23	10000	102.4	90	110	
Ca	44	2	He	10131.688	0.707	495665	0.60	10000	101.3	90	110	
V	51	2	He	100.289	0.377	717979	0.44	100	100.3	90	110	
Cr	52	2	He	102.255	1.990	785735	1.94	100	102.3	90	110	
Mn	55	2	He	99.946	0.771	552550	0.66	100	99.9	90	110	
Fe	56	2	He	10295.110	1.348	69815604	1.37	10000	103.0	90	110	
Co	59	2	He	102.011	0.983	1071390	1.05	100	102.0	90	110	
Ni	60	2	He	104.622	1.791	272884	1.78	100	104.6	90	110	
Cu	63	2	He	72.924	1.903	712632	1.24	100	72.9	90	110	CCV Main CR1-2 Failed
Zn	66	2	He	101.578	0.903	168529	0.86	100	101.6	90	110	
As	75	2	He	100.229	1.391	168478	1.29	100	100.2	90	110	
Se	78	2	He	93.350	1.078	13268	1.15	100	93.4	90	110	
B	11	1	nogas	499.397	9.264	2783855	1.74	500	99.9	90	110	
Si	28	1	nogas	4831.925	10.247	7871548	1.80	5000	96.6	90	110	
Ca	43	1	nogas	10226.677	6.940	432354	1.29	10000	102.3	90	110	
Ca	44	1	nogas	10030.286	8.639	7251196	2.31	10000	100.3	90	110	
Fe	56	1	nogas	10100.068	7.106	288565756	3.09	10000	101.0	90	110	
Se	77	1	nogas	73.065	13.520	43676	1.04	100	73.1	90	110	CCV Main CR1-2 Failed
Se	82	1	nogas	94.397	5.559	34062	1.13	100	94.4	90	110	
Mo	95	1	nogas	98.092	8.944	677309	2.90	100	98.1	90	110	
Sn	118	1	nogas	90.541	7.852	972257	1.83	100	90.5	90	110	
Ba	137	1	nogas	94.713	7.799	479278	1.19	100	94.7	90	110	
Sb	121	2	He	98.650	0.771	582674	0.67	100	98.6	90	110	
Li	7	1	nogas	113.065	5.845	2128975	1.97	100	113.1	90	110	CCV Main CR1-2 Failed
P	31	1	nogas	470.835	8.651	1127202	1.31	500	94.2	90	110	
La	139	1	nogas	106.071	16.603	590	20.55	100	106.1	90	110	
Au	197	1	nogas	-10.564	-3204.459	20	86.60	100	-10.6	90	110	CCV Main CR1-2 Failed

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	1208139	7.71	1244232	97.10	70	125	
Ge	72	1	nogas	3733171	6.38	3426753	108.94	70	125	
In	115	1	nogas	3352554	6.90	3101048	108.11	70	125	
Bi	209	1	nogas	2495682	7.61	2417268	103.24	70	125	

Continuing Calibration Verification (CCV) Report

Ge	72	2	He	886849	0.10	931587	95.20	70	125	

Continuing Calibration Blank (CCB) Report

Sample Table

Sample Name	CCB
Data File Name	075_CCB.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\121
Acq Date Time	2018-12-11T18:29:47-06:00
Sample Type	CCB
Dilution	1
Comment	
ISTD Ref File Name	005CALB.d
Sample QC Pass/Fail	Pass
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Be	9	1	nogas	0.059	22.1	610	20.5	1	
Na	23	1	nogas	48.684	4.1	1911866	1.6	100	
Mg	24	1	nogas	7.828	23.1	156357	19.9	100	
Al	27	1	nogas	0.182	6.0	27907	0.7	5	
K	39	1	nogas	-1.677	-315.3	8990643	0.9	100	
Ti	47	1	nogas	0.030	102.8	553	12.3	2.5	
V	51	1	nogas	-1.633	-4.1	227775	0.5	2.5	
Cr	52	1	nogas	-0.427	-14.2	42796	3.2	2.5	
Mn	55	1	nogas	-0.008	-582.2	34780	3.8	2.5	
Co	59	1	nogas	0.036	28.6	2637	10.4	2.5	
Ni	60	1	nogas	0.329	5.5	1397	8.0	2.5	
Cu	63	1	nogas	-59.542	-0.5	89075	5.1	2.5	
Zn	66	1	nogas	0.477	7.8	3394	4.9	2.5	
As	75	1	nogas	-1.424	-7.2	52620	1.1	2.5	
Sr	88	1	nogas	0.323	4.9	12548	3.7	2.5	
Ag	107	1	nogas	0.057	12.6	1053	11.1	2.5	
Cd	111	1	nogas	0.080	12.5	320	13.6	1	
Sb	121	1	nogas	0.134	6.2	2567	4.6	2.5	
Tl	205	1	nogas	0.722	66.7	20476	56.9	1	
Pb	208	1	nogas	-0.935	-1.7	10518	4.5	2.5	
U	238	1	nogas	0.142	48.4	4974	45.7	2.5	
[Pb]	206	1	nogas	-0.908	-0.6	2614	1.6	2.5	
[Pb]	207	1	nogas	-0.822	-2.8	2544	7.3	2.5	
Na	23	2	He	52.783	3.0	147061	1.8	100	
Mg	24	2	He	6.618	9.0	6868	7.9	100	
Al	27	2	He	0.938	13.6	747	10.1	5	
K	39	2	He	-12.848	-15.9	218692	0.9	100	
Ca	43	2	He	30.484	11.8	127	9.1	100	
Ca	44	2	He	15.253	36.2	4357	6.5	100	
V	51	2	He	0.912	2.7	3428	4.1	2.5	
Cr	52	2	He	0.027	158.5	6081	5.9	2.5	
Mn	55	2	He	-0.241	-22.7	3107	9.1	2.5	
Fe	56	2	He	6.796	7.5	59299	6.2	100	
Co	59	2	He	0.026	19.5	737	8.2	2.5	
Ni	60	2	He	0.516	4.3	353	15.6	2.5	
Cu	63	2	He	-26.348	-0.3	32422	1.3	2.5	
Zn	66	2	He	0.432	8.0	933	5.3	2.5	
As	75	2	He	0.033	14.8	401	1.3	2.5	
Se	78	2	He	0.748	8.6	187	5.4	2.5	
B	11	1	nogas	0.228	369.3	133290	3.8	10	

Continuing Calibration Blank (CCB) Report

Si	28	1	nogas	-116.103	-22.6	1453556	1.7	5	
Ca	43	1	nogas	27.588	12.2	2390	6.0	100	
Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Ca	44	1	nogas	-137.057	-8.3	380507	1.5	100	
Fe	56	1	nogas	19.765	24.7	2472478	4.9	100	
Se	77	1	nogas	-10.448	-12.5	16945	2.6	2.5	
Se	82	1	nogas	-0.084	-257.3	433	17.3	2.5	
Mo	95	1	nogas	0.285	30.9	2050	27.8	2.5	
Sn	118	1	nogas	1.081	4.8	12985	5.8	5	
Ba	137	1	nogas	0.068	21.3	1697	5.9	2.5	
Sb	121	2	He	0.094	26.3	787	17.6	2.5	
P	31	1	nogas	-4.317	-22.7	124492	1.4	10	
La	139	1	nogas	2.215	174.4	80	25.0	2.5	
Au	197	1	nogas	-204.231	-92.9	10	100.0	2.5	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	1305834	1.12	1244232	104.95	70	125	
Ge	72	1	nogas	3543614	0.48	3426753	103.41	70	125	
In	115	1	nogas	3343979	1.63	3101048	107.83	70	125	
Bi	209	1	nogas	2493674	0.69	2417268	103.16	70	125	
Ge	72	2	He	872221	1.09	931587	93.63	70	125	

Continuing Calibration Verification (CCV) Report

Sample Table

Sample Name	CCV
Data File Name	084_CCV.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\121
Acq Date Time	2018-12-11T18:48:11-06:00
Sample Type	CCV
Dilution	1
Comment	
ISTD Ref File Name	005CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Exp Value	%Rec	%Low	%High2	QC Flag
Be	9	1	nogas	98.899	1.421	815017	2.55	100	98.9	90	110	
Na	23	1	nogas	9832.159	0.809	282579373	2.37	10000	98.3	90	110	
Mg	24	1	nogas	10149.680	3.143	184702725	2.56	10000	101.5	90	110	
Al	27	1	nogas	101.685	6.174	2246907	2.90	100	101.7	90	110	
K	39	1	nogas	10519.489	3.589	239037255	0.36	10000	105.2	90	110	
Ti	47	1	nogas	101.173	3.517	218050	1.44	100	101.2	90	110	
V	51	1	nogas	98.814	2.692	3218054	1.25	100	98.8	90	110	
Cr	52	1	nogas	100.216	5.360	2564692	1.97	100	100.2	90	110	
Mn	55	1	nogas	105.452	6.866	3267879	3.52	100	105.5	90	110	
Co	59	1	nogas	99.231	3.150	2738599	0.90	100	99.2	90	110	
Ni	60	1	nogas	98.238	3.323	600326	0.40	100	98.2	90	110	
Cu	63	1	nogas	50.464	9.300	1585885	1.15	100	50.5	90	110	CCV Main CR1-2 Failed
Zn	66	1	nogas	100.577	3.347	494359	0.65	100	100.6	90	110	
As	75	1	nogas	97.158	4.054	678292	1.48	100	97.2	90	110	
Sr	88	1	nogas	103.053	4.598	3390493	1.44	100	103.1	90	110	
Ag	107	1	nogas	103.733	5.001	1716160	2.33	100	103.7	90	110	
Cd	111	1	nogas	99.443	3.630	364732	0.84	100	99.4	90	110	
Sb	121	1	nogas	103.923	5.345	1641792	2.99	100	103.9	90	110	
Tl	205	1	nogas	105.497	1.814	2401327	2.53	100	105.5	90	110	
Pb	208	1	nogas	102.820	0.064	3146685	0.06	100	102.8	90	110	
U	238	1	nogas	101.637	3.923	3147218	3.34	100	101.6	90	110	
[Pb]	206	1	nogas	97.861	1.259	784297	1.67	100	97.9	90	110	
[Pb]	207	1	nogas	93.442	0.963	652242	0.86	100	93.4	90	110	
Na	23	2	He	10536.495	1.526	17377724	1.66	10000	105.4	90	110	
Mg	24	2	He	10426.597	2.913	9685246	2.89	10000	104.3	90	110	
Al	27	2	He	99.079	0.451	53837	0.19	100	99.1	90	110	
K	39	2	He	9957.222	1.812	10267708	1.77	10000	99.6	90	110	
Ca	43	2	He	10179.400	3.189	28526	2.93	10000	101.8	90	110	
Ca	44	2	He	9964.352	1.230	475412	1.31	10000	99.6	90	110	
V	51	2	He	100.181	1.050	699357	1.10	100	100.2	90	110	
Cr	52	2	He	102.050	0.638	764664	0.81	100	102.0	90	110	
Mn	55	2	He	100.558	2.337	542073	2.27	100	100.6	90	110	
Fe	56	2	He	10177.607	1.136	67300594	1.02	10000	101.8	90	110	
Co	59	2	He	100.059	0.896	1024731	0.77	100	100.1	90	110	
Ni	60	2	He	103.262	1.340	262625	1.53	100	103.3	90	110	
Cu	63	2	He	73.071	2.000	695900	1.59	100	73.1	90	110	CCV Main CR1-2 Failed
Zn	66	2	He	101.224	0.482	163764	0.68	100	101.2	90	110	
As	75	2	He	100.461	1.811	164662	1.57	100	100.5	90	110	
Se	78	2	He	93.199	1.333	12917	1.44	100	93.2	90	110	
B	11	1	nogas	511.019	1.439	2607689	1.93	500	102.2	90	110	
Si	28	1	nogas	4825.403	4.711	7519353	0.57	5000	96.5	90	110	
Ca	43	1	nogas	10276.611	3.277	415285	0.65	10000	102.8	90	110	
Ca	44	1	nogas	10270.493	1.321	7092067	2.13	10000	102.7	90	110	
Fe	56	1	nogas	10188.612	2.634	278260431	1.95	10000	101.9	90	110	
Se	77	1	nogas	80.898	10.335	44050	2.77	100	80.9	90	110	CCV Main CR1-2 Failed
Se	82	1	nogas	95.473	3.556	32904	0.17	100	95.5	90	110	
Mo	95	1	nogas	99.807	1.716	659582	2.02	100	99.8	90	110	
Sn	118	1	nogas	89.981	2.910	933754	1.26	100	90.0	90	110	CCV Main CR1-2 Failed
Ba	137	1	nogas	97.691	2.288	477767	1.66	100	97.7	90	110	
Sb	121	2	He	99.277	0.977	571779	0.82	100	99.3	90	110	
Li	7	1	nogas	115.593	2.004	1988385	1.62	100	115.6	90	110	CCV Main CR1-2 Failed
P	31	1	nogas	475.930	4.405	1087910	1.03	500	95.2	90	110	
La	139	1	nogas	107.191	29.662	573	28.78	100	107.2	90	110	
Au	197	1	nogas	274.546	305.326	33	124.90	100	274.5	90	110	CCV Main CR1-2 Failed

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	1102008	1.16	1244232	88.57	70	125	
Ge	72	1	nogas	3560699	3.35	3426753	103.91	70	125	
In	115	1	nogas	3229943	2.89	3101048	104.16	70	125	
Bi	209	1	nogas	2374796	0.90	2417268	98.24	70	125	

Continuing Calibration Verification (CCV) Report

Ge	72	2	He	864780	0.25	931587	92.83	70	125	

Continuing Calibration Blank (CCB) Report

Sample Table

Sample Name	CCB
Data File Name	085_CCB.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\121
Acq Date Time	2018-12-11T18:50:16-06:00
Sample Type	CCB
Dilution	1
Comment	
ISTD Ref File Name	005CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Be	9	1	nogas	0.117	1.3	1107	1.4	1	
Na	23	1	nogas	23.757	1.2	1137522	2.0	100	
Mg	24	1	nogas	11.499	7.3	215598	8.3	100	
Al	27	1	nogas	0.216	13.1	28869	1.9	5	
K	39	1	nogas	-7.464	-198.8	8929743	0.8	100	
Ti	47	1	nogas	0.104	61.9	717	17.4	2.5	
V	51	1	nogas	-1.693	-14.6	227740	3.3	2.5	
Cr	52	1	nogas	-0.448	-16.2	42579	1.3	2.5	
Mn	55	1	nogas	-0.112	-44.8	31844	3.3	2.5	
Co	59	1	nogas	0.086	30.3	4024	15.7	2.5	
Ni	60	1	nogas	0.325	5.0	1383	4.6	2.5	
Cu	63	1	nogas	-59.877	-0.4	85193	4.8	2.5	
Zn	66	1	nogas	0.354	18.4	2820	14.5	2.5	
As	75	1	nogas	-1.657	-12.0	51536	1.0	2.5	
Sr	88	1	nogas	0.163	12.1	7378	5.8	2.5	
Ag	107	1	nogas	0.099	18.4	1763	15.9	2.5	
Cd	111	1	nogas	0.105	7.9	400	4.3	1	
Sb	121	1	nogas	0.599	7.0	9953	3.6	2.5	
Tl	205	1	nogas	0.711	59.9	20255	51.5	1	
Pb	208	1	nogas	-0.940	-1.6	10365	4.4	2.5	
U	238	1	nogas	0.137	42.9	4804	40.9	2.5	
[Pb]	206	1	nogas	-0.920	-0.9	2514	3.0	2.5	
[Pb]	207	1	nogas	-0.869	-3.4	2204	11.8	2.5	
Na	23	2	He	27.594	3.8	105108	2.1	100	
Mg	24	2	He	9.299	8.2	9369	8.8	100	
Al	27	2	He	1.024	25.3	793	19.5	5	
K	39	2	He	-12.115	-11.3	219430	0.6	100	
Ca	43	2	He	17.614	54.0	90	29.4	100	
Ca	44	2	He	1.254	346.1	3684	7.5	100	
V	51	2	He	0.920	2.0	3480	1.8	2.5	
Cr	52	2	He	0.025	34.6	6054	1.4	2.5	
Mn	55	2	He	-0.277	-3.6	2904	2.4	2.5	
Fe	56	2	He	9.438	5.0	76750	4.0	100	
Co	59	2	He	0.061	9.0	1097	3.2	2.5	
Ni	60	2	He	0.542	3.2	420	9.5	2.5	
Cu	63	2	He	-26.592	-0.4	30716	1.4	2.5	
Zn	66	2	He	0.419	4.2	910	2.9	2.5	
As	75	2	He	0.077	40.9	473	12.3	2.5	
Se	78	2	He	0.854	29.6	201	15.9	2.5	
B	11	1	nogas	0.422	36.8	126857	1.3	10	
Si	28	1	nogas	-156.449	-36.2	1414243	1.8	5	
Ca	43	1	nogas	13.711	23.6	1847	6.4	100	
Ca	44	1	nogas	-175.106	-14.0	358647	1.3	100	
Fe	56	1	nogas	17.062	38.5	2415911	4.8	100	
Se	77	1	nogas	-12.719	-21.5	16394	3.7	2.5	
Se	82	1	nogas	-0.327	-60.9	353	18.8	2.5	
Mo	95	1	nogas	0.366	22.7	2594	18.3	2.5	
Sn	118	1	nogas	1.126	4.2	13035	1.4	5	

Continuing Calibration Blank (CCB) Report

Ba	137	1	nogas	0.120	48.1	1893	12.9	2.5	
Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Sb	121	2	He	0.510	7.4	3197	6.0	2.5	
P	31	1	nogas	-5.394	-45.8	123231	1.4	10	
La	139	1	nogas	1.181	574.9	73	47.9	2.5	
Au	197	1	nogas	109.646	191.2	27	43.3	2.5	CCB Main CR1 Failed

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	1232380	0.80	1244232	99.05	70	125	
Ge	72	1	nogas	3572152	3.11	3426753	104.24	70	125	
In	115	1	nogas	3242236	3.92	3101048	104.55	70	125	
Bi	209	1	nogas	2492372	2.41	2417268	103.11	70	125	
Ge	72	2	He	870635	1.99	931587	93.46	70	125	

Continuing Calibration Verification (CCV) Report

Sample Table

Sample Name	CCV
Data File Name	096_CCV.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\121
Acq Date Time	2018-12-11T19:12:48-06:00
Sample Type	CCV
Dilution	1
Comment	
ISTD Ref File Name	005CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Exp Value	%Rec	%Low	%High2	QC Flag
Be	9	1	nogas	95.987	4.434	859121	1.15	100	96.0	90	110	
Na	23	1	nogas	10327.132	1.705	290780865	2.80	10000	103.3	90	110	
Mg	24	1	nogas	10511.270	1.684	187454250	2.42	10000	105.1	90	110	
Al	27	1	nogas	100.959	5.237	2268514	4.00	100	101.0	90	110	
K	39	1	nogas	10332.122	1.623	238836705	1.76	10000	103.3	90	110	
Ti	47	1	nogas	98.531	2.660	215828	0.53	100	98.5	90	110	
V	51	1	nogas	105.649	2.052	3476950	0.85	100	105.6	90	110	
Cr	52	1	nogas	100.884	1.447	2625276	1.66	100	100.9	90	110	
Mn	55	1	nogas	105.051	3.132	3310943	1.09	100	105.1	90	110	
Co	59	1	nogas	99.225	2.455	2784399	3.90	100	99.2	90	110	
Ni	60	1	nogas	98.111	1.495	609441	1.12	100	98.1	90	110	
Cu	63	1	nogas	46.239	2.460	1553924	1.40	100	46.2	90	110	CCV Main CR1-2 Failed
Zn	66	1	nogas	99.386	1.923	496532	0.22	100	99.4	90	110	
As	75	1	nogas	98.898	1.590	700708	0.70	100	98.9	90	110	
Sr	88	1	nogas	101.180	3.432	3383889	1.77	100	101.2	90	110	
Ag	107	1	nogas	101.200	1.345	1702430	1.15	100	101.2	90	110	
Cd	111	1	nogas	96.703	1.849	351306	2.07	100	96.7	90	110	
Sb	121	1	nogas	101.651	3.412	1632392	1.57	100	101.7	90	110	
Tl	205	1	nogas	99.476	2.318	2370088	2.04	100	99.5	90	110	
Pb	208	1	nogas	106.708	1.628	3264211	1.61	100	106.7	90	110	
U	238	1	nogas	100.370	1.647	3253694	0.79	100	100.4	90	110	
[Pb]	206	1	nogas	94.181	2.554	790402	1.91	100	94.2	90	110	
[Pb]	207	1	nogas	92.850	1.424	678481	1.07	100	92.9	90	110	
Na	23	2	He	10989.974	2.078	18475815	2.41	10000	109.9	90	110	
Mg	24	2	He	10601.341	0.769	10039030	0.98	10000	106.0	90	110	
Al	27	2	He	96.675	1.185	53560	1.64	100	96.7	90	110	
K	39	2	He	10163.026	0.890	10475142	0.87	10000	101.6	90	110	
Ca	43	2	He	10125.209	2.058	28929	2.69	10000	101.3	90	110	
Ca	44	2	He	10041.386	0.473	488371	0.88	10000	100.4	90	110	
V	51	2	He	98.699	0.427	702358	0.84	100	98.7	90	110	
Cr	52	2	He	99.796	1.181	762473	1.77	100	99.8	90	110	
Mn	55	2	He	100.415	0.982	551813	0.45	100	100.4	90	110	
Fe	56	2	He	10335.306	0.660	69670446	0.21	10000	103.4	90	110	
Co	59	2	He	99.465	1.211	1038422	0.86	100	99.5	90	110	
Ni	60	2	He	101.624	1.408	263462	1.44	100	101.6	90	110	
Cu	63	2	He	68.774	1.208	680144	0.23	100	68.8	90	110	CCV Main CR1-2 Failed
Zn	66	2	He	100.952	0.542	166500	1.04	100	101.0	90	110	
As	75	2	He	99.492	0.564	166248	0.10	100	99.5	90	110	
Se	78	2	He	94.535	0.906	13356	1.55	100	94.5	90	110	
B	11	1	nogas	493.273	5.079	2738387	2.51	500	98.7	90	110	
Si	28	1	nogas	5019.875	1.596	7886947	1.52	5000	100.4	90	110	
Ca	43	1	nogas	10187.353	2.300	418417	0.64	10000	101.9	90	110	
Ca	44	1	nogas	9945.776	3.254	6991327	0.97	10000	99.5	90	110	
Fe	56	1	nogas	10322.153	1.577	286451623	0.92	10000	103.2	90	110	
Se	77	1	nogas	105.041	3.470	52064	1.55	100	105.0	90	110	
Se	82	1	nogas	96.444	2.365	33785	2.45	100	96.4	90	110	
Mo	95	1	nogas	98.034	1.806	658351	2.25	100	98.0	90	110	
Sn	118	1	nogas	91.938	4.188	944209	0.91	100	91.9	90	110	
Ba	137	1	nogas	99.335	3.749	480757	0.24	100	99.3	90	110	
Sb	121	2	He	100.586	1.011	590563	0.48	100	100.6	90	110	
Li	7	1	nogas	112.621	0.760	2109524	3.30	100	112.6	90	110	CCV Main CR1-2 Failed
P	31	1	nogas	468.251	1.757	1090295	0.83	500	93.7	90	110	
La	139	1	nogas	115.751	12.417	607	14.40	100	115.8	90	110	CCV Main CR1-2 Failed
Au	197	1	nogas	366.038	50.636	40	25.00	100	366.0	90	110	CCV Main CR1-2 Failed

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	1198304	3.78	1244232	96.31	70	125	
Ge	72	1	nogas	3617432	2.11	3426753	105.56	70	125	
In	115	1	nogas	3198342	3.74	3101048	103.14	70	125	
Bi	209	1	nogas	2485923	0.87	2417268	102.84	70	125	

Continuing Calibration Verification (CCV) Report

Ge	72	2	He	881589	0.66	931587	94.63	70	125	

Continuing Calibration Blank (CCB) Report

Sample Table

Sample Name	CCB
Data File Name	097_CCB.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\121
Acq Date Time	2018-12-11T19:14:51-06:00
Sample Type	CCB
Dilution	1
Comment	
ISTD Ref File Name	005CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Be	9	1	nogas	0.057	32.2	597	33.9	1	
Na	23	1	nogas	106.117	8.0	3563308	6.8	100	CCB Main CR1 Failed
Mg	24	1	nogas	19.301	9.2	366702	9.8	100	
Al	27	1	nogas	0.173	28.0	28655	1.8	5	
K	39	1	nogas	-20.425	-67.2	8874426	0.9	100	
Ti	47	1	nogas	0.036	51.4	587	8.1	2.5	
V	51	1	nogas	1.355	3.9	327340	3.5	2.5	
Cr	52	1	nogas	-0.350	-23.2	46234	1.4	2.5	
Mn	55	1	nogas	-0.127	-26.4	32222	0.3	2.5	
Co	59	1	nogas	0.040	26.1	2817	9.1	2.5	
Ni	60	1	nogas	0.316	8.3	1363	8.9	2.5	
Cu	63	1	nogas	-62.487	-0.2	50870	4.7	2.5	
Zn	66	1	nogas	0.349	16.5	2860	9.1	2.5	
As	75	1	nogas	0.312	96.8	65765	1.9	2.5	
Sr	88	1	nogas	0.321	5.8	12935	5.4	2.5	
Ag	107	1	nogas	0.045	32.4	880	24.6	2.5	
Cd	111	1	nogas	0.042	26.7	173	24.0	1	
Sb	121	1	nogas	0.129	22.7	2580	15.5	2.5	
Tl	205	1	nogas	0.655	74.3	19479	62.0	1	
Pb	208	1	nogas	-1.010	-2.3	8254	8.6	2.5	
U	238	1	nogas	0.138	46.6	5001	43.6	2.5	
[Pb]	206	1	nogas	-0.983	-3.0	2057	12.4	2.5	
[Pb]	207	1	nogas	-0.943	-3.5	1723	14.5	2.5	
Na	23	2	He	104.890	6.8	245732	4.7	100	CCB Main CR1 Failed
Mg	24	2	He	17.929	9.2	18376	7.7	100	
Al	27	2	He	0.905	21.1	767	14.1	5	
K	39	2	He	-14.121	-24.2	217409	1.6	100	
Ca	43	2	He	47.317	43.6	183	33.3	100	
Ca	44	2	He	31.495	7.7	5404	3.5	100	
V	51	2	He	1.042	2.1	4576	2.2	2.5	
Cr	52	2	He	-0.002	-1242.7	6171	1.8	2.5	
Mn	55	2	He	-0.289	-3.6	2997	1.0	2.5	
Fe	56	2	He	6.639	5.0	61295	2.7	100	
Co	59	2	He	0.032	37.6	843	14.2	2.5	
Ni	60	2	He	0.500	4.5	330	19.9	2.5	
Cu	63	2	He	-28.454	-0.1	19207	1.4	2.5	
Zn	66	2	He	0.405	18.4	937	13.3	2.5	
As	75	2	He	0.032	15.0	420	3.5	2.5	
Se	78	2	He	0.886	10.7	217	7.5	2.5	
B	11	1	nogas	-4.646	-15.5	105983	3.2	10	
Si	28	1	nogas	-152.367	-23.4	1457421	1.4	5	
Ca	43	1	nogas	54.679	1.6	3597	2.8	100	
Ca	44	1	nogas	-169.867	-11.6	371686	1.1	100	
Fe	56	1	nogas	21.316	25.5	2599320	3.5	100	
Se	77	1	nogas	1.160	119.1	21072	3.1	2.5	
Se	82	1	nogas	-0.291	-62.9	377	19.6	2.5	
Mo	95	1	nogas	0.260	25.6	1940	20.2	2.5	
Sn	118	1	nogas	1.028	3.0	12375	3.2	5	

Continuing Calibration Blank (CCB) Report

Ba	137	1	nogas	0.310	27.0	2910	14.0	2.5	
Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Sb	121	2	He	0.096	26.9	847	19.4	2.5	
P	31	1	nogas	-5.863	-37.3	125529	1.0	10	
La	139	1	nogas	3.668	277.3	87	56.9	2.5	CCB Main CR1 Failed
Au	197	1	nogas	-209.797	-88.6	10	100.0	2.5	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	1318971	6.20	1244232	106.01	70	125	
Ge	72	1	nogas	3666557	3.06	3426753	107.00	70	125	
In	115	1	nogas	3335397	0.55	3101048	107.56	70	125	
Bi	209	1	nogas	2573951	0.97	2417268	106.48	70	125	
Ge	72	2	He	918296	1.52	931587	98.57	70	125	

Continuing Calibration Verification (CCV) Report

Sample Table

Sample Name	CCV
Data File Name	107_CCV.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\121
Acq Date Time	2018-12-11T19:35:27-06:00
Sample Type	CCV
Dilution	1
Comment	
ISTD Ref File Name	005CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Exp Value	%Rec	%Low	%High2	QC Flag
Be	9	1	nogas	99.863	3.494	905901	1.53	100	99.9	90	110	
Na	23	1	nogas	10667.144	2.127	302012557	1.62	10000	106.7	90	110	
Mg	24	1	nogas	10940.803	2.736	196179225	0.65	10000	109.4	90	110	
Al	27	1	nogas	103.635	2.640	2402652	2.67	100	103.6	90	110	
K	39	1	nogas	10499.145	1.905	250229331	1.77	10000	105.0	90	110	
Ti	47	1	nogas	100.458	1.333	227065	1.35	100	100.5	90	110	
V	51	1	nogas	107.239	2.532	3637144	2.38	100	107.2	90	110	
Cr	52	1	nogas	102.970	1.430	2763257	1.42	100	103.0	90	110	
Mn	55	1	nogas	104.438	1.965	3397160	2.00	100	104.4	90	110	
Co	59	1	nogas	99.047	2.611	2866605	2.56	100	99.0	90	110	
Ni	60	1	nogas	98.490	0.700	631209	0.71	100	98.5	90	110	
Cu	63	1	nogas	45.990	5.807	1599566	2.36	100	46.0	90	110	CCV Main CR1-2 Failed
Zn	66	1	nogas	100.699	0.649	519083	0.66	100	100.7	90	110	
As	75	1	nogas	100.577	0.873	734128	0.75	100	100.6	90	110	
Sr	88	1	nogas	101.814	3.399	3513955	3.34	100	101.8	90	110	
Ag	107	1	nogas	100.808	0.881	1749629	0.94	100	100.8	90	110	
Cd	111	1	nogas	101.537	3.221	380572	0.21	100	101.5	90	110	
Sb	121	1	nogas	101.698	0.379	1685433	0.33	100	101.7	90	110	
Tl	205	1	nogas	105.905	2.659	2501372	3.36	100	105.9	90	110	
Pb	208	1	nogas	107.493	0.651	3287917	0.64	100	107.5	90	110	
U	238	1	nogas	100.966	1.135	3244975	2.37	100	101.0	90	110	
[Pb]	206	1	nogas	98.798	1.114	821507	1.69	100	98.8	90	110	
[Pb]	207	1	nogas	95.135	0.925	688882	0.79	100	95.1	90	110	
Na	23	2	He	10304.326	1.455	18299759	0.84	10000	103.0	90	110	
Mg	24	2	He	10262.827	1.148	10264964	1.06	10000	102.6	90	110	
Al	27	2	He	97.503	1.230	57050	0.56	100	97.5	90	110	
K	39	2	He	10812.817	1.073	11130077	1.05	10000	108.1	90	110	
Ca	43	2	He	10240.656	4.995	30889	3.65	10000	102.4	90	110	
Ca	44	2	He	10129.172	3.170	520185	1.67	10000	101.3	90	110	
V	51	2	He	98.759	1.347	742265	0.41	100	98.8	90	110	
Cr	52	2	He	98.990	1.512	798804	0.21	100	99.0	90	110	
Mn	55	2	He	98.230	2.382	570222	1.47	100	98.2	90	110	
Fe	56	2	He	9899.745	2.603	70478547	1.41	10000	99.0	90	110	
Co	59	2	He	98.390	0.927	1085006	0.87	100	98.4	90	110	
Ni	60	2	He	101.614	2.060	278215	0.43	100	101.6	90	110	
Cu	63	2	He	68.345	3.997	715200	1.47	100	68.3	90	110	CCV Main CR1-2 Failed
Zn	66	2	He	101.203	1.808	176285	0.95	100	101.2	90	110	
As	75	2	He	99.244	0.920	175163	0.84	100	99.2	90	110	
Se	78	2	He	95.297	1.820	14218	0.44	100	95.3	90	110	
B	11	1	nogas	503.871	4.346	2832128	2.28	500	100.8	90	110	
Si	28	1	nogas	5048.659	3.831	8173818	3.08	5000	101.0	90	110	
Ca	43	1	nogas	10357.032	2.590	438913	2.52	10000	103.6	90	110	
Ca	44	1	nogas	10235.799	2.594	7410881	2.40	10000	102.4	90	110	
Fe	56	1	nogas	10310.756	1.834	295223773	1.85	10000	103.1	90	110	
Se	77	1	nogas	102.137	1.588	52816	0.92	100	102.1	90	110	
Se	82	1	nogas	97.322	4.641	35168	4.52	100	97.3	90	110	
Mo	95	1	nogas	99.374	2.352	688454	2.30	100	99.4	90	110	
Sn	118	1	nogas	93.685	3.189	993281	1.01	100	93.7	90	110	
Ba	137	1	nogas	98.334	3.383	491551	4.30	100	98.3	90	110	
Sb	121	2	He	97.668	1.707	605652	0.23	100	97.7	90	110	
Li	7	1	nogas	115.444	1.386	2188147	3.75	100	115.4	90	110	CCV Main CR1-2 Failed
P	31	1	nogas	482.952	0.149	1155832	0.12	500	96.6	90	110	
La	139	1	nogas	130.222	6.967	693	4.41	100	130.2	90	110	CCV Main CR1-2 Failed
Au	197	1	nogas	-7.067	-5496.531	20	100.00	100	-7.1	90	110	CCV Main CR1-2 Failed

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	1214547	4.85	1244232	97.61	70	125	
Ge	72	1	nogas	3731536	0.06	3426753	108.89	70	125	
In	115	1	nogas	3300707	3.26	3101048	106.44	70	125	
Bi	209	1	nogas	2464199	1.35	2417268	101.94	70	125	

Continuing Calibration Verification (CCV) Report

Ge	72	2	He	931250	1.66	931587	99.96	70	125	

Continuing Calibration Blank (CCB) Report

Sample Table

Sample Name	CCB
Data File Name	108_CCB.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\121
Acq Date Time	2018-12-11T19:37:32-06:00
Sample Type	CCB
Dilution	1
Comment	
ISTD Ref File Name	005CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Be	9	1	nogas	0.073	37.8	757	32.5	1	
Na	23	1	nogas	106.665	8.4	3572758	3.3	100	CCB Main CR1 Failed
Mg	24	1	nogas	45.746	11.7	850034	7.8	100	
Al	27	1	nogas	0.251	30.4	30959	3.5	5	
K	39	1	nogas	-11.876	-90.8	9235228	0.6	100	
Ti	47	1	nogas	0.063	79.7	657	16.8	2.5	
V	51	1	nogas	2.098	16.5	356471	3.9	2.5	
Cr	52	1	nogas	-0.225	-20.0	50399	1.4	2.5	
Mn	55	1	nogas	0.234	38.5	44407	4.0	2.5	
Co	59	1	nogas	0.049	37.1	3144	14.2	2.5	
Ni	60	1	nogas	0.333	16.8	1497	22.7	2.5	
Cu	63	1	nogas	-63.015	-0.1	44257	3.0	2.5	
Zn	66	1	nogas	0.383	8.3	3094	4.8	2.5	
As	75	1	nogas	0.882	14.6	70808	3.5	2.5	
Sr	88	1	nogas	0.650	8.1	24510	4.9	2.5	
Ag	107	1	nogas	0.063	24.6	1210	19.5	2.5	
Cd	111	1	nogas	0.071	24.4	283	21.6	1	
Sb	121	1	nogas	0.127	10.4	2600	6.4	2.5	
Tl	205	1	nogas	0.727	68.3	21187	55.1	1	
Pb	208	1	nogas	-0.993	-3.0	8781	10.3	2.5	
U	238	1	nogas	0.150	49.3	5388	43.2	2.5	
[Pb]	206	1	nogas	-0.976	-5.3	2130	18.1	2.5	
[Pb]	207	1	nogas	-0.929	-2.0	1840	4.8	2.5	
Na	23	2	He	94.451	2.5	229268	1.4	100	
Mg	24	2	He	36.416	3.9	36889	2.7	100	
Al	27	2	He	0.728	13.7	670	8.3	5	
K	39	2	He	-9.271	-33.3	222297	1.4	100	
Ca	43	2	He	66.965	21.0	243	16.6	100	
Ca	44	2	He	57.876	13.0	6778	4.6	100	
V	51	2	He	1.064	1.5	4779	1.3	2.5	
Cr	52	2	He	0.042	22.7	6575	2.3	2.5	
Mn	55	2	He	-0.006	-352.2	4641	3.7	2.5	
Fe	56	2	He	9.243	3.8	80204	3.4	100	
Co	59	2	He	0.036	10.6	893	5.2	2.5	
Ni	60	2	He	0.536	12.1	430	40.7	2.5	
Cu	63	2	He	-28.883	-0.1	16281	0.4	2.5	
Zn	66	2	He	0.367	22.0	877	15.3	2.5	
As	75	2	He	0.063	31.2	478	8.1	2.5	
Se	78	2	He	0.898	24.4	220	14.6	2.5	
B	11	1	nogas	-6.755	-15.6	94719	3.7	10	
Si	28	1	nogas	-177.506	-11.0	1452270	1.6	5	
Ca	43	1	nogas	90.785	9.4	5184	4.9	100	
Ca	44	1	nogas	-182.856	-11.2	369738	1.3	100	
Fe	56	1	nogas	27.376	23.7	2818927	4.0	100	
Se	77	1	nogas	5.131	43.3	22705	5.3	2.5	CCB Main CR1 Failed
Se	82	1	nogas	-0.392	-19.5	347	8.8	2.5	
Mo	95	1	nogas	0.276	29.7	2090	24.4	2.5	
Sn	118	1	nogas	1.201	9.5	14144	6.8	5	

Continuing Calibration Blank (CCB) Report

Ba	137	1	nogas	0.280	9.2	2747	5.6	2.5	
Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Sb	121	2	He	0.104	18.5	900	12.2	2.5	
P	31	1	nogas	-3.082	-37.7	133731	0.8	10	
La	139	1	nogas	12.859	83.5	130	38.5	2.5	CCB Main CR1 Failed
Au	197	1	nogas	-89.073	-123.4	17	34.6	2.5	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	1333950	4.42	1244232	107.21	70	125	
Ge	72	1	nogas	3733674	2.50	3426753	108.96	70	125	
In	115	1	nogas	3318769	2.65	3101048	107.02	70	125	
Bi	209	1	nogas	2593812	2.67	2417268	107.30	70	125	
Ge	72	2	He	925267	1.20	931587	99.32	70	125	

Calibration Blank Report

Sample Table

Sample Name	CAL BLK
Data File Name	113CALB.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\121
Acq Date Time	2018-12-11T19:47:47-06:00
Sample Type	CalBlk
Level	1
Dilution	1
Comment	

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD
Be	9	1	nogas	37	261.21
Na	23	1	nogas	955382	0.00
Mg	24	1	nogas	36219	0.02
Al	27	1	nogas	27861	0.00
K	39	1	nogas	8960180	0.00
Ti	47	1	nogas	513	1.10
V	51	1	nogas	390469	0.00
Cr	52	1	nogas	46412	0.00
Mn	55	1	nogas	28946	0.01
Co	59	1	nogas	1140	1.09
Ni	60	1	nogas	730	1.14
Cu	63	1	nogas	45296	0.01
Zn	66	1	nogas	1760	0.15
As	75	1	nogas	71607	0.00
Sr	88	1	nogas	3114	0.06
Ag	107	1	nogas	117	25.80
Cd	111	1	nogas	23	280.57
Sb	121	1	nogas	497	4.22
Tl	205	1	nogas	577	2.30
Pb	208	1	nogas	5394	0.15
[Pb]	206	1	nogas	1390	1.14
[Pb]	207	1	nogas	1187	0.67
Na	23	2	He	95357	0.00
Mg	24	2	He	1900	0.56
Al	27	2	He	770	0.51
K	39	2	He	216285	0.00
Ca	43	2	He	37	171.77
Ca	44	2	He	2934	0.12
V	51	2	He	4835	0.08
Cr	52	2	He	5744	0.06
Mn	55	2	He	2174	0.46
Fe	56	2	He	18089	0.01
Co	59	2	He	243	5.93
Ni	60	2	He	200	10.90
Cu	63	2	He	15613	0.03
Zn	66	2	He	563	0.96
As	75	2	He	386	1.44
Se	78	2	He	191	2.80
B	11	1	nogas	56597	0.01
Si	28	1	nogas	1373243	0.00
Ca	43	1	nogas	1380	1.22
Ca	44	1	nogas	301161	0.00

Calibration Blank Report

Name	Mass	Tune Step	Tune Mode	CPS	%RSD
Fe	56	1	nogas	2440603	0.00
Se	77	1	nogas	22878	0.01
Se	82	1	nogas	353	8.82
Mo	95	1	nogas	193	8.60
Sn	118	1	nogas	1260	0.48
Ba	137	1	nogas	1687	0.17
Sb	121	2	He	220	4.13
Li	7	1	nogas	109109	0.00
P	31	1	nogas	136404	0.00
La	139	1	nogas	90	93.21

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD
Li	6	1	nogas	1314390	0.40
Ge	72	1	nogas	3749087	1.59
In	115	1	nogas	3430303	4.55
Bi	209	1	nogas	2610544	3.00
Ge	72	2	He	932298	1.09

Calibration Standard Report

Sample Table

Sample Name	2/10/200
Data File Name	114CALS.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\121
Acq Date Time	2018-12-11T19:49:49-06:00
Sample Type	CalStd
Level	2
Dilution	1
Comment	
ISTD Ref File Name	113CALB.d
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD
Be	9	1	nogas	17131	0.03
Na	23	1	nogas	6814648	0.00
Mg	24	1	nogas	3858286	0.00
Al	27	1	nogas	65597	0.00
K	39	1	nogas	13616420	0.00
Ti	47	1	nogas	4927	0.06
V	51	1	nogas	445768	0.00
Cr	52	1	nogas	99278	0.00
Mn	55	1	nogas	92625	0.00
Co	59	1	nogas	56768	0.00
Ni	60	1	nogas	13315	0.02
Cu	63	1	nogas	75815	0.00
Zn	66	1	nogas	12198	0.01
As	75	1	nogas	83313	0.00
Sr	88	1	nogas	68612	0.00
Ag	107	1	nogas	34217	0.01
Cd	111	1	nogas	7305	0.06
Sb	121	1	nogas	32754	0.01
Tl	205	1	nogas	45752	0.01
Pb	208	1	nogas	70805	0.00
[Pb]	206	1	nogas	17500	0.04
[Pb]	207	1	nogas	15558	0.01
Na	23	2	He	420202	0.00
Mg	24	2	He	185518	0.00
Al	27	2	He	1483	0.36
K	39	2	He	400885	0.00
Ca	43	2	He	623	0.54
Ca	44	2	He	11774	0.06
V	51	2	He	17837	0.00
Cr	52	2	He	20098	0.02
Mn	55	2	He	12685	0.01
Fe	56	2	He	1366375	0.00
Co	59	2	He	20352	0.00
Ni	60	2	He	5197	0.04
Cu	63	2	He	28522	0.01
Zn	66	2	He	3854	0.14
As	75	2	He	3460	0.03
Se	78	2	He	427	2.91
B	11	1	nogas	107801	0.00
Si	28	1	nogas	1504138	0.00

Calibration Standard Report

Ca	43	1	nogas	10020	0.02
Ca	44	1	nogas	432355	0.00
Name	Mass	Tune Step	Tune Mode	CPS	%RSD
Fe	56	1	nogas	8082193	0.00
Se	77	1	nogas	23222	0.01
Se	82	1	nogas	1093	0.79
Mo	95	1	nogas	14203	0.03
Sn	118	1	nogas	20869	0.01
Ba	137	1	nogas	10814	0.06
Sb	121	2	He	11497	0.04
P	31	1	nogas	152757	0.00
La	139	1	nogas	80	41.34

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	1317270	3.69	1314390	100.22	70	125	
Ge	72	1	nogas	3766343	2.99	3749087	100.46	70	125	
In	115	1	nogas	3319063	1.19	3430303	96.76	70	125	
Bi	209	1	nogas	2645256	4.84	2610544	101.33	70	125	
Ge	72	2	He	854329	2.93	932298	91.64	70	125	

Calibration Standard Report

Sample Table

Sample Name	5/25/500
Data File Name	115CALS.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\121
Acq Date Time	2018-12-11T19:51:53-06:00
Sample Type	CalStd
Level	3
Dilution	1
Comment	
ISTD Ref File Name	113CALB.d
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD
Be	9	1	nogas	42517	0.01
Na	23	1	nogas	15349424	0.00
Mg	24	1	nogas	9913509	0.00
Al	27	1	nogas	137717	0.00
K	39	1	nogas	20692179	0.00
Ti	47	1	nogas	11350	0.03
V	51	1	nogas	557850	0.00
Cr	52	1	nogas	180318	0.00
Mn	55	1	nogas	198876	0.00
Co	59	1	nogas	143917	0.00
Ni	60	1	nogas	32880	0.00
Cu	63	1	nogas	119820	0.00
Zn	66	1	nogas	27658	0.01
As	75	1	nogas	106613	0.00
Sr	88	1	nogas	175195	0.00
Ag	107	1	nogas	87175	0.00
Cd	111	1	nogas	18243	0.03
Sb	121	1	nogas	79809	0.00
Tl	205	1	nogas	114310	0.00
Pb	208	1	nogas	165350	0.00
[Pb]	206	1	nogas	40775	0.00
[Pb]	207	1	nogas	35800	0.00
Na	23	2	He	965444	0.00
Mg	24	2	He	491989	0.00
Al	27	2	He	3457	0.04
K	39	2	He	735510	0.00
Ca	43	2	He	1370	0.09
Ca	44	2	He	26453	0.00
V	51	2	He	40084	0.00
Cr	52	2	He	45155	0.00
Mn	55	2	He	30362	0.00
Fe	56	2	He	3545644	0.00
Co	59	2	He	54518	0.00
Ni	60	2	He	14282	0.01
Cu	63	2	He	52328	0.00
Zn	66	2	He	9413	0.03
As	75	2	He	8465	0.06
Se	78	2	He	853	0.87
B	11	1	nogas	186834	0.00
Si	28	1	nogas	1666771	0.00

Calibration Standard Report

Ca	43	1	nogas	21853	0.01
Ca	44	1	nogas	632194	0.00
Name	Mass	Tune Step	Tune Mode	CPS	%RSD
Fe	56	1	nogas	17229725	0.00
Se	77	1	nogas	25455	0.00
Se	82	1	nogas	1970	0.09
Mo	95	1	nogas	34831	0.00
Sn	118	1	nogas	50346	0.00
Ba	137	1	nogas	25226	0.02
Sb	121	2	He	28567	0.01
P	31	1	nogas	188701	0.00
La	139	1	nogas	70	70.70

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	1377626	2.10	1314390	104.81	70	125	
Ge	72	1	nogas	3809638	0.56	3749087	101.62	70	125	
In	115	1	nogas	3412254	0.72	3430303	99.47	70	125	
Bi	209	1	nogas	2588801	1.61	2610544	99.17	70	125	
Ge	72	2	He	914940	1.55	932298	98.14	70	125	

Calibration Standard Report

Sample Table

Sample Name	10/50/1000
Data File Name	116CALS.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\121
Acq Date Time	2018-12-11T19:53:56-06:00
Sample Type	CalStd
Level	4
Dilution	1
Comment	
ISTD Ref File Name	113CALB.d
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD
Be	9	1	nogas	84097	0.00
Na	23	1	nogas	29961614	0.00
Mg	24	1	nogas	18780270	0.00
Al	27	1	nogas	251217	0.00
K	39	1	nogas	32542367	0.00
Ti	47	1	nogas	23001	0.01
V	51	1	nogas	714982	0.00
Cr	52	1	nogas	310087	0.00
Mn	55	1	nogas	389211	0.00
Co	59	1	nogas	282800	0.00
Ni	60	1	nogas	64467	0.00
Cu	63	1	nogas	199052	0.00
Zn	66	1	nogas	54468	0.00
As	75	1	nogas	138679	0.00
Sr	88	1	nogas	346854	0.00
Ag	107	1	nogas	171955	0.00
Cd	111	1	nogas	37250	0.01
Sb	121	1	nogas	158453	0.00
Tl	205	1	nogas	232893	0.00
Pb	208	1	nogas	324582	0.00
[Pb]	206	1	nogas	81042	0.00
[Pb]	207	1	nogas	70450	0.00
Na	23	2	He	1978153	0.00
Mg	24	2	He	993801	0.00
Al	27	2	He	6118	0.07
K	39	2	He	1286331	0.00
Ca	43	2	He	2894	0.30
Ca	44	2	He	50288	0.01
V	51	2	He	76698	0.00
Cr	52	2	He	84292	0.00
Mn	55	2	He	62529	0.00
Fe	56	2	He	6953901	0.00
Co	59	2	He	110011	0.00
Ni	60	2	He	27948	0.01
Cu	63	2	He	86805	0.00
Zn	66	2	He	18006	0.01
As	75	2	He	17122	0.01
Se	78	2	He	1476	0.30
B	11	1	nogas	308857	0.00
Si	28	1	nogas	1980383	0.00

Calibration Standard Report

Ca	43	1	nogas	44072	0.00
Ca	44	1	nogas	979107	0.00
Name	Mass	Tune Step	Tune Mode	CPS	%RSD
Fe	56	1	nogas	30554820	0.00
Se	77	1	nogas	27110	0.00
Se	82	1	nogas	3624	0.12
Mo	95	1	nogas	69479	0.00
Sn	118	1	nogas	99043	0.00
Ba	137	1	nogas	49134	0.00
Sb	121	2	He	59331	0.00
P	31	1	nogas	240817	0.00
La	139	1	nogas	113	23.78

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	1322918	4.39	1314390	100.65	70	125	
Ge	72	1	nogas	3709870	3.61	3749087	98.95	70	125	
In	115	1	nogas	3379106	1.61	3430303	98.51	70	125	
Bi	209	1	nogas	2604430	3.73	2610544	99.77	70	125	
Ge	72	2	He	918643	0.16	932298	98.54	70	125	

Calibration Standard Report

Sample Table

Sample Name	100/500/10K
Data File Name	117CALS.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\121
Acq Date Time	2018-12-11T19:55:59-06:00
Sample Type	CalStd
Level	5
Dilution	1
Comment	
ISTD Ref File Name	113CALB.d
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD
Be	9	1	nogas	883971	0.00
Na	23	1	nogas	296183048	0.00
Mg	24	1	nogas	191048471	0.00
Al	27	1	nogas	2351946	0.00
K	39	1	nogas	250840539	0.00
Ti	47	1	nogas	222035	0.00
V	51	1	nogas	3433683	0.00
Cr	52	1	nogas	2713335	0.00
Mn	55	1	nogas	3350817	0.00
Co	59	1	nogas	2877411	0.00
Ni	60	1	nogas	623854	0.00
Cu	63	1	nogas	1568716	0.00
Zn	66	1	nogas	510020	0.00
As	75	1	nogas	701970	0.00
Sr	88	1	nogas	3496361	0.00
Ag	107	1	nogas	1761628	0.00
Cd	111	1	nogas	367424	0.00
Sb	121	1	nogas	1677416	0.00
Tl	205	1	nogas	2535758	0.00
Pb	208	1	nogas	3323552	0.00
[Pb]	206	1	nogas	830878	0.00
[Pb]	207	1	nogas	702777	0.00
Na	23	2	He	18299818	0.00
Mg	24	2	He	10162189	0.00
Al	27	2	He	55619	0.00
K	39	2	He	10907343	0.00
Ca	43	2	He	29354	0.02
Ca	44	2	He	501950	0.00
V	51	2	He	736700	0.00
Cr	52	2	He	794537	0.00
Mn	55	2	He	568776	0.00
Fe	56	2	He	70864089	0.00
Co	59	2	He	1075832	0.00
Ni	60	2	He	275720	0.00
Cu	63	2	He	715138	0.00
Zn	66	2	He	175642	0.00
As	75	2	He	171865	0.00
Se	78	2	He	13735	0.01
B	11	1	nogas	2768459	0.00
Si	28	1	nogas	7975692	0.00

Calibration Standard Report

Ca	43	1	nogas	428370	0.00
Ca	44	1	nogas	7293635	0.00
Name	Mass	Tune Step	Tune Mode	CPS	%RSD
Fe	56	1	nogas	287871865	0.00
Se	77	1	nogas	48291	0.00
Se	82	1	nogas	33835	0.01
Mo	95	1	nogas	693516	0.00
Sn	118	1	nogas	969438	0.00
Ba	137	1	nogas	498153	0.00
Sb	121	2	He	596552	0.00
P	31	1	nogas	1159000	0.00
La	139	1	nogas	530	3.56

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	1290237	9.71	1314390	98.16	70	125	
Ge	72	1	nogas	3995709	8.89	3749087	106.58	70	125	
In	115	1	nogas	3538120	10.62	3430303	103.14	70	125	
Bi	209	1	nogas	2758707	8.24	2610544	105.68	70	125	
Ge	72	2	He	906836	1.24	932298	97.27	70	125	

Calibration Standard Report

Sample Table

Sample Name	200/1000/20K
Data File Name	118CALS.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\121
Acq Date Time	2018-12-11T19:58:03-06:00
Sample Type	CalStd
Level	6
Dilution	1
Comment	
ISTD Ref File Name	113CALB.d
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD
Be	9	1	nogas	1689364	0.00
Na	23	1	nogas	564011496	0.00
Mg	24	1	nogas	371556575	0.00
Al	27	1	nogas	4545170	0.00
K	39	1	nogas	467838510	0.00
Ti	47	1	nogas	450665	0.00
V	51	1	nogas	6545610	0.00
Cr	52	1	nogas	5254645	0.00
Mn	55	1	nogas	6618474	0.00
Co	59	1	nogas	5579979	0.00
Ni	60	1	nogas	1282591	0.00
Cu	63	1	nogas	3039026	0.00
Zn	66	1	nogas	996846	0.00
As	75	1	nogas	1393141	0.00
Sr	88	1	nogas	7007486	0.00
Ag	107	1	nogas	3348881	0.00
Cd	111	1	nogas	729109	0.00
Sb	121	1	nogas	3308210	0.00
Tl	205	1	nogas	4814085	0.00
Pb	208	1	nogas	6785737	0.00
[Pb]	206	1	nogas	1693524	0.00
[Pb]	207	1	nogas	1498848	0.00
Na	23	2	He	34607218	0.00
Mg	24	2	He	19092422	0.00
Al	27	2	He	103233	0.00
K	39	2	He	20228775	0.00
Ca	43	2	He	55844	0.00
Ca	44	2	He	949220	0.00
V	51	2	He	1454044	0.00
Cr	52	2	He	1587653	0.00
Mn	55	2	He	1069926	0.00
Fe	56	2	He	133687835	0.00
Co	59	2	He	2165044	0.00
Ni	60	2	He	532628	0.00
Cu	63	2	He	1423386	0.00
Zn	66	2	He	333957	0.00
As	75	2	He	332506	0.00
Se	78	2	He	26354	0.00
B	11	1	nogas	5235130	0.00
Si	28	1	nogas	13637966	0.00

Calibration Standard Report

Ca	43	1	nogas	834491	0.00
Ca	44	1	nogas	13881330	0.00
Name	Mass	Tune Step	Tune Mode	CPS	%RSD
Fe	56	1	nogas	566581329	0.00
Se	77	1	nogas	82332	0.00
Se	82	1	nogas	68730	0.00
Mo	95	1	nogas	1416099	0.00
Sn	118	1	nogas	2105469	0.00
Ba	137	1	nogas	971637	0.00
Sb	121	2	He	1158491	0.00
P	31	1	nogas	2214509	0.00
La	139	1	nogas	950	0.51

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	1105158	5.26	1314390	84.08	70	125	
Ge	72	1	nogas	3609330	3.94	3749087	96.27	70	125	
In	115	1	nogas	3336138	2.50	3430303	97.25	70	125	
Bi	209	1	nogas	2517695	1.84	2610544	96.44	70	125	
Ge	72	2	He	893529	0.95	932298	95.84	70	125	

Initial Calibration Verification (ICV) Report

Sample Table

Sample Name	ICCV
Data File Name	120_ICV.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\121
Acq Date Time	2018-12-11T20:02:38-06:00
Sample Type	ICV
Dilution	1
Comment	
ISTD Ref File Name	113CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Exp Value	%Rec	%Low	%High	QC Flag
Be	9	1	nogas	100.962	3.088	842638	0.71	100	101.0	90	110	
Na	23	1	nogas	10412.529	2.886	274527473	2.39	10000	104.1	90	110	
Mg	24	1	nogas	10339.183	1.718	178637271	0.82	10000	103.4	90	110	
Al	27	1	nogas	100.702	3.004	2208220	1.66	100	100.7	90	110	
K	39	1	nogas	10319.743	2.146	236606172	1.99	10000	103.2	90	110	
Ti	47	1	nogas	97.106	2.293	208351	1.67	100	97.1	90	110	
V	51	1	nogas	96.143	0.368	3185501	3.06	100	96.1	90	110	
Cr	52	1	nogas	100.231	1.008	2546223	3.44	100	100.2	90	110	
Mn	55	1	nogas	102.415	1.002	3254117	3.79	100	102.4	90	110	
Co	59	1	nogas	102.584	5.515	2745094	3.16	100	102.6	90	110	
Ni	60	1	nogas	98.905	3.331	599503	0.65	100	98.9	90	110	
Cu	63	1	nogas	103.241	0.500	1522143	2.37	100	103.2	90	110	
Zn	66	1	nogas	101.539	1.169	484414	1.85	100	101.5	90	110	
As	75	1	nogas	94.874	1.640	656518	1.49	100	94.9	90	110	
Sr	88	1	nogas	99.002	2.640	3310881	1.80	100	99.0	90	110	
Ag	107	1	nogas	101.490	2.394	1637579	0.62	100	101.5	90	110	
Cd	111	1	nogas	102.056	0.871	352654	0.36	100	102.1	90	110	
Sb	121	1	nogas	99.209	2.777	1568918	1.31	100	99.2	90	110	
Tl	205	1	nogas	98.598	2.361	2284254	2.31	100	98.6	90	110	
Pb	208	1	nogas	92.723	2.178	3135082	2.17	100	92.7	90	110	
U	238	1	nogas	102.992	4.279	3120601	0.79	100	103.0	90	110	
[Pb]	206	1	nogas	95.236	2.877	766424	3.30	100	95.2	90	110	
[Pb]	207	1	nogas	92.589	3.605	653575	1.87	100	92.6	90	110	
Na	23	2	He	9964.363	5.179	16489027	3.91	10000	99.6	90	110	
Mg	24	2	He	10056.346	5.278	9171422	3.06	10000	100.6	90	110	
Al	27	2	He	102.997	4.970	51253	0.81	100	103.0	90	110	
K	39	2	He	9488.877	4.365	9842150	4.27	10000	94.9	90	110	
Ca	43	2	He	10163.976	0.834	27083	3.83	10000	101.6	90	110	
Ca	44	2	He	9998.139	4.127	453910	3.48	10000	100.0	90	110	
V	51	2	He	95.792	4.131	659946	2.54	100	95.8	90	110	
Cr	52	2	He	95.557	2.363	718501	3.89	100	95.6	90	110	
Mn	55	2	He	98.574	2.296	505043	4.21	100	98.6	90	110	
Fe	56	2	He	9830.279	3.087	62753174	2.06	10000	98.3	90	110	
Co	59	2	He	93.804	4.885	956825	2.25	100	93.8	90	110	
Ni	60	2	He	96.925	6.161	245420	2.81	100	96.9	90	110	
Cu	63	2	He	94.765	4.611	642394	0.44	100	94.8	90	110	
Zn	66	2	He	98.817	2.486	157778	1.95	100	98.8	90	110	
As	75	2	He	96.412	4.850	152356	3.15	100	96.4	90	110	
Se	78	2	He	96.143	3.064	12130	1.49	100	96.1	90	110	
B	11	1	nogas	507.938	5.595	2650320	3.15	500	101.6	90	110	
Si	28	1	nogas	5322.267	3.433	7602663	0.16	5000	106.4	90	110	
Ca	43	1	nogas	10169.822	4.508	407158	1.77	10000	101.7	90	110	
Ca	44	1	nogas	10267.109	4.699	6966046	1.83	10000	102.7	90	110	
Fe	56	1	nogas	10150.818	2.357	276053215	1.73	10000	101.5	90	110	
Se	77	1	nogas	71.372	2.588	41194	1.81	100	71.4	90	110	ICV Main CR1 Failed
Se	82	1	nogas	98.245	2.461	32249	2.26	100	98.2	90	110	
Mo	95	1	nogas	94.914	2.481	639321	0.47	100	94.9	90	110	
Sn	118	1	nogas	95.565	0.955	937955	0.69	100	95.6	90	110	
Ba	137	1	nogas	100.232	1.366	463776	0.65	100	100.2	90	110	
Sb	121	2	He	97.387	5.384	535382	4.26	100	97.4	90	110	
Li	7	1	nogas	109.602	1.398	2075340	3.91	100	109.6	90	110	
P	31	1	nogas	485.739	2.985	1088114	0.67	500	97.1	90	110	
La	139	1	nogas	115.474	14.017	557	11.96	100	115.5	90	110	ICV Main CR1 Failed
Au	197	1	nogas	103.073	357.978	17	91.65	100	103.1	90	110	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	1112570	2.74	1314390	84.65	70	125	
Ge	72	1	nogas	3506167	2.84	3749087	93.52	70	125	
In	115	1	nogas	3188728	0.74	3430303	92.96	70	125	
Bi	209	1	nogas	2440505	3.64	2610544	93.49	70	125	

Initial Calibration Verification (ICV) Report

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Ge	72	2	He	846259	4.36	932298	90.77	70	125	

Sample Report

Sample Table

Sample Name	LLCCV2
Data File Name	121SMPL.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\121
Acq Date Time	2018-12-11T20:04:42-06:00
Sample Type	Sample
Dilution	1
Comment	
ISTD Ref FileName	113CALB.d
Sample QC Pass/Fail	Pass
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
Be	9	1	nogas	1.700	1.700	2.52	16657	0.01	2000	
Na	23	1	nogas	203.682	203.682	1.78	6659559	0.00	200000	
Mg	24	1	nogas	212.020	212.020	3.15	3945900	0.01	200000	
Al	27	1	nogas	1.720	1.720	7.22	65719	0.00	2000	
K	39	1	nogas	203.044	203.044	4.87	13356084	0.00	200000	
Ti	47	1	nogas	1.920	1.920	3.91	4764	0.04	2000	
V	51	1	nogas	-3.309	-3.309	-7.87	278190	0.00	2000	
Cr	52	1	nogas	1.795	1.795	4.32	91538	0.00	2000	
Mn	55	1	nogas	1.952	1.952	3.83	91891	0.00	2000	
Co	59	1	nogas	2.031	2.031	3.51	57534	0.00	2000	
Ni	60	1	nogas	3.293	3.293	1.47	13518	0.02	2000	
Cu	63	1	nogas	2.328	2.328	10.50	78570	0.00	2000	
Zn	66	1	nogas	2.688	2.688	3.98	11897	0.02	2000	
As	75	1	nogas	0.651	0.651	22.68	64146	0.00	2000	
Sr	88	1	nogas	1.956	1.956	2.95	70847	0.00	2000	
Ag	107	1	nogas	2.002	2.002	2.16	33633	0.01	2000	
Cd	111	1	nogas	1.979	1.979	3.52	7285	0.03	2000	
Sb	121	1	nogas	2.015	2.015	0.06	33549	0.01	2000	
Tl	205	1	nogas	2.740	2.740	15.60	65374	0.00	2000	
Pb	208	1	nogas	1.949	1.949	3.19	71189	0.00	2000	
U	238	1	nogas	2.121	2.121	3.44	65740	0.00	2000	
[Pb]	206	1	nogas	1.981	1.981	3.42	17563	0.01	2000	
[Pb]	207	1	nogas	2.044	2.044	3.30	15838	0.01	2000	
Na	23	2	He	197.589	197.589	0.96	436709	0.05	200000	
Mg	24	2	He	199.660	199.660	0.49	194971	0.10	200000	
Al	27	2	He	1.138	1.138	29.71	1577	0.07	2000	
K	39	2	He	193.727	193.727	2.24	412808	0.05	200000	
Ca	43	2	He	206.115	206.115	13.57	617	33.42	200000	
Ca	44	2	He	195.622	195.622	1.19	12184	1.61	200000	
V	51	2	He	1.925	1.925	0.09	17237	0.01	2000	
Cr	52	2	He	1.928	1.928	0.05	20779	0.01	2000	
Mn	55	2	He	1.958	1.958	2.97	12681	0.02	2000	
Fe	56	2	He	205.549	205.549	0.21	1408524	0.01	200000	
Co	59	2	He	1.981	1.981	3.47	21670	0.01	2000	
Ni	60	2	He	1.747	1.747	3.75	5538	0.03	2000	
Cu	63	2	He	2.552	2.552	3.14	31858	0.01	2000	
Zn	66	2	He	1.647	1.647	6.22	4037	0.04	2000	
As	75	2	He	1.977	1.977	4.51	3677	0.05	2000	
Se	78	2	He	2.053	2.053	11.96	465	0.44	2000	
B	11	1	nogas	17.179	17.179	5.05	159287	0.01	2000	
Si	28	1	nogas	165.722	165.722	15.64	1536782	0.01	2000	
Ca	43	1	nogas	207.830	207.830	4.28	9959	2.09	200000	

Sample Report

Ca	44	1	nogas	251.459	251.459	5.18	462200	0.05	200000	
Fe	56	1	nogas	194.920	194.920	3.84	7823466	0.00	200000	
Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
Se	77	1	nogas	-15.912	-15.912	-13.45	17619	-0.09	2000	
Se	82	1	nogas	1.863	1.863	29.19	973	0.19	2000	
Mo	95	1	nogas	2.157	2.157	2.12	15270	0.01	2000	
Sn	118	1	nogas	2.037	2.037	3.82	22441	0.01	2000	
Ba	137	1	nogas	1.845	1.845	5.04	10700	0.02	2000	
Sb	121	2	He	1.991	1.991	2.34	11814	0.02	2000	
La	139	1	nogas	-0.150	-0.150	-7130.97	87	-0.17	2000	
Au	197	1	nogas	181.405	181.405	138.20	20	907.02	2000	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	1303366	3.51	1314390	99.16	70	125	
Ge	72	1	nogas	3638271	1.80	3749087	97.04	70	125	
In	115	1	nogas	3386394	0.85	3430303	98.72	70	125	
Bi	209	1	nogas	2489948	1.74	2610544	95.38	70	125	
Ge	72	2	He	896693	0.32	932298	96.18	70	125	

Low Level Initial Calibration Verification (LLICV) Report

Sample Table

Sample Name	LLCCV5
Data File Name	122LICV.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\121
Acq Date Time	2018-12-11T20:06:46-06:00
Sample Type	LLICV
Dilution	1
Comment	
ISTD Ref File Name	113CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Exp Value	%Rec	%Low	%High	QC Flag
Be	9	1	nogas	4.044	1.801	40479	3.16	5	80.9	70	130	
Na	23	1	nogas	487.448	1.007	14567446	0.64	500	97.5	70	130	
Mg	24	1	nogas	502.502	0.285	9269489	0.94	500	100.5	70	130	
Al	27	1	nogas	4.645	4.363	131587	0.93	5	92.9	70	130	
K	39	1	nogas	504.667	4.205	20292473	1.03	500	100.9	70	130	
Ti	47	1	nogas	5.035	8.378	11684	6.04	5	100.7	70	130	
V	51	1	nogas	0.011	2204.589	379547	2.31	5	0.2	70	130	LLICV Main CR1 Failed
Cr	52	1	nogas	4.828	5.080	170175	1.42	5	96.6	70	130	
Mn	55	1	nogas	4.939	2.750	189651	1.36	5	98.8	70	130	
Co	59	1	nogas	4.923	3.913	137913	1.05	5	98.5	70	130	
Ni	60	1	nogas	6.173	3.533	31878	2.56	5	123.5	70	130	
Cu	63	1	nogas	5.387	7.285	124118	3.03	5	107.7	70	130	
Zn	66	1	nogas	5.791	3.279	27327	3.38	5	115.8	70	130	
As	75	1	nogas	3.839	15.123	85047	1.78	5	76.8	70	130	
Sr	88	1	nogas	4.768	3.233	168457	1.52	5	95.4	70	130	
Ag	107	1	nogas	4.926	4.365	82658	3.12	5	98.5	70	130	
Cd	111	1	nogas	4.900	1.583	17609	1.99	5	98.0	70	130	
Sb	121	1	nogas	4.752	4.497	78489	2.10	5	95.0	70	130	
Tl	205	1	nogas	4.673	1.304	112592	0.63	5	93.5	70	130	
Pb	208	1	nogas	4.657	1.274	162565	1.23	5	93.1	70	130	
U	238	1	nogas	4.901	2.593	153932	3.62	5	98.0	70	130	
[Pb]	206	1	nogas	4.633	3.280	39856	2.09	5	92.7	70	130	
[Pb]	207	1	nogas	4.765	2.547	35913	1.41	5	95.3	70	130	
Na	23	2	He	490.239	0.862	946569	0.36	500	98.0	70	130	
Mg	24	2	He	501.907	2.416	486770	1.96	500	100.4	70	130	
Al	27	2	He	3.623	26.419	2860	16.96	5	72.5	70	130	
K	39	2	He	484.236	1.589	707512	1.10	500	96.8	70	130	
Ca	43	2	He	540.219	6.964	1557	6.34	500	108.0	70	130	
Ca	44	2	He	499.428	3.750	26693	3.06	500	99.9	70	130	
V	51	2	He	4.761	1.076	37821	0.64	5	95.2	70	130	
Cr	52	2	He	4.785	0.301	43338	0.19	5	95.7	70	130	
Mn	55	2	He	4.809	1.720	28072	1.93	5	96.2	70	130	
Fe	56	2	He	497.714	1.890	3381813	1.42	500	99.5	70	130	
Co	59	2	He	4.909	1.299	53284	1.34	5	98.2	70	130	
Ni	60	2	He	4.705	1.855	13445	1.35	5	94.1	70	130	
Cu	63	2	He	5.521	3.516	52716	2.13	5	110.4	70	130	
Zn	66	2	He	4.475	3.159	8779	3.12	5	89.5	70	130	
As	75	2	He	4.800	2.339	8389	1.92	5	96.0	70	130	
Se	78	2	He	4.806	1.560	827	1.57	5	96.1	70	130	
B	11	1	nogas	25.023	4.896	210910	1.06	25	100.1	70	130	
Si	28	1	nogas	307.374	11.927	1712604	1.45	25	1229.5	70	130	LLICV Main CR1 Failed
Ca	43	1	nogas	516.697	2.898	22768	1.40	500	103.3	70	130	
Ca	44	1	nogas	541.655	4.455	658823	0.36	500	108.3	70	130	
Fe	56	1	nogas	485.376	1.587	15968998	1.97	500	97.1	70	130	
Se	77	1	nogas	-11.561	-21.962	18890	3.82	5	-231.2	70	130	LLICV Main CR1 Failed
Se	82	1	nogas	4.573	5.521	1887	5.04	5	91.5	70	130	
Mo	95	1	nogas	4.786	3.141	33665	3.12	5	95.7	70	130	
Sn	118	1	nogas	4.819	1.964	50276	1.02	5	96.4	70	130	
Ba	137	1	nogas	4.818	4.794	24691	2.33	5	96.4	70	130	
Sb	121	2	He	4.755	0.838	27896	1.03	5	95.1	70	130	
Li	7	1	nogas	4.237	6.409	202264	0.51	5	84.7	70	130	
P	31	1	nogas	23.969	4.081	181743	2.07	25	95.9	70	130	
La	139	1	nogas	-1.426	-544.440	80	43.30	5	-28.5	70	130	LLICV Main CR1 Failed
Au	197	1	nogas	13.348	2733.704	13	114.56	5	267.0	70	130	LLICV Main CR1 Failed

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	1332263	2.49	1314390	101.36	70	125	
Ge	72	1	nogas	3641622	2.83	3749087	97.13	70	125	
In	115	1	nogas	3312310	2.56	3430303	96.56	70	125	
Bi	209	1	nogas	2525211	1.07	2610544	96.73	70	125	

Low Level Initial Calibration Verification (LLICV) Report

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Ge	72	2	He	895679	0.45	932298	96.07	70	125	

Initial Calibration Blank (ICB) Report

Sample Table

Sample Name	ICCB
Data File Name	123_ICB.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\121
Acq Date Time	2018-12-11T20:08:49-06:00
Sample Type	ICB
Dilution	1
Comment	
ISTD Ref File Name	113CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Be	9	1	nogas	0.010	21.7	137	16.9	1	
Na	23	1	nogas	3.041	22.5	1025183	2.7	100	
Mg	24	1	nogas	0.896	10.9	52082	4.5	100	
Al	27	1	nogas	0.105	8.8	29534	2.1	5	
K	39	1	nogas	4.520	154.5	8838153	0.5	100	
Ti	47	1	nogas	-0.017	-225.9	463	18.4	2.5	
V	51	1	nogas	-4.412	-5.3	245666	2.1	2.5	
Cr	52	1	nogas	-0.156	-24.3	41176	3.8	2.5	
Mn	55	1	nogas	1.023	3.4	61793	0.7	2.5	
Co	59	1	nogas	0.016	28.5	1557	7.1	2.5	
Ni	60	1	nogas	2.269	2.1	7031	3.2	2.5	
Cu	63	1	nogas	0.584	19.0	52896	4.6	2.5	
Zn	66	1	nogas	1.000	7.1	3527	8.5	2.5	
As	75	1	nogas	-0.822	-41.1	54725	3.4	2.5	
Sr	88	1	nogas	0.002	470.2	3097	9.2	2.5	
Ag	107	1	nogas	0.013	19.6	333	13.9	2.5	
Cd	111	1	nogas	0.008	99.6	50	52.9	1	
Sb	121	1	nogas	0.032	16.4	1017	7.9	2.5	
Tl	205	1	nogas	0.110	50.9	3124	42.5	1	
Pb	208	1	nogas	0.044	23.2	6887	5.0	2.5	
U	238	1	nogas	0.022	17.6	757	15.2	2.5	
[Pb]	206	1	nogas	0.048	6.3	1703	0.9	2.5	
[Pb]	207	1	nogas	0.047	29.2	1460	7.6	2.5	
Na	23	2	He	4.219	9.3	99237	1.3	100	
Mg	24	2	He	1.212	9.9	3004	2.8	100	
Al	27	2	He	-0.234	-144.2	867	20.5	5	
K	39	2	He	0.465	63.5	216757	0.1	100	
Ca	43	2	He	7.647	119.2	57	44.4	100	
Ca	44	2	He	8.463	51.8	3230	5.4	100	
V	51	2	He	0.010	120.8	3313	2.4	2.5	
Cr	52	2	He	-0.013	-353.9	5434	7.8	2.5	
Mn	55	2	He	1.063	19.1	7845	12.9	2.5	
Fe	56	2	He	1.548	21.3	27905	7.1	100	
Co	59	2	He	0.026	24.2	513	14.1	2.5	
Ni	60	2	He	0.731	2.6	2820	1.8	2.5	
Cu	63	2	He	0.683	9.6	18720	3.2	2.5	
Zn	66	2	He	-0.098	-128.5	1107	19.0	2.5	
As	75	2	He	-0.012	-148.3	351	7.6	2.5	
Se	78	2	He	0.037	282.4	200	6.0	2.5	
B	11	1	nogas	3.233	7.5	76797	0.9	10	
Si	28	1	nogas	36.716	61.4	1384090	2.3	5	ICB Main CR1 Failed
Ca	43	1	nogas	3.384	89.5	1487	7.2	100	
Ca	44	1	nogas	52.201	32.9	328901	2.4	100	
Fe	56	1	nogas	-9.719	-23.0	2105226	2.1	100	

Initial Calibration Blank (ICB) Report

Se	77	1	nogas	-15.321	-13.3	17869	2.6	2.5	
Se	82	1	nogas	0.077	288.1	370	18.9	2.5	
Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Mo	95	1	nogas	0.052	6.4	557	4.5	2.5	
Sn	118	1	nogas	0.429	2.9	5571	1.4	5	
Ba	137	1	nogas	-0.160	-19.3	863	17.3	2.5	
Sb	121	2	He	0.017	46.3	313	15.7	2.5	
P	31	1	nogas	1.289	112.3	135601	1.0	10	
La	139	1	nogas	-0.502	-639.9	83	18.3	2.5	
Au	197	1	nogas	182.968	133.4	20	50.0	2.5	ICB Main CR1 Failed

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	1325165	1.33	1314390	100.82	70	125	
Ge	72	1	nogas	3654143	1.61	3749087	97.47	70	125	
In	115	1	nogas	3303352	1.88	3430303	96.30	70	125	
Bi	209	1	nogas	2473641	1.13	2610544	94.76	70	125	
Ge	72	2	He	898100	1.08	932298	96.33	70	125	

Continuing Calibration Verification (CCV) Report

Sample Table

Sample Name	CCV
Data File Name	131_CCV.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\121
Acq Date Time	2018-12-11T20:25:11-06:00
Sample Type	CCV
Dilution	1
Comment	
ISTD Ref File Name	113CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Exp Value	%Rec	%Low	%High2	QC Flag
Be	9	1	nogas	95.066	4.388	812026	1.11	100	95.1	90	110	
Na	23	1	nogas	10357.306	1.435	276407090	2.31	10000	103.6	90	110	
Mg	24	1	nogas	10373.776	2.604	181369046	1.31	10000	103.7	90	110	
Al	27	1	nogas	98.712	3.534	2217540	2.09	100	98.7	90	110	
K	39	1	nogas	9966.850	2.779	234320714	1.57	10000	99.7	90	110	
Ti	47	1	nogas	97.311	3.042	213840	2.07	100	97.3	90	110	
V	51	1	nogas	94.864	4.606	3222324	2.52	100	94.9	90	110	
Cr	52	1	nogas	97.335	2.417	2532886	1.87	100	97.3	90	110	
Mn	55	1	nogas	96.674	0.864	3146932	2.41	100	96.7	90	110	
Co	59	1	nogas	99.450	2.316	2727221	0.67	100	99.5	90	110	
Ni	60	1	nogas	96.383	3.192	598337	2.38	100	96.4	90	110	
Cu	63	1	nogas	101.838	3.143	1537880	1.58	100	101.8	90	110	
Zn	66	1	nogas	101.639	1.788	496578	0.19	100	101.6	90	110	
As	75	1	nogas	94.557	0.848	670409	0.93	100	94.6	90	110	
Sr	88	1	nogas	98.205	1.703	3364112	0.55	100	98.2	90	110	
Ag	107	1	nogas	101.088	1.130	1670972	1.03	100	101.1	90	110	
Cd	111	1	nogas	102.517	2.671	350156	0.38	100	102.5	90	110	
Sb	121	1	nogas	97.811	1.683	1585042	3.12	100	97.8	90	110	
Tl	205	1	nogas	103.961	4.264	2289262	2.78	100	104.0	90	110	
Pb	208	1	nogas	92.761	1.471	3136362	1.47	100	92.8	90	110	
U	238	1	nogas	108.540	3.355	3128777	3.23	100	108.5	90	110	
[Pb]	206	1	nogas	100.361	2.067	767739	0.99	100	100.4	90	110	
[Pb]	207	1	nogas	99.507	2.190	667962	1.53	100	99.5	90	110	
Na	23	2	He	9939.286	2.041	16839158	2.80	10000	99.4	90	110	
Mg	24	2	He	10229.453	1.344	9552456	1.49	10000	102.3	90	110	
Al	27	2	He	102.383	2.249	52176	1.45	100	102.4	90	110	
K	39	2	He	9800.372	0.443	10158142	0.43	10000	98.0	90	110	
Ca	43	2	He	10005.423	1.997	27267	0.95	10000	100.1	90	110	
Ca	44	2	He	9901.410	2.260	460102	2.44	10000	99.0	90	110	
V	51	2	He	98.671	2.611	695678	1.77	100	98.7	90	110	
Cr	52	2	He	97.442	2.822	749333	2.21	100	97.4	90	110	
Mn	55	2	He	100.162	3.242	524866	3.01	100	100.2	90	110	
Fe	56	2	He	10017.452	1.687	65447686	1.53	10000	100.2	90	110	
Co	59	2	He	97.237	1.540	1015519	1.08	100	97.2	90	110	
Ni	60	2	He	101.215	1.941	262448	1.10	100	101.2	90	110	
Cu	63	2	He	99.187	2.634	687774	1.60	100	99.2	90	110	
Zn	66	2	He	100.291	0.177	163863	1.08	100	100.3	90	110	
As	75	2	He	98.988	0.265	160134	0.80	100	99.0	90	110	
Se	78	2	He	100.136	1.571	12923	0.74	100	100.1	90	110	
B	11	1	nogas	486.965	5.848	2602246	1.12	500	97.4	90	110	
Si	28	1	nogas	4919.456	2.085	7298705	0.52	5000	98.4	90	110	
Ca	43	1	nogas	10094.917	1.581	414235	1.99	10000	100.9	90	110	
Ca	44	1	nogas	10009.668	2.593	6969037	3.63	10000	100.1	90	110	
Fe	56	1	nogas	9971.624	1.624	277868923	2.67	10000	99.7	90	110	
Se	77	1	nogas	80.997	1.665	44926	0.90	100	81.0	90	110	CCV Main CR1-2 Failed
Se	82	1	nogas	96.933	1.126	32603	2.73	100	96.9	90	110	
Mo	95	1	nogas	96.452	3.317	665462	2.31	100	96.5	90	110	
Sn	118	1	nogas	99.112	1.238	961710	1.21	100	99.1	90	110	
Ba	137	1	nogas	103.654	2.590	474141	2.53	100	103.7	90	110	
Sb	121	2	He	99.305	0.865	558833	0.68	100	99.3	90	110	
Li	7	1	nogas	97.587	4.343	1900463	2.24	100	97.6	90	110	
P	31	1	nogas	470.935	2.049	1084659	0.11	500	94.2	90	110	
La	139	1	nogas	105.611	11.310	510	8.55	100	105.6	90	110	
Au	197	1	nogas	387.758	36.871	27	21.65	100	387.8	90	110	CCV Main CR1-2 Failed

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	1139764	5.31	1314390	86.71	70	125	
Ge	72	1	nogas	3590664	1.71	3749087	95.77	70	125	
In	115	1	nogas	3153130	2.40	3430303	91.92	70	125	
Bi	209	1	nogas	2319708	1.64	2610544	88.86	70	125	

Continuing Calibration Verification (CCV) Report

Ge	72	2	He	865454	1.06	932298	92.83	70	125	

Continuing Calibration Blank (CCB) Report

Sample Table

Sample Name	CCB
Data File Name	132_CCB.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\121
Acq Date Time	2018-12-11T20:27:16-06:00
Sample Type	CCB
Dilution	1
Comment	
ISTD Ref File Name	113CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Be	9	1	nogas	0.042	46.7	437	42.2	1	
Na	23	1	nogas	4.591	30.2	1028287	7.4	100	
Mg	24	1	nogas	4.189	32.0	108503	23.7	100	
Al	27	1	nogas	0.166	6.3	30184	1.4	5	
K	39	1	nogas	14.231	20.1	8850102	0.4	100	
Ti	47	1	nogas	0.034	45.4	563	6.2	2.5	
V	51	1	nogas	-4.996	-3.4	222476	1.7	2.5	
Cr	52	1	nogas	-0.137	-12.3	40698	1.0	2.5	
Mn	55	1	nogas	1.097	2.1	62720	1.5	2.5	
Co	59	1	nogas	0.049	6.8	2407	4.5	2.5	
Ni	60	1	nogas	2.347	0.6	7352	0.9	2.5	
Cu	63	1	nogas	0.707	17.0	53431	3.0	2.5	
Zn	66	1	nogas	1.001	1.8	3457	2.4	2.5	
As	75	1	nogas	-1.151	-2.3	51339	0.6	2.5	
Sr	88	1	nogas	0.040	26.3	4321	8.6	2.5	
Ag	107	1	nogas	0.032	15.3	637	13.4	2.5	
Cd	111	1	nogas	0.046	20.5	187	20.3	1	
Sb	121	1	nogas	0.112	20.5	2274	16.6	2.5	
Tl	205	1	nogas	1.036	57.7	24667	56.0	1	CCB Main CR1 Failed
Pb	208	1	nogas	0.051	42.2	7114	10.2	2.5	
U	238	1	nogas	0.145	58.2	4504	56.4	2.5	
[Pb]	206	1	nogas	0.070	53.7	1870	16.1	2.5	
[Pb]	207	1	nogas	0.057	25.6	1517	7.4	2.5	
Na	23	2	He	4.067	23.1	95561	0.3	100	
Mg	24	2	He	2.350	5.6	3967	4.5	100	
Al	27	2	He	-0.261	-16.0	823	3.9	5	
K	39	2	He	-2.224	-129.8	214029	1.4	100	
Ca	43	2	He	15.657	37.1	77	19.9	100	
Ca	44	2	He	9.911	21.8	3187	1.7	100	
V	51	2	He	-0.006	-169.7	3089	2.8	2.5	
Cr	52	2	He	0.010	249.9	5421	2.1	2.5	
Mn	55	2	He	1.092	3.8	7738	3.5	2.5	
Fe	56	2	He	3.390	8.0	39035	5.9	100	
Co	59	2	He	0.038	21.0	627	13.6	2.5	
Ni	60	2	He	0.778	7.2	2844	3.5	2.5	
Cu	63	2	He	0.790	11.2	18806	3.7	2.5	
Zn	66	2	He	-0.042	-108.7	1160	7.9	2.5	
As	75	2	He	0.024	85.8	398	8.9	2.5	
Se	78	2	He	0.082	221.8	199	10.1	2.5	
B	11	1	nogas	5.046	18.0	84871	5.7	10	
Si	28	1	nogas	75.700	19.8	1398604	0.6	5	CCB Main CR1 Failed
Ca	43	1	nogas	16.432	13.6	1983	5.1	100	
Ca	44	1	nogas	73.923	4.8	335653	0.1	100	
Fe	56	1	nogas	-4.269	-123.8	2205812	6.6	100	
Se	77	1	nogas	-17.132	-1.5	16941	1.2	2.5	
Se	82	1	nogas	0.011	74.6	340	0.0	2.5	

Continuing Calibration Blank (CCB) Report

Mo	95	1	nogas	0.243	39.2	1847	35.3	2.5	
Sn	118	1	nogas	0.678	4.8	8049	2.1	5	
Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Ba	137	1	nogas	-0.129	-10.0	1000	3.6	2.5	
Sb	121	2	He	0.086	19.6	690	13.8	2.5	
P	31	1	nogas	2.753	39.0	135376	0.9	10	
La	139	1	nogas	7.570	95.8	117	26.2	2.5	CCB Main CR1 Failed
Au	197	1	nogas	185.129	130.5	20	50.0	2.5	CCB Main CR1 Failed

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	1280035	0.78	1314390	97.39	70	125	
Ge	72	1	nogas	3568136	0.78	3749087	95.17	70	125	
In	115	1	nogas	3283950	3.47	3430303	95.73	70	125	
Bi	209	1	nogas	2453970	1.01	2610544	94.00	70	125	
Ge	72	2	He	867293	1.53	932298	93.03	70	125	

Continuing Calibration Verification (CCV) Report

Sample Table

Sample Name	CCV
Data File Name	139_CCV.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\121
Acq Date Time	2018-12-11T20:41:37-06:00
Sample Type	CCV
Dilution	1
Comment	
ISTD Ref File Name	113CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Exp Value	%Rec	%Low	%High2	QC Flag
Be	9	1	nogas	95.885	3.496	821633	0.11	100	95.9	90	110	
Na	23	1	nogas	10103.444	2.112	280599148	2.32	10000	101.0	90	110	
Mg	24	1	nogas	9788.488	1.565	178129854	1.64	10000	97.9	90	110	
Al	27	1	nogas	99.615	2.997	2268021	3.08	100	99.6	90	110	
K	39	1	nogas	9907.172	2.228	236160797	3.38	10000	99.1	90	110	
Ti	47	1	nogas	97.336	1.483	216772	1.13	100	97.3	90	110	
V	51	1	nogas	96.043	1.932	3302079	1.30	100	96.0	90	110	
Cr	52	1	nogas	98.875	3.691	2606357	3.04	100	98.9	90	110	
Mn	55	1	nogas	99.877	2.738	3292427	1.52	100	99.9	90	110	
Co	59	1	nogas	99.633	2.414	2768664	1.24	100	99.6	90	110	
Ni	60	1	nogas	96.954	2.720	609926	1.57	100	97.0	90	110	
Cu	63	1	nogas	100.956	3.611	1545231	2.39	100	101.0	90	110	
Zn	66	1	nogas	100.667	1.461	498397	1.03	100	100.7	90	110	
As	75	1	nogas	96.594	0.967	692658	0.43	100	96.6	90	110	
Sr	88	1	nogas	99.086	2.718	3439222	1.70	100	99.1	90	110	
Ag	107	1	nogas	101.410	0.585	1698639	0.76	100	101.4	90	110	
Cd	111	1	nogas	103.409	2.302	362264	0.82	100	103.4	90	110	
Sb	121	1	nogas	100.958	2.529	1657335	2.15	100	101.0	90	110	
Tl	205	1	nogas	97.049	2.254	2358394	2.05	100	97.0	90	110	
Pb	208	1	nogas	98.856	1.501	3342103	1.50	100	98.9	90	110	
U	238	1	nogas	105.441	0.506	3353160	0.63	100	105.4	90	110	
[Pb]	206	1	nogas	94.657	2.130	798977	2.00	100	94.7	90	110	
[Pb]	207	1	nogas	95.907	0.666	710318	0.29	100	95.9	90	110	
Na	23	2	He	10035.462	0.233	17303176	1.53	10000	100.4	90	110	
Mg	24	2	He	10085.496	1.071	9587539	2.68	10000	100.9	90	110	
Al	27	2	He	101.333	1.266	52583	2.54	100	101.3	90	110	
K	39	2	He	9871.458	1.867	10230254	1.83	10000	98.7	90	110	
Ca	43	2	He	10185.318	1.480	28252	0.28	10000	101.9	90	110	
Ca	44	2	He	9923.419	0.988	469315	0.96	10000	99.2	90	110	
V	51	2	He	97.882	2.229	702417	0.93	100	97.9	90	110	
Cr	52	2	He	98.232	2.658	768734	0.93	100	98.2	90	110	
Mn	55	2	He	100.799	1.851	537659	2.36	100	100.8	90	110	
Fe	56	2	He	10126.235	1.229	67342129	1.90	10000	101.3	90	110	
Co	59	2	He	98.454	1.534	1046506	0.41	100	98.5	90	110	
Ni	60	2	He	101.496	2.065	267887	2.19	100	101.5	90	110	
Cu	63	2	He	97.898	2.460	691176	2.24	100	97.9	90	110	
Zn	66	2	He	98.193	0.873	163313	0.87	100	98.2	90	110	
As	75	2	He	99.508	2.317	163815	1.31	100	99.5	90	110	
Se	78	2	He	100.758	2.122	13232	0.39	100	100.8	90	110	
B	11	1	nogas	494.323	4.171	2650550	2.46	500	98.9	90	110	
Si	28	1	nogas	5010.871	4.401	7507521	2.53	5000	100.2	90	110	
Ca	43	1	nogas	10029.745	3.223	416989	2.76	10000	100.3	90	110	
Ca	44	1	nogas	9899.256	3.247	6985822	3.32	10000	99.0	90	110	
Fe	56	1	nogas	10229.439	3.336	288681165	2.13	10000	102.3	90	110	
Se	77	1	nogas	91.492	4.414	48538	1.29	100	91.5	90	110	
Se	82	1	nogas	98.423	3.850	33525	2.74	100	98.4	90	110	
Mo	95	1	nogas	97.529	2.541	681872	1.48	100	97.5	90	110	
Sn	118	1	nogas	99.003	1.586	985187	1.18	100	99.0	90	110	
Ba	137	1	nogas	103.528	3.496	485518	1.50	100	103.5	90	110	
Sb	121	2	He	100.711	1.300	576814	0.78	100	100.7	90	110	
Li	7	1	nogas	101.041	6.895	1968886	3.15	100	101.0	90	110	
P	31	1	nogas	475.021	2.566	1107462	1.11	500	95.0	90	110	
La	139	1	nogas	97.749	16.283	490	12.25	100	97.7	90	110	
Au	197	1	nogas	876.915	47.469	50	34.64	100	876.9	90	110	CCV Main CR1-2 Failed

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	1142537	3.35	1314390	86.93	70	125	
Ge	72	1	nogas	3638289	1.22	3749087	97.04	70	125	
In	115	1	nogas	3233568	2.01	3430303	94.26	70	125	
Bi	209	1	nogas	2558874	0.55	2610544	98.02	70	125	

Continuing Calibration Verification (CCV) Report

Ge	72	2	He	880919	1.72	932298	94.49	70	125	

Continuing Calibration Blank (CCB) Report

Sample Table

Sample Name	CCB
Data File Name	140_CCB.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\121
Acq Date Time	2018-12-11T20:43:42-06:00
Sample Type	CCB
Dilution	1
Comment	
ISTD Ref File Name	113CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Be	9	1	nogas	0.045	30.5	477	29.1	1	
Na	23	1	nogas	3.948	79.1	1012568	4.7	100	
Mg	24	1	nogas	4.378	24.3	111548	12.7	100	
Al	27	1	nogas	0.167	20.0	30826	2.6	5	
K	39	1	nogas	-0.437	-805.4	8692757	0.7	100	
Ti	47	1	nogas	0.051	36.3	613	7.4	2.5	
V	51	1	nogas	-4.916	-5.8	229432	3.4	2.5	
Cr	52	1	nogas	-0.141	-11.7	41423	0.4	2.5	
Mn	55	1	nogas	1.187	3.7	66931	2.5	2.5	
Co	59	1	nogas	0.065	14.4	2917	9.5	2.5	
Ni	60	1	nogas	2.344	0.5	7482	0.4	2.5	
Cu	63	1	nogas	-0.198	-31.2	41039	1.7	2.5	
Zn	66	1	nogas	1.096	1.8	3997	3.1	2.5	
As	75	1	nogas	-0.646	-55.6	55682	3.8	2.5	
Sr	88	1	nogas	0.043	31.6	4511	9.8	2.5	
Ag	107	1	nogas	0.037	25.3	730	22.0	2.5	
Cd	111	1	nogas	0.043	66.1	180	58.0	1	
Sb	121	1	nogas	0.119	20.8	2440	17.3	2.5	
Tl	205	1	nogas	1.107	60.9	27233	61.6	1	CCB Main CR1 Failed
Pb	208	1	nogas	0.092	14.2	8498	5.2	2.5	
U	238	1	nogas	0.127	55.8	4087	56.5	2.5	
[Pb]	206	1	nogas	0.121	4.7	2334	3.2	2.5	
[Pb]	207	1	nogas	0.094	18.1	1823	5.6	2.5	
Na	23	2	He	1.360	64.6	92825	0.2	100	
Mg	24	2	He	2.636	14.9	4321	9.5	100	
Al	27	2	He	-0.563	-32.3	687	15.3	5	
K	39	2	He	-6.476	-46.3	209715	1.4	100	
Ca	43	2	He	9.035	77.4	60	33.3	100	
Ca	44	2	He	9.576	53.6	3234	5.6	100	
V	51	2	He	0.002	1368.1	3206	5.1	2.5	
Cr	52	2	He	0.035	59.1	5728	3.2	2.5	
Mn	55	2	He	1.209	5.5	8519	5.9	2.5	
Fe	56	2	He	3.406	9.5	39917	6.0	100	
Co	59	2	He	0.048	14.1	743	11.4	2.5	
Ni	60	2	He	0.794	10.9	2944	5.9	2.5	
Cu	63	2	He	0.030	240.1	13899	2.0	2.5	
Zn	66	2	He	0.003	3848.8	1260	17.9	2.5	
As	75	2	He	-0.006	-360.0	357	11.3	2.5	
Se	78	2	He	-0.244	-40.3	161	9.3	2.5	
B	11	1	nogas	4.080	7.4	79716	3.1	10	
Si	28	1	nogas	67.345	30.7	1416645	1.2	5	CCB Main CR1 Failed
Ca	43	1	nogas	17.234	36.5	2057	12.7	100	
Ca	44	1	nogas	23.316	20.8	308233	1.3	100	
Fe	56	1	nogas	-7.940	-53.1	2148173	6.1	100	
Se	77	1	nogas	-16.617	-6.1	17432	1.0	2.5	
Se	82	1	nogas	0.335	64.9	457	16.7	2.5	

Continuing Calibration Blank (CCB) Report

Mo	95	1	nogas	0.225	31.8	1767	29.1	2.5	
Sn	118	1	nogas	0.629	6.2	7722	4.7	5	
Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Ba	137	1	nogas	-0.107	-11.0	1130	5.8	2.5	
Sb	121	2	He	0.074	15.4	633	10.2	2.5	
P	31	1	nogas	4.014	31.8	140720	1.7	10	
La	139	1	nogas	3.892	100.0	103	14.8	2.5	CCB Main CR1 Failed
Au	197	1	nogas	257.984	110.2	23	49.5	2.5	CCB Main CR1 Failed

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	1288335	0.86	1314390	98.02	70	125	
Ge	72	1	nogas	3640499	0.65	3749087	97.10	70	125	
In	115	1	nogas	3356347	1.60	3430303	97.84	70	125	
Bi	209	1	nogas	2513318	3.13	2610544	96.28	70	125	
Ge	72	2	He	884816	1.81	932298	94.91	70	125	

Continuing Calibration Verification (CCV) Report

Sample Table

Sample Name	CCV
Data File Name	151_CCV.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\121
Acq Date Time	2018-12-11T21:06:15-06:00
Sample Type	CCV
Dilution	1
Comment	
ISTD Ref File Name	113CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Exp Value	%Rec	%Low	%High2	QC Flag
Be	9	1	nogas	95.924	2.626	819894	1.03	100	95.9	90	110	
Na	23	1	nogas	10271.498	0.656	275401364	2.69	10000	102.7	90	110	
Mg	24	1	nogas	10050.466	1.459	176589721	3.13	10000	100.5	90	110	
Al	27	1	nogas	104.328	3.753	2267579	4.35	100	104.3	90	110	
K	39	1	nogas	10024.285	0.677	228057122	0.94	10000	100.2	90	110	
Ti	47	1	nogas	99.305	0.883	211222	1.82	100	99.3	90	110	
V	51	1	nogas	97.771	5.806	3204430	5.63	100	97.8	90	110	
Cr	52	1	nogas	100.393	2.731	2527295	3.31	100	100.4	90	110	
Mn	55	1	nogas	102.612	1.942	3230484	2.42	100	102.6	90	110	
Co	59	1	nogas	101.456	1.844	2692648	1.00	100	101.5	90	110	
Ni	60	1	nogas	97.918	1.809	588453	1.89	100	97.9	90	110	
Cu	63	1	nogas	100.329	0.945	1467203	1.48	100	100.3	90	110	
Zn	66	1	nogas	100.729	0.641	476304	1.19	100	100.7	90	110	
As	75	1	nogas	98.943	1.145	676188	0.42	100	98.9	90	110	
Sr	88	1	nogas	101.635	0.852	3369557	1.35	100	101.6	90	110	
Ag	107	1	nogas	105.489	1.578	1687337	0.54	100	105.5	90	110	
Cd	111	1	nogas	101.316	4.212	357350	0.67	100	101.3	90	110	
Sb	121	1	nogas	101.209	2.287	1586639	1.45	100	101.2	90	110	
Tl	205	1	nogas	101.265	1.203	2324507	1.93	100	101.3	90	110	
Pb	208	1	nogas	93.288	4.008	3154135	4.00	100	93.3	90	110	
U	238	1	nogas	106.432	0.598	3197241	1.99	100	106.4	90	110	
[Pb]	206	1	nogas	95.475	1.019	761422	3.34	100	95.5	90	110	
[Pb]	207	1	nogas	96.429	1.122	674760	3.21	100	96.4	90	110	
Na	23	2	He	9887.056	3.831	16827256	1.89	10000	98.9	90	110	
Mg	24	2	He	10007.518	3.820	9388744	1.91	10000	100.1	90	110	
Al	27	2	He	101.801	5.149	52125	3.35	100	101.8	90	110	
K	39	2	He	9617.189	1.942	9972314	1.90	10000	96.2	90	110	
Ca	43	2	He	9797.098	0.366	26840	1.78	10000	98.0	90	110	
Ca	44	2	He	9751.807	0.378	455527	2.14	10000	97.5	90	110	
V	51	2	He	97.122	2.513	688247	1.57	100	97.1	90	110	
Cr	52	2	He	96.560	2.438	746274	0.58	100	96.6	90	110	
Mn	55	2	He	98.998	4.196	521306	3.29	100	99.0	90	110	
Fe	56	2	He	9823.304	4.045	64487674	2.96	10000	98.2	90	110	
Co	59	2	He	96.421	1.394	1012067	0.93	100	96.4	90	110	
Ni	60	2	He	99.640	0.985	259698	0.95	100	99.6	90	110	
Cu	63	2	He	96.387	1.119	672191	1.07	100	96.4	90	110	
Zn	66	2	He	98.314	1.698	161453	1.33	100	98.3	90	110	
As	75	2	He	98.536	1.418	160194	0.57	100	98.5	90	110	
Se	78	2	He	98.241	3.870	12742	2.00	100	98.2	90	110	
B	11	1	nogas	486.805	5.532	2603296	3.52	500	97.4	90	110	
Si	28	1	nogas	5221.237	2.060	7419632	2.32	5000	104.4	90	110	
Ca	43	1	nogas	10420.513	3.806	413632	2.63	10000	104.2	90	110	
Ca	44	1	nogas	10041.696	4.706	6761191	3.36	10000	100.4	90	110	
Fe	56	1	nogas	10176.343	1.069	274343931	1.47	10000	101.8	90	110	
Se	77	1	nogas	92.335	3.208	46593	1.84	100	92.3	90	110	
Se	82	1	nogas	100.873	2.133	32810	1.33	100	100.9	90	110	
Mo	95	1	nogas	96.548	1.903	644863	3.03	100	96.5	90	110	
Sn	118	1	nogas	96.612	2.026	968387	1.75	100	96.6	90	110	
Ba	137	1	nogas	99.149	4.396	468306	1.43	100	99.1	90	110	
Sb	121	2	He	99.999	3.315	565445	2.02	100	100.0	90	110	
Li	7	1	nogas	96.270	2.090	1877129	1.18	100	96.3	90	110	
P	31	1	nogas	486.778	2.253	1080895	2.40	500	97.4	90	110	
La	139	1	nogas	92.386	18.527	473	18.46	100	92.4	90	110	
Au	197	1	nogas	362.668	42.634	27	21.65	100	362.7	90	110	CCV Main CR1-2 Failed

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	1139359	3.13	1314390	86.68	70	125	
Ge	72	1	nogas	3474602	1.15	3749087	92.68	70	125	
In	115	1	nogas	3257994	3.64	3430303	94.98	70	125	
Bi	209	1	nogas	2417304	2.34	2610544	92.60	70	125	

Continuing Calibration Verification (CCV) Report

Ge	72	2	He	869883	1.91	932298	93.31	70	125	

Continuing Calibration Blank (CCB) Report

Sample Table

Sample Name	CCB
Data File Name	152_CCB.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\121
Acq Date Time	2018-12-11T21:08:19-06:00
Sample Type	CCB
Dilution	1
Comment	
ISTD Ref File Name	113CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Be	9	1	nogas	0.085	8.3	873	5.8	1	
Na	23	1	nogas	8.331	21.8	1120014	2.3	100	
Mg	24	1	nogas	8.567	15.6	183963	10.3	100	
Al	27	1	nogas	0.258	14.8	32462	3.3	5	
K	39	1	nogas	12.365	32.7	8874686	1.0	100	
Ti	47	1	nogas	0.099	43.1	710	13.4	2.5	
V	51	1	nogas	-4.590	-1.3	236385	1.4	2.5	
Cr	52	1	nogas	-0.060	-80.0	42960	2.1	2.5	
Mn	55	1	nogas	1.186	3.1	66071	0.8	2.5	
Co	59	1	nogas	0.093	13.1	3644	9.9	2.5	
Ni	60	1	nogas	2.395	3.7	7708	5.9	2.5	
Cu	63	1	nogas	-0.451	-27.4	36810	4.3	2.5	
Zn	66	1	nogas	1.094	1.8	3937	2.4	2.5	
As	75	1	nogas	-0.756	-34.6	54264	1.1	2.5	
Sr	88	1	nogas	0.077	5.0	5614	3.0	2.5	
Ag	107	1	nogas	0.071	11.3	1290	9.5	2.5	
Cd	111	1	nogas	0.071	14.2	270	13.4	1	
Sb	121	1	nogas	0.200	12.4	3724	11.3	2.5	
Tl	205	1	nogas	1.097	57.4	26611	56.7	1	CCB Main CR1 Failed
Pb	208	1	nogas	0.089	12.6	8404	4.5	2.5	
U	238	1	nogas	0.190	40.6	6005	40.5	2.5	
[Pb]	206	1	nogas	0.111	7.8	2237	3.2	2.5	
[Pb]	207	1	nogas	0.096	21.3	1827	8.5	2.5	
Na	23	2	He	3.930	26.0	96205	1.3	100	
Mg	24	2	He	6.331	9.1	7755	5.2	100	
Al	27	2	He	-0.277	-18.9	823	4.9	5	
K	39	2	He	-2.239	-155.3	214013	1.6	100	
Ca	43	2	He	16.511	93.8	80	54.5	100	
Ca	44	2	He	6.620	35.1	3064	4.1	100	
V	51	2	He	0.053	19.9	3530	1.9	2.5	
Cr	52	2	He	0.099	70.7	6154	7.1	2.5	
Mn	55	2	He	1.192	4.2	8329	1.3	2.5	
Fe	56	2	He	6.927	5.7	62710	2.3	100	
Co	59	2	He	0.086	10.5	1133	10.2	2.5	
Ni	60	2	He	0.887	6.0	3160	6.2	2.5	
Cu	63	2	He	-0.084	-59.6	12965	1.1	2.5	
Zn	66	2	He	-0.004	-3828.4	1230	16.3	2.5	
As	75	2	He	0.042	23.7	431	5.4	2.5	
Se	78	2	He	0.014	1718.1	192	16.2	2.5	
B	11	1	nogas	8.413	10.3	107594	5.7	10	
Si	28	1	nogas	80.127	19.8	1414553	0.7	5	CCB Main CR1 Failed
Ca	43	1	nogas	21.742	20.9	2217	9.3	100	
Ca	44	1	nogas	30.871	31.3	309389	0.8	100	
Fe	56	1	nogas	-2.026	-304.4	2284040	7.1	100	
Se	77	1	nogas	-15.997	-24.3	17382	4.8	2.5	
Se	82	1	nogas	0.084	448.7	367	33.9	2.5	

Continuing Calibration Blank (CCB) Report

Mo	95	1	nogas	0.246	34.1	1883	30.5	2.5	
Sn	118	1	nogas	0.787	10.6	8936	7.7	5	
Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Ba	137	1	nogas	-0.033	-69.4	1423	5.1	2.5	
Sb	121	2	He	0.163	8.2	1133	7.4	2.5	
P	31	1	nogas	3.092	50.5	137072	0.9	10	
La	139	1	nogas	5.014	126.5	103	24.4	2.5	CCB Main CR1 Failed
Au	197	1	nogas	178.118	136.4	20	50.0	2.5	CCB Main CR1 Failed

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	1314545	2.25	1314390	100.01	70	125	
Ge	72	1	nogas	3595497	2.04	3749087	95.90	70	125	
In	115	1	nogas	3208663	2.75	3430303	93.54	70	125	
Bi	209	1	nogas	2496339	0.51	2610544	95.63	70	125	
Ge	72	2	He	875273	1.93	932298	93.88	70	125	

Sample Report

Sample Table

Sample Name	LLCCV2
Data File Name	153SMPL.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\121
Acq Date Time	2018-12-11T21:10:22-06:00
Sample Type	Sample
Dilution	1
Comment	
ISTD Ref FileName	113CALB.d
Sample QC Pass/Fail	Pass
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
Be	9	1	nogas	1.692	1.692	0.86	16707	0.01	2000	
Na	23	1	nogas	186.793	186.793	5.29	5920403	0.00	200000	
Mg	24	1	nogas	209.409	209.409	2.03	3734331	0.01	200000	
Al	27	1	nogas	1.695	1.695	3.77	64437	0.00	2000	
K	39	1	nogas	199.137	199.137	13.15	13112550	0.00	200000	
Ti	47	1	nogas	1.912	1.912	7.18	4691	0.04	2000	
V	51	1	nogas	-2.729	-2.729	-9.49	292708	0.00	2000	
Cr	52	1	nogas	1.784	1.784	5.89	90226	0.00	2000	
Mn	55	1	nogas	1.890	1.890	4.88	88887	0.00	2000	
Co	59	1	nogas	1.999	1.999	3.37	55996	0.00	2000	
Ni	60	1	nogas	3.186	3.186	3.53	12688	0.03	2000	
Cu	63	1	nogas	1.233	1.233	6.10	61613	0.00	2000	
Zn	66	1	nogas	2.666	2.666	1.83	11661	0.02	2000	
As	75	1	nogas	0.875	0.875	39.59	64869	0.00	2000	
Sr	88	1	nogas	1.936	1.936	2.45	69365	0.00	2000	
Ag	107	1	nogas	2.010	2.010	2.83	33399	0.01	2000	
Cd	111	1	nogas	1.914	1.914	6.16	6811	0.03	2000	
Sb	121	1	nogas	1.986	1.986	4.43	32684	0.01	2000	
Tl	205	1	nogas	2.008	2.008	4.51	47948	0.00	2000	
Pb	208	1	nogas	1.923	1.923	1.04	70288	0.00	2000	
U	238	1	nogas	2.052	2.052	2.26	63505	0.00	2000	
[Pb]	206	1	nogas	1.946	1.946	7.30	17243	0.01	2000	
[Pb]	207	1	nogas	1.963	1.963	6.91	15224	0.01	2000	
Na	23	2	He	182.999	182.999	1.37	403837	0.05	200000	
Mg	24	2	He	199.230	199.230	2.12	191034	0.10	200000	
Al	27	2	He	1.134	1.134	20.48	1547	0.07	2000	
K	39	2	He	185.142	185.142	0.71	404100	0.05	200000	
Ca	43	2	He	225.585	225.585	19.03	660	34.18	200000	
Ca	44	2	He	192.523	192.523	3.33	11824	1.63	200000	
V	51	2	He	1.895	1.895	0.46	16716	0.01	2000	
Cr	52	2	He	1.911	1.911	4.53	20271	0.01	2000	
Mn	55	2	He	1.928	1.928	2.20	12294	0.02	2000	
Fe	56	2	He	206.770	206.770	2.17	1391111	0.01	200000	
Co	59	2	He	2.022	2.022	3.60	21710	0.01	2000	
Ni	60	2	He	1.942	1.942	3.43	5951	0.03	2000	
Cu	63	2	He	1.643	1.643	8.58	24987	0.01	2000	
Zn	66	2	He	1.632	1.632	9.73	3940	0.04	2000	
As	75	2	He	1.901	1.901	0.77	3487	0.05	2000	
Se	78	2	He	2.101	2.101	26.58	463	0.45	2000	
B	11	1	nogas	12.631	12.631	9.84	132757	0.01	2000	
Si	28	1	nogas	152.196	152.196	32.40	1502818	0.01	2000	
Ca	43	1	nogas	194.791	194.791	4.44	9306	2.09	200000	

Sample Report

Ca	44	1	nogas	187.625	187.625	11.80	414289	0.05	200000	
Fe	56	1	nogas	187.206	187.206	4.12	7523268	0.00	200000	
Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
Se	77	1	nogas	-14.624	-14.624	-3.07	17799	-0.08	2000	
Se	82	1	nogas	1.870	1.870	29.09	967	0.19	2000	
Mo	95	1	nogas	1.989	1.989	4.17	13929	0.01	2000	
Sn	118	1	nogas	1.982	1.982	3.87	21153	0.01	2000	
Ba	137	1	nogas	1.894	1.894	2.01	10580	0.02	2000	
Sb	121	2	He	2.047	2.047	3.26	11921	0.02	2000	
La	139	1	nogas	-2.635	-2.635	-112.43	73	-3.59	2000	
Au	197	1	nogas	415.108	415.108	206.05	30	1383.69	2000	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	1312720	4.05	1314390	99.87	70	125	
Ge	72	1	nogas	3598928	3.26	3749087	95.99	70	125	
In	115	1	nogas	3275103	1.64	3430303	95.48	70	125	
Bi	209	1	nogas	2486882	2.30	2610544	95.26	70	125	
Ge	72	2	He	880649	1.60	932298	94.46	70	125	

Continuing Calibration Verification (CCV) Report

Sample Table

Sample Name	CCV
Data File Name	163_CCV.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\121
Acq Date Time	2018-12-11T21:31:00-06:00
Sample Type	CCV
Dilution	1
Comment	
ISTD Ref File Name	113CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Exp Value	%Rec	%Low	%High2	QC Flag
Be	9	1	nogas	96.583	0.484	831539	0.81	100	96.6	90	110	
Na	23	1	nogas	11231.188	4.746	298594998	1.36	10000	112.3	90	110	CCV Main CR1-2 Failed
Mg	24	1	nogas	10254.061	2.672	178809896	2.46	10000	102.5	90	110	
Al	27	1	nogas	100.079	3.827	2234624	3.38	100	100.1	90	110	
K	39	1	nogas	9795.994	1.568	229103688	2.02	10000	98.0	90	110	
Ti	47	1	nogas	95.694	1.057	209061	1.42	100	95.7	90	110	
V	51	1	nogas	97.166	1.680	3272656	1.65	100	97.2	90	110	
Cr	52	1	nogas	101.073	0.714	2612655	0.25	100	101.1	90	110	
Mn	55	1	nogas	98.075	0.831	3172191	0.37	100	98.1	90	110	
Co	59	1	nogas	100.805	3.212	2748153	3.35	100	100.8	90	110	
Ni	60	1	nogas	96.836	0.675	597641	1.06	100	96.8	90	110	
Cu	63	1	nogas	96.836	2.007	1456025	2.44	100	96.8	90	110	
Zn	66	1	nogas	98.472	0.694	478185	0.47	100	98.5	90	110	
As	75	1	nogas	98.428	0.502	691216	0.64	100	98.4	90	110	
Sr	88	1	nogas	98.635	1.091	3358675	1.20	100	98.6	90	110	
Ag	107	1	nogas	98.687	0.774	1621375	0.26	100	98.7	90	110	
Cd	111	1	nogas	102.485	2.984	353696	1.00	100	102.5	90	110	
Sb	121	1	nogas	100.104	2.148	1611889	1.64	100	100.1	90	110	
Tl	205	1	nogas	100.226	5.095	2287724	3.74	100	100.2	90	110	
Pb	208	1	nogas	92.485	0.914	3127044	0.91	100	92.5	90	110	
U	238	1	nogas	109.489	1.501	3272325	2.83	100	109.5	90	110	
[Pb]	206	1	nogas	95.416	3.161	756637	2.18	100	95.4	90	110	
[Pb]	207	1	nogas	94.213	2.351	655574	1.04	100	94.2	90	110	
Na	23	2	He	10330.036	3.269	17448370	2.93	10000	103.3	90	110	
Mg	24	2	He	10073.695	3.478	9381518	3.18	10000	100.7	90	110	
Al	27	2	He	103.632	2.790	52664	2.45	100	103.6	90	110	
K	39	2	He	9858.891	1.128	10217505	1.10	10000	98.6	90	110	
Ca	43	2	He	10188.924	2.229	27698	2.55	10000	101.9	90	110	
Ca	44	2	He	9887.121	1.601	458237	1.91	10000	98.9	90	110	
V	51	2	He	96.888	0.506	681457	0.74	100	96.9	90	110	
Cr	52	2	He	96.558	0.687	740696	0.39	100	96.6	90	110	
Mn	55	2	He	99.521	3.216	520137	2.90	100	99.5	90	110	
Fe	56	2	He	9811.672	3.398	63931706	3.09	10000	98.1	90	110	
Co	59	2	He	97.130	2.810	1011719	2.50	100	97.1	90	110	
Ni	60	2	He	100.529	1.839	260000	1.51	100	100.5	90	110	
Cu	63	2	He	94.288	1.022	652832	1.05	100	94.3	90	110	
Zn	66	2	He	99.073	1.708	161460	1.93	100	99.1	90	110	
As	75	2	He	98.728	0.833	159293	0.99	100	98.7	90	110	
Se	78	2	He	100.074	1.393	12881	1.17	100	100.1	90	110	
B	11	1	nogas	483.463	2.255	2605689	2.53	500	96.7	90	110	
Si	28	1	nogas	5134.567	1.451	7514921	0.69	5000	102.7	90	110	
Ca	43	1	nogas	10024.181	0.866	408823	0.67	10000	100.2	90	110	
Ca	44	1	nogas	9908.791	1.333	6858096	1.02	10000	99.1	90	110	
Fe	56	1	nogas	9705.023	2.100	268806123	1.61	10000	97.1	90	110	
Se	77	1	nogas	114.559	4.348	54127	2.23	100	114.6	90	110	CCV Main CR1-2 Failed
Se	82	1	nogas	96.260	4.029	32172	3.52	100	96.3	90	110	
Mo	95	1	nogas	94.553	1.354	648508	1.01	100	94.6	90	110	
Sn	118	1	nogas	97.735	2.329	958276	2.23	100	97.7	90	110	
Ba	137	1	nogas	99.399	2.213	459459	1.45	100	99.4	90	110	
Sb	121	2	He	98.388	0.803	552216	0.54	100	98.4	90	110	
Li	7	1	nogas	99.787	3.443	1956057	3.02	100	99.8	90	110	
P	31	1	nogas	471.897	0.877	1080120	0.43	500	94.4	90	110	
La	139	1	nogas	104.753	28.956	510	22.10	100	104.8	90	110	
Au	197	1	nogas	111.574	126.288	17	34.64	100	111.6	90	110	CCV Main CR1-2 Failed

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	1147047	0.37	1314390	87.27	70	125	
Ge	72	1	nogas	3568577	0.51	3749087	95.19	70	125	
In	115	1	nogas	3186257	2.68	3430303	92.89	70	125	
Bi	209	1	nogas	2404520	1.36	2610544	92.11	70	125	

Continuing Calibration Verification (CCV) Report

Ge	72	2	He	863148	0.32	932298	92.58	70	125	

Continuing Calibration Blank (CCB) Report

Sample Table

Sample Name	CCB
Data File Name	164_CCB.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\121
Acq Date Time	2018-12-11T21:33:05-06:00
Sample Type	CCB
Dilution	1
Comment	
ISTD Ref File Name	113CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Be	9	1	nogas	0.052	22.9	550	20.7	1	
Na	23	1	nogas	206.088	4.1	6568988	2.9	100	CCB Main CR1 Failed
Mg	24	1	nogas	19.803	4.3	391592	3.3	100	
Al	27	1	nogas	0.315	20.3	34044	2.7	5	
K	39	1	nogas	19.895	73.1	9131827	1.3	100	
Ti	47	1	nogas	0.074	85.2	660	18.6	2.5	
V	51	1	nogas	-1.697	-9.2	326608	1.4	2.5	
Cr	52	1	nogas	0.079	97.7	46966	2.3	2.5	
Mn	55	1	nogas	1.079	6.0	63221	2.3	2.5	
Co	59	1	nogas	0.056	43.4	2644	23.3	2.5	
Ni	60	1	nogas	2.555	1.7	8802	1.5	2.5	CCB Main CR1 Failed
Cu	63	1	nogas	-1.735	-1.7	18129	3.6	2.5	
Zn	66	1	nogas	1.165	4.2	4331	7.5	2.5	
As	75	1	nogas	1.435	9.1	69144	1.2	2.5	
Sr	88	1	nogas	0.213	3.3	10396	0.7	2.5	
Ag	107	1	nogas	0.044	31.5	840	25.1	2.5	
Cd	111	1	nogas	0.050	20.7	207	15.6	1	
Sb	121	1	nogas	0.117	12.6	2400	7.6	2.5	
Tl	205	1	nogas	0.916	54.4	23632	57.5	1	
Pb	208	1	nogas	0.060	41.3	7431	11.3	2.5	
U	238	1	nogas	0.134	51.5	4508	55.0	2.5	
[Pb]	206	1	nogas	0.050	28.3	1817	3.7	2.5	
[Pb]	207	1	nogas	0.057	33.8	1620	13.0	2.5	
Na	23	2	He	180.248	0.8	398614	1.1	100	CCB Main CR1 Failed
Mg	24	2	He	17.005	5.2	17929	5.2	100	
Al	27	2	He	-0.060	-231.9	937	7.1	5	
K	39	2	He	7.742	27.9	224138	1.0	100	
Ca	43	2	He	44.128	24.3	157	19.5	100	
Ca	44	2	He	26.628	11.7	4017	3.5	100	
V	51	2	He	0.144	11.1	4197	2.6	2.5	
Cr	52	2	He	0.013	210.8	5518	4.0	2.5	
Mn	55	2	He	1.193	6.0	8379	4.1	2.5	
Fe	56	2	He	3.577	5.6	40802	2.9	100	
Co	59	2	He	0.037	21.0	627	12.9	2.5	
Ni	60	2	He	0.844	7.6	3060	5.7	2.5	
Cu	63	2	He	-1.066	-6.2	6241	6.9	2.5	
Zn	66	2	He	0.052	58.6	1330	4.2	2.5	
As	75	2	He	0.022	59.1	400	5.1	2.5	
Se	78	2	He	-0.127	-138.7	175	12.8	2.5	
B	11	1	nogas	7.396	10.2	101123	1.8	10	
Si	28	1	nogas	92.325	40.7	1443298	1.6	5	CCB Main CR1 Failed
Ca	43	1	nogas	34.491	11.5	2764	4.6	100	
Ca	44	1	nogas	1.386	471.9	292592	0.9	100	
Fe	56	1	nogas	3.192	238.8	2450021	6.2	100	
Se	77	1	nogas	-0.437	-398.6	22040	3.6	2.5	
Se	82	1	nogas	0.152	102.0	393	12.8	2.5	

Continuing Calibration Blank (CCB) Report

Mo	95	1	nogas	0.419	20.6	3104	16.8	2.5	
Sn	118	1	nogas	0.697	17.1	8437	12.8	5	
Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Ba	137	1	nogas	-0.058	-45.7	1373	6.2	2.5	
Sb	121	2	He	0.097	18.5	763	13.3	2.5	
P	31	1	nogas	0.551	262.6	133228	0.3	10	
La	139	1	nogas	1.509	341.8	93	22.3	2.5	
Au	197	1	nogas	72.067	338.5	17	69.3	2.5	CCB Main CR1 Failed

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	1311811	3.05	1314390	99.80	70	125	
Ge	72	1	nogas	3631418	2.42	3749087	96.86	70	125	
In	115	1	nogas	3370158	3.38	3430303	98.25	70	125	
Bi	209	1	nogas	2612534	4.55	2610544	100.08	70	125	
Ge	72	2	He	879442	0.52	932298	94.33	70	125	

Continuing Calibration Verification (CCV) Report

Sample Table

Sample Name	CCV
Data File Name	170_CCV.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\121
Acq Date Time	2018-12-11T21:45:25-06:00
Sample Type	CCV
Dilution	1
Comment	
ISTD Ref File Name	113CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Exp Value	%Rec	%Low	%High2	QC Flag
Be	9	1	nogas	94.794	0.443	831113	0.94	100	94.8	90	110	
Na	23	1	nogas	10641.221	4.752	282290831	2.64	10000	106.4	90	110	
Mg	24	1	nogas	10340.003	4.106	179767908	1.13	10000	103.4	90	110	
Al	27	1	nogas	100.700	0.945	2225455	1.23	100	100.7	90	110	
K	39	1	nogas	10414.163	3.830	240451980	2.61	10000	104.1	90	110	
Ti	47	1	nogas	98.432	0.834	212812	0.98	100	98.4	90	110	
V	51	1	nogas	97.294	2.033	3242523	1.23	100	97.3	90	110	
Cr	52	1	nogas	100.192	2.641	2564621	4.22	100	100.2	90	110	
Mn	55	1	nogas	99.632	0.989	3189454	2.25	100	99.6	90	110	
Co	59	1	nogas	101.794	1.939	2746122	0.17	100	101.8	90	110	
Ni	60	1	nogas	98.059	0.797	599070	1.41	100	98.1	90	110	
Cu	63	1	nogas	103.687	0.150	1540043	1.88	100	103.7	90	110	
Zn	66	1	nogas	101.594	1.545	488282	0.32	100	101.6	90	110	
As	75	1	nogas	97.633	1.538	679005	0.48	100	97.6	90	110	
Sr	88	1	nogas	99.327	2.356	3347560	2.72	100	99.3	90	110	
Ag	107	1	nogas	104.280	0.822	1695899	2.20	100	104.3	90	110	
Cd	111	1	nogas	100.357	2.433	353715	1.42	100	100.4	90	110	
Sb	121	1	nogas	101.243	2.499	1613270	0.99	100	101.2	90	110	
Tl	205	1	nogas	101.707	1.548	2409683	0.15	100	101.7	90	110	
Pb	208	1	nogas	96.133	2.356	3250181	2.35	100	96.1	90	110	
U	238	1	nogas	106.423	3.259	3301040	4.67	100	106.4	90	110	
[Pb]	206	1	nogas	97.448	1.909	801869	0.69	100	97.4	90	110	
[Pb]	207	1	nogas	96.289	1.593	695387	2.27	100	96.3	90	110	
Na	23	2	He	9966.052	5.008	17025109	3.47	10000	99.7	90	110	
Mg	24	2	He	10043.182	4.143	9458764	2.68	10000	100.4	90	110	
Al	27	2	He	102.578	2.632	52734	1.11	100	102.6	90	110	
K	39	2	He	9674.945	2.015	10030904	1.97	10000	96.7	90	110	
Ca	43	2	He	10278.021	3.614	28255	2.55	10000	102.8	90	110	
Ca	44	2	He	9839.052	3.648	461196	2.76	10000	98.4	90	110	
V	51	2	He	97.219	2.713	691533	1.17	100	97.2	90	110	
Cr	52	2	He	96.677	1.820	750102	0.42	100	96.7	90	110	
Mn	55	2	He	99.350	2.720	525178	1.19	100	99.3	90	110	
Fe	56	2	He	10000.318	2.789	65905596	1.41	10000	100.0	90	110	
Co	59	2	He	96.171	0.908	1013377	0.96	100	96.2	90	110	
Ni	60	2	He	99.680	0.562	260835	2.05	100	99.7	90	110	
Cu	63	2	He	97.757	2.281	684238	2.72	100	97.8	90	110	
Zn	66	2	He	98.823	2.480	162908	2.26	100	98.8	90	110	
As	75	2	He	98.981	1.992	161535	1.45	100	99.0	90	110	
Se	78	2	He	97.320	3.313	12674	2.16	100	97.3	90	110	
B	11	1	nogas	475.554	2.876	2610940	3.15	500	95.1	90	110	
Si	28	1	nogas	5102.125	1.990	7398677	1.16	5000	102.0	90	110	
Ca	43	1	nogas	10278.655	3.393	414777	2.34	10000	102.8	90	110	
Ca	44	1	nogas	10082.863	1.604	6901631	1.06	10000	100.8	90	110	
Fe	56	1	nogas	10011.451	1.698	274365814	0.94	10000	100.1	90	110	
Se	77	1	nogas	95.906	1.810	48371	2.78	100	95.9	90	110	
Se	82	1	nogas	99.026	2.402	32753	2.89	100	99.0	90	110	
Mo	95	1	nogas	97.775	2.358	663601	0.57	100	97.8	90	110	
Sn	118	1	nogas	97.699	3.282	977881	1.52	100	97.7	90	110	
Ba	137	1	nogas	101.362	1.264	478468	1.95	100	101.4	90	110	
Sb	121	2	He	99.615	2.874	565462	1.63	100	99.6	90	110	
Li	7	1	nogas	97.853	2.421	1955701	3.35	100	97.9	90	110	
P	31	1	nogas	489.586	2.195	1104143	0.38	500	97.9	90	110	
La	139	1	nogas	96.129	3.522	487	1.19	100	96.1	90	110	
Au	197	1	nogas	-67.588	-612.393	10	173.21	100	-67.6	90	110	CCV Main CR1-2 Failed

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	1168132	1.18	1314390	88.87	70	125	
Ge	72	1	nogas	3532207	1.79	3749087	94.22	70	125	
In	115	1	nogas	3253109	1.84	3430303	94.83	70	125	
Bi	209	1	nogas	2495067	1.40	2610544	95.58	70	125	

Continuing Calibration Verification (CCV) Report

Ge	72	2	He	873195	1.55	932298	93.66	70	125	

Continuing Calibration Blank (CCB) Report

Sample Table

Sample Name	CCB
Data File Name	171_CCB.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\121
Acq Date Time	2018-12-11T21:47:29-06:00
Sample Type	CCB
Dilution	1
Comment	
ISTD Ref File Name	113CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Be	9	1	nogas	0.039	32.0	417	30.5	1	
Na	23	1	nogas	30.312	0.4	1690562	0.4	100	
Mg	24	1	nogas	4.758	14.2	116309	9.6	100	
Al	27	1	nogas	0.172	21.2	30375	2.0	5	
K	39	1	nogas	8.646	118.2	8740354	0.3	100	
Ti	47	1	nogas	-0.023	-85.0	440	6.8	2.5	
V	51	1	nogas	-3.467	-7.9	268612	1.4	2.5	
Cr	52	1	nogas	-0.063	-146.3	42636	3.6	2.5	
Mn	55	1	nogas	1.154	6.1	64650	1.9	2.5	
Co	59	1	nogas	0.044	12.0	2300	5.4	2.5	
Ni	60	1	nogas	2.333	1.7	7282	0.7	2.5	
Cu	63	1	nogas	-0.291	-54.4	38921	4.1	2.5	
Zn	66	1	nogas	1.169	3.6	4281	2.3	2.5	
As	75	1	nogas	0.051	934.7	59143	3.0	2.5	
Sr	88	1	nogas	0.053	29.5	4794	13.4	2.5	
Ag	107	1	nogas	0.031	16.9	613	11.1	2.5	
Cd	111	1	nogas	0.029	50.4	130	40.7	1	
Sb	121	1	nogas	0.093	14.4	1967	12.2	2.5	
Tl	205	1	nogas	0.931	61.9	23188	61.2	1	
Pb	208	1	nogas	0.035	15.1	6591	2.7	2.5	
U	238	1	nogas	0.123	65.1	4024	64.6	2.5	
[Pb]	206	1	nogas	0.057	19.7	1837	4.2	2.5	
[Pb]	207	1	nogas	0.036	30.0	1427	7.8	2.5	
Na	23	2	He	30.001	7.3	138411	2.9	100	
Mg	24	2	He	4.285	15.3	5738	10.9	100	
Al	27	2	He	-0.210	-182.3	843	22.6	5	
K	39	2	He	-1.601	-137.2	214661	1.0	100	
Ca	43	2	He	12.160	64.1	67	31.2	100	
Ca	44	2	He	9.284	37.3	3137	5.0	100	
V	51	2	He	0.075	13.9	3634	2.4	2.5	
Cr	52	2	He	0.090	71.3	5994	8.6	2.5	
Mn	55	2	He	1.132	6.5	7888	4.8	2.5	
Fe	56	2	He	3.796	6.9	41390	4.6	100	
Co	59	2	He	0.048	26.8	727	19.1	2.5	
Ni	60	2	He	0.846	15.8	3000	10.9	2.5	
Cu	63	2	He	0.073	25.3	13822	0.4	2.5	
Zn	66	2	He	0.036	46.4	1277	1.6	2.5	
As	75	2	He	-0.004	-336.8	349	6.4	2.5	
Se	78	2	He	-0.068	-143.8	179	7.5	2.5	
B	11	1	nogas	3.260	17.6	75900	4.8	10	
Si	28	1	nogas	87.206	36.5	1415121	0.3	5	CCB Main CR1 Failed
Ca	43	1	nogas	20.460	14.9	2150	4.3	100	
Ca	44	1	nogas	43.834	20.3	316323	0.9	100	
Fe	56	1	nogas	-3.149	-119.5	2242224	6.1	100	
Se	77	1	nogas	-9.692	-3.8	19084	2.3	2.5	
Se	82	1	nogas	-0.192	-38.9	273	7.6	2.5	

Continuing Calibration Blank (CCB) Report

Mo	95	1	nogas	0.213	34.0	1650	31.6	2.5	
Sn	118	1	nogas	0.619	6.4	7765	4.3	5	
Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Ba	137	1	nogas	-0.065	-60.5	1363	13.2	2.5	
Sb	121	2	He	0.071	17.8	603	12.2	2.5	
P	31	1	nogas	1.770	144.1	133617	1.1	10	
La	139	1	nogas	0.380	646.2	90	11.1	2.5	
Au	197	1	nogas	-73.549	-316.2	10	100.0	2.5	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	1306798	2.28	1314390	99.42	70	125	
Ge	72	1	nogas	3576248	2.72	3749087	95.39	70	125	
In	115	1	nogas	3422877	0.98	3430303	99.78	70	125	
Bi	209	1	nogas	2558856	2.39	2610544	98.02	70	125	
Ge	72	2	He	861282	0.54	932298	92.38	70	125	

Sample Report

Sample Table

Sample Name	MBLK-135349
Data File Name	172SMPL.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\121
Acq Date Time	2018-12-11T21:49:35-06:00
Sample Type	Sample
Dilution	1
Comment	TW B135349
ISTD Ref FileName	113CALB.d
Sample QC Pass/Fail	Pass
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
Be	9	1	nogas	0.011	0.011	40.45	147	0.01	2000	
Na	23	1	nogas	22.349	22.349	16.76	1572134	0.00	200000	
Mg	24	1	nogas	19.769	19.769	1.60	400953	0.00	200000	
Al	27	1	nogas	5.247	5.247	2.48	146742	0.00	2000	
K	39	1	nogas	5.532	5.532	155.34	8924393	0.00	200000	
Ti	47	1	nogas	0.000	0.000	-3137.58	503	0.00	2000	
V	51	1	nogas	-4.746	-4.746	-7.11	237065	0.00	2000	
Cr	52	1	nogas	-0.198	-0.198	-39.53	40344	0.00	2000	
Mn	55	1	nogas	2.210	2.210	4.45	101471	0.00	2000	
Co	59	1	nogas	0.004	0.004	85.70	1220	0.00	2000	
Ni	60	1	nogas	1.327	1.327	2.03	1013	0.13	2000	
Cu	63	1	nogas	-0.821	-0.821	-16.38	32098	0.00	2000	
Zn	66	1	nogas	0.704	0.704	6.73	2067	0.03	2000	
As	75	1	nogas	-1.352	-1.352	-36.98	51573	0.00	2000	
Sr	88	1	nogas	0.009	0.009	62.36	3360	0.00	2000	
Ag	107	1	nogas	0.005	0.005	55.46	193	0.00	2000	
Cd	111	1	nogas	0.015	0.015	44.94	77	0.02	2000	
Sb	121	1	nogas	0.042	0.042	11.83	1187	0.00	2000	
Tl	205	1	nogas	0.038	0.038	24.15	1550	0.00	2000	
Pb	208	1	nogas	0.029	0.029	52.59	6364	0.00	2000	
U	238	1	nogas	0.015	0.015	23.64	613	0.00	2000	
[Pb]	206	1	nogas	0.019	0.019	121.03	1583	0.00	2000	
[Pb]	207	1	nogas	0.013	0.013	113.50	1310	0.00	2000	
Na	23	2	He	18.229	18.229	1.53	124080	0.01	200000	
Mg	24	2	He	18.856	18.856	4.16	20154	0.09	200000	
Al	27	2	He	4.740	4.740	7.04	3460	0.14	2000	
K	39	2	He	-2.403	-2.403	-146.02	213847	0.00	200000	
Ca	43	2	He	9.846	9.846	52.04	63	15.55	200000	
Ca	44	2	He	-3.773	-3.773	-105.74	2654	-0.14	200000	
V	51	2	He	-0.039	-0.039	-26.98	2968	0.00	2000	
Cr	52	2	He	-0.005	-0.005	-314.92	5511	0.00	2000	
Mn	55	2	He	2.512	2.512	2.30	15750	0.02	2000	
Fe	56	2	He	1.985	1.985	9.61	30966	0.01	200000	
Co	59	2	He	0.011	0.011	119.43	360	0.00	2000	
Ni	60	2	He	-0.197	-0.197	-5.06	333	-0.06	2000	
Cu	63	2	He	-0.339	-0.339	-15.62	11537	0.00	2000	
Zn	66	2	He	-0.411	-0.411	-7.54	580	-0.07	2000	
As	75	2	He	-0.050	-0.050	-18.30	289	-0.02	2000	
Se	78	2	He	-0.031	-0.031	-1042.02	191	-0.02	2000	
B	11	1	nogas	0.378	0.378	31.54	61475	0.00	2000	

Sample Report

Si	28	1	nogas	948.830	948.830	6.09	2530551	0.04	2000	
Ca	43	1	nogas	3.825	3.825	145.66	1520	0.25	200000	
Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
Ca	44	1	nogas	23.426	23.426	69.71	311546	0.01	200000	
Fe	56	1	nogas	-12.058	-12.058	-10.91	2054363	0.00	200000	
Se	77	1	nogas	-18.453	-18.453	-10.87	17082	-0.11	2000	
Se	82	1	nogas	-0.070	-0.070	-289.31	323	-0.02	2000	
Mo	95	1	nogas	0.046	0.046	19.20	513	0.01	2000	
Sn	118	1	nogas	0.042	0.042	20.89	1687	0.00	2000	
Ba	137	1	nogas	-0.248	-0.248	-5.08	453	-0.05	2000	
Sb	121	2	He	0.039	0.039	11.88	443	0.01	2000	
La	139	1	nogas	-7.129	-7.129	-48.98	57	-12.58	2000	
Au	197	1	nogas	214.412	214.412	333.91	23	918.91	2000	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	1372435	2.39	1314390	104.42	70	125	
Ge	72	1	nogas	3680731	2.47	3749087	98.18	70	125	
In	115	1	nogas	3404841	1.52	3430303	99.26	70	125	
Bi	209	1	nogas	2666591	2.15	2610544	102.15	70	125	
Ge	72	2	He	900620	1.17	932298	96.60	70	125	

Sample Report

Sample Table

Sample Name	LCS-135349
Data File Name	173SMPL.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\121
Acq Date Time	2018-12-11T21:51:38-06:00
Sample Type	Sample
Dilution	1
Comment	TW B135349
ISTD Ref FileName	113CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
Be	9	1	nogas	50.081	50.081	4.21	448435	0.01	2000	
Na	23	1	nogas	5389.371	5389.371	4.39	151956724	0.00	200000	
Mg	24	1	nogas	5308.852	5308.852	4.22	97815815	0.01	200000	
Al	27	1	nogas	112.119	112.119	3.35	2547052	0.00	2000	
K	39	1	nogas	5228.591	5228.591	2.04	128628236	0.00	200000	
Ti	47	1	nogas	149.021	149.021	0.78	331453	0.04	2000	
V	51	1	nogas	46.718	46.718	0.47	1800078	0.00	2000	
Cr	52	1	nogas	50.914	50.914	1.55	1363615	0.00	2000	
Mn	55	1	nogas	52.751	52.751	3.57	1750921	0.00	2000	
Co	59	1	nogas	52.962	52.962	2.50	1471348	0.00	2000	
Ni	60	1	nogas	51.734	51.734	3.80	321735	0.02	2000	
Cu	63	1	nogas	50.303	50.303	2.89	791547	0.01	2000	
Zn	66	1	nogas	53.428	53.428	0.60	263713	0.02	2000	
As	75	1	nogas	47.470	47.470	2.01	370615	0.01	2000	
Sr	88	1	nogas	101.499	101.499	2.01	3521584	0.00	2000	
Ag	107	1	nogas	52.649	52.649	1.27	881502	0.01	2000	
Cd	111	1	nogas	51.886	51.886	4.87	189472	0.03	2000	
Sb	121	1	nogas	51.244	51.244	3.18	840782	0.01	2000	
Tl	205	1	nogas	48.462	48.462	3.82	1181742	0.00	2000	
Pb	208	1	nogas	49.530	49.530	1.65	1677188	0.00	2000	
U	238	1	nogas	104.433	104.433	2.33	3334069	0.00	2000	
[Pb]	206	1	nogas	49.638	49.638	3.88	420945	0.01	2000	
[Pb]	207	1	nogas	49.541	49.541	2.82	368699	0.01	2000	
Na	23	2	He	5362.454	5362.454	0.83	9288820	0.06	200000	
Mg	24	2	He	5334.428	5334.428	1.86	5070303	0.11	200000	
Al	27	2	He	115.054	115.054	2.02	59557	0.19	2000	
K	39	2	He	5144.849	5144.849	1.59	5435409	0.09	200000	
Ca	43	2	He	5388.611	5388.611	4.01	14960	36.02	200000	
Ca	44	2	He	5263.203	5263.203	2.21	250202	2.10	200000	
V	51	2	He	50.426	50.426	1.10	363459	0.01	2000	
Cr	52	2	He	50.758	50.758	1.72	399884	0.01	2000	
Mn	55	2	He	52.422	52.422	3.29	280498	0.02	2000	
Fe	56	2	He	5264.136	5264.136	2.17	35007604	0.02	200000	
Co	59	2	He	50.740	50.740	3.80	539315	0.01	2000	
Ni	60	2	He	52.612	52.612	0.58	139279	0.04	2000	
Cu	63	2	He	50.552	50.552	1.62	363471	0.01	2000	
Zn	66	2	He	52.118	52.118	1.42	87264	0.06	2000	
As	75	2	He	51.108	51.108	2.08	84344	0.06	2000	
Se	78	2	He	52.217	52.217	1.80	6950	0.75	2000	
B	11	1	nogas	492.113	492.113	3.79	2757379	0.02	2000	
Si	28	1	nogas	5998.932	5998.932	4.31	8719075	0.07	2000	>LDR
Ca	43	1	nogas	5368.650	5368.650	1.12	223714	2.40	200000	
Ca	44	1	nogas	5429.276	5429.276	3.28	3959884	0.14	200000	
Fe	56	1	nogas	5290.306	5290.306	2.43	150371424	0.00	200000	

Sample Report

Se	77	1	nogas	24.170	24.170	4.19	29147	0.08	2000	
Se	82	1	nogas	50.794	50.794	2.29	17462	0.29	2000	
Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
Mo	95	1	nogas	48.471	48.471	1.01	338877	0.01	2000	
Sn	118	1	nogas	96.869	96.869	3.11	1004963	0.01	2000	
Ba	137	1	nogas	50.529	50.529	3.68	247986	0.02	2000	
Sb	121	2	He	52.184	52.184	1.55	298962	0.02	2000	
La	139	1	nogas	34.575	34.575	35.06	237	14.61	2000	
Au	197	1	nogas	484.317	484.317	78.83	33	1452.95	2000	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	1193536	2.07	1314390	90.81	70	125	
Ge	72	1	nogas	3636475	1.94	3749087	97.00	70	125	
In	115	1	nogas	3372259	2.56	3430303	98.31	70	125	
Bi	209	1	nogas	2568352	2.38	2610544	98.38	70	125	
Ge	72	2	He	880902	1.75	932298	94.49	70	125	

Sample Report

Sample Table

Sample Name	HS18111440-01
Data File Name	174SMPL.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\121
Acq Date Time	2018-12-11T21:53:39-06:00
Sample Type	Sample
Dilution	1
Comment	TW B135349
ISTD Ref FileName	113CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
Be	9	1	nogas	0.073	0.073	4.41	757	0.01	2000	
Na	23	1	nogas	52129.748	52129.748	7.57	1615876203	0.00	200000	
Mg	24	1	nogas	2248.868	2248.868	7.26	45838441	0.00	200000	
Al	27	1	nogas	379.923	379.923	4.23	9212433	0.00	2000	
K	39	1	nogas	352.209	352.209	11.75	18022640	0.00	200000	
Ti	47	1	nogas	10.169	10.169	5.02	24810	0.04	2000	
V	51	1	nogas	-6.658	-6.658	-3.48	189413	0.00	2000	
Cr	52	1	nogas	0.508	0.508	27.30	62485	0.00	2000	
Mn	55	1	nogas	56.117	56.117	6.31	1999869	0.00	2000	
Co	59	1	nogas	1.052	1.052	3.85	32593	0.00	2000	
Ni	60	1	nogas	4.839	4.839	4.81	25091	0.02	2000	
Cu	63	1	nogas	-0.632	-0.632	-24.53	37104	0.00	2000	
Zn	66	1	nogas	5.019	5.019	6.37	25204	0.02	2000	
As	75	1	nogas	-2.998	-2.998	-8.74	43242	-0.01	2000	
Sr	88	1	nogas	149.923	149.923	5.87	5587369	0.00	2000	
Ag	107	1	nogas	0.019	0.019	32.01	470	0.00	2000	
Cd	111	1	nogas	0.073	0.073	37.52	300	0.02	2000	
Sb	121	1	nogas	0.230	0.230	8.00	4564	0.01	2000	
Tl	205	1	nogas	0.823	0.823	68.95	21091	0.00	2000	
Pb	208	1	nogas	0.603	0.603	3.45	25758	0.00	2000	
U	238	1	nogas	0.399	0.399	39.51	13246	0.00	2000	
[Pb]	206	1	nogas	0.577	0.577	18.72	6508	0.01	2000	
[Pb]	207	1	nogas	0.560	0.560	11.28	5558	0.01	2000	
Na	23	2	He	57988.751	57988.751	1.78	101933632	0.06	200000	
Mg	24	2	He	2576.958	2576.958	1.29	2509276	0.10	200000	
Al	27	2	He	435.644	435.644	2.35	228178	0.19	2000	
K	39	2	He	405.643	405.643	1.69	627784	0.06	200000	
Ca	43	2	He	7000.744	7000.744	5.04	19894	35.19	200000	
Ca	44	2	He	6800.598	6800.598	1.58	330217	2.06	200000	
V	51	2	He	1.870	1.870	2.84	16934	0.01	2000	
Cr	52	2	He	1.069	1.069	3.37	14062	0.01	2000	
Mn	55	2	He	59.546	59.546	1.69	326057	0.02	2000	
Fe	56	2	He	799.956	799.956	3.73	5462866	0.01	200000	
Co	59	2	He	1.088	1.088	2.61	12077	0.01	2000	
Ni	60	2	He	3.374	3.374	1.59	9953	0.03	2000	
Cu	63	2	He	-0.101	-0.101	-36.83	13245	0.00	2000	
Zn	66	2	He	4.167	4.167	8.26	8319	0.05	2000	
As	75	2	He	1.224	1.224	1.83	2432	0.05	2000	
Se	78	2	He	0.135	0.135	242.24	214	0.06	2000	
B	11	1	nogas	40.379	40.379	5.60	301690	0.01	2000	
Si	28	1	nogas	256693.677	256693.677	4.62	341341288	0.08	2000	>LDR
Ca	43	1	nogas	6127.281	6127.281	5.91	274140	2.24	200000	
Ca	44	1	nogas	6254.007	6254.007	8.11	4852060	0.13	200000	
Fe	56	1	nogas	728.457	728.457	6.09	24446117	0.00	200000	

Sample Report

Se	77	1	nogas	-40.912	-40.912	-1.39	11217	-0.36	2000	
Se	82	1	nogas	0.209	0.209	71.54	443	0.05	2000	
Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
Mo	95	1	nogas	0.854	0.854	12.84	6605	0.01	2000	
Sn	118	1	nogas	0.687	0.687	22.53	8712	0.01	2000	
Ba	137	1	nogas	50.665	50.665	8.03	260819	0.02	2000	
Sb	121	2	He	0.237	0.237	5.60	1603	0.01	2000	
La	139	1	nogas	5109.696	5109.696	10.25	23339	21.89	2000	>LDR
Au	197	1	nogas	70.587	70.587	195.69	17	423.52	2000	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	1317959	4.03	1314390	100.27	70	125	
Ge	72	1	nogas	3914472	5.03	3749087	104.41	70	125	
In	115	1	nogas	3549682	7.39	3430303	103.48	70	125	
Bi	209	1	nogas	2691526	5.62	2610544	103.10	70	125	
Ge	72	2	He	901938	0.30	932298	96.74	70	125	

Sample Report

Sample Table

Sample Name	HS18111440-01SD
Data File Name	175SMPL.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\121
Acq Date Time	2018-12-11T21:55:42-06:00
Sample Type	Sample
Dilution	5
Comment	TW B135349
ISTD Ref FileName	113CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
Be	9	1	nogas	0.017	0.087	16.96	203	0.01	2000	
Na	23	1	nogas	12256.050	61280.250	3.11	340198266	0.00	200000	
Mg	24	1	nogas	539.166	2695.832	1.80	9847862	0.01	200000	
Al	27	1	nogas	91.931	459.655	1.38	2069949	0.00	2000	
K	39	1	nogas	85.890	429.451	2.60	10541427	0.00	200000	
Ti	47	1	nogas	2.445	12.227	8.13	5864	0.04	2000	
V	51	1	nogas	-3.421	-17.105	-13.09	271439	0.00	2000	
Cr	52	1	nogas	-0.006	-0.029	-585.60	44353	0.00	2000	
Mn	55	1	nogas	11.668	58.341	3.20	404578	0.00	2000	
Co	59	1	nogas	0.241	1.205	1.52	7705	0.00	2000	
Ni	60	1	nogas	2.131	10.655	3.15	6048	0.04	2000	
Cu	63	1	nogas	-1.050	-5.251	-10.61	27998	0.00	2000	
Zn	66	1	nogas	1.971	9.857	1.43	8242	0.02	2000	
As	75	1	nogas	-0.611	-3.056	-55.40	55211	0.00	2000	
Sr	88	1	nogas	33.054	165.268	0.48	1135761	0.00	2000	
Ag	107	1	nogas	0.002	0.010	100.07	143	0.00	2000	
Cd	111	1	nogas	0.012	0.060	34.06	67	0.02	2000	
Sb	121	1	nogas	0.052	0.260	15.65	1320	0.00	2000	
Tl	205	1	nogas	0.061	0.307	27.92	2040	0.00	2000	
Pb	208	1	nogas	0.113	0.565	8.64	9211	0.00	2000	
U	238	1	nogas	0.067	0.335	14.77	2214	0.00	2000	
[Pb]	206	1	nogas	0.119	0.595	5.18	2344	0.01	2000	
[Pb]	207	1	nogas	0.112	0.559	6.88	1973	0.01	2000	
Na	23	2	He	11984.830	59924.151	3.48	20608862	0.06	200000	
Mg	24	2	He	517.385	2586.925	2.13	492596	0.11	200000	
Al	27	2	He	91.132	455.659	3.09	47293	0.19	2000	
K	39	2	He	76.818	384.090	2.33	294212	0.03	200000	
Ca	43	2	He	1502.986	7514.930	5.88	4191	35.87	200000	
Ca	44	2	He	1427.579	7137.893	3.38	69754	2.05	200000	
V	51	2	He	0.437	2.187	7.12	6292	0.01	2000	
Cr	52	2	He	0.200	1.001	31.61	6968	0.00	2000	
Mn	55	2	He	12.011	60.056	2.61	65751	0.02	2000	
Fe	56	2	He	159.974	799.872	2.50	1078878	0.01	200000	
Co	59	2	He	0.261	1.305	12.18	3000	0.01	2000	
Ni	60	2	He	0.561	2.807	4.08	2317	0.02	2000	
Cu	63	2	He	-0.476	-2.381	-11.04	10316	0.00	2000	
Zn	66	2	He	0.854	4.268	12.02	2650	0.03	2000	
As	75	2	He	0.208	1.040	13.87	704	0.03	2000	
Se	78	2	He	-0.016	-0.082	-1248.01	189	-0.01	2000	
B	11	1	nogas	9.768	48.840	6.27	113172	0.01	2000	
Si	28	1	nogas	56990.256	284951.282	2.49	70714127	0.08	2000	>LDR
Ca	43	1	nogas	1373.328	6866.640	2.31	57559	2.39	200000	
Ca	44	1	nogas	1473.181	7365.904	5.63	1272849	0.12	200000	
Fe	56	1	nogas	150.795	753.973	2.63	6511094	0.00	200000	

Sample Report

Se	77	1	nogas	-15.257	-76.286	-10.74	17599	-0.09	2000	
Se	82	1	nogas	-0.018	-0.089	-2242.93	333	-0.01	2000	
Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
Mo	95	1	nogas	0.198	0.991	12.69	1553	0.01	2000	
Sn	118	1	nogas	0.217	1.087	13.33	3464	0.01	2000	
Ba	137	1	nogas	10.288	51.441	2.72	51397	0.02	2000	
Sb	121	2	He	0.055	0.273	9.84	520	0.01	2000	
La	139	1	nogas	1080.316	5401.579	4.03	4741	22.79	2000	
Au	197	1	nogas	11.400	57.002	1215.81	13	85.50	2000	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	1285426	2.33	1314390	97.80	70	125	
Ge	72	1	nogas	3594787	1.08	3749087	95.88	70	125	
In	115	1	nogas	3343832	0.89	3430303	97.48	70	125	
Bi	209	1	nogas	2538959	0.51	2610544	97.26	70	125	
Ge	72	2	He	879474	1.82	932298	94.33	70	125	

Sample Report

Sample Table

Sample Name	HS18111440-01MS
Data File Name	176SMPL.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\121
Acq Date Time	2018-12-11T21:57:47-06:00
Sample Type	Sample
Dilution	1
Comment	TW B135349
ISTD Ref FileName	113CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
Be	9	1	nogas	50.679	50.679	3.70	434174	0.01	2000	
Na	23	1	nogas	61873.441	61873.441	0.86	1833861708	0.00	200000	
Mg	24	1	nogas	7126.440	7126.440	0.47	138807499	0.01	200000	
Al	27	1	nogas	781.957	781.957	3.18	17859181	0.00	2000	
K	39	1	nogas	5290.051	5290.051	3.74	131918745	0.00	200000	
Ti	47	1	nogas	153.988	153.988	4.19	347336	0.04	2000	
V	51	1	nogas	50.559	50.559	4.78	1944166	0.00	2000	
Cr	52	1	nogas	51.936	51.936	0.85	1410209	0.00	2000	
Mn	55	1	nogas	82.023	82.023	1.49	2747123	0.00	2000	
Co	59	1	nogas	51.948	51.948	0.85	1464516	0.00	2000	
Ni	60	1	nogas	52.095	52.095	1.01	328876	0.02	2000	
Cu	63	1	nogas	48.860	48.860	3.57	781481	0.01	2000	
Zn	66	1	nogas	56.379	56.379	3.53	282340	0.02	2000	
As	75	1	nogas	48.847	48.847	1.76	385192	0.01	2000	
Sr	88	1	nogas	254.035	254.035	2.56	8936134	0.00	2000	
Ag	107	1	nogas	48.867	48.867	2.27	829921	0.01	2000	
Cd	111	1	nogas	50.418	50.418	1.13	184025	0.03	2000	
Sb	121	1	nogas	46.068	46.068	4.05	766932	0.01	2000	
Tl	205	1	nogas	46.817	46.817	5.39	1119878	0.00	2000	
Pb	208	1	nogas	48.308	48.308	1.24	1635933	0.00	2000	
U	238	1	nogas	103.803	103.803	1.28	3250040	0.00	2000	
[Pb]	206	1	nogas	49.599	49.599	4.06	412677	0.01	2000	
[Pb]	207	1	nogas	48.995	48.995	3.15	357736	0.01	2000	
Na	23	2	He	63552.511	63552.511	0.74	110779762	0.06	200000	
Mg	24	2	He	7544.151	7544.151	2.46	7281176	0.10	200000	
Al	27	2	He	826.727	826.727	0.29	428528	0.19	2000	
K	39	2	He	5353.235	5353.235	1.89	5646803	0.09	200000	
Ca	43	2	He	12006.110	12006.110	3.45	33818	35.50	200000	
Ca	44	2	He	11869.826	11869.826	0.37	569516	2.08	200000	
V	51	2	He	50.123	50.123	0.60	366888	0.01	2000	
Cr	52	2	He	49.866	49.866	1.08	399093	0.01	2000	
Mn	55	2	He	81.758	81.758	2.16	443217	0.02	2000	
Fe	56	2	He	6291.163	6291.163	2.15	42487011	0.01	200000	
Co	59	2	He	48.810	48.810	1.77	526991	0.01	2000	
Ni	60	2	He	51.729	51.729	2.52	139055	0.04	2000	
Cu	63	2	He	48.510	48.510	0.54	354777	0.01	2000	
Zn	66	2	He	53.674	53.674	1.74	91230	0.06	2000	
As	75	2	He	49.406	49.406	1.16	82789	0.06	2000	
Se	78	2	He	48.116	48.116	4.25	6519	0.74	2000	
B	11	1	nogas	530.058	530.058	4.04	2837541	0.02	2000	
Si	28	1	nogas	296252.302	296252.302	2.22	371565368	0.08	2000	>LDR
Ca	43	1	nogas	11688.648	11688.648	2.37	492484	2.37	200000	
Ca	44	1	nogas	11953.210	11953.210	2.86	8489277	0.14	200000	
Fe	56	1	nogas	6410.487	6410.487	1.44	184362104	0.00	200000	

Sample Report

Se	77	1	nogas	39.075	39.075	8.78	33915	0.12	2000	
Se	82	1	nogas	49.857	49.857	3.67	17399	0.29	2000	
Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
Mo	95	1	nogas	47.126	47.126	3.69	334121	0.01	2000	
Sn	118	1	nogas	85.458	85.458	2.95	885867	0.01	2000	
Ba	137	1	nogas	105.553	105.553	1.88	515788	0.02	2000	
Sb	121	2	He	48.039	48.039	2.01	279531	0.02	2000	
La	139	1	nogas	6708.865	6708.865	1.59	29192	22.98	2000	>LDR
Au	197	1	nogas	170.885	170.885	135.11	20	854.42	2000	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	1142507	4.13	1314390	86.92	70	125	
Ge	72	1	nogas	3689426	1.96	3749087	98.41	70	125	
In	115	1	nogas	3368217	1.52	3430303	98.19	70	125	
Bi	209	1	nogas	2519650	1.88	2610544	96.52	70	125	
Ge	72	2	He	894477	0.50	932298	95.94	70	125	

Sample Report

Sample Table

Sample Name	HS18111440-01MSD
Data File Name	177SMPL.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\121
Acq Date Time	2018-12-11T21:59:49-06:00
Sample Type	Sample
Dilution	1
Comment	TW B135349
ISTD Ref FileName	113CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
Be	9	1	nogas	49.810	49.810	1.44	431689	0.01	2000	
Na	23	1	nogas	59678.649	59678.649	4.87	1820533774	0.00	200000	
Mg	24	1	nogas	6886.881	6886.881	1.62	138177641	0.00	200000	
Al	27	1	nogas	883.149	883.149	4.84	20092123	0.00	2000	
K	39	1	nogas	5262.937	5262.937	2.20	130854890	0.00	200000	
Ti	47	1	nogas	156.299	156.299	0.71	351463	0.04	2000	
V	51	1	nogas	50.637	50.637	3.21	1940024	0.00	2000	
Cr	52	1	nogas	52.034	52.034	4.80	1407240	0.00	2000	
Mn	55	1	nogas	82.041	82.041	5.09	2737084	0.00	2000	
Co	59	1	nogas	50.260	50.260	3.34	1411856	0.00	2000	
Ni	60	1	nogas	51.931	51.931	2.43	326703	0.02	2000	
Cu	63	1	nogas	48.987	48.987	2.99	780580	0.01	2000	
Zn	66	1	nogas	57.105	57.105	2.41	285022	0.02	2000	
As	75	1	nogas	49.256	49.256	1.30	386571	0.01	2000	
Sr	88	1	nogas	257.370	257.370	2.94	9021721	0.00	2000	
Ag	107	1	nogas	49.359	49.359	2.48	835335	0.01	2000	
Cd	111	1	nogas	50.725	50.725	2.30	183023	0.03	2000	
Sb	121	1	nogas	46.593	46.593	1.55	773231	0.01	2000	
Tl	205	1	nogas	45.899	45.899	4.78	1119186	0.00	2000	
Pb	208	1	nogas	48.283	48.283	1.23	1635095	0.00	2000	
U	238	1	nogas	102.749	102.749	1.68	3279415	0.00	2000	
[Pb]	206	1	nogas	48.019	48.019	4.31	407252	0.01	2000	
[Pb]	207	1	nogas	48.473	48.473	3.60	360721	0.01	2000	
Na	23	2	He	64481.703	64481.703	0.50	111301432	0.06	200000	
Mg	24	2	He	7482.114	7482.114	1.69	7150509	0.10	200000	
Al	27	2	He	928.310	928.310	1.82	476296	0.19	2000	
K	39	2	He	5181.762	5181.762	0.80	5472855	0.09	200000	
Ca	43	2	He	12400.005	12400.005	7.14	34562	35.88	200000	
Ca	44	2	He	12041.664	12041.664	2.04	571995	2.11	200000	
V	51	2	He	50.698	50.698	2.43	367347	0.01	2000	
Cr	52	2	He	50.199	50.199	3.34	397720	0.01	2000	
Mn	55	2	He	82.869	82.869	2.87	444750	0.02	2000	
Fe	56	2	He	6526.334	6526.334	2.31	43642554	0.01	200000	
Co	59	2	He	49.269	49.269	1.26	526741	0.01	2000	
Ni	60	2	He	52.075	52.075	2.66	138590	0.04	2000	
Cu	63	2	He	48.246	48.246	2.21	349423	0.01	2000	
Zn	66	2	He	54.511	54.511	1.89	91709	0.06	2000	
As	75	2	He	50.642	50.642	2.19	84009	0.06	2000	
Se	78	2	He	49.391	49.391	2.21	6622	0.75	2000	
B	11	1	nogas	544.952	544.952	1.32	2950520	0.02	2000	
Si	28	1	nogas	296455.001	296455.001	2.36	370539914	0.08	2000	>LDR
Ca	43	1	nogas	11907.104	11907.104	0.75	500091	2.38	200000	
Ca	44	1	nogas	11875.107	11875.107	0.56	8410182	0.14	200000	
Fe	56	1	nogas	6411.517	6411.517	2.71	183768496	0.00	200000	

Sample Report

Se	77	1	nogas	44.056	44.056	4.80	35251	0.12	2000	
Se	82	1	nogas	49.158	49.158	5.13	17088	0.29	2000	
Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
Mo	95	1	nogas	46.467	46.467	2.11	328379	0.01	2000	
Sn	118	1	nogas	86.831	86.831	1.96	889966	0.01	2000	
Ba	137	1	nogas	106.802	106.802	2.44	515874	0.02	2000	
Sb	121	2	He	48.773	48.773	0.54	281019	0.02	2000	
La	139	1	nogas	7375.998	7375.998	3.26	31726	23.25	2000	>LDR
Au	197	1	nogas	243.136	243.136	55.65	23	1042.01	2000	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	1154816	1.64	1314390	87.86	70	125	
Ge	72	1	nogas	3676815	2.12	3749087	98.07	70	125	
In	115	1	nogas	3329786	1.10	3430303	97.07	70	125	
Bi	209	1	nogas	2567810	1.40	2610544	98.36	70	125	
Ge	72	2	He	885813	2.05	932298	95.01	70	125	

Sample Report

Sample Table

Sample Name	HS18111440-01PDS
Data File Name	178SMPL.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\121
Acq Date Time	2018-12-11T22:01:50-06:00
Sample Type	Sample
Dilution	1
Comment	TW B135349
ISTD Ref FileName	113CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
Be	9	1	nogas	92.538	92.538	1.34	895244	0.01	2000	
Na	23	1	nogas	65058.332	65058.332	1.51	2047335846	0.00	200000	
Mg	24	1	nogas	11349.993	11349.993	0.98	234697455	0.00	200000	
Al	27	1	nogas	600.042	600.042	6.46	14489763	0.00	2000	
K	39	1	nogas	9967.331	9967.331	2.88	254658739	0.00	200000	
Ti	47	1	nogas	199.894	199.894	5.26	476529	0.04	2000	
V	51	1	nogas	89.692	89.692	7.50	3330476	0.00	2000	
Cr	52	1	nogas	95.383	95.383	6.33	2695863	0.00	2000	
Mn	55	1	nogas	122.211	122.211	4.95	4312171	0.00	2000	
Co	59	1	nogas	97.657	97.657	8.32	2906966	0.00	2000	
Ni	60	1	nogas	94.852	94.852	3.75	639628	0.01	2000	
Cu	63	1	nogas	97.760	97.760	2.51	1606716	0.01	2000	
Zn	66	1	nogas	104.541	104.541	4.31	554942	0.02	2000	
As	75	1	nogas	93.093	93.093	4.48	717955	0.01	2000	
Sr	88	1	nogas	253.822	253.822	4.71	9438733	0.00	2000	
Ag	107	1	nogas	94.309	94.309	5.32	1693102	0.01	2000	
Cd	111	1	nogas	100.380	100.380	3.35	376417	0.03	2000	
Sb	121	1	nogas	93.725	93.725	7.01	1648204	0.01	2000	
Tl	205	1	nogas	101.482	101.482	3.63	2536404	0.00	2000	
Pb	208	1	nogas	99.666	99.666	0.94	3369439	0.00	2000	
U	238	1	nogas	0.370	0.370	19.81	12275	0.00	2000	
[Pb]	206	1	nogas	94.362	94.362	3.63	819142	0.01	2000	
[Pb]	207	1	nogas	95.559	95.559	3.72	727854	0.01	2000	
Na	23	2	He	67842.858	67842.858	2.05	123981148	0.05	200000	
Mg	24	2	He	12473.126	12473.126	2.07	12620372	0.10	200000	
Al	27	2	He	655.506	655.506	1.61	356504	0.18	2000	
K	39	2	He	10836.093	10836.093	2.48	11208815	0.10	200000	
Ca	43	2	He	17134.418	17134.418	2.82	50566	33.89	200000	
Ca	44	2	He	16972.059	16972.059	2.13	852267	1.99	200000	
V	51	2	He	98.346	98.346	1.87	751297	0.01	2000	
Cr	52	2	He	96.785	96.785	1.72	806470	0.01	2000	
Mn	55	2	He	131.654	131.654	2.46	746689	0.02	2000	
Fe	56	2	He	11154.140	11154.140	2.77	78952307	0.01	200000	
Co	59	2	He	96.856	96.856	2.45	1096016	0.01	2000	
Ni	60	2	He	100.038	100.038	1.36	281091	0.04	2000	
Cu	63	2	He	96.180	96.180	2.02	723068	0.01	2000	
Zn	66	2	He	105.550	105.550	1.52	186766	0.06	2000	
As	75	2	He	101.151	101.151	1.56	177272	0.06	2000	
Se	78	2	He	100.868	100.868	3.03	14099	0.72	2000	
B	11	1	nogas	956.093	956.093	1.17	5735716	0.02	2000	
Si	28	1	nogas	362639.107	362639.107	4.19	480573406	0.08	2000	>LDR
Ca	43	1	nogas	16254.048	16254.048	5.89	723216	2.25	200000	
Ca	44	1	nogas	16362.734	16362.734	6.19	12167402	0.13	200000	
Fe	56	1	nogas	10600.953	10600.953	4.87	320660182	0.00	200000	

Sample Report

Se	77	1	nogas	66.551	66.551	17.13	44298	0.15	2000	
Se	82	1	nogas	96.221	96.221	6.93	35124	0.27	2000	
Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
Mo	95	1	nogas	92.758	92.758	4.97	695156	0.01	2000	
Sn	118	1	nogas	95.976	95.976	4.83	1021752	0.01	2000	
Ba	137	1	nogas	153.259	153.259	4.82	768263	0.02	2000	
Sb	121	2	He	96.588	96.588	1.11	588942	0.02	2000	
La	139	1	nogas	6297.980	6297.980	7.38	28130	22.39	2000	>LDR
Au	197	1	nogas	302.336	302.336	114.85	27	1133.76	2000	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	1288851	0.91	1314390	98.06	70	125	
Ge	72	1	nogas	3903918	3.86	3749087	104.13	70	125	
In	115	1	nogas	3462556	3.73	3430303	100.94	70	125	
Bi	209	1	nogas	2633634	3.23	2610544	100.88	70	125	
Ge	72	2	He	937815	2.10	932298	100.59	70	125	

Continuing Calibration Verification (CCV) Report

Sample Table

Sample Name	CCV
Data File Name	179_CCV.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\121
Acq Date Time	2018-12-11T22:03:57-06:00
Sample Type	CCV
Dilution	1
Comment	
ISTD Ref File Name	113CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Exp Value	%Rec	%Low	%High2	QC Flag
Be	9	1	nogas	97.138	4.327	872858	1.15	100	97.1	90	110	
Na	23	1	nogas	10443.242	2.238	298567757	0.92	10000	104.4	90	110	
Mg	24	1	nogas	9915.934	2.137	185791608	1.46	10000	99.2	90	110	
Al	27	1	nogas	99.486	2.897	2327873	3.60	100	99.5	90	110	
K	39	1	nogas	10175.326	1.605	248941422	1.48	10000	101.8	90	110	
Ti	47	1	nogas	99.202	1.834	227051	2.83	100	99.2	90	110	
V	51	1	nogas	99.560	2.354	3503497	2.54	100	99.6	90	110	
Cr	52	1	nogas	98.855	2.783	2678461	3.51	100	98.9	90	110	
Mn	55	1	nogas	98.942	1.868	3352283	1.60	100	98.9	90	110	
Co	59	1	nogas	101.115	2.423	2887278	1.07	100	101.1	90	110	
Ni	60	1	nogas	96.689	2.633	625083	2.35	100	96.7	90	110	
Cu	63	1	nogas	97.881	3.240	1540922	2.11	100	97.9	90	110	
Zn	66	1	nogas	101.464	2.145	516279	2.84	100	101.5	90	110	
As	75	1	nogas	97.805	2.341	719819	0.45	100	97.8	90	110	
Sr	88	1	nogas	99.379	1.642	3544866	1.12	100	99.4	90	110	
Ag	107	1	nogas	100.378	2.227	1727747	2.40	100	100.4	90	110	
Cd	111	1	nogas	101.887	2.488	370641	0.30	100	101.9	90	110	
Sb	121	1	nogas	103.906	4.124	1752235	2.53	100	103.9	90	110	
Tl	205	1	nogas	101.167	4.402	2508707	2.78	100	101.2	90	110	
Pb	208	1	nogas	99.100	0.284	3350331	0.28	100	99.1	90	110	
U	238	1	nogas	104.696	2.583	3398462	2.01	100	104.7	90	110	
[Pb]	206	1	nogas	95.271	3.044	820717	1.60	100	95.3	90	110	
[Pb]	207	1	nogas	94.178	2.479	712005	2.02	100	94.2	90	110	
Na	23	2	He	9944.785	2.162	17658888	3.14	10000	99.4	90	110	
Mg	24	2	He	9964.378	0.794	9751842	0.60	10000	99.6	90	110	
Al	27	2	He	101.737	3.274	54338	2.05	100	101.7	90	110	
K	39	2	He	10207.744	1.074	10571395	1.05	10000	102.1	90	110	
Ca	43	2	He	10200.966	4.112	29130	2.92	10000	102.0	90	110	
Ca	44	2	He	10064.690	0.328	490112	0.90	10000	100.6	90	110	
V	51	2	He	98.243	2.213	725957	1.09	100	98.2	90	110	
Cr	52	2	He	95.816	2.025	772419	2.18	100	95.8	90	110	
Mn	55	2	He	100.355	2.238	551141	1.94	100	100.4	90	110	
Fe	56	2	He	10132.893	2.403	69377266	1.72	10000	101.3	90	110	
Co	59	2	He	99.853	1.966	1092867	0.83	100	99.9	90	110	
Ni	60	2	He	102.427	2.143	278368	2.28	100	102.4	90	110	
Cu	63	2	He	98.019	1.935	712614	2.14	100	98.0	90	110	
Zn	66	2	He	98.607	1.212	168872	1.42	100	98.6	90	110	
As	75	2	He	100.444	2.270	170267	1.22	100	100.4	90	110	
Se	78	2	He	99.693	0.901	13485	0.34	100	99.7	90	110	
B	11	1	nogas	499.180	3.005	2807002	0.27	500	99.8	90	110	
Si	28	1	nogas	5657.965	1.162	8535733	0.74	5000	113.2	90	110	CCV Main CR1-2 Failed
Ca	43	1	nogas	10087.425	3.847	430842	2.21	10000	100.9	90	110	
Ca	44	1	nogas	9998.172	2.298	7245734	0.59	10000	100.0	90	110	
Fe	56	1	nogas	10037.570	2.920	291126232	1.52	10000	100.4	90	110	
Se	77	1	nogas	103.362	1.549	53402	2.14	100	103.4	90	110	
Se	82	1	nogas	99.278	0.497	34757	1.82	100	99.3	90	110	
Mo	95	1	nogas	96.686	0.387	694803	1.98	100	96.7	90	110	
Sn	118	1	nogas	98.503	3.335	1017693	1.95	100	98.5	90	110	
Ba	137	1	nogas	102.064	2.345	497221	2.00	100	102.1	90	110	
Sb	121	2	He	102.125	1.043	602357	1.80	100	102.1	90	110	
Li	7	1	nogas	99.266	2.566	2032430	1.35	100	99.3	90	110	
P	31	1	nogas	478.980	1.878	1146397	0.26	500	95.8	90	110	
La	139	1	nogas	125.531	10.327	630	9.91	100	125.5	90	110	CCV Main CR1-2 Failed
Au	197	1	nogas	316.292	156.464	27	78.06	100	316.3	90	110	CCV Main CR1-2 Failed

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	1198300	3.27	1314390	91.17	70	125	
Ge	72	1	nogas	3738776	1.67	3749087	99.72	70	125	
In	115	1	nogas	3358034	2.24	3430303	97.89	70	125	
Bi	209	1	nogas	2612337	1.63	2610544	100.07	70	125	

Continuing Calibration Verification (CCV) Report

Ge	72	2	He	907050	1.22	932298	97.29	70	125	

Continuing Calibration Blank (CCB) Report

Sample Table

Sample Name	CCB
Data File Name	180_CCB.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\121
Acq Date Time	2018-12-11T22:06:01-06:00
Sample Type	CCB
Dilution	1
Comment	
ISTD Ref File Name	113CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Be	9	1	nogas	0.089	7.9	900	6.2	1	
Na	23	1	nogas	37.524	4.7	2077136	3.3	100	
Mg	24	1	nogas	8.099	9.8	192626	8.8	100	
Al	27	1	nogas	0.361	13.3	36789	1.6	5	
K	39	1	nogas	1.762	469.5	9144949	0.6	100	
Ti	47	1	nogas	0.121	33.4	803	10.6	2.5	
V	51	1	nogas	-2.124	-8.6	328946	1.4	2.5	
Cr	52	1	nogas	0.068	135.1	48978	3.6	2.5	
Mn	55	1	nogas	1.111	3.8	67403	1.8	2.5	
Co	59	1	nogas	0.090	12.3	3770	7.4	2.5	
Ni	60	1	nogas	2.383	0.5	8089	0.7	2.5	
Cu	63	1	nogas	-0.731	-9.2	34643	3.8	2.5	
Zn	66	1	nogas	1.195	4.7	4697	7.4	2.5	
As	75	1	nogas	0.656	36.3	67180	2.1	2.5	
Sr	88	1	nogas	0.118	8.3	7445	3.3	2.5	
Ag	107	1	nogas	0.071	5.8	1357	4.2	2.5	
Cd	111	1	nogas	0.087	40.3	357	36.6	1	
Sb	121	1	nogas	0.415	4.3	7632	2.6	2.5	
Tl	205	1	nogas	1.062	54.5	28305	55.3	1	CCB Main CR1 Failed
Pb	208	1	nogas	0.091	25.9	8451	9.4	2.5	
U	238	1	nogas	0.175	44.8	6081	46.1	2.5	
[Pb]	206	1	nogas	0.078	13.0	2147	6.3	2.5	
[Pb]	207	1	nogas	0.076	16.1	1837	4.9	2.5	
Na	23	2	He	30.593	8.0	149332	1.8	100	
Mg	24	2	He	7.561	12.2	9392	6.8	100	
Al	27	2	He	-0.294	-64.3	857	8.9	5	
K	39	2	He	5.873	26.7	222243	0.7	100	
Ca	43	2	He	55.379	117.0	193	92.7	100	
Ca	44	2	He	16.735	54.2	3721	8.9	100	
V	51	2	He	0.136	16.6	4348	3.6	2.5	
Cr	52	2	He	0.005	633.9	5728	4.6	2.5	
Mn	55	2	He	1.181	4.4	8722	2.4	2.5	
Fe	56	2	He	10.002	31.5	87731	26.3	100	
Co	59	2	He	0.082	10.6	1153	9.6	2.5	
Ni	60	2	He	0.827	11.4	3160	5.2	2.5	
Cu	63	2	He	-0.218	-36.6	12705	5.6	2.5	
Zn	66	2	He	0.098	78.5	1477	9.9	2.5	
As	75	2	He	0.067	26.8	498	8.5	2.5	
Se	78	2	He	-0.147	-6.4	181	2.3	2.5	
B	11	1	nogas	9.171	9.4	110380	3.9	10	
Si	28	1	nogas	149.351	19.3	1587572	0.8	5	CCB Main CR1 Failed
Ca	43	1	nogas	31.511	19.9	2770	9.4	100	
Ca	44	1	nogas	4.381	182.7	309001	0.7	100	
Fe	56	1	nogas	-2.714	-259.5	2398237	7.4	100	
Se	77	1	nogas	-5.481	-42.8	21593	3.4	2.5	
Se	82	1	nogas	0.228	45.5	440	9.9	2.5	

Continuing Calibration Blank (CCB) Report

Mo	95	1	nogas	0.343	22.4	2704	19.8	2.5	
Sn	118	1	nogas	0.789	7.4	9873	5.5	5	
Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Ba	137	1	nogas	-0.007	-472.5	1703	9.1	2.5	
Sb	121	2	He	0.374	1.7	2464	3.5	2.5	
P	31	1	nogas	1.236	65.8	141238	1.4	10	
La	139	1	nogas	1.186	432.5	97	23.9	2.5	
Au	197	1	nogas	-83.332	-271.7	10	100.0	2.5	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	1293883	1.41	1314390	98.44	70	125	
Ge	72	1	nogas	3808516	1.56	3749087	101.59	70	125	
In	115	1	nogas	3536296	1.47	3430303	103.09	70	125	
Bi	209	1	nogas	2727251	2.13	2610544	104.47	70	125	
Ge	72	2	He	923089	2.90	932298	99.01	70	125	

Sample Report

Sample Table

Sample Name	HS18111440-02
Data File Name	181SMPL.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\121
Acq Date Time	2018-12-11T22:08:04-06:00
Sample Type	Sample
Dilution	1
Comment	TW B135349
ISTD Ref FileName	113CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
Be	9	1	nogas	0.077	0.077	12.12	700	0.01	2000	
Na	23	1	nogas	OR	OR	#VALUE!	OR	#VALUE!	200000	
Mg	24	1	nogas	45197.249	45197.249	5.33	883199453	0.01	200000	
Al	27	1	nogas	216.862	216.862	2.54	5024629	0.00	2000	
K	39	1	nogas	1508.060	1508.060	1.65	44366416	0.00	200000	
Ti	47	1	nogas	7.232	7.232	3.06	16968	0.04	2000	
V	51	1	nogas	-2.459	-2.459	-21.79	311347	0.00	2000	
Cr	52	1	nogas	0.863	0.863	0.92	69028	0.00	2000	
Mn	55	1	nogas	187.249	187.249	3.96	6296966	0.00	2000	
Co	59	1	nogas	1.859	1.859	5.43	54026	0.00	2000	
Ni	60	1	nogas	7.050	7.050	3.97	38370	0.02	2000	
Cu	63	1	nogas	0.092	0.092	28.82	46445	0.00	2000	
Zn	66	1	nogas	6.368	6.368	2.17	30906	0.02	2000	
As	75	1	nogas	5.302	5.302	5.82	96923	0.01	2000	
Sr	88	1	nogas	1179.464	1179.464	1.24	41909549	0.00	2000	
Ag	107	1	nogas	0.017	0.017	17.51	407	0.00	2000	
Cd	111	1	nogas	0.185	0.185	17.19	703	0.03	2000	
Sb	121	1	nogas	0.304	0.304	1.40	5611	0.01	2000	
Tl	205	1	nogas	0.069	0.069	13.88	2297	0.00	2000	
Pb	208	1	nogas	0.442	0.442	5.17	20312	0.00	2000	
U	238	1	nogas	3.634	3.634	4.27	118614	0.00	2000	
[Pb]	206	1	nogas	0.435	0.435	3.93	5158	0.01	2000	
[Pb]	207	1	nogas	0.405	0.405	4.84	4267	0.01	2000	
Na	23	2	He	244146.529	244146.529	2.98	426012154	0.06	200000	>LDR
Mg	24	2	He	46328.507	46328.507	0.75	44784424	0.10	200000	
Al	27	2	He	226.778	226.778	0.83	118465	0.19	2000	
K	39	2	He	1578.330	1578.330	2.30	1817400	0.09	200000	
Ca	43	2	He	97429.692	97429.692	1.27	274611	35.48	200000	
Ca	44	2	He	96409.061	96409.061	0.81	4613636	2.09	200000	
V	51	2	He	1.247	1.247	1.29	12294	0.01	2000	
Cr	52	2	He	1.009	1.009	1.16	13498	0.01	2000	
Mn	55	2	He	188.680	188.680	2.75	1021718	0.02	2000	
Fe	56	2	He	608.870	608.870	1.06	4134911	0.01	200000	
Co	59	2	He	1.801	1.801	2.26	19707	0.01	2000	
Ni	60	2	He	3.380	3.380	5.42	9906	0.03	2000	
Cu	63	2	He	-0.422	-0.422	-7.61	10897	0.00	2000	
Zn	66	2	He	4.913	4.913	8.22	9513	0.05	2000	
As	75	2	He	0.630	0.630	3.26	1423	0.04	2000	
Se	78	2	He	-0.050	-0.050	-316.80	188	-0.03	2000	
B	11	1	nogas	40.759	40.759	5.79	267743	0.02	2000	
Si	28	1	nogas	228363.490	228363.490	2.32	289681142	0.08	2000	>LDR
Ca	43	1	nogas	98080.001	98080.001	2.90	4164380	2.36	200000	
Ca	44	1	nogas	94557.307	94557.307	1.31	65790196	0.14	200000	
Fe	56	1	nogas	584.207	584.207	4.87	19174822	0.00	200000	
Se	77	1	nogas	24.421	24.421	7.62	29948	0.08	2000	
Se	82	1	nogas	1.502	1.502	15.66	870	0.17	2000	

Sample Report

Mo	95	1	nogas	0.273	0.273	3.63	2147	0.01	2000	
Sn	118	1	nogas	0.417	0.417	3.92	5601	0.01	2000	
Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
Ba	137	1	nogas	29.560	29.560	0.62	146836	0.02	2000	
Sb	121	2	He	0.335	0.335	5.12	2160	0.02	2000	
La	139	1	nogas	4252.424	4252.424	4.03	18687	22.76	2000	>LDR
Au	197	1	nogas	161.181	161.181	258.56	20	805.90	2000	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	1160441	3.04	1314390	88.29	70	125	
Ge	72	1	nogas	3726838	1.36	3749087	99.41	70	125	
In	115	1	nogas	3395753	0.96	3430303	98.99	70	125	
Bi	209	1	nogas	2625901	2.53	2610544	100.59	70	125	
Ge	72	2	He	896043	0.94	932298	96.11	70	125	

Sample Report

Sample Table

Sample Name	HS18111440-03
Data File Name	182SMPL.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\121
Acq Date Time	2018-12-11T22:10:06-06:00
Sample Type	Sample
Dilution	1
Comment	TW B135349
ISTD Ref FileName	113CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
Be	9	1	nogas	0.069	0.069	18.59	647	0.01	2000	
Na	23	1	nogas	OR	OR	#VALUE!	OR	#VALUE!	200000	
Mg	24	1	nogas	45532.455	45532.455	1.64	899089020	0.01	200000	
Al	27	1	nogas	202.312	202.312	5.22	4669608	0.00	2000	
K	39	1	nogas	1330.088	1330.088	2.48	40034026	0.00	200000	
Ti	47	1	nogas	7.137	7.137	0.94	16698	0.04	2000	
V	51	1	nogas	-1.019	-1.019	-76.76	354640	0.00	2000	
Cr	52	1	nogas	0.754	0.754	13.23	65880	0.00	2000	
Mn	55	1	nogas	84.221	84.221	1.50	2838902	0.00	2000	
Co	59	1	nogas	1.768	1.768	5.73	51219	0.00	2000	
Ni	60	1	nogas	6.741	6.741	3.51	36192	0.02	2000	
Cu	63	1	nogas	-0.121	-0.121	-79.46	43020	0.00	2000	
Zn	66	1	nogas	4.565	4.565	4.04	21643	0.02	2000	
As	75	1	nogas	5.937	5.937	14.53	100727	0.01	2000	
Sr	88	1	nogas	1187.611	1187.611	4.02	42019130	0.00	2000	
Ag	107	1	nogas	0.010	0.010	23.11	280	0.00	2000	
Cd	111	1	nogas	0.173	0.173	3.23	650	0.03	2000	
Sb	121	1	nogas	0.228	0.228	11.87	4304	0.01	2000	
Tl	205	1	nogas	0.031	0.031	13.98	1297	0.00	2000	
Pb	208	1	nogas	0.360	0.360	1.30	17561	0.00	2000	
U	238	1	nogas	3.730	3.730	2.52	116005	0.00	2000	
[Pb]	206	1	nogas	0.398	0.398	11.77	4601	0.01	2000	
[Pb]	207	1	nogas	0.369	0.369	4.19	3797	0.01	2000	
Na	23	2	He	247367.868	247367.868	1.90	442591927	0.06	200000	>LDR
Mg	24	2	He	46678.142	46678.142	1.34	46267209	0.10	200000	
Al	27	2	He	205.705	205.705	3.18	110266	0.19	2000	
K	39	2	He	1383.411	1383.411	2.16	1619668	0.09	200000	
Ca	43	2	He	97347.415	97347.415	1.18	281352	34.60	200000	
Ca	44	2	He	98463.419	98463.419	3.35	4830884	2.04	200000	
V	51	2	He	1.204	1.204	3.33	12290	0.01	2000	
Cr	52	2	He	0.705	0.705	13.49	11380	0.01	2000	
Mn	55	2	He	87.045	87.045	2.03	484508	0.02	2000	
Fe	56	2	He	568.351	568.351	2.19	3958672	0.01	200000	
Co	59	2	He	1.661	1.661	4.37	18646	0.01	2000	
Ni	60	2	He	3.021	3.021	4.88	9169	0.03	2000	
Cu	63	2	He	-0.586	-0.586	-2.20	9986	-0.01	2000	
Zn	66	2	He	2.595	2.595	11.91	5768	0.04	2000	
As	75	2	He	0.611	0.611	17.20	1427	0.04	2000	
Se	78	2	He	0.022	0.022	678.27	203	0.01	2000	
B	11	1	nogas	38.565	38.565	0.73	259410	0.01	2000	
Si	28	1	nogas	233056.490	233056.490	4.04	294371489	0.08	2000	>LDR
Ca	43	1	nogas	99581.769	99581.769	3.62	4211536	2.36	200000	
Ca	44	1	nogas	98101.171	98101.171	3.80	67962919	0.14	200000	
Fe	56	1	nogas	542.315	542.315	3.16	17910608	0.00	200000	
Se	77	1	nogas	29.288	29.288	16.78	31247	0.09	2000	
Se	82	1	nogas	1.750	1.750	22.03	950	0.18	2000	

Sample Report

Mo	95	1	nogas	0.222	0.222	7.70	1773	0.01	2000	
Sn	118	1	nogas	0.084	0.084	20.73	2094	0.00	2000	
Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
Ba	137	1	nogas	29.600	29.600	2.69	144788	0.02	2000	
Sb	121	2	He	0.238	0.238	5.56	1640	0.01	2000	
La	139	1	nogas	4013.451	4013.451	2.99	17372	23.10	2000	>LDR
Au	197	1	nogas	94.331	94.331	385.23	17	565.98	2000	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	1174725	2.81	1314390	89.37	70	125	
Ge	72	1	nogas	3714559	3.70	3749087	99.08	70	125	
In	115	1	nogas	3342786	1.82	3430303	97.45	70	125	
Bi	209	1	nogas	2499462	2.27	2610544	95.74	70	125	
Ge	72	2	He	918816	1.03	932298	98.55	70	125	

Sample Report

Sample Table

Sample Name	HS18111440-04
Data File Name	183SMPL.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\121
Acq Date Time	2018-12-11T22:12:07-06:00
Sample Type	Sample
Dilution	1
Comment	TW B135349
ISTD Ref FileName	113CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
Be	9	1	nogas	0.161	0.161	18.02	1400	0.01	2000	
Na	23	1	nogas	OR	OR	#VALUE!	OR	#VALUE!	200000	
Mg	24	1	nogas	138063.127	138063.127	5.08	2775647795	0.00	200000	
Al	27	1	nogas	872.564	872.564	4.84	20049368	0.00	2000	
K	39	1	nogas	2481.111	2481.111	1.80	66984560	0.00	200000	
Ti	47	1	nogas	24.234	24.234	1.84	55484	0.04	2000	
V	51	1	nogas	2.519	2.519	32.59	464512	0.00	2000	
Cr	52	1	nogas	2.525	2.525	4.94	112687	0.00	2000	
Mn	55	1	nogas	79.203	79.203	1.82	2670387	0.00	2000	
Co	59	1	nogas	2.498	2.498	5.61	71874	0.00	2000	
Ni	60	1	nogas	16.747	16.747	2.59	101210	0.02	2000	
Cu	63	1	nogas	1.025	1.025	19.00	60372	0.00	2000	
Zn	66	1	nogas	11.259	11.259	2.10	55575	0.02	2000	
As	75	1	nogas	12.618	12.618	2.97	145441	0.01	2000	
Sr	88	1	nogas	3289.358	3289.358	2.44	116406672	0.00	2000	>LDR
Ag	107	1	nogas	0.016	0.016	15.52	387	0.00	2000	
Cd	111	1	nogas	0.349	0.349	6.29	1307	0.03	2000	
Sb	121	1	nogas	0.281	0.281	8.39	5194	0.01	2000	
Tl	205	1	nogas	0.029	0.029	12.56	1230	0.00	2000	
Pb	208	1	nogas	1.606	1.606	1.54	59587	0.00	2000	
U	238	1	nogas	2.658	2.658	3.54	82544	0.00	2000	
[Pb]	206	1	nogas	1.778	1.778	2.55	15941	0.01	2000	
[Pb]	207	1	nogas	1.579	1.579	3.35	12525	0.01	2000	
Na	23	2	He	389813.913	389813.913	0.54	685233803	0.06	200000	>LDR
Mg	24	2	He	148874.056	148874.056	1.53	144971238	0.10	200000	
Al	27	2	He	900.377	900.377	1.56	470878	0.19	2000	
K	39	2	He	2584.361	2584.361	2.30	2837956	0.09	200000	
Ca	43	2	He	338935.514	338935.514	2.43	962366	35.22	200000	>LDR
Ca	44	2	He	339141.867	339141.867	2.46	16342386	2.08	200000	>LDR
V	51	2	He	3.164	3.164	2.16	26421	0.01	2000	
Cr	52	2	He	2.294	2.294	3.19	23839	0.01	2000	
Mn	55	2	He	81.035	81.035	0.09	443331	0.02	2000	
Fe	56	2	He	2297.511	2297.511	0.10	15670220	0.01	200000	
Co	59	2	He	2.054	2.054	0.91	22608	0.01	2000	
Ni	60	2	He	11.776	11.776	0.34	32616	0.04	2000	
Cu	63	2	He	0.156	0.156	21.35	15076	0.00	2000	
Zn	66	2	He	8.831	8.831	0.42	16214	0.05	2000	
As	75	2	He	1.409	1.409	5.42	2746	0.05	2000	
Se	78	2	He	0.079	0.079	94.19	207	0.04	2000	
B	11	1	nogas	62.850	62.850	4.56	377111	0.02	2000	
Si	28	1	nogas	262233.269	262233.269	3.12	331060555	0.08	2000	>LDR
Ca	43	1	nogas	337218.996	337218.996	1.08	14263331	2.36	200000	>LDR
Ca	44	1	nogas	333666.510	333666.510	2.04	230482083	0.14	200000	>LDR
Fe	56	1	nogas	2229.181	2229.181	2.19	66084814	0.00	200000	
Se	77	1	nogas	70.033	70.033	10.74	43201	0.16	2000	
Se	82	1	nogas	5.839	5.839	6.70	2357	0.25	2000	

Sample Report

Mo	95	1	nogas	0.140	0.140	15.21	1190	0.01	2000	
Sn	118	1	nogas	0.235	0.235	7.09	3694	0.01	2000	
Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
Ba	137	1	nogas	38.761	38.761	0.92	191556	0.02	2000	
Sb	121	2	He	0.308	0.308	8.29	2020	0.02	2000	
La	139	1	nogas	15142.302	15142.302	2.12	66157	22.89	2000	>LDR
Au	197	1	nogas	419.079	419.079	151.96	30	1396.93	2000	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	1133745	2.24	1314390	86.26	70	125	
Ge	72	1	nogas	3713338	3.16	3749087	99.05	70	125	
In	115	1	nogas	3387442	1.11	3430303	98.75	70	125	
Bi	209	1	nogas	2496334	0.56	2610544	95.63	70	125	
Ge	72	2	He	902663	0.40	932298	96.82	70	125	

Sample Report

Sample Table

Sample Name	HS18111440-05
Data File Name	184SMPL.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\121
Acq Date Time	2018-12-11T22:14:09-06:00
Sample Type	Sample
Dilution	1
Comment	TW B135349
ISTD Ref FileName	113CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
Be	9	1	nogas	0.043	0.043	18.88	423	0.01	2000	
Na	23	1	nogas	OR	OR	#VALUE!	OR	#VALUE!	200000	
Mg	24	1	nogas	55275.371	55275.371	4.26	1152712592	0.00	200000	
Al	27	1	nogas	32.563	32.563	2.31	820273	0.00	2000	
K	39	1	nogas	824.309	824.309	4.66	29817780	0.00	200000	
Ti	47	1	nogas	2.828	2.828	9.06	7312	0.04	2000	
V	51	1	nogas	0.134	0.134	555.23	413145	0.00	2000	
Cr	52	1	nogas	0.430	0.430	32.42	60579	0.00	2000	
Mn	55	1	nogas	80.266	80.266	5.10	2861096	0.00	2000	
Co	59	1	nogas	0.940	0.940	3.65	29387	0.00	2000	
Ni	60	1	nogas	5.398	5.398	2.09	29076	0.02	2000	
Cu	63	1	nogas	-0.783	-0.783	-11.26	34887	0.00	2000	
Zn	66	1	nogas	2.645	2.645	2.79	12615	0.02	2000	
As	75	1	nogas	6.889	6.889	11.04	113306	0.01	2000	
Sr	88	1	nogas	1464.386	1464.386	5.21	54797919	0.00	2000	
Ag	107	1	nogas	0.017	0.017	15.38	427	0.00	2000	
Cd	111	1	nogas	0.069	0.069	29.95	283	0.02	2000	
Sb	121	1	nogas	0.139	0.139	15.63	2980	0.00	2000	
Tl	205	1	nogas	0.019	0.019	29.79	1050	0.00	2000	
Pb	208	1	nogas	0.026	0.026	18.03	6257	0.00	2000	
U	238	1	nogas	21.729	21.729	5.19	699922	0.00	2000	
[Pb]	206	1	nogas	0.018	0.018	140.02	1527	0.00	2000	
[Pb]	207	1	nogas	0.026	0.026	32.69	1373	0.00	2000	
Na	23	2	He	350507.719	350507.719	2.83	619436697	0.06	200000	>LDR
Mg	24	2	He	61841.421	61841.421	2.31	60545056	0.10	200000	
Al	27	2	He	35.104	35.104	3.29	19417	0.18	2000	
K	39	2	He	880.057	880.057	0.58	1109047	0.08	200000	
Ca	43	2	He	105841.944	105841.944	1.91	302144	35.03	200000	
Ca	44	2	He	104963.613	104963.613	2.20	5086806	2.06	200000	
V	51	2	He	1.689	1.689	2.38	15708	0.01	2000	
Cr	52	2	He	0.464	0.464	3.83	9306	0.00	2000	
Mn	55	2	He	84.967	84.967	0.77	467211	0.02	2000	
Fe	56	2	He	45.196	45.196	1.92	327166	0.01	200000	
Co	59	2	He	0.879	0.879	0.36	9859	0.01	2000	
Ni	60	2	He	1.453	1.453	2.33	4807	0.03	2000	
Cu	63	2	He	-1.210	-1.210	-0.76	5414	-0.02	2000	
Zn	66	2	He	0.976	0.976	10.51	2944	0.03	2000	
As	75	2	He	0.502	0.502	8.69	1226	0.04	2000	
Se	78	2	He	0.126	0.126	85.40	214	0.06	2000	
B	11	1	nogas	29.651	29.651	5.48	218148	0.01	2000	
Si	28	1	nogas	210216.926	210216.926	4.42	281045656	0.07	2000	>LDR
Ca	43	1	nogas	102175.738	102175.738	4.73	4570791	2.24	200000	
Ca	44	1	nogas	99143.614	99143.614	3.13	72679856	0.14	200000	
Fe	56	1	nogas	35.483	35.483	6.26	3631734	0.00	200000	
Se	77	1	nogas	34.838	34.838	18.42	34770	0.10	2000	
Se	82	1	nogas	2.488	2.488	26.61	1270	0.20	2000	

Sample Report

Mo	95	1	nogas	0.359	0.359	12.60	2904	0.01	2000	
Sn	118	1	nogas	0.084	0.084	19.17	2184	0.00	2000	
Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
Ba	137	1	nogas	31.169	31.169	1.61	158949	0.02	2000	
Sb	121	2	He	0.165	0.165	3.98	1190	0.01	2000	
La	139	1	nogas	837.482	837.482	12.11	3844	21.79	2000	
Au	197	1	nogas	633.915	633.915	78.45	40	1584.79	2000	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	1214281	2.51	1314390	92.38	70	125	
Ge	72	1	nogas	3931108	4.57	3749087	104.86	70	125	
In	115	1	nogas	3488392	3.80	3430303	101.69	70	125	
Bi	209	1	nogas	2594952	3.81	2610544	99.40	70	125	
Ge	72	2	He	907456	0.17	932298	97.34	70	125	

Continuing Calibration Verification (CCV) Report

Sample Table

Sample Name	CCV
Data File Name	189_CCV.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\121
Acq Date Time	2018-12-11T22:24:31-06:00
Sample Type	CCV
Dilution	1
Comment	
ISTD Ref File Name	113CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Exp Value	%Rec	%Low	%High2	QC Flag
Be	9	1	nogas	94.225	2.232	856315	2.03	100	94.2	90	110	
Na	23	1	nogas	10243.345	5.595	299718290	3.18	10000	102.4	90	110	
Mg	24	1	nogas	9993.835	2.520	191732217	1.97	10000	99.9	90	110	
Al	27	1	nogas	95.879	3.029	2353209	1.76	100	95.9	90	110	
K	39	1	nogas	9832.255	2.622	252642081	3.24	10000	98.3	90	110	
Ti	47	1	nogas	96.846	1.752	232444	1.22	100	96.8	90	110	
V	51	1	nogas	97.873	4.657	3618031	3.10	100	97.9	90	110	
Cr	52	1	nogas	99.419	3.880	2823885	2.84	100	99.4	90	110	
Mn	55	1	nogas	98.606	3.394	3503411	2.15	100	98.6	90	110	
Co	59	1	nogas	101.003	3.850	3025142	3.61	100	101.0	90	110	
Ni	60	1	nogas	95.198	2.090	645390	2.00	100	95.2	90	110	
Cu	63	1	nogas	98.238	1.127	1622370	2.29	100	98.2	90	110	
Zn	66	1	nogas	98.657	0.888	526447	1.89	100	98.7	90	110	
As	75	1	nogas	97.620	1.941	753701	0.94	100	97.6	90	110	
Sr	88	1	nogas	96.188	2.166	3598357	0.97	100	96.2	90	110	
Ag	107	1	nogas	99.937	4.483	1803505	3.24	100	99.9	90	110	
Cd	111	1	nogas	102.064	3.252	381461	1.06	100	102.1	90	110	
Sb	121	1	nogas	97.728	1.738	1729015	0.92	100	97.7	90	110	
Tl	205	1	nogas	103.197	2.731	2549586	1.62	100	103.2	90	110	
Pb	208	1	nogas	101.802	0.570	3441532	0.57	100	101.8	90	110	
U	238	1	nogas	107.291	4.260	3468129	2.77	100	107.3	90	110	
[Pb]	206	1	nogas	96.888	1.334	831586	1.92	100	96.9	90	110	
[Pb]	207	1	nogas	96.561	0.911	727199	1.25	100	96.6	90	110	
Na	23	2	He	10193.937	1.417	18680399	1.93	10000	101.9	90	110	
Mg	24	2	He	10168.519	0.116	10272652	0.52	10000	101.7	90	110	
Al	27	2	He	101.605	2.782	56026	2.35	100	101.6	90	110	
K	39	2	He	10274.840	1.086	10639460	1.06	10000	102.7	90	110	
Ca	43	2	He	9993.596	2.004	29467	2.04	10000	99.9	90	110	
Ca	44	2	He	9749.046	1.093	490116	0.57	10000	97.5	90	110	
V	51	2	He	97.270	1.050	742057	0.88	100	97.3	90	110	
Cr	52	2	He	97.554	2.559	811614	2.15	100	97.6	90	110	
Mn	55	2	He	98.846	1.292	560393	0.87	100	98.8	90	110	
Fe	56	2	He	9853.347	1.958	69648926	2.29	10000	98.5	90	110	
Co	59	2	He	97.913	1.542	1106377	2.05	100	97.9	90	110	
Ni	60	2	He	101.021	0.832	283405	0.64	100	101.0	90	110	
Cu	63	2	He	96.331	1.917	723115	1.46	100	96.3	90	110	
Zn	66	2	He	98.929	2.735	174865	2.26	100	98.9	90	110	
As	75	2	He	98.371	0.958	172167	1.48	100	98.4	90	110	
Se	78	2	He	99.103	2.369	13838	1.83	100	99.1	90	110	
B	11	1	nogas	483.961	4.127	2753124	3.89	500	96.8	90	110	
Si	28	1	nogas	4952.297	2.041	8014512	0.80	5000	99.0	90	110	
Ca	43	1	nogas	9970.946	0.904	446819	0.97	10000	99.7	90	110	
Ca	44	1	nogas	9940.945	0.743	7559644	1.91	10000	99.4	90	110	
Fe	56	1	nogas	9922.622	1.742	301934348	1.84	10000	99.2	90	110	
Se	77	1	nogas	97.405	2.591	54154	1.66	100	97.4	90	110	
Se	82	1	nogas	97.211	2.799	35696	2.27	100	97.2	90	110	
Mo	95	1	nogas	94.500	0.856	712156	0.82	100	94.5	90	110	
Sn	118	1	nogas	96.805	1.352	1027917	0.85	100	96.8	90	110	
Ba	137	1	nogas	103.696	4.276	518839	2.05	100	103.7	90	110	
Sb	121	2	He	100.246	0.578	610316	1.05	100	100.2	90	110	
Li	7	1	nogas	96.197	2.453	1994249	2.26	100	96.2	90	110	
P	31	1	nogas	466.765	1.821	1175379	1.05	500	93.4	90	110	
La	139	1	nogas	108.839	10.133	573	10.22	100	108.8	90	110	
Au	197	1	nogas	78.207	332.445	17	69.28	100	78.2	90	110	CCV Main CR1-2 Failed

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	1210833	0.30	1314390	92.12	70	125	
Ge	72	1	nogas	3921101	1.21	3749087	104.59	70	125	
In	115	1	nogas	3450418	2.17	3430303	100.59	70	125	
Bi	209	1	nogas	2602124	1.71	2610544	99.68	70	125	

Continuing Calibration Verification (CCV) Report

Ge	72	2	He	936258	0.52	932298	100.42	70	125	

Continuing Calibration Blank (CCB) Report

Sample Table

Sample Name	CCB
Data File Name	190_CCB.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\121
Acq Date Time	2018-12-11T22:26:35-06:00
Sample Type	CCB
Dilution	1
Comment	
ISTD Ref File Name	113CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Be	9	1	nogas	0.066	33.3	700	32.9	1	
Na	23	1	nogas	45.287	9.4	2364062	5.0	100	
Mg	24	1	nogas	9.244	16.9	219504	10.0	100	
Al	27	1	nogas	0.223	40.9	35214	7.4	5	
K	39	1	nogas	-5.126	-94.6	9419840	0.4	100	
Ti	47	1	nogas	0.026	288.9	610	29.6	2.5	
V	51	1	nogas	-2.274	-13.3	340109	3.6	2.5	
Cr	52	1	nogas	-0.070	-25.4	47471	2.1	2.5	
Mn	55	1	nogas	1.106	2.3	70521	1.2	2.5	
Co	59	1	nogas	0.065	25.2	3200	15.8	2.5	
Ni	60	1	nogas	2.388	1.9	8519	2.9	2.5	
Cu	63	1	nogas	-0.361	-37.1	42382	4.9	2.5	
Zn	66	1	nogas	1.158	5.7	4721	6.7	2.5	
As	75	1	nogas	0.490	33.9	69281	2.0	2.5	
Sr	88	1	nogas	0.159	14.8	9366	9.7	2.5	
Ag	107	1	nogas	0.040	27.9	857	23.8	2.5	
Cd	111	1	nogas	0.056	4.1	247	2.3	1	
Sb	121	1	nogas	0.120	24.3	2687	19.6	2.5	
Tl	205	1	nogas	0.983	65.3	26101	61.5	1	
Pb	208	1	nogas	0.053	48.0	7181	12.0	2.5	
U	238	1	nogas	0.155	55.0	5381	51.6	2.5	
[Pb]	206	1	nogas	0.041	59.3	1833	10.2	2.5	
[Pb]	207	1	nogas	0.039	107.3	1560	19.0	2.5	
Na	23	2	He	43.102	0.5	176037	0.8	100	
Mg	24	2	He	8.287	11.9	10376	9.4	100	
Al	27	2	He	-0.256	-63.7	900	9.5	5	
K	39	2	He	5.395	2.9	221757	0.1	100	
Ca	43	2	He	25.659	85.7	113	57.4	100	
Ca	44	2	He	18.518	39.0	3910	9.8	100	
V	51	2	He	0.108	1.4	4239	0.8	2.5	
Cr	52	2	He	0.010	272.6	5908	3.4	2.5	
Mn	55	2	He	1.252	1.5	9343	0.6	2.5	
Fe	56	2	He	5.366	5.5	56637	4.2	100	
Co	59	2	He	0.042	15.4	727	10.4	2.5	
Ni	60	2	He	0.852	8.6	3310	6.0	2.5	
Cu	63	2	He	0.086	56.8	15267	1.9	2.5	
Zn	66	2	He	-0.029	-105.5	1287	4.3	2.5	
As	75	2	He	0.030	23.7	443	2.3	2.5	
Se	78	2	He	-0.154	-77.7	184	8.5	2.5	
B	11	1	nogas	4.229	15.2	83653	4.1	10	
Si	28	1	nogas	15.109	121.4	1483852	1.6	5	CCB Main CR1 Failed
Ca	43	1	nogas	28.291	15.0	2760	7.2	100	
Ca	44	1	nogas	-11.320	-26.1	312504	0.9	100	
Fe	56	1	nogas	-1.897	-318.2	2542463	7.4	100	
Se	77	1	nogas	-6.443	-17.5	22344	1.3	2.5	
Se	82	1	nogas	0.018	263.9	383	4.0	2.5	

Continuing Calibration Blank (CCB) Report

Mo	95	1	nogas	0.222	40.5	1910	35.9	2.5	
Sn	118	1	nogas	0.634	2.8	8452	3.4	5	
Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Ba	137	1	nogas	0.003	579.0	1810	5.8	2.5	
Sb	121	2	He	0.091	5.8	780	4.4	2.5	
P	31	1	nogas	-0.506	-108.3	144218	0.3	10	
La	139	1	nogas	0.538	263.3	97	6.0	2.5	
Au	197	1	nogas	202.619	246.9	23	99.0	2.5	CCB Main CR1 Failed

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	1338527	4.63	1314390	101.84	70	125	
Ge	72	1	nogas	3994748	1.07	3749087	106.55	70	125	
In	115	1	nogas	3647552	2.24	3430303	106.33	70	125	
Bi	209	1	nogas	2759231	2.24	2610544	105.70	70	125	
Ge	72	2	He	945375	0.59	932298	101.40	70	125	

Continuing Calibration Verification (CCV) Report

Sample Table

Sample Name	CCV
Data File Name	201_CCV.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\121
Acq Date Time	2018-12-11T22:49:27-06:00
Sample Type	CCV
Dilution	1
Comment	
ISTD Ref File Name	113CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Fail

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Exp Value	%Rec	%Low	%High2	QC Flag
Be	9	1	nogas	86.781	4.912	1184584	6.17	100	86.8	90	110	CCV Main CR1-2 Failed
Na	23	1	nogas	15857.886	6.727	734178716	6.64	10000	158.6	90	110	CCV Main CR1-2 Failed
Mg	24	1	nogas	9783.481	2.921	297180007	3.21	10000	97.8	90	110	
Al	27	1	nogas	103.009	6.680	3719715	5.13	100	103.0	90	110	
K	39	1	nogas	10856.391	1.741	409435559	1.78	10000	108.6	90	110	
Ti	47	1	nogas	100.952	2.487	356990	3.58	100	101.0	90	110	
V	51	1	nogas	91.246	4.871	5013165	5.70	100	91.2	90	110	
Cr	52	1	nogas	98.779	1.626	4135068	2.74	100	98.8	90	110	
Mn	55	1	nogas	99.944	0.815	5232167	2.29	100	99.9	90	110	
Co	59	1	nogas	100.055	0.590	4415159	1.85	100	100.1	90	110	
Ni	60	1	nogas	101.561	0.777	1015056	0.84	100	101.6	90	110	
Cu	63	1	nogas	103.750	0.597	2519770	0.98	100	103.8	90	110	
Zn	66	1	nogas	98.277	1.540	772377	0.50	100	98.3	90	110	
As	75	1	nogas	97.641	0.924	1110552	0.66	100	97.6	90	110	
Sr	88	1	nogas	135.638	11.662	7467332	10.45	100	135.6	90	110	CCV Main CR1-2 Failed
Ag	107	1	nogas	90.622	3.393	2410725	4.71	100	90.6	90	110	
Cd	111	1	nogas	101.311	2.428	511691	2.32	100	101.3	90	110	
Sb	121	1	nogas	86.056	4.736	2242178	3.33	100	86.1	90	110	CCV Main CR1-2 Failed
Tl	205	1	nogas	96.895	5.553	2655352	2.39	100	96.9	90	110	
Pb	208	1	nogas	108.142	2.078	3655520	2.08	100	108.1	90	110	
U	238	1	nogas	100.451	1.709	3605942	2.75	100	100.5	90	110	
[Pb]	206	1	nogas	93.028	2.808	886209	2.39	100	93.0	90	110	
[Pb]	207	1	nogas	92.565	2.431	773912	3.14	100	92.6	90	110	
Na	23	2	He	14478.143	4.970	43130409	1.51	10000	144.8	90	110	CCV Main CR1-2 Failed
Mg	24	2	He	9981.877	2.467	16428944	1.53	10000	99.8	90	110	
Al	27	2	He	105.674	4.916	94814	0.81	100	105.7	90	110	
K	39	2	He	18455.684	0.708	18938408	0.70	10000	184.6	90	110	CCV Main CR1-2 Failed
Ca	43	2	He	11018.953	3.932	52909	1.21	10000	110.2	90	110	CCV Main CR1-2 Failed
Ca	44	2	He	10858.428	3.840	888585	1.49	10000	108.6	90	110	
V	51	2	He	94.504	4.673	1174094	0.95	100	94.5	90	110	
Cr	52	2	He	92.708	8.878	1255117	4.87	100	92.7	90	110	
Mn	55	2	He	99.952	3.311	923003	0.82	100	100.0	90	110	
Fe	56	2	He	9699.605	3.600	111665448	0.85	10000	97.0	90	110	
Co	59	2	He	91.239	2.033	1680073	3.08	100	91.2	90	110	
Ni	60	2	He	90.340	3.095	412996	1.00	100	90.3	90	110	
Cu	63	2	He	85.863	4.416	1052187	0.47	100	85.9	90	110	CCV Main CR1-2 Failed
Zn	66	2	He	92.064	4.380	265160	0.47	100	92.1	90	110	
As	75	2	He	92.474	4.734	263560	1.30	100	92.5	90	110	
Se	78	2	He	98.169	2.889	22336	1.65	100	98.2	90	110	
B	11	1	nogas	513.803	4.328	4381179	1.97	500	102.8	90	110	
Si	28	1	nogas	5198.945	5.392	12285057	2.98	5000	104.0	90	110	
Ca	43	1	nogas	11178.484	4.570	737370	3.04	10000	111.8	90	110	CCV Main CR1-2 Failed
Ca	44	1	nogas	11123.912	4.168	12400686	2.56	10000	111.2	90	110	CCV Main CR1-2 Failed
Fe	56	1	nogas	10096.786	0.623	452567293	2.08	10000	101.0	90	110	
Se	77	1	nogas	124.912	4.420	92326	1.36	100	124.9	90	110	CCV Main CR1-2 Failed
Se	82	1	nogas	100.160	3.607	54165	3.55	100	100.2	90	110	
Mo	95	1	nogas	88.323	2.890	980330	1.60	100	88.3	90	110	CCV Main CR1-2 Failed
Sn	118	1	nogas	99.599	3.409	1428570	2.77	100	99.6	90	110	
Ba	137	1	nogas	96.275	2.443	651162	1.65	100	96.3	90	110	
Sb	121	2	He	85.473	4.153	847450	0.16	100	85.5	90	110	CCV Main CR1-2 Failed
Li	7	1	nogas	103.341	1.427	3204943	1.20	100	103.3	90	110	
P	31	1	nogas	520.870	1.044	1907833	0.80	500	104.2	90	110	
La	139	1	nogas	118.176	4.123	830	4.34	100	118.2	90	110	CCV Main CR1-2 Failed
Au	197	1	nogas	737.176	47.565	50	34.64	100	737.2	90	110	CCV Main CR1-2 Failed

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	1818131	2.56	1314390	138.33	70	125	ISTD Failed
Ge	72	1	nogas	5776225	1.49	3749087	154.07	70	125	ISTD Failed
In	115	1	nogas	4660781	0.82	3430303	135.87	70	125	ISTD Failed
Bi	209	1	nogas	2889062	3.33	2610544	110.67	70	125	

Continuing Calibration Verification (CCV) Report

Ge	72	2	He	1526323	3.93	932298	163.72	70	125	ISTD Failed

Continuing Calibration Blank (CCB) Report

Sample Table

Sample Name	CCB
Data File Name	202_CCB.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\121
Acq Date Time	2018-12-11T22:51:31-06:00
Sample Type	CCB
Dilution	1
Comment	
ISTD Ref File Name	113CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Fail

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Be	9	1	nogas	0.056	6.7	827	1.4	1	
Na	23	1	nogas	2145.064	9.3	101514561	6.2	100	CCB Main CR1 Failed
Mg	24	1	nogas	27.317	36.7	902528	37.1	100	
Al	27	1	nogas	0.379	17.3	55549	7.3	5	
K	39	1	nogas	-12.500	-140.3	13107826	1.1	100	
Ti	47	1	nogas	0.094	49.4	1100	11.6	2.5	
V	51	1	nogas	-7.674	-0.9	226833	4.4	2.5	
Cr	52	1	nogas	-0.122	-104.6	65235	4.2	2.5	
Mn	55	1	nogas	1.444	11.4	117297	3.5	2.5	
Co	59	1	nogas	0.091	17.9	5668	9.1	2.5	
Ni	60	1	nogas	7.260	4.0	60452	1.1	2.5	CCB Main CR1 Failed
Cu	63	1	nogas	2.362	14.7	123213	2.9	2.5	
Zn	66	1	nogas	1.197	1.7	7011	2.1	2.5	
As	75	1	nogas	2.774	13.3	121704	0.7	2.5	CCB Main CR1 Failed
Sr	88	1	nogas	10.514	13.2	571888	9.4	2.5	CCB Main CR1 Failed
Ag	107	1	nogas	0.034	7.6	1057	4.7	2.5	
Cd	111	1	nogas	0.062	43.7	353	34.2	1	
Sb	121	1	nogas	0.117	23.0	3737	14.7	2.5	
Tl	205	1	nogas	1.029	65.5	30264	64.5	1	CCB Main CR1 Failed
Pb	208	1	nogas	0.089	28.2	8404	10.1	2.5	
U	238	1	nogas	0.137	56.7	5295	55.9	2.5	
[Pb]	206	1	nogas	0.044	52.0	2047	11.6	2.5	
[Pb]	207	1	nogas	0.056	16.3	1870	2.8	2.5	
Na	23	2	He	2033.547	4.1	6114084	0.8	100	CCB Main CR1 Failed
Mg	24	2	He	18.770	13.8	33490	9.4	100	
Al	27	2	He	-0.232	-37.0	1457	8.0	5	
K	39	2	He	141.959	1.0	360293	0.4	100	CCB Main CR1 Failed
Ca	43	2	He	140.415	9.1	723	5.8	100	CCB Main CR1 Failed
Ca	44	2	He	115.953	9.3	14045	2.8	100	CCB Main CR1 Failed
V	51	2	He	-0.087	-22.3	4371	3.5	2.5	
Cr	52	2	He	-0.002	-1646.8	9246	1.9	2.5	
Mn	55	2	He	1.435	5.6	16541	1.0	2.5	
Fe	56	2	He	6.459	10.6	102849	11.0	100	
Co	59	2	He	0.053	23.8	1353	15.2	2.5	
Ni	60	2	He	0.830	16.3	5167	8.8	2.5	
Cu	63	2	He	-1.341	-3.2	7428	3.5	2.5	
Zn	66	2	He	-0.039	-277.6	2017	12.2	2.5	
As	75	2	He	0.018	79.1	672	5.1	2.5	
Se	78	2	He	-0.201	-31.7	283	3.3	2.5	
B	11	1	nogas	46.248	11.1	475686	2.5	10	CCB Main CR1 Failed
Si	28	1	nogas	-59.122	-75.4	1963878	0.7	5	
Ca	43	1	nogas	127.068	16.2	10280	9.4	100	CCB Main CR1 Failed
Ca	44	1	nogas	135.550	21.0	598312	1.3	100	CCB Main CR1 Failed
Fe	56	1	nogas	0.520	1312.9	3711271	4.3	100	
Se	77	1	nogas	5.836	39.1	37245	1.0	2.5	CCB Main CR1 Failed
Se	82	1	nogas	1.333	21.8	1233	8.9	2.5	
Mo	95	1	nogas	0.205	52.0	2504	42.4	2.5	
Sn	118	1	nogas	0.616	17.5	10950	10.6	5	
Ba	137	1	nogas	0.030	130.4	2597	6.6	2.5	

Continuing Calibration Blank (CCB) Report

Sb	121	2	He	0.053	17.7	877	7.3	2.5	
P	31	1	nogas	-0.310	-599.4	205437	0.8	10	
La	139	1	nogas	9.465	105.9	187	38.8	2.5	CCB Main CR1 Failed
Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Au	197	1	nogas	90.730	213.6	20	50.0	2.5	CCB Main CR1 Failed

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	1863910	6.52	1314390	141.81	70	125	ISTD Failed
Ge	72	1	nogas	5676789	3.69	3749087	151.42	70	125	ISTD Failed
In	115	1	nogas	4863669	5.22	3430303	141.79	70	125	ISTD Failed
Bi	209	1	nogas	3029818	1.67	2610544	116.06	70	125	
Ge	72	2	He	1506638	3.55	932298	161.60	70	125	ISTD Failed

Continuing Calibration Verification (CCV) Report

Sample Table

Sample Name	CCV
Data File Name	204_CCV.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\121
Acq Date Time	2018-12-11T22:55:37-06:00
Sample Type	CCV
Dilution	1
Comment	
ISTD Ref File Name	113CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Fail

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Exp Value	%Rec	%Low	%High2	QC Flag
Be	9	1	nogas	93.062	5.236	1133137	2.31	100	93.1	90	110	
Na	23	1	nogas	11096.595	1.242	472494061	1.73	10000	111.0	90	110	CCV Main CR1-2 Failed
Mg	24	1	nogas	10084.499	2.491	281403006	1.63	10000	100.8	90	110	
Al	27	1	nogas	103.064	5.802	3530233	3.58	100	103.1	90	110	
K	39	1	nogas	10308.853	1.535	369491842	1.72	10000	103.1	90	110	
Ti	47	1	nogas	100.078	2.716	335582	0.41	100	100.1	90	110	
V	51	1	nogas	93.889	4.963	4872250	2.17	100	93.9	90	110	
Cr	52	1	nogas	99.508	2.976	3949451	0.54	100	99.5	90	110	
Mn	55	1	nogas	100.792	0.787	5005280	2.22	100	100.8	90	110	
Co	59	1	nogas	98.234	4.554	4113436	5.60	100	98.2	90	110	
Ni	60	1	nogas	101.428	3.189	961706	3.37	100	101.4	90	110	
Cu	63	1	nogas	99.614	6.522	2299998	8.34	100	99.6	90	110	
Zn	66	1	nogas	99.493	0.787	742002	2.48	100	99.5	90	110	
As	75	1	nogas	94.241	3.291	1019711	0.71	100	94.2	90	110	
Sr	88	1	nogas	96.717	2.846	5060338	5.42	100	96.7	90	110	
Ag	107	1	nogas	93.028	5.550	2348391	7.08	100	93.0	90	110	
Cd	111	1	nogas	97.732	2.220	496409	1.66	100	97.7	90	110	
Sb	121	1	nogas	90.785	3.241	2245408	4.34	100	90.8	90	110	
Tl	205	1	nogas	98.356	5.476	2798814	4.27	100	98.4	90	110	
Pb	208	1	nogas	112.045	6.103	3787264	6.09	100	112.0	90	110	CCV Main CR1-2 Failed
U	238	1	nogas	99.920	1.894	3725387	5.35	100	99.9	90	110	
[Pb]	206	1	nogas	93.560	7.719	923401	1.51	100	93.6	90	110	
[Pb]	207	1	nogas	93.302	6.972	808252	0.85	100	93.3	90	110	
Na	23	2	He	11016.167	12.258	29863381	0.40	10000	110.2	90	110	CCV Main CR1-2 Failed
Mg	24	2	He	9877.650	11.873	14772654	0.90	10000	98.8	90	110	
Al	27	2	He	103.838	12.782	84689	1.65	100	103.8	90	110	
K	39	2	He	16892.994	1.866	17353158	1.84	10000	168.9	90	110	CCV Main CR1-2 Failed
Ca	43	2	He	10567.889	12.629	46101	1.02	10000	105.7	90	110	
Ca	44	2	He	10531.408	13.007	782758	0.63	10000	105.3	90	110	
V	51	2	He	96.237	13.677	1085360	2.47	100	96.2	90	110	
Cr	52	2	He	95.559	12.326	1176823	0.13	100	95.6	90	110	
Mn	55	2	He	102.107	12.404	856686	1.58	100	102.1	90	110	
Fe	56	2	He	9896.055	12.820	103464715	0.62	10000	99.0	90	110	
Co	59	2	He	99.022	9.593	1659659	2.94	100	99.0	90	110	
Ni	60	2	He	96.326	12.791	399817	0.42	100	96.3	90	110	
Cu	63	2	He	90.770	13.616	1008733	1.04	100	90.8	90	110	
Zn	66	2	He	95.530	12.820	249901	1.02	100	95.5	90	110	
As	75	2	He	94.580	12.732	244889	1.25	100	94.6	90	110	
Se	78	2	He	97.271	12.271	20110	1.01	100	97.3	90	110	
B	11	1	nogas	515.070	6.325	3920125	2.78	500	103.0	90	110	
Si	28	1	nogas	4992.128	3.809	11270936	0.35	5000	99.8	90	110	
Ca	43	1	nogas	10361.026	2.485	648624	0.48	10000	103.6	90	110	
Ca	44	1	nogas	10120.247	3.930	10740877	0.98	10000	101.2	90	110	
Fe	56	1	nogas	10196.985	1.675	433509593	1.84	10000	102.0	90	110	
Se	77	1	nogas	97.848	2.494	75874	2.07	100	97.8	90	110	
Se	82	1	nogas	95.761	3.142	49147	2.69	100	95.8	90	110	
Mo	95	1	nogas	89.600	2.652	943398	0.40	100	89.6	90	110	CCV Main CR1-2 Failed
Sn	118	1	nogas	97.761	9.477	1413172	12.12	100	97.8	90	110	
Ba	137	1	nogas	94.247	3.379	641015	1.46	100	94.2	90	110	
Sb	121	2	He	88.091	13.681	792850	1.88	100	88.1	90	110	CCV Main CR1-2 Failed
Li	7	1	nogas	99.772	7.252	2764474	2.84	100	99.8	90	110	
P	31	1	nogas	526.956	10.981	1825955	7.19	500	105.4	90	110	
La	139	1	nogas	97.352	29.257	707	21.98	100	97.4	90	110	
Au	197	1	nogas	-94.718	-231.371	10	100.00	100	-94.7	90	110	CCV Main CR1-2 Failed

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	1624812	5.02	1314390	123.62	70	125	
Ge	72	1	nogas	5480730	2.84	3749087	146.19	70	125	ISTD Failed
In	115	1	nogas	4688431	2.69	3430303	136.68	70	125	ISTD Failed
Bi	209	1	nogas	3002712	7.19	2610544	115.02	70	125	

Continuing Calibration Verification (CCV) Report

Ge	72	2	He	1400487	13.05	932298	150.22	70	125	ISTD Failed

Continuing Calibration Blank (CCB) Report

Sample Table

Sample Name	CCB
Data File Name	205_CCB.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\121
Acq Date Time	2018-12-11T22:57:42-06:00
Sample Type	CCB
Dilution	1
Comment	
ISTD Ref File Name	113CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Fail

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Be	9	1	nogas	0.044	28.7	640	27.4	1	
Na	23	1	nogas	949.290	8.5	43732428	7.5	100	CCB Main CR1 Failed
Mg	24	1	nogas	15.374	23.4	506154	20.1	100	
Al	27	1	nogas	0.262	11.5	51073	2.0	5	
K	39	1	nogas	-35.152	-19.0	12233402	1.2	100	
Ti	47	1	nogas	0.033	35.7	887	2.8	2.5	
V	51	1	nogas	-6.783	-1.3	267408	0.8	2.5	
Cr	52	1	nogas	-0.189	-34.4	62211	2.4	2.5	
Mn	55	1	nogas	1.120	4.6	100332	1.7	2.5	
Co	59	1	nogas	0.062	20.7	4367	11.5	2.5	
Ni	60	1	nogas	6.289	2.3	50549	1.4	2.5	CCB Main CR1 Failed
Cu	63	1	nogas	-0.185	-51.1	63884	2.3	2.5	
Zn	66	1	nogas	1.128	4.3	6435	4.2	2.5	
As	75	1	nogas	1.149	20.1	104511	0.6	2.5	
Sr	88	1	nogas	8.131	15.6	442549	16.5	2.5	CCB Main CR1 Failed
Ag	107	1	nogas	0.025	11.1	827	8.8	2.5	
Cd	111	1	nogas	0.029	24.0	183	17.5	1	
Sb	121	1	nogas	0.096	14.4	3177	11.0	2.5	
Tl	205	1	nogas	0.983	60.7	30637	58.7	1	
Pb	208	1	nogas	0.074	16.9	7884	5.4	2.5	
U	238	1	nogas	0.112	47.2	4604	45.4	2.5	
[Pb]	206	1	nogas	0.031	22.3	2027	3.5	2.5	
[Pb]	207	1	nogas	0.021	95.6	1653	10.0	2.5	
Na	23	2	He	955.955	6.5	2745541	0.5	100	CCB Main CR1 Failed
Mg	24	2	He	11.526	6.4	20241	1.9	100	
Al	27	2	He	0.063	811.1	1577	19.7	5	
K	39	2	He	108.600	2.3	326453	0.8	100	CCB Main CR1 Failed
Ca	43	2	He	77.852	21.0	397	16.4	100	
Ca	44	2	He	63.255	11.4	9126	4.1	100	
V	51	2	He	-0.053	-46.3	4447	1.4	2.5	
Cr	52	2	He	-0.020	-299.2	8365	3.3	2.5	
Mn	55	2	He	1.223	13.6	13552	4.5	2.5	
Fe	56	2	He	4.521	7.7	74892	3.1	100	
Co	59	2	He	0.051	17.1	1230	10.2	2.5	
Ni	60	2	He	0.926	11.6	5201	3.4	2.5	
Cu	63	2	He	-0.994	-7.3	10717	1.9	2.5	
Zn	66	2	He	0.020	565.4	2027	9.7	2.5	
As	75	2	He	0.007	617.1	593	13.0	2.5	
Se	78	2	He	-0.359	-20.6	230	1.7	2.5	
B	11	1	nogas	29.502	8.6	316724	4.7	10	CCB Main CR1 Failed
Si	28	1	nogas	-159.883	-32.5	1760020	3.9	5	
Ca	43	1	nogas	92.678	28.2	8025	20.2	100	
Ca	44	1	nogas	7.770	247.3	461222	3.7	100	
Fe	56	1	nogas	-6.667	-88.6	3382224	7.1	100	
Se	77	1	nogas	-5.651	-10.6	31908	1.1	2.5	
Se	82	1	nogas	0.476	33.1	780	9.0	2.5	
Mo	95	1	nogas	0.180	42.4	2237	36.7	2.5	
Sn	118	1	nogas	0.595	13.0	10680	9.5	5	
Ba	137	1	nogas	-0.015	-49.6	2290	1.2	2.5	

Continuing Calibration Blank (CCB) Report

Sb	121	2	He	0.051	5.3	793	5.1	2.5	
P	31	1	nogas	0.329	222.8	206318	0.9	10	
La	139	1	nogas	6.086	138.2	163	30.8	2.5	CCB Main CR1 Failed
Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Au	197	1	nogas	199.801	199.9	27	78.1	2.5	CCB Main CR1 Failed

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	1770723	2.89	1314390	134.72	70	125	ISTD Failed
Ge	72	1	nogas	5641596	1.77	3749087	150.48	70	125	ISTD Failed
In	115	1	nogas	4865254	1.97	3430303	141.83	70	125	ISTD Failed
Bi	209	1	nogas	3207700	1.71	2610544	122.87	70	125	
Ge	72	2	He	1401614	5.96	932298	150.34	70	125	ISTD Failed

Low Level Initial Calibration Verification (LLICV) Report

Sample Table

Sample Name	LLCCV5
Data File Name	206LICV.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\121
Acq Date Time	2018-12-11T22:59:44-06:00
Sample Type	LLICV
Dilution	1
Comment	
ISTD Ref File Name	113CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Fail

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Exp Value	%Rec	%Low	%High	QC Flag
Be	9	1	nogas	4.286	3.316	55029	1.71	5	85.7	70	130	
Na	23	1	nogas	1230.342	9.784	55672149	6.38	500	246.1	70	130	LLICV Main CR1 Failed
Mg	24	1	nogas	499.583	6.312	14525618	2.04	500	99.9	70	130	
Al	27	1	nogas	4.708	5.309	204643	2.47	5	94.2	70	130	
K	39	1	nogas	438.970	3.515	28905138	0.12	500	87.8	70	130	
Ti	47	1	nogas	5.015	5.848	17936	7.03	5	100.3	70	130	
V	51	1	nogas	-2.236	-14.806	478874	4.78	5	-44.7	70	130	LLICV Main CR1 Failed
Cr	52	1	nogas	4.568	2.252	251621	2.35	5	91.4	70	130	
Mn	55	1	nogas	4.850	2.653	287362	1.10	5	97.0	70	130	
Co	59	1	nogas	4.765	1.566	205541	1.23	5	95.3	70	130	
Ni	60	1	nogas	9.761	0.415	84268	1.78	5	195.2	70	130	LLICV Main CR1 Failed
Cu	63	1	nogas	4.449	2.612	169588	1.10	5	89.0	70	130	
Zn	66	1	nogas	5.650	0.628	40969	1.21	5	113.0	70	130	
As	75	1	nogas	4.868	4.567	141316	1.04	5	97.4	70	130	
Sr	88	1	nogas	10.310	13.497	554633	11.85	5	206.2	70	130	LLICV Main CR1 Failed
Ag	107	1	nogas	4.529	3.479	116962	2.43	5	90.6	70	130	
Cd	111	1	nogas	4.741	9.042	24651	5.99	5	94.8	70	130	
Sb	121	1	nogas	4.202	1.342	106963	2.70	5	84.0	70	130	
Tl	205	1	nogas	4.560	3.257	139213	2.35	5	91.2	70	130	
Pb	208	1	nogas	5.837	3.244	202418	3.16	5	116.7	70	130	
U	238	1	nogas	4.518	4.460	179825	4.81	5	90.4	70	130	
[Pb]	206	1	nogas	4.693	5.726	51141	4.92	5	93.9	70	130	
[Pb]	207	1	nogas	4.667	6.642	44596	5.72	5	93.3	70	130	
Na	23	2	He	1190.049	0.698	3464327	0.08	500	238.0	70	130	LLICV Main CR1 Failed
Mg	24	2	He	481.188	0.341	746227	0.36	500	96.2	70	130	
Al	27	2	He	4.130	6.285	4994	4.25	5	82.6	70	130	
K	39	2	He	866.111	1.912	1094900	1.53	500	173.2	70	130	LLICV Main CR1 Failed
Ca	43	2	He	511.526	3.940	2360	4.17	500	102.3	70	130	
Ca	44	2	He	522.552	0.395	44443	0.76	500	104.5	70	130	
V	51	2	He	4.438	1.582	56714	0.84	5	88.8	70	130	
Cr	52	2	He	4.484	1.108	65480	1.34	5	89.7	70	130	
Mn	55	2	He	4.932	1.423	45937	1.97	5	98.6	70	130	
Fe	56	2	He	473.419	1.673	5143911	1.33	500	94.7	70	130	
Co	59	2	He	4.534	0.134	78699	0.80	5	90.7	70	130	
Ni	60	2	He	4.550	4.645	20829	4.15	5	91.0	70	130	
Cu	63	2	He	3.539	4.638	61978	3.09	5	70.8	70	130	
Zn	66	2	He	4.182	1.516	13248	1.57	5	83.6	70	130	
As	75	2	He	4.403	2.955	12349	2.12	5	88.1	70	130	
Se	78	2	He	4.417	0.265	1241	0.49	5	88.3	70	130	
B	11	1	nogas	47.265	3.185	445975	0.98	25	189.1	70	130	LLICV Main CR1 Failed
Si	28	1	nogas	72.230	40.211	2189045	0.88	25	288.9	70	130	LLICV Main CR1 Failed
Ca	43	1	nogas	553.336	4.586	37365	2.74	500	110.7	70	130	
Ca	44	1	nogas	456.081	5.329	924715	1.23	500	91.2	70	130	
Fe	56	1	nogas	464.138	2.947	23657098	2.82	500	92.8	70	130	
Se	77	1	nogas	-5.618	-20.016	31701	0.92	5	-112.4	70	130	LLICV Main CR1 Failed
Se	82	1	nogas	4.662	8.732	2947	5.53	5	93.2	70	130	
Mo	95	1	nogas	4.553	1.123	49295	1.34	5	91.1	70	130	
Sn	118	1	nogas	4.550	1.977	68883	1.98	5	91.0	70	130	
Ba	137	1	nogas	4.684	8.099	34822	4.31	5	93.7	70	130	
Sb	121	2	He	4.291	1.584	40277	1.14	5	85.8	70	130	
Li	7	1	nogas	6.357	2.397	318581	0.39	5	127.1	70	130	
P	31	1	nogas	19.699	13.340	266078	1.81	25	78.8	70	130	
La	139	1	nogas	9.173	56.373	180	14.70	5	183.5	70	130	LLICV Main CR1 Failed
Au	197	1	nogas	193.427	295.057	27	114.56	5	3868.5	70	130	LLICV Main CR1 Failed

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	1709732	1.71	1314390	130.08	70	125	ISTD Failed
Ge	72	1	nogas	5602774	1.77	3749087	149.44	70	125	ISTD Failed
In	115	1	nogas	4800709	3.54	3430303	139.95	70	125	ISTD Failed
Bi	209	1	nogas	3200030	1.11	2610544	122.58	70	125	

Low Level Initial Calibration Verification (LLICV) Report

Ge	72	2	He	1431900	0.69	932298	153.59	70	125	ISTD Failed

Sample Report

Sample Table

Sample Name	LLCCV2
Data File Name	207SMPL.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\121
Acq Date Time	2018-12-11T23:01:46-06:00
Sample Type	Sample
Dilution	1
Comment	
ISTD Ref FileName	113CALB.d
Sample QC Pass/Fail	Pass
ISTD Pass/Fail	Fail

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
Be	9	1	nogas	1.752	1.752	4.76	23765	0.01	2000	
Na	23	1	nogas	765.242	765.242	3.69	34380817	0.00	200000	
Mg	24	1	nogas	208.167	208.167	3.00	5943510	0.00	200000	
Al	27	1	nogas	1.716	1.716	2.69	100155	0.00	2000	
K	39	1	nogas	155.461	155.461	7.42	18711573	0.00	200000	
Ti	47	1	nogas	1.955	1.955	2.28	7388	0.03	2000	
V	51	1	nogas	-4.708	-4.708	-8.56	359269	0.00	2000	
Cr	52	1	nogas	1.739	1.739	4.26	137451	0.00	2000	
Mn	55	1	nogas	2.074	2.074	2.69	146315	0.00	2000	
Co	59	1	nogas	2.009	2.009	3.37	86833	0.00	2000	
Ni	60	1	nogas	6.900	6.900	1.27	55677	0.01	2000	
Cu	63	1	nogas	1.634	1.634	8.48	104129	0.00	2000	
Zn	66	1	nogas	2.733	2.733	3.94	18490	0.01	2000	
As	75	1	nogas	2.010	2.010	18.73	111421	0.00	2000	
Sr	88	1	nogas	5.360	5.360	2.17	288397	0.00	2000	
Ag	107	1	nogas	1.889	1.889	3.17	48420	0.00	2000	
Cd	111	1	nogas	1.909	1.909	5.52	10380	0.02	2000	
Sb	121	1	nogas	1.765	1.765	2.36	44935	0.00	2000	
Tl	205	1	nogas	1.886	1.886	4.55	59677	0.00	2000	
Pb	208	1	nogas	2.394	2.394	1.30	86215	0.00	2000	
U	238	1	nogas	1.867	1.867	1.37	76539	0.00	2000	
[Pb]	206	1	nogas	1.827	1.827	4.27	21551	0.01	2000	
[Pb]	207	1	nogas	1.797	1.797	2.84	18594	0.01	2000	
Na	23	2	He	762.411	762.411	1.92	2235168	0.03	200000	
Mg	24	2	He	197.958	197.958	1.88	303678	0.07	200000	
Al	27	2	He	1.339	1.339	7.21	2640	0.05	2000	
K	39	2	He	392.788	392.788	0.94	614744	0.06	200000	
Ca	43	2	He	228.906	228.906	9.86	1070	21.39	200000	
Ca	44	2	He	221.986	221.986	0.69	21119	1.05	200000	
V	51	2	He	1.741	1.741	2.66	24969	0.01	2000	
Cr	52	2	He	1.852	1.852	2.85	31701	0.01	2000	
Mn	55	2	He	2.216	2.216	3.04	22113	0.01	2000	
Fe	56	2	He	202.694	202.694	1.49	2181817	0.01	200000	
Co	59	2	He	1.877	1.877	3.17	32269	0.01	2000	
Ni	60	2	He	1.789	1.789	7.04	8879	0.02	2000	
Cu	63	2	He	0.967	0.967	4.54	32499	0.00	2000	
Zn	66	2	He	1.562	1.562	6.98	6114	0.03	2000	
As	75	2	He	1.818	1.818	2.58	5356	0.03	2000	
Se	78	2	He	1.533	1.533	9.36	623	0.25	2000	
B	11	1	nogas	29.315	29.315	5.23	321203	0.01	2000	
Si	28	1	nogas	-38.451	-38.451	-259.28	1959105	0.00	2000	
Ca	43	1	nogas	230.826	230.826	2.05	16641	1.39	200000	

Sample Report

Ca	44	1	nogas	123.601	123.601	8.10	573376	0.02	200000	
Fe	56	1	nogas	188.969	188.969	4.41	11682888	0.00	200000	
Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
Se	77	1	nogas	-8.634	-8.634	-13.68	30085	-0.03	2000	
Se	82	1	nogas	2.352	2.352	6.86	1733	0.14	2000	
Mo	95	1	nogas	1.879	1.879	4.45	20319	0.01	2000	
Sn	118	1	nogas	1.884	1.884	1.39	30794	0.01	2000	
Ba	137	1	nogas	1.802	1.802	2.69	15491	0.01	2000	
Sb	121	2	He	1.784	1.784	3.48	16665	0.01	2000	
La	139	1	nogas	-2.529	-2.529	-457.76	113	-2.23	2000	
Au	197	1	nogas	733.404	733.404	11.97	57	1294.24	2000	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	1804201	3.38	1314390	137.27	70	125	ISTD Failed
Ge	72	1	nogas	5551880	2.38	3749087	148.09	70	125	ISTD Failed
In	115	1	nogas	5001212	2.85	3430303	145.80	70	125	ISTD Failed
Bi	209	1	nogas	3293240	2.11	2610544	126.15	70	125	ISTD Failed
Ge	72	2	He	1408417	1.14	932298	151.07	70	125	ISTD Failed

Interference Check Solution A (ICS-A) Report

Sample Table

Sample Name	ICSA
Data File Name	208ICSA.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\121
Acq Date Time	2018-12-11T23:03:47-06:00
Sample Type	ICSA
Dilution	1
Comment	
ISTD Ref File Name	113CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Fail

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Be	9	1	nogas	0.013	41.4	203	32.7	0	ICSA Main CR1 Failed
Na	23	1	nogas	100922.753	1.0	4114160359	0.8	0	
Mg	24	1	nogas	99104.455	2.1	2654389593	0.4	0	
Al	27	1	nogas	94555.749	1.7	3108342460	1.1	0	
K	39	1	nogas	102558.495	5.0	3452090077	4.2	0	
Ti	47	1	nogas	2077.862	0.7	6747981	1.0	0	
V	51	1	nogas	-5.941	-3.5	289573	4.0	0	ICSA Main CR1 Failed
Cr	52	1	nogas	0.661	6.2	90842	1.2	0	ICSA Main CR1 Failed
Mn	55	1	nogas	0.129	36.6	47210	4.6	0	ICSA Main CR1 Failed
Co	59	1	nogas	0.454	3.6	20031	2.5	0	ICSA Main CR1 Failed
Ni	60	1	nogas	5.965	0.9	44634	1.0	0	
Cu	63	1	nogas	0.413	3.9	73232	0.6	0	ICSA Main CR1 Failed
Zn	66	1	nogas	2.590	3.7	16675	3.4	0	ICSA Main CR1 Failed
As	75	1	nogas	3.557	5.3	121556	0.9	0	ICSA Main CR1 Failed
Sr	88	1	nogas	4.233	18.0	218923	17.5	0	ICSA Main CR1 Failed
Ag	107	1	nogas	0.063	10.6	1717	8.9	0	ICSA Main CR1 Failed
Cd	111	1	nogas	2.586	5.4	12538	3.7	0	
Sb	121	1	nogas	0.191	17.1	5281	14.7	0	ICSA Main CR1 Failed
Tl	205	1	nogas	0.039	66.8	1833	43.8	0	ICSA Main CR1 Failed
Pb	208	1	nogas	0.060	21.5	7434	5.9	0	ICSA Main CR1 Failed
[Pb]	206	1	nogas	0.027	52.8	1920	5.0	0	ICSA Main CR1 Failed
[Pb]	207	1	nogas	0.023	77.5	1610	6.9	0	ICSA Main CR1 Failed
Na	23	2	He	101717.130	2.2	257535036	1.3	0	
Mg	24	2	He	98736.176	1.1	138456345	1.4	0	
Al	27	2	He	101395.744	2.0	76192716	1.2	0	
K	39	2	He	155172.985	1.3	157629454	1.3	0	
Ca	43	2	He	101847.675	1.4	416421	1.0	0	
Ca	44	2	He	100886.930	4.1	7007415	5.9	0	
V	51	2	He	-0.008	-236.1	4607	2.4	0	ICSA Main CR1 Failed
Cr	52	2	He	0.212	21.7	10443	4.6	0	ICSA Main CR1 Failed
Mn	55	2	He	0.319	14.8	5531	7.3	0	ICSA Main CR1 Failed
Fe	56	2	He	101039.719	2.2	991084785	0.6	0	
Co	59	2	He	0.290	2.9	4891	1.1	0	ICSA Main CR1 Failed
Ni	60	2	He	0.080	22.6	1557	2.9	0	ICSA Main CR1 Failed
Cu	63	2	He	-0.813	-6.3	11811	3.5	0	ICSA Main CR1 Failed
Zn	66	2	He	0.075	158.6	2020	13.4	0	ICSA Main CR1 Failed
As	75	2	He	0.073	16.8	714	2.2	0	ICSA Main CR1 Failed
Se	78	2	He	-0.457	-16.0	195	9.2	0	ICSA Main CR1 Failed
B	11	1	nogas	24.168	1.4	247281	0.8	0	
Si	28	1	nogas	294.685	5.2	2478644	1.5	0	
Ca	43	1	nogas	104124.064	4.9	6306919	4.1	0	
Ca	44	1	nogas	101008.810	2.6	100219922	1.7	0	
Fe	56	1	nogas	100189.361	1.6	4102435025	1.8	0	
Se	77	1	nogas	14.454	14.1	38528	1.5	0	
Se	82	1	nogas	0.776	46.4	883	19.9	0	ICSA Main CR1 Failed
Mo	95	1	nogas	1884.167	0.6	19249656	1.5	0	
Sn	118	1	nogas	0.105	11.0	3074	3.3	0	ICSA Main CR1 Failed
Ba	137	1	nogas	0.156	22.1	3204	4.5	0	ICSA Main CR1 Failed
Sb	121	2	He	0.145	10.6	1537	10.7	0	ICSA Main CR1 Failed

Interference Check Solution A (ICS-A) Report

P	31	1	nogas	92834.070	2.3	278696929	1.9	0	
La	139	1	nogas	37.740	24.0	333	18.3	0	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	1600977	0.51	1314390	121.80	70	125	
Ge	72	1	nogas	5316746	0.84	3749087	141.81	70	125	ISTD Failed
In	115	1	nogas	4467128	3.20	3430303	130.23	70	125	ISTD Failed
Bi	209	1	nogas	3105843	3.32	2610544	118.97	70	125	
Ge	72	2	He	1300001	2.32	932298	139.44	70	125	ISTD Failed

Interference Check Solution AB (ICS-AB) Report

Sample Table

Sample Name	ICSAB
Data File Name	209ICSB.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\121
Acq Date Time	2018-12-11T23:05:56-06:00
Sample Type	ICSB
Dilution	1
Comment	
ISTD Ref File Name	113CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Fail

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Exp Value	%Rec	%Low	%High	QC Flag
Be	9	1	nogas	111.218	3.541	1259237	3.42	100	111.2	80	120	
Na	23	1	nogas	113592.600	3.377	4528372901	1.82	100	113592.6	80	120	ICSB Main CR1 Failed
Mg	24	1	nogas	110318.763	1.162	2890669331	0.76	100	110318.8	80	120	
Al	27	1	nogas	94415.212	1.117	3040912168	1.15	100	94415.2	80	120	ICSB Main CR1 Failed
K	39	1	nogas	113489.621	2.470	3742124484	2.46	100	113489.6	80	120	
Ti	47	1	nogas	2216.757	0.868	7052796	0.93	100	2216.8	80	120	ICSB Main CR1 Failed
V	51	1	nogas	105.534	3.052	5141438	2.80	100	105.5	80	120	
Cr	52	1	nogas	109.006	1.267	4107788	1.28	100	109.0	80	120	
Mn	55	1	nogas	107.067	4.210	5051223	4.25	100	107.1	80	120	
Co	59	1	nogas	110.078	0.497	4379915	0.45	100	110.1	80	120	
Ni	60	1	nogas	110.298	1.265	995062	1.35	100	110.3	80	120	
Cu	63	1	nogas	108.850	3.536	2380884	3.37	100	108.9	80	120	
Zn	66	1	nogas	112.546	0.481	798028	0.45	100	112.5	80	120	
As	75	1	nogas	106.837	0.919	1087775	0.86	100	106.8	80	120	
Sr	88	1	nogas	110.625	2.124	5497675	2.05	100	110.6	80	120	
Ag	107	1	nogas	101.752	2.651	2440167	2.71	100	101.8	80	120	
Cd	111	1	nogas	114.277	0.877	548994	0.36	100	114.3	80	120	
Sb	121	1	nogas	104.823	2.400	2463779	2.42	100	104.8	80	120	
Tl	205	1	nogas	111.779	0.998	3178004	2.17	100	111.8	80	120	
Pb	208	1	nogas	128.784	2.245	4352257	2.24	100	128.8	80	120	ICSB Main CR1 Failed
U	238	1	nogas	118.027	4.207	4388444	1.31	100	118.0	80	120	
[Pb]	206	1	nogas	107.947	2.651	1065427	0.28	100	107.9	80	120	
[Pb]	207	1	nogas	108.123	3.528	936320	1.70	100	108.1	80	120	
Na	23	2	He	107556.460	2.866	276870823	1.52	100	107556.5	80	120	ICSB Main CR1 Failed
Mg	24	2	He	105934.320	3.212	151011281	1.81	100	105934.3	80	120	ICSB Main CR1 Failed
Al	27	2	He	96845.080	3.521	73974234	0.11	100	96845.1	80	120	ICSB Main CR1 Failed
K	39	2	He	162634.640	0.717	165198831	0.72	100	162634.6	80	120	ICSB Main CR1 Failed
Ca	43	2	He	108859.795	3.655	452412	0.94	100	108859.8	80	120	ICSB Main CR1 Failed
Ca	44	2	He	109968.589	3.684	7758291	0.35	100	109968.6	80	120	
V	51	2	He	103.980	4.873	1118697	1.78	100	104.0	80	120	
Cr	52	2	He	102.369	3.374	1201571	1.45	100	102.4	80	120	
Mn	55	2	He	106.172	4.062	849062	0.69	100	106.2	80	120	
Fe	56	2	He	107378.529	2.803	1070914091	1.00	100	107378.5	80	120	ICSB Main CR1 Failed
Co	59	2	He	106.381	3.623	1696243	1.93	100	106.4	80	120	
Ni	60	2	He	102.117	3.488	404239	0.34	100	102.1	80	120	
Cu	63	2	He	98.695	3.527	1044978	0.41	100	98.7	80	120	
Zn	66	2	He	104.405	2.447	260386	1.04	100	104.4	80	120	
As	75	2	He	103.151	4.759	254646	1.85	100	103.2	80	120	
Se	78	2	He	108.631	2.822	21381	0.66	100	108.6	80	120	
B	11	1	nogas	568.533	2.873	4017255	1.03	100	568.5	80	120	
Si	28	1	nogas	5749.608	0.625	12054654	0.60	100	5749.6	80	120	ICSB Main CR1 Failed
Ca	43	1	nogas	116929.431	1.325	6940201	1.28	100	116929.4	80	120	ICSB Main CR1 Failed
Ca	44	1	nogas	113965.743	1.282	110739242	1.20	100	113965.7	80	120	ICSB Main CR1 Failed
Fe	56	1	nogas	112149.366	3.627	4498512367	3.70	100	112149.4	80	120	
Se	77	1	nogas	127.761	3.576	84452	2.27	100	127.8	80	120	
Se	82	1	nogas	112.854	3.991	54977	4.03	100	112.9	80	120	
Mo	95	1	nogas	2039.296	1.582	20410275	1.51	100	2039.3	80	120	ICSB Main CR1 Failed
Sn	118	1	nogas	113.555	1.573	1549369	2.34	100	113.6	80	120	
Ba	137	1	nogas	109.556	0.867	704604	1.15	100	109.6	80	120	
Sb	121	2	He	102.543	4.298	880744	0.97	100	102.5	80	120	
La	139	1	nogas	176.676	1.288	1123	0.51	100	176.7	80	120	ICSB Main CR1 Failed

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	1508674	1.79	1314390	114.78	70	125	
Ge	72	1	nogas	5208706	0.07	3749087	138.93	70	125	ISTD Failed
In	115	1	nogas	4433276	0.94	3430303	129.24	70	125	ISTD Failed
Bi	209	1	nogas	2994201	2.88	2610544	114.70	70	125	
Ge	72	2	He	1322183	3.44	932298	141.82	70	125	ISTD Failed

Tune Report

Batch Folder C:\Agilent\ICPMH\1\DATA\121118A.b
Report Comment
Instrument Name G3281A JP11080910

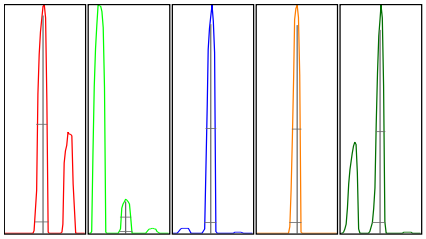
[nogas]

Mass	Range	Count (Actual)	Response (Actual) [cps/ug/l]	Response (Required) [cps/ug/l]	Response (Flag)	Resp Ratio (Actual)	Resp Ratio (Required)	Resp Ratio (Flag)
9		19578				NaN	-	
24		43065				NaN	-	
59		54948				NaN	-	
115		45908				NaN	-	
208		32616				NaN	-	

Mass	RSD% (Actual)	RSD% (Required)	RSD% (Flag)	Background (Actual)	Background (Required)	Background (Flag)
9	0.78	5.00				
24	0.52	5.00				
59	0.45	5.00				
115	1.67	5.00				
208	0.75	5.00				

Mass	Replicate 1 Count	Replicate 2 Count	Replicate 3 Count	Replicate 4 Count	Replicate 5 Count
9	19553	19550	19431	19836	19520
24	43130	43014	43130	42723	43327
59	54794	55126	55295	54783	54741
115	44983	45614	45900	45953	47090
208	32504	32837	32684	32808	32246

Integration Time [sec] 0.1



Mass	Peak Height	Axis (Actual)	Axis (Required)	Axis (Flag)	W-50%	W-X% (Actual)	W-X% (Required)	W-X% (Flag)
9	5376.50	8.95	8.9 - 9.1		0.37	0.486	0.750	
24	11800.93	23.90	23.9 - 24.1		0.37	0.476	0.750	
59	16125.17	58.95	58.9 - 59.1		0.34	0.442	0.750	
115	14231.45	115.05	114.9 - 115.1		0.31	0.441	0.750	
208	9705.31	208.00	207.9 - 208.1		0.32	0.507	0.750	

X = 5 **Integration Time [sec]** 0.1 **Acquisition Time [sec]** 168.5 **Y Axis** Linear

Tune Parameters

Plasma Paramters

RF Power	1600 W	Carrier Gas	0.40 L/min	S/C Temp	2 ℃
RF Matching	1.70 V	Option Gas	0.0 %	Makeup/Dilution Gas	0.40 L/min
Smpl Depth	8.0 mm	Nebulizer Pump	0.10 rps	Gas Switch	Dilution Gas

Lenses Parameters

Extract 1	0.0 V	Omega Lens	8.0 V	Deflect	15.0 V
Extract 2	-200.0 V	Cell Entrance	-30 V	Plate Bias	-50 V
Omega Bias	-100 V	Cell Exit	-58 V		

Cell Parameters

OctP Bias	-8.0 V	He Flow	0.0 mL/min	Energy Discrimination	5.0 V
OctP RF	190 V	H2 Flow	0.0 mL/min		
Use Gas	true	3rd Gas Flow	0 %		

[He]

Mass	Range	Count (Actual)	Response (Actual) [cps/ug/l]	Response (Required) [cps/ug/l]	Response (Flag)	Resp Ratio (Actual)	Resp Ratio (Required)	Resp Ratio (Flag)
9		398				NaN	-	
24		3012				NaN	-	
59		25021				NaN	-	

Tune Report

Mass	RSD% (Actual)	RSD% (Required)	RSD% (Flag)	Background (Actual)	Background (Required)	Background (Flag)
9	4.55	5.00				
24	2.33	5.00				
59	0.61	5.00				

Mass	Replicate 1 Count	Replicate 2 Count	Replicate 3 Count	Replicate 4 Count	Replicate 5 Count
9	387	382	385	414	421
24	3107	3011	2954	3053	2936
59	24821	25129	25210	24977	24965

Integration Time [sec] 0.1

Mass	Peak Height	Axis (Actual)	Axis (Required)	Axis (Flag)	W-50%	W-X% (Actual)	W-X% (Required)	W-X% (Flag)
9	105.72	8.90	8.9 - 9.1		0.38	0.491	0.750	
24	833.48	23.95	23.9 - 24.1		0.37	0.466	0.750	
59	7603.20	58.95	58.9 - 59.1		0.33	0.438	0.750	

X = 5 **Integration Time [sec]** 0.1 **Acquisition Time [sec]** 100.6 **Y Axis** Linear

Tune Parameters

Plasma Paramters

RF Power	1600 W	Carrier Gas	0.40 L/min	S/C Temp	2 ℃
RF Matching	1.70 V	Option Gas	0.0 %	Makeup/Dilution Gas	0.40 L/min
Smpl Depth	8.0 mm	Nebulizer Pump	0.10 rps	Gas Switch	Dilution Gas

Lenses Parameters

Extract 1	0.0 V	Omega Lens	8.0 V	Deflect	2.0 V
Extract 2	-200.0 V	Cell Entrance	-32 V	Plate Bias	-60 V
Omega Bias	-100 V	Cell Exit	-70 V		

Cell Parameters

OctP Bias	-18.0 V	He Flow	4.0 mL/min	Energy Discrimination	5.0 V
OctP RF	190 V	H2 Flow	0.0 mL/min		
Use Gas	true	3rd Gas Flow	0 %		

HS18111440 Wet Chem Raw Data

ALS WO# HS18111440

Report Date: 12/11/2018 : 7:40 PM

PC-TitratION PLUS
Calibration Report

HS18111440 JC 1/28/2019
~~HS1812440~~

Calibration Record # 2057

Calibration Settings

Calibration ID	PH CAL 4-7-10	Date	12/11/2018
Channel	1	Time	7:40 PM
Probe Type	pH	Temperature	295.57 K 22.42 C
Probe ID	PH ELECTRODE	Analysis Type	Single Line Fit

Calibration Results

Slope	-57.615	CorrCoeff	0.9997
Intercept	3.460	Equation:	Y = (-57.615) X + (3.460)

Calibration Validity True Operator

	Result	Minimum	Maximum
Slope	-57.615	-65.00	-53.00
Intercept	3.460	-100.00	100.00
Correlation Coefficient	0.9997	0.99	1.00

Note: "True" means the calibration was within the specified ranges
"False" means the calibration was NOT within the specified ranges

A: 329027
B: 329028
C: 329029

Calibration Data	Standard	Reading
	4.00	178.58
	7.00	-1.09
	10.00	-167.11

PC-TitratION PLUS by Man-Tech Associates, Inc.

CALRPRTLive1.SRW
Copyright Hinterland Software Ltd.

Report Date: 12/12/2018 : 6:04 AM

PC-TitratION PLUS
Water Analysis Report

Run Number 3433 **Order Number** 20181211-2

SampleID	RunDate	RunTime	Temp	cond (uS)	pH	palk-ppm	talk-ppm	bcarb-ppm	carb-ppm	hydr-ppm	mLs @ 8.3	mLs @ 4.5	mLs @ 4.2
ICV-PH	12/11/2018	7:44 PM	22.37	-1.00	6.04	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00
TAP WATER	12/11/2018	7:51 PM	22.46	-1.00	7.79	.00	362.54	362.54	.00	.00	.00	3.45	3.45
WBLKW1-181211	12/11/2018	7:56 PM	22.42	-1.00	5.74	.00	.60	.60	.00	.00	.00	.02	.02
LCS1-181211	12/11/2018	8:04 PM	22.49	-1.00	10.93	552.72	1,070.04	.00	1,034.64	35.41	5.26	10.19	10.19
LCSD1-181211	12/11/2018	8:13 PM	22.46	-1.00	10.93	552.20	1,071.71	.00	1,039.01	32.70	5.26	10.21	10.21
HS18111440-01	12/11/2018	8:19 PM	22.52	-1.00	6.79	.00	118.23	118.23	.00	.00	.00	1.13	1.13
HS18111440-01DUP	12/11/2018	8:25 PM	22.35	-1.00	6.81	.00	114.72	114.72	.00	.00	.00	1.09	1.09
HS18111440-02	12/11/2018	8:31 PM	22.31	-1.00	6.69	.00	312.35	312.35	.00	.00	.00	2.97	2.97
HS18111440-03	12/11/2018	8:37 PM	22.31	-1.00	6.95	.00	313.08	313.08	.00	.00	.00	2.98	2.98
HS18111440-04	12/11/2018	8:43 PM	22.31	-1.00	6.61	.00	239.40	239.40	.00	.00	.00	2.28	2.28
HS18111440-05	12/11/2018	8:49 PM	22.43	-1.00	6.93	.00	434.87	434.87	.00	.00	.00	4.14	4.14
CCV-PH	12/11/2018	8:51 PM	22.54	-1.00	7.04	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00
CCV-ALK	12/11/2018	9:00 PM	22.32	-1.00	10.90	542.04	1,055.06	.00	1,026.04	29.02	5.16	10.05	10.05
DI RINSE	12/11/2018	9:05 PM	22.63	-1.00	5.91	.00	.34	.34	.00	.00	.00	.02	.02
HS18111491-10DF2	12/11/2018	9:14 PM	22.55	-1.00	7.53	.00	1,037.44	1,037.44	.00	.00	.00	9.88	9.88
HS18111491-11DF2	12/11/2018	9:23 PM	22.81	-1.00	7.84	.00	1,174.83	1,174.83	.00	.00	.00	11.19	11.19
HS18111491-12DF2	12/11/2018	9:31 PM	22.78	-1.00	7.35	.00	642.43	642.43	.00	.00	.00	6.12	6.12
HS18111491-13DF2	12/11/2018	9:38 PM	22.83	-1.00	7.40	.00	652.82	652.82	.00	.00	.00	6.22	6.22
HS18111491-14DF2	12/11/2018	9:44 PM	22.89	-1.00	7.83	.00	238.13	238.13	.00	.00	.00	2.27	2.27
HS18111491-15	12/11/2018	9:51 PM	23.06	-1.00	7.47	.00	602.01	602.01	.00	.00	.00	5.73	5.73
HS18111528-01	12/11/2018	9:58 PM	23.19	-1.00	7.92	.00	437.22	437.22	.00	.00	.00	4.16	4.16
HS18111497-01	12/11/2018	10:05 PM	22.93	-1.00	7.89	.00	88.56	88.56	.00	.00	.00	.84	.84
HS18111497-02	12/11/2018	10:12 PM	22.96	-1.00	7.62	.00	356.67	356.67	.00	.00	.00	3.40	3.40
CCV-PH	12/11/2018	10:14 PM	22.92	-1.00	7.04	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00
CCV-ALK	12/11/2018	10:22 PM	22.63	-1.00	10.87	534.42	1,049.29	.00	1,029.74	19.55	5.09	9.99	9.99
DI RINSE	12/11/2018	10:27 PM	22.95	-1.00	6.02	.00	.61	.61	.00	.00	.00	.02	.02
HS18111497-03	12/11/2018	10:33 PM	22.93	-1.00	7.46	.00	265.42	265.42	.00	.00	.00	2.53	2.53

Copyright Hinterland Software Ltd.

Run Number 3433 **Order Number** 20181211-2

SampleID	RunDate	RunTime	Temp	cond (uS)	pH	palk-ppm	talk-ppm	bcarb-ppm	carb-ppm	hydr-ppm	mLs @ 8.3	mLs @ 4.5	mLs @ 4.2
HS18120114-06	12/11/2018	10:39 PM	23.09	-1.00	6.69	.00	273.00	273.00	.00	.00	.00	2.60	2.60
HS18120114-07	12/11/2018	10:45 PM	23.25	-1.00	6.72	.00	417.00	417.00	.00	.00	.00	3.97	3.97
HS18120113-01	12/11/2018	10:53 PM	23.17	-1.00	6.98	.00	8.43	8.43	.00	.00	.00	.10	.10
HS18120545-01	12/11/2018	11:01 PM	23.14	-1.00	8 20	.00	488.40	488.40	.00	.00	.00	4.65	4.65
HS18120545-02	12/11/2018	11:07 PM	22.95	-1.00	8.75	12.37	216.24	191.50	24.75	.00	.12	2.06	2.06
WBLKW2-181211	12/11/2018	11:12 PM	22.99	-1.00	5.93	.00	.45	.45	.00	.00	.00	.02	.02
WLCS2-181211	12/11/2018	11:21 PM	22.84	-1.00	10.85	536.34	1,060.05	.00	1,047.40	12.64	5.11	10.10	10.10
WLCSD2-181211	12/11/2018	11:30 PM	23.07	-1.00	10.84	536.00	1,061.71	.00	1,051.42	10.29	5.10	10.11	10.11
CCV-PH	12/11/2018	11:32 PM	23.11	-1.00	7.04	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00
CCV-ALK	12/11/2018	11:41 PM	23.03	-1.00	10.83	537.82	1,065.50	.00	1,055.36	10.14	5.12	10.15	10.15
DI RINSE	12/11/2018	11:46 PM	23.43	-1.00	5.98	.00	.49	.49	.00	.00	.00	.02	.02
HS18120166-01	12/11/2018	11:53 PM	23.23	-1.00	7.78	.00	278.58	278.58	.00	.00	.00	2.65	2.65
HS18120166-01DUP	12/11/2018	11:59 PM	23.20	-1.00	7.80	.00	282.09	282.09	.00	.00	.00	2.69	2.69
HS18120166-02	12/12/2018	12:06 AM	23.15	-1.00	7.24	.00	322.38	322.38	.00	.00	.00	3.07	3.07
HS18120166-03	12/12/2018	12:12 AM	23.17	-1.00	7.42	.00	311.75	311.75	.00	.00	.00	2.97	2.97
HS18120166-04	12/12/2018	12:19 AM	23.22	-1.00	7.60	.00	432.55	432.55	.00	.00	.00	4.12	4.12
HS18120166-05	12/12/2018	12:26 AM	23.20	-1.00	7.66	.00	420.24	420.24	.00	.00	.00	4.00	4.00
HS18120166-06	12/12/2018	12:33 AM	23.35	-1.00	7.45	.00	524.74	524.74	.00	.00	.00	5.00	5.00
HS18120166-07	12/12/2018	12:39 AM	23.57	-1.00	6.93	.00	183.61	183.61	.00	.00	.00	1.75	1.75
HS18120166-08	12/12/2018	12:46 AM	23.43	-1.00	7.72	.00	552.16	552.16	.00	.00	.00	5.26	5.26
CCV-PH	12/12/2018	12:48 AM	23.25	-1.00	7.04	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00
CCV-ALK	12/12/2018	12:57 AM	22.92	-1.00	10.80	524.09	1,045.81	.00	1,043.43	2.38	4.99	9.96	9.96
DI RINSE	12/12/2018	1:02 AM	23.28	-1.00	5.98	.00	.44	.44	.00	.00	.00	.02	.02
HS18120166-09	12/12/2018	1:08 AM	23.20	-1.00	7.76	.00	286.26	286.26	.00	.00	.00	2.73	2.73
HS18120166-10	12/12/2018	1:14 AM	23.31	-1.00	6.59	.00	264.45	264.45	.00	.00	.00	2.52	2.52
HS18120166-11	12/12/2018	1:20 AM	23.41	-1.00	7.55	.00	343.27	343.27	.00	.00	.00	3.27	3.27
HS18120166-12	12/12/2018	1:26 AM	23.52	-1.00	7.15	.00	164.38	164.38	.00	.00	.00	1.57	1.57
HS18120166-13	12/12/2018	1:33 AM	23.56	-1.00	7.50	.00	175.88	175.88	.00	.00	.00	1.68	1.68
HS18120166-14	12/12/2018	1:39 AM	23.47	-1.00	7.41	.00	179.89	179.89	.00	.00	.00	1.71	1.71
HS18120166-15	12/12/2018	1:45 AM	23.39	-1.00	7.42	.00	260.69	260.69	.00	.00	.00	2.48	2.48

Copyright Hinterland Software Ltd.

Run Number 3433 **Order Number** 20181211-2

SampleID	RunDate	RunTime	Temp	cond (uS)	pH	palk-ppm	talk-ppm	bcarb-ppm	carb-ppm	hydr-ppm	mLs @ 8.3	mLs @ 4.5	mLs @ 4.2
HS18120166-16	12/12/2018	1:52 AM	23.36	-1.00	7.37	.00	292.13	292.13	.00	.00	.00	2.78	2.78
HS18120166-17	12/12/2018	1:58 AM	23.23	-1.00	7.13	.00	262.71	262.71	.00	.00	.00	2.50	2.50
CCV-PH	12/12/2018	2:00 AM	23.15	-1.00	7.04	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00
CCV-ALK	12/12/2018	2:09 AM	22.99	-1.00	10.79	528.43	1,057.43	.58	1,056.85	.00	5.03	10.07	10.07
DI RINSE	12/12/2018	2:14 AM	23.56	-1.00	5.99	.00	.41	.41	.00	.00	.00	.02	.02
HS18120166-18	12/12/2018	2:20 AM	23.76	-1.00	7.34	.00	268.11	268.11	.00	.00	.00	2.55	2.55
HS18120166-19	12/12/2018	2:27 AM	23.64	-1.00	7.58	.00	304.07	304.07	.00	.00	.00	2.90	2.90
HS18120166-20	12/12/2018	2:33 AM	23.41	-1.00	7.15	.00	279.20	279.20	.00	.00	.00	2.66	2.66
WBLKW3-180714	12/12/2018	2:38 AM	23.39	-1.00	5.95	.00	.52	.52	.00	.00	.00	.02	.02
LCS3-180714	12/12/2018	2:48 AM	23.30	-1.00	10.77	523.28	1,051.59	5.02	1,046.57	.00	4.98	10.02	10.02
LCSD3-180714	12/12/2018	2:56 AM	23.33	-1.00	10.78	523.33	1,049.15	2.50	1,046.65	.00	4.98	9.99	9.99
HS18120166-21	12/12/2018	3:02 AM	23.52	-1.00	7.55	.00	376.78	376.78	.00	.00	.00	3.59	3.59
HS18120166-21DUP	12/12/2018	3:09 AM	23.57	-1.00	7.55	.00	374.64	374.64	.00	.00	.00	3.57	3.57
HS18120166-22	12/12/2018	3:15 AM	23.57	-1.00	7.64	.00	306.07	306.07	.00	.00	.00	2.91	2.91
CCV-PH	12/12/2018	3:18 AM	23.67	-1.00	7.04	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00
CCV-ALK	12/12/2018	3:27 AM	23.39	-1.00	10.75	517.52	1,044.19	9.15	1,035.04	.00	4.93	9.94	9.94
DI RINSE	12/12/2018	3:32 AM	23.54	-1.00	6.02	.00	.53	.53	.00	.00	.00	.02	.02
HS18120166-23	12/12/2018	3:38 AM	23.44	-1.00	7.55	.00	366.43	366.43	.00	.00	.00	3.49	3.49
HS18120166-24	12/12/2018	3:44 AM	23.52	-1.00	7.56	.00	152.56	152.56	.00	.00	.00	1.45	1.45
HS18120166-25	12/12/2018	3:51 AM	23.47	-1.00	7.66	.00	320.35	320.35	.00	.00	.00	3.05	3.05
HS18120166-26	12/12/2018	3:57 AM	23.56	-1.00	7.45	.00	206.04	206.04	.00	.00	.00	1.96	1.96
HS18120166-27	12/12/2018	4:04 AM	23.56	-1.00	7.38	.00	259.22	259.22	.00	.00	.00	2.47	2.47
HS18120166-28	12/12/2018	4:10 AM	23.89	-1.00	7.31	.00	327.16	327.16	.00	.00	.00	3.12	3.12
HS18120166-29	12/12/2018	4:16 AM	23.75	-1.00	7.66	.00	212.43	212.43	.00	.00	.00	2.02	2.02
HS18120166-30	12/12/2018	4:23 AM	23.70	-1.00	7.78	.00	149.71	149.71	.00	.00	.00	1.43	1.43
HS18120166-31	12/12/2018	4:30 AM	23.60	-1.00	7.73	.00	156.64	156.64	.00	.00	.00	1.49	1.49
CCV-PH	12/12/2018	4:32 AM	23.49	-1.00	7.04	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00
CCV-ALK	12/12/2018	4:40 AM	23.33	-1.00	10.73	516.68	1,050.46	17.10	1,033.36	.00	4.92	10.00	10.00
DI RINSE	12/12/2018	4:45 AM	23.59	-1.00	6.00	.00	.56	.56	.00	.00	.00	.02	.02
HS18120166-32	12/12/2018	4:52 AM	23.62	-1.00	7.86	.00	309.51	309.51	.00	.00	.00	2.95	2.95

PC-TitratION PLUS by Man-Tech Associates, Inc.

GENERAL RESULTS REPORT.SRW

Copyright Hinterland Software Ltd.

Run Number 3433 **Order Number** 20181211-2

SampleID	RunDate	RunTime	Temp	cond (uS)	pH	palk-ppm	talk-ppm	bcarb-ppm	carb-ppm	hydr-ppm	mLs @ 8.3	mLs @ 4.5	mLs @ 4.2
HS18120166-33	12/12/2018	4:59 AM	23.59	-1.00	7.85	.00	232.62	232.62	.00	.00	.00	2.22	2.22
HS18120166-39	12/12/2018	5:05 AM	23.83	-1.00	6.50	.00	425.07	425.07	.00	.00	.00	4.05	4.05
HS18120166-40	12/12/2018	5:12 AM	23.76	-1.00	7.79	.00	285.47	285.47	.00	.00	.00	2.72	2.72
HS18120166-41	12/12/2018	5:19 AM	23.73	-1.00	8.08	.00	186.69	186.69	.00	.00	.00	1.78	1.78
HS18120166-42	12/12/2018	5:25 AM	23.73	-1.00	8.00	.00	164.93	164.93	.00	.00	.00	1.57	1.57
HS18120166-43	12/12/2018	5:32 AM	23.59	-1.00	7.62	.00	601.51	601.51	.00	.00	.00	5.73	5.73
HS18111500-01	12/12/2018	5:39 AM	23.67	-1.00	8.29	.00	295.77	295.77	.00	.00	.00	2.82	2.82
HS18120490-01	12/12/2018	5:47 AM	23.62	-1.00	8.14	.00	92.47	92.47	.00	.00	.00	.88	.88
CCV-PH	12/12/2018	5:49 AM	23.65	-1.00	7.04	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00
CCV-ALK	12/12/2018	5:58 AM	23.80	-1.00	10.69	514.02	1,061.57	33.54	1,028.03	.00	4.90	10.11	10.11
DI RINSE	12/12/2018	6:02 AM	23.86	-1.00	6.00	.00	.51	.51	.00	.00	.00	.02	.02

PC-TitratION PLUS by Man-Tech Associates, Inc.

GENERAL RESULTS REPORT.SRW

Copyright Hinterland Software Ltd.

HS18111440

Reagent ID:	Prep. Date:		Date/Time:	12/5/18 18:00	Reported by:	JHD/
2970207704			Batch ID:		Reviewed by:	
2970207820					Log Book #:	
2970204614			LCS ID# :	2970206703 →	Prep. Date:	
308055203	10/31/18		MS ID# :	2970206703 →	Prep. Date:	

Calculated Iodine Normality => 0.02475 Iodine (N)

WO	WO	Sx Vol. (mL)	Iodine (mL)	Titrant used (mL)	Sod. Thio. (N)	Iodine (N)	Init. Conc.	Final Conc.
STD1	STD1	0	20	19.80	0.0250	0.02475		
STD2	STD2	0	20	19.80	0.0250	0.02475	0.0248	
STD3	STD3	0	20	19.80	0.0250	0.02475	Iodine (N)	(mg/L)
BLK	BLK	200	20	19.70	0.0250	0.0248		0.28
LCS	LCS	200	20	9.00	0.0250	0.0248		21.68
LCSD	LCSD	200	20	9.00	0.0250	0.0248		21.68
HS18111440-01	SAMP	200	20	19.30	0.0250	0.0248		1.08
HS18111440-01MS	MS	200	20	8.80	0.0250	0.0248		22.08
HS18111440-02	SAMP	200	20	18.30	0.0250	0.0248		3.08
HS18111440-03	SAMP	200	20	19.90	0.0250	0.0248		-0.12
HS18111440-04	SAMP	200	20	19.90	0.0250	0.0248		-0.12
HS18111440-05	SAMP	200	20	19.50	0.0250	0.0248		0.68
HS18111352-01	SAMP	200	20	18.00	0.0250	0.0248		3.68
					0.0250			
					0.0250			
					0.0250			
					0.0250			
					0.0250			
					0.0250			
					0.0250			
					0.0250			
					0.0250			
					0.0250			
					0.0250			
					0.0250			
					0.0250			

HS18111440

Prep Batch Report

Batch ID: 135291
Prep Code: P_TW_PR4500
Start Date: 06 Dec 2018 09:30 AM
End Date: 06 Dec 2018 12:30 PM
Technician: Maitri Desai

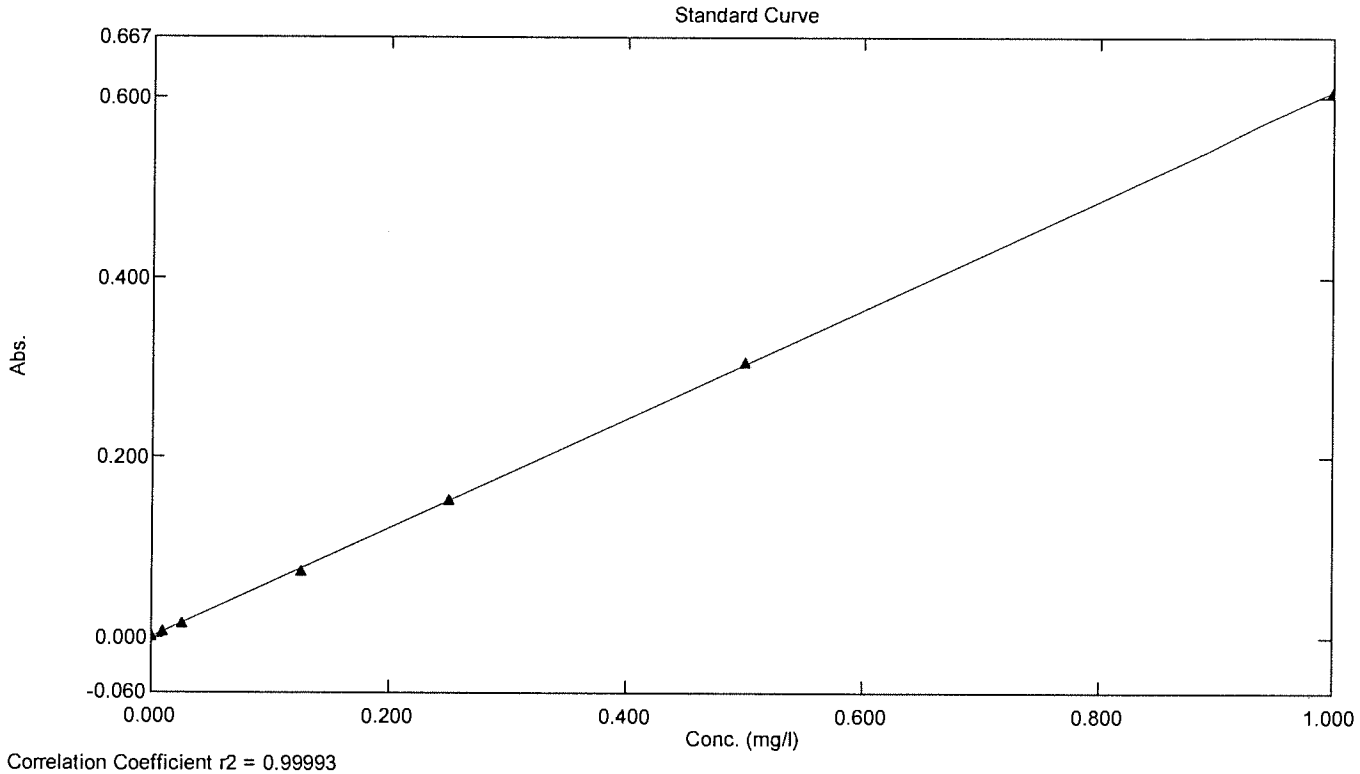
Init Sample Weight / Volume: 50
Final Sample Volume: 50
Original Factor: 1
Prep Unit Factor: 1
Prep Unit: mL

Sample ID	Fraction	Matrix	pH	Initial Weight / Volume	Final Volume	Prep Factor	Spike Factor	Comments
HS18111440-01	I	Groundwater		5	50	10	10	
HS18111440-01MS	A			5	50	10	10	
HS18111440-01MSD	A			5	50	10	10	
HS18120097-01	F	Water		50	50	1	1	
HS18120113-01	E	Water		50	50	1	1	
HS18120114-06	I	Groundwater		50	50	1	1	
HS18120114-07	I	Groundwater		50	50	1	1	
HS18120231-01	E	Water		50	50	1	1	
LCS-135291	A			50	50	1	1	
MBLK-135291	A			50	50	1	1	

Standard Table Report

01/09/2019 01:26:26 PM

File Name: C:\Program Files (x86)\Shimadzu\UVProbe\Data\T_PO4_UNKNOWN\2018P_TW\181206_P_TW_.pho



Correlation Coefficient r2 = 0.99993

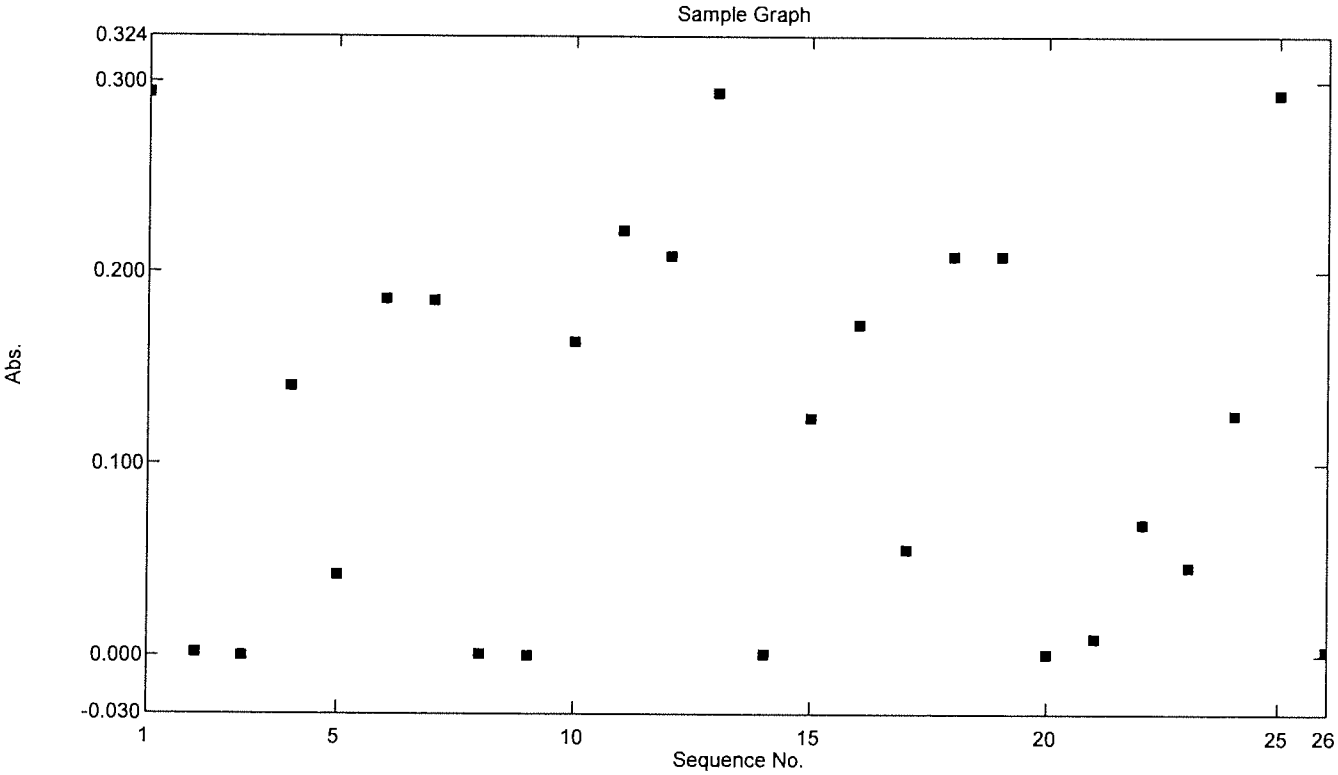
Standard Table

	Sample ID	Type	Ex	Conc	WL880.0	Wgt.Facto	Comments
1	STD1	Standard		0.000	0.001	1.000	
2	STD2	Standard		0.010	0.007	1.000	
3	STD3	Standard		0.025	0.016	1.000	
4	STD4	Standard		0.125	0.073	1.000	
5	STD5	Standard		0.250	0.153	1.000	
6	STD6	Standard		0.500	0.307	1.000	
7	STD7	Standard		1.000	0.606	1.000	
8							

Sample Table Report

01/09/2019 01:26:29 PM

File Name: C:\Program Files (x86)\Shimadzu\UVProbe\Data\T_PO4_UNKNOWN\2018P_TW\181206_P_TW_.pho



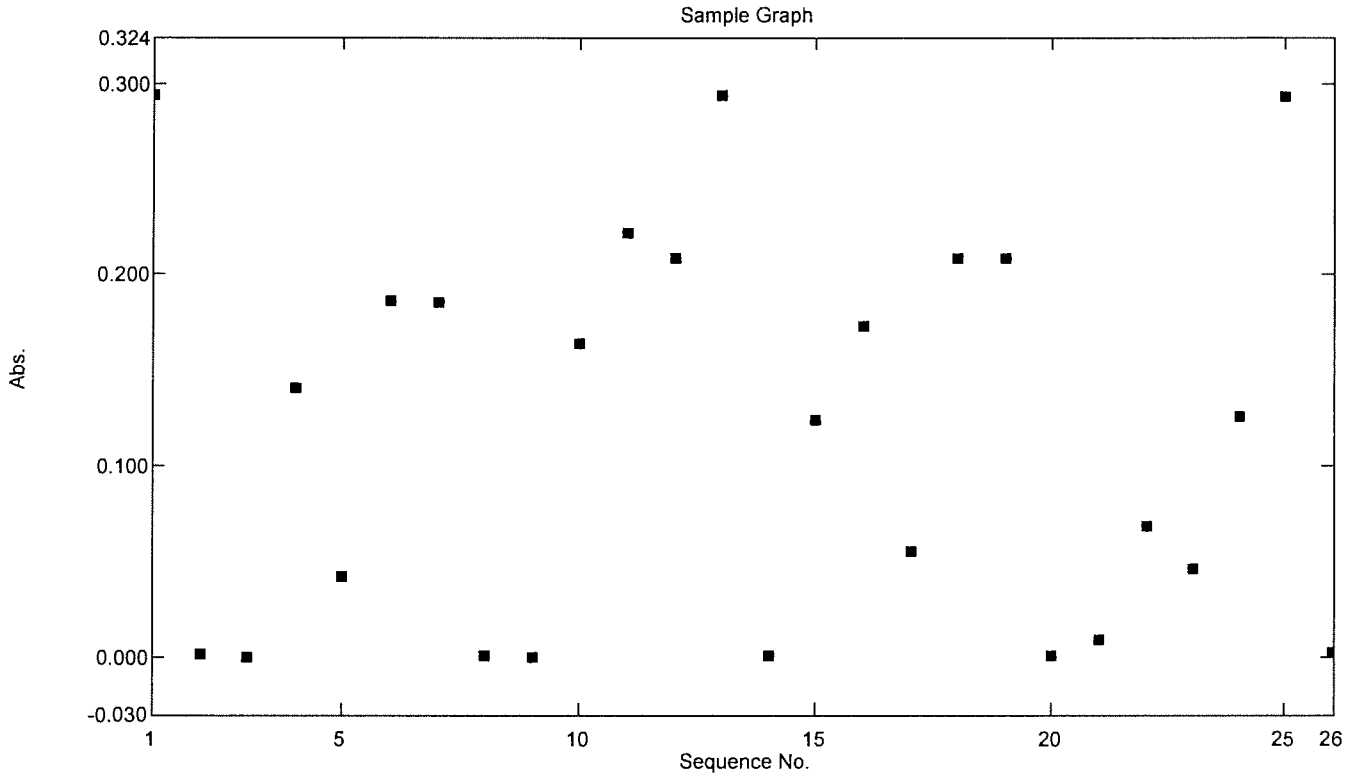
Sample Table

	Sample ID	Type	Ex	Conc	WL880.0	Comments
1	CCV	Unknown		0.484	0.294	
2	CCB	Unknown		0.002	0.002	
3	MBLK	Unknown		-0.001	0.000	
4	LCS	Unknown		0.230	0.141	
5	18111496.01	Unknown		0.069	0.042	
6	18111496.01MS	Unknown		0.306	0.186	
7	18111496.01MSD	Unknown		0.305	0.186	
8	18111496.03	Unknown		-0.000	0.001	
9	18120002.01	Unknown		-0.002	-0.000	
10	18120002.02	Unknown		0.269	0.164	DF:10X
11	18120002.03	Unknown		0.364	0.222	DF:10X
12	18120002.04	Unknown		0.343	0.209	DF:10X
13	CCV2	Unknown		0.483	0.294	
14	CCB3	Unknown		0.000	0.001	
15	18120112.01	Unknown		0.203	0.124	
16	18120112.02	Unknown		0.285	0.173	
17	18111440.01	Unknown		0.091	0.056	PF:10X
18	18111440.01MS	Unknown		0.343	0.209	PF:10X
19	18111440.01MSD	Unknown		0.342	0.208	PF:10X

Sample Table Report

01/09/2019 01:26:29 PM

File Name: C:\Program Files (x86)\Shimadzu\UVProbe\Data\T_PO4_UNKNOWN\2018P_TW\181206_P_TW_.pho



Sample Table

	Sample ID	Type	Ex	Conc	WL880.0	Comments
20	181200097.01	Unknown		0.000	0.001	
21	18120113.01	Unknown		0.014	0.009	
22	18120114.06	Unknown		0.112	0.069	
23	18120114.07	Unknown		0.075	0.046	
24	18120231.01	Unknown		0.207	0.126	
25	CCV3	Unknown		0.481	0.293	
26	CCB3.	Unknown		0.002	0.002	
27						

HS 18111440

Prep Batch Report

Batch ID: 135148
Prep Code: P_TW_PR4500
Start Date: 03 Dec 2018 10:00 AM
End Date: 03 Dec 2018 12:30 PM
Technician: Maitri Desai

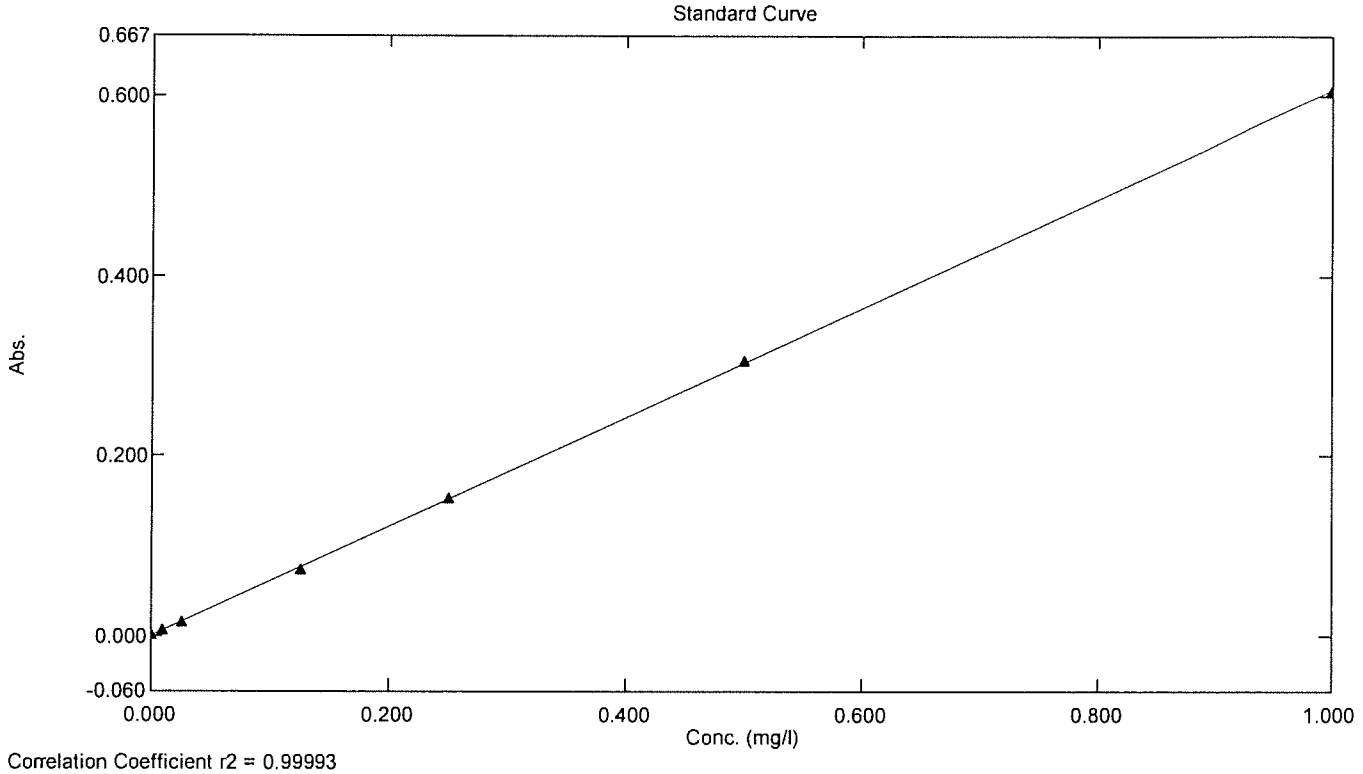
Init Sample Weight / Volume: 50
Final Sample Volume: 50
Original Factor: 1
Prep Unit Factor: 1
Prep Unit: mL

Sample ID	Fraction	Matrix	pH	Initial Weight / Volume	Final Volume	Prep Factor	Spike Factor	Comments
HS18111307-01	E	Water		50	50	1	1	
HS18111357-01	E	Water		50	50	1	1	
HS18111407-01	B	Wastewater		50	50	1	1	
HS18111426-01	F	Water		50	50	1	1	
HS18111426-02	F	Water		50	50	1	1	
HS18111426-03	F	Water		50	50	1	1	
HS18111426-03MS	A			50	50	1	1	
HS18111426-03MSD	A			50	50	1	1	
HS18111432-01	G	Water		50	50	1	1	
HS18111440-02	I	Groundwater		50	50	1	1	
HS18111440-03	I	Groundwater		50	50	1	1	
HS18111440-04	I	Groundwater		50	50	1	1	
HS18111440-05	I	Groundwater		50	50	1	1	
HS18111497-01	I	Groundwater		50	50	1	1	
HS18111497-02	I	Groundwater		50	50	1	1	
HS18111497-03	I	Groundwater		50	50	1	1	
HS18111504-01	A	Wastewater		50	50	1	1	
HS18111504-02	A	Wastewater		50	50	1	1	
HS18111517-01	H	Water		1	50	50	50	
HS18120006-01	B	Aqueous		50	50	1	1	
LCS-135148	A			50	50	1	1	
LCSD-135148	A			50	50	1	1	
MBLK-135148	A			50	50	1	1	

Standard Table Report

01/09/2019 01:26:03 PM

File Name: C:\Program Files (x86)\Shimadzu\UVProbe\Data\T_PO4_UNKNOWN\2018P_TW\181203_P_TW_.pho



Correlation Coefficient r2 = 0.99993

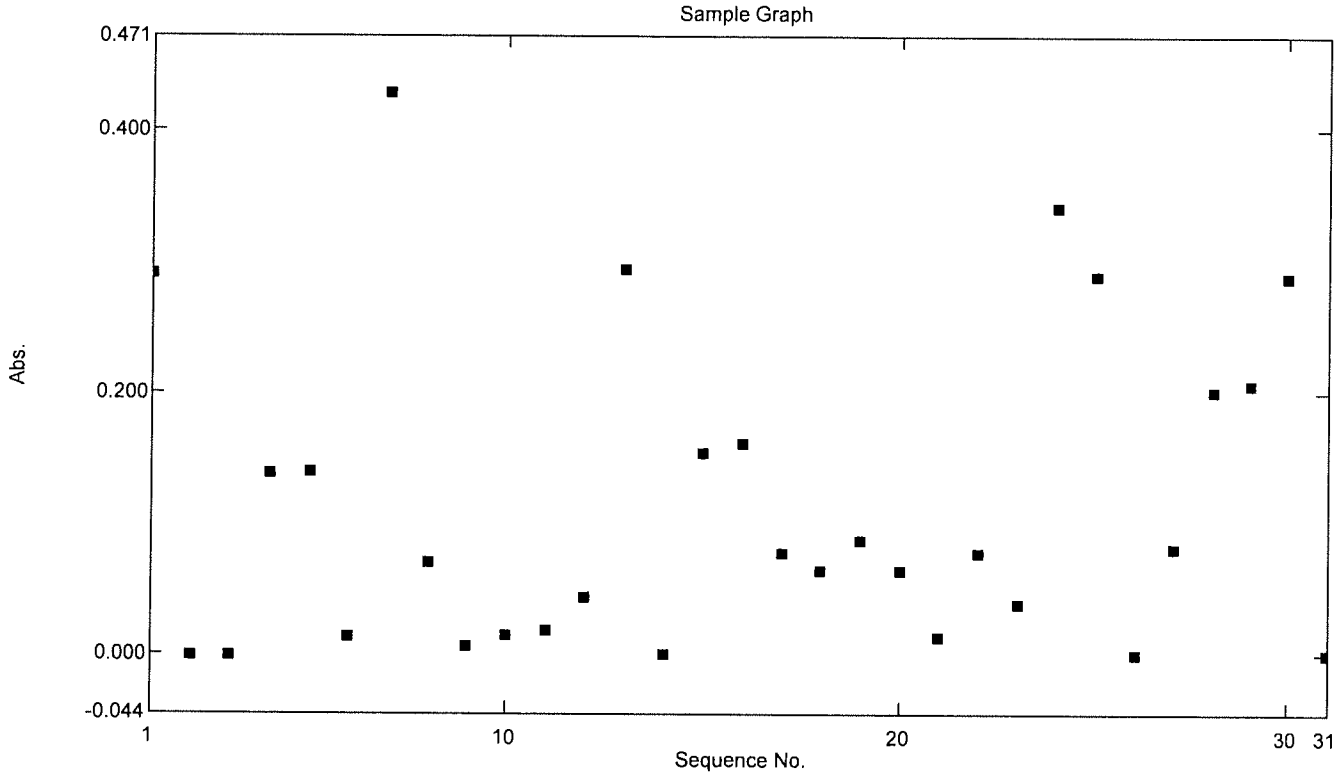
Standard Table

	Sample ID	Type	Ex	Conc	WL880.0	Wgt.Facto	Comments
1	STD1	Standard		0.000	0.001	1.000	
2	STD2	Standard		0.010	0.007	1.000	
3	STD3	Standard		0.025	0.016	1.000	
4	STD4	Standard		0.125	0.073	1.000	
5	STD5	Standard		0.250	0.153	1.000	
6	STD6	Standard		0.500	0.307	1.000	
7	STD7	Standard		1.000	0.606	1.000	
8							

Sample Table Report

01/09/2019 01:27:15 PM

File Name: C:\Program Files (x86)\Shimadzu\UVProbe\Data\T_PO4_UNKNOWN\2018P_TW\181203_P_TW_.pho



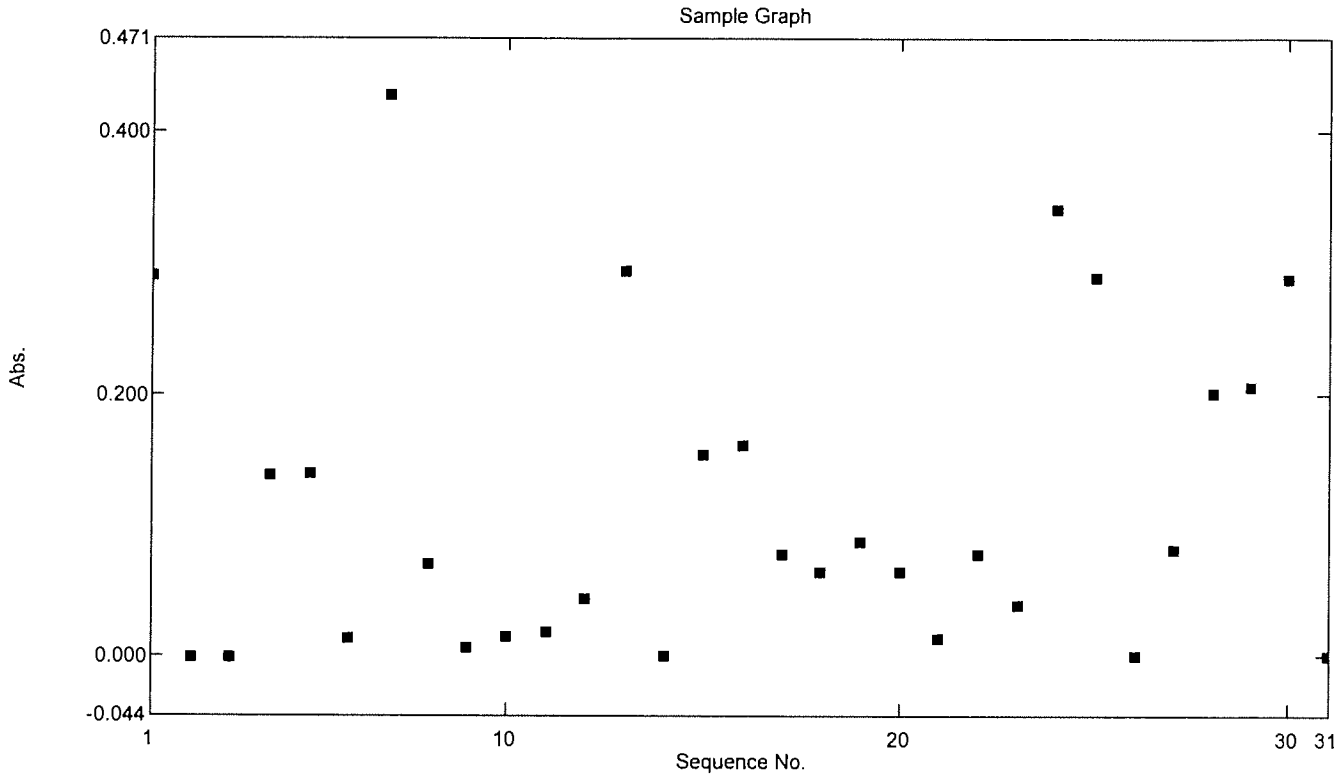
Sample Table

	Sample ID	Type	Ex	Conc	WL880.0	Comments
1	CCV	Unknown		0.476	0.290	
2	CCB	Unknown		-0.003	-0.001	
3	MBLK	Unknown		-0.002	-0.000	
4	LCS	Unknown		0.227	0.138	
5	LCSD	Unknown		0.228	0.139	
6	18111307.01	Unknown		0.021	0.014	
7	18111357.01	Unknown		0.704	0.428	
8	18111407.01	Unknown		0.114	0.070	
9	18111426.01	Unknown		0.009	0.006	
10	18111426.02	Unknown		0.023	0.015	
11	18111426.03	Unknown		0.029	0.018	
12	18111432.01	Unknown		0.070	0.043	
13	CCV2	Unknown		0.483	0.294	
14	CCB2	Unknown		-0.001	0.000	
15	18111426.03MS	Unknown		0.252	0.154	
16	18111426.03MSD	Unknown		0.263	0.160	
17	18111440.02	Unknown		0.128	0.078	
18	18111440.03	Unknown		0.104	0.064	
19	18111440.04	Unknown		0.142	0.087	

Sample Table Report

01/09/2019 01:27:15 PM

File Name: C:\Program Files (x86)\Shimadzu\UVProbe\Data\T_PO4_UNKNOWN\2018P_TW\181203_P_TW_.pho



Sample Table

	Sample ID	Type	Ex	Conc	WL880.0	Comments
20	18111440.05	Unknown		0.104	0.064	
21	18111497.01	Unknown		0.020	0.013	
22	18111497.02	Unknown		0.126	0.077	
23	18111497.03	Unknown		0.064	0.040	
24	18111504.01	Unknown		0.560	0.341	DF:10X
25	CCV3	Unknown		0.474	0.288	
26	CCB3	Unknown		-0.000	0.001	
27	18111504.02	Unknown		0.133	0.081	
28	18111517.01	Unknown		0.330	0.201	PF:50X
29	18120006.01	Unknown		0.338	0.206	
30	CCV4	Unknown		0.472	0.287	
31	CCB4	Unknown		-0.001	0.001	
32						

Sequence: 112918 HS18111440
Operator: alshs.nouser

Printed: 1/16/2019 5:11:51 PM

Title: Temporary sequence for manual data acquisition
Datasource: HP0307B_local
Location: ICS3000_2\2_Data\02-2018
Timebase: ICS3000_2
#Samples: 134

Created: 11/30/2018 2:30:38 PM by alshs.nouser
(Modified, not saved)

No.	Name	Comment	Pos.	Type	Dil. Factor	Program
1	STD1	297.020.7208	91	Standard	1.0000	anions3
2	STD2		92	Standard	1.0000	anions3
3	STD3		93	Standard	1.0000	anions3
4	STD4		94	Standard	1.0000	anions3
5	STD5		95	Standard	1.0000	anions3
6	STD6		96	Standard	1.0000	anions3
7	ICV		97	Unknown	1.0000	anions3
8	ICB		98	Unknown	1.0000	anions3
9	CCV1		3	Unknown	1.0000	anions3
10	CCB		4	Unknown	1.0000	anions3
11	WBLKW1-112918		18	Unknown	1.0000	anions3
12	WLCSW1-112918		19	Unknown	1.0000	anions3
13	WLCSDW1-112918		20	Unknown	1.0000	anions3
14	HS18111426-01		21	Unknown	1.0000	anions3
15	HS18111426-01DF20		22	Unknown	20.0000	anions3
16	HS18111426-02		23	Unknown	1.0000	anions3
17	HS18111426-02DF20		24	Unknown	20.0000	anions3
18	HS18111426-03		25	Unknown	1.0000	anions3
19	HS18111426-03MS		26	Unknown	1.0000	anions3
20	HS18111426-03MSD		27	Unknown	1.0000	anions3
21	CCV		1	Unknown	1.0000	anions3
22	CCB		2	Unknown	1.0000	anions3
23	HS18111426-03DF20		28	Unknown	20.0000	anions3
24	HS18111428-01		29	Unknown	1.0000	anions3
25	HS18111428-01DF10		30	Unknown	10.0000	anions3
26	HS18111428-02		31	Unknown	1.0000	anions3
27	HS18111428-02DF10		32	Unknown	10.0000	anions3
28	HS18111428-03DF2		33	Unknown	2.0000	anions3
29	HS18111428-03DF20		34	Unknown	20.0000	anions3
30	HS18111428-03DF200		35	Unknown	200.0000	anions3
31	HS18111160-01DF200		50	Unknown	200.0000	anions3
32	HS18110696-11DF500		48	Unknown	500.0000	anions3
33	CCV1		3	Unknown	1.0000	anions3
34	CCB		4	Unknown	1.0000	anions3

Chromeleon © Dionex Corporation, Version 6.80 SR13 Build 3967 (218758)

Sequence: 112918
Operator: alshs.nouser

Printed: 1/16/2019 5:11:51 PM

Title: Temporary sequence for manual data acquisition
Datasource: HP0307B_local
Location: ICS3000_2\2_Data\02-2018
Timebase: ICS3000_2
#Samples: 134

Created: 11/30/2018 2:30:38 PM by alshs.nouser
(Modified, not saved)

No.	Name	Method	Inj. Vol.	Status	Inj. Date/Time	Weight
1	STD1	110818	20.0	Finished	11/8/2018 3:37:13 PM	1.0000
2	STD2	110818	20.0	Finished	11/8/2018 3:58:55 PM	1.0000
3	STD3	110818	20.0	Finished	11/8/2018 4:20:37 PM	1.0000
4	STD4	110818	20.0	Finished	11/8/2018 4:42:20 PM	1.0000
5	STD5	110818	20.0	Finished	11/8/2018 5:04:01 PM	1.0000
6	STD6	110818	20.0	Finished	11/8/2018 5:25:43 PM	1.0000
7	ICV	110818	20.0	Finished	11/8/2018 5:47:25 PM	1.0000
8	ICB	110818	20.0	Finished	11/8/2018 6:09:07 PM	1.0000
9	CCV1	110818	20.0	Finished	11/29/2018 3:25:12 PM	1.0000
10	CCB	110818	20.0	Finished	11/29/2018 3:46:54 PM	1.0000
11	WBLKW1-112918	110818	20.0	Finished	11/29/2018 4:08:36 PM	1.0000
12	WLCSW1-112918	110818	20.0	Finished	11/29/2018 4:30:18 PM	1.0000
13	WLCSDW1-112918	110818	20.0	Finished	11/29/2018 4:51:59 PM	1.0000
14	HS18111426-01	110818	20.0	Finished	11/29/2018 5:13:41 PM	1.0000
15	HS18111426-01DF20	110818	20.0	Finished	11/29/2018 5:35:23 PM	1.0000
16	HS18111426-02	110818	20.0	Finished	11/29/2018 5:57:06 PM	1.0000
17	HS18111426-02DF20	110818	20.0	Finished	11/29/2018 6:18:48 PM	1.0000
18	HS18111426-03	110818	20.0	Finished	11/29/2018 6:40:29 PM	1.0000
19	HS18111426-03MS	110818	20.0	Finished	11/29/2018 7:02:11 PM	1.0000
20	HS18111426-03MSD	110818	20.0	Finished	11/29/2018 7:23:53 PM	1.0000
21	CCV	110818	20.0	Finished	11/29/2018 7:45:34 PM	1.0000
22	CCB	110818	20.0	Finished	11/29/2018 8:07:16 PM	1.0000
23	HS18111426-03DF20	110818	20.0	Finished	11/29/2018 8:28:58 PM	1.0000
24	HS18111428-01	110818	20.0	Finished	11/29/2018 8:50:40 PM	1.0000
25	HS18111428-01DF10	110818	20.0	Finished	11/29/2018 9:12:22 PM	1.0000
26	HS18111428-02	110818	20.0	Finished	11/29/2018 9:34:03 PM	1.0000
27	HS18111428-02DF10	110818	20.0	Finished	11/29/2018 9:55:45 PM	1.0000
28	HS18111428-03DF2	110818	20.0	Finished	11/29/2018 10:17:27 PM	1.0000
29	HS18111428-03DF20	110818	20.0	Finished	11/29/2018 10:39:10 PM	1.0000
30	HS18111428-03DF200	110818	20.0	Finished	11/29/2018 11:00:52 PM	1.0000
31	HS18111160-01DF200	110818	20.0	Finished	11/29/2018 11:22:35 PM	1.0000
32	HS18110696-11DF500	110818	20.0	Finished	11/29/2018 11:44:17 PM	1.0000
33	CCV1	110818	20.0	Finished	11/30/2018 12:05:59 AM	1.0000
34	CCB	110818	20.0	Finished	11/30/2018 12:27:41 AM	1.0000

Chromeleon © Dionex Corporation, Version 6.80 SR13 Build 3967 (218758)

Sequence: 112918
Operator: alshs.nouser

Title: Temporary sequence for manual data acquisition
Datasource: HP0307B_local
Location: ICS3000_2\2_Data\02-2018
Timebase: ICS3000_2
#Samples: 134

Created: 11/30/2018 2:30:38 PM by alshs.nouser
(Modified, not saved)

No.	Name	ISTD Amount	Sample ID	Replicate ID
1	STD1	1.0000		01
2	STD2	1.0000		01
3	STD3	1.0000		01
4	STD4	1.0000		01
5	STD5	1.0000		01
6	STD6	1.0000		01
7	ICV	1.0000		01
8	ICB	1.0000		01
9	CCV1	1.0000		01
10	CCB	1.0000		01
11	WBLKW1-112918	1.0000		01
12	WLCSW1-112918	1.0000		01
13	WLCSDW1-112918	1.0000		01
14	HS18111426-01	1.0000		01
15	HS18111426-01DF20	1.0000		01
16	HS18111426-02	1.0000		01
17	HS18111426-02DF20	1.0000		01
18	HS18111426-03	1.0000		01
19	HS18111426-03MS	1.0000		01
20	HS18111426-03MSD	1.0000		01
21	CCV	1.0000		01
22	CCB	1.0000		01
23	HS18111426-03DF20	1.0000		01
24	HS18111428-01	1.0000		01
25	HS18111428-01DF10	1.0000		01
26	HS18111428-02	1.0000		01
27	HS18111428-02DF10	1.0000		01
28	HS18111428-03DF2	1.0000		01
29	HS18111428-03DF20	1.0000		01
30	HS18111428-03DF200	1.0000		01
31	HS18111160-01DF200	1.0000		01
32	HS18110696-11DF500	1.0000		01
33	CCV1	1.0000		01
34	CCB	1.0000		01

Chromeleon © Dionex Corporation, Version 6.80 SR13 Build 3967 (218758)

Sequence: 112918
Operator: alshs.nouser

Printed: 1/16/2019 5:11:51 PM

Title: Temporary sequence for manual data acquisition
Datasource: HP0307B_local
Location: ICS3000_2\2_Data\02-2018
Timebase: ICS3000_2
#Samples: 134

Created: 11/30/2018 2:30:38 PM by alshs.nouser
(Modified, not saved)

No.	Name	Comment	Pos.	Type	Dil. Factor	Program
35	HS18111440-01		53	Unknown	1.0000	anions3
36	HS18111440-01MS		54	Unknown	1.0000	anions3
37	HS18111440-01MSD		55	Unknown	1.0000	anions3
38	HS18111440-02DF2		56	Unknown	2.0000	anions3
39	HS18111440-02DF20		57	Unknown	20.0000	anions3
40	HS18111440-03		58	Unknown	1.0000	anions3
41	HS18111440-03DF20		59	Unknown	20.0000	anions3
42	HS18111440-04DF2		60	Unknown	2.0000	anions3
43	HS18111440-04DF20		61	Unknown	20.0000	anions3
44	HS18111440-05DF10		63	Unknown	10.0000	anions3
45	CCV		1	Unknown	1.0000	anions3
46	CCB		2	Unknown	1.0000	anions3
47	HS18111280-01		51	Unknown	1.0000	anions3
48	HS18111280-02		52	Unknown	1.0000	anions3
49	HS18111440-05		62	Unknown	1.0000	anions3
50	HS18110696-08DF500		45	Unknown	500.0000	anions3
51	HS18110696-09DF500		46	Unknown	500.0000	anions3
52	HS18110696-10DF500		47	Unknown	500.0000	anions3
53	HS18111381-01DF20		64	Unknown	1.0000	anions3
54	HS18111381-02DF20		65	Unknown	1.0000	anions3
55	HS18110696-01DF500		36	Unknown	500.0000	anions3
56	HS18110696-07DF500		44	Unknown	500.0000	anions3
57	CCV1		3	Unknown	1.0000	anions3
58	CCB		4	Unknown	1.0000	anions3
59	WBLKW1-113018		66	Unknown	1.0000	anions3
60	WLCSW1-113018		67	Unknown	1.0000	anions3
61	WLCSDW1-113018		68	Unknown	1.0000	anions3
62	HS18110696-02DF20		37	Unknown	20.0000	anions3
63	HS18110696-02MSDF20		38	Unknown	20.0000	anions3
64	HS18110696-02MSDDF20		39	Unknown	20.0000	anions3
65	HS18110696-03DF500		40	Unknown	500.0000	anions3
66	HS18110696-04DF500		41	Unknown	500.0000	anions3
67	HS18110696-05DF500		42	Unknown	500.0000	anions3
68	HS18110696-06DF500		43	Unknown	500.0000	anions3

Chromeleon © Dionex Corporation, Version 6.80 SR13 Build 3967 (218758)

Sequence: 112918
Operator: alshs.nouser

Printed: 1/16/2019 5:11:51 PM

Title: Temporary sequence for manual data acquisition
Datasource: HP0307B_local
Location: ICS3000_2\2_Data\02-2018
Timebase: ICS3000_2
#Samples: 134

Created: 11/30/2018 2:30:38 PM by alshs.nouser
(Modified, not saved)

No.	Name	Method	Inj. Vol.	Status	Inj. Date/Time	Weight
35	HS18111440-01	110818	20.0	Finished	11/30/2018 12:49:23 AM	1.0000
36	HS18111440-01MS	110818	20.0	Finished	11/30/2018 1:11:05 AM	1.0000
37	HS18111440-01MSD	110818	20.0	Finished	11/30/2018 1:32:47 AM	1.0000
38	HS18111440-02DF2	110818	20.0	Finished	11/30/2018 1:54:29 AM	1.0000
39	HS18111440-02DF20	110818	20.0	Finished	11/30/2018 2:16:11 AM	1.0000
40	HS18111440-03	110818	20.0	Finished	11/30/2018 2:37:53 AM	1.0000
41	HS18111440-03DF20	110818	20.0	Finished	11/30/2018 2:59:35 AM	1.0000
42	HS18111440-04DF2	110818	20.0	Finished	11/30/2018 3:21:17 AM	1.0000
43	HS18111440-04DF20	110818	20.0	Finished	11/30/2018 3:43:00 AM	1.0000
44	HS18111440-05DF10	110818	20.0	Finished	11/30/2018 4:04:42 AM	1.0000
45	CCV	110818	20.0	Finished	11/30/2018 4:26:24 AM	1.0000
46	CCB	110818	20.0	Finished	11/30/2018 4:48:06 AM	1.0000
47	HS18111280-01	110818	20.0	Finished	11/30/2018 5:09:48 AM	1.0000
48	HS18111280-02	110818	20.0	Finished	11/30/2018 5:31:30 AM	1.0000
49	HS18111440-05	110818	20.0	Finished	11/30/2018 5:53:12 AM	1.0000
50	HS18110696-08DF500	110818	20.0	Finished	11/30/2018 6:14:53 AM	1.0000
51	HS18110696-09DF500	110818	20.0	Finished	11/30/2018 6:36:35 AM	1.0000
52	HS18110696-10DF500	110818	20.0	Finished	11/30/2018 6:58:17 AM	1.0000
53	HS18111381-01DF20	110818	20.0	Finished	11/30/2018 7:19:59 AM	1.0000
54	HS18111381-02DF20	110818	20.0	Finished	11/30/2018 7:41:41 AM	1.0000
55	HS18110696-01DF500	110818	20.0	Finished	11/30/2018 8:03:23 AM	1.0000
56	HS18110696-07DF500	110818	20.0	Finished	11/30/2018 8:25:05 AM	1.0000
57	CCV1	110818	20.0	Finished	11/30/2018 8:46:47 AM	1.0000
58	CCB	110818	20.0	Finished	11/30/2018 9:08:29 AM	1.0000
59	WBLKW1-113018	110818	20.0	Finished	11/30/2018 9:30:11 AM	1.0000
60	WLCSW1-113018	110818	20.0	Finished	11/30/2018 9:51:53 AM	1.0000
61	WLCSDW1-113018	110818	20.0	Finished	11/30/2018 10:13:35 AM	1.0000
62	HS18110696-02DF20	110818	20.0	Finished	11/30/2018 10:35:17 AM	1.0000
63	HS18110696-02MSDF20	110818	20.0	Finished	11/30/2018 10:56:59 AM	1.0000
64	HS18110696-02MSDDF20	110818	20.0	Finished	11/30/2018 11:18:41 AM	1.0000
65	HS18110696-03DF500	110818	20.0	Finished	11/30/2018 11:40:23 AM	1.0000
66	HS18110696-04DF500	110818	20.0	Finished	11/30/2018 12:02:05 PM	1.0000
67	HS18110696-05DF500	110818	20.0	Finished	11/30/2018 12:23:47 PM	1.0000
68	HS18110696-06DF500	110818	20.0	Finished	11/30/2018 12:45:28 PM	1.0000

Chromeleon © Dionex Corporation, Version 6.80 SR13 Build 3967 (218758)

Sequence: 112918
Operator: alshs.nouser

Title: Temporary sequence for manual data acquisition
Datasource: HP0307B_local
Location: ICS3000_2\2_Data\02-2018
Timebase: ICS3000_2
#Samples: 134

Created: 11/30/2018 2:30:38 PM by alshs.nouser
(Modified, not saved)

No.	Name	ISTD Amount	Sample ID	Replicate ID
35	HS18111440-01	1.0000		01
36	HS18111440-01MS	1.0000		01
37	HS18111440-01MSD	1.0000		01
38	HS18111440-02DF2	1.0000		01
39	HS18111440-02DF20	1.0000		01
40	HS18111440-03	1.0000		01
41	HS18111440-03DF20	1.0000		01
42	HS18111440-04DF2	1.0000		01
43	HS18111440-04DF20	1.0000		01
44	HS18111440-05DF10	1.0000		01
45	CCV	1.0000		01
46	CCB	1.0000		01
47	HS18111280-01	1.0000		01
48	HS18111280-02	1.0000		01
49	HS18111440-05	1.0000		01
50	HS18110696-08DF500	1.0000		01
51	HS18110696-09DF500	1.0000		01
52	HS18110696-10DF500	1.0000		01
53	HS18111381-01DF20	1.0000		01
54	HS18111381-02DF20	1.0000		01
55	HS18110696-01DF500	1.0000		01
56	HS18110696-07DF500	1.0000		01
57	CCV1	1.0000		01
58	CCB	1.0000		01
59	WBLKW1-113018	1.0000		01
60	WLCSW1-113018	1.0000		01
61	WLCSDW1-113018	1.0000		01
62	HS18110696-02DF20	1.0000		01
63	HS18110696-02MSDF20	1.0000		01
64	HS18110696-02MSDDF20	1.0000		01
65	HS18110696-03DF500	1.0000		01
66	HS18110696-04DF500	1.0000		01
67	HS18110696-05DF500	1.0000		01
68	HS18110696-06DF500	1.0000		01

Chromeleon © Dionex Corporation, Version 6.80 SR13 Build 3967 (218758)

Sequence: 112918
Operator: alshs.nouser

Title: Temporary sequence for manual data acquisition
Datasource: HP0307B_local
Location: ICS3000_2\2_Data\02-2018
Timebase: ICS3000_2
#Samples: 134

Created: 11/30/2018 2:30:38 PM by alshs.nouser
(Modified, not saved)

No.	Name	Comment	Pos.	Type	Dil. Factor	Program
69	CCV		1	Unknown	1.0000	anions3
70	CCB		2	Unknown	1.0000	anions3
71	HS18111280-01		51	Unknown	1.0000	anions3
72	HS18111432-01		69	Unknown	1.0000	anions3
73	HS18111432-01DF10		71	Unknown	10.0000	anions3
74	HS18111432-01DF50		72	Unknown	50.0000	anions3
75	HS18111434-01DF10		73	Unknown	10.0000	anions3
76	HS18111408-01		74	Unknown	1.0000	anions3
77	HS18111408-01DF10		75	Unknown	10.0000	anions3
78	HS18111408-02		76	Unknown	1.0000	anions3
79	HS18111408-02DF10		77	Unknown	10.0000	anions3
80	CCV1		3	Unknown	1.0000	anions3
81	CCB		4	Unknown	1.0000	anions3
82	HS18111497-01		78	Unknown	1.0000	anions3
83	HS18111497-01MS		79	Unknown	1.0000	anions3
84	HS18111497-01MSD		80	Unknown	1.0000	anions3
85	HS18111497-02		81	Unknown	1.0000	anions3
86	HS18111497-02DF20		82	Unknown	20.0000	anions3
87	HS18111497-03		83	Unknown	1.0000	anions3
88	HS18111497-03DF20		84	Unknown	20.0000	anions3
89	HS18110758-01DF2		85	Unknown	2.0000	anions3
90	HS18110758-01DF20		86	Unknown	20.0000	anions3
91	HS18111084-01DF200		87	Unknown	200.0000	anions3
92	CCV		1	Unknown	1.0000	anions3
93	CCB		2	Unknown	1.0000	anions3
94	HS18110760-01		88	Unknown	1.0000	anions3
95	HS18110760-01DF20		89	Unknown	20.0000	anions3
96	HS18110755-01DF500		90	Unknown	500.0000	anions3
97	HS18110755-02DF500		91	Unknown	500.0000	anions3
98	HS18110755-03DF500		92	Unknown	500.0000	anions3
99	HS18110755-04DF500		93	Unknown	500.0000	anions3
100	HS18110754-01DF50		11	Unknown	50.0000	anions3
101	HS18110754-02DF500		12	Unknown	500.0000	anions3
102	HS18110754-02MSDF500		13	Unknown	500.0000	anions3

Chromeleon © Dionex Corporation, Version 6.80 SR13 Build 3967 (218758)

Sequence: 112918
Operator: alshs.nouser

Printed: 1/16/2019 5:11:51 PM

Title: Temporary sequence for manual data acquisition
Datasource: HP0307B_local
Location: ICS3000_2\2_Data\02-2018
Timebase: ICS3000_2
#Samples: 134

Created: 11/30/2018 2:30:38 PM by alshs.nouser
(Modified, not saved)

No.	Name	Method	Inj. Vol.	Status	Inj. Date/Time	Weight
69	CCV	110818	20.0	Finished	11/30/2018 1:07:10 PM	1.0000
70	CCB	110818	20.0	Finished	11/30/2018 1:28:53 PM	1.0000
71	HS18111280-01	110818	20.0	Finished	11/30/2018 2:38:12 PM	1.0000
72	HS18111432-01	110818	20.0	Finished	11/30/2018 2:59:54 PM	1.0000
73	HS18111432-01DF10	110818	20.0	Finished	11/30/2018 3:21:36 PM	1.0000
74	HS18111432-01DF50	110818	20.0	Finished	11/30/2018 3:43:18 PM	1.0000
75	HS18111434-01DF10	110818	20.0	Finished	11/30/2018 4:05:00 PM	1.0000
76	HS18111408-01	110818	20.0	Finished	11/30/2018 4:26:42 PM	1.0000
77	HS18111408-01DF10	110818	20.0	Finished	11/30/2018 4:48:24 PM	1.0000
78	HS18111408-02	110818	20.0	Finished	11/30/2018 5:10:05 PM	1.0000
79	HS18111408-02DF10	110818	20.0	Finished	11/30/2018 5:31:47 PM	1.0000
80	CCV1	110818	20.0	Finished	11/30/2018 5:53:29 PM	1.0000
81	CCB	110818	20.0	Finished	11/30/2018 6:15:11 PM	1.0000
82	HS18111497-01	110818	20.0	Finished	11/30/2018 7:07:37 PM	1.0000
83	HS18111497-01MS	110818	20.0	Finished	11/30/2018 7:29:19 PM	1.0000
84	HS18111497-01MSD	110818	20.0	Finished	11/30/2018 7:51:01 PM	1.0000
85	HS18111497-02	110818	20.0	Finished	11/30/2018 8:12:43 PM	1.0000
86	HS18111497-02DF20	110818	20.0	Finished	11/30/2018 8:34:25 PM	1.0000
87	HS18111497-03	110818	20.0	Finished	11/30/2018 8:56:06 PM	1.0000
88	HS18111497-03DF20	110818	20.0	Finished	11/30/2018 9:17:48 PM	1.0000
89	HS18110758-01DF2	110818	20.0	Finished	11/30/2018 9:39:30 PM	1.0000
90	HS18110758-01DF20	110818	20.0	Finished	11/30/2018 10:01:12 PM	1.0000
91	HS18111084-01DF200	110818	20.0	Finished	11/30/2018 10:22:54 PM	1.0000
92	CCV	110818	20.0	Finished	11/30/2018 10:44:36 PM	1.0000
93	CCB	110818	20.0	Finished	11/30/2018 11:06:18 PM	1.0000
94	HS18110760-01	110818	20.0	Finished	11/30/2018 11:28:00 PM	1.0000
95	HS18110760-01DF20	110818	20.0	Finished	11/30/2018 11:49:42 PM	1.0000
96	HS18110755-01DF500	110818	20.0	Finished	12/1/2018 12:11:24 AM	1.0000
97	HS18110755-02DF500	110818	20.0	Finished	12/1/2018 12:33:06 AM	1.0000
98	HS18110755-03DF500	110818	20.0	Finished	12/1/2018 12:54:48 AM	1.0000
99	HS18110755-04DF500	110818	20.0	Finished	12/1/2018 1:16:30 AM	1.0000
100	HS18110754-01DF50	110818	20.0	Finished	12/1/2018 1:38:12 AM	1.0000
101	HS18110754-02DF500	110818	20.0	Finished	12/1/2018 1:59:56 AM	1.0000
102	HS18110754-02MSDF500	110818	20.0	Finished	12/1/2018 2:21:38 AM	1.0000

Chromeleon © Dionex Corporation, Version 6.80 SR13 Build 3967 (218758)

Sequence: 112918
Operator: alshs.nouser

Title: Temporary sequence for manual data acquisition
Datasource: HP0307B_local
Location: ICS3000_2\2_Data\02-2018
Timebase: ICS3000_2
#Samples: 134

Created: 11/30/2018 2:30:38 PM by alshs.nouser
(Modified, not saved)

No.	Name	ISTD Amount	Sample ID	Replicate ID
69	CCV	1.0000		01
70	CCB	1.0000		01
71	HS18111280-01	1.0000		01
72	HS18111432-01	1.0000		01
73	HS18111432-01DF10	1.0000		01
74	HS18111432-01DF50	1.0000		01
75	HS18111434-01DF10	1.0000		01
76	HS18111408-01	1.0000		01
77	HS18111408-01DF10	1.0000		01
78	HS18111408-02	1.0000		01
79	HS18111408-02DF10	1.0000		01
80	CCV1	1.0000		01
81	CCB	1.0000		01
82	HS18111497-01	1.0000		01
83	HS18111497-01MS	1.0000		01
84	HS18111497-01MSD	1.0000		01
85	HS18111497-02	1.0000		01
86	HS18111497-02DF20	1.0000		01
87	HS18111497-03	1.0000		01
88	HS18111497-03DF20	1.0000		01
89	HS18110758-01DF2	1.0000		01
90	HS18110758-01DF20	1.0000		01
91	HS18111084-01DF200	1.0000		01
92	CCV	1.0000		01
93	CCB	1.0000		01
94	HS18110760-01	1.0000		01
95	HS18110760-01DF20	1.0000		01
96	HS18110755-01DF500	1.0000		01
97	HS18110755-02DF500	1.0000		01
98	HS18110755-03DF500	1.0000		01
99	HS18110755-04DF500	1.0000		01
100	HS18110754-01DF50	1.0000		01
101	HS18110754-02DF500	1.0000		01
102	HS18110754-02MSDF500	1.0000		01

Chromeleon © Dionex Corporation, Version 6.80 SR13 Build 3967 (218758)

Sequence: 112918
Operator: alshs.nouser

Title: Temporary sequence for manual data acquisition
Datasource: HP0307B_local
Location: ICS3000_2\2_Data\02-2018
Timebase: ICS3000_2
#Samples: 134

Created: 11/30/2018 2:30:38 PM by alshs.nouser
(Modified, not saved)

No.	Name	Comment	Pos.	Type	Dil. Factor	Program
103	HS18110754-02MSDDF500		14	Unknown	500.0000	anions3
104	CCV1		3	Unknown	1.0000	anions3
105	CCB		4	Unknown	1.0000	anions3
106	WBLKW1-120118		5	Unknown	1.0000	anions3
107	WLCSW1-120118		6	Unknown	1.0000	anions3
108	WLCSDW1-120118		7	Unknown	1.0000	anions3
109	HS18110754-03DF500		15	Unknown	500.0000	anions3
110	HS18110754-04DF500		16	Unknown	500.0000	anions3
111	HS18110834-04		17	Unknown	1.0000	anions3
112	HS18110834-05		18	Unknown	1.0000	anions3
113	HS18110834-06		19	Unknown	1.0000	anions3
114	HS18110835-01		20	Unknown	1.0000	anions3
115	HS18110835-02		21	Unknown	1.0000	anions3
116	CCV		1	Unknown	1.0000	anions3
117	CCB		2	Unknown	1.0000	anions3
118	CCV		1	Unknown	1.0000	anions3
119	CCB		2	Unknown	1.0000	anions3
120	HS18120007-01		22	Unknown	1.0000	anions3
121	DI H2O		10	Unknown	1.0000	anions3
122	HS18120007-01DF20		23	Unknown	20.0000	anions3
123	HS18120007-01MSDF20		24	Unknown	20.0000	anions3
124	HS18120007-01MSDDF20		25	Unknown	20.0000	anions3
125	HS18120007-01DF50		26	Unknown	50.0000	anions3
126	CCV1		3	Unknown	1.0000	anions3
127	CCB1		4	Unknown	1.0000	anions3
128	DI H2O		10	Unknown	1.0000	anions3
129	DI H2O		10	Unknown	1.0000	anions3
130	CCV		1	Unknown	1.0000	anions3
131	CCB		2	Unknown	1.0000	anions3
132	HS18110755-04DF10		94	Unknown	10.0000	anions3
133	CCV1		3	Unknown	1.0000	anions3
134	CCB		4	Unknown	1.0000	anions3

Chromeleon © Dionex Corporation, Version 6.80 SR13 Build 3967 (218758)

Sequence: 112918
Operator: alshs.nouser

Title: Temporary sequence for manual data acquisition
Datasource: HP0307B_local
Location: ICS3000_2\2_Data\02-2018
Timebase: ICS3000_2
#Samples: 134

Created: 11/30/2018 2:30:38 PM by alshs.nouser
(Modified, not saved)

No.	Name	Method	Inj. Vol.	Status	Inj. Date/Time	Weight
103	HS18110754-02MSDDF500	110818	20.0	Finished	12/1/2018 2:43:20 AM	1.0000
104	CCV1	110818	20.0	Finished	12/1/2018 3:05:02 AM	1.0000
105	CCB	110818	20.0	Finished	12/1/2018 3:26:44 AM	1.0000
106	WBLKW1-120118	110818	20.0	Finished	12/1/2018 3:48:26 AM	1.0000
107	WLCSW1-120118	110818	20.0	Finished	12/1/2018 4:10:08 AM	1.0000
108	WLCSDW1-120118	110818	20.0	Finished	12/1/2018 4:31:50 AM	1.0000
109	HS18110754-03DF500	110818	20.0	Finished	12/1/2018 4:53:32 AM	1.0000
110	HS18110754-04DF500	110818	20.0	Finished	12/1/2018 5:15:14 AM	1.0000
111	HS18110834-04	110818	20.0	Finished	12/1/2018 5:36:56 AM	1.0000
112	HS18110834-05	110818	20.0	Finished	12/1/2018 5:58:39 AM	1.0000
113	HS18110834-06	110818	20.0	Finished	12/1/2018 6:20:21 AM	1.0000
114	HS18110835-01	110818	20.0	Finished	12/1/2018 6:42:03 AM	1.0000
115	HS18110835-02	110818	20.0	Finished	12/1/2018 7:03:45 AM	1.0000
116	CCV	110818	20.0	Finished	12/1/2018 7:25:27 AM	1.0000
117	CCB	110818	20.0	Finished	12/1/2018 7:47:09 AM	1.0000
118	CCV	110818	20.0	Finished	12/1/2018 2:18:47 PM	1.0000
119	CCB	110818	20.0	Finished	12/1/2018 2:40:29 PM	1.0000
120	HS18120007-01	110818	20.0	Finished	12/1/2018 3:02:11 PM	1.0000
121	DI H2O	110818	20.0	Finished	12/1/2018 3:23:53 PM	1.0000
122	HS18120007-01DF20	110818	20.0	Finished	12/1/2018 3:45:35 PM	1.0000
123	HS18120007-01MSDF20	110818	20.0	Finished	12/1/2018 4:07:17 PM	1.0000
124	HS18120007-01MSDDF20	110818	20.0	Finished	12/1/2018 4:29:00 PM	1.0000
125	HS18120007-01DF50	110818	20.0	Finished	12/1/2018 4:50:42 PM	1.0000
126	CCV1	110818	20.0	Finished	12/1/2018 5:12:24 PM	1.0000
127	CCB1	110818	20.0	Finished	12/1/2018 5:34:06 PM	1.0000
128	DI H2O	110818	20.0	Finished	12/3/2018 9:46:56 AM	1.0000
129	DI H2O	110818	20.0	Finished	12/3/2018 10:08:39 AM	1.0000
130	CCV	110818	20.0	Finished	12/3/2018 11:42:49 AM	1.0000
131	CCB	110818	20.0	Finished	12/3/2018 12:04:31 PM	1.0000
132	HS18110755-04DF10	110818	20.0	Finished	12/3/2018 12:26:13 PM	1.0000
133	CCV1	110818	20.0	Finished	12/3/2018 12:52:43 PM	1.0000
134	CCB	110818	20.0	Finished	12/3/2018 1:14:25 PM	1.0000

Chromeleon © Dionex Corporation, Version 6.80 SR13 Build 3967 (218758)

Sequence: 112918
Operator: alshs.nouser

Title: Temporary sequence for manual data acquisition
Datasource: HP0307B_local
Location: ICS3000_2\2_Data\02-2018
Timebase: ICS3000_2
#Samples: 134

Created: 11/30/2018 2:30:38 PM by alshs.nouser
(Modified, not saved)

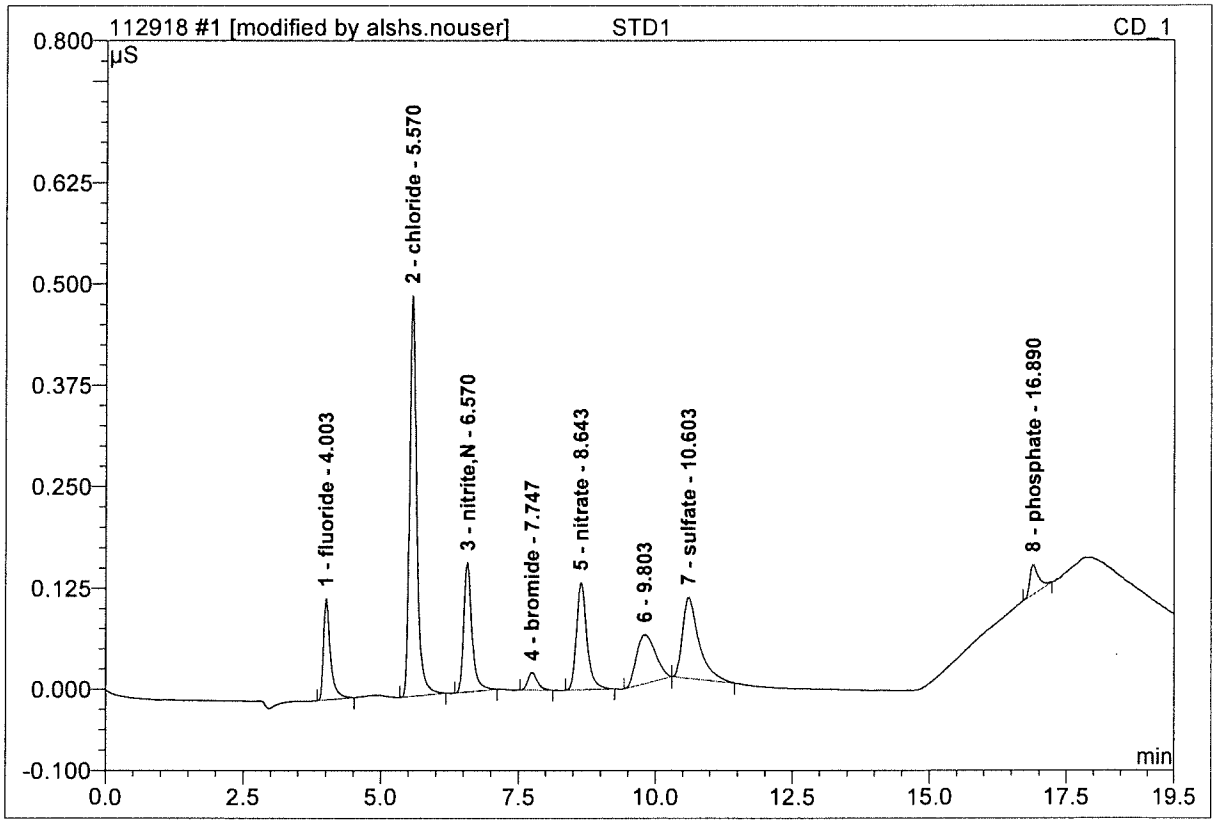
No.	Name	ISTD Amount	Sample ID	Replicate ID
103	HS18110754-02MSDDF500	1.0000		01
104	CCV1	1.0000		01
105	CCB	1.0000		01
106	WBLKW1-120118	1.0000		01
107	WLCSW1-120118	1.0000		01
108	WLCSDW1-120118	1.0000		01
109	HS18110754-03DF500	1.0000		01
110	HS18110754-04DF500	1.0000		01
111	HS18110834-04	1.0000		01
112	HS18110834-05	1.0000		01
113	HS18110834-06	1.0000		01
114	HS18110835-01	1.0000		01
115	HS18110835-02	1.0000		01
116	CCV	1.0000		01
117	CCB	1.0000		01
118	CCV	1.0000		01
119	CCB	1.0000		01
120	HS18120007-01	1.0000		01
121	DI H2O	1.0000		01
122	HS18120007-01DF20	1.0000		01
123	HS18120007-01MSDF20	1.0000		01
124	HS18120007-01MSDDF20	1.0000		01
125	HS18120007-01DF50	1.0000		01
126	CCV1	1.0000		01
127	CCB1	1.0000		01
128	DI H2O	1.0000		01
129	DI H2O	1.0000		01
130	CCV	1.0000		01
131	CCB	1.0000		01
132	HS18110755-04DF10	1.0000		01
133	CCV1	1.0000		01
134	CCB	1.0000		01

Chromeleon © Dionex Corporation, Version 6.80 SR13 Build 3967 (218758)

1 STD1

297.020.7208

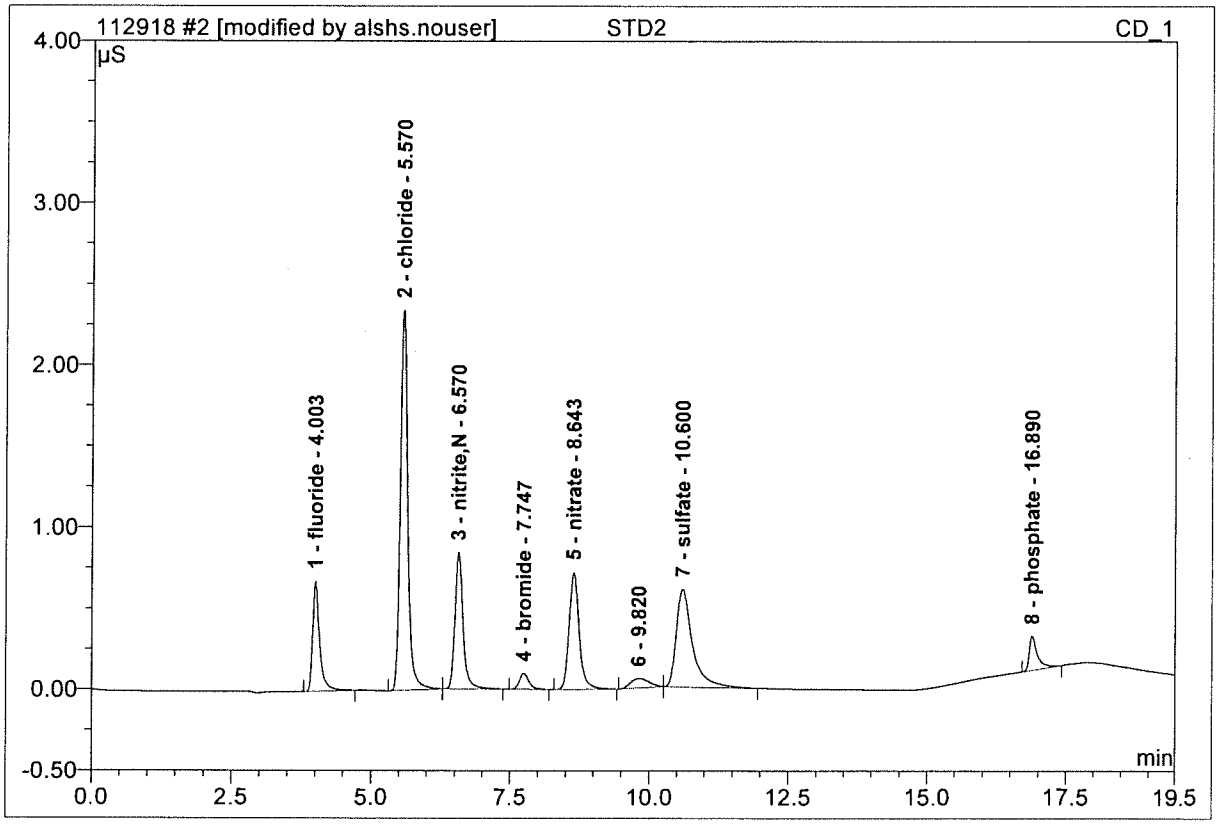
Sample Name:	**STD1**	*Injection Volume:*	**20.0**
Vial Number:	**91**	*Channel:*	**CD_1**
Sample Type:	**standard**	*Wavelength:*	**n.a.**
Control Program:	**anions3**	*Bandwidth:*	**n.a.**
Quantif. Method:	**110818**	*Dilution Factor:*	**1.**
Recording Time:	**11/8/2018 15:37**	*Sample Weight:*	**1.0000**
Run Time (min):	**19.50**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount ppm	Dil.Fac.
1	4.00	fluoride	0.125	0.018	8.40	0.110	1.
2	5.57	chloride	0.494	0.074	33.62	0.568	1.
3	6.57	nitrite,N	0.160	0.028	12.63	0.094	1.
4	7.75	bromide	0.022	0.004	2.03	0.144	1.
5	8.64	nitrate	0.133	0.029	13.35	0.123	1.
7	10.60	sulfate	0.101	0.035	15.83	0.648	1.
8	16.89	phosphate	0.037	0.006	2.95	0.157	1.
Total:			1.071	0.195	88.80	1.845	

2 STD2

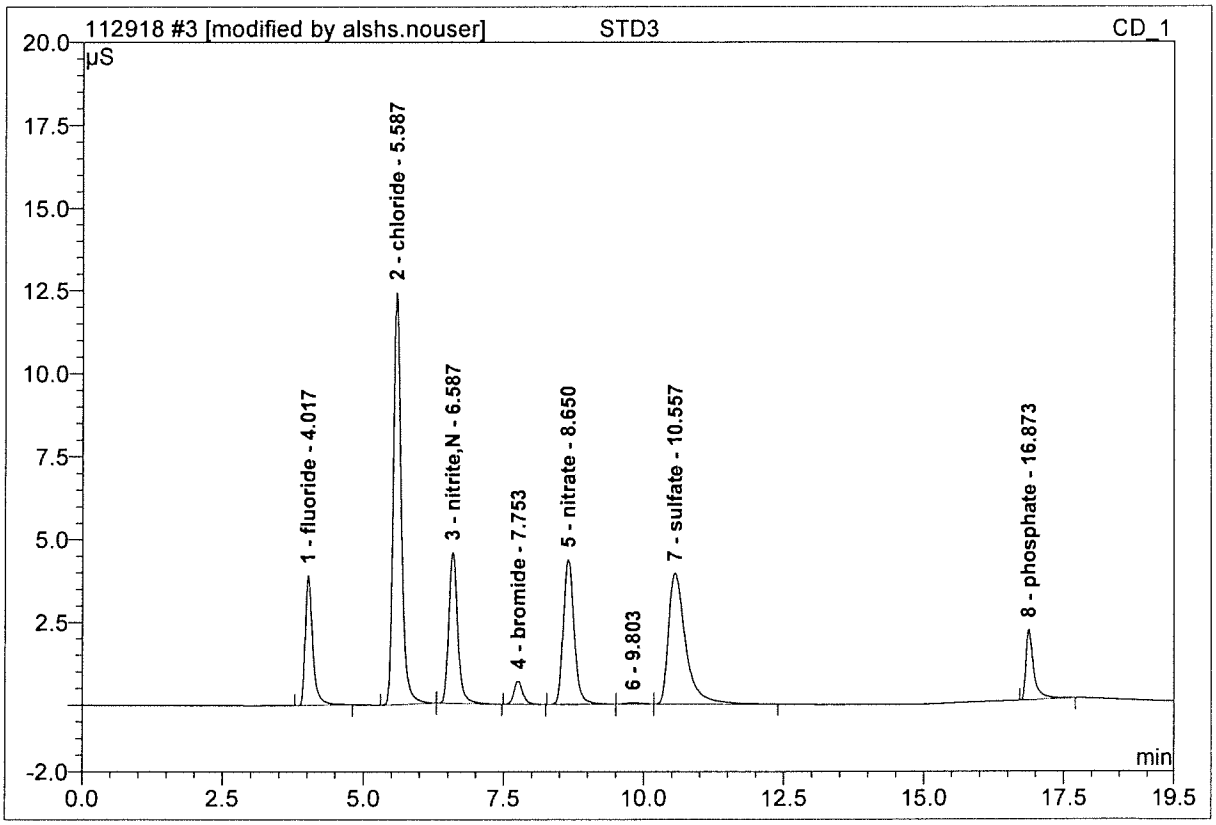
Sample Name:	**STD2**	*Injection Volume:*	**20.0**
Vial Number:	**92**	*Channel:*	**CD_1**
Sample Type:	**standard**	*Wavelength:*	**n.a.**
Control Program:	**anions3**	*Bandwidth:*	**n.a.**
Quantif. Method:	**110818**	*Dilution Factor:*	**1.**
Recording Time:	**11/8/2018 15:58**	*Sample Weight:*	**1.0000**
Run Time (min):	**19.50**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount ppm	Dil.Fac.
1	4.00	fluoride	0.678	0.098	9.47	0.361	1.
2	5.57	chloride	2.343	0.362	34.95	1.864	1.
3	6.57	nitrite,N	0.840	0.143	13.78	0.375	1.
4	7.75	bromide	0.099	0.019	1.88	0.321	1.
5	8.64	nitrate	0.720	0.152	14.68	0.345	1.
7	10.60	sulfate	0.605	0.203	19.66	1.680	1.
8	16.89	phosphate	0.209	0.036	3.44	0.279	1.
Total:			5.495	1.012	97.86	5.224	

3 STD3

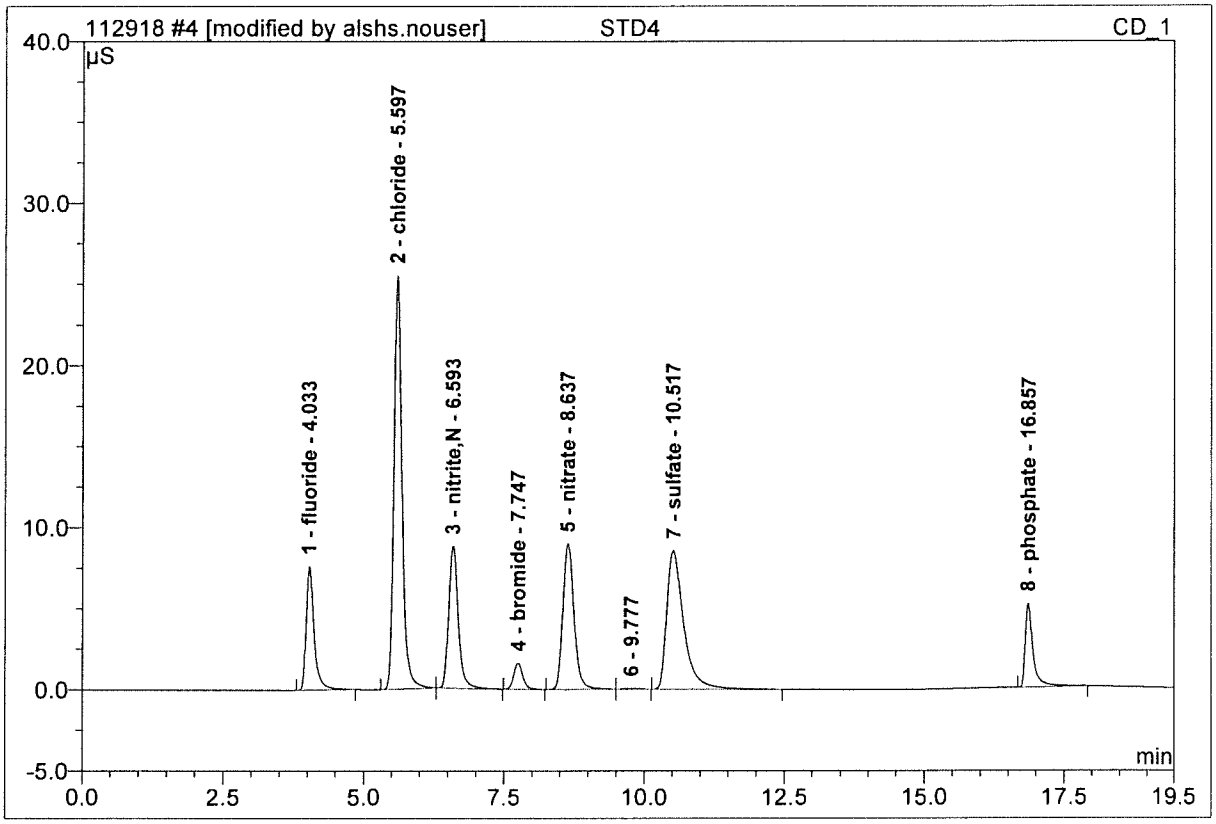
Sample Name:	**STD3**	*Injection Volume:*	**20.0**
Vial Number:	**93**	*Channel:*	**CD_1**
Sample Type:	**standard**	*Wavelength:*	**n.a.**
Control Program:	**anions3**	*Bandwidth:*	**n.a.**
Quantif. Method:	**110818**	*Dilution Factor:*	**1.**
Recording Time:	**11/8/2018 16:20**	*Sample Weight:*	**1.0000**
Run Time (min):	**19.50**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount ppm	Dil.Fac.
1	4.02	fluoride	3.931	0.610	9.51	1.974	1.
2	5.59	chloride	12.426	2.058	32.10	9.501	1.
3	6.59	nitrite,N	4.563	0.856	13.35	2.121	1.
4	7.75	bromide	0.706	0.131	2.05	1.630	1.
5	8.65	nitrate	4.384	0.989	15.42	1.862	1.
7	10.56	sulfate	3.970	1.409	21.98	9.063	1.
8	16.87	phosphate	2.125	0.344	5.36	1.565	1.
Total:			32.104	6.396	99.78	27.715	

4 STD4

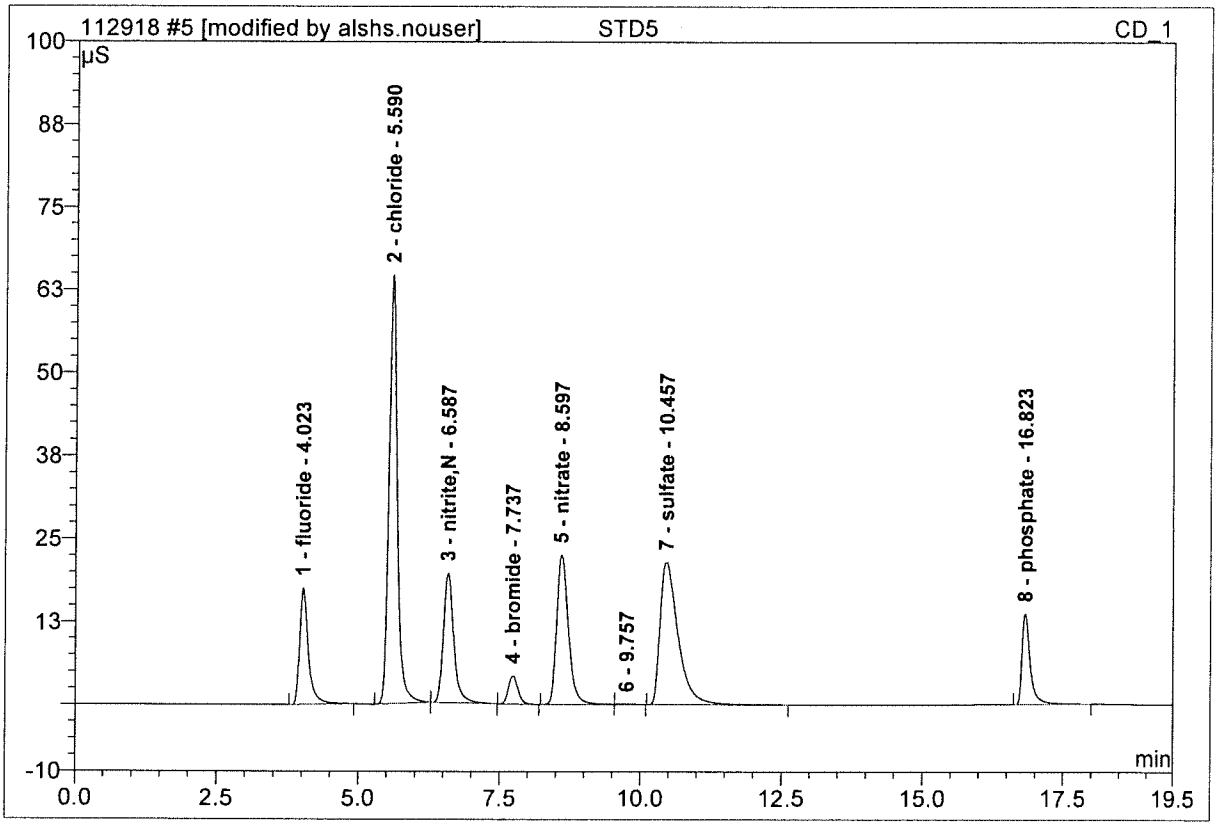
Sample Name:	**STD4**	*Injection Volume:*	**20.0**
Vial Number:	**94**	*Channel:*	**CD_1**
Sample Type:	**standard**	*Wavelength:*	**n.a.**
Control Program:	**anions3**	*Bandwidth:*	**n.a.**
Quantif. Method:	**110818**	*Dilution Factor:*	**1.**
Recording Time:	**11/8/2018 16:42**	*Sample Weight:*	**1.0000**
Run Time (min):	**19.50**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount ppm	Dil.Fac.
1	4.03	fluoride	7.603	1.260	9.33	4.021	1.
2	5.60	chloride	25.472	4.277	31.67	19.493	1.
3	6.59	nitrite,N	8.744	1.730	12.81	4.260	1.
4	7.75	bromide	1.599	0.300	2.22	3.612	1.
5	8.64	nitrate	8.957	2.077	15.38	3.835	1.
7	10.52	sulfate	8.533	3.005	22.25	18.833	1.
8	16.86	phosphate	5.156	0.840	6.22	3.633	1.
Total:			66.066	13.487	99.88	57.688	

5 STD5

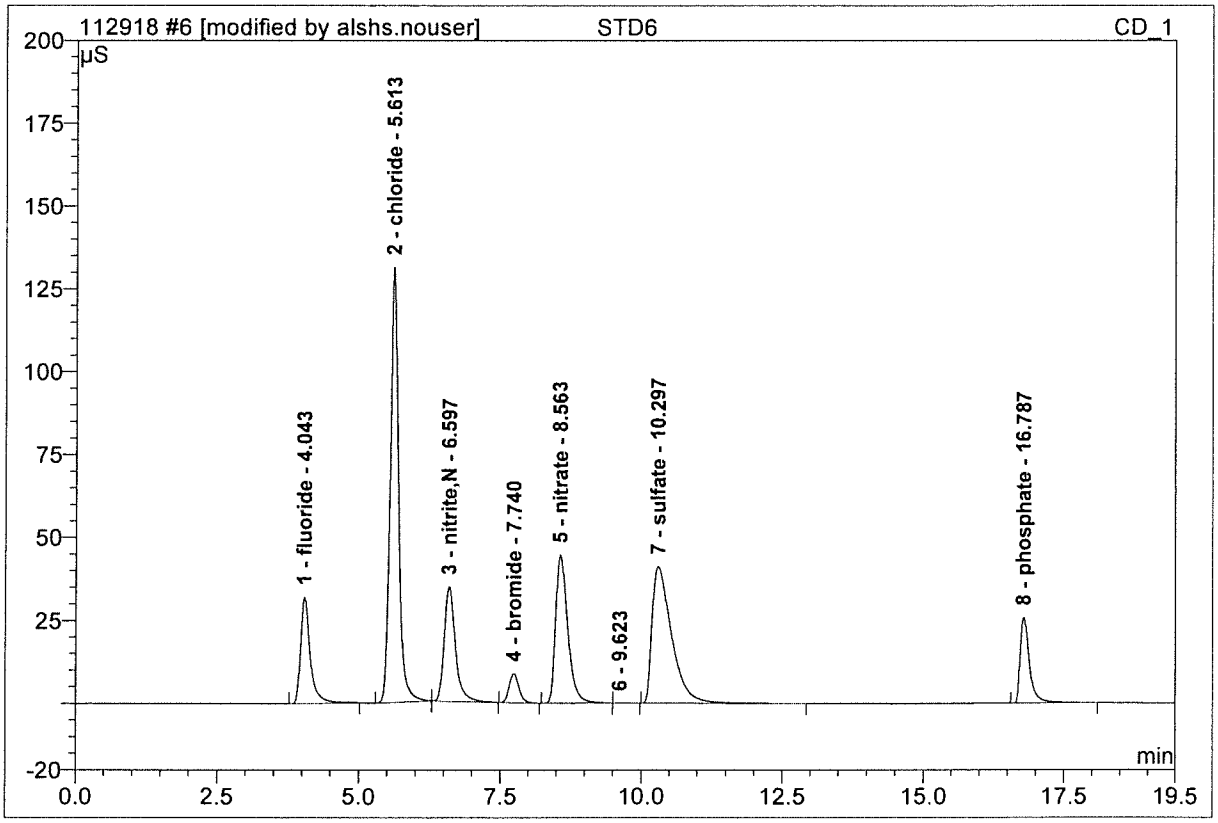
Sample Name:	**STD5**	*Injection Volume:*	**20.0**
Vial Number:	**95**	*Channel:*	**CD_1**
Sample Type:	**standard**	*Wavelength:*	**n.a.**
Control Program:	**anions3**	*Bandwidth:*	**n.a.**
Quantif. Method:	**110818**	*Dilution Factor:*	**1.**
Recording Time:	**11/8/2018 17:04**	*Sample Weight:*	**1.0000**
Run Time (min):	**19.50**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount ppm	Dil.Fac.
1	4.02	fluoride	17.561	3.171	9.07	10.044	1.
2	5.59	chloride	64.602	10.958	31.33	49.578	1.
3	6.59	nitrite,N	19.488	4.165	11.91	10.222	1.
4	7.74	bromide	4.284	0.838	2.40	9.922	1.
5	8.60	nitrate	22.525	5.473	15.65	9.994	1.
7	10.46	sulfate	21.536	8.002	22.88	49.430	1.
8	16.82	phosphate	13.630	2.350	6.72	9.933	1.
Total:			163.627	34.958	99.95	149.122	

6 STD6

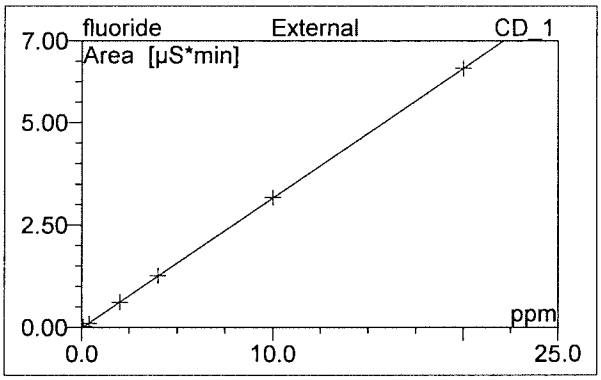
Sample Name:	**STD6**	*Injection Volume:*	**20.0**
Vial Number:	**96**	*Channel:*	**CD_1**
Sample Type:	**standard**	*Wavelength:*	**n.a.**
Control Program:	**anions3**	*Bandwidth:*	**n.a.**
Quantif. Method:	**110818**	*Dilution Factor:*	**1.**
Recording Time:	**11/8/2018 17:25**	*Sample Weight:*	**1.0000**
Run Time (min):	**19.50**	*Sample Amount:*	**1.0000**

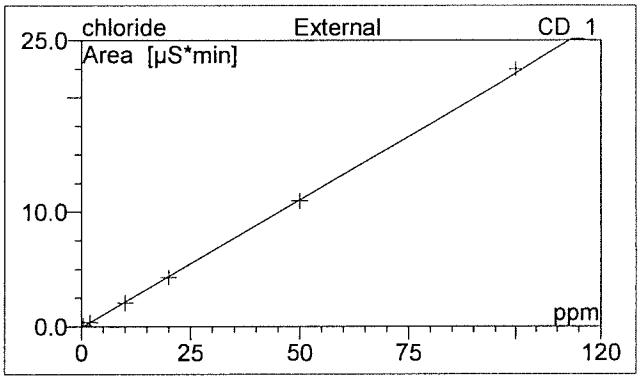


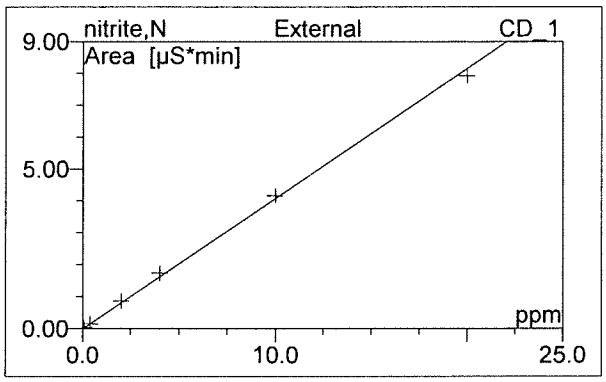
No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount ppm	Dil.Fac.
1	4.04	fluoride	32.109	6.327	8.86	19.990	1.
2	5.61	chloride	131.095	22.488	31.49	101.496	1.
3	6.60	nitrite,N	34.513	7.926	11.10	19.428	1.
4	7.74	bromide	8.856	1.772	2.48	20.871	1.
5	8.56	nitrate	44.623	11.179	15.65	20.340	1.
7	10.30	sulfate	41.276	16.726	23.42	102.847	1.
8	16.79	phosphate	25.834	4.988	6.98	20.933	1.
Total:			318.304	71.406	99.98	305.906	

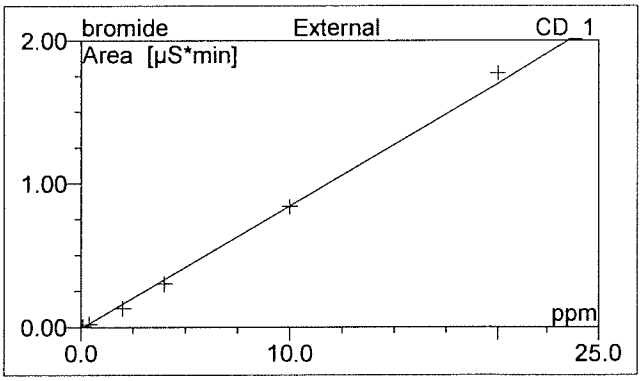
6 STD6

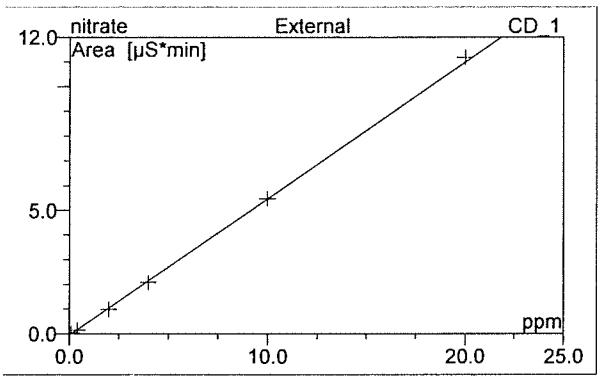
Sample Name:	**STD6**	*Injection Volume:*	**20.0**
Vial Number:	**96**	*Channel:*	**CD_1**
Sample Type:	**standard**	*Wavelength:*	**n.a.**
Control Program:	**anions3**	*Bandwidth:*	**n.a.**
Quantif. Method:	**110818**	*Dilution Factor:*	**1.0000**
Recording Time:	**11/8/2018 17:25**	*Sample Weight:*	**1.0000**
Run Time (min):	**19.50**	*Sample Amount:*	**1.0000**

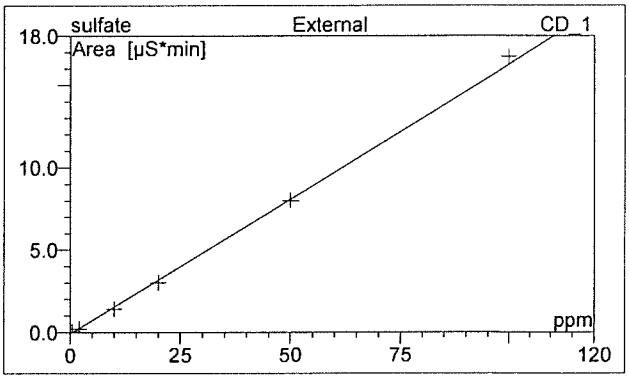


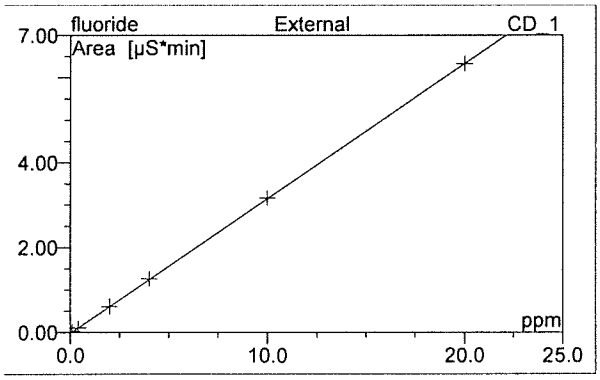


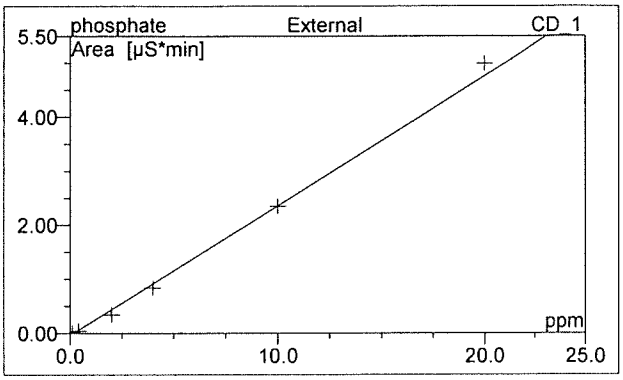










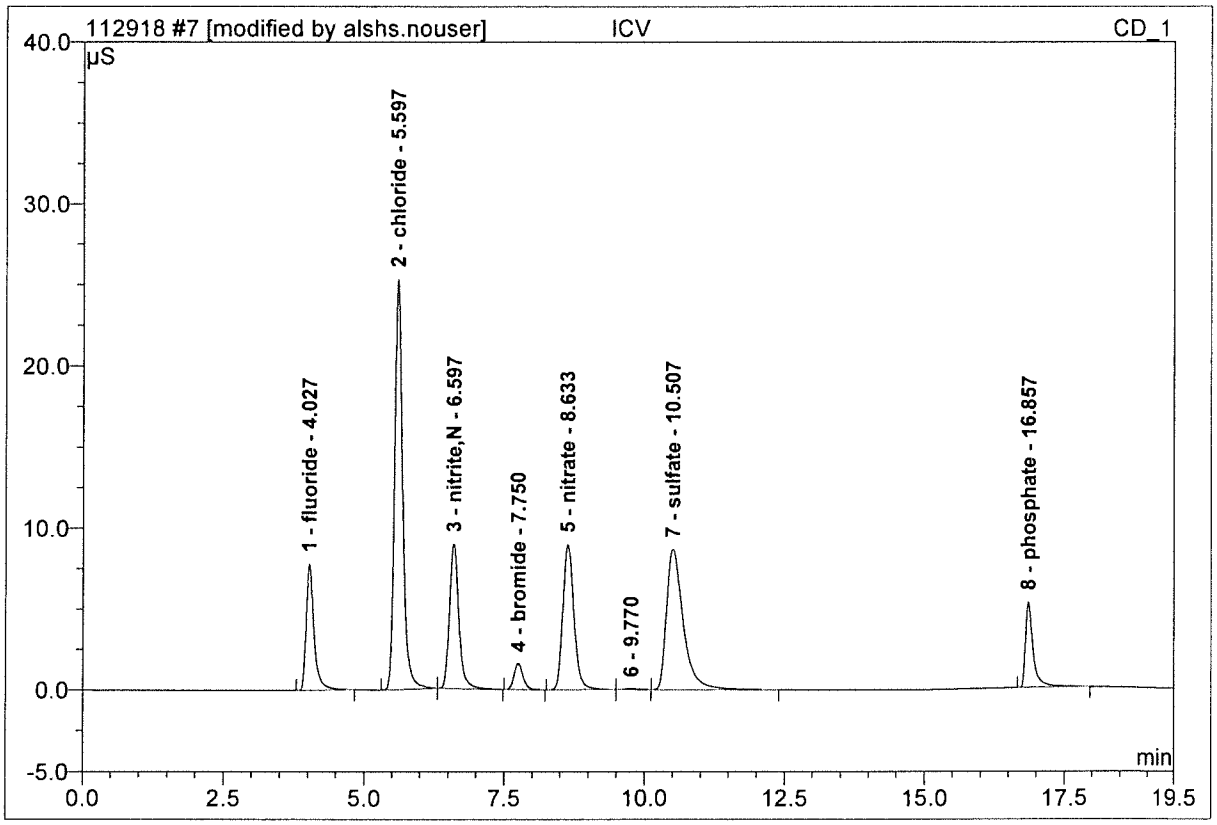


No.	Ret.Time min	Peak Name	Cal.Type	Points	Coeff.Det. %	Offset	Slope	Curve
1	4.04	fluoride	XLOff	6	99.9834	-0.0165	0.3174	0.000
2	5.61	chloride	XLOff	6	99.9513	-0.0523	0.2221	0.000
3	6.60	nitrite,N	XLOff	6	99.8600	-0.0107	0.4085	0.000
4	7.74	bromide	XLOff	6	99.4702	-0.0079	0.0853	0.000
5	8.56	nitrate	XLOff	6	99.8969	-0.0385	0.5515	0.000
7	10.30	sulfate	XLOff	6	99.8003	-0.0709	0.1633	0.000
8	16.79	phosphate	XLOff	6	99.2890	-0.0312	0.2398	0.000
Average:					99.7502	-0.0326	0.2840	0.0000

No.	Ret.Time min	Peak Name	Cal.Type	Points	Corr.Coeff. %	RF-Value	Std.Dev.	RSD %
1	4.04	fluoride	XLOff	6	99.992	3.151	0.008	6.327
2	5.61	chloride	XLOff	6	99.976	4.503	0.048	10.720
3	6.60	nitrite,N	XLOff	6	99.930	2.448	0.030	17.286
4	7.74	bromide	XLOff	6	99.735	11.729	0.012	39.935
5	8.56	nitrate	XLOff	6	99.948	1.813	0.034	16.534
7	10.30	sulfate	XLOff	6	99.900	6.123	0.071	24.113
8	16.79	phosphate	XLOff	6	99.644	4.171	0.039	51.853
Average:					99.8749	4.8482	0.0346	23.8238

7 ICV

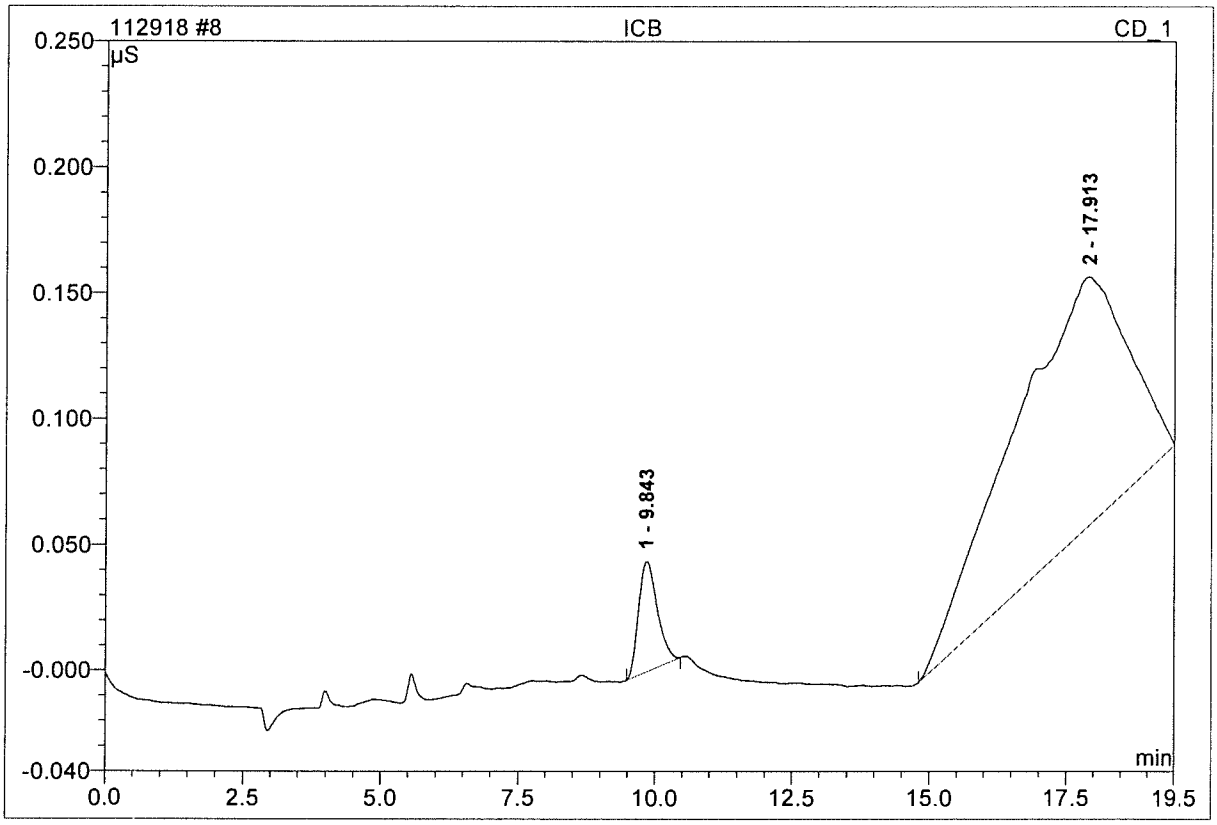
Sample Name:	**ICV**	*Injection Volume:*	**20.0**
Vial Number:	**97**	*Channel:*	**CD_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**anions3**	*Bandwidth:*	**n.a.**
Quantif. Method:	**110818**	*Dilution Factor:*	**1.**
Recording Time:	**11/8/2018 17:47**	*Sample Weight:*	**1.0000**
Run Time (min):	**19.50**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount ppm	Dil.Fac.
1	4.03	fluoride	7.797	1.274	9.44	4.066	1.
2	5.60	chloride	25.280	4.240	31.42	19.328	1.
3	6.60	nitrite,N	8.911	1.748	12.95	4.306	1.
4	7.75	bromide	1.599	0.300	2.22	3.608	1.
5	8.63	nitrate	8.971	2.059	15.26	3.804	1.
7	10.51	sulfate	8.674	3.010	22.31	18.867	1.
8	16.86	phosphate	5.266	0.850	6.30	3.676	1.
Total:			66.498	13.482	99.89	57.656	

8 ICB

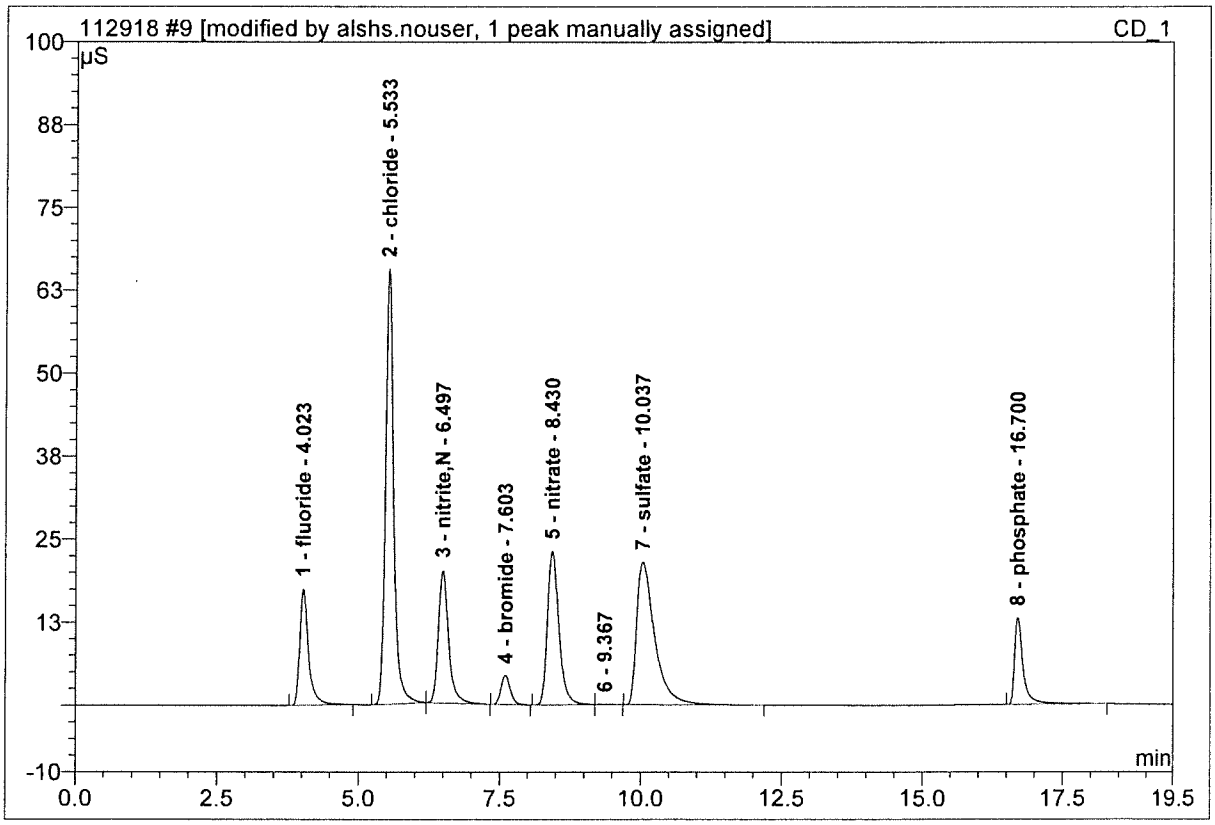
Sample Name:	**ICB**	*Injection Volume:*	**20.0**
Vial Number:	**98**	*Channel:*	**CD_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**anions3**	*Bandwidth:*	**n.a.**
Quantif. Method:	**110818**	*Dilution Factor:*	**1.**
Recording Time:	**11/8/2018 18:09**	*Sample Weight:*	**1.0000**
Run Time (min):	**19.50**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount ppm	Dil.Fac.
Total:			0.000	0.000	0.00	0.000	

9 CCV1

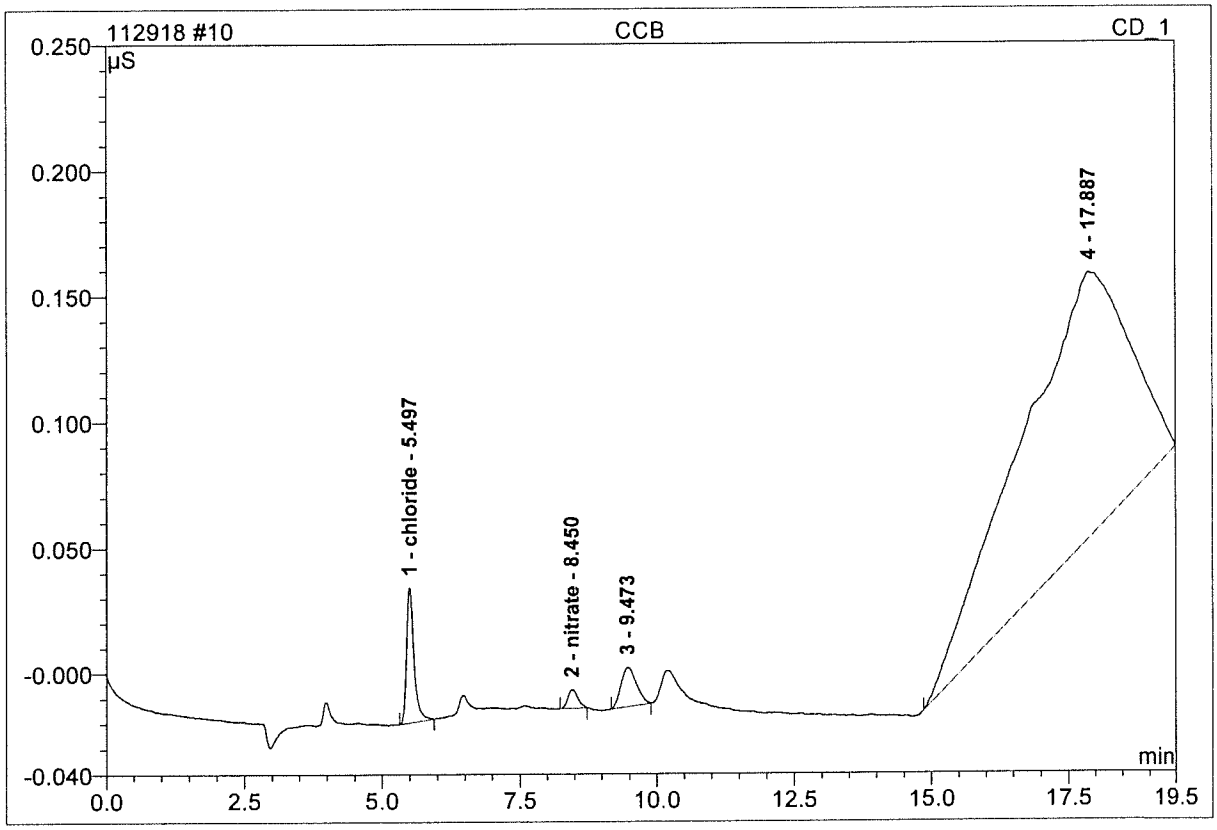
Sample Name:	**CCV1**	*Injection Volume:*	**20.0**
Vial Number:	**3**	*Channel:*	**CD_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**anions3**	*Bandwidth:*	**n.a.**
Quantif. Method:	**110818**	*Dilution Factor:*	**1.**
Recording Time:	**11/29/2018 15:25**	*Sample Weight:*	**1.0000**
Run Time (min):	**19.50**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount ppm	Dil.Fac.
1	4.02	fluoride	17.563	3.192	9.11	10.110	1.
2	5.53	chloride	65.488	10.964	31.28	49.604	1.
3	6.50	nitrite,N	19.986	4.225	12.05	10.369	1.
4	7.60	bromide	4.396	0.849	2.42	10.051	1.
5	8.43	nitrate	23.105	5.445	15.53	9.944	1.
7	10.04	sulfate	21.507	8.011	22.85	49.487	1.
8	16.70	phosphate	13.036	2.352	6.71	9.938	1.
Total:			165.081	35.038	99.96	149.503	

10 CCB

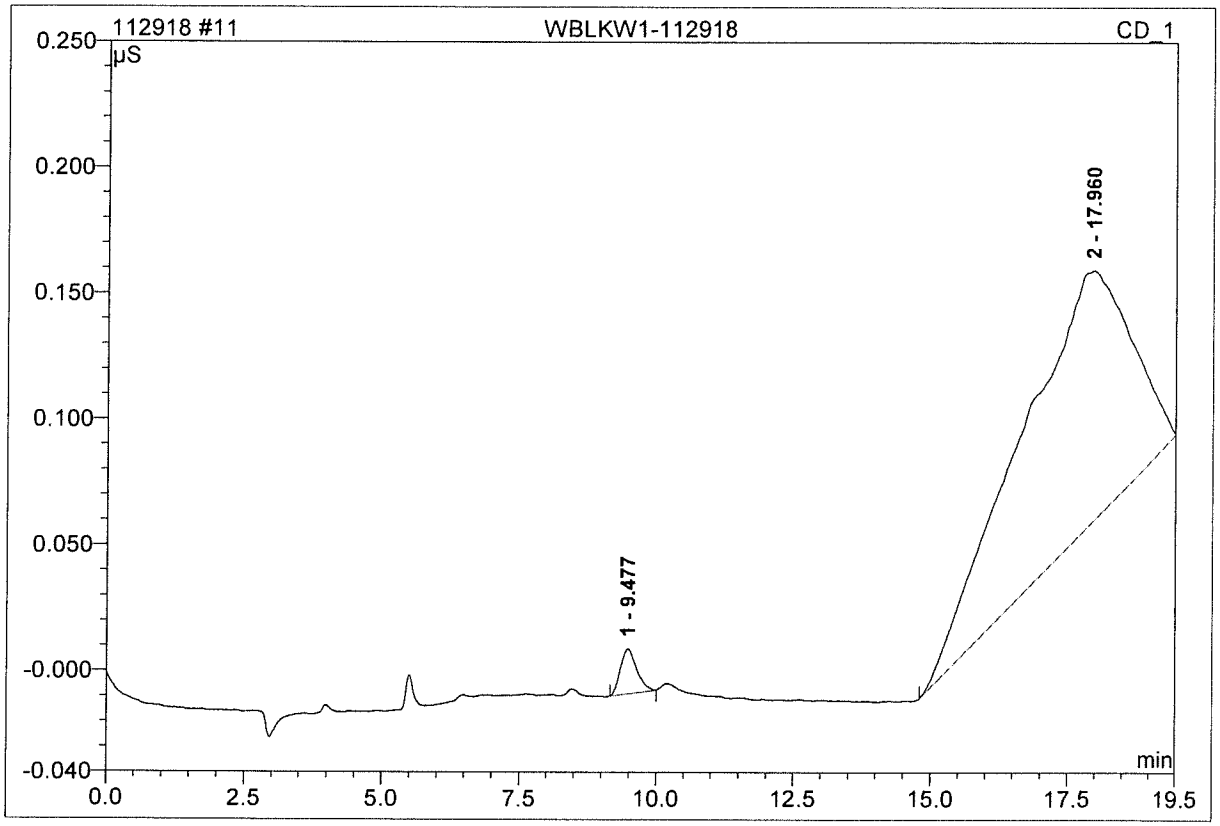
Sample Name:	**CCB**	*Injection Volume:*	**20.0**
Vial Number:	**4**	*Channel:*	**CD_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**anions3**	*Bandwidth:*	**n.a.**
Quantif. Method:	**110818**	*Dilution Factor:*	**1.**
Recording Time:	**11/29/2018 15:46**	*Sample Weight:*	**1.0000**
Run Time (min):	**19.50**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount ppm	Dil.Fac.
1	5.50	chloride	0.054	0.008	3.11	0.273	1.
2	8.45	nitrate	0.007	0.002	0.59	0.073	1.
Total:			0.061	0.010	3.70	0.346	

11 WBLKW1-112918

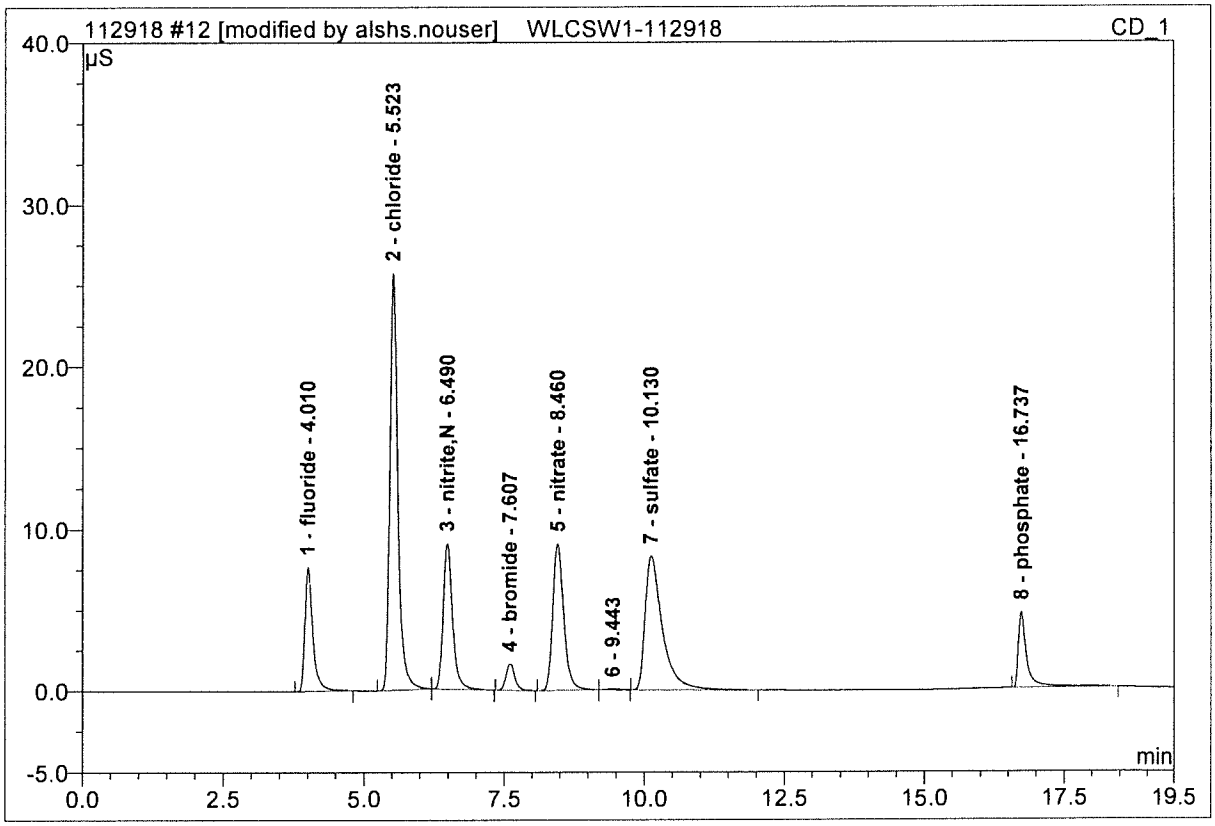
Sample Name:	**WBLKW1-112918**	*Injection Volume:*	**20.0**
Vial Number:	**18**	*Channel:*	**CD_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**anions3**	*Bandwidth:*	**n.a.**
Quantif. Method:	**110818**	*Dilution Factor:*	**1.**
Recording Time:	**11/29/2018 16:08**	*Sample Weight:*	**1.0000**
Run Time (min):	**19.50**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount ppm	Dil.Fac.
Total:			0.000	0.000	0.00	0.000	

12 WLCSW1-112918

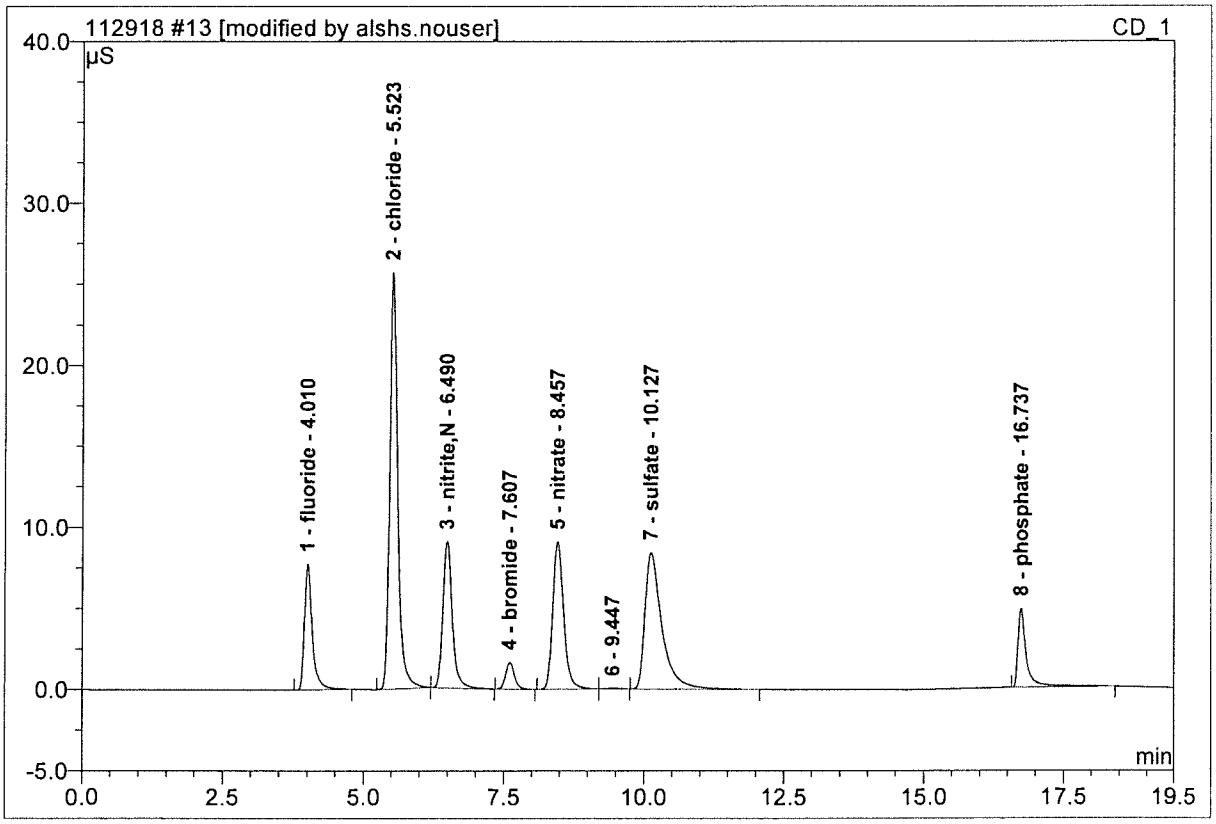
Sample Name:	**WLCSW1-112918**	*Injection Volume:*	**20.0**
Vial Number:	**19**	*Channel:*	**CD_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**anions3**	*Bandwidth:*	**n.a.**
Quantif. Method:	**110818**	*Dilution Factor:*	**1.**
Recording Time:	**11/29/2018 16:30**	*Sample Weight:*	**1.0000**
Run Time (min):	**19.50**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount ppm	Dil.Fac.
1	4.01	fluoride	7.679	1.263	9.37	4.031	1.
2	5.52	chloride	25.721	4.252	31.56	19.382	1.
3	6.49	nitrite,N	9.017	1.759	13.05	4.332	1.
4	7.61	bromide	1.652	0.303	2.25	3.650	1.
5	8.46	nitrate	9.061	2.066	15.33	3.816	1.
7	10.13	sulfate	8.307	2.963	21.99	18.576	1.
8	16.74	phosphate	4.691	0.855	6.34	3.695	1.
Total:			66.127	13.461	99.89	57.482	

13 WLCSDW1-112918

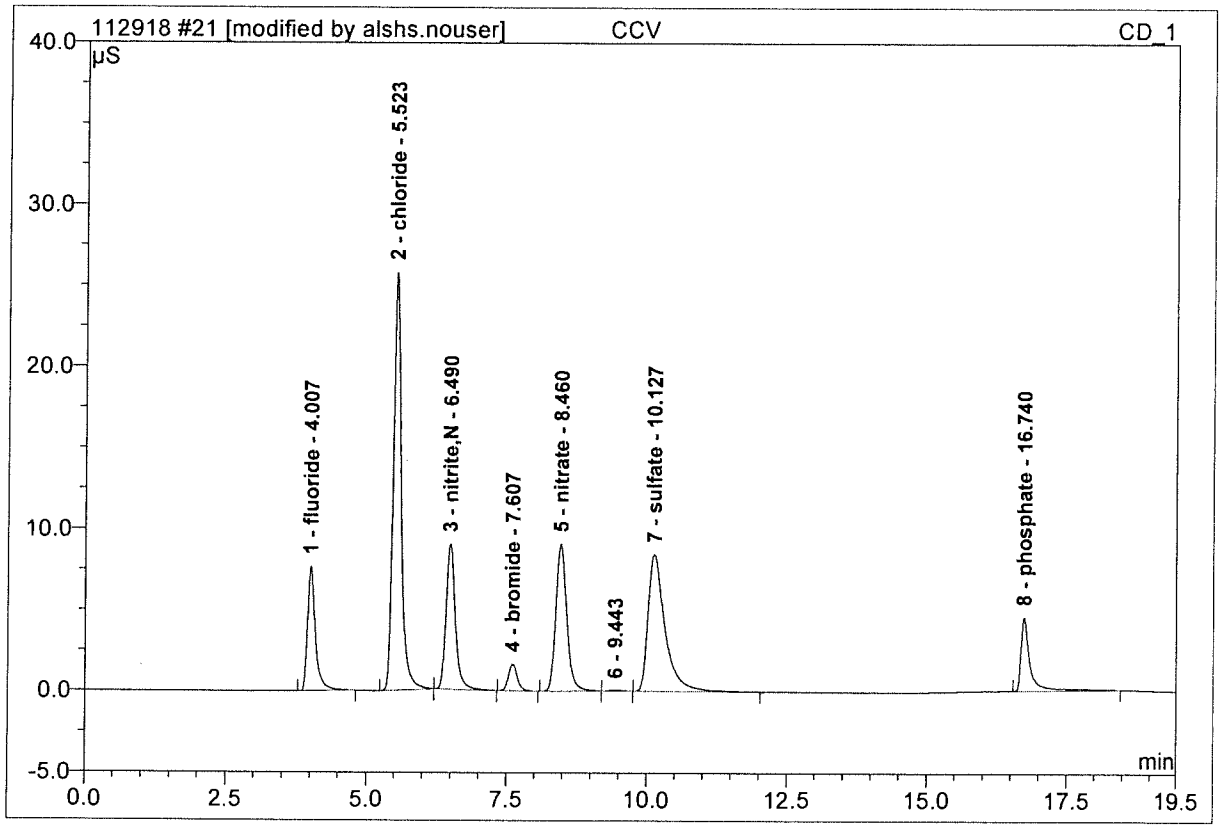
Sample Name:	**WLCSDW1-112918**	*Injection Volume:*	**20.0**
Vial Number:	**20**	*Channel:*	**CD_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**anions3**	*Bandwidth:*	**n.a.**
Quantif. Method:	**110818**	*Dilution Factor:*	**1.**
Recording Time:	**11/29/2018 16:51**	*Sample Weight:*	**1.0000**
Run Time (min):	**19.50**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount ppm	Dil.Fac.
1	4.01	fluoride	7.748	1.262	9.36	4.028	1.
2	5.52	chloride	25.664	4.238	31.44	19.320	1.
3	6.49	nitrite,N	9.017	1.757	13.04	4.327	1.
4	7.61	bromide	1.652	0.303	2.25	3.647	1.
5	8.46	nitrate	9.074	2.065	15.31	3.814	1.
7	10.13	sulfate	8.410	2.970	22.03	18.621	1.
8	16.74	phosphate	4.858	0.872	6.47	3.769	1.
Total:			66.423	13.468	99.90	57.525	

21 CCV

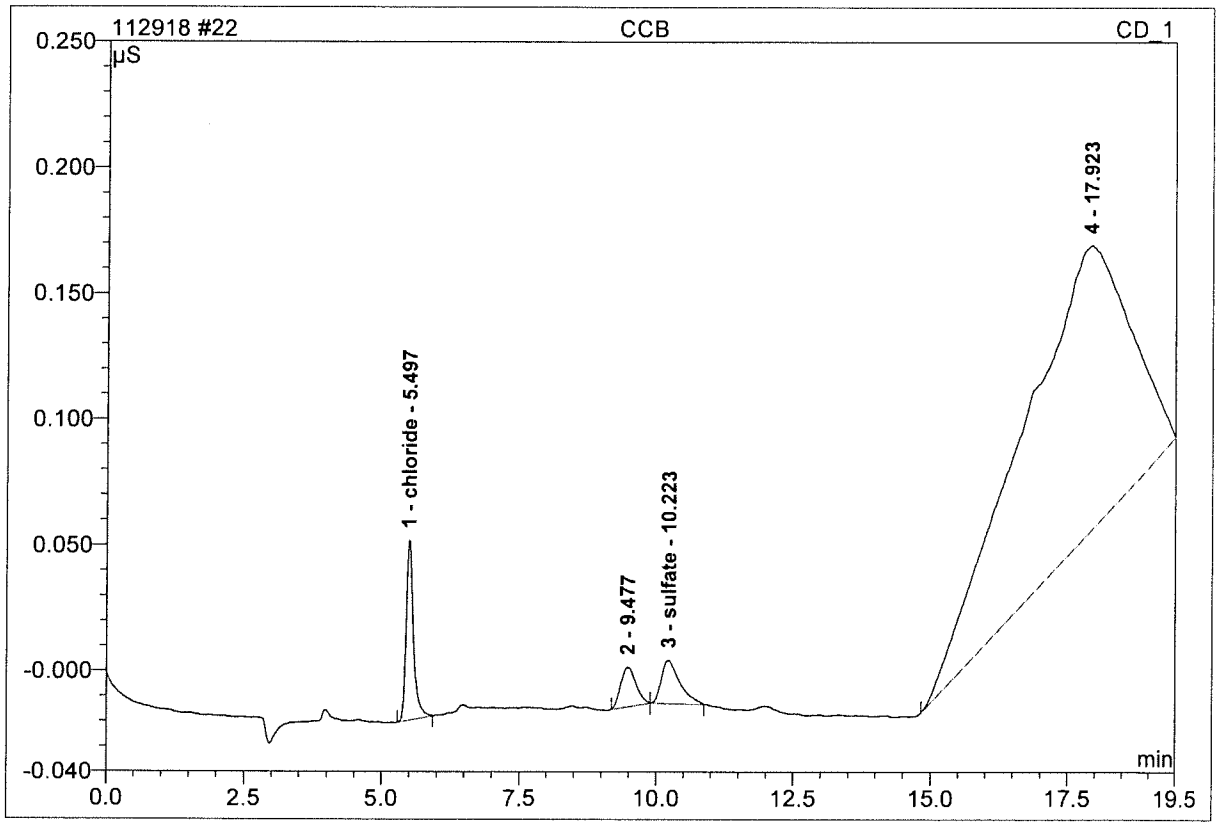
Sample Name:	**CCV**	*Injection Volume:*	**20.0**
Vial Number:	**1**	*Channel:*	**CD_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**anions3**	*Bandwidth:*	**n.a.**
Quantif. Method:	**110818**	*Dilution Factor:*	**1.**
Recording Time:	**11/29/2018 19:45**	*Sample Weight:*	**1.0000**
Run Time (min):	**19.50**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount ppm	Dil.Fac.
1	4.01	fluoride	7.695	1.262	9.35	4.028	1.
2	5.52	chloride	25.768	4.249	31.49	19.367	1.
3	6.49	nitrite,N	8.964	1.749	12.96	4.307	1.
4	7.61	bromide	1.656	0.305	2.26	3.666	1.
5	8.46	nitrate	9.085	2.062	15.29	3.810	1.
7	10.13	sulfate	8.462	2.982	22.10	18.691	1.
8	16.74	phosphate	4.561	0.871	6.46	3.764	1.
Total:			66.191	13.479	99.91	57.633	

22 CCB

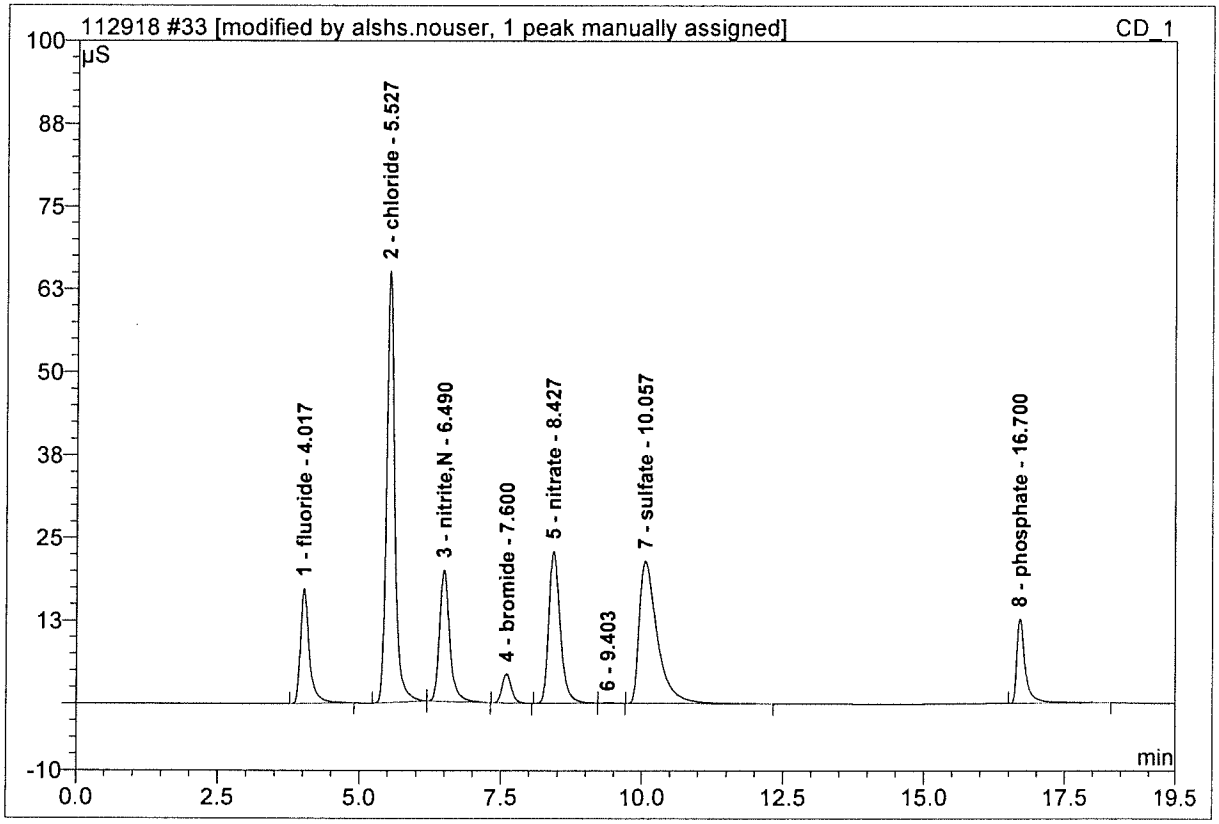
Sample Name:	**CCB**	*Injection Volume:*	**20.0**
Vial Number:	**2**	*Channel:*	**CD_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**anions3**	*Bandwidth:*	**n.a.**
Quantif. Method:	**110818**	*Dilution Factor:*	**1.**
Recording Time:	**11/29/2018 20:07**	*Sample Weight:*	**1.0000**
Run Time (min):	**19.50**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount ppm	Dil.Fac.
1	5.50	chloride	0.071	0.011	3.80	0.285	1.
3	10.22	sulfate	0.017	0.007	2.33	0.476	1.
Total:			0.089	0.018	6.13	0.761	

33 CCV1

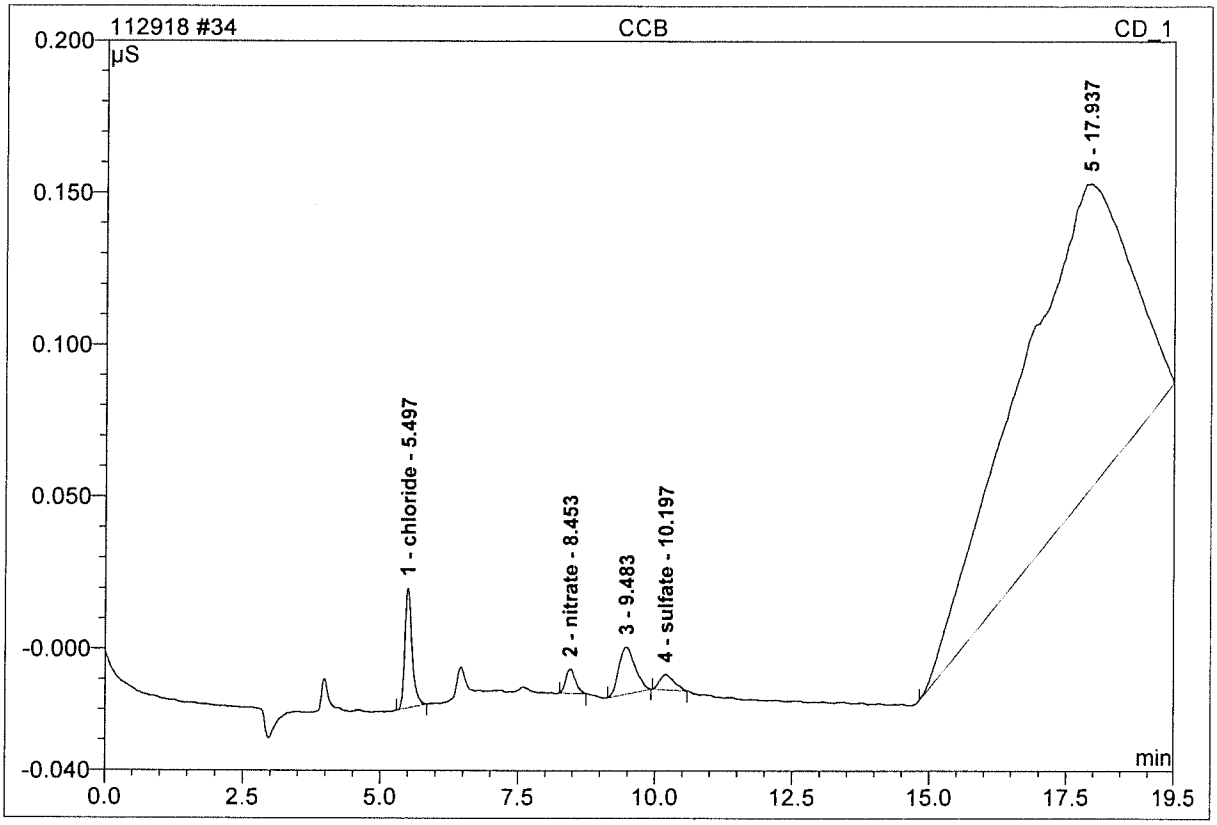
Sample Name:	**CCV1**	*Injection Volume:*	**20.0**
Vial Number:	**3**	*Channel:*	**CD_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**anions3**	*Bandwidth:*	**n.a.**
Quantif. Method:	**110818**	*Dilution Factor:*	**1.**
Recording Time:	**11/30/2018 0:05**	*Sample Weight:*	**1.0000**
Run Time (min):	**19.50**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount ppm	Dil.Fac.
1	4.02	fluoride	17.331	3.173	9.13	10.050	1.
2	5.53	chloride	65.008	10.863	31.27	49.149	1.
3	6.49	nitrite,N	19.822	4.187	12.05	10.274	1.
4	7.60	bromide	4.368	0.841	2.42	9.960	1.
5	8.43	nitrate	22.932	5.407	15.56	9.874	1.
7	10.06	sulfate	21.454	7.955	22.90	49.142	1.
8	16.70	phosphate	12.677	2.302	6.63	9.733	1.
Total:			163.591	34.728	99.96	148.182	

34 CCB

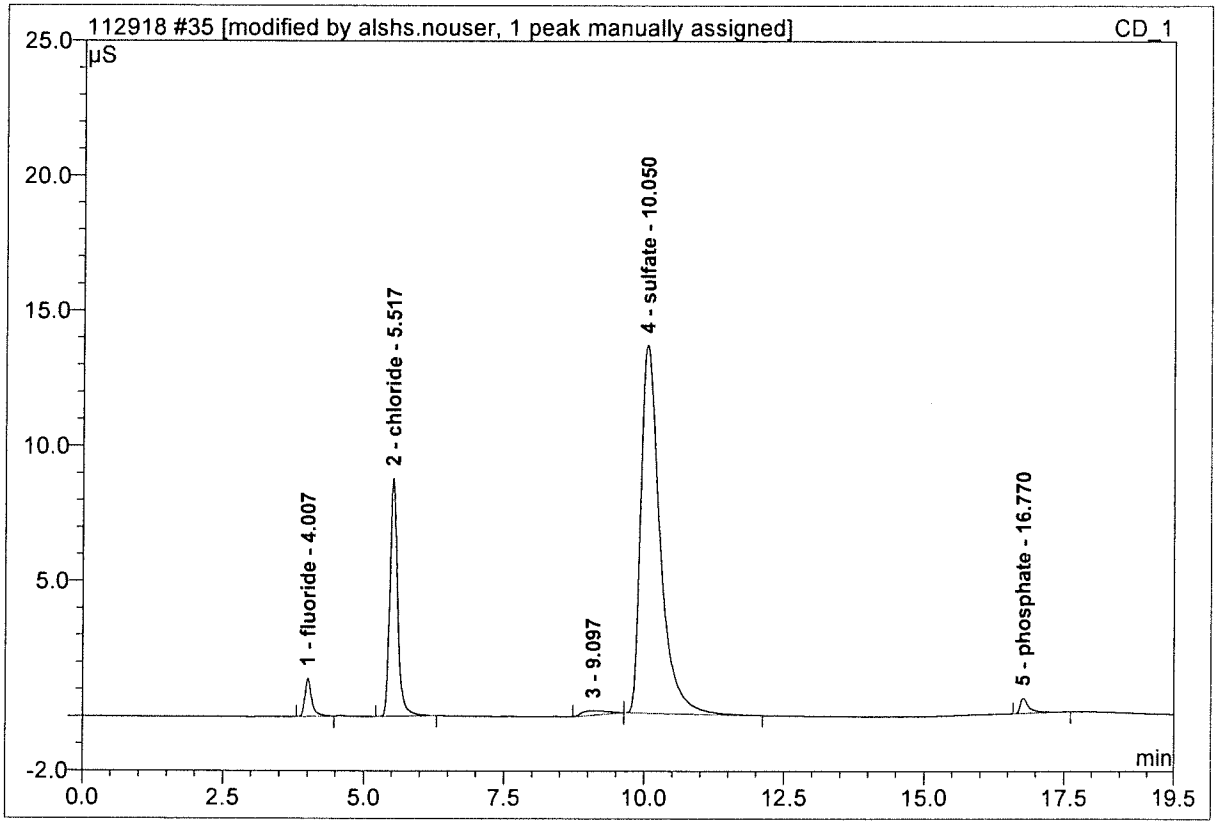
Sample Name:	**CCB**	*Injection Volume:*	**20.0**
Vial Number:	**4**	*Channel:*	**CD_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**anions3**	*Bandwidth:*	**n.a.**
Quantif. Method:	**110818**	*Dilution Factor:*	**1.**
Recording Time:	**11/30/2018 0:27**	*Sample Weight:*	**1.0000**
Run Time (min):	**19.50**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount ppm	Dil.Fac.
1	5.50	chloride	0.040	0.006	2.30	0.263	1.
2	8.45	nitrate	0.008	0.002	0.63	0.073	1.
4	10.20	sulfate	0.005	0.002	0.60	0.444	1.
Total:			0.053	0.009	3.53	0.779	

35 HS18111440-01

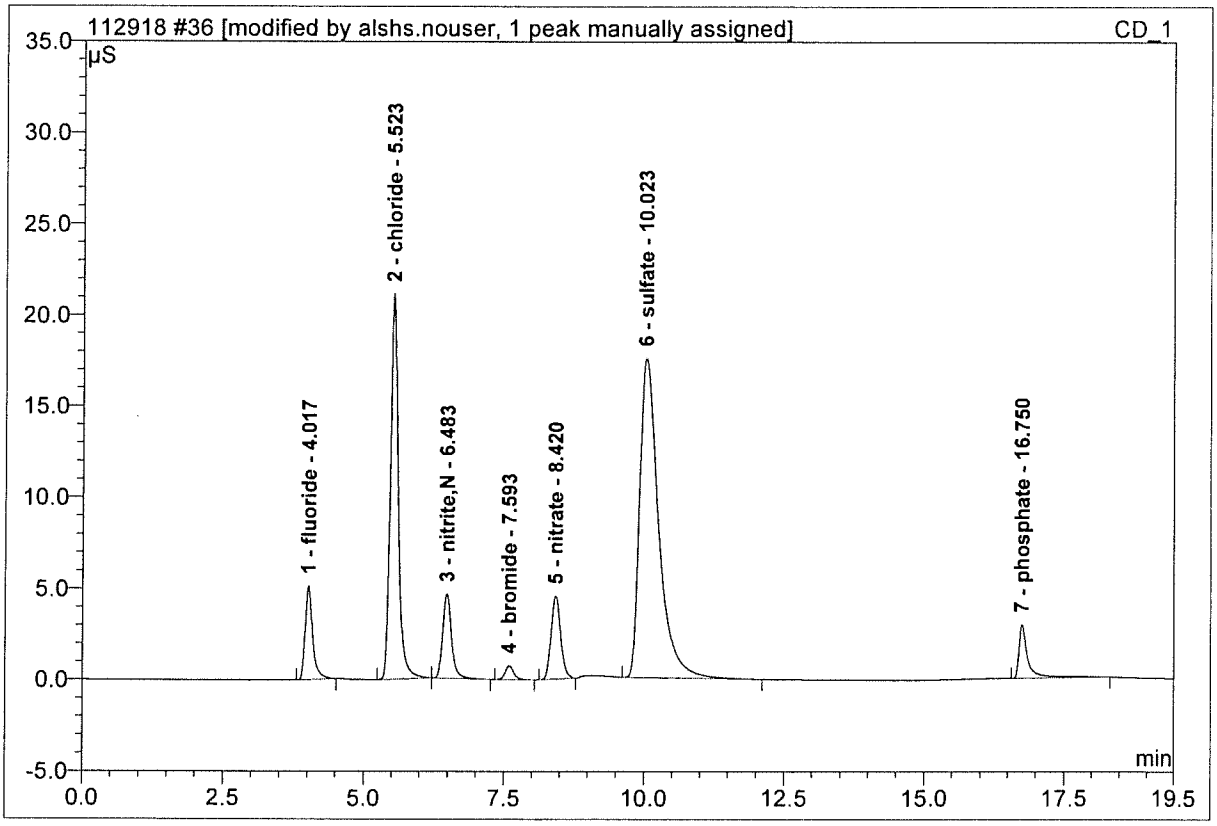
Sample Name:	**HS18111440-01**	*Injection Volume:*	**20.0**
Vial Number:	**53**	*Channel:*	**CD_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**anions3**	*Bandwidth:*	**n.a.**
Quantif. Method:	**110818**	*Dilution Factor:*	**1.**
Recording Time:	**11/30/2018 0:49**	*Sample Weight:*	**1.0000**
Run Time (min):	**19.50**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount ppm	Dil.Fac.
1	4.01	fluoride	1.398	0.196	2.72	0.671	1.
2	5.52	chloride	8.808	1.408	19.51	6.577	1.
4	10.05	sulfate	13.623	5.420	75.08	33.619	1.
5	16.77	phosphate	0.568	0.108	1.50	0.582	1.
Total:			24.397	7.133	98.81	41.449	

36 HS18111440-01MS

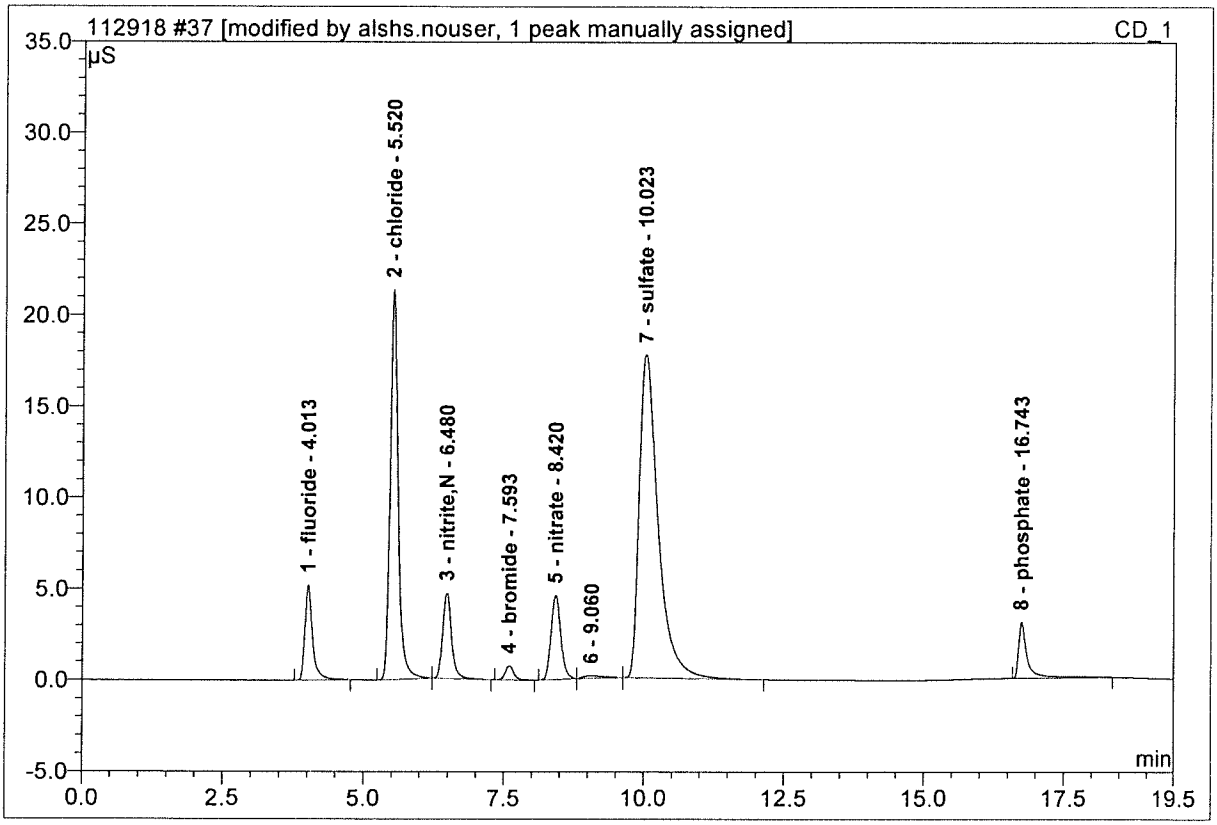
Sample Name:	**HS18111440-01MS**	*Injection Volume:*	**20.0**
Vial Number:	**54**	*Channel:*	**CD_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**anions3**	*Bandwidth:*	**n.a.**
Quantif. Method:	**110818**	*Dilution Factor:*	**1.**
Recording Time:	**11/30/2018 1:11**	*Sample Weight:*	**1.0000**
Run Time (min):	**19.50**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount ppm	Dil.Fac.
1	4.02	fluoride	5.142	0.797	5.83	2.564	1.
2	5.52	chloride	21.136	3.478	25.44	15.896	1.
3	6.48	nitrite,N	4.630	0.848	6.20	2.102	1.
4	7.59	bromide	0.767	0.135	0.99	1.673	1.
5	8.42	nitrate	4.582	0.921	6.73	1.739	1.
6	10.02	sulfate	17.497	6.932	50.71	42.882	1.
7	16.75	phosphate	2.973	0.561	4.10	2.469	1.
Total:			56.727	13.672	100.00	69.325	

37 HS18111440-01MSD

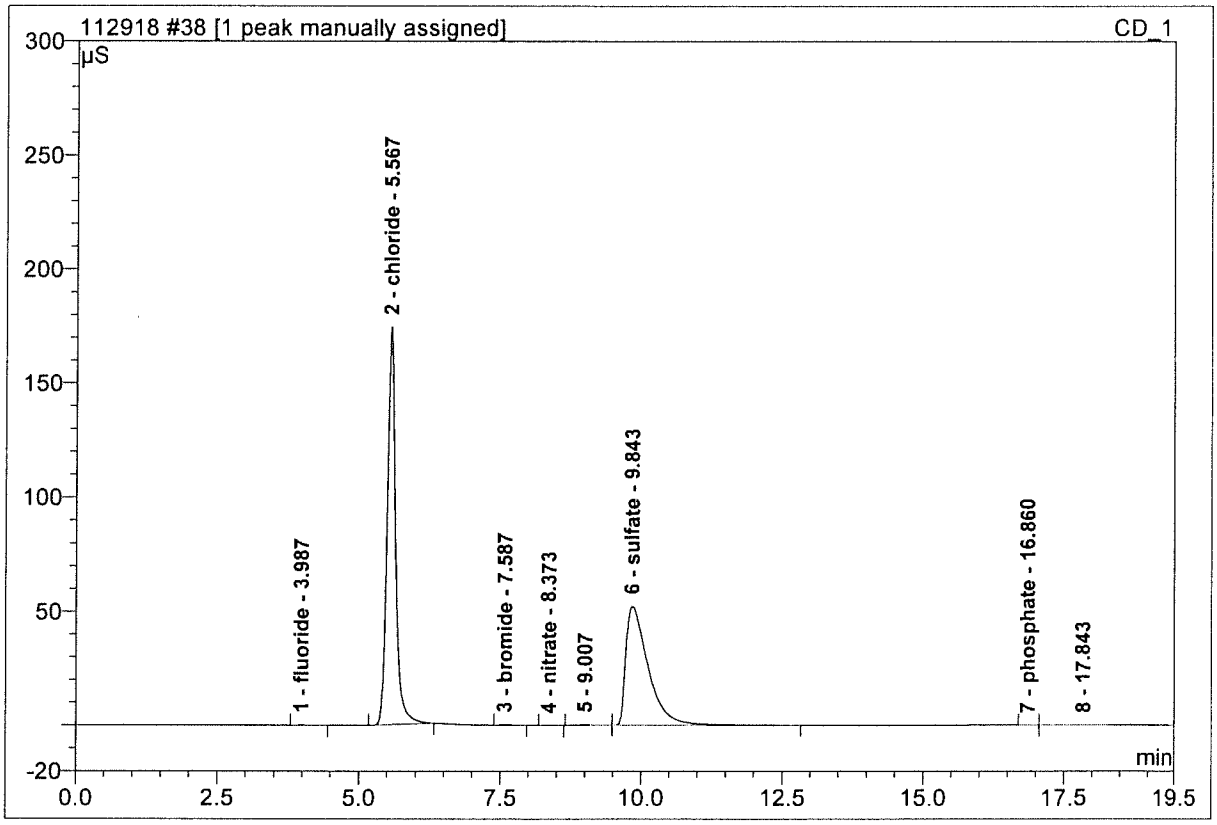
Sample Name:	**HS18111440-01MSD**	*Injection Volume:*	**20.0**
Vial Number:	**55**	*Channel:*	**CD_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**anions3**	*Bandwidth:*	**n.a.**
Quantif. Method:	**110818**	*Dilution Factor:*	**1.**
Recording Time:	**11/30/2018 1:32**	*Sample Weight:*	**1.0000**
Run Time (min):	**19.50**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount ppm	Dil.Fac.
1	4.01	fluoride	5.211	0.826	5.95	2.656	1.
2	5.52	chloride	21.345	3.506	25.26	16.023	1.
3	6.48	nitrite,N	4.684	0.858	6.18	2.126	1.
4	7.59	bromide	0.775	0.137	0.98	1.693	1.
5	8.42	nitrate	4.613	0.935	6.74	1.765	1.
7	10.02	sulfate	17.722	6.970	50.22	43.110	1.
8	16.74	phosphate	3.075	0.582	4.20	2.559	1.
Total:			57.425	13.814	99.53	69.932	

38 HS18111440-02DF2

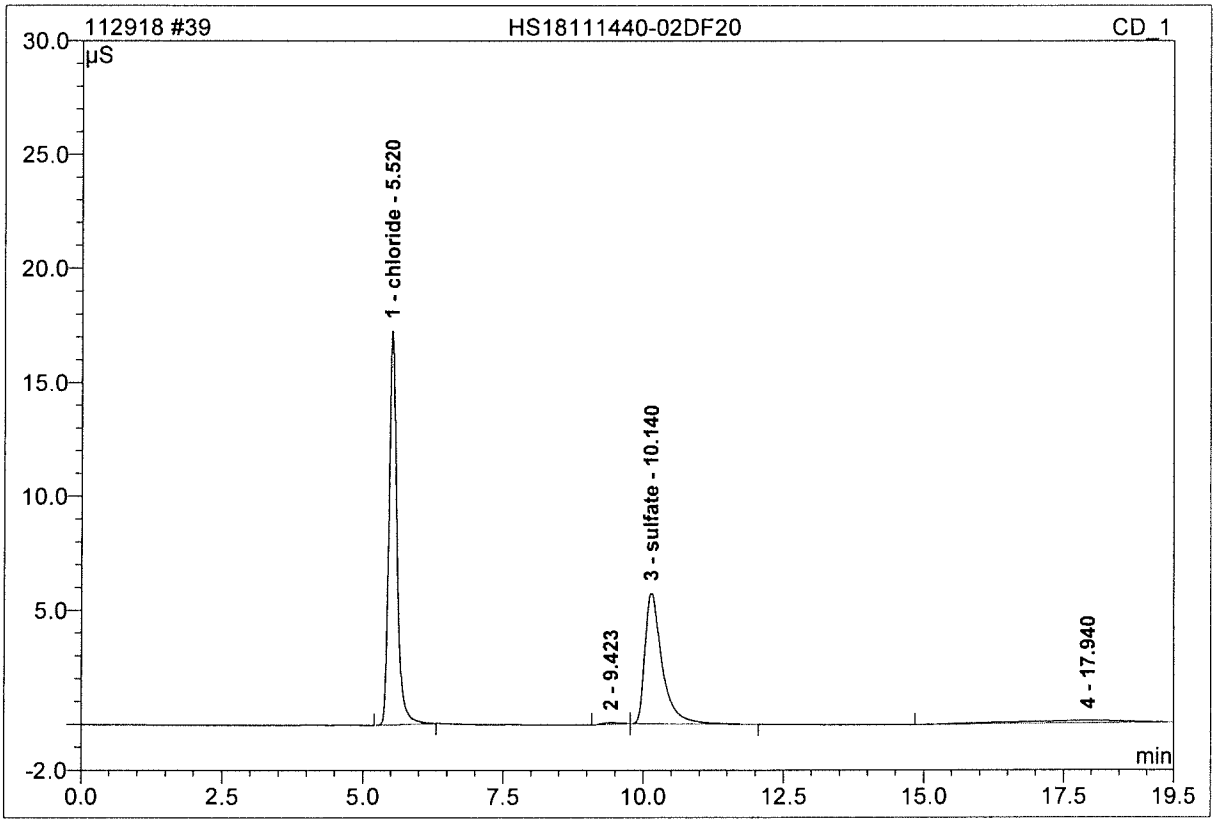
Sample Name:	**HS18111440-02DF2**	*Injection Volume:*	**20.0**
Vial Number:	**56**	*Channel:*	**CD_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**anions3**	*Bandwidth:*	**n.a.**
Quantif. Method:	**110818**	*Dilution Factor:*	**2.**
Recording Time:	**11/30/2018 1:54**	*Sample Weight:*	**1.0000**
Run Time (min):	**19.50**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount ppm	Dil.Fac.
1	3.99	fluoride	0.201	0.032	0.06	0.303	2.
2	5.57	chloride	174.359	29.938	55.44	270.084	2.
3	7.59	bromide	0.291	0.051	0.09	1.375	2.
4	8.37	nitrate	0.013	0.002	0.00	0.148	2.
6	9.84	sulfate	52.307	23.821	44.11	292.586	2.
7	16.86	phosphate	0.010	0.002	0.00	0.279	2.
Total:			227.180	53.846	99.71	564.773	

39 HS18111440-02DF20

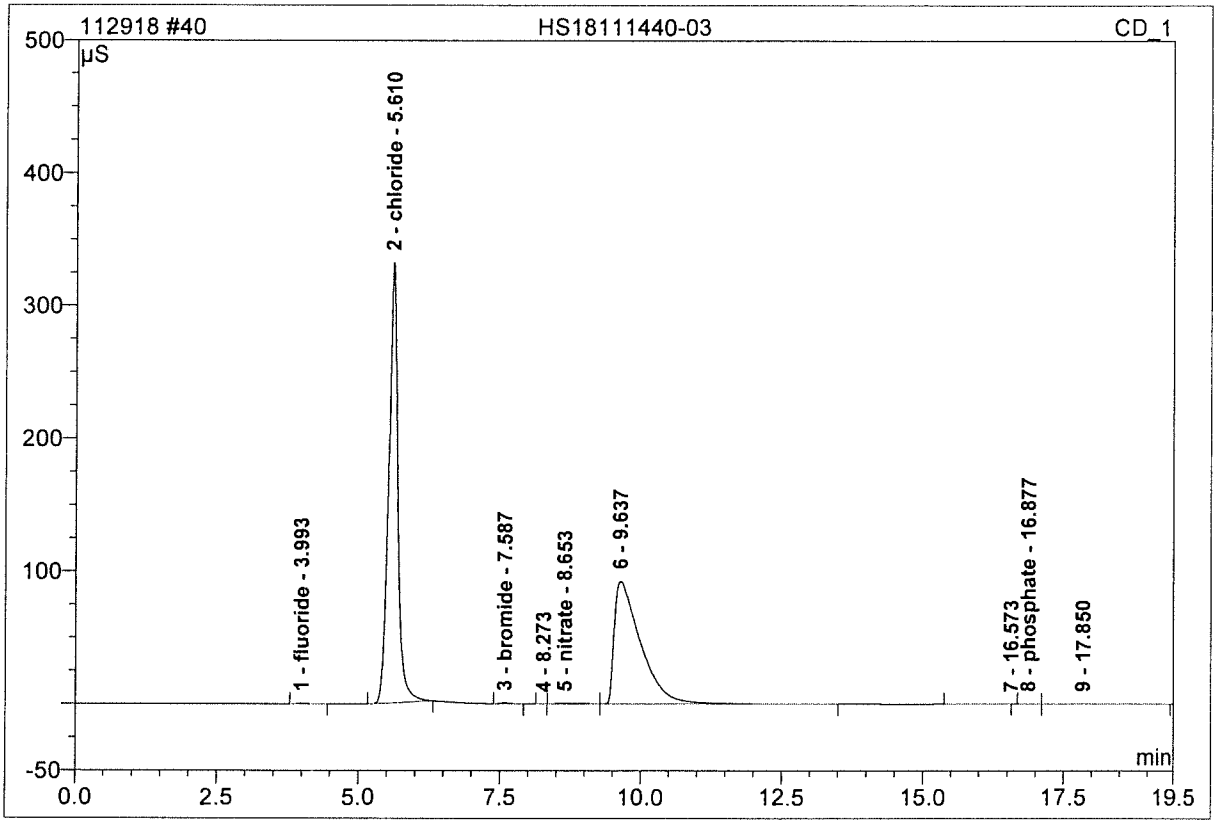
Sample Name:	**HS18111440-02DF20**	*Injection Volume:*	**20.0**
Vial Number:	**57**	*Channel:*	**CD_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**anions3**	*Bandwidth:*	**n.a.**
Quantif. Method:	**110818**	*Dilution Factor:*	**20.**
Recording Time:	**11/30/2018 2:16**	*Sample Weight:*	**1.0000**
Run Time (min):	**19.50**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount ppm	Dil.Fac.
1	5.52	chloride	17.272	2.833	54.77	259.849	20.
3	10.14	sulfate	5.719	2.032	39.29	257.542	20.
Total:			22.990	4.865	94.06	517.391	

40 HS18111440-03

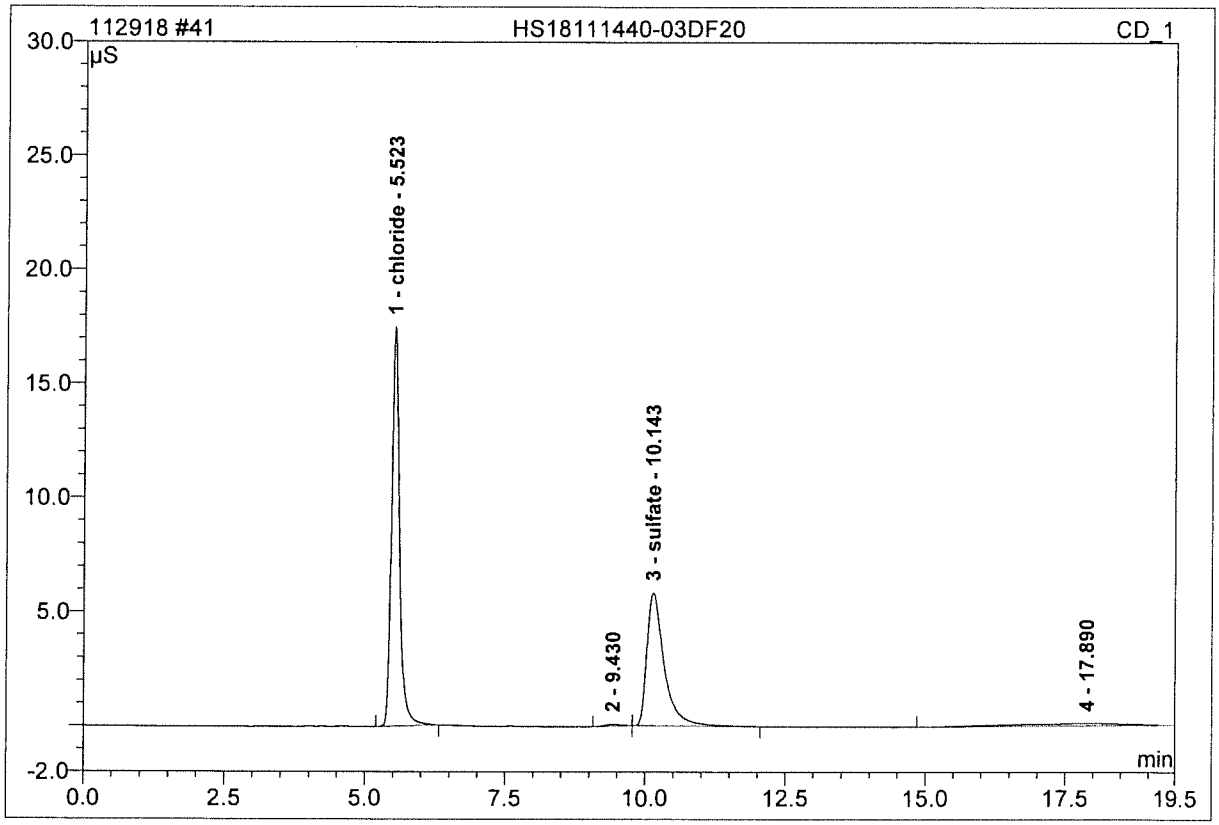
Sample Name:	**HS18111440-03**	*Injection Volume:*	**20.0**
Vial Number:	**58**	*Channel:*	**CD_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**anions3**	*Bandwidth:*	**n.a.**
Quantif. Method:	**110818**	*Dilution Factor:*	**1.**
Recording Time:	**11/30/2018 2:37**	*Sample Weight:*	**1.0000**
Run Time (min):	**19.50**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount ppm	Dil.Fac.
1	3.99	fluoride	0.408	0.063	0.06	0.250	1.
2	5.61	chloride	331.571	62.329	55.33	280.894	1.
3	7.59	bromide	0.691	0.118	0.10	1.476	1.
5	8.65	nitrate	0.199	0.110	0.10	0.269	1.
8	16.88	phosphate	0.016	0.004	0.00	0.146	1.
Total:			332.885	62.623	55.59	283.035	

41 HS18111440-03DF20

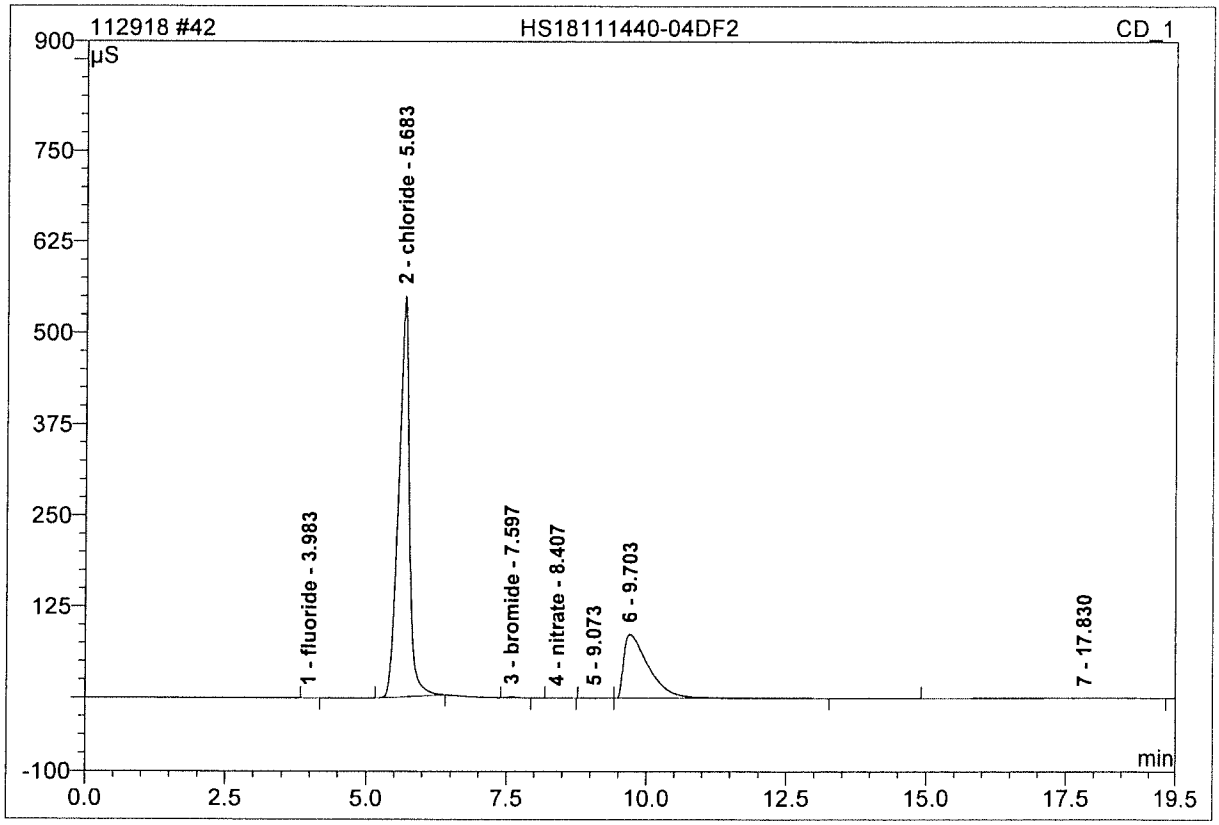
Sample Name:	**HS18111440-03DF20**	*Injection Volume:*	**20.0**
Vial Number:	**59**	*Channel:*	**CD_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**anions3**	*Bandwidth:*	**n.a.**
Quantif. Method:	**110818**	*Dilution Factor:*	**20.**
Recording Time:	**11/30/2018 2:59**	*Sample Weight:*	**1.0000**
Run Time (min):	**19.50**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount ppm	Dil.Fac.
1	5.52	chloride	17.485	2.871	54.55	263.239	20.
3	10.14	sulfate	5.817	2.083	39.58	263.724	20.
Total:			23.301	4.953	94.13	526.963	

42 HS18111440-04DF2

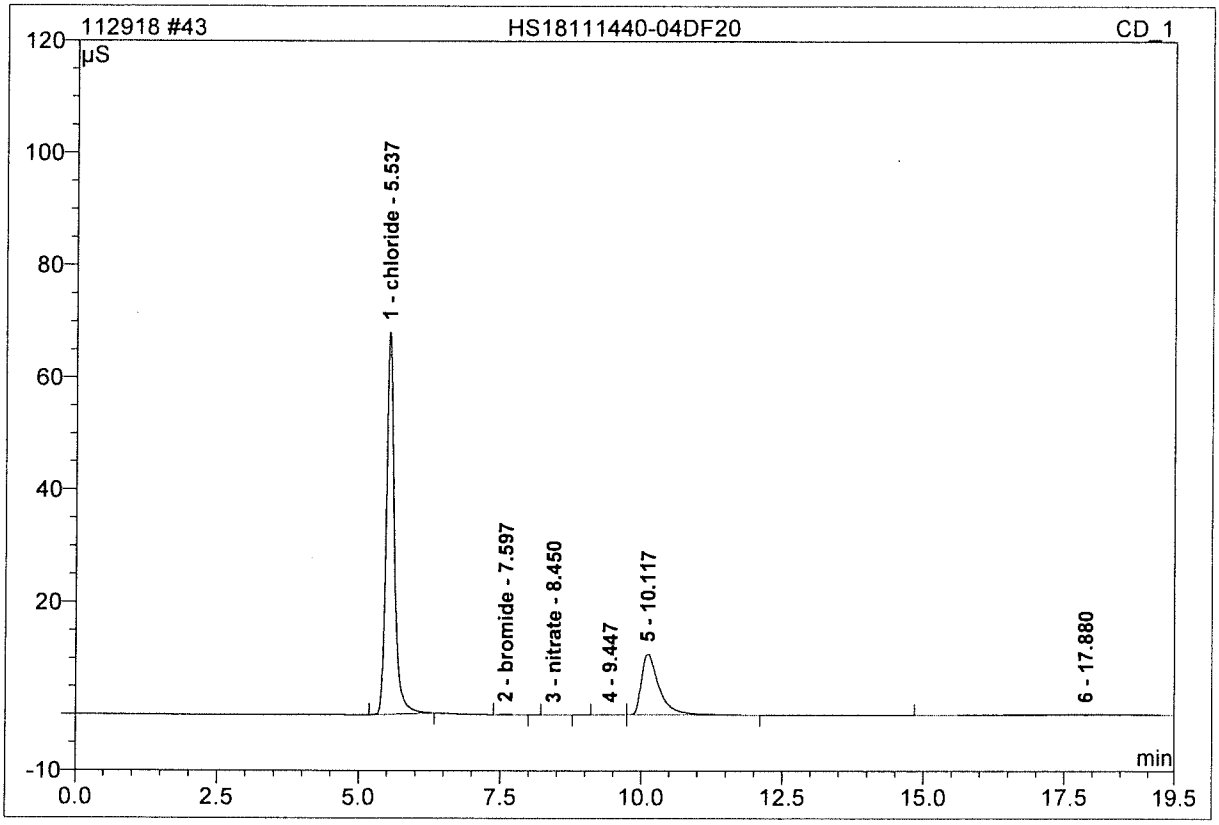
Sample Name:	**HS18111440-04DF2**	*Injection Volume:*	**20.0**
Vial Number:	**60**	*Channel:*	**CD_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**anions3**	*Bandwidth:*	**n.a.**
Quantif. Method:	**110818**	*Dilution Factor:*	**2.**
Recording Time:	**11/30/2018 3:21**	*Sample Weight:*	**1.0000**
Run Time (min):	**19.50**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount ppm	Dil.Fac.
1	3.98	fluoride	0.081	0.011	0.01	0.171	2.
2	5.68	chloride	548.557	121.970	72.97	1098.903	2.
3	7.60	bromide	1.241	0.220	0.13	5.342	2.
4	8.41	nitrate	0.274	0.052	0.03	0.327	2.
Total:			550.153	122.252	73.14	1104.743	

43 HS18111440-04DF20

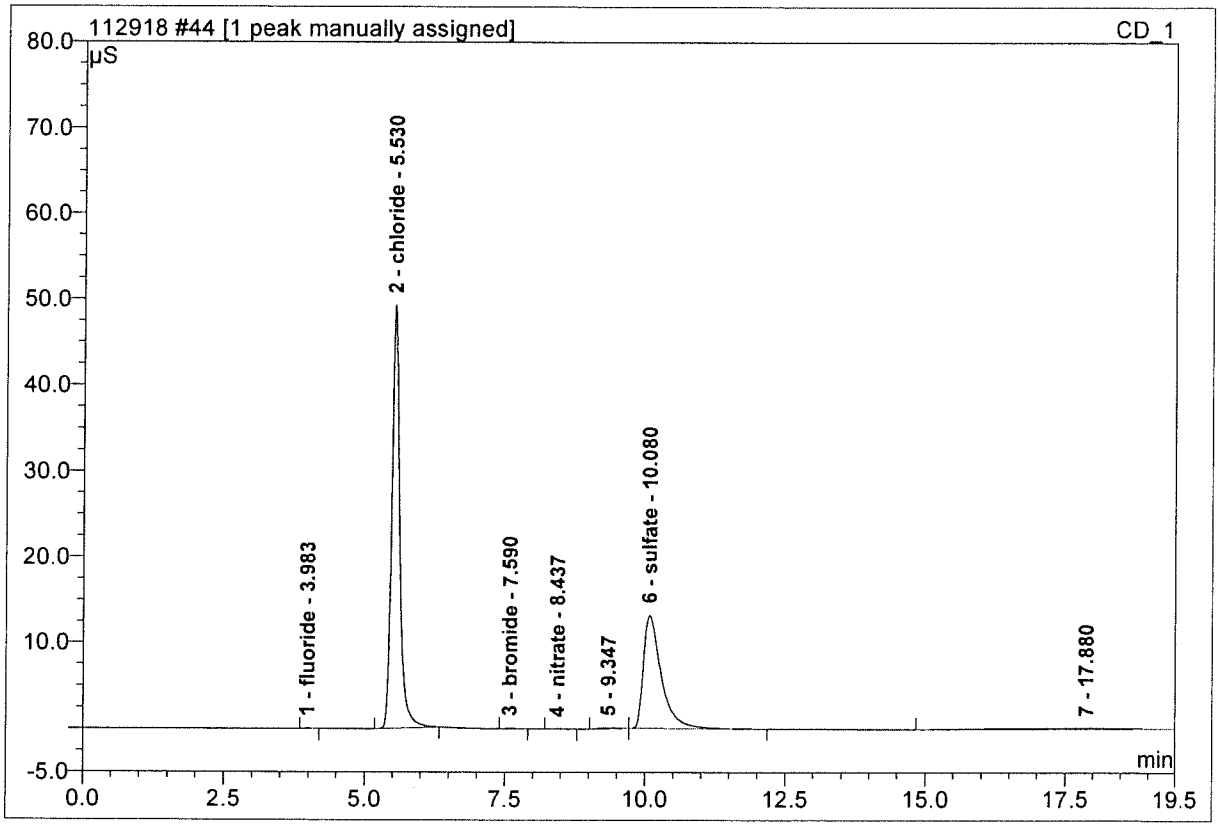
Sample Name:	**HS18111440-04DF20**	*Injection Volume:*	**20.0**
Vial Number:	**61**	*Channel:*	**CD_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**anions3**	*Bandwidth:*	**n.a.**
Quantif. Method:	**110818**	*Dilution Factor:*	**20.**
Recording Time:	**11/30/2018 3:43**	*Sample Weight:*	**1.0000**
Run Time (min):	**19.50**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount ppm	Dil.Fac.
1	5.54	chloride	68.076	11.353	72.78	1027.172	20.
2	7.60	bromide	0.077	0.014	0.09	5.185	20.
3	8.45	nitrate	0.017	0.004	0.02	1.524	20.
Total:			68.171	11.371	72.90	1033.880	

44 HS18111440-05DF10

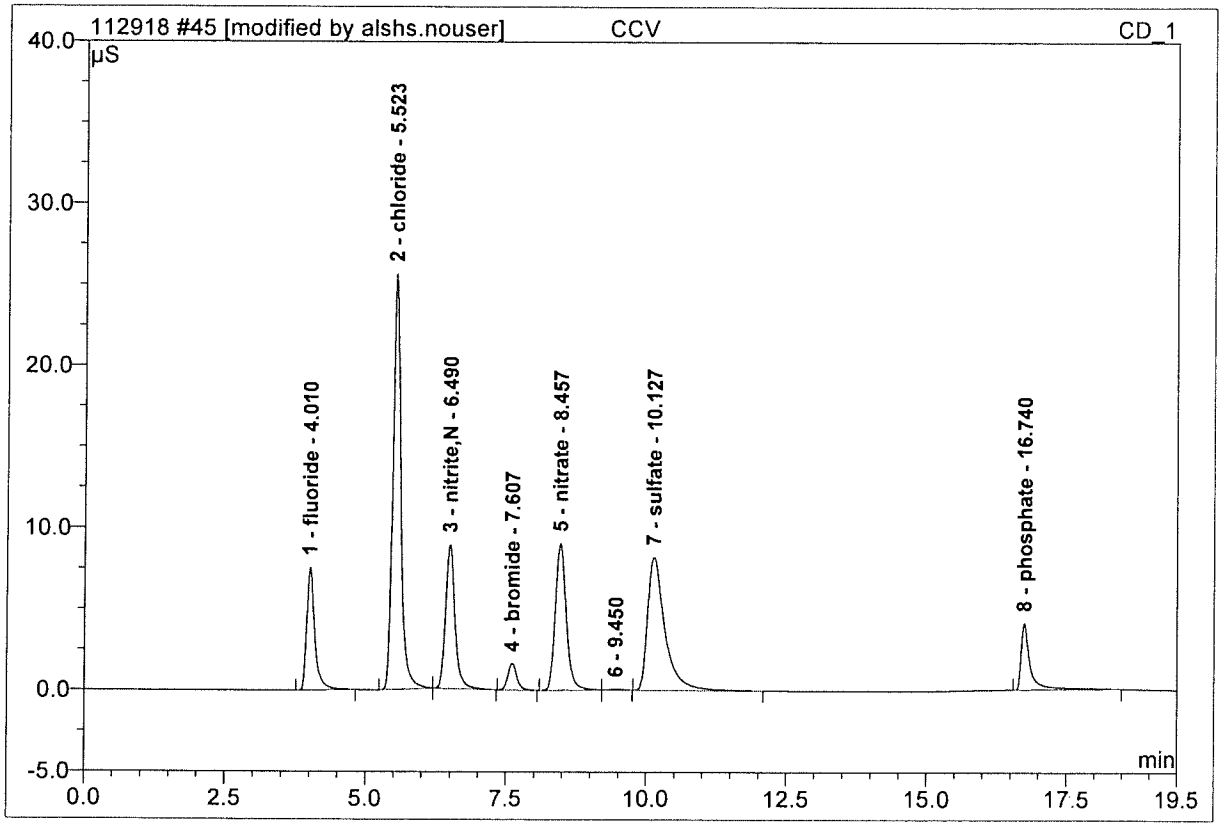
Sample Name:	**HS18111440-05DF10**	*Injection Volume:*	**20.0**
Vial Number:	**63**	*Channel:*	**CD_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**anions3**	*Bandwidth:*	**n.a.**
Quantif. Method:	**110818**	*Dilution Factor:*	**10.**
Recording Time:	**11/30/2018 4:04**	*Sample Weight:*	**1.0000**
Run Time (min):	**19.50**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount ppm	Dil.Fac.
1	3.98	fluoride	0.073	0.009	0.07	0.808	10.
2	5.53	chloride	49.202	8.213	61.11	372.154	10.
3	7.59	bromide	0.059	0.011	0.08	2.192	10.
4	8.44	nitrate	0.012	0.003	0.02	0.745	10.
6	10.08	sulfate	13.180	4.875	36.27	302.816	10.
Total:			62.526	13.110	97.56	678.716	

45 CCV

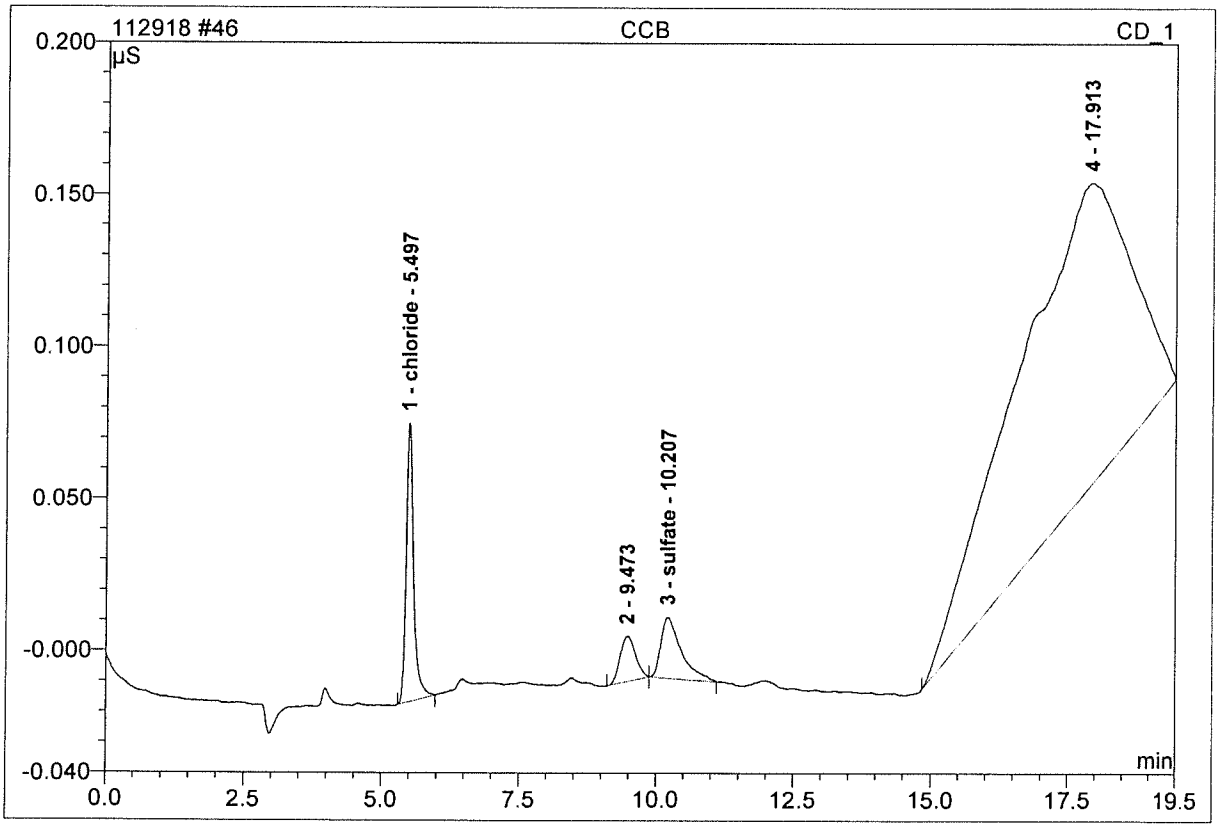
Sample Name:	**CCV**	*Injection Volume:*	**20.0**
Vial Number:	**1**	*Channel:*	**CD_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**anions3**	*Bandwidth:*	**n.a.**
Quantif. Method:	**110818**	*Dilution Factor:*	**1.**
Recording Time:	**11/30/2018 4:26**	*Sample Weight:*	**1.0000**
Run Time (min):	**19.50**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount ppm	Dil.Fac.
1	4.01	fluoride	7.553	1.251	9.36	3.993	1.
2	5.52	chloride	25.609	4.237	31.70	19.313	1.
3	6.49	nitrite,N	8.856	1.736	12.99	4.275	1.
4	7.61	bromide	1.636	0.302	2.26	3.630	1.
5	8.46	nitrate	9.030	2.063	15.44	3.811	1.
7	10.13	sulfate	8.199	2.955	22.11	18.526	1.
8	16.74	phosphate	4.109	0.810	6.06	3.508	1.
Total:			64.992	13.353	99.91	57.056	

46 CCB

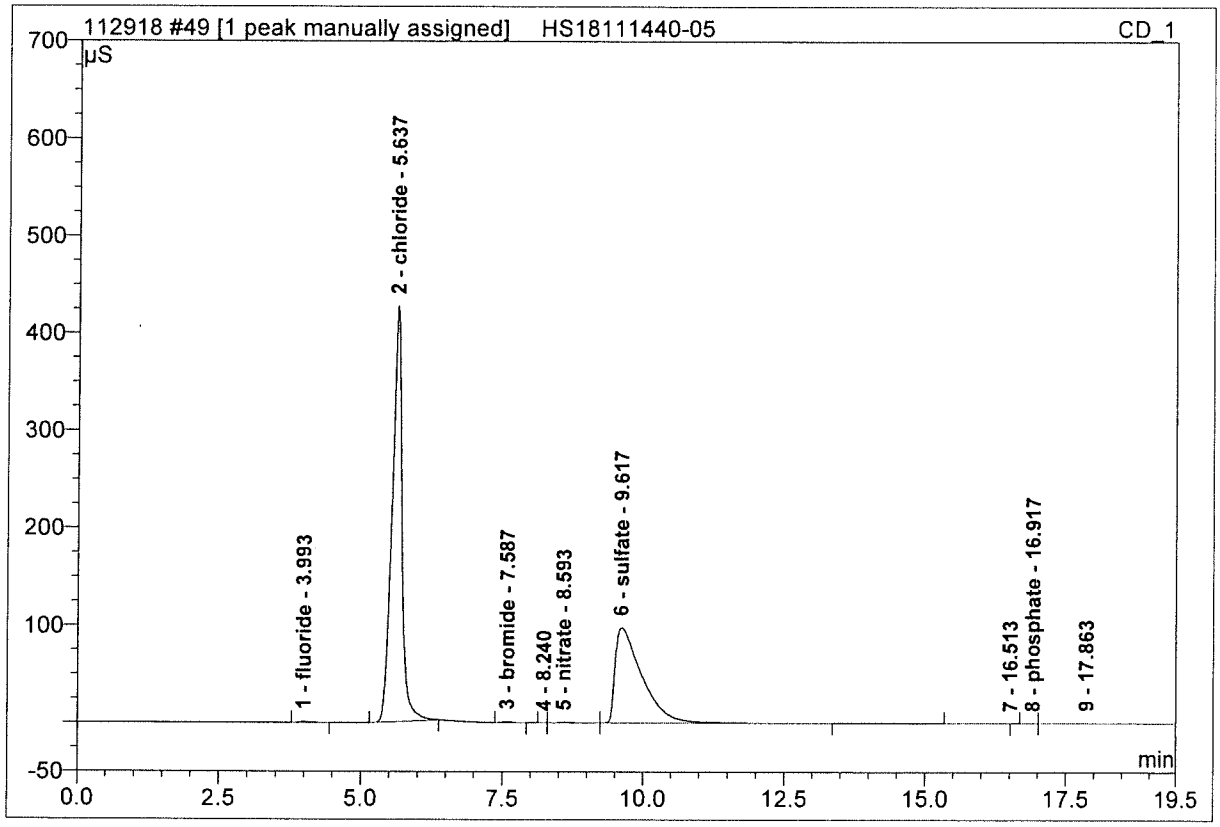
Sample Name:	**CCB**	*Injection Volume:*	**20.0**
Vial Number:	**2**	*Channel:*	**CD_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**anions3**	*Bandwidth:*	**n.a.**
Quantif. Method:	**110818**	*Dilution Factor:*	**1.**
Recording Time:	**11/30/2018 4:48**	*Sample Weight:*	**1.0000**
Run Time (min):	**19.50**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount ppm	Dil.Fac.
1	5.50	chloride	0.092	0.014	5.14	0.299	1.
3	10.21	sulfate	0.020	0.009	3.11	0.487	1.
Total:			0.112	0.023	8.25	0.787	

49 HS18111440-05

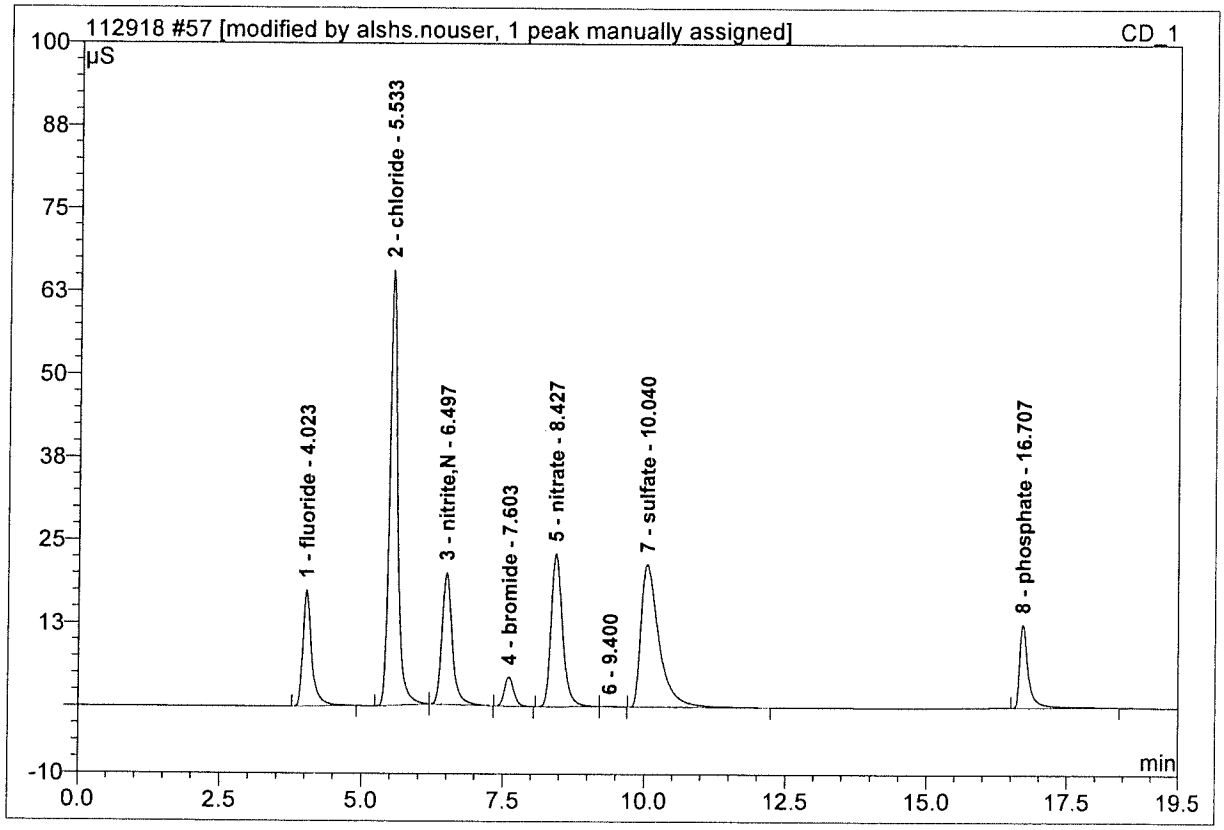
Sample Name:	**HS18111440-05**	*Injection Volume:*	**20.0**
Vial Number:	**62**	*Channel:*	**CD_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**anions3**	*Bandwidth:*	**n.a.**
Quantif. Method:	**110818**	*Dilution Factor:*	**1.**
Recording Time:	**11/30/2018 5:53**	*Sample Weight:*	**1.0000**
Run Time (min):	**19.50**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount ppm	Dil.Fac.
1	3.99	fluoride	0.989	0.155	0.11	0.542	1.
2	5.64	chloride	426.861	86.450	61.40	389.509	1.
3	7.59	bromide	0.972	0.169	0.12	2.073	1.
5	8.59	nitrate	0.171	0.093	0.07	0.239	1.
6	9.62	sulfate	98.293	53.845	38.24	330.129	1.
8	16.92	phosphate	0.009	0.002	0.00	0.137	1.
Total:			527.295	140.714	99.93	722.629	

57 CCV1

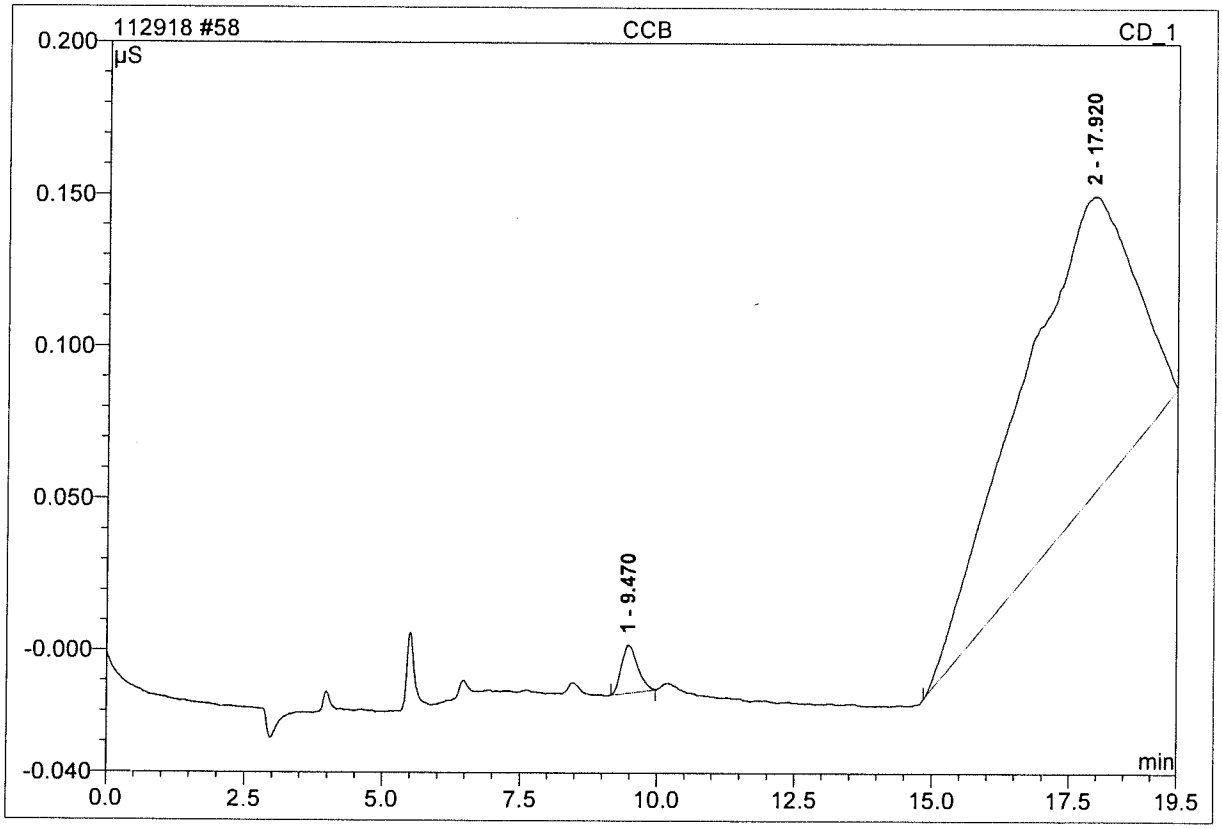
Sample Name:	**CCV1**	*Injection Volume:*	**20.0**
Vial Number:	**3**	*Channel:*	**CD_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**anions3**	*Bandwidth:*	**n.a.**
Quantif. Method:	**110818**	*Dilution Factor:*	**1.**
Recording Time:	**11/30/2018 8:46**	*Sample Weight:*	**1.0000**
Run Time (min):	**19.50**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount ppm	Dil.Fac.
1	4.02	fluoride	17.442	3.191	9.13	10.107	1.
2	5.53	chloride	65.573	10.984	31.41	49.693	1.
3	6.50	nitrite,N	19.794	4.193	11.99	10.290	1.
4	7.60	bromide	4.387	0.848	2.42	10.035	1.
5	8.43	nitrate	23.009	5.438	15.55	9.931	1.
7	10.04	sulfate	21.460	7.990	22.85	49.357	1.
8	16.71	phosphate	12.455	2.312	6.61	9.774	1.
Total:			164.119	34.956	99.96	149.188	

58 CCB

Sample Name:	**CCB**	*Injection Volume:*	**20.0**
Vial Number:	**4**	*Channel:*	**CD_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**anions3**	*Bandwidth:*	**n.a.**
Quantif. Method:	**110818**	*Dilution Factor:*	**1.**
Recording Time:	**11/30/2018 9:08**	*Sample Weight:*	**1.0000**
Run Time (min):	**19.50**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount ppm	Dil.Fac.
Total:			0.000	0.000	0.00	0.000	

HS18111497 Cover Page

ALS WO# HS18111497

ALS Environmental
ALS Group USA, Corp
1317 South 13th Avenue
Kelso, WA 98626
T : +1 360 577 7222
F : +1 360 636 1068
www.alsglobal.com

Table of Contents

HS18111497 Cover Page
- CoverPage
- HS18111497 Longhorn Army Ammunition Plant LHAAP50 Final
  - CoverLetter
  - Sample Summary
  - CaseNarrative
  - 50WW06-181129
  - 50WW13-181129
  - 50WW14-181129
  - Weight/Volume Log
  - Dates Report
  - QC
  - Acronyms
  - Certifications
  - Sample Tracking Record
  - SampleReceiptCheckList
  - COC
  - HS18111497 ALS Kelso Sub Data
  - HS18111497 ALS Salt Lake City Combined Report 1833875
  - HS18111497 ALS Simi Valley P1806587 Tier IV
- HS18111497 8260 Raw Data
- HS18111497 Longhorn Army Ammunition Plant LHAAP50

Table of Contents (continued)

Form 11 - ICPMS05 Internal Standard Association
Form 12 - ICPMS05_328925 Preparation Log
Form 12 - ICPMS05_329366 Preparation Log
Form 13 - ICPMS05_328925 Run Log
Form 13 - ICPMS05_329366 Run Log
Form 2 - ICPMS05_328925 CCV
Form 2 - ICPMS05_329366 CCV
Form 3 - ICPMS05_328925 CCB
Form 3 - ICPMS05_329366 CCB
Form 4 - ICPMS05_328925 ICSA
Form 4 - ICPMS05_329366 ICSA
Form 5A - ICPMS05_328925 MS
Form 5A - ICPMS05_329366 MS
Form 5B - ICPMS05_328925 PDS
Form 5B - ICPMS05_329366 PDS
Form 7 - ICPMS05_328925 LCS
Form 7 - ICPMS05_329366 LCS
Form 8 - ICPMS05_328925 SD
Form 8 - ICPMS05_329366 SD
HS18111497 Wet Chem Raw

10450 Stancliff Rd. Suite 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887
www.alsglobal.com

WorkOrder: HS18111497

Longhorn Army Ammunition Plant LHAAP-50

Aptim Environmental & Infrastucture, Inc.

Susan Huang
2500 City West Blvd., Suite 1700
Houston TX 77042

28-Jan-2019

HS18111497 Longhorn Army Ammunition Plant LHAAP50 Final

ALS WO# HS18111497

10450 Stancliff Rd. Suite 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887

December 21, 2018

Susan Huang
Aptim Environmental & Infrastucture, Inc.
2500 City West Blvd., Suite 1700
Houston, TX 77042

Work Order: **HS18111497**

Laboratory Results for: **Longhorn Army Ammunition Plant LHAAP-50**

Dear Susan,

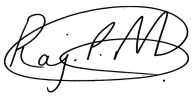
ALS Environmental received 3 sample(s) on Nov 30, 2018 for the analysis presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

If you have any questions regarding this report, please feel free to call me.

Sincerely,



Generated By: JUMOKE.LAWAL
RJ Modashia
Project Manager

ALS Houston, US Date: 21-Dec-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant LHAAP-50
Work Order: HS18111497

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS18111497-01	50WW06-181129	Groundwater		29-Nov-2018 15:25	30-Nov-2018 09:40	☐
HS18111497-02	50WW13-181129	Groundwater		29-Nov-2018 11:15	30-Nov-2018 09:40	☐
HS18111497-03	50WW14-181129	Groundwater		29-Nov-2018 13:20	30-Nov-2018 09:40	☐

ALS Houston, US Date: 21-Dec-18

Client: Aptim Environmental & Infrastucture, Inc. **CASE NARRATIVE**
Project: Longhorn Army Ammunition Plant LHAAP-50
Work Order:

Work Order Comments

- The analysis for Methane, Methene, Ethane and CO2 by RSK175 was subcontracted to ALS Simi Valley, CA. Final report attached.
- The analysis for Perchlorate was subcontracted to ALS Salt Lake City, UT. Final report attached.

Work Order Comments

- The analysis for TOC was subcontracted to ALS Kelso, WA. Final report attached.

GCMS Volatiles by Method SW8260

Batch ID: R329152

Sample ID: HS18111538-04MS

- MS and MSD are for an unrelated sample.

Metals by Method SW6020

Batch ID: 135380,135382

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

Batch ID: 135368

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

WetChemistry by Method E376.1

Batch ID: R328778

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

WetChemistry by Method SM2320B

Batch ID: R329027

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

WetChemistry by Method SW9056

Batch ID: R328445

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

WetChemistry by Method SM4500P E

Batch ID: 135148

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

ALS Houston, US Date: 21-Dec-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant LHAAP-50
Sample ID: 50WW06-181129
Collection Date: 29-Nov-2018 15:25

ANALYTICAL REPORT
WorkOrder:HS18111497
Lab ID:HS18111497-01
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	12-Dec-2018 12:20
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	12-Dec-2018 12:20
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	12-Dec-2018 12:20
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	ug/L	1	12-Dec-2018 12:20
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	12-Dec-2018 12:20
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	12-Dec-2018 12:20
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	12-Dec-2018 12:20
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Dec-2018 12:20
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	12-Dec-2018 12:20
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	12-Dec-2018 12:20
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	12-Dec-2018 12:20
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Dec-2018 12:20
1,2-Dibromo-3-chloropropane	1.0	U	1.0	1.0	1.0	ug/L	1	12-Dec-2018 12:20
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	12-Dec-2018 12:20
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	12-Dec-2018 12:20
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	12-Dec-2018 12:20
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	12-Dec-2018 12:20
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Dec-2018 12:20
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	12-Dec-2018 12:20
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	12-Dec-2018 12:20
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	12-Dec-2018 12:20
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	12-Dec-2018 12:20
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	12-Dec-2018 12:20
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Dec-2018 12:20
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	12-Dec-2018 12:20
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	12-Dec-2018 12:20
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Dec-2018 12:20
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	12-Dec-2018 12:20
Acetone	2.0	U	2.0	2.0	2.0	ug/L	1	12-Dec-2018 12:20
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	12-Dec-2018 12:20
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	12-Dec-2018 12:20
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	12-Dec-2018 12:20
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	12-Dec-2018 12:20
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	12-Dec-2018 12:20
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	12-Dec-2018 12:20
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	12-Dec-2018 12:20
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	12-Dec-2018 12:20
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Dec-2018 12:20
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	12-Dec-2018 12:20

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 21-Dec-18

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: Longhorn Army Ammunition Plant LHAAP-50 WorkOrder:HS18111497
Sample ID: 50WW06-181129 Lab ID:HS18111497-01
Collection Date: 29-Nov-2018 15:25 Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: PC
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	12-Dec-2018 12:20
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	12-Dec-2018 12:20
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	12-Dec-2018 12:20
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	12-Dec-2018 12:20
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	12-Dec-2018 12:20
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	12-Dec-2018 12:20
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	12-Dec-2018 12:20
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Dec-2018 12:20
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	ug/L	1	12-Dec-2018 12:20
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Dec-2018 12:20
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	12-Dec-2018 12:20
Methylene chloride	0.50	U	1.0	0.50	2.0	ug/L	1	12-Dec-2018 12:20
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	12-Dec-2018 12:20
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Dec-2018 12:20
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Dec-2018 12:20
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Dec-2018 12:20
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Dec-2018 12:20
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Dec-2018 12:20
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Dec-2018 12:20
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Dec-2018 12:20
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	12-Dec-2018 12:20
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	12-Dec-2018 12:20
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	12-Dec-2018 12:20
Trichloroethene	**14**		**0.20**	**0.50**	**1.0**	**ug/L**	1	12-Dec-2018 12:20
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	12-Dec-2018 12:20
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	12-Dec-2018 12:20
Surr: 1,2-Dichloroethane-d4	*91.0*			**0**	*70-126*	*%REC*	*1*	*12-Dec-2018 12:20*
Surr: 4-Bromofluorobenzene	*97.7*			**0**	*81-113*	*%REC*	*1*	*12-Dec-2018 12:20*
Surr: Dibromofluoromethane	*87.2*			**0**	*77-123*	*%REC*	*1*	*12-Dec-2018 12:20*
Surr: Toluene-d8	*104*			**0**	*82-127*	*%REC*	*1*	*12-Dec-2018 12:20*
ICP-MS METALS BY SW6020A		**Method:SW6020**				Prep:SW3010A / 08-Dec-2018		Analyst: RPM
Iron	0.100	U	0.0120	0.100	0.200	mg/L	1	17-Dec-2018 17:01
DISSOLVED METALS BY SW6020A		**Method:SW6020 (dissolved)**				Prep:SW3010A / 10-Dec-2018		Analyst: ALR
Iron	0.100	U	0.0120	0.100	0.200	mg/L	1	10-Dec-2018 20:30
Manganese	**0.0238**		**0.000700**	**0.00100**	**0.00500**	**mg/L**	1	10-Dec-2018 20:30
SULFIDE BY E376.1		**Method:E376.1**						Analyst: KVL
Sulfide	**14.4**		**1.00**	**1.00**	**1.00**	**mg/L**	1	06-Dec-2018 15:40
ALKALINITY BY SM2320B		**Method:SM2320B**						Analyst: AJH
Alkalinity, Total (As CaCO3)	**88.6**		**5.00**	**5.00**	**5.00**	**mg/L**	1	11-Dec-2018 22:05

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 21-Dec-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant LHAAP-50
Sample ID: 50WW06-181129
Collection Date: 29-Nov-2018 15:25

ANALYTICAL REPORT
WorkOrder:HS18111497
Lab ID:HS18111497-01
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
PHOSPHORUS BY SM4500P E		**Method:SM4500P E**				Prep:SM4500P E / 03-Dec-2018		Analyst: MZD
Phosphorus, Total (As P)	**0.0200**	J	**0.0200**	**0.0250**	**0.0500**	**mg/L**	1	03-Dec-2018 15:15
ANIONS BY SW9056A		**Method:SW9056**						Analyst: KMU
Chloride	**4.64**		**0.200**	**0.500**	**0.500**	**mg/L**	1	30-Nov-2018 19:07
Nitrogen, Nitrate (As N)	**0.127**		**0.0300**	**0.500**	**0.100**	**mg/L**	1	30-Nov-2018 19:07
Nitrogen, Nitrite (As N)	0.100	U	0.0300	0.100	0.100	mg/L	1	30-Nov-2018 19:07
Sulfate	**9.65**		**0.200**	**0.500**	**0.500**	**mg/L**	1	30-Nov-2018 19:07
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	13-Dec-2018 16:53
SUBCONTRACT ANALYSIS - RSK		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	11-Dec-2018 16:56
SUBCONTRACT ANALYSIS - TOC ANALYSIS		**Method:NA**						Analyst: SUBK
Subcontract Analysis	See Attached		0	0		NA	1	21-Dec-2018 16:43

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 21-Dec-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant LHAAP-50
Sample ID: 50WW13-181129
Collection Date: 29-Nov-2018 11:15

ANALYTICAL REPORT
WorkOrder:HS18111497
Lab ID:HS18111497-02
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	12-Dec-2018 14:48
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	12-Dec-2018 14:48
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	12-Dec-2018 14:48
1,1,2-Trichlor-1,2,2-trifluoroethane	**6.1**		**0.50**	**0.50**	**1.0**	**ug/L**	1	12-Dec-2018 14:48
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	12-Dec-2018 14:48
1,1-Dichloroethane	**2.4**		**0.20**	**0.50**	**1.0**	**ug/L**	1	12-Dec-2018 14:48
1,1-Dichloroethene	**5.4**		**0.20**	**0.50**	**1.0**	**ug/L**	1	12-Dec-2018 14:48
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Dec-2018 14:48
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	12-Dec-2018 14:48
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	12-Dec-2018 14:48
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	12-Dec-2018 14:48
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Dec-2018 14:48
1,2-Dibromo-3-chloropropane	1.0	U	1.0	1.0	1.0	ug/L	1	12-Dec-2018 14:48
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	12-Dec-2018 14:48
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	12-Dec-2018 14:48
1,2-Dichloroethane	**12**		**0.20**	**0.50**	**1.0**	**ug/L**	1	12-Dec-2018 14:48
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	12-Dec-2018 14:48
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Dec-2018 14:48
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	12-Dec-2018 14:48
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	12-Dec-2018 14:48
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	12-Dec-2018 14:48
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	12-Dec-2018 14:48
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	12-Dec-2018 14:48
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Dec-2018 14:48
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	12-Dec-2018 14:48
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	12-Dec-2018 14:48
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Dec-2018 14:48
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	12-Dec-2018 14:48
Acetone	2.0	U	2.0	2.0	2.0	ug/L	1	12-Dec-2018 14:48
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	12-Dec-2018 14:48
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	12-Dec-2018 14:48
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	12-Dec-2018 14:48
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	12-Dec-2018 14:48
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	12-Dec-2018 14:48
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	12-Dec-2018 14:48
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	12-Dec-2018 14:48
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	12-Dec-2018 14:48
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Dec-2018 14:48
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	12-Dec-2018 14:48

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 21-Dec-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant LHAAP-50
Sample ID: 50WW13-181129
Collection Date: 29-Nov-2018 11:15

ANALYTICAL REPORT
WorkOrder:HS18111497
Lab ID:HS18111497-02
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: PC
Chloroform	**1.0**		**0.20**	**0.50**	**1.0**	**ug/L**	1	12-Dec-2018 14:48
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	12-Dec-2018 14:48
cis-1,2-Dichloroethene	**100**		**0.20**	**0.50**	**1.0**	**ug/L**	1	12-Dec-2018 14:48
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	12-Dec-2018 14:48
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	12-Dec-2018 14:48
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	12-Dec-2018 14:48
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	12-Dec-2018 14:48
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Dec-2018 14:48
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	ug/L	1	12-Dec-2018 14:48
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Dec-2018 14:48
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	12-Dec-2018 14:48
Methylene chloride	0.50	U	1.0	0.50	2.0	ug/L	1	12-Dec-2018 14:48
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	12-Dec-2018 14:48
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Dec-2018 14:48
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Dec-2018 14:48
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Dec-2018 14:48
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Dec-2018 14:48
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Dec-2018 14:48
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Dec-2018 14:48
Tetrachloroethene	**4.6**		**0.30**	**0.50**	**1.0**	**ug/L**	1	12-Dec-2018 14:48
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	12-Dec-2018 14:48
trans-1,2-Dichloroethene	**0.93**	J	**0.20**	**0.50**	**1.0**	**ug/L**	1	12-Dec-2018 14:48
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	12-Dec-2018 14:48
Trichloroethene	**2,700**		**10**	**25**	**50**	**ug/L**	50	12-Dec-2018 16:27
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	12-Dec-2018 14:48
Vinyl chloride	**1.4**		**0.20**	**0.50**	**1.0**	**ug/L**	1	12-Dec-2018 14:48
Surr: 1,2-Dichloroethane-d4	*89.7*			**0**	*70-126*	*%REC*	*50*	*12-Dec-2018 16:27*
Surr: 1,2-Dichloroethane-d4	*90.5*			**0**	*70-126*	*%REC*	*1*	*12-Dec-2018 14:48*
Surr: 4-Bromofluorobenzene	*98.7*			**0**	*81-113*	*%REC*	*1*	*12-Dec-2018 14:48*
Surr: 4-Bromofluorobenzene	*98.8*			**0**	*81-113*	*%REC*	*50*	*12-Dec-2018 16:27*
Surr: Dibromofluoromethane	*86.9*			**0**	*77-123*	*%REC*	*50*	*12-Dec-2018 16:27*
Surr: Dibromofluoromethane	*87.8*			**0**	*77-123*	*%REC*	*1*	*12-Dec-2018 14:48*
Surr: Toluene-d8	*106*			**0**	*82-127*	*%REC*	*50*	*12-Dec-2018 16:27*
Surr: Toluene-d8	*105*			**0**	*82-127*	*%REC*	*1*	*12-Dec-2018 14:48*
ICP-MS METALS BY SW6020A		**Method:SW6020**				Prep:SW3010A / 10-Dec-2018		Analyst: ALR
Iron	**0.168**	J	**0.0120**	**0.100**	**0.200**	**mg/L**	1	10-Dec-2018 19:22
DISSOLVED METALS BY SW6020A		**Method:SW6020 (dissolved)**				Prep:SW3010A / 10-Dec-2018		Analyst: ALR
Iron	**0.174**	J	**0.0120**	**0.100**	**0.200**	**mg/L**	1	10-Dec-2018 20:36
Manganese	**0.0896**		**0.000700**	**0.00100**	**0.00500**	**mg/L**	1	10-Dec-2018 20:36

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 21-Dec-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant LHAAP-50
Sample ID: 50WW13-181129
Collection Date: 29-Nov-2018 11:15

ANALYTICAL REPORT
WorkOrder:HS18111497
Lab ID:HS18111497-02
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
SULFIDE BY E376.1		**Method:E376.1**						Analyst: KVL
Sulfide	**2.36**		**1.00**	**1.00**	**1.00**	**mg/L**	1	06-Dec-2018 15:40
ALKALINITY BY SM2320B		**Method:SM2320B**						Analyst: AJH
Alkalinity, Total (As CaCO3)	**357**		**5.00**	**5.00**	**5.00**	**mg/L**	1	11-Dec-2018 22:12
PHOSPHORUS BY SM4500P E		**Method:SM4500P E**				Prep:SM4500P E / 03-Dec-2018		Analyst: MZD
Phosphorus, Total (As P)	**0.126**		**0.0200**	**0.0250**	**0.0500**	**mg/L**	1	03-Dec-2018 15:15
ANIONS BY SW9056A		**Method:SW9056**						Analyst: KMU
Chloride	**343**		**4.00**	**10.0**	**10.0**	**mg/L**	20	30-Nov-2018 20:34
Nitrogen, Nitrate (As N)	**0.0740**	J	**0.0300**	**0.500**	**0.100**	**mg/L**	1	30-Nov-2018 20:12
Nitrogen, Nitrite (As N)	0.100	U	0.0300	0.100	0.100	mg/L	1	30-Nov-2018 20:12
Sulfate	**304**		**4.00**	**10.0**	**10.0**	**mg/L**	20	30-Nov-2018 20:34
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	13-Dec-2018 16:53
SUBCONTRACT ANALYSIS - RSK		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	11-Dec-2018 16:56
SUBCONTRACT ANALYSIS - TOC ANALYSIS		**Method:NA**						Analyst: SUBK
Subcontract Analysis	See Attached		0	0		NA	1	21-Dec-2018 16:43

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 21-Dec-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant LHAAP-50
Sample ID: 50WW14-181129
Collection Date: 29-Nov-2018 13:20

ANALYTICAL REPORT
WorkOrder:HS18111497
Lab ID:HS18111497-03
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	12-Dec-2018 12:44
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	12-Dec-2018 12:44
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	12-Dec-2018 12:44
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	ug/L	1	12-Dec-2018 12:44
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	12-Dec-2018 12:44
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	12-Dec-2018 12:44
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	12-Dec-2018 12:44
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Dec-2018 12:44
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	12-Dec-2018 12:44
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	12-Dec-2018 12:44
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	12-Dec-2018 12:44
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Dec-2018 12:44
1,2-Dibromo-3-chloropropane	1.0	U	1.0	1.0	1.0	ug/L	1	12-Dec-2018 12:44
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	12-Dec-2018 12:44
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	12-Dec-2018 12:44
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	12-Dec-2018 12:44
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	12-Dec-2018 12:44
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Dec-2018 12:44
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	12-Dec-2018 12:44
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	12-Dec-2018 12:44
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	12-Dec-2018 12:44
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	12-Dec-2018 12:44
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	12-Dec-2018 12:44
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Dec-2018 12:44
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	12-Dec-2018 12:44
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	12-Dec-2018 12:44
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Dec-2018 12:44
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	12-Dec-2018 12:44
Acetone	2.0	U	2.0	2.0	2.0	ug/L	1	12-Dec-2018 12:44
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	12-Dec-2018 12:44
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	12-Dec-2018 12:44
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	12-Dec-2018 12:44
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	12-Dec-2018 12:44
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	12-Dec-2018 12:44
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	12-Dec-2018 12:44
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	12-Dec-2018 12:44
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	12-Dec-2018 12:44
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Dec-2018 12:44
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	12-Dec-2018 12:44

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 21-Dec-18

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: Longhorn Army Ammunition Plant LHAAP-50 WorkOrder:HS18111497
Sample ID: 50WW14-181129 Lab ID:HS18111497-03
Collection Date: 29-Nov-2018 13:20 Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: PC
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	12-Dec-2018 12:44
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	12-Dec-2018 12:44
cis-1,2-Dichloroethene	**3.2**		**0.20**	**0.50**	**1.0**	**ug/L**	1	12-Dec-2018 12:44
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	12-Dec-2018 12:44
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	12-Dec-2018 12:44
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	12-Dec-2018 12:44
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	12-Dec-2018 12:44
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Dec-2018 12:44
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	ug/L	1	12-Dec-2018 12:44
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Dec-2018 12:44
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	12-Dec-2018 12:44
Methylene chloride	0.50	U	1.0	0.50	2.0	ug/L	1	12-Dec-2018 12:44
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	12-Dec-2018 12:44
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Dec-2018 12:44
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Dec-2018 12:44
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Dec-2018 12:44
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Dec-2018 12:44
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Dec-2018 12:44
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Dec-2018 12:44
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Dec-2018 12:44
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	12-Dec-2018 12:44
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	12-Dec-2018 12:44
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	12-Dec-2018 12:44
Trichloroethene	**12**		**0.20**	**0.50**	**1.0**	**ug/L**	1	12-Dec-2018 12:44
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	12-Dec-2018 12:44
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	12-Dec-2018 12:44
Surr: 1,2-Dichloroethane-d4	*89.6*			**0**	*70-126*	*%REC*	*1*	*12-Dec-2018 12:44*
Surr: 4-Bromofluorobenzene	*98.7*			**0**	*81-113*	*%REC*	*1*	*12-Dec-2018 12:44*
Surr: Dibromofluoromethane	*86.7*			**0**	*77-123*	*%REC*	*1*	*12-Dec-2018 12:44*
Surr: Toluene-d8	*106*			**0**	*82-127*	*%REC*	*1*	*12-Dec-2018 12:44*
ICP-MS METALS BY SW6020A		**Method:SW6020**				Prep:SW3010A / 10-Dec-2018		Analyst: ALR
Iron	**8.70**		**0.0120**	**0.100**	**0.200**	**mg/L**	1	10-Dec-2018 19:28
DISSOLVED METALS BY SW6020A		**Method:SW6020 (dissolved)**				Prep:SW3010A / 10-Dec-2018		Analyst: ALR
Iron	**8.61**		**0.0120**	**0.100**	**0.200**	**mg/L**	1	10-Dec-2018 20:38
Manganese	**0.472**		**0.000700**	**0.00100**	**0.00500**	**mg/L**	1	10-Dec-2018 20:38
SULFIDE BY E376.1		**Method:E376.1**						Analyst: KVL
Sulfide	**2.16**		**1.00**	**1.00**	**1.00**	**mg/L**	1	06-Dec-2018 15:40
ALKALINITY BY SM2320B		**Method:SM2320B**						Analyst: AJH
Alkalinity, Total (As CaCO3)	**265**		**5.00**	**5.00**	**5.00**	**mg/L**	1	11-Dec-2018 22:33

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 21-Dec-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant LHAAP-50
Sample ID: 50WW14-181129
Collection Date: 29-Nov-2018 13:20

ANALYTICAL REPORT
WorkOrder:HS18111497
Lab ID:HS18111497-03
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
PHOSPHORUS BY SM4500P E		**Method:SM4500P E**				Prep:SM4500P E / 03-Dec-2018		Analyst: MZD
Phosphorus, Total (As P)	**0.0640**		**0.0200**	**0.0250**	**0.0500**	**mg/L**	1	03-Dec-2018 15:15
ANIONS BY SW9056A		**Method:SW9056**						Analyst: KMU
Chloride	**369**		**4.00**	**10.0**	**10.0**	**mg/L**	20	30-Nov-2018 21:17
Nitrogen, Nitrate (As N)	0.500	U	0.0300	0.500	0.100	mg/L	1	30-Nov-2018 20:56
Nitrogen, Nitrite (As N)	0.100	U	0.0300	0.100	0.100	mg/L	1	30-Nov-2018 20:56
Sulfate	**341**		**4.00**	**10.0**	**10.0**	**mg/L**	20	30-Nov-2018 21:17
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	13-Dec-2018 16:53
SUBCONTRACT ANALYSIS - RSK		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	11-Dec-2018 16:56
SUBCONTRACT ANALYSIS - TOC ANALYSIS		**Method:NA**						Analyst: SUBK
Subcontract Analysis	See Attached		0	0		NA	1	21-Dec-2018 16:43

Note: See Qualifiers Page for a list of qualifiers and their explanation.

WEIGHT LOG

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant LHAAP-50
WorkOrder: HS18111497

Batch ID: 135148 **Method:** PHOSPHORUS BY SM4500P E **Prep:** P_TW_PR4500

SampID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS18111497-01	1	50	50 (mL)	1
HS18111497-02	1	50	50 (mL)	1
HS18111497-03	1	50	50 (mL)	1

Batch ID: 135368 **Method:** ICP-MS METALS BY SW6020A **Prep:** 3010A

SampID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS18111497-01	1	10	10 (mL)	1

Batch ID: 135380 **Method:** ICP-MS METALS BY SW6020A **Prep:** 3010A

SampID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS18111497-02	1	10	10 (mL)	1
HS18111497-03	1	10	10 (mL)	1

Batch ID: 135382 **Method:** DISSOLVED METALS BY SW6020A **Prep:** 3010A DISS

SampID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS18111497-01	1	10	10 (mL)	1
HS18111497-02	1	10	10 (mL)	1
HS18111497-03	1	10	10 (mL)	1

ALS Houston, US Date: 21-Dec-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant LHAAP-50
WorkOrder: HS18111497

DATES REPORT

Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
Batch ID 135148	**Test Name :** PHOSPHORUS BY SM4500P E			**Matrix:** Groundwater		
HS18111497-01	50WW06-181129	29 Nov 2018 15:25		03 Dec 2018 10:00	03 Dec 2018 15:15	1
HS18111497-02	50WW13-181129	29 Nov 2018 11:15		03 Dec 2018 10:00	03 Dec 2018 15:15	1
HS18111497-03	50WW14-181129	29 Nov 2018 13:20		03 Dec 2018 10:00	03 Dec 2018 15:15	1
Batch ID 135368	**Test Name :** ICP-MS METALS BY SW6020A			**Matrix:** Groundwater		
HS18111497-01	50WW06-181129	29 Nov 2018 15:25		08 Dec 2018 09:30	17 Dec 2018 17:01	1
Batch ID 135380	**Test Name :** ICP-MS METALS BY SW6020A			**Matrix:** Groundwater		
HS18111497-02	50WW13-181129	29 Nov 2018 11:15		10 Dec 2018 09:30	10 Dec 2018 19:22	1
HS18111497-03	50WW14-181129	29 Nov 2018 13:20		10 Dec 2018 09:30	10 Dec 2018 19:28	1
Batch ID 135382	**Test Name :** DISSOLVED METALS BY SW6020A			**Matrix:** Groundwater		
HS18111497-01	50WW06-181129	29 Nov 2018 15:25		10 Dec 2018 09:30	10 Dec 2018 20:30	1
HS18111497-02	50WW13-181129	29 Nov 2018 11:15		10 Dec 2018 09:30	10 Dec 2018 20:36	1
HS18111497-03	50WW14-181129	29 Nov 2018 13:20		10 Dec 2018 09:30	10 Dec 2018 20:38	1
Batch ID R328445	**Test Name :** ANIONS BY SW9056A			**Matrix:** Groundwater		
HS18111497-01	50WW06-181129	29 Nov 2018 15:25			30 Nov 2018 19:07	1
HS18111497-02	50WW13-181129	29 Nov 2018 11:15			30 Nov 2018 20:34	20
HS18111497-02	50WW13-181129	29 Nov 2018 11:15			30 Nov 2018 20:12	1
HS18111497-03	50WW14-181129	29 Nov 2018 13:20			30 Nov 2018 21:17	20
HS18111497-03	50WW14-181129	29 Nov 2018 13:20			30 Nov 2018 20:56	1
Batch ID R328778	**Test Name :** SULFIDE BY E376.1			**Matrix:** Groundwater		
HS18111497-01	50WW06-181129	29 Nov 2018 15:25			06 Dec 2018 15:40	1
HS18111497-02	50WW13-181129	29 Nov 2018 11:15			06 Dec 2018 15:40	1
HS18111497-03	50WW14-181129	29 Nov 2018 13:20			06 Dec 2018 15:40	1
Batch ID R329007	**Test Name :** SUBCONTRACT ANALYSIS - RSK			**Matrix:** Groundwater		
HS18111497-01	50WW06-181129	29 Nov 2018 15:25			11 Dec 2018 16:56	1
HS18111497-02	50WW13-181129	29 Nov 2018 11:15			11 Dec 2018 16:56	1
HS18111497-03	50WW14-181129	29 Nov 2018 13:20			11 Dec 2018 16:56	1
Batch ID R329027	**Test Name :** ALKALINITY BY SM2320B			**Matrix:** Groundwater		
HS18111497-01	50WW06-181129	29 Nov 2018 15:25			11 Dec 2018 22:05	1
HS18111497-02	50WW13-181129	29 Nov 2018 11:15			11 Dec 2018 22:12	1
HS18111497-03	50WW14-181129	29 Nov 2018 13:20			11 Dec 2018 22:33	1
Batch ID R329152	**Test Name :** LOW LEVEL VOLATILES BY SW8260C			**Matrix:** Groundwater		
HS18111497-01	50WW06-181129	29 Nov 2018 15:25			12 Dec 2018 12:20	1
HS18111497-02	50WW13-181129	29 Nov 2018 11:15			12 Dec 2018 16:27	50
HS18111497-02	50WW13-181129	29 Nov 2018 11:15			12 Dec 2018 14:48	1
HS18111497-03	50WW14-181129	29 Nov 2018 13:20			12 Dec 2018 12:44	1

ALS Houston, US Date: 21-Dec-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant LHAAP-50
WorkOrder: HS18111497

DATES REPORT

Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
Batch ID R329197	**Test Name :** SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)			**Matrix:** Groundwater		
HS18111497-01	50WW06-181129	29 Nov 2018 15:25			13 Dec 2018 16:53	1
HS18111497-02	50WW13-181129	29 Nov 2018 11:15			13 Dec 2018 16:53	1
HS18111497-03	50WW14-181129	29 Nov 2018 13:20			13 Dec 2018 16:53	1
Batch ID R329744	**Test Name :** SUBCONTRACT ANALYSIS - TOC ANALYSIS			**Matrix:** Groundwater		
HS18111497-01	50WW06-181129	29 Nov 2018 15:25			21 Dec 2018 16:43	1
HS18111497-02	50WW13-181129	29 Nov 2018 11:15			21 Dec 2018 16:43	1
HS18111497-03	50WW14-181129	29 Nov 2018 13:20			21 Dec 2018 16:43	1

ALS Houston, US Date: 21-Dec-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant LHAAP-50
WorkOrder: HS18111497

QC BATCH REPORT

Batch ID: 135368 **Instrument: ICPMS05** **Method: SW6020**

MBLK Sample ID: **MBLK-135368** Units: **mg/L** Analysis Date: **17-Dec-2018 14:55**
Client ID: Run ID: **ICPMS05_329366** SeqNo: **4868530** PrepDate: **08-Dec-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Iron	0.100	0.200								U

LCS Sample ID: **LCS-135368** Units: **mg/L** Analysis Date: **17-Dec-2018 14:56**
Client ID: Run ID: **ICPMS05_329366** SeqNo: **4868531** PrepDate: **08-Dec-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Iron	5.467	0.200	5	0	109	80 - 120				

MS Sample ID: **HS18111447-01MS** Units: **mg/L** Analysis Date: **17-Dec-2018 15:02**
Client ID: Run ID: **ICPMS05_329366** SeqNo: **4868534** PrepDate: **08-Dec-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Iron	8.66	0.200	5	2.798	117	80 - 120				

MSD Sample ID: **HS18111447-01MSD** Units: **mg/L** Analysis Date: **17-Dec-2018 16:27**
Client ID: Run ID: **ICPMS05_329366** SeqNo: **4868848** PrepDate: **08-Dec-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Iron	8.411	0.200	5	2.798	112	80 - 120	8.66	2.92	20	

PDS Sample ID: **HS18111447-01PDS** Units: **mg/L** Analysis Date: **17-Dec-2018 15:06**
Client ID: Run ID: **ICPMS05_329366** SeqNo: **4868536** PrepDate: **08-Dec-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Iron	15.14	0.200	10	2.798	123	75 - 125				

SD Sample ID: **HS18111447-01SD** Units: **mg/L** Analysis Date: **17-Dec-2018 15:00**
Client ID: Run ID: **ICPMS05_329366** SeqNo: **4868533** PrepDate: **08-Dec-2018** DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Iron	2.915	1.00					2.798	4.17	10	

The following samples were analyzed in this batch: HS18111497-01

ALS Houston, US Date: 21-Dec-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant LHAAP-50
WorkOrder: HS18111497

QC BATCH REPORT

Batch ID: 135380 **Instrument: ICPMS05** **Method: SW6020**

MBLK Sample ID: **MBLK-135380** Units: **mg/L** Analysis Date: **10-Dec-2018 18:43**
Client ID: Run ID: **ICPMS05_328925** SeqNo: **4857161** PrepDate: **10-Dec-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Iron	0.100	0.200								U

LCS Sample ID: **LCS-135380** Units: **mg/L** Analysis Date: **10-Dec-2018 18:45**
Client ID: Run ID: **ICPMS05_328925** SeqNo: **4857162** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Iron	5.152	0.200	5	0	103	80 - 120				

LCSD Sample ID: **LCSD-135380** Units: **mg/L** Analysis Date: **10-Dec-2018 18:47**
Client ID: Run ID: **ICPMS05_328925** SeqNo: **4857163** PrepDate: **10-Dec-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Iron	5.071	0.200	5	0	101	80 - 120	5.152	1.59	20	

MS Sample ID: **HS18120471-10MS** Units: **mg/L** Analysis Date: **10-Dec-2018 18:53**
Client ID: Run ID: **ICPMS05_328925** SeqNo: **4857166** PrepDate: **10-Dec-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Iron	5.051	0.200	5	0.006775	101	80 - 120				

MSD Sample ID: **HS18120471-10MSD** Units: **mg/L** Analysis Date: **10-Dec-2018 18:55**
Client ID: Run ID: **ICPMS05_328925** SeqNo: **4857167** PrepDate: **10-Dec-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Iron	5.016	0.200	5	0.006775	100	80 - 120	5.051	0.702	20	

PDS Sample ID: **HS18120471-10PDS** Units: **mg/L** Analysis Date: **10-Dec-2018 18:57**
Client ID: Run ID: **ICPMS05_328925** SeqNo: **4857168** PrepDate: **10-Dec-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Iron	10.69	0.200	10	0.006775	107	75 - 125				

ALS Houston, US Date: 21-Dec-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant LHAAP-50
WorkOrder: HS18111497

QC BATCH REPORT

Batch ID: 135380 **Instrument: ICPMS05** **Method: SW6020**

SD Sample ID: **HS18120471-10SD** Units: **mg/L** Analysis Date: **10-Dec-2018 18:51**
Client ID: Run ID: **ICPMS05_328925** SeqNo: **4857165** PrepDate: **10-Dec-2018** DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Iron	0.500	1.00					0.006775	0	10	U

The following samples were analyzed in this batch: HS18111497-02 HS18111497-03

ALS Houston, US Date: 21-Dec-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant LHAAP-50
WorkOrder: HS18111497

QC BATCH REPORT

Batch ID: 135382 **Instrument: ICPMS05** **Method: SW6020 (dissolved) (DISSOLVED)**

MBLK Sample ID: **MBLKF1-135382** Units: **mg/L** Analysis Date: **10-Dec-2018 19:59**
Client ID: Run ID: **ICPMS05_328925** SeqNo: **4857201** PrepDate: **10-Dec-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Iron	0.100	0.200								U
Manganese	0.00226	0.00500								J

MBLK Sample ID: **MBLK-135382** Units: **mg/L** Analysis Date: **10-Dec-2018 20:01**
Client ID: Run ID: **ICPMS05_328925** SeqNo: **4857202** PrepDate: **10-Dec-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Iron	0.100	0.200								U
Manganese	0.001521	0.00500								J

LCS Sample ID: **LCS-135382** Units: **mg/L** Analysis Date: **10-Dec-2018 20:03**
Client ID: Run ID: **ICPMS05_328925** SeqNo: **4857203** PrepDate: **10-Dec-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Iron	5.001	0.200	5	0	100	80 - 120				
Manganese	0.05062	0.00500	0.05	0	101	80 - 120				

LCSD Sample ID: **LCSD-135382** Units: **mg/L** Analysis Date: **10-Dec-2018 20:05**
Client ID: Run ID: **ICPMS05_328925** SeqNo: **4857204** PrepDate: **10-Dec-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Iron	5.082	0.200	5	0	102	80 - 120	5.001	1.61	20	
Manganese	0.05048	0.00500	0.05	0	101	80 - 120	0.05062	0.277	20	

MS Sample ID: **HS18111440-01MS** Units: **mg/L** Analysis Date: **10-Dec-2018 20:16**
Client ID: Run ID: **ICPMS05_328925** SeqNo: **4857209** PrepDate: **10-Dec-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Iron	6.274	0.200	5	1.553	94.4	75 - 125				
Manganese	0.08137	0.00500	0.05	0.03851	85.7	75 - 125				

ALS Houston, US Date: 21-Dec-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant LHAAP-50
WorkOrder: HS18111497

QC BATCH REPORT

Batch ID: 135382 **Instrument: ICPMS05** **Method: SW6020 (dissolved) (DISSOLVED)**

MSD Sample ID: **HS18111440-01MSD** Units: **mg/L** Analysis Date: **10-Dec-2018 20:18**
Client ID: Run ID: **ICPMS05_328925** SeqNo: **4857210** PrepDate: **10-Dec-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Iron	6.289	0.200	5	1.553	94.7	75 - 125	6.274	0.246	20	
Manganese	0.08202	0.00500	0.05	0.03851	87.0	75 - 125	0.08137	0.785	20	

PDS Sample ID: **HS18111440-01PDS** Units: **mg/L** Analysis Date: **10-Dec-2018 20:20**
Client ID: Run ID: **ICPMS05_328925** SeqNo: **4857211** PrepDate: **10-Dec-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Iron	11.44	0.200	10	1.553	98.9	75 - 125				
Manganese	0.1314	0.00500	0.1	0.03851	92.9	75 - 125				

SD Sample ID: **HS18111440-01SD** Units: **mg/L** Analysis Date: **10-Dec-2018 20:13**
Client ID: Run ID: **ICPMS05_328925** SeqNo: **4857208** PrepDate: **10-Dec-2018** DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Iron	1.642	1.00					1.553	5.73	10	

The following samples were analyzed in this batch: HS18111497-01 HS18111497-02 HS18111497-03

ALS Houston, US Date: 21-Dec-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant LHAAP-50
WorkOrder: HS18111497

QC BATCH REPORT

Batch ID: R329152 **Instrument: VOA9** **Method: SW8260**

MBLK Sample ID: **VBLKW-181212** Units: **ug/L** Analysis Date: **12-Dec-2018 11:55**
Client ID: Run ID: **VOA9_329152** SeqNo: **4862613** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	0.50	1.0								U
1,1,1-Trichloroethane	0.50	1.0								U
1,1,2,2-Tetrachloroethane	0.50	1.0								U
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	1.0								U
1,1,2-Trichloroethane	0.50	1.0								U
1,1-Dichloroethane	0.50	1.0								U
1,1-Dichloroethene	0.50	1.0								U
1,1-Dichloropropene	0.50	1.0								U
1,2,3-Trichlorobenzene	0.50	1.0								U
1,2,3-Trichloropropane	0.50	1.0								U
1,2,4-Trichlorobenzene	0.50	1.0								U
1,2,4-Trimethylbenzene	0.50	1.0								U
1,2-Dibromo-3-chloropropane	1.0	1.0								U
1,2-Dibromoethane	0.50	1.0								U
1,2-Dichlorobenzene	0.50	1.0								U
1,2-Dichloroethane	0.50	1.0								U
1,2-Dichloropropane	0.50	1.0								U
1,3,5-Trimethylbenzene	0.50	1.0								U
1,3-Dichlorobenzene	0.50	1.0								U
1,3-Dichloropropane	0.50	1.0								U
1,4-Dichlorobenzene	0.50	1.0								U
2,2-Dichloropropane	0.50	1.0								U
2-Butanone	1.0	2.0								U
2-Chlorotoluene	0.50	1.0								U
2-Hexanone	1.0	2.0								U
4-Chlorotoluene	0.50	1.0								U
4-Isopropyltoluene	0.50	1.0								U
4-Methyl-2-pentanone	1.0	2.0								U
Acetone	2.0	2.0								U
Benzene	0.50	1.0								U
Bromobenzene	0.50	1.0								U
Bromochloromethane	0.50	1.0								U
Bromodichloromethane	0.50	1.0								U
Bromoform	0.50	1.0								U

ALS Houston, US Date: 21-Dec-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant LHAAP-50
WorkOrder: HS18111497

QC BATCH REPORT

Batch ID: R329152 **Instrument: VOA9** **Method: SW8260**

MBLK Sample ID: **VBLKW-181212** Units: **ug/L** Analysis Date: **12-Dec-2018 11:55**
Client ID: Run ID: **VOA9_329152** SeqNo: **4862613** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromomethane	0.50	1.0								U
Carbon disulfide	1.0	2.0								U
Carbon tetrachloride	0.50	1.0								U
Chlorobenzene	0.50	1.0								U
Chloroethane	0.50	1.0								U
Chloroform	0.50	1.0								U
Chloromethane	0.50	1.0								U
cis-1,2-Dichloroethene	0.50	1.0								U
cis-1,3-Dichloropropene	0.50	1.0								U
Dibromochloromethane	0.50	1.0								U
Dibromomethane	0.50	1.0								U
Dichlorodifluoromethane	0.50	1.0								U
Ethylbenzene	0.50	1.0								U
Hexachlorobutadiene	1.0	1.0								U
Isopropylbenzene	0.50	1.0								U
m,p-Xylene	1.0	2.0								U
Methylene chloride	0.50	2.0								U
Naphthalene	0.50	1.0								U
n-Butylbenzene	0.50	1.0								U
n-Propylbenzene	0.50	1.0								U
o-Xylene	0.50	1.0								U
sec-Butylbenzene	0.50	1.0								U
Styrene	0.50	1.0								U
tert-Butylbenzene	0.50	1.0								U
Tetrachloroethene	0.50	1.0								U
Toluene	0.50	1.0								U
trans-1,2-Dichloroethene	0.50	1.0								U
trans-1,3-Dichloropropene	0.50	1.0								U
Trichloroethene	0.50	1.0								U
Trichlorofluoromethane	0.50	1.0								U
Vinyl chloride	0.50	1.0								U
Surr: 1,2-Dichloroethane-d4	*44.81*	*1.0*	*50*	*0*	*89.6*	*70 - 123*				
Surr: 4-Bromofluorobenzene	*49.13*	*1.0*	*50*	*0*	*98.3*	*82 - 115*				
Surr: Dibromofluoromethane	*43.3*	*1.0*	*50*	*0*	*86.6*	*73 - 126*				

ALS Houston, US Date: 21-Dec-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant LHAAP-50
WorkOrder: HS18111497

QC BATCH REPORT

Batch ID: R329152 **Instrument: VOA9** **Method: SW8260**

MBLK Sample ID: **VBLKW-181212** Units: **ug/L** Analysis Date: **12-Dec-2018 11:55**
Client ID: Run ID: **VOA9_329152** SeqNo: **4862613** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Surr: Toluene-d8	*52.63*	*1.0*	*50*	*0*	*105*	*81 - 120*				

ALS Houston, US Date: 21-Dec-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant LHAAP-50
WorkOrder: HS18111497

QC BATCH REPORT

Batch ID: R329152 **Instrument: VOA9** **Method: SW8260**

LCS Sample ID: **VLCSW-1812012** Units: **ug/L** Analysis Date: **12-Dec-2018 11:05**
Client ID: Run ID: **VOA9_329152** SeqNo: **4862612** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	21.27	1.0	20	0	106	77 - 118				
1,1,1-Trichloroethane	19.12	1.0	20	0	95.6	70 - 130				
1,1,2,2-Tetrachloroethane	21.37	1.0	20	0	107	70 - 120				
1,1,2-Trichlor-1,2,2-trifluoroethane	19.5	1.0	20	0	97.5	70 - 130				
1,1,2-Trichloroethane	21.27	1.0	20	0	106	77 - 113				
1,1-Dichloroethane	20.09	1.0	20	0	100	71 - 122				
1,1-Dichloroethene	19.44	1.0	20	0	97.2	70 - 130				
1,1-Dichloropropene	21.67	1.0	20	0	108	78 - 118				
1,2,3-Trichlorobenzene	22.04	1.0	20	0	110	70 - 130				
1,2,3-Trichloropropane	20.65	1.0	20	0	103	70 - 127				
1,2,4-Trichlorobenzene	21.89	1.0	20	0	109	77 - 126				
1,2,4-Trimethylbenzene	22.84	1.0	20	0	114	73 - 121				
1,2-Dibromo-3-chloropropane	19.81	1.0	20	0	99.0	70 - 130				
1,2-Dibromoethane	21.7	1.0	20	0	108	76 - 123				
1,2-Dichlorobenzene	20.92	1.0	20	0	105	77 - 113				
1,2-Dichloroethane	20.1	1.0	20	0	101	70 - 124				
1,2-Dichloropropane	22.35	1.0	20	0	112	72 - 119				
1,3,5-Trimethylbenzene	22.45	1.0	20	0	112	75 - 118				
1,3-Dichlorobenzene	21.23	1.0	20	0	106	78 - 118				
1,3-Dichloropropane	21.86	1.0	20	0	109	75 - 116				
1,4-Dichlorobenzene	22.44	1.0	20	0	112	79 - 113				
2,2-Dichloropropane	20.27	1.0	20	0	101	70 - 130				
2-Butanone	40.95	2.0	40	0	102	70 - 130				
2-Chlorotoluene	21.89	1.0	20	0	109	70 - 128				
2-Hexanone	45.29	2.0	40	0	113	70 - 130				
4-Chlorotoluene	22.25	1.0	20	0	111	74 - 126				
4-Isopropyltoluene	23.29	1.0	20	0	116	74 - 126				
4-Methyl-2-pentanone	45.28	2.0	40	0	113	70 - 130				
Acetone	39.97	2.0	40	0	99.9	70 - 130				
Benzene	22	1.0	20	0	110	74 - 120				
Bromobenzene	21.21	1.0	20	0	106	78 - 113				
Bromochloromethane	21.3	1.0	20	0	107	76 - 124				
Bromodichloromethane	20.41	1.0	20	0	102	74 - 122				
Bromoform	18.88	1.0	20	0	94.4	73 - 128				

ALS Houston, US Date: 21-Dec-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant LHAAP-50
WorkOrder: HS18111497

QC BATCH REPORT

Batch ID: R329152 **Instrument: VOA9** **Method: SW8260**

LCS Sample ID: **VLCSW-1812012** Units: **ug/L** Analysis Date: **12-Dec-2018 11:05**
Client ID: Run ID: **VOA9_329152** SeqNo: **4862612** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromomethane	18.54	1.0	20	0	92.7	70 - 130				
Carbon disulfide	41.25	2.0	40	0	103	70 - 130				
Carbon tetrachloride	20.53	1.0	20	0	103	71 - 125				
Chlorobenzene	21.13	1.0	20	0	106	76 - 113				
Chloroethane	20.14	1.0	20	0	101	70 - 130				
Chloroform	19.31	1.0	20	0	96.6	71 - 121				
Chloromethane	20.76	1.0	20	0	104	70 - 129				
cis-1,2-Dichloroethene	19.8	1.0	20	0	99.0	75 - 122				
cis-1,3-Dichloropropene	22.46	1.0	20	0	112	73 - 127				
Dibromochloromethane	21.4	1.0	20	0	107	77 - 122				
Dibromomethane	20.78	1.0	20	0	104	78 - 121				
Dichlorodifluoromethane	18.15	1.0	20	0	90.7	70 - 130				
Ethylbenzene	21.93	1.0	20	0	110	77 - 117				
Hexachlorobutadiene	24.9	1.0	20	0	124	70 - 130				
Isopropylbenzene	22.4	1.0	20	0	112	73 - 127				
m,p-Xylene	44.31	2.0	40	0	111	77 - 122				
Methylene chloride	21.5	2.0	20	0	108	70 - 127				
Naphthalene	23.53	1.0	20	0	118	70 - 130				
n-Butylbenzene	23.68	1.0	20	0	118	72 - 130				
n-Propylbenzene	22.81	1.0	20	0	114	73 - 124				
o-Xylene	22.42	1.0	20	0	112	75 - 119				
sec-Butylbenzene	22.89	1.0	20	0	114	73 - 128				
Styrene	22.74	1.0	20	0	114	72 - 126				
tert-Butylbenzene	22.41	1.0	20	0	112	73 - 124				
Tetrachloroethene	21.88	1.0	20	0	109	76 - 119				
Toluene	21.88	1.0	20	0	109	77 - 118				
trans-1,2-Dichloroethene	19.97	1.0	20	0	99.8	72 - 127				
trans-1,3-Dichloropropene	19.8	1.0	20	0	99.0	77 - 119				
Trichloroethene	21.19	1.0	20	0	106	77 - 121				
Trichlorofluoromethane	18.59	1.0	20	0	92.9	70 - 130				
Vinyl chloride	20.99	1.0	20	0	105	70 - 130				
Surr: 1,2-Dichloroethane-d4	*43.37*	*1.0*	*50*	*0*	*86.7*	*70 - 130*				
Surr: 4-Bromofluorobenzene	*50.8*	*1.0*	*50*	*0*	*102*	*82 - 115*				
Surr: Dibromofluoromethane	*44.33*	*1.0*	*50*	*0*	*88.7*	*73 - 126*				

ALS Houston, US Date: 21-Dec-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant LHAAP-50
WorkOrder: HS18111497

QC BATCH REPORT

Batch ID: R329152 **Instrument: VOA9** **Method: SW8260**

LCS Sample ID: **VLCSW-1812012** Units: **ug/L** Analysis Date: **12-Dec-2018 11:05**
Client ID: Run ID: **VOA9_329152** SeqNo: **4862612** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Surr: Toluene-d8	*52.7*	*1.0*	*50*	*0*	*105*	*81 - 120*				

ALS Houston, US Date: 21-Dec-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant LHAAP-50
WorkOrder: HS18111497

QC BATCH REPORT

Batch ID: R329152 **Instrument: VOA9** **Method: SW8260**

MS Sample ID: **HS18111538-04MS** Units: **ug/L** Analysis Date: **12-Dec-2018 15:13**
Client ID: Run ID: **VOA9_329152** SeqNo: **4862621** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	22.44	1.0	20	0	112	70 - 120				
1,1,1-Trichloroethane	21.32	1.0	20	0	107	70 - 130				
1,1,2,2-Tetrachloroethane	23.3	1.0	20	0	117	70 - 123				
1,1,2-Trichlor-1,2,2-trifluoroethane	21.98	1.0	20	0	110	70 - 130				
1,1,2-Trichloroethane	22.7	1.0	20	0	114	70 - 117				
1,1-Dichloroethane	21.78	1.0	20	0	109	70 - 127				
1,1-Dichloroethene	21.38	1.0	20	0	107	70 - 130				
1,1-Dichloropropene	24.4	1.0	20	0	122	70 - 129				
1,2,3-Trichlorobenzene	23.36	1.0	20	0	117	70 - 130				
1,2,3-Trichloropropane	22.89	1.0	20	0	114	70 - 130				
1,2,4-Trichlorobenzene	22.97	1.0	20	0	115	70 - 125				
1,2,4-Trimethylbenzene	24.86	1.0	20	0	124	70 - 125				
1,2-Dibromo-3-chloropropane	20.51	1.0	20	0	103	70 - 130				
1,2-Dibromoethane	22.56	1.0	20	0	113	70 - 124				
1,2-Dichlorobenzene	21.96	1.0	20	0	110	70 - 115				
1,2-Dichloroethane	21.53	1.0	20	0	108	70 - 127				
1,2-Dichloropropane	24.89	1.0	20	1.073	119	70 - 122				
1,3,5-Trimethylbenzene	24.82	1.0	20	0	124	70 - 126				
1,3-Dichlorobenzene	22.32	1.0	20	0	112	70 - 119				
1,3-Dichloropropane	22.86	1.0	20	0	114	70 - 121				
1,4-Dichlorobenzene	23.38	1.0	20	0	117	70 - 114				S
2,2-Dichloropropane	21.39	1.0	20	0	107	70 - 130				
2-Butanone	50.13	2.0	40	10.12	100	70 - 130				
2-Chlorotoluene	23.87	1.0	20	0	119	70 - 130				
2-Hexanone	45.26	2.0	40	0	113	70 - 130				
4-Chlorotoluene	23.84	1.0	20	0	119	70 - 130				
4-Isopropyltoluene	25.57	1.0	20	0	128	70 - 130				
4-Methyl-2-pentanone	46.02	2.0	40	0	115	70 - 130				
Acetone	50.78	2.0	40	8.933	105	70 - 130				
Benzene	24.2	1.0	20	0	121	70 - 127				
Bromobenzene	22.27	1.0	20	0	111	70 - 115				
Bromochloromethane	22.98	1.0	20	0	115	70 - 127				
Bromodichloromethane	21.94	1.0	20	0	110	70 - 124				
Bromoform	19.45	1.0	20	0	97.2	70 - 129				

ALS Houston, US Date: 21-Dec-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant LHAAP-50
WorkOrder: HS18111497

QC BATCH REPORT

Batch ID: R329152 **Instrument: VOA9** **Method: SW8260**

MS Sample ID: **HS18111538-04MS** Units: **ug/L** Analysis Date: **12-Dec-2018 15:13**
Client ID: Run ID: **VOA9_329152** SeqNo: **4862621** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromomethane	15.61	1.0	20	0	78.0	70 - 130				
Carbon disulfide	45.09	2.0	40	0	113	70 - 130				
Carbon tetrachloride	23.37	1.0	20	0	117	70 - 130				
Chlorobenzene	22.8	1.0	20	0	114	70 - 114				
Chloroethane	20.77	1.0	20	0	104	70 - 130				
Chloroform	20.9	1.0	20	0	105	70 - 125				
Chloromethane	19.09	1.0	20	0	95.4	70 - 130				
cis-1,2-Dichloroethene	22.75	1.0	20	0.9868	109	70 - 128				
cis-1,3-Dichloropropene	23.4	1.0	20	0	117	70 - 125				
Dibromochloromethane	22.32	1.0	20	0	112	70 - 124				
Dibromomethane	21.97	1.0	20	0	110	70 - 124				
Dichlorodifluoromethane	12.83	1.0	20	0	64.2	70 - 130				S
Ethylbenzene	23.8	1.0	20	0	119	70 - 124				
Hexachlorobutadiene	25.41	1.0	20	0	127	70 - 130				
Isopropylbenzene	25.02	1.0	20	0	125	70 - 130				
m,p-Xylene	48.15	2.0	40	0	120	70 - 130				
Methylene chloride	22.7	2.0	20	0	114	70 - 128				
Naphthalene	27.11	1.0	20	0	136	70 - 130				S
n-Butylbenzene	26.14	1.0	20	0	131	70 - 130				S
n-Propylbenzene	25.27	1.0	20	0	126	70 - 130				
o-Xylene	24.98	1.0	20	0.7136	121	70 - 124				
sec-Butylbenzene	25.54	1.0	20	0	128	70 - 130				
Styrene	24.45	1.0	20	0	122	70 - 130				
tert-Butylbenzene	24.96	1.0	20	0	125	70 - 130				
Tetrachloroethene	24.01	1.0	20	0	120	70 - 130				
Toluene	23.91	1.0	20	0	120	70 - 123				
trans-1,2-Dichloroethene	22.13	1.0	20	0	111	70 - 130				
trans-1,3-Dichloropropene	20.46	1.0	20	0	102	70 - 121				
Trichloroethene	31.08	1.0	20	0	155	70 - 129				S
Trichlorofluoromethane	20.37	1.0	20	0	102	70 - 130				
Vinyl chloride	20.63	1.0	20	0	103	70 - 130				
Surr: 1,2-Dichloroethane-d4	*44.07*	*1.0*	*50*	*0*	*88.1*	*70 - 126*				
Surr: 4-Bromofluorobenzene	*51.41*	*1.0*	*50*	*0*	*103*	*81 - 113*				
Surr: Dibromofluoromethane	*44.86*	*1.0*	*50*	*0*	*89.7*	*77 - 123*				

ALS Houston, US Date: 21-Dec-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant LHAAP-50
WorkOrder: HS18111497

QC BATCH REPORT

Batch ID: R329152 **Instrument:** VOA9 **Method:** SW8260

MS Sample ID: **HS18111538-04MS** Units: **ug/L** Analysis Date: **12-Dec-2018 15:13**
Client ID: Run ID: **VOA9_329152** SeqNo: **4862621** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Surr: Toluene-d8	*53.42*	*1.0*	*50*	*0*	*107*	*82 - 127*				

ALS Houston, US Date: 21-Dec-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant LHAAP-50
WorkOrder: HS18111497

QC BATCH REPORT

Batch ID: R329152 **Instrument: VOA9** **Method: SW8260**

MSD Sample ID: **HS18111538-04MSD** Units: **ug/L** Analysis Date: **12-Dec-2018 15:38**
Client ID: Run ID: **VOA9_329152** SeqNo: **4862622** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	22.41	1.0	20	0	112	70 - 120	22.44	0.102	20	
1,1,1-Trichloroethane	20.58	1.0	20	0	103	70 - 130	21.32	3.52	20	
1,1,2,2-Tetrachloroethane	23.05	1.0	20	0	115	70 - 123	23.3	1.11	20	
1,1,2-Trichlor-1,2,2-trifluoroethane	20.9	1.0	20	0	104	70 - 130	21.98	5.05	20	
1,1,2-Trichloroethane	22.55	1.0	20	0	113	70 - 117	22.7	0.675	20	
1,1-Dichloroethane	21.39	1.0	20	0	107	70 - 127	21.78	1.83	20	
1,1-Dichloroethene	20.18	1.0	20	0	101	70 - 130	21.38	5.77	20	
1,1-Dichloropropene	23.51	1.0	20	0	118	70 - 129	24.4	3.74	20	
1,2,3-Trichlorobenzene	23.21	1.0	20	0	116	70 - 130	23.36	0.609	20	
1,2,3-Trichloropropane	22.55	1.0	20	0	113	70 - 130	22.89	1.51	20	
1,2,4-Trichlorobenzene	22.86	1.0	20	0	114	70 - 125	22.97	0.491	20	
1,2,4-Trimethylbenzene	24.24	1.0	20	0	121	70 - 125	24.86	2.52	20	
1,2-Dibromo-3-chloropropane	20.97	1.0	20	0	105	70 - 130	20.51	2.23	20	
1,2-Dibromoethane	22.7	1.0	20	0	114	70 - 124	22.56	0.633	20	
1,2-Dichlorobenzene	21.64	1.0	20	0	108	70 - 115	21.96	1.43	20	
1,2-Dichloroethane	21.03	1.0	20	0	105	70 - 127	21.53	2.35	20	
1,2-Dichloropropane	24.44	1.0	20	1.073	117	70 - 122	24.89	1.82	20	
1,3,5-Trimethylbenzene	24.06	1.0	20	0	120	70 - 126	24.82	3.1	20	
1,3-Dichlorobenzene	22.15	1.0	20	0	111	70 - 119	22.32	0.749	20	
1,3-Dichloropropane	22.63	1.0	20	0	113	70 - 121	22.86	1.02	20	
1,4-Dichlorobenzene	23.12	1.0	20	0	116	70 - 114	23.38	1.12	20	S
2,2-Dichloropropane	21.12	1.0	20	0	106	70 - 130	21.39	1.26	20	
2-Butanone	51.86	2.0	40	10.12	104	70 - 130	50.13	3.4	20	
2-Chlorotoluene	23.25	1.0	20	0	116	70 - 130	23.87	2.65	20	
2-Hexanone	46.62	2.0	40	0	117	70 - 130	45.26	2.96	20	
4-Chlorotoluene	23.37	1.0	20	0	117	70 - 130	23.84	2.01	20	
4-Isopropyltoluene	25.07	1.0	20	0	125	70 - 130	25.57	1.98	20	
4-Methyl-2-pentanone	46.68	2.0	40	0	117	70 - 130	46.02	1.41	20	
Acetone	52.4	2.0	40	8.933	109	70 - 130	50.78	3.15	20	
Benzene	23.36	1.0	20	0	117	70 - 127	24.2	3.51	20	
Bromobenzene	22	1.0	20	0	110	70 - 115	22.27	1.24	20	
Bromochloromethane	22.01	1.0	20	0	110	70 - 127	22.98	4.3	20	
Bromodichloromethane	21.2	1.0	20	0	106	70 - 124	21.94	3.47	20	
Bromoform	19.44	1.0	20	0	97.2	70 - 129	19.45	0.0215	20	

ALS Houston, US Date: 21-Dec-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant LHAAP-50
WorkOrder: HS18111497

QC BATCH REPORT

Batch ID: R329152 **Instrument: VOA9** **Method: SW8260**

MSD Sample ID: **HS18111538-04MSD** Units: **ug/L** Analysis Date: **12-Dec-2018 15:38**
Client ID: Run ID: **VOA9_329152** SeqNo: **4862622** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
Bromomethane	13.22	1.0	20	0	66.1	70 - 130	15.61	16.5	20	S
Carbon disulfide	42.24	2.0	40	0	106	70 - 130	45.09	6.52	20	
Carbon tetrachloride	22.48	1.0	20	0	112	70 - 130	23.37	3.85	20	
Chlorobenzene	22.3	1.0	20	0	111	70 - 114	22.8	2.23	20	
Chloroethane	20.03	1.0	20	0	100	70 - 130	20.77	3.62	20	
Chloroform	20.17	1.0	20	0	101	70 - 125	20.9	3.56	20	
Chloromethane	17.93	1.0	20	0	89.7	70 - 130	19.09	6.24	20	
cis-1,2-Dichloroethene	21.9	1.0	20	0.9868	105	70 - 128	22.75	3.81	20	
cis-1,3-Dichloropropene	23.01	1.0	20	0	115	70 - 125	23.4	1.66	20	
Dibromochloromethane	22.17	1.0	20	0	111	70 - 124	22.32	0.642	20	
Dibromomethane	21.64	1.0	20	0	108	70 - 124	21.97	1.51	20	
Dichlorodifluoromethane	12.11	1.0	20	0	60.6	70 - 130	12.83	5.78	20	S
Ethylbenzene	23.53	1.0	20	0	118	70 - 124	23.8	1.14	20	
Hexachlorobutadiene	25.6	1.0	20	0	128	70 - 130	25.41	0.775	20	
Isopropylbenzene	24.43	1.0	20	0	122	70 - 130	25.02	2.38	20	
m,p-Xylene	47.53	2.0	40	0	119	70 - 130	48.15	1.29	20	
Methylene chloride	21.67	2.0	20	0	108	70 - 128	22.7	4.67	20	
Naphthalene	27.13	1.0	20	0	136	70 - 130	27.11	0.0687	20	S
n-Butylbenzene	25.52	1.0	20	0	128	70 - 130	26.14	2.4	20	
n-Propylbenzene	24.77	1.0	20	0	124	70 - 130	25.27	1.99	20	
o-Xylene	24.11	1.0	20	0.7136	117	70 - 124	24.98	3.55	20	
sec-Butylbenzene	25.03	1.0	20	0	125	70 - 130	25.54	2.03	20	
Styrene	23.97	1.0	20	0	120	70 - 130	24.45	1.99	20	
tert-Butylbenzene	24.25	1.0	20	0	121	70 - 130	24.96	2.85	20	
Tetrachloroethene	23.34	1.0	20	0	117	70 - 130	24.01	2.81	20	
Toluene	23.37	1.0	20	0	117	70 - 123	23.91	2.28	20	
trans-1,2-Dichloroethene	21.03	1.0	20	0	105	70 - 130	22.13	5.07	20	
trans-1,3-Dichloropropene	20.26	1.0	20	0	101	70 - 121	20.46	1.01	20	
Trichloroethene	25.26	1.0	20	0	126	70 - 129	31.08	20.6	20	R
Trichlorofluoromethane	19.57	1.0	20	0	97.9	70 - 130	20.37	3.96	20	
Vinyl chloride	19.67	1.0	20	0	98.3	70 - 130	20.63	4.76	20	
Surr: 1,2-Dichloroethane-d4	*43.6*	*1.0*	*50*	*0*	*87.2*	*70 - 126*	*44.07*	*1.06*	*20*	
Surr: 4-Bromofluorobenzene	*51.27*	*1.0*	*50*	*0*	*103*	*81 - 113*	*51.41*	*0.264*	*20*	
Surr: Dibromofluoromethane	*44.57*	*1.0*	*50*	*0*	*89.1*	*77 - 123*	*44.86*	*0.645*	*20*	

ALS Houston, US Date: 21-Dec-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant LHAAP-50
WorkOrder: HS18111497

QC BATCH REPORT

Batch ID: R329152 **Instrument: VOA9** **Method: SW8260**

MSD Sample ID: **HS18111538-04MSD** Units: **ug/L** Analysis Date: **12-Dec-2018 15:38**
Client ID: Run ID: **VOA9_329152** SeqNo: **4862622** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Surr: Toluene-d8	*53.01*	*1.0*	*50*	*0*	*106*	*82 - 127*	*53.42*	*0.762*	*20*	

The following samples were analyzed in this batch: HS18111497-01 HS18111497-02 HS18111497-03

ALS Houston, US Date: 21-Dec-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant LHAAP-50
WorkOrder: HS18111497

QC BATCH REPORT

Batch ID: 135148 **Instrument: UV-2450** **Method: SM4500P E**

MBLK Sample ID: **MBLK-135148** Units: **mg/L** Analysis Date: **03-Dec-2018 15:15**
Client ID: Run ID: **UV-2450_328499** SeqNo: **4845845** PrepDate: **03-Dec-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Phosphorus, Total (As P)	0.0250	0.0500								U

LCS Sample ID: **LCS-135148** Units: **mg/L** Analysis Date: **03-Dec-2018 15:15**
Client ID: Run ID: **UV-2450_328499** SeqNo: **4845843** PrepDate: **03-Dec-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Phosphorus, Total (As P)	0.227	0.0500	0.25	0	90.8	80 - 120				

LCSD Sample ID: **LCSD-135148** Units: **mg/L** Analysis Date: **03-Dec-2018 15:15**
Client ID: Run ID: **UV-2450_328499** SeqNo: **4845844** PrepDate: **03-Dec-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Phosphorus, Total (As P)	0.228	0.0500	0.25	0	91.2	80 - 120	0.227	0.44	20	

MS Sample ID: **HS18111426-03MS** Units: **mg/L** Analysis Date: **03-Dec-2018 15:15**
Client ID: Run ID: **UV-2450_328499** SeqNo: **4845841** PrepDate: **03-Dec-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Phosphorus, Total (As P)	0.252	0.0500	0.25	0.029	89.2	80 - 120				

MSD Sample ID: **HS18111426-03MSD** Units: **mg/L** Analysis Date: **03-Dec-2018 15:15**
Client ID: Run ID: **UV-2450_328499** SeqNo: **4845842** PrepDate: **03-Dec-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Phosphorus, Total (As P)	0.263	0.0500	0.25	0.029	93.6	80 - 120	0.252	4.27	20	

The following samples were analyzed in this batch: HS18111497-01 HS18111497-02 HS18111497-03

ALS Houston, US Date: 21-Dec-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant LHAAP-50
WorkOrder: HS18111497

QC BATCH REPORT

Batch ID: R328445 **Instrument: ICS3K2** **Method: SW9056**

MBLK Sample ID: **WBLKW1-113018** Units: **mg/L** Analysis Date: **30-Nov-2018 09:30**
Client ID: Run ID: **ICS3K2_328445** SeqNo: **4844644** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	0.500	0.500								U
Nitrogen, Nitrate (As N)	0.500	0.100								U
Nitrogen, Nitrite (As N)	0.100	0.100								U
Sulfate	0.500	0.500								U

LCS Sample ID: **WLCSW1-113018** Units: **mg/L** Analysis Date: **30-Nov-2018 09:51**
Client ID: Run ID: **ICS3K2_328445** SeqNo: **4844645** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	19.47	0.500	20	0	97.3	80 - 120				
Nitrogen, Nitrate (As N)	3.835	0.100	4	0	95.9	80 - 120				
Nitrogen, Nitrite (As N)	4.338	0.100	4	0	108	80 - 120				
Sulfate	18.66	0.500	20	0	93.3	80 - 120				

LCSD Sample ID: **WLCSDW1-113018** Units: **mg/L** Analysis Date: **30-Nov-2018 10:13**
Client ID: Run ID: **ICS3K2_328445** SeqNo: **4844646** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	19.33	0.500	20	0	96.7	80 - 120	19.47	0.706	20	
Nitrogen, Nitrate (As N)	3.813	0.100	4	0	95.3	80 - 120	3.835	0.575	20	
Nitrogen, Nitrite (As N)	4.333	0.100	4	0	108	80 - 120	4.338	0.115	20	
Sulfate	18.58	0.500	20	0	92.9	80 - 120	18.66	0.424	20	

MS Sample ID: **HS18111497-01MS** Units: **mg/L** Analysis Date: **30-Nov-2018 19:29**
Client ID: **50WW06-181129** Run ID: **ICS3K2_328445** SeqNo: **4844655** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	14.04	0.500	10	4.637	94.0	80 - 120				
Nitrogen, Nitrate (As N)	1.89	0.100	2	0.127	88.2	80 - 120				
Nitrogen, Nitrite (As N)	2.124	0.100	2	0	106	80 - 120				
Sulfate	20.01	0.500	10	9.649	104	80 - 120				

ALS Houston, US Date: 21-Dec-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant LHAAP-50
WorkOrder: HS18111497

QC BATCH REPORT

Batch ID: R328445 **Instrument: ICS3K2** **Method: SW9056**

MS Sample ID: **HS18110696-02MS** Units: **mg/L** Analysis Date: **30-Nov-2018 10:56**
Client ID: Run ID: **ICS3K2_328445** SeqNo: **4844648** PrepDate: DF: **20**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	718.4	10.0	200	532.4	93.0	80 - 120				
Nitrogen, Nitrate (As N)	42.11	2.00	40	5.016	92.7	80 - 120				
Nitrogen, Nitrite (As N)	43.59	2.00	40	0	109	80 - 120				
Sulfate	524.6	10.0	200	329.7	97.5	80 - 120				

MSD Sample ID: **HS18111497-01MSD** Units: **mg/L** Analysis Date: **30-Nov-2018 19:51**
Client ID: **50WW06-181129** Run ID: **ICS3K2_328445** SeqNo: **4844656** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	14.12	0.500	10	4.637	94.8	80 - 120	14.04	0.611	20	
Nitrogen, Nitrate (As N)	1.913	0.100	2	0.127	89.3	80 - 120	1.89	1.21	20	
Nitrogen, Nitrite (As N)	2.141	0.100	2	0	107	80 - 120	2.124	0.797	20	
Sulfate	20.21	0.500	10	9.649	106	80 - 120	20.01	0.997	20	

MSD Sample ID: **HS18110696-02MSD** Units: **mg/L** Analysis Date: **30-Nov-2018 11:18**
Client ID: Run ID: **ICS3K2_328445** SeqNo: **4844649** PrepDate: DF: **20**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	724	10.0	200	532.4	95.8	80 - 120	718.4	0.778	20	
Nitrogen, Nitrate (As N)	42.33	2.00	40	5.016	93.3	80 - 120	42.11	0.512	20	
Nitrogen, Nitrite (As N)	44.02	2.00	40	0	110	80 - 120	43.59	0.963	20	
Sulfate	528.1	10.0	200	329.7	99.2	80 - 120	524.6	0.67	20	

The following samples were analyzed in this batch: HS18111497-01 HS18111497-02 HS18111497-03

ALS Houston, US Date: 21-Dec-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant LHAAP-50
WorkOrder: HS18111497

QC BATCH REPORT

Batch ID: R328778 **Instrument: WetChem_HS** **Method: E376.1**

MBLK Sample ID: **MBLK-R328778** Units: **mg/L** Analysis Date: **06-Dec-2018 15:40**
Client ID: Run ID: **WetChem_HS_328778** SeqNo: **4853445** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfide	1.00	1.00								U

LCS Sample ID: **LCS-R328778** Units: **mg/L** Analysis Date: **06-Dec-2018 15:40**
Client ID: Run ID: **WetChem_HS_328778** SeqNo: **4853444** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfide	21.96	1.00	25	0	87.8	80 - 120				

LCSD Sample ID: **LCSD-R328778** Units: **mg/L** Analysis Date: **06-Dec-2018 15:40**
Client ID: Run ID: **WetChem_HS_328778** SeqNo: **4853443** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfide	21.76	1.00	25	0	87.0	80 - 120	21.96	0.915	20	

MS Sample ID: **HS18120114-07MS** Units: **mg/L** Analysis Date: **06-Dec-2018 15:40**
Client ID: Run ID: **WetChem_HS_328778** SeqNo: **4853446** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfide	25.16	1.00	25	-0.004	101	80 - 120				

The following samples were analyzed in this batch: HS18111497-01 HS18111497-02 HS18111497-03

ALS Houston, US Date: 21-Dec-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant LHAAP-50
WorkOrder: HS18111497

QC BATCH REPORT

Batch ID: R329027 **Instrument: ManTech01** **Method: SM2320B**

MBLK Sample ID: **WBLKW1-181211** Units: **mg/L** Analysis Date: **11-Dec-2018 19:56**
Client ID: Run ID: **ManTech01_329027** SeqNo: **4859850** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Total (As CaCO3)	5.00	5.00								U

LCS Sample ID: **LCS1-181211** Units: **mg/L** Analysis Date: **11-Dec-2018 20:04**
Client ID: Run ID: **ManTech01_329027** SeqNo: **4859851** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Total (As CaCO3)	1070	5.00	1000	0	107	85 - 115				

LCSD Sample ID: **LCSD1-181211** Units: **mg/L** Analysis Date: **11-Dec-2018 20:13**
Client ID: Run ID: **ManTech01_329027** SeqNo: **4859852** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Total (As CaCO3)	1072	5.00	1000	0	107	85 - 115	1070	0.156	20	

DUP Sample ID: **HS18111440-01DUP** Units: **mg/L** Analysis Date: **11-Dec-2018 20:25**
Client ID: Run ID: **ManTech01_329027** SeqNo: **4859854** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Total (As CaCO3)	114.7	5.00					118.2	3.01	20	

The following samples were analyzed in this batch: HS18111497-01 HS18111497-02 HS18111497-03

ALS Houston, US Date: 21-Dec-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant LHAAP-50
WorkOrder: **HS18111497**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL/SDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitaion Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

Unit Reported	Description
mg/L	Milligrams per Liter

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
North Carolina	624-2018	31-Dec-2018
Arkansas	88-0356	27-Mar-2019
Texas	T10470231-18-21	30-Apr-2019
North Dakota	R193 2018-2019	30-Apr-2019
Illinois	004438	29-Jun-2019
Louisiana	03087	30-Jun-2019
Dept of Defense	ANAB L2231	22-Dec-2018
Kentucky	123043 - 2018	30-Apr-2019
Kansas	E-10352 2018-2019	31-Jul-2019
Oklahoma	2018-156	31-Aug-2019

ALS Houston, US Date: 21-Dec-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant LHAAP-50
Work Order: HS18111497

SAMPLE TRACKING

Lab Samp ID	Client Sample ID	Action	Date	Person	New Location
HS18111497-01	50WW06-181129	Login	11/30/2018 1:09:51 PM	JRM	Sub
HS18111497-01	50WW06-181129	Login	11/30/2018 1:09:51 PM	JRM	WET162
HS18111497-01	50WW06-181129	Login	11/30/2018 1:09:51 PM	JRM	WET162
HS18111497-01	50WW06-181129	Login	11/30/2018 1:09:51 PM	JRM	WET162
HS18111497-01	50WW06-181129	Login	11/30/2018 1:09:51 PM	JRM	MET061
HS18111497-01	50WW06-181129	Login	11/30/2018 1:09:51 PM	JRM	MET061
HS18111497-01	50WW06-181129	Login	11/30/2018 1:09:51 PM	JRM	VOA197
HS18111497-01	50WW06-181129	Login	11/30/2018 1:09:51 PM	JRM	Sub
HS18111497-01	50WW06-181129	Login	11/30/2018 1:09:51 PM	JRM	Sub
HS18111497-01	50WW06-181129	Login	11/30/2018 1:09:51 PM	JRM	Sub
HS18111497-02	50WW13-181129	Login	11/30/2018 1:09:51 PM	JRM	Sub
HS18111497-02	50WW13-181129	Login	11/30/2018 1:09:51 PM	JRM	WET162
HS18111497-02	50WW13-181129	Login	11/30/2018 1:09:51 PM	JRM	Sub
HS18111497-02	50WW13-181129	Login	11/30/2018 1:09:51 PM	JRM	Sub
HS18111497-02	50WW13-181129	Login	11/30/2018 1:09:51 PM	JRM	WET162
HS18111497-02	50WW13-181129	Login	11/30/2018 1:09:51 PM	JRM	WET162
HS18111497-02	50WW13-181129	Login	11/30/2018 1:09:51 PM	JRM	MET061
HS18111497-02	50WW13-181129	Login	11/30/2018 1:09:51 PM	JRM	MET061
HS18111497-02	50WW13-181129	Login	11/30/2018 1:09:51 PM	JRM	VOA197
HS18111497-02	50WW13-181129	Login	11/30/2018 1:09:51 PM	JRM	Sub
HS18111497-03	50WW14-181129	Login	11/30/2018 1:09:51 PM	JRM	Sub
HS18111497-03	50WW14-181129	Login	11/30/2018 1:09:51 PM	JRM	WET162
HS18111497-03	50WW14-181129	Login	11/30/2018 1:09:51 PM	JRM	WET162
HS18111497-03	50WW14-181129	Login	11/30/2018 1:09:51 PM	JRM	WET162
HS18111497-03	50WW14-181129	Login	11/30/2018 1:09:51 PM	JRM	MET061
HS18111497-03	50WW14-181129	Login	11/30/2018 1:09:51 PM	JRM	MET061
HS18111497-03	50WW14-181129	Login	11/30/2018 1:09:51 PM	JRM	VOA197
HS18111497-03	50WW14-181129	Login	11/30/2018 1:09:51 PM	JRM	Sub
HS18111497-03	50WW14-181129	Login	11/30/2018 1:09:51 PM	JRM	Sub
HS18111497-03	50WW14-181129	Login	11/30/2018 1:09:51 PM	JRM	Sub

ALS Houston, US Date: 21-Dec-18

Sample Receipt Checklist

Client Name: CBI-Houston
Work Order: HS18111497
Date/Time Received: **30-Nov-2018 09:40**
Received by: **JRM**

Checklist completed by: *Jared R. Makan* eSignature 30-Nov-2018 Date
Reviewed by: *RJ Modashia* eSignature 3-Dec-2018 Date

Matrices: **Water**
Carrier name: **FedEx Priority Overnight**

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
TX1005 solids received in hermetically sealed vials?	Yes ☐	No ☐	N/A ☑
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	2.1c/2.5c UC/C	IR11	
Cooler(s)/Kit(s):	43948		
Date/Time sample(s) sent to storage:	11/30/2018 13:22		
Water - VOA vials have zero headspace?	Yes ☑	No ☐	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	Yes ☑	No ☐	N/A ☐
pH adjusted?	Yes ☐	No ☑	N/A ☐
pH adjusted by:			

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

APTIM

COC ID: 50-NOV2018-GW-ALSHT-18112

TURNAROUND TIME: normal

RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO			
Facility Name	Longhorn AAP			Lab Name	ALS Laboratories			Email Invoice To	FedInvoices@CBIFederalServices.com		
Project Number	501032			Lab Contact	RJ Modashia						
	LHAAP-50			Email	RJ.Modashia@alsglobal.com			Email Report To	Kim.napier@aptim.com		
Address	1203-B East Grand Avenue			Address	10450 Stancliff Rd., Suite 210			Mail Reports To	Kim Napier		
	PMB 202							Address	2410 Cherahala Blvd.		
City	Marshall	State	TX	City	Houston	State	TX	City	Knoxville	State	TN
Postal Code	75670	Country	USA	Postal Code	77099	Country	USA	Postal Code	37932	Country	USA
Phone Number	713.243.7264			Phone Number	281.575.2279 or 281.530.5656						
Project Manager	Praveen Srivastav							Shipping Company	FedEx		

SAMPLE DETAILS

Sample ID	Location	Start Depth	End Depth	Depth Unit	Field Matrix	Date	Time (24hr)	# Of Cont.
50 WW06-181129	50WW06					11/29/18	1525	16
50WW13-181129	50WW13					11/29/18	1115	16
50WW14-181129	50WW14					11/29/18	1320	16

ANALYSIS REQUESTED

ANALYSIS	VOCs in Water by 8260B	Carbon Dioxide in Water by RSK175	Methane, Ethane, Ethene in Water by RSK175	Anions in Water by E300.0	TOC in Water by E415.1	Perchlorate by 6850	Sulfide in Water by E376.1	Phosphorous by E365.2	Alkalinity by E310.1	Dissolved Fe and Mn by 6020	Fe Total by 6020
50 WW06-181129	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
50WW13-181129	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
50WW14-181129	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

HS18111497

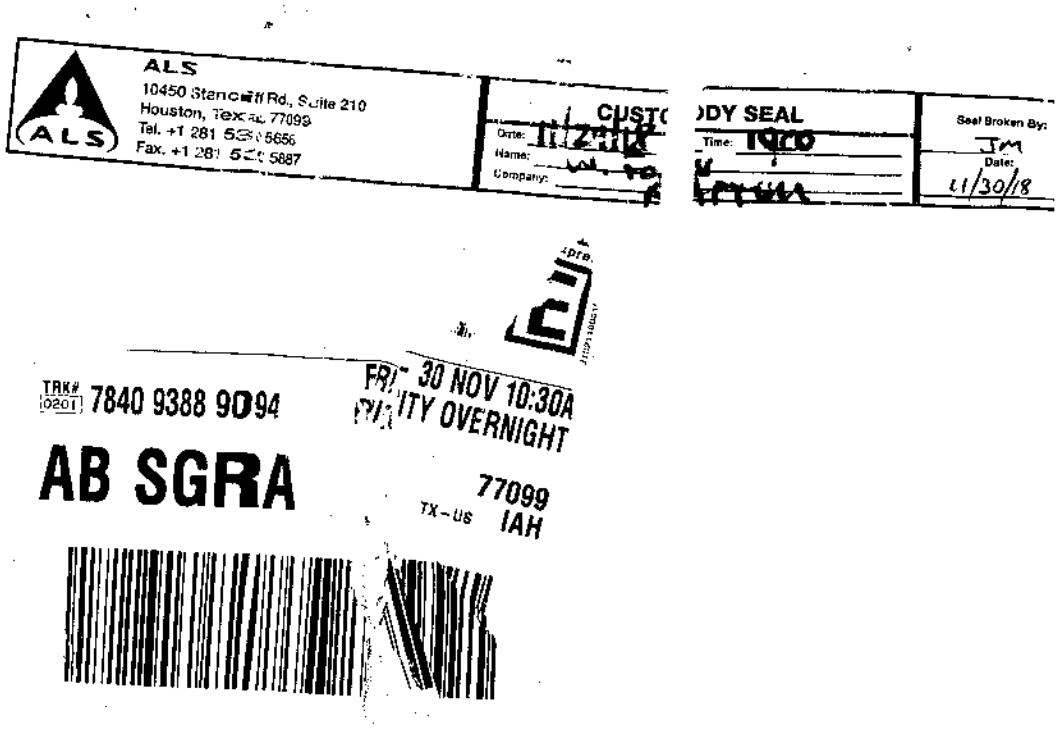
Aptim Environmental & Infrastucture. Inc.

Longhorn Army Ammunition Plant LHAAP-50

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
Anions should include chloride, nitrate, nitrite, and sulfate.	Wesley Garcia	11/29/18 1900		

Cooler 43948 1211

Temp 2.1 COC


ALS
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5887
CUSTODY SEAL
Date:
Name:
Company:
Time:
Seal Broken By:
Date:
11/30/18
TRK# 7840 9388 9094
FRI 30 NOV 10:30A
PRIORITY OVERNIGHT
AB SGRA
77099
TX-US IAH

ALS Environmental
ALS Group USA, Corp
1317 South 13th Avenue
Kelso, WA 98626
T : +1 360 577 7222
F : +1 360 636 1068
www.alsglobal.com

December 21, 2018 **Analytical Report for Service Request No:** K1811723

RJ Modashia
ALS Laboratory Group
10450 Stancliff Road
Suite 210
Houston, TX 77099-4338

RE: ALS Houston DOD TOC / HS18111497

Dear RJ,

Enclosed are the results of the sample(s) submitted to our laboratory December 01, 2018
For your reference, these analyses have been assigned our service request number **K1811723.**

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. All results are intended to be considered in their entirety, and ALS Group USA Corp. dba ALS Environmental (ALS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please contact me if you have any questions. My extension is 3350. You may also contact me via email at Kelley.Lovejoy@alsglobal.com.

Respectfully submitted,

ALS Group USA, Corp. dba ALS Environmental

For Kelley Lovejoy
Project Manager

ALS Environmental
ALS Group USA, Corp
1317 South 13th Avenue
Kelso, WA 98626
T : +1 360 577 7222
F : +1 360 636 1068
www.alsglobal.com

Table of Contents

Acronyms
Qualifiers
State Certifications, Accreditations, And Licenses
Case Narrative
Chain of Custody
General Chemistry
Raw Data
    General Chemistry

Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LOD	Limit of Detection
LOQ	Limit of Quantitation
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Inorganic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
E	The result is an estimate amount because the value exceeded the instrument calibration range.
J	The result is an estimated value.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.
H	The holding time for this test is immediately following sample collection. The samples were analyzed as soon as possible after receipt by the laboratory.

Metals Data Qualifiers

#	The control limit criteria is not applicable. See case narrative.
J	The result is an estimated value.
E	The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
M	The duplicate injection precision was not met.
N	The Matrix Spike sample recovery is not within control limits. See case narrative.
S	The reported value was determined by the Method of Standard Additions (MSA).
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
W	The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
+	The correlation coefficient for the MSA is less than 0.995.
Q	See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
A	A tentatively identified compound, a suspected aldol-condensation product.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
C	The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
D	The reported result is from a dilution.
E	The result is an estimated value.
J	The result is an estimated value.
N	The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
P	The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

F	The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
L	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
H	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
O	The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
Y	The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
Z	The chromatographic fingerprint does not resemble a petroleum product.

ALS Group USA Corp. dba ALS Environmental (ALS) - Kelso
State Certifications, Accreditations, and Licenses

Agency	Web Site	Number
Alaska DEH	http://dec.alaska.gov/eh/lab/cs/csapproval.htm	UST-040
Arizona DHS	http://www.azdhs.gov/lab/license/env.htm	AZ0339
Arkansas - DEQ	http://www.adeq.state.ar.us/techsvs/labcert.htm	88-0637
California DHS (ELAP)	http://www.cdph.ca.gov/certlic/labs/Pages/ELAP.aspx	2795
DOD ELAP	http://www.denix.osd.mil/edqw/Accreditation/AccreditedLabs.cfm	L16-58-R4
Florida DOH	http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm	E87412
Hawaii DOH	http://health.hawaii.gov/	-
ISO 17025	http://www.pjlabs.com/	L16-57
Louisiana DEQ	http://www.deq.louisiana.gov/page/la-lab-accreditation	03016
Maine DHS	http://www.maine.gov/dhhs/	WA01276
Minnesota DOH	http://www.health.state.mn.us/accreditation	053-999-457
Nevada DEP	http://ndep.nv.gov/bsdw/labservice.htm	WA01276
New Jersey DEP	http://www.nj.gov/dep/enforcement/oqa.html	WA005
New York - DOH	https://www.wadsworth.org/regulatory/elap	12060
North Carolina DEQ	https://deq.nc.gov/about/divisions/water-resources/water-resources-data/water-sciences-home-page/laboratory-certification-branch/non-field-lab-certification	605
Oklahoma DEQ	http://www.deq.state.ok.us/CSDnew/labcert.htm	9801
Oregon – DEQ (NELAP)	http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	WA100010
South Carolina DHEC	http://www.scdhec.gov/environment/EnvironmentalLabCertification/	61002
Texas CEQ	http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html	T104704427
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C544
Wyoming (EPA Region 8)	https://www.epa.gov/region8-waterops/epa-region-8-certified-drinking-water-	-
Kelso Laboratory Website	www.alsglobal.com	NA

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. A complete listing of specific NELAP-certified analytes, can be found in the certification section at www.ALSGlobal.com or at the accreditation bodies web site.
Please refer to the certification and/or accreditation body's web site if samples are submitted for compliance purposes. The states highlighted above, require the analysis be listed on the state certification if used for compliance purposes and if the method/anlayte is offered by that state.

Case Narrative

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

1317 South 13th Ave, Kelso, WA 98626 | 1-360-577-7222 | www.alsglobal.com

Client: ALS Environmental - US
Project: ALS Houston DOD TOC
Sample Matrix: Ground Water

Service Request: K1811723
Date Received: 12/01/2018

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples designated for Tier IV validation deliverables including summary forms and all of the associated raw data for each of the analyses. When appropriate to the method, method blank results have been reported with each analytical test.

Sample Receipt:

Three ground water samples were received for analysis at ALS Environmental on 12/01/2018. The samples were received in good condition and consistent with the accompanying chain of custody form. The samples were stored in a refrigerator at 4ºC upon receipt at the laboratory.

General Chemistry:

Method SM 5310 C, 12/18/2018: The Relative Percent Difference (RPD) criterion for the replicate analysis of Total Organic Carbon in sample 50WW14-181129 was not applicable because the analyte concentration was not significantly greater than the Method Reporting Limit (MRL). Analytical values derived from measurements close to the detection limit are not subject to the same accuracy and precision criteria as results derived from measurements higher on the calibration range for the method.

Approved by _____ Date 12/21/2018

Chain of Custody

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

K1811723

10450 Stancliff Rd, Ste 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887
www.alsglobal.com

Subcontract Chain of Custody

COC ID: 10328

SUBCONTRACT TO:

ALS Environmental Kelso
1317 S. 13th Avenue
Kelso, WA 98626

Phone: +1 360 501 3312

CUSTOMER INFORMATION:

Company:	ALS Houston
Contact:	RJ Modashia
Address:	10450 Stancliff Rd, Ste 210
Phone:	+1 281 530 5656
Email:	RJ.Modashia@alsglobal.com
Alternate Contact:	Jumoke M. Lawal
Email:	jumoke.lawal@alsglobal.com

INVOICE INFORMATION:

Company:	ALS Houston
Contact:	Accounts Payable
Address:	10450 Stancliff Rd, Ste 210
Phone:	+1 281 530 5656
Reference:	HS18111497
TSR:	Sonia West

	LAB SAMPLE ID	CLIENT SAMPLE ID	MATRIX	COLLECT DATE
	ANALYSIS REQUESTED			DUE DATE
1.	**HS18111497-01**	**50WW06-181129**	**Groundwater**	**29 Nov 2018 15:25**
	TOC Analysis with DOD Level IV			14 Dec 2018
2.	**HS18111497-02**	**50WW13-181129**	**Groundwater**	**29 Nov 2018 11:15**
	TOC Analysis with DOD Level IV			14 Dec 2018
3.	**HS18111497-03**	**50WW14-181129**	**Groundwater**	**29 Nov 2018 13:20**
	TOC Analysis with DOD Level IV			14 Dec 2018

Comments: Please analyze for the analysis listed above.
Send report to the emails shown above.

QC Level: DOD IV (DoD Data Package)

Relinquished By: R Giga Date/Time: 11/30/18 1800

Received By: Daniel Ramirez Date/Time: 12-1-18 0845

Cooler ID(s): Temperature(s):

RIGHT SOLUTIONS | RIGHT PARTNER

K1811723

10450 Stancliff Rd, Ste 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887
www.alsglobal.com

Purchase Order

PO: HS18111497

VENDOR:

ALS Environmental Kelso
1317 S. 13th Avenue
Kelso, WA 98626

Phone: +1 360 501 3312

CUSTOMER INFORMATION:

Company:	ALS Houston
Contact:	RJ Modashia
Address:	10450 Stancliff Rd, Ste 210
Phone:	+1 281 530 5656
Email:	RJ.Modashia@alsglobal.com
Alternate Contact:	Jumoke M. Lawal
Email:	jumoke.lawal@alsglobal.com

INVOICE INFORMATION:

Company:	ALS Houston
Contact:	Accounts Payable
Address:	10450 Stancliff Rd, Ste 210
Phone:	+1 281 530 5656
Reference:	10328
TSR:	Sonia West

	Item	Catalog No	Unit Price	Quantity	Ext Price
1.	TOC Analysis with DOD Level IV	NA	$9.00	3	$27.00

Order Total: $27.00

00963981

PC KL

Cooler Receipt and Preservation Form

Client ALS - Houston Service Request K18 11723

Received: 12-1-18 Opened: 12-1-18 By: DSP Unloaded: 12-1-18 By: DSP

1. Samples were received via? *USPS* (*Fed Ex*) *UPS* *DHL* *PDX* *Courier* *Hand Delivered*
2. Samples were received in: (circle) (*Cooler*) *Box* *Envelope* *Other* _____ *NA*
3. Were custody seals on coolers? NA (Y) N If yes, how many and where? 1 TOP FRONT

   If present, were custody seals intact? (Y) N If present, were they signed and dated? (Y) N

Raw Cooler Temp	Corrected Cooler Temp	Raw Temp Blank	Corrected Temp Blank	Corr. Factor	Thermometer ID	Cooler/COC ID (NA)	Tracking Number NA	Filed
0.1	-0.1	1.5	1.3	-0.2	376		4380 9535 1747	

4. Packing material: *Inserts* *Baggies* (*Bubble Wrap*) *Gel Packs* (*Wet Ice*) *Dry Ice* *Sleeves* _____
5. Were custody papers properly filled out (ink, signed, etc.)? NA (Y) N
6. Were samples received in good condition (temperature, unbroken)? *Indicate in the table below.* NA (Y) N

   If applicable, tissue samples were received: *Frozen* *Partially Thawed* *Thawed*
7. Were all sample labels complete (i.e analysis, preservation, etc.)? NA (Y) N
8. Did all sample labels and tags agree with custody papers? *Indicate major discrepancies in the table on page 2.* NA (Y) N
9. Were appropriate bottles/containers and volumes received for the tests indicated? NA (Y) N
10. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below* (NA) Y N
11. Were VOA vials received without headspace? *Indicate in the table below.* NA (Y) N
12. Was C12/Res negative? (NA) Y N

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count Bottle Type	Out of Temp	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

Notes, Discrepancies, & Resolutions: _____

General Chemistry

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	K1811723
Project:	ALS Houston DOD TOC/HS18111497	**Date Collected:**	11/29/18
Sample Matrix:	Ground Water	**Date Received:**	12/1/18
Analysis Method:	SM 5310 C	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA

Carbon, Total Organic

Sample Name	Lab Code	Result	LOQ	LOD	MDL	Dil.	Date Analyzed	Q
50WW06-181129	K1811723-001	**1.19**	0.50	0.20	0.07	1	12/18/18 10:27	
50WW13-181129	K1811723-002	**1.58**	0.50	0.20	0.07	1	12/18/18 11:48	
50WW14-181129	K1811723-003	**1.46**	0.50	0.20	0.07	1	12/18/18 12:20	
Method Blank	K1811723-MB	ND U	0.50	0.20	0.07	1	12/18/18 16:37	

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	K1811723
Project	ALS Houston DOD TOC/HS18111497	**Date Collected:**	11/29/18
Sample Matrix:	Ground Water	**Date Received:**	12/01/18
Analysis Method:	SM 5310 C	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA

Replicate Sample Summary
Carbon, Total Organic

Sample Name:	Lab Code:	MRL	LOQ	MDL	Sample Result	Duplicate Result	Average	RPD	RPD Limit	Date Analyzed
50WW06-181129	K1811723-001DUP	0.50	0.20	0.07	1.19	1.10	1.15	8	10	12/18/18
50WW13-181129	K1811723-002DUP	0.50	0.20	0.07	1.58	1.55	1.56	2	10	12/18/18
50WW14-181129	K1811723-003DUP	0.50	0.20	0.07	1.46	1.28	1.37	13 *	10	12/18/18

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	K1811723
Project:	ALS Houston DOD TOC/HS18111497	**Date Collected:**	11/29/18
Sample Matrix:	Ground Water	**Date Received:**	12/01/18
		Date Analyzed:	12/18/18
		Date Extracted:	NA

Matrix Spike Summary
Carbon, Total Organic

Sample Name:	50WW06-181129	**Units:**	mg/L
Lab Code:	K1811723-001	**Basis:**	NA
Analysis Method:	SM 5310 C		
Prep Method:	None		

Matrix Spike
K1811723-001MS

Analyte Name	Sample Result	Result	Spike Amount	% Rec	% Rec Limits
Carbon, Total Organic	1.19	25.8	25.0	98	83-117

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	K1811723
Project:	ALS Houston DOD TOC/HS18111497	**Date Analyzed:**	12/18/18
Sample Matrix:	Ground Water	**Date Extracted:**	NA

Lab Control Sample Summary
Carbon, Total Organic

Analysis Method:	SM 5310 C	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA
		Analysis Lot:	619305

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1811723-LCS	20.3	21.9	93	83-117

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US **Service Request:** K1811723
Project: ALS Houston DOD TOC/HS18111497

Continuing Calibration Verification (CCV) Summary

Carbon, Total Organic

Analysis Method: SM 5310 C **Units:** mg/L

	Analysis Lot	Lab Code	Date Analyzed	True Value	Measured Value	Percent Recovery	Acceptance Limits
CCV1	619305	KQ1818480-26	12/18/18 06:42	25.0	24.5	98	90-110
CCV2	619305	KQ1818480-27	12/18/18 11:15	25.0	24.0	96	90-110
CCV3	619305	KQ1818480-28	12/18/18 16:04	25.0	24.0	96	90-110
CCV4	619305	KQ1818480-29	12/18/18 21:23	25.0	24.0	96	90-110
CCV5	619305	KQ1818480-30	12/19/18 02:13	25.0	24.1	96	90-110

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US **Service Request:**K1811723
Project: ALS Houston DOD TOC/HS18111497

Continuing Calibration Blank (CCB) Summary
Carbon, Total Organic

Analysis Method: SM 5310 C **Units:**mg/L

	Analysis Lot	Lab Code	Date Analyzed	LOQ	LOD	MDL	Result	Q
CCB1	619305	KQ1818480-31	12/18/18 06:58	0.50	0.20	0.07	ND	U
CCB2	619305	KQ1818480-32	12/18/18 11:32	0.50	0.20	0.07	ND	U
CCB3	619305	KQ1818480-33	12/18/18 16:20	0.50	0.20	0.07	ND	U
CCB4	619305	KQ1818480-34	12/18/18 21:40	0.50	0.20	0.07	ND	U
CCB5	619305	KQ1818480-35	12/19/18 02:29	0.50	0.20	0.07	ND	U

Raw Data

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

General Chemistry

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

Work Request # (Original) K1811791, 1579, 1723, 1888, 1809, 1519, 2001, 1625, 1790, 1783

Tier: IV I IV IV II II IV I II IV

Date Analyzed: 12/17/18

Analyst: CES

Run # DOC: 619304
TOC: 619305, 619306

Analysis: DOC/TOC

DATA QUALITY REPORT
INORGANICS

Explain any "no" responses to questions below, and any corrective actions in the comments section below.

1.	Is the method name and number correct and appropriate?	(yes)/no/NA
2.	Holding times met for all analyses and for all samples?	(yes)/no/NA
3.	Are calculations correct?	(yes)/no/NA
4.	Is the reporting basis correct? (Dry Weight)	(yes)/no/NA
5.	All quality control criteria met?	yes/(no)
6.	Is the calibration curve correlation coefficient ≥ 0.995?	(yes)/no/NA
7.	MBs, CCVs, CCBs, LCSs, Dups, and Spikes, analyzed at proper frequency?	(yes)/no/NA
8.	Are ICVs, CCVs, and CCBs all within acceptance limits?	(yes)/no/NA
9.	Are results for methods blanks all ND?	(yes)/no/NA
10.	Are all QC samples within acceptance criteria? (LCS % rec, MS/DMS % rec, DUP or MS/DMS RPDs, etc.)	yes/(no)/NA
11.	Are all exceptions explained?	(yes)/no/NA
12.	Have all applicable service requests been reviewed?	(yes)/no/NA
13.	Are all samples labeled correctly?	(yes)/no/NA
14.	Have all instructions on the service request been followed? (e.g. Special MRLs, QC on a specific sample, Form V)	(yes)/no/NA
15.	Are detection limits and units reported correctly?	(yes)/no/NA
16.	Is the unused space on the benchsheet crossed out?	(yes)/no/NA
17.	Was analysis turned in by the due date? (n-2) (If not record SR#)	yes/(no)/NA

COMMENTS:

(1791-1, 3, 6, 8, 9, 10, 12 DOC), 1723-13, 1888-1, 1809-5, (1791-5, 7, 11, 3, 6, 10, 12 TOC), 1783-1, 2 RPD not within acceptance limits. The sample results are less than 5x the MRL.

1791-5 MS/MSD %R not within acceptance limits - salt water samples - ran on extended reaction method with a 2x minimum dilution.

RA 1888-2, 1625-1, 3 RPD not within acceptance limits.

Final Approved by: [signature] Date: 12/20/18

DQREPORT

RA 2001-1 over dilution.

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** CSETHE **Analysis Lot:** 619304 **Method/Testcode:** SM 5310 C/TOC D

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	T
K1811579-001	Carbon, Dissolved Organic (DOC)	N/A		Water	1.04 mg/L	10 ml	1.04 mg/L	1	0.07	0.50			12/18/18 08:19	N	
K1811579-002	Carbon, Dissolved Organic (DOC)	N/A		Water	5.52 mg/L	10 ml	55.2 mg/L	10	0.7	5.0			12/18/18 09:24	N	
K1811791-001	Carbon, Dissolved Organic (DOC)	N/A		Ocean Water	0.20 mg/L	10 ml	0.20 mg/L J	1	0.07	0.50			12/17/18 22:28	N	
K1811791-002	Carbon, Dissolved Organic (DOC)	N/A		Ocean Water	0.12 mg/L	10 ml	0.12 mg/L J	1	0.07	0.50			12/17/18 23:00	N	I
K1811791-003	Carbon, Dissolved Organic (DOC)	N/A		Ocean Water	1.12 mg/L	10 ml	2.2 mg/L	2	0.2	1.0			12/17/18 23:32	N	I
K1811791-004	Carbon, Dissolved Organic (DOC)	N/A		Ocean Water	0.85 mg/L	10 ml	1.7 mg/L	2	0.2	1.0			12/18/18 00:04	N	I
K1811791-005	Carbon, Dissolved Organic (DOC)	N/A		Ocean Water	1.01 mg/L	10 ml	2.0 mg/L	2	0.2	1.0			12/18/18 00:35	N	I
K1811791-006	Carbon, Dissolved Organic (DOC)	N/A		Ocean Water	0.96 mg/L	10 ml	1.9 mg/L	2	0.2	1.0			12/18/18 02:28	N	
K1811791-007	Carbon, Dissolved Organic (DOC)	N/A		Ocean Water	0.72 mg/L	10 ml	1.4 mg/L	2	0.2	1.0			12/18/18 03:00	N	I
K1811791-008	Carbon, Dissolved Organic (DOC)	N/A		Ocean Water	0.62 mg/L	10 ml	1.2 mg/L	2	0.2	1.0			12/18/18 03:32	N	I
K1811791-009	Carbon, Dissolved Organic (DOC)	N/A		Ocean Water	1.22 mg/L	10 ml	2.4 mg/L	2	0.2	1.0			12/18/18 04:03	N	I
K1811791-010	Carbon, Dissolved Organic (DOC)	N/A		Ocean Water	0.84 mg/L	10 ml	1.7 mg/L	2	0.2	1.0			12/18/18 04:35	N	I
K1811791-011	Carbon, Dissolved Organic (DOC)	N/A		Ocean Water	0.53 mg/L	10 ml	1.1 mg/L	2	0.2	1.0			12/18/18 05:07	N	I
K1811791-012	Carbon, Dissolved Organic (DOC)	N/A		Ocean Water	0.65 mg/L	10 ml	1.3 mg/L	2	0.2	1.0			12/18/18 05:38	N	I
KQ1818477-01	Carbon, Dissolved Organic DUP (DOC)		K1811791-001	Ocean Water	0.12 mg/L	10 ml	0.12 mg/L J	1	0.07	0.50		51*	12/17/18 22:28	N	I
KQ1818477-02	Carbon, Dissolved Organic DUP (DOC)		K1811791-002	Ocean Water	0.06 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50		NC	12/17/18 23:00	N	I
KQ1818477-03	Carbon, Dissolved Organic DUP (DOC)		K1811791-003	Ocean Water	0.87 mg/L	10 ml	1.7 mg/L	2	0.2	1.0		25*	12/17/18 23:32	N	I
KQ1818477-04	Carbon, Dissolved Organic DUP (DOC)		K1811791-004	Ocean Water	0.82 mg/L	10 ml	1.6 mg/L	2	0.2	1.0		3	12/18/18 00:04	N	I
KQ1818477-05	Carbon, Dissolved Organic MS (DOC)		K1811791-005	Ocean Water	17.94 mg/L	10 ml	35.9 mg/L	2	0.2	1.0	68*		12/18/18 01:40	N	I
KQ1818477-06	Carbon, Dissolved Organic DMS (DOC)		K1811791-005	Ocean Water	17.82 mg/L	10 ml	35.6 mg/L	2	0.2	1.0	67*	<1	12/18/18 01:40	N	I
KQ1818477-07	Carbon, Dissolved Organic DUP (DOC)		K1811791-005	Ocean Water	0.94 mg/L	10 ml	1.9 mg/L	2	0.2	1.0		8	12/18/18 00:35	N	I

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

12/20/18 CES 12/19/18

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** CSETHE **Analysis Lot:** 619304 **Method/Testcode:** SM 5310 C/TOC D

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	T
KQ1818477-08	Carbon, Dissolved Organic (DOC)	DUP	K1811791-006	Ocean Water	0.75 mg/L	10 ml	1.5 mg/L	2	0.2	1.0		25*	12/18/18 02:28	N	I
KQ1818477-09	Carbon, Dissolved Organic (DOC)	DUP	K1811791-007	Ocean Water	0.69 mg/L	10 ml	1.4 mg/L	2	0.2	1.0		4	12/18/18 03:00	N	I
KQ1818477-10	Carbon, Dissolved Organic (DOC)	DUP	K1811791-008	Ocean Water	0.99 mg/L	10 ml	2.0 mg/L	2	0.2	1.0		46*	12/18/18 03:32	N	I
KQ1818477-11	Carbon, Dissolved Organic (DOC)	DUP	K1811791-009	Ocean Water	0.66 mg/L	10 ml	1.3 mg/L	2	0.2	1.0		60*	12/18/18 04:03	N	I
KQ1818477-12	Carbon, Dissolved Organic (DOC)	DUP	K1811791-010	Ocean Water	0.59 mg/L	10 ml	1.2 mg/L	2	0.2	1.0		35*	12/18/18 04:35	N	I
KQ1818477-13	Carbon, Dissolved Organic (DOC)	DUP	K1811791-011	Ocean Water	0.53 mg/L	10 ml	1.1 mg/L	2	0.2	1.0		<1	12/18/18 05:07	N	I
KQ1818477-14	Carbon, Dissolved Organic (DOC)	DUP	K1811791-012	Ocean Water	0.54 mg/L	10 ml	1.1 mg/L	2	0.2	1.0		19*	12/18/18 05:38	N	I
KQ1818477-15	Carbon, Dissolved Organic (DOC)	MS	K1811579-001	Water	25.66 mg/L	10 ml	25.7 mg/L	1	0.07	0.50	98		12/18/18 08:51	N	
KQ1818477-16	Carbon, Dissolved Organic (DOC)	DUP	K1811579-001	Water	1.01 mg/L	10 ml	1.00 mg/L	1	0.07	0.50		3	12/18/18 08:19	N	
KQ1818477-17	Carbon, Dissolved Organic (DOC)	DUP	K1811579-002	Water	5.29 mg/L	10 ml	52.9 mg/L	10	0.7	5.0		4	12/18/18 09:24	N	
KQ1818477-18	Carbon, Dissolved Organic (DOC)	MB		Ocean Water	0.08 mg/L	10 ml	0.08 mg/L J	1	0.07	0.50			12/17/18 21:07	N	I
KQ1818477-19	Carbon, Dissolved Organic (DOC)	MB		Ocean Water	0.03 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			12/18/18 07:15	N	I
KQ1818477-20	Carbon, Dissolved Organic (DOC)	LCS		Ocean Water	20.87 mg/L	10 ml	20.9 mg/L	1	0.07	0.50	95		12/17/18 21:24	N	
KQ1818477-21	Carbon, Dissolved Organic (DOC)	LCS		Ocean Water	20.89 mg/L	10 ml	20.9 mg/L	1	0.07	0.50	95		12/18/18 07:31	N	I
KQ1818477-22	Carbon, Dissolved Organic (DOC)	CCV		Ocean Water	24.71 mg/L	10 ml	24.7 mg/L	1			99		12/17/18 20:34	N	I
KQ1818477-23	Carbon, Dissolved Organic (DOC)	CCV		Ocean Water	24.91 mg/L	10 ml	24.9 mg/L	1			100		12/18/18 01:07	N	I
KQ1818477-24	Carbon, Dissolved Organic (DOC)	CCV		Ocean Water	24.50 mg/L	10 ml	24.5 mg/L	1			98		12/18/18 06:42	N	I
KQ1818477-25	Carbon, Dissolved Organic (DOC)	CCV		Ocean Water	24.00 mg/L	10 ml	24.0 mg/L	1			96		12/18/18 11:15	N	I
KQ1818477-26	Carbon, Dissolved Organic (DOC)	CCB		Ocean Water	-0.03 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			12/17/18 20:51	N	I
KQ1818477-27	Carbon, Dissolved Organic (DOC)	CCB		Ocean Water	0.22 mg/L	10 ml	0.22 mg/L J	1	0.07	0.50			12/18/18 01:24	N	I
KQ1818477-28	Carbon, Dissolved Organic (DOC)	CCB		Ocean Water	3.17000000000001E	10 ml	0.50 mg/L U	1	0.07	0.50			12/18/18 06:58	N	I

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** CSETHE **Analysis Lot:** 619304 **Method/Testcode:** SM 5310 C/TOC D

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
KQ1818477-29	Carbon, Dissolved Organic (DOC)	CCB		Ocean Water	-0.16 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			12/18/18 11:32	N	IV

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** CSETHE **Analysis Lot:** 619305 **Method/Testcode:** SM 5310 C/TOC T

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	T
K1811519-001	Carbon, Total Organic	N/A		Water	1.72 mg/L	10 ml	1.72 mg/L	1	0.07	0.50			12/19/18 00:04	N	
K1811723-001	Carbon, Total Organic	N/A		Ground Water	1.19 mg/L	10 ml	1.19 mg/L	1	0.07	0.50			12/18/18 10:27	N	I
K1811723-002	Carbon, Total Organic	N/A		Ground Water	1.58 mg/L	10 ml	1.58 mg/L	1	0.07	0.50			12/18/18 11:48	N	I
K1811723-003	Carbon, Total Organic	N/A		Ground Water	1.46 mg/L	10 ml	1.46 mg/L	1	0.07	0.50			12/18/18 12:20	N	I
K1811791-001	Carbon, Total Organic	N/A		Ocean Water	-0.09 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			12/18/18 15:32	N	I
K1811791-002	Carbon, Total Organic	N/A		Ocean Water	-0.16 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			12/18/18 17:10	N	I
K1811791-003	Carbon, Total Organic	N/A		Ocean Water	0.34 mg/L	10 ml	0.7 mg/L J	2	0.2	1.0			12/18/18 17:42	N	I
K1811791-004	Carbon, Total Organic	N/A		Ocean Water	0.24 mg/L	10 ml	0.5 mg/L J	2	0.2	1.0			12/18/18 18:13	N	I
K1811791-005	Carbon, Total Organic	N/A		Ocean Water	0.28 mg/L	10 ml	0.6 mg/L J	2	0.2	1.0			12/18/18 18:45	N	
K1811791-006	Carbon, Total Organic	N/A		Ocean Water	0.41 mg/L	10 ml	0.8 mg/L J	2	0.2	1.0			12/18/18 19:17	N	
K1811791-007	Carbon, Total Organic	N/A		Ocean Water	0.35 mg/L	10 ml	0.7 mg/L J	2	0.2	1.0			12/18/18 19:48	N	I
K1811791-008	Carbon, Total Organic	N/A		Ocean Water	0.28 mg/L	10 ml	0.6 mg/L J	2	0.2	1.0			12/18/18 20:20	N	I
K1811791-009	Carbon, Total Organic	N/A		Ocean Water	0.26 mg/L	10 ml	0.5 mg/L J	2	0.2	1.0			12/18/18 20:52	N	I
K1811791-010	Carbon, Total Organic	N/A		Ocean Water	0.24 mg/L	10 ml	0.5 mg/L J	2	0.2	1.0			12/18/18 21:57	N	I
K1811791-011	Carbon, Total Organic	N/A		Ocean Water	0.17 mg/L	10 ml	0.3 mg/L J	2	0.2	1.0			12/18/18 22:29	N	I
K1811791-012	Carbon, Total Organic	N/A		Ocean Water	0.67 mg/L	10 ml	1.3 mg/L	2	0.2	1.0			12/18/18 23:00	N	I
K1811809-005	Carbon, Total Organic	N/A		Water	0.62 mg/L	10 ml	0.62 mg/L	1	0.07	0.50			12/18/18 14:28	N	I
K1811888-001	Carbon, Total Organic	N/A		Water	1.97 mg/L	10 ml	1.97 mg/L	1	0.07	0.50			12/18/18 12:52	N	I
K1811888-002	Carbon, Total Organic	N/A		Water	2.84 mg/L	10 ml	2.84 mg/L	1	0.07	0.50			12/18/18 13:56	N	I
KQ1818480-01	Carbon, Total Organic	MS	K1811723-001	Ground Water	25.79 mg/L	10 ml	25.8 mg/L	1	0.07	0.50	98		12/18/18 10:59	N	I
KQ1818480-02	Carbon, Total Organic	DUP	K1811723-001	Ground Water	1.10 mg/L	10 ml	1.10 mg/L	1	0.07	0.50		8	12/18/18 10:27	N	I
KQ1818480-03	Carbon, Total Organic	DUP	K1811723-002	Ground Water	1.55 mg/L	10 ml	1.55 mg/L	1	0.07	0.50		2	12/18/18 11:48	N	I
KQ1818480-04	Carbon, Total Organic	DUP	K1811723-003	Ground Water	1.28 mg/L	10 ml	1.28 mg/L	1	0.07	0.50		13*	12/18/18 12:20	N	I
KQ1818480-05	Carbon, Total Organic	MS	K1811888-001	Water	24.62 mg/L	10 ml	24.6 mg/L	1	0.07	0.50	91		12/18/18 13:23	N	I

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

12/20/18 CES 12/19/18

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** CSETHE **Analysis Lot:** 619305 **Method/Testcode:** SM 5310 C/TOC T

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	T
KQ1818480-06	Carbon, Total Organic	DUP	K1811888-001	Water	1.39 mg/L	10 ml	1.39 mg/L	1	0.07	0.50		35*	12/18/18 12:52	N	I
KQ1818480-07	Carbon, Total Organic	DUP	K1811888-002	Water	3.16 mg/L	10 ml	3.16 mg/L	1	0.07	0.50		11*	12/18/18 13:56	N	
KQ1818480-08	Carbon, Total Organic	MS	K1811809-005	Water	24.88 mg/L	10 ml	24.9 mg/L	1	0.07	0.50	97		12/18/18 15:00	N	I
KQ1818480-09	Carbon, Total Organic	DUP	K1811809-005	Water	0.43 mg/L	10 ml	0.43 mg/L J	1	0.07	0.50		35*	12/18/18 14:28	N	I
KQ1818480-10	Carbon, Total Organic	DUP	K1811791-001	Ocean Water	-0.16 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50		NC	12/18/18 15:32	N	I
KQ1818480-11	Carbon, Total Organic	DUP	K1811791-002	Ocean Water	-0.16 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50		NC	12/18/18 17:10	N	
KQ1818480-12	Carbon, Total Organic	DUP	K1811791-003	Ocean Water	0.51 mg/L	10 ml	1.0 mg/L	2	0.2	1.0		38*	12/18/18 17:42	N	I
KQ1818480-13	Carbon, Total Organic	DUP	K1811791-004	Ocean Water	0.05 mg/L	10 ml	1.0 mg/L U	2	0.2	1.0		NC	12/18/18 18:13	N	I
KQ1818480-14	Carbon, Total Organic	DUP	K1811791-005	Ocean Water	0.76 mg/L	10 ml	1.5 mg/L	2	0.2	1.0		92*	12/18/18 18:45	N	I
KQ1818480-15	Carbon, Total Organic	DUP	K1811791-006	Ocean Water	0.22 mg/L	10 ml	0.4 mg/L J	2	0.2	1.0		62*	12/18/18 19:17	N	I
KQ1818480-16	Carbon, Total Organic	DUP	K1811791-007	Ocean Water	0.22 mg/L	10 ml	0.4 mg/L J	2	0.2	1.0		49*	12/18/18 19:48	N	I
KQ1818480-17	Carbon, Total Organic	DUP	K1811791-008	Ocean Water	0.02 mg/L	10 ml	1.0 mg/L U	2	0.2	1.0		NC	12/18/18 20:20	N	I
KQ1818480-18	Carbon, Total Organic	DUP	K1811791-009	Ocean Water	0.02 mg/L	10 ml	1.0 mg/L U	2	0.2	1.0		NC	12/18/18 20:52	N	I
KQ1818480-19	Carbon, Total Organic	DUP	K1811791-010	Ocean Water	0.13 mg/L	10 ml	0.3 mg/L J	2	0.2	1.0		55*	12/18/18 21:57	N	I
KQ1818480-20	Carbon, Total Organic	DUP	K1811791-011	Ocean Water	0.11 mg/L	10 ml	0.2 mg/L J	2	0.2	1.0		42*	12/18/18 22:29	N	I
KQ1818480-21	Carbon, Total Organic	DUP	K1811791-012	Ocean Water	0.36 mg/L	10 ml	0.7 mg/L J	2	0.2	1.0		61*	12/18/18 23:00	N	I
KQ1818480-22	Carbon, Total Organic	MS	K1811519-001	Water	26.65 mg/L	10 ml	26.7 mg/L	1	0.07	0.50	100		12/19/18 00:35	N	I
KQ1818480-23	Carbon, Total Organic	DUP	K1811519-001	Water	1.57 mg/L	10 ml	1.57 mg/L	1	0.07	0.50		10	12/19/18 00:04	N	I
KQ1818480-24	Carbon, Total Organic	MB		Ground Water	-0.16 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			12/18/18 16:37	N	I
KQ1818480-25	Carbon, Total Organic	LCS		Ground Water	20.30 mg/L	10 ml	20.3 mg/L	1	0.07	0.50	93		12/18/18 16:54	N	I
KQ1818480-26	Carbon, Total Organic	CCV		Ground Water	24.50 mg/L	10 ml	24.5 mg/L	1			98		12/18/18 06:42	N	I
KQ1818480-27	Carbon, Total Organic	CCV		Ground Water	24.00 mg/L	10 ml	24.0 mg/L	1			96		12/18/18 11:15	N	I
KQ1818480-28	Carbon, Total Organic	CCV		Ground Water	23.99 mg/L	10 ml	24.0 mg/L	1			96		12/18/18 16:04	N	I
KQ1818480-29	Carbon, Total Organic	CCV		Ground Water	23.98 mg/L	10 ml	24.0 mg/L	1			96		12/18/18 21:23	N	I

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** CSETHE **Analysis Lot:** 619305 **Method/Testcode:** SM 5310 C/TOC T

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	i r
KQ1818480-30	Carbon, Total Organic	CCV		Ground Water	24.08 mg/L	10 ml	24.1 mg/L	1			96		12/19/18 02:13	N	IV
KQ1818480-31	Carbon, Total Organic	CCB		Ground Water	3.17000000000001E	10 ml	0.50 mg/L U	1	0.07	0.50			12/18/18 06:58	N	I
KQ1818480-32	Carbon, Total Organic	CCB		Ground Water	-0.16 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			12/18/18 11:32	N	I
KQ1818480-33	Carbon, Total Organic	CCB		Ground Water	-0.16 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			12/18/18 16:20	N	I
KQ1818480-34	Carbon, Total Organic	CCB		Ground Water	-0.16 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			12/18/18 21:40	N	I
KQ1818480-35	Carbon, Total Organic	CCB		Ground Water	-0.16 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			12/19/18 02:29	N	I

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** CSETHE **Analysis Lot:** 619306 **Method/Testcode:** SM 5310 C/TOC T

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	T
K1811625-001	Carbon, Total Organic	N/A		Ground Water	4.20 mg/L	10 ml	8.4 mg/L	2	0.2	1.0			12/19/18 03:19	N	
K1811625-002	Carbon, Total Organic	N/A		Ground Water	3.26 mg/L	10 ml	13.0 mg/L	4	0.3	2.0			12/19/18 04:38	N	
K1811625-003	Carbon, Total Organic	N/A		Ground Water	4.69 mg/L	10 ml	18.8 mg/L	4	0.3	2.0			12/19/18 05:10	N	
K1811625-004	Carbon, Total Organic	N/A		Ground Water	5.71 mg/L	10 ml	22.8 mg/L	4	0.3	2.0			12/19/18 05:42	N	
K1811625-005	Carbon, Total Organic	N/A		Ground Water	0.75 mg/L	10 ml	7.5 mg/L	10	0.7	5.0			12/19/18 06:13	N	
K1811783-001	Carbon, Total Organic	N/A		Ground Water	0.68 mg/L	10 ml	0.67 mg/L	1	0.07	0.50			12/19/18 10:13	N	I
K1811783-002	Carbon, Total Organic	N/A		Ground Water	0.77 mg/L	10 ml	0.77 mg/L	1	0.07	0.50			12/19/18 11:32	N	I
K1811783-003	Carbon, Total Organic	N/A		Ground Water	1.55 mg/L	10 ml	1.55 mg/L	1	0.07	0.50			12/19/18 12:35	N	
K1811783-004	Carbon, Total Organic	N/A		Ground Water	0.41 mg/L	10 ml	0.41 mg/L J	1	0.07	0.50			12/19/18 13:38	N	I
K1811790-001	Carbon, Total Organic	N/A		Water	8.35 mg/L	10 ml	835 mg/L	100	7	50			12/19/18 06:45	N	I
K1811790-002	Carbon, Total Organic	N/A		Water	9.85 mg/L	10 ml	985 mg/L	100	7	50			12/19/18 08:38	N	I
K1811790-003	Carbon, Total Organic	N/A		Water	8.64 mg/L	10 ml	864 mg/L	100	7	50			12/19/18 09:10	N	I
K1812001-001	Carbon, Total Organic	N/A		Water	0.54 mg/L	10 ml	54 mg/L	100	7	50			12/19/18 01:08	N	
KQ1818481-01	Carbon, Total Organic	MS	K1812001-001	Water	24.61 mg/L	10 ml	2460 mg/L	100	7	50	96		12/19/18 01:40	N	I
KQ1818481-02	Carbon, Total Organic	DUP	K1812001-001	Water	0.36 mg/L	10 ml	36 mg/L J	100	7	50		39*	12/19/18 01:08	N	I
KQ1818481-03	Carbon, Total Organic	MS	K1811625-001	Ground Water	29.29 mg/L	10 ml	58.6 mg/L	2	0.2	1.0	100		12/19/18 03:50	N	
KQ1818481-04	Carbon, Total Organic	DUP	K1811625-001	Ground Water	3.71 mg/L	10 ml	7.4 mg/L	2	0.2	1.0		12*	12/19/18 03:19	N	
KQ1818481-05	Carbon, Total Organic	DUP	K1811625-002	Ground Water	2.97 mg/L	10 ml	11.9 mg/L	4	0.3	2.0		9	12/19/18 04:38	N	
KQ1818481-06	Carbon, Total Organic	DUP	K1811625-003	Ground Water	4.19 mg/L	10 ml	16.8 mg/L	4	0.3	2.0		11*	12/19/18 05:10	N	
KQ1818481-07	Carbon, Total Organic	DUP	K1811625-004	Ground Water	5.67 mg/L	10 ml	22.7 mg/L	4	0.3	2.0		<1	12/19/18 05:42	N	
KQ1818481-08	Carbon, Total Organic	DUP	K1811625-005	Ground Water	0.79 mg/L	10 ml	7.9 mg/L	10	0.7	5.0		5	12/19/18 06:13	N	I
KQ1818481-09	Carbon, Total Organic	MS	K1811790-001	Water	33.45 mg/L	10 ml	3350 mg/L	100	7	50	100		12/19/18 07:50	N	I
KQ1818481-10	Carbon, Total Organic	DUP	K1811790-001	Water	8.58 mg/L	10 ml	858 mg/L	100	7	50		3	12/19/18 06:45	N	I
KQ1818481-11	Carbon, Total Organic	DUP	K1811790-002	Water	9.86 mg/L	10 ml	986 mg/L	100	7	50		<1	12/19/18 08:38	N	I
KQ1818481-12	Carbon, Total Organic	DUP	K1811790-003	Water	8.46 mg/L	10 ml	846 mg/L	100	7	50		2	12/19/18 09:10	N	I
KQ1818481-13	Carbon, Total Organic	MS	K1811783-001	Ground Water	25.24 mg/L	10 ml	25.2 mg/L	1	0.07	0.50	98		12/19/18 11:16	N	I
KQ1818481-14	Carbon, Total Organic	DUP	K1811783-001	Ground Water	0.53 mg/L	10 ml	0.53 mg/L	1	0.07	0.50		25*	12/19/18 10:13	N	I

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

12/20/18 CES 12/19/18

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** CSETHE **Analysis Lot:** 619306 **Method/Testcode:** 9060/TOC T

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	T
KQ1818481-15	Carbon, Total Organic	TRP	K1811783-001	Ground Water	0.54 mg/L	10 ml	0.54 mg/L	1	0.07	0.50		14	12/19/18 10:13	N	I
KQ1818481-16	Carbon, Total Organic	QUAD	K1811783-001	Ground Water	0.48 mg/L	10 ml	0.48 mg/L J	1	0.07	0.50		15	12/19/18 10:13	N	I
KQ1818481-17	Carbon, Total Organic	DUP	K1811783-002	Ground Water	0.62 mg/L	10 ml	0.62 mg/L	1	0.07	0.50		22*	12/19/18 11:32	N	I
KQ1818481-18	Carbon, Total Organic	TRP	K1811783-002	Ground Water	0.56 mg/L	10 ml	0.56 mg/L	1	0.07	0.50		17	12/19/18 11:32	N	I
KQ1818481-19	Carbon, Total Organic	QUAD	K1811783-002	Ground Water	0.46 mg/L	10 ml	0.46 mg/L J	1	0.07	0.50		21*	12/19/18 11:32	N	
KQ1818481-20	Carbon, Total Organic	DUP	K1811783-003	Ground Water	1.44 mg/L	10 ml	1.44 mg/L	1	0.07	0.50		7	12/19/18 12:35	N	I
KQ1818481-21	Carbon, Total Organic	TRP	K1811783-003	Ground Water	1.38 mg/L	10 ml	1.38 mg/L	1	0.07	0.50		6	12/19/18 12:35	N	I
KQ1818481-22	Carbon, Total Organic	QUAD	K1811783-003	Ground Water	1.35 mg/L	10 ml	1.35 mg/L	1	0.07	0.50		6	12/19/18 12:35	N	I
KQ1818481-23	Carbon, Total Organic	DUP	K1811783-004	Ground Water	0.37 mg/L	10 ml	0.37 mg/L J	1	0.07	0.50		11	12/19/18 13:38	N	I
KQ1818481-24	Carbon, Total Organic	TRP	K1811783-004	Ground Water	0.35 mg/L	10 ml	0.35 mg/L J	1	0.07	0.50		8	12/19/18 13:38	N	I
KQ1818481-25	Carbon, Total Organic	QUAD	K1811783-004	Ground Water	0.34 mg/L	10 ml	0.34 mg/L J	1	0.07	0.50		8	12/19/18 13:38	N	I
KQ1818481-26	Carbon, Total Organic	MB		Water	-0.16 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			12/19/18 02:46	N	I
KQ1818481-26	Carbon, Total Organic	MB		Water	-0.16 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			12/19/18 02:46	N	I
KQ1818481-27	Carbon, Total Organic	LCS		Water	20.54 mg/L	10 ml	20.5 mg/L	1	0.07	0.50	94		12/19/18 03:02	N	I
KQ1818481-27	Carbon, Total Organic	LCS		Water	20.54 mg/L	10 ml	20.5 mg/L	1	0.07	0.50	94		12/19/18 03:02	N	I
KQ1818481-28	Carbon, Total Organic	CCV		Water	23.98 mg/L	10 ml	24.0 mg/L	1			96		12/18/18 21:23	N	I
KQ1818481-28	Carbon, Total Organic	CCV		Water	23.98 mg/L	10 ml	24.0 mg/L	1			96		12/18/18 21:23	N	I
KQ1818481-29	Carbon, Total Organic	CCV		Water	24.08 mg/L	10 ml	24.1 mg/L	1			96		12/19/18 02:13	N	I
KQ1818481-29	Carbon, Total Organic	CCV		Water	24.08 mg/L	10 ml	24.1 mg/L	1			96		12/19/18 02:13	N	I
KQ1818481-30	Carbon, Total Organic	CCV		Water	23.86 mg/L	10 ml	23.9 mg/L	1			96		12/19/18 07:17	N	I
KQ1818481-30	Carbon, Total Organic	CCV		Water	23.86 mg/L	10 ml	23.9 mg/L	1			96		12/19/18 07:17	N	I
KQ1818481-31	Carbon, Total Organic	CCV		Water	24.40 mg/L	10 ml	24.4 mg/L	1			98		12/19/18 14:41	N	I
KQ1818481-31	Carbon, Total Organic	CCV		Water	24.40 mg/L	10 ml	24.4 mg/L	1			98		12/19/18 14:41	N	I
KQ1818481-32	Carbon, Total Organic	CCB		Water	-0.16 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			12/18/18 21:40	N	I
KQ1818481-32	Carbon, Total Organic	CCB		Water	-0.16 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			12/18/18 21:40	N	I
KQ1818481-33	Carbon, Total Organic	CCB		Water	-0.16 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			12/19/18 02:29	N	I
KQ1818481-33	Carbon, Total Organic	CCB		Water	-0.16 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			12/19/18 02:29	N	I
KQ1818481-34	Carbon, Total Organic	CCB		Water	-0.16 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			12/19/18 07:33	N	I
KQ1818481-34	Carbon, Total Organic	CCB		Water	-0.16 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			12/19/18 07:33	N	I
KQ1818481-35	Carbon, Total Organic	CCB		Water	-0.16 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			12/19/18 14:58	N	IV

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** CSETHE **Analysis Lot:** 619306 **Method/Testcode:** SM 5310 C/TOC T

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Ti
KQ1818481-35	Carbon, Total Organic	CCB		Water	-0.16 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			12/19/18 14:58	N	I

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

0.132	0.132	0.132	0.132	OBSERVATIONS	13	0.1315
0.244				STD Deviation	0.12576	ABOVE
0.383				AVERAGE	0.08505	ABOVE
0.163	0.163	0.163	0.163	UCL	0.21082	0.163
0.185	0.185	0.185	0.185	LCL	-0.04071	0.185
0.000						0
0.000						0
0.000				OBSERVATIONS	3	0
0.000				STD Deviation	0.04695	0
0.000				AVERAGE	0.15983	0
0.000				UCL	0.20679	0
0.000				LCL	0.11288	0
0.000						0
						0
				OBSERVATIONS	3	0
				STD Deviation	0.04695	0
				AVERAGE	0.15983	0
				UCL	0.20679	0
				LCL	0.11288	0
						0
						0
				OBSERVATIONS	3	0
				STD Deviation	0.03293	0
				AVERAGE	0.15983	0
						0
						0
						0
						0
						0
						0

12/20/18

DOC: 619304,
TOC: 619305,
619306

Schedule: 12172018C

Version: 14
Instrument: Fusion1
Last Saved by: Fusion1 (Fusion1)
Last Saved on: 2018/12/18 14:41 - Tuesday

12/20/18

Position	Sample Type	Sample ID	Method ID (Calibration ID)	Reps
(Clean)	Clean	Clean		1
D	Sample	RB	Extended Reaction 021711 (Extended Reaction 021711)	1
(Clean)	Clean	Clean		1
D	Sample	RB	Extended Reaction 021711 (Extended Reaction 021711)	1
(Clean)	Clean	Clean		1
D	Sample	RB	Extended Reaction 021711 (Extended Reaction 021711)	1
(Blank)	Blank	Reagent/Acid Blank		1
D	Sample	RB	Extended Reaction 021711 (Extended Reaction 021711)	1
B	Check Standard	[TOC] CCV 021711 [25 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1
D	Check Standard	[TOC] CCB 021711 [0.0 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1
1	Sample	MB1	Extended Reaction 021711 (Extended Reaction 021711)	1
2	Check Standard	[TOC] LCS ER [21.9 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1
3	Sample	ICS	Extended Reaction 021711 (Extended Reaction 021711)	1
4	Sample	FB 12/4/18	Extended Reaction 021711 (Extended Reaction 021711)	2
5	Sample	K1811791-001 doc	Extended Reaction 021711 (Extended Reaction 021711)	2
6	Sample	K1811791-002 doc	Extended Reaction 021711 (Extended Reaction 021711)	2
7	Sample	K1811791-003 doc 2x	Extended Reaction 021711 (Extended Reaction 021711)	2
8	Sample	K1811791-004 doc 2x	Extended Reaction 021711 (Extended Reaction 021711)	2
9	Sample	K1811791-005 doc 2x	Extended Reaction 021711 (Extended Reaction 021711)	2
B	Check Standard	[TOC] CCV 021711 [25 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1
D	Check Standard	[TOC] CCB 021711 [0.0 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1
10	Sample	K1811791-005 ms/msd doc 2x	Extended Reaction 021711 (Extended Reaction 021711)	2
11	Sample	RB	Extended Reaction 021711 (Extended Reaction 021711)	1
12	Sample	K1811791-006 doc 2x	Extended Reaction 021711 (Extended Reaction 021711)	2
13	Sample	K1811791-007 doc 2x	Extended Reaction 021711 (Extended Reaction 021711)	2
14	Sample	K1811791-008 doc 2x	Extended Reaction 021711 (Extended Reaction 021711)	2
15	Sample	K1811791-009 doc 2x	Extended Reaction 021711 (Extended Reaction 021711)	2
16	Sample	K1811791-010 doc 2x	Extended Reaction 021711 (Extended Reaction 021711)	2
17	Sample	K1811791-011 doc 2x	Extended Reaction 021711 (Extended Reaction 021711)	2
18	Sample	K1811791-012 doc 2x	Extended Reaction 021711 (Extended Reaction 021711)	2
19	Sample	RB	Extended Reaction 021711 (Extended Reaction 021711)	2
B	Check Standard	[TOC] CCV 021711 [25 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1
D	Check Standard	[TOC] CCB 021711 [0.0 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1
20	Sample	MB2	Extended Reaction 021711 (Extended Reaction 021711)	1
2	Check Standard	[TOC] LCS ER [21.9 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1
21	Sample	FB 11/29/18	Extended Reaction 021711 (Extended Reaction 021711)	2
22	Sample	K1811579-001 doc	Extended Reaction 021711 (Extended Reaction 021711)	2
23	Sample	K1811579-001 ms doc	Extended Reaction 021711 (Extended Reaction 021711)	1
24	Sample	RB	Extended Reaction 021711 (Extended Reaction 021711)	1
25	Sample	K1811579-002 doc 10x	Extended Reaction 021711 (Extended Reaction 021711)	2
26	Sample	RB	Extended Reaction 021711 (Extended Reaction 021711)	2
27	Sample	K1811723-001.02	Extended Reaction 021711 (Extended Reaction 021711)	2
28	Sample	K1811723-001.02 ms	Extended Reaction 021711 (Extended Reaction 021711)	1
B	Check Standard	[TOC] CCV 021711 [25 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1
D	Check Standard	[TOC] CCB 021711 [0.0 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1
29	Sample	K1811723-002.02	Extended Reaction 021711 (Extended Reaction 021711)	2
30	Sample	K1811723-003.02	Extended Reaction 021711 (Extended Reaction 021711)	2
31	Sample	K1811888-001.01	Extended Reaction 021711 (Extended Reaction 021711)	2
32	Sample	K1811888-001.01 ms	Extended Reaction 021711 (Extended Reaction 021711)	1
33	Sample	RB	Extended Reaction 021711 (Extended Reaction 021711)	1
34	Sample	K1811888-002.02	Extended Reaction 021711 (Extended Reaction 021711)	2
35	Sample	K1811809-005.14	Extended Reaction 021711 (Extended Reaction 021711)	2
36	Sample	K1811809-005.14 ms	Extended Reaction 021711 (Extended Reaction 021711)	1
37	Sample	RB	Extended Reaction 021711 (Extended Reaction 021711)	1

Schedule: 12172018C

Position	Sample Type	Sample ID	Method ID (Calibration ID)	Reps
38	Sample	K1811791-001.01	Extended Reaction 021711 (Extended Reaction 021711)	2
C	Check Standard	[TOC] CCV 021711 [25 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1
D	Check Standard	[TOC] CCB 021711 [0.0 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1
39	Sample	MB	Extended Reaction 021711 (Extended Reaction 021711)	1
2	Check Standard	[TOC] LCS ER [21.9 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1
40	Sample	K1811791-002.01	Extended Reaction 021711 (Extended Reaction 021711)	2
41	Sample	K1811791-003.01 2x	Extended Reaction 021711 (Extended Reaction 021711)	2
42	Sample	K1811791-004.01 2x	Extended Reaction 021711 (Extended Reaction 021711)	2
43	Sample	K1811791-005.01 2x	Extended Reaction 021711 (Extended Reaction 021711)	2
44	Sample	K1811791-006.01 2x	Extended Reaction 021711 (Extended Reaction 021711)	2
45	Sample	K1811791-007.01 2x	Extended Reaction 021711 (Extended Reaction 021711)	2
46	Sample	K1811791-008.01 2x	Extended Reaction 021711 (Extended Reaction 021711)	2
47	Sample	K1811791-009.01 2x	Extended Reaction 021711 (Extended Reaction 021711)	2
C	Check Standard	[TOC] CCV 021711 [25 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1
D	Check Standard	[TOC] CCB 021711 [0.0 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1
48	Sample	K1811791-010.01 2x	Extended Reaction 021711 (Extended Reaction 021711)	2
49	Sample	K1811791-011.01 2x	Extended Reaction 021711 (Extended Reaction 021711)	2
50	Sample	K1811791-012.01 2x	Extended Reaction 021711 (Extended Reaction 021711)	2
51	Sample	RE	Extended Reaction 021711 (Extended Reaction 021711)	2
52	Sample	K1811791-001.01	Extended Reaction 021711 (Extended Reaction 021711)	2
53	Sample	K1811419-001.01 ms	Extended Reaction 021711 (Extended Reaction 021711)	1
MB	Sample	MB	Extended Reaction 021711 (Extended Reaction 021711)	1
55	Sample	K1812001-001.01 10x	Extended Reaction 021711 (Extended Reaction 021711)	2
56	Sample	K1812001-001.01 ms 10x	Extended Reaction 021711 (Extended Reaction 021711)	1
57	Sample	RE	Extended Reaction 021711 (Extended Reaction 021711)	1
C	Check Standard	[TOC] CCV 021711 [25 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1
D	Check Standard	[TOC] CCB 021711 [0.0 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1
MB	Sample	MB	Extended Reaction 021711 (Extended Reaction 021711)	1
2	Check Standard	[TOC] LCS ER [21.9 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1
58	Sample	K1811625-001.02	Extended Reaction 021711 (Extended Reaction 021711)	2
59	Sample	K1811625-001.02 ms 2x	Extended Reaction 021711 (Extended Reaction 021711)	1
60	Sample	RE	Extended Reaction 021711 (Extended Reaction 021711)	1
61	Sample	K1811625-002.03 4x	Extended Reaction 021711 (Extended Reaction 021711)	2
62	Sample	K1811625-003.03 4x	Extended Reaction 021711 (Extended Reaction 021711)	2
63	Sample	K1811625-004.03 4x	Extended Reaction 021711 (Extended Reaction 021711)	2
64	Sample	K1811625-005.03 10x	Extended Reaction 021711 (Extended Reaction 021711)	2
65	Sample	K1811791-013.01 10x	Extended Reaction 021711 (Extended Reaction 021711)	2
C	Check Standard	[TOC] CCV 021711 [25 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1
D	Check Standard	[TOC] CCB 021711 [0.0 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1
66	Sample	K1811791-014.01 10x	Extended Reaction 021711 (Extended Reaction 021711)	2
67	Sample	RE	Extended Reaction 021711 (Extended Reaction 021711)	2
68	Sample	K1811791-015.01 10x	Extended Reaction 021711 (Extended Reaction 021711)	2
70	Sample	K1811791-003.01 10x	Extended Reaction 021711 (Extended Reaction 021711)	2
71	Sample	MB	Extended Reaction 021711 (Extended Reaction 021711)	2
72	Sample	K1811763-001.08	Extended Reaction 021711 (Extended Reaction 021711)	4
73	Sample	K1811763-001.08 ms	Extended Reaction 021711 (Extended Reaction 021711)	1
74	Sample	K1811763-002.08	Extended Reaction 021711 (Extended Reaction 021711)	4
75	Sample	K1811763-003.08	Extended Reaction 021711 (Extended Reaction 021711)	4
1	Sample	K1811763-004.08	Extended Reaction 021711 (Extended Reaction 021711)	4
C	Check Standard	[TOC] CCV 021711 [25 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1
D	Check Standard	[TOC] CCB 021711 [0.0 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1

Fusion Report - 12172018C
Monday, December 17, 2018 05:49 PM

(View - Reps, Unused Reps, Meta-Data, Signature, History)
Printed on 2018/12/19 15:35 - Wednesday

Report Summary Information

Company Location:	Gen Chem Lab		
Schedule Name:	12172018C	Engine Version:	1.1.5.1
Instrument Name:	Fusion1	Firmware Version:	1.2.0696
Report Version:	1 of 1	Connection:	RS232 COM1
Report Creation by Operators (schedule version):	Fusion1 (Fusion1) (v1) Fusion1 (Fusion1) (v2) Fusion1 (Fusion1) (v3) Fusion1 (Fusion1) (v5) Fusion1 (Fusion1) (v6) Fusion1 (Fusion1) (v7) Fusion1 (Fusion1) (v9) Fusion1 (Fusion1) (v10) Fusion1 (Fusion1) (v11) Fusion1 (Fusion1) (v12) Fusion1 (Fusion1) (v14)		
Comment:			

12/20/18

Report Results

Sample Type: Clean — From Schedule Version 1

	Pos	Analysis Type	Sample ID	Start Time
◈	(clean)		Clean	2018/12/17 17:49

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	13.44	16.04	2.60	49.35	05:26
2	TC Clean	6.88	9.30	2.42	49.98	04:03
3	TC Clean	2.27	4.99	2.72	50.04	03:49
4	TC Clean	2.11	4.65	2.54	50.04	03:48

Sample Type: Sample — From Schedule Version 1

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	D	TOC	RB	0.0000 ppm	0.0000 ppm	0.0000%	2018/12/17 18:11

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time

1	TOC	0.0000	0.0000	12.99	15.78	2.79	50.01	12:31

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 16.8487 (IC) (v1200)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

Sample Type: Clean — From Schedule Version 1

	Pos	Analysis Type	Sample ID	Start Time
◈	(clean)		Clean	2018/12/17 18:27

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	12.58	15.63	3.05	49.42	05:26
2	TC Clean	5.35	8.09	2.74	50.03	04:03
3	TC Clean	1.92	4.57	2.64	50.03	03:56
4	TC Clean	1.75	4.42	2.67	50.04	03:55

Sample Type: Sample — From Schedule Version 1

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	D	TOC	RB	0.0000 ppm	0.0000 ppm	0.0000%	2018/12/17 18:50

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	13.11	15.75	2.64	50.08	12:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 16.8487 (IC) (v1200)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

Sample Type: Clean — From Schedule Version 1

	Pos	Analysis Type	Sample ID	Start Time
◈	(clean)		Clean	2018/12/17 19:06

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	12.45	15.75	3.29	49.26	05:25
2	TC Clean	5.16	7.92	2.77	50.06	04:06
3	TC Clean	1.79	4.46	2.67	50.04	03:47
4	TC Clean	1.44	4.20	2.75	50.04	03:47

Sample Type: Sample — From Schedule Version 1

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	D	TOC	RB	0.0000 ppm	0.0000 ppm	0.0000%	2018/12/17 19:28

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	13.40	16.13	2.73	50.08	12:33

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 16.8487 (IC) (v1200)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

Sample Type: Blank (Creating v1201) From Schedule Version 1

	Pos	Analysis Type	Sample ID	Start Time
◆	(blank)		Reagent/Acid Blank	2018/12/17 19:44

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	12.33	15.59	3.26	49.36	05:24
2	TC Clean	5.44	8.28	2.84	50.00	04:03
3	TC Clean	1.90	4.51	2.61	50.07	03:51
4	TC Clean	1.54	4.25	2.71	50.08	03:48
5	Reagent Blank	6.62	9.24	2.62	50.08	05:05
6	Acid Blank	1.62	4.06	2.44	49.34	05:27

Sample Type: Sample From Schedule Version 2

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	D	TOC	RB	1.6691 ppm	0.0000 ppm	0.0000%	2018/12/17 20:18

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.6691	16.6907	29.80	32.86	3.06	50.04	12:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 17.0445 (IC) (v1201)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

Sample Type: Check Standard --> CCV 021711 From Schedule Version 3

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	B	TOC	25.0000	1:2	[TOC] CCV 021711 [25 ppm]	0 / infinity (NA / NA)	24.8711 ppm	0.0000 ppm	0%	2018/12/17 20:34

						(PASS)				

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	24.8711	248.7113	208.58	211.55	2.97	50.06	12:31

Completion State: Success - Criteria met.
Success Action: Do Nothing
Method: Extended Reaction 021711 (v3)
Calibration: Extended Reaction 021711 (v24)
STD Conc - Pos B: 50 ppmC

Sample Type: Check Standard --> CCB 021711

From Schedule Version 5

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	D	TOC	0.0000	1:2	[TOC] CCB 021711 [0.0 ppm]	0 / infinity (NA / NA)	0.1315 ppm (PASS)	0.0000 ppm	0%	2018/12/17 20:51

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0.0 ppm	1	0.1315	1.3151	19.45	22.31	2.86	50.06	12:30

Completion State: Success - Criteria met.
Success Action: Do Nothing
Method: Extended Reaction 021711 (v3)
Calibration: Extended Reaction 021711 (v24)
STD Conc - Pos D: 0 ppmC

Sample Type: Sample

From Schedule Version 6

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	1	TOC	MB1	0.2435 ppm	0.0000 ppm	0.0000%	2018/12/17 21:07

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.2435	2.4350	18.91	21.70	2.79	50.01	12:29

Dilution: 1:10
Blank Contribution: (TC) 17.0445 (IC) (v1201)
Method: Extended Reaction 021711 (v3)
Calibration: Extended Reaction 021711 (v24)

Sample Type: Check Standard --> LCS ER

From Schedule Version 6

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	2	TOC	21.9000	1:1	[TOC] LCS ER [21.9 ppm]	0 / infinity (NA / NA)	21.0291 ppm (PASS)	0.0000 ppm	0%	2018/12/17 21:24

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
2	TOC	21.9 ppm	1	21.0291	210.2910	179.21	181.82	2.62	49.97	12:32

Completion State **Success Action** **Method** **Calibration** **STD Conc - Pos 2**

Success - Criteria met.	Do Nothing	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)	21.9 ppmC

Sample Type: Sample

From Schedule Version 6

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	3	TOC	ICS	0.5767 ppm	0.0000 ppm	0.0000%	2018/12/17 21:40

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.5767	5.7668	21.45	24.21	2.76	49.91	12:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 17.0445 (IC) (v1201)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	4	TOC	FB 12/4/18	0.4085 ppm	0.2143 ppm	52.4600%	2018/12/17 21:57

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.2570	2.5698	19.01	21.67	2.66	49.88	12:28
2	TOC	0.5601	5.6006	21.33	23.92	2.60	49.85	12:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 17.0445 (IC) (v1201)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	5	TOC	K1811791-001 doc	0.3154 ppm	0.0560 ppm	17.7400%	2018/12/17 22:28

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.3550	3.5495	19.76	22.38	2.62	49.84	12:28
2	TOC	0.2758	2.7581	19.15	21.78	2.63	49.84	12:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 17.0445 (IC) (v1201)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	6	TOC	K1811791-002 doc	0.2521 ppm	0.0457 ppm	18.1200%	2018/12/17 23:00

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.2844	2.8445	19.22	21.86	2.64	49.81	12:24
2	TOC	0.2198	2.1983	18.72	21.29	2.57	49.80	12:24

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 17.0445 (IC) (v1201)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time

7	TOC	K1811791-003 doc 2x	1.1525 ppm	0.1778 ppm	15.4300%	2018/12/17 23:32

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.2782	12.7821	26.82	29.31	2.49	49.76	12:26
2	TOC	1.0268	10.2680	24.89	27.47	2.58	49.76	12:26

Dilution: 1:10

Blank Contribution: (TC) 17.0445 (IC) (v1201)

Method: Extended Reaction 021711 (v3)

Calibration: Extended Reaction 021711 (v24)

Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
8	TOC	K1811791-004 doc 2x	0.9959 ppm	0.0178 ppm	1.7800%	2018/12/18 00:04

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.0085	10.0848	24.75	27.60	2.84	49.73	12:31
2	TOC	0.9834	9.8337	24.56	27.34	2.78	49.73	12:26

Dilution: 1:10

Blank Contribution: (TC) 17.0445 (IC) (v1201)

Method: Extended Reaction 021711 (v3)

Calibration: Extended Reaction 021711 (v24)

Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
9	TOC	K1811791-005 doc 2x	1.1333 ppm	0.0537 ppm	4.7400%	2018/12/18 00:35

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.1713	11.7134	26.00	28.80	2.80	49.71	12:28
2	TOC	1.0953	10.9534	25.42	28.21	2.79	49.73	12:27

Dilution: 1:10

Blank Contribution: (TC) 17.0445 (IC) (v1201)

Method: Extended Reaction 021711 (v3)

Calibration: Extended Reaction 021711 (v24)

Sample Type: Check Standard --> CCV 021711

From Schedule Version 6

Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
B	TOC	25.0000	1:2	[TOC] CCV 021711 [25 ppm]	0 / infinity (NA / NA)	25.0685 ppm (PASS)	0.0000 ppm	0%	2018/12/18 01:07

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	25.0685	250.6852	210.09	212.95	2.86	49.74	12:33

Completion State: Success - Criteria met.

Success Action: Do Nothing

Method: Extended Reaction 021711 (v3)

Calibration: Extended Reaction 021711 (v24)

STD Conc - Pos -: 50 ppmC

Sample Type: Check Standard --> CCB 021711

From Schedule Version 6

			Concentration			Min / Max				

	Pos	BAT	(ppm)	Dil	Sample ID	(% dev)	Result	Std. Dev.	RSD	Start Time
◈	D	TOC	0.0000	1:2	[TOC] CCB 021711 [0.0 ppm]	0 / infinity (NA / NA)	0.3827 ppm (PASS)	0.0000 ppm	0%	2018/12/18 01:24

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0.0 ppm	1	0.3827	3.8266	21.37	24.25	2.88	49.70	12:30

Completion State: Success - Criteria met.
Success Action: Do Nothing
Method: Extended Reaction 021711 (v3)
Calibration: Extended Reaction 021711 (v24)
STD Conc - Pos D: 0 ppmC

Sample Type: Sample — From Schedule Version 6

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	10	TOC	K1811791-005 ms/msd doc 2x	18.0421 ppm	0.0816 ppm	0.4500%	2018/12/18 01:40

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	18.0998	180.9976	155.41	158.12	2.70	49.66	12:29
2	TOC	17.9844	179.8439	154.53	157.47	2.94	49.68	12:20

Dilution: 1:10
Blank Contribution: (TC) 17.0445 (IC) (v1201)
Method: Extended Reaction 021711 (v3)
Calibration: Extended Reaction 021711 (v24)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	11	TOC	RB	1.2384 ppm	0.0000 ppm	0.0000%	2018/12/18 02:12

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.2384	12.3845	26.51	29.35	2.84	49.67	12:28

Dilution: 1:10
Blank Contribution: (TC) 17.0445 (IC) (v1201)
Method: Extended Reaction 021711 (v3)
Calibration: Extended Reaction 021711 (v24)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	12	TOC	K1811791-006 doc 2x	1.0184 ppm	0.1495 ppm	14.6800%	2018/12/18 02:28

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.1241	11.2412	25.64	28.39	2.75	49.65	12:28
2	TOC	0.9127	9.1273	24.02	26.77	2.75	49.65	12:27

Dilution: 1:10
Blank Contribution: (TC) 17.0445 (IC) (v1201)
Method: Extended Reaction 021711 (v3)
Calibratio: Extended Reaction 021711 (v24)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	13	TOC	K1811791-007 doc 2x	0.8607 ppm	0.0221 ppm	2.5700%	2018/12/18 03:00

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.8764	8.7636	23.74	26.50	2.75	49.66	12:23
2	TOC	0.8451	8.4510	23.50	26.30	2.79	49.63	12:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 17.0445 (IC) (v1201)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	14	TOC	K1811791-008 doc 2x	0.9612 ppm	0.2596 ppm	27.0100%	2018/12/18 03:32

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.7776	7.7760	22.99	25.83	2.84	49.65	12:23
2	TOC	1.1448	11.4479	25.80	28.61	2.82	49.65	12:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 17.0445 (IC) (v1201)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	15	TOC	K1811791-009 doc 2x	1.0978 ppm	0.3978 ppm	36.2400%	2018/12/18 04:03

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.3791	13.7907	27.59	30.42	2.83	49.62	12:24
2	TOC	0.8165	8.1645	23.29	26.02	2.73	49.60	12:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 17.0445 (IC) (v1201)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	16	TOC	K1811791-010 doc 2x	0.8754 ppm	0.1751 ppm	20.0000%	2018/12/18 04:35

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.9992	9.9919	24.68	27.38	2.70	49.62	12:25
2	TOC	0.7516	7.5157	22.79	25.42	2.63	49.63	12:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 17.0445 (IC) (v1201)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	17	TOC	K1811791-011 doc 2x	0.6892 ppm	0.0030 ppm	0.4300%	2018/12/18 05:07

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.6913	6.9127	22.33	25.15	2.82	49.62	12:27
2	TOC	0.6871	6.8708	22.30	25.24	2.94	49.64	12:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 17.0445 (IC)	Extended Reaction	Extended Reaction

(v1201) 021711 (v3) 021711 (v24)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	18	TOC	K1811791-012 doc 2x	0.7555 ppm	0.0784 ppm	10.3800%	2018/12/18 05:38

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.8110	8.1096	23.24	25.97	2.73	49.62	12:28
2	TOC	0.7000	7.0003	22.40	25.09	2.70	49.61	12:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 17.0445 (IC) (v1201)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	19	TOC	RB	0.2535 ppm	0.0595 ppm	23.4600%	2018/12/18 06:10

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.2956	2.9557	19.30	22.06	2.76	49.63	12:22
2	TOC	0.2115	2.1145	18.66	21.35	2.68	49.62	12:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 17.0445 (IC) (v1201)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

Sample Type: Check Standard --> CCV 021711 From Schedule Version 6

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	B	TOC	25.0000	1:2	[TOC] CCV 021711 [25 ppm]	0 / infinity (NA / NA)	24.6631 ppm (PASS)	0.0000 ppm	0%	2018/12/18 06:42

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	24.6631	246.6314	206.99	209.68	2.69	49.65	12:30

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)	50 ppmC

Sample Type: Check Standard --> CCB 021711 From Schedule Version 6

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	D	TOC	0.0000	1:2	[TOC] CCB 021711 [0.0 ppm]	0 / infinity (NA / NA)	0.1630 ppm (PASS)	0.0000 ppm	0%	2018/12/18 06:58

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0.0 ppm	1	0.1630	1.6303	19.69	22.46	2.77	49.62	12:29

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)	0 ppmC

Sample Type: Sample — From Schedule Version 6

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	20	TOC	MB2	0.1850 ppm	0.0000 ppm	0.0000%	2018/12/18 07:15

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.1850	1.8503	18.46	21.30	2.84	49.62	12:34

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 17.0445 (IC) (v1201)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

Sample Type: Check Standard --> LCS ER — From Schedule Version 6

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	2	TOC	21.9000	1:1	[TOC] LCS ER [21.9 ppm]	0 / infinity (NA / NA)	21.0464 ppm (PASS)	0.0000 ppm	0%	2018/12/18 07:31

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
2	TOC	21.9 ppm	1	21.0464	210.4637	179.34	182.04	2.70	49.62	12:34

Completion State	Success Action	Method	Calibration	STD Conc - Pos 2
Success - Criteria met.	Do Nothing	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)	21.9 ppmC

Sample Type: Sample — From Schedule Version 6

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	21	TOC	FB 11/29/18	0.1484 ppm	0.0686 ppm	46.2500%	2018/12/18 07:48

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.1969	1.9694	18.55	21.39	2.84	49.61	12:27
2	TOC	0.0999	0.9987	17.81	20.41	2.60	49.60	12:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 17.0445 (IC) (v1201)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	22	TOC	K1811579-001 doc	1.1821 ppm	0.0245 ppm	2.0700%	2018/12/18 08:19

Rep	Base	ppm	µg	Adjusted	NDIR (Abs)	Baseline	Pressure	Run

#	Analysis Type			(Abs)		(Abs)	(psig)	Time
1	TOC	1.1995	11.9946	26.21	28.95	2.74	49.62	12:26
2	TOC	1.1648	11.6480	25.95	28.64	2.69	49.63	12:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 17.0445 (IC) (v1201)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	23	TOC	K1811579-001 ms doc	25.8210 ppm	0.0000 ppm	0.0000%	2018/12/18 08:51

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	25.8210	258.2097	214.44	217.19	2.76	49.65	12:33

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 17.0445 (IC) (v1201)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	24	TOC	RB	0.2820 ppm	0.0000 ppm	0.0000%	2018/12/18 09:08

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.2820	2.8196	19.20	22.02	2.82	49.65	12:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 17.0445 (IC) (v1201)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	25	TOC	K1811579-002 doc 10x	5.5622 ppm	0.1603 ppm	2.8800%	2018/12/18 09:24

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	5.6755	56.7553	60.43	63.10	2.67	49.66	12:25
2	TOC	5.4488	54.4884	58.70	61.33	2.63	49.76	12:24

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 17.0445 (IC) (v1201)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	26	TOC	RB	0.1481 ppm	0.0097 ppm	6.5600%	2018/12/18 09:55

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.1549	1.5494	18.23	20.94	2.71	49.83	12:27
2	TOC	0.1412	1.4121	18.12	20.78	2.65	49.87	12:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 17.0445 (IC) (v1201)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time

◈ 27	TOC	K1811723-001.02	1.3077 ppm	0.0621 ppm	4.7500%	2018/12/18 10:27	

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.3516	13.5160	27.38	29.94	2.57	49.92	12:25
2	TOC	1.2638	12.6382	26.71	29.34	2.63	49.95	12:26

Dilution
1:10

Blank Contribution
(TC) 17.0445 (IC) (v1201)

Method
Extended Reaction 021711 (v3)

Calibration
Extended Reaction 021711 (v24)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	28	TOC	K1811723-001.02 ms	25.9544 ppm	0.0000 ppm	0.0000%	2018/12/18 10:59

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	25.9544	259.5439	215.46	218.02	2.56	49.97	12:33

Dilution
1:10

Blank Contribution
(TC) 17.0445 (IC) (v1201)

Method
Extended Reaction 021711 (v3)

Calibration
Extended Reaction 021711 (v24)

Sample Type: Check Standard --> CCV 021711 From Schedule Version 6

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	B	TOC	25.0000	1:2	[TOC] CCV 021711 [25 ppm]	0 / infinity (NA / NA)	24.1578 ppm (PASS)	0.0000 ppm	0%	2018/12/18 11:15

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	24.1578	241.5782	203.13	205.84	2.71	49.99	12:31

Completion State
Success - Criteria met.

Success Action
Do Nothing

Method
Extended Reaction 021711 (v3)

Calibration
Extended Reaction 021711 (v24)

STD Conc - Pos B
50 ppmC

Sample Type: Check Standard --> CCB 021711 From Schedule Version 6

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	D	TOC	0.0000	1:2	[TOC] CCB 021711 [0.0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2018/12/18 11:32

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0.0 ppm	1	0.0000	0.0000	17.99	20.49	2.50	50.01	12:33

Completion State
Success - Criteria met.

Success Action
Do Nothing

Method
Extended Reaction 021711 (v3)

Calibration
Extended Reaction 021711 (v24)

STD Conc - Pos D
0 ppmC

From Schedule Version 6

Sample Type: Sample

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	29	TOC	K1811723-002.02	1.7234 ppm	0.0179 ppm	1.0400%	2018/12/18 11:48

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.7360	17.3605	30.32	32.93	2.62	50.00	12:27
2	TOC	1.7108	17.1080	30.12	32.92	2.80	50.00	12:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 17.0445 (IC) (v1201)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	30	TOC	K1811723-003.02	1.5303 ppm	0.1283 ppm	8.3800%	2018/12/18 12:20

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.6211	16.2107	29.44	32.15	2.71	49.97	12:27
2	TOC	1.4396	14.3963	28.05	30.61	2.56	49.95	12:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 17.0445 (IC) (v1201)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

From Schedule Version 7

Sample Type: Sample

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	31	TOC	K1811888-001.01	1.8398 ppm	0.4145 ppm	22.5300%	2018/12/18 12:52

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.1329	21.3293	33.35	35.99	2.64	49.94	12:28
2	TOC	1.5468	15.4677	28.87	31.52	2.66	49.98	12:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 17.0445 (IC) (v1201)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

From Schedule Version 9

Sample Type: Sample

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	32	TOC	K1811888-001.01 ms	24.7758 ppm	0.0000 ppm	0.0000%	2018/12/18 13:23

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	24.7758	247.7579	206.45	209.06	2.62	49.97	12:34

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 17.0445 (IC)	Extended Reaction	Extended Reaction

(v1201)	021711 (v3)	021711 (v24)

Sample Type: Sample — From Schedule Version 10

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	33	TOC	RB	0.1438 ppm	0.0000 ppm	0.0000%	2018/12/18 13:40

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.1438	1.4383	18.14	20.82	2.67	49.98	12:33

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 17.0445 (IC) (v1201)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

Sample Type: Sample — From Schedule Version 11

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	34	TOC	K1811888-002.02	3.1600 ppm	0.2234 ppm	7.0700%	2018/12/18 13:56

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	3.0020	30.0203	39.99	42.68	2.69	49.98	12:25
2	TOC	3.3179	33.1794	42.41	45.28	2.87	50.02	12:22

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 17.0445 (IC) (v1201)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

Sample Type: Sample — From Schedule Version 12

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	35	TOC	K1811809-005.14	0.6832 ppm	0.1304 ppm	19.0900%	2018/12/18 14:28

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.7754	7.7538	22.97	25.63	2.66	50.02	12:26
2	TOC	0.5909	5.9094	21.56	24.23	2.67	50.04	12:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 17.0445 (IC) (v1201)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

Sample Type: Sample — From Schedule Version 14

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	36	TOC	K1811809-005.14 ms	25.0348 ppm	0.0000 ppm	0.0000%	2018/12/18 15:00

Rep	Base			Adjusted		Baseline	Pressure	Run

#	Analysis Type	ppm	µg	(Abs)	NDIR (Abs)	(Abs)	(psig)	Time
1	TOC	25.0348	250.3480	208.43	211.18	2.75	50.04	12:30

Dilution 1:10 **Blank Contribution** (TC) 17.0445 (IC) (v1201) **Method** Extended Reaction 021711 (v3) **Calibration** Extended Reaction 021711 (v24)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	37	TOC	RB	0.2006 ppm	0.0000 ppm	0.0000%	2018/12/18 15:16

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.2006	2.0060	18.58	21.16	2.58	50.06	12:31

Dilution 1:10 **Blank Contribution** (TC) 17.0445 (IC) (v1201) **Method** Extended Reaction 021711 (v3) **Calibration** Extended Reaction 021711 (v24)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	38	TOC	K1811791-001.01	0.0352 ppm	0.0498 ppm	141.4200%	2018/12/18 15:32

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0704	0.7044	17.58	20.40	2.81	50.08	12:25
2	TOC	0.0000	0.0000	16.18	18.88	2.70	50.10	12:21

Dilution 1:10 **Blank Contribution** (TC) 17.0445 (IC) (v1201) **Method** Extended Reaction 021711 (v3) **Calibration** Extended Reaction 021711 (v24)

Sample Type: Check Standard --> CCV 021711 From Schedule Version 14

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	B	TOC	25.0000	1:2	[TOC] CCV 021711 [25 ppm]	0 / infinity (NA / NA)	24.1479 ppm (PASS)	0.0000 ppm	0%	2018/12/18 16:04

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	24.1479	241.4788	203.05	205.87	2.82	50.07	12:32

Completion State Success - Criteria met. **Success Action** Do Nothing **Method** Extended Reaction 021711 (v3) **Calibration** Extended Reaction 021711 (v24) **STD Conc - Pos B** 50 ppmC

Sample Type: Check Standard --> CCB 021711 From Schedule Version 14

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	D	TOC	0.0000	1:2	[TOC] CCB 021711 [0.0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2018/12/18 16:20

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0.0 ppm	1	0.0000	0.0000	17.47	20.06	2.58	50.14	12:30

Completion State: Success - Criteria met.
Success Action: Do Nothing
Method: Extended Reaction 021711 (v3)
Calibration: Extended Reaction 021711 (v24)
STD Conc - Pos D: 0 ppmC

Sample Type: Sample — From Schedule Version 14

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	39	TOC	MB3	0.0000 ppm	0.0000 ppm	0.0000%	2018/12/18 16:37

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	16.58	19.15	2.57	50.12	12:33

Dilution: 1:10
Blank Contribution: (TC) 17.0445 (IC) (v1201)
Method: Extended Reaction 021711 (v3)
Calibration: Extended Reaction 021711 (v24)

Sample Type: Check Standard --> LCS ER — From Schedule Version 14

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	2	TOC	21.9000	1:1	[TOC] LCS ER [21.9 ppm]	0 / infinity (NA / NA)	20.4581 ppm (PASS)	0.0000 ppm	0%	2018/12/18 16:54

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
2	TOC	21.9 ppm	1	20.4581	204.5812	174.84	177.41	2.57	50.13	12:28

Completion State: Success - Criteria met.
Success Action: Do Nothing
Method: Extended Reaction 021711 (v3)
Calibration: Extended Reaction 021711 (v24)
STD Conc - Pos 2: 21.9 ppmC

Sample Type: Sample — From Schedule Version 14

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	40	TOC	K1811791-002.01	0.0000 ppm	0.0000 ppm	0.0000%	2018/12/18 17:10

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	16.38	19.07	2.69	50.15	12:23
2	TOC	0.0000	0.0000	15.63	18.28	2.64	50.14	12:22

Dilution: 1:10
Blank Contribution: (TC) 17.0445 (IC) (v1201)
Method: Extended Reaction 021711 (v3)
Calibration: Extended Reaction 021711 (v24)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	41	TOC	K1811791-003.01 2x	0.5851 ppm	0.1144 ppm	19.5500%	2018/12/18 17:42

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.5042	5.0421	20.90	23.49	2.60	50.15	12:27
2	TOC	0.6660	6.6602	22.14	24.83	2.70	50.18	12:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 17.0445 (IC) (v1201)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	42	TOC	K1811791-004.01 2x	0.3073 ppm	0.1328 ppm	43.2200%	2018/12/18 18:13

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.4013	4.0126	20.11	22.83	2.71	50.16	12:29
2	TOC	0.2134	2.1342	18.68	21.29	2.61	50.24	12:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 17.0445 (IC) (v1201)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	43	TOC	K1811791-005.01 2x	0.6815 ppm	0.3393 ppm	49.7900%	2018/12/18 18:45

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.4416	4.4155	20.42	23.02	2.60	50.26	12:28
2	TOC	0.9214	9.2136	24.09	26.68	2.59	50.07	12:23

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 17.0445 (IC) (v1201)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	44	TOC	K1811791-006.01 2x	0.4718 ppm	0.1360 ppm	28.8200%	2018/12/18 19:17

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.5679	5.6791	21.39	24.02	2.64	50.11	12:24
2	TOC	0.3756	3.7562	19.92	22.67	2.75	50.10	12:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 17.0445 (IC) (v1201)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	45	TOC	K1811791-007.01 2x	0.4444 ppm	0.0980 ppm	22.0400%	2018/12/18 19:48

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.5136	5.1363	20.97	23.53	2.56	50.11	12:27

2	TOC	0.3751	3.7510	19.91	22.68	2.77	50.09	12:24

Dilution 1:10 **Blank Contribution** (TC) 17.0445 (IC) (v1201) **Method** Extended Reaction 021711 (v3) **Calibration** Extended Reaction 021711 (v24)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	46	TOC	K1811791-008.01 2x	0.3106 ppm	0.1878 ppm	60.4500%	2018/12/18 20:20

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.4434	4.4338	20.43	23.21	2.77	50.10	12:25
2	TOC	0.1778	1.7784	18.40	21.08	2.68	50.05	12:27

Dilution 1:10 **Blank Contribution** (TC) 17.0445 (IC) (v1201) **Method** Extended Reaction 021711 (v3) **Calibration** Extended Reaction 021711 (v24)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	47	TOC	K1811791-009.01 2x	0.2990 ppm	0.1716 ppm	57.3800%	2018/12/18 20:52

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.4204	4.2036	20.26	22.95	2.69	50.02	12:28
2	TOC	0.1777	1.7771	18.40	20.96	2.56	50.06	12:25

Dilution 1:10 **Blank Contribution** (TC) 17.0445 (IC) (v1201) **Method** Extended Reaction 021711 (v3) **Calibration** Extended Reaction 021711 (v24)

Sample Type: Check Standard --> CCV 021711 From Schedule Version 14

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	B	TOC	25.0000	1:2	[TOC] CCV 021711 [25 ppm]	0 / infinity (NA / NA)	24.1409 ppm (PASS)	0.0000 ppm	0%	2018/12/18 21:23

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	24.1409	241.4095	203.00	205.71	2.71	50.09	12:29

Completion State Success - Criteria met. **Success Action** Do Nothing **Method** Extended Reaction 021711 (v3) **Calibration** Extended Reaction 021711 (v24) **STD Conc - Pos B** 50 ppmC

Sample Type: Check Standard --> CCB 021711 From Schedule Version 14

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	D	TOC	0.0000	1:2	[TOC] CCB 021711 [0.0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2018/12/18 21:40

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0.0 ppm	1	0.0000	0.0000	18.39	21.12	2.73	50.08	12:31

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)	0 ppmC

Sample Type: Sample From Schedule Version 14

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	48	TOC	K1811791-010.01 2x	0.3448 ppm	0.0718 ppm	20.8200%	2018/12/18 21:57

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.3955	3.9551	20.07	22.98	2.91	50.06	12:24
2	TOC	0.2940	2.9400	19.29	21.88	2.59	50.01	12:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 17.0445 (IC) (v1201)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	49	TOC	K1811791-011.01 2x	0.3018 ppm	0.0422 ppm	13.9700%	2018/12/18 22:29

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.3317	3.3167	19.58	22.18	2.60	49.95	12:27
2	TOC	0.2720	2.7202	19.12	21.88	2.75	49.94	12:22

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 17.0445 (IC) (v1201)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	50	TOC	K1811791-012.01 2x	0.6735 ppm	0.2212 ppm	32.8400%	2018/12/18 23:00

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.8299	8.2993	23.39	26.14	2.75	49.86	12:24
2	TOC	0.5172	5.1716	21.00	23.90	2.91	49.88	12:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 17.0445 (IC) (v1201)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	51	TOC	RB	0.1533 ppm	0.1011 ppm	65.9400%	2018/12/18 23:32

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.2248	2.2480	18.76	21.51	2.75	49.87	12:27
2	TOC	0.0818	0.8182	17.67	20.46	2.79	49.84	12:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 17.0445 (IC) (v1201)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	52	TOC	K1811519-001.01	1.8054 ppm	0.1116 ppm	6.1800%	2018/12/19 00:04

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.8844	18.8439	31.45	33.98	2.53	49.83	12:28
2	TOC	1.7265	17.2650	30.24	32.98	2.73	49.80	12:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 17.0445 (IC) (v1201)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	53	TOC	K1811519-001.01 ms	26.8104 ppm	0.0000 ppm	0.0000%	2018/12/19 00:35

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	26.8104	268.1042	222.00	224.74	2.74	49.80	12:34

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 17.0445 (IC) (v1201)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	54	TOC	RB	0.1106 ppm	0.0000 ppm	0.0000%	2018/12/19 00:52

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.1106	1.1060	17.89	20.42	2.53	49.78	12:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 17.0445 (IC) (v1201)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	55	TOC	K1812001-001.01 100x	0.6108 ppm	0.1233 ppm	20.1900%	2018/12/19 01:08

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.6979	6.9794	22.38	24.94	2.56	49.79	12:26
2	TOC	0.5236	5.2357	21.05	23.80	2.75	49.78	12:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 17.0445 (IC) (v1201)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	56	TOC	K1812001-001.01 ms 100x	24.7719 ppm	0.0000 ppm	0.0000%	2018/12/19 01:40

Rep	Base	ppm	µg	Adjusted	NDIR (Abs)	Baseline	Pressure	Run

#	Analysis Type			(Abs)		(Abs)	(psig)	Time
1	TOC	24.7719	247.7187	206.42	209.12	2.70	49.76	12:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 17.0445 (IC) (v1201)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	57	TOC	RB	0.0400 ppm	0.0000 ppm	0.0000%	2018/12/19 01:56

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0400	0.3996	17.35	20.05	2.70	49.75	12:33

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 17.0445 (IC) (v1201)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

Sample Type: Check Standard --> CCV 021711 From Schedule Version 14

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	B	TOC	25.0000	1:2	[TOC] CCV 021711 [25 ppm]	0 / infinity (NA / NA)	24.2359 ppm (PASS)	0.0000 ppm	0%	2018/12/19 02:13

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	24.2359	242.3592	203.72	206.27	2.55	49.76	12:34

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)	50 ppmC

Sample Type: Check Standard --> CCB 021711 From Schedule Version 14

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	D	TOC	0.0000	1:2	[TOC] CCB 021711 [0.0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2018/12/19 02:29

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0.0 ppm	1	0.0000	0.0000	17.53	20.07	2.54	49.76	12:33

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)	0 ppmC

Sample Type: Sample From Schedule Version 14

		Analysis			Std. Dev.		

	Pos	Type	Sample ID	Result (ppmC)	(ppmC)	RSD	Start Time
◈	58	TOC	MB4	0.0000 ppm	0.0000 ppm	0.0000%	2018/12/19 02:46

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	17.04	19.74	2.70	49.74	12:34

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 17.0445 (IC) (v1201)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

Sample Type: Check Standard --> LCS ER From Schedule Version 14

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	2	TOC	21.9000	1:1	[TOC] LCS ER [21.9 ppm]	0 / infinity (NA / NA)	20.6962 ppm (PASS)	0.0000 ppm	0%	2018/12/19 03:02

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
2	TOC	21.9 ppm	1	20.6962	206.9619	176.66	179.26	2.60	49.74	12:32

Completion State	Success Action	Method	Calibration	STD Conc - Pos 2
Success - Criteria met.	Do Nothing	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)	21.9 ppmC

Sample Type: Sample From Schedule Version 14

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	59	TOC	K1811625-001.03 2x	4.1158 ppm	0.3420 ppm	8.3100%	2018/12/19 03:19

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	4.3576	43.5762	50.36	53.04	2.68	49.72	12:24
2	TOC	3.8740	38.7401	46.66	49.27	2.61	49.74	12:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 17.0445 (IC) (v1201)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	60	TOC	K1811625-001.03 ms 2x	29.4511 ppm	0.0000 ppm	0.0000%	2018/12/19 03:50

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	29.4511	294.5108	242.19	244.81	2.62	49.72	12:31

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 17.0445 (IC) (v1201)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

	Pos	Analysis	Sample ID	Result (ppmC)	Std. Dev.	RSD	Start Time

		Type			(ppmC)		
◈	61	TOC	RB	0.0000 ppm	0.0000 ppm	0.0000%	2018/12/19 04:07

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	14.59	17.19	2.60	49.73	12:25
2	TOC	0.0000	0.0000	14.56	17.21	2.66	49.67	12:24

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 17.0445 (IC) (v1201)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	62	TOC	K1811625-002.03 4x	3.2755 ppm	0.2014 ppm	6.1500%	2018/12/19 04:38

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	3.4179	34.1788	43.17	45.78	2.60	49.70	12:24
2	TOC	3.1331	31.3310	41.00	43.63	2.63	49.71	12:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 17.0445 (IC) (v1201)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	63	TOC	K1811625-003.03 4x	4.6014 ppm	0.3565 ppm	7.7500%	2018/12/19 05:10

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	4.8535	48.5352	54.15	56.71	2.56	49.71	12:23
2	TOC	4.3494	43.4938	50.29	52.90	2.61	49.72	12:24

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 17.0445 (IC) (v1201)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	64	TOC	K1811625-004.03 4x	5.8531 ppm	0.0267 ppm	0.4600%	2018/12/19 05:42

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	5.8720	58.7201	61.93	64.43	2.50	49.70	12:27
2	TOC	5.8342	58.3420	61.64	64.27	2.62	49.70	12:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 17.0445 (IC) (v1201)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	65	TOC	K1811625-005.03 10x	0.9256 ppm	0.0280 ppm	3.0300%	2018/12/19 06:13

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.9058	9.0580	23.97	26.61	2.64	49.67	12:27
2	TOC	0.9454	9.4543	24.27	26.76	2.49	49.71	12:28

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	66	TOC	K1811790-001.01 100x	8.6250 ppm	0.1668 ppm	1.9300%	2018/12/19 06:45

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	8.5071	85.0705	82.08	84.59	2.51	49.73	12:25
2	TOC	8.7429	87.4290	83.88	86.65	2.76	49.71	12:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 17.0445 (IC) (v1201)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

Sample Type: Check Standard --> CCV 021711 From Schedule Version 14

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	B	TOC	25.0000	1:2	[TOC] CCV 021711 [25 ppm]	0 / infinity (NA / NA)	24.0171 ppm (PASS)	0.0000 ppm	0%	2018/12/19 07:17

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	24.0171	240.1707	202.05	204.73	2.68	49.69	12:29

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)	50 ppmC

Sample Type: Check Standard --> CCB 021711 From Schedule Version 14

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	D	TOC	0.0000	1:2	[TOC] CCB 021711 [0.0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2018/12/19 07:33

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0.0 ppm	1	0.0000	0.0000	15.83	18.43	2.60	49.68	12:27

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)	0 ppmC

Sample Type: Sample From Schedule Version 14

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	67	TOC	K1811790-001.01 ms	33.6141 ppm	0.0000 ppm	0.0000%	2018/12/19 07:50

		100x						

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	33.6141	336.1412	274.01	276.60	2.59	49.69	12:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 17.0445 (IC) (v1201)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	68	TOC	RB	0.0385 ppm	0.0166 ppm	43.0500%	2018/12/19 08:06

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0268	0.2675	17.25	19.99	2.74	49.68	12:27
2	TOC	0.0502	0.5017	17.43	20.17	2.74	49.73	12:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 17.0445 (IC) (v1201)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	69	TOC	K1811790-002.01 100x	10.0140 ppm	0.0095 ppm	0.1000%	2018/12/19 08:38

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	10.0073	100.0731	93.55	96.17	2.62	49.71	12:26
2	TOC	10.0208	100.2079	93.65	96.31	2.66	49.74	12:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 17.0445 (IC) (v1201)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	70	TOC	K1811790-003.01 100x	8.7089 ppm	0.1249 ppm	1.4300%	2018/12/19 09:10

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	8.7972	87.9719	84.30	86.86	2.56	49.71	12:25
2	TOC	8.6206	86.2059	82.95	85.82	2.87	49.71	12:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 17.0445 (IC) (v1201)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	71	TOC	RB	0.0331 ppm	0.0056 ppm	17.0500%	2018/12/19 09:4

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0371	0.3708	17.33	20.14	2.81	49.71	12:24
2	TOC	0.0291	0.2911	17.27	19.89	2.62	49.67	12:25

Dilution	Blank Contribution	Method	Calibration

1:10	(TC) 17.0445 (IC) (v1201)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	72	TOC	K1811783-001.08	0.7160 ppm	0.0833 ppm	11.6300%	2018/12/19 10:13

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.8348	8.3477	23.43	26.16	2.74	49.69	12:26
2	TOC	0.6854	6.8538	22.28	24.95	2.66	49.72	12:26
3	TOC	0.7025	7.0252	22.42	25.10	2.69	49.69	12:25
4	TOC	0.6413	6.4130	21.95	24.69	2.74	49.69	12:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 17.0445 (IC) (v1201)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	73	TOC	K1811783-001.08 ms	25.3987 ppm	0.0000 ppm	0.0000%	2018/12/19 11:16

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	25.3987	253.9871	211.21	213.89	2.68	49.83	12:31

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 17.0445 (IC) (v1201)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	74	TOC	K1811783-002.08	0.7637 ppm	0.1298 ppm	16.9900%	2018/12/19 11:32

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.9324	9.3235	24.17	26.82	2.65	49.89	12:27
2	TOC	0.7805	7.8048	23.01	25.44	2.43	49.93	12:24
3	TOC	0.7193	7.1926	22.54	25.06	2.52	50.00	12:24
4	TOC	0.6229	6.2285	21.81	24.27	2.46	50.07	12:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 17.0445 (IC) (v1201)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	75	TOC	K1811783-003.08	1.5883 ppm	0.0861 ppm	5.4200%	2018/12/19 12:35

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.7060	17.0596	30.09	32.53	2.45	49.95	12:28
2	TOC	1.5974	15.9739	29.26	31.91	2.65	49.93	12:25
3	TOC	1.5366	15.3656	28.79	31.39	2.60	49.94	12:28
4	TOC	1.5133	15.1328	28.61	31.29	2.67	49.92	12:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 17.0445 (IC)	Extended Reaction	Extended Reaction

(v1201) 021711 (v3) 021711 (v24)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	1	TOC	K1811783-004.08	0.5263 ppm	0.0292 ppm	5.5400%	2018/12/19 13:38

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.5677	5.6765	21.38	23.95	2.56	49.94	12:26
2	TOC	0.5258	5.2579	21.06	23.64	2.58	49.91	12:27
3	TOC	0.5083	5.0826	20.93	23.61	2.68	49.93	12:25
4	TOC	0.5036	5.0355	20.89	23.51	2.62	49.95	12:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 17.0445 (IC) (v1201)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

Sample Type: Check Standard --> CCV 021711 From Schedule Version 14

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	B	TOC	25.0000	1:2	[TOC] CCV 021711 [25 ppm]	0 / infinity (NA / NA)	24.5560 ppm (PASS)	0.0000 ppm	0%	2018/12/19 14:41

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	24.5560	245.5601	206.17	208.80	2.63	49.93	12:35

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)	50 ppmC

Sample Type: Check Standard --> CCB 021711 From Schedule Version 14

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	D	TOC	0.0000	1:2	[TOC] CCB 021711 [0.0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2018/12/19 14:58

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0.0 ppm	1	0.0000	0.0000	17.90	20.59	2.69	49.92	12:33

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)	0 ppmC

Meta Data Used in this Report

Blanks

Version	Reagent (Abs)	Acid (Abs)	DI IC (Abs)	DI TC (Abs)	DI TOC (Abs)	Save Time	Operator
v1200	1.2290	0.9990	0.0000	0.0000	0.0000	2018/12/17 11:49	Fusion1 (Fusion1)
v1201	2.2080	1.6200	0.0000	0.0000	0.0000	2018/12/17 20:18	Fusion1 (Fusion1)

Calibrations

Name: Extended Reaction 021711 (TOC)

Version: v24

Ver Creation: 2018/11/26 18:53

Comment:

Operator: Fusion1 (Fusion1)

Basic Analysis Type: TOC

Calibration curve formula: TOC: y = 7.645x + 18.448

r^2 value: TOC: r^2 = 0.99984

Basic Analysis Type: TOC

Sample ID	Y Raw Value	X Expected	Message	End Time
0.0 ppm	19.1720	0.0000		2018/11/26 17:15
0.50 ppm	23.8410	0.5000		2018/11/26 17:31
1.00 ppm	25.1300	1.0000		2018/11/26 17:47
5.00 ppm	53.5500	5.0000		2018/11/26 18:03
10.0 ppm	95.3860	10.0000		2018/11/26 18:20
25.0 ppm	211.7220	25.0000		2018/11/26 18:36
50.0 ppm	399.8190	50.0000		2018/11/26 18:52

Methods

Name: Extended Reaction 021711 (TOC)

Version: v3

Ver Creation: 2013/02/04 11:44

Comment:

Operator: Gen Chem Lab (Fusion1)

Parameter	Value
SampleVolume	10.0 mL
Dilution	1:10
AcidVolume	0.5 ml
ReagentVolume	2.0 ml
UVReactorPrerinse	Off
UVReactorPrerinseVolume	5.0
NumberOfUVReactorPrerinses	1
ICSpargeTime	1.00 mins
DetectorSweepFlow	500 ml/min

Advanced Parameter	Value
NeedleRinseVolume	5.0 ml
VialPrimeVolume	2.0 ml
ICSamplePrimeVolume	2.0 ml
ICSpargeRinseVolume	12.0 ml
BaselineStabilizeTime	0.70 min
DetectorPressureFlow	150 ml/min
SyringeSpeedWaste	10
SyringeSpeedAcid	7
SyringeSpeedReagent	7

PreSpargeTime	4.00 mins	SyringeSpeedDIWater	7
SystemFlow	500 ml/min	NDIRPressurization	60 psig
		SyringeSpeedSampleDispense	5
		SyringeSpeedSampleAspirate	4
		SyringeSpeedUVDispense	7
		SyringeSpeedUVAspirate	5
		SyringeSpeedICDispense	7
		SyringeSpeedICAspirate	5
		NDIRPressureStabilize	1.75 min
		SampleMixing	Off
		SampleMixingCycles	1
		SampleMixingVolume	10.0
		LowLevelFilterNDIR	Off

Acceptance / Approval

Electronic Signatures

Report Version	User Name	Acceptance	Reason	Date

Report History

Report History

Report Version	User Name	System Reason	User Reason	Date
1	Fusion1 (Fusion1)	Schedule completed	Schedule completed	2018/12/19 15:17

ALS Environmental

StarLIMS Run: 619304, 619305, 619306

Analysis: DOC, TOC

Method: SM 5310 C, 9060

CCV: 11-GEN-05-73F 50 ppm LCS: 11-GEN-05-73C 21.9 ppm

ICAL Date: 11/26/18

ICAL ID: 11-GEN-05-72J

ICS ID: 11-GEN-05-73B

ICS TV: 25.0 ppm ICS % R = 2

Spike ID: 11-GEN-05-70O 0.05 ml of 5000 ppm stock ---> 10.0 ml = 25.0 ppm x dilution factor

Sodium Persulfate: 11-GEN-05-73J

21 % H3PO4: 11-GEN-05-73I

Equipment ID: K-TOC-03

PIPETTE ID: 124276B, Marge, N11314F, 129001F

FILTER ID: 16848878

Analyzed By: CES	Date Analyzed: 12/17/18
Reviewed By:	Date Reviewed: 12/20/18

Case Narrative

Method: 6850
Analysis: Perchlorate
Analysis SOP: LC-MS-CLO4
ALS WO ID(s): 1833461; 1833875; 1833980

Client: ALS Laboratories (Houston, TX)
Matrix: Water
ELMS Batch (HBN): 2179 (229053)

General Set Information: There were twenty field samples in these Work Orders. The samples were analyzed for perchlorate.

Method Summary: Each sample was prepared as noted below and analyzed using an Agilent 1100 LC/MSD system in select ion monitoring (SIM) mode at m/z 83 and 85, which corresponds to the loss of one oxygen atom from the perchlorate molecule. ChemStation software was used for instrument control and data analysis. The ion ratio of m/z 83 to 85 was used to positively identify the response peak as perchlorate. Quantitation was performed using the m/z 83 peak area. An internal standard (ISTD) of ^{18}O labeled perchlorate was added to each sample to establish the perchlorate peak retention time and used in quantitation.

Sample Preparation: A 10.0mL aliquot of each sample was transferred into a 15-mL centrifuge tube. 50µL of an ^{18}O labeled perchlorate solution was added to each sample as an internal standard. The samples were then capped, vortexed, and filtered into autosampler vial using Phenex PES membrane 0.45µm Syringe filters.

Holding Times: Holding times were met for all analyses.

Dilutions: Field samples 1833461004/05 and 1833875002 were analyzed and reported from 1:100 dilutions. Field sample 1833461006 was analyzed and reported from 1:10,000 dilution. The reporting limits have been adjusted accordingly.

Method QC data: The method blank (LMB 631667) was less than 1/2 the CRDL. The recovery for the LCS (631668) was within acceptable parameters.

MS/MSD Analysis: MS/MSD was performed on samples 1833461002/03 (Client ID: 50WW16-181128). 5.0µl of Working Standard Solution Horizon ID 43701 was added to 10.0mL of sample preparation. The spike target was 5.µg/L. The MS/MSD percent recoveries and relative percent difference (RPD) were within the performance limits.

Instrument QC: Instrument initial and continuing calibrations were performed in accordance with published procedures.

NC/CAR(s): NA

Sample Calculation: Samples were reported in µg/L. Results were calculated in µg/L by the equation (A)x(B),

where: A = Analyte concentration from the standard curve (µg/L)
B = Dilution performed at time of analysis

Miscellaneous Comments: These samples were analyzed in accordance with the requirements found in the DOD QSM Version 5.1.1.

Thomas Bosch December 13, 2018
Analyst Date

ANALYTICAL REPORT

Report Date: December 13, 2018

RJ Modashia
ALS Environmental (Houston)
10450 Stancliff Road
Suite 210
Houston, TX 77099

Phone: 281 530-5656

E-mail: RJ.Modashia@ALSGlobal.com

Workorder: **34-1833875**
Project ID: HS18111497
Purchase Order: HS18111497
Project Manager Kevin W. Griffiths

Client Sample ID	Lab ID	Collect Date	Receive Date	Sampling Site
50WW06-181129	1833875001	11/29/18	12/01/18	
50WW13-181129	1833875002	11/29/18	12/01/18	
50WW14-181129	1833875003	11/29/18	12/01/18	

ANALYTICAL REPORT

Workorder: 34-1833875
Client: ALS Environmental (Houston)
Project Manager: Kevin W. Griffiths

Analytical Results

Sample ID: **50WW06-181129** | Sampling Site: NA | Collected: 11/29/2018
Lab ID: 1833875001 | Media: 125 mL Nalgene | Received: 12/01/2018
Matrix: Water | Sampling Parameter: NA

Analysis Method - EPA 6850, DoD QSM

Preparation: Not Applicable
Analysis: EPA 6850, DoD QSM Water | **Instrument ID:** LCMS04
Batch: ELMS/2179 (HBN: 229053) | **Percent Solid:** NA
Analyzed: 12/11/2018 10:48 | **Report Basis:** Wet

Analyte	Result (ug/L)	DL (ug/L)	LOD (ug/L)	LOQ (ug/L)	Dilution	Qual
Perchlorate	**24**	1.0	2.0	4.0	1	

Sample ID: **50WW13-181129** | Sampling Site: NA | Collected: 11/29/2018
Lab ID: 1833875002 | Media: 125 mL Nalgene | Received: 12/01/2018
Matrix: Water | Sampling Parameter: NA

Analysis Method - EPA 6850, DoD QSM

Preparation: Not Applicable
Analysis: EPA 6850, DoD QSM Water | **Instrument ID:** LCMS04
Batch: ELMS/2179 (HBN: 229053) | **Percent Solid:** NA
Analyzed: 12/11/2018 11:02 | **Report Basis:** Wet

Analyte	Result (ug/L)	DL (ug/L)	LOD (ug/L)	LOQ (ug/L)	Dilution	Qual
Perchlorate	**1100**	100	200	400	100	

Sample ID: **50WW14-181129** | Sampling Site: NA | Collected: 11/29/2018
Lab ID: 1833875003 | Media: 125 mL Nalgene | Received: 12/01/2018
Matrix: Water | Sampling Parameter: NA

Analysis Method - EPA 6850, DoD QSM

Preparation: Not Applicable
Analysis: EPA 6850, DoD QSM Water | **Instrument ID:** LCMS04
Batch: ELMS/2179 (HBN: 229053) | **Percent Solid:** NA
Analyzed: 12/11/2018 11:15 | **Report Basis:** Wet

Analyte	Result (ug/L)	DL (ug/L)	LOD (ug/L)	LOQ (ug/L)	Dilution	Qual
Perchlorate	1.9	1.0	2.0	4.0	1	J

Comments

Quality Control: **EPA 6850, DoD QSM - (HBN: 229053)**

Field samples 1833461004/05 and 1833875002 were analyzed and reported from 1:100 dilutions. Field sample 1833461006 was analyzed and reported from 1:10,000 dilution. The reporting limits have been adjusted accordingly.

Report Authorization (/S/ is an electronic signature that complies with 21 CFR Part 11)

Method	Analyst	Peer Review
EPA 6850, DoD QSM	/S/ Thomas Bosch 12/12/2018 10:58	/S/ Stephen Brose 12/13/2018 14:23

ANALYTICAL REPORT

Workorder: 34-1833875
Client: ALS Environmental (Houston)
Project Manager: Kevin W. Griffiths

Laboratory Contact Information

ALS Environmental
960 W Levoy Drive
Salt Lake City, Utah 84123

Phone: (801) 266-7700
Email: alslt.lab@ALSGlobal.com
Web: www.alsslc.com

General Lab Comments

The results provided in this report relate only to the items tested.
Samples were received in acceptable condition unless otherwise noted.
Samples have not been blank corrected unless otherwise noted.
This test report shall not be reproduced, except in full, without written approval of ALS.

ALS provides professional analytical services for all samples submitted. ALS is not in a position to interpret the data and assumes no responsibility for the quality of the samples submitted.

All quality control samples processed with the samples in this report yielded acceptable results unless otherwise noted.

ALS is accredited for specific fields of testing (scopes) in the following testing sectors. The quality system implemented at ALS conforms to accreditation requirements and is applied to all analytical testing performed by ALS. The following table lists testing sector, accreditation body, accreditation number and website. Please contact these accrediting bodies or your ALS project manager for the current scope of accreditation that applies to your analytical testing.

Testing Sector	Accreditation Body	Certificate Number	Website
Environmental	PJLA (DoD ELAP)		
	Utah (TNI)		
	Nevada		
	Oklahoma		
	Iowa		

ANALYTICAL REPORT

Workorder: 34-1833875
Client: ALS Environmental (Houston)
Project Manager: Kevin W. Griffiths

Result Symbol Definitions

MDL = Method Detection Limit, a statistical estimate of method/media/instrument sensitivity.
RL = Reporting Limit, a verified value of method/media/instrument sensitivity.
CRDL = Contract Required Detection Limit
Reg. Limit = Regulatory Limit.
ND = Not Detected, testing result not detected above the MDL or RL.
< This testing result is less than the numerical value.
** No result could be reported, see sample comments for details.

Qualifier Symbol Definitions

U = Qualifier indicates that the analyte was not detected above the MDL.
J = Qualifier Indicates that the analyte value is between the MDL and the RL. It is also used to indicate an estimated value for tentatively identified compounds in mass spectrometry where a 1:1 response is assumed.
B = Qualifier indicates that the analyte was detected in the blank.
E = Qualifier indicates that the analyte result exceeds calibration range.
P = Qualifier indicates that the RPD between the two columns is greater than 40%.

Quality Control Sample Batch Report

Analysis Information

Workorder: 1833875

Limits:	Client SOW/Contract Specified	**Preparation:**	NA	**Analysis:**	EPA 6850, DoD QSM
Basis:	DoD QSM	**Batch:**	NA	**Batch:**	ELMS/2179 (HBN: 229053)
		Prepared By:	NA	**Analyzed By:**	Thom as Bosch

Blank

LMB: 631667
Analyzed: 12/11/2018 08:44
Units: ug/L

Analyte	Result	MDL	RL
Perchlorate	ND	1	2.00

Laboratory Control Sample

LCS: 631668
Analyzed: 12/11/2018 08:57
Dilution: 1
Units: ug/L

Analyte	Result	Target	% Rec	QC Limits	
Perchlorate	4.58	5.00	91.6	78.8	123.8

Matrix Spike - Matrix Spike Duplicate

Sample: 1833461001	**MS:** 1833461002	**MSD:** 1833461003
Analyzed: 12/11/2018 09:11	**Analyzed:** 12/11/2018 09:25	**Analyzed:** 12/11/2018 09:39
Dilution: 1	**Dilution:** 1	**Dilution:** 1
Units: ug/L	**Units:** ug/L	**Units:** ug/L

Analyte	Result	Result	Target	% Rec	QC Limits		Result	% Rec	RPD	QC Limits	
Perchlorate	ND	4.85	5	97.0	78.8	123.8	5.01	100	3.24	0.0	20.0

Continuing Calibration Verification

CCV: 631664	**CCV:** 631669	**CCV:** 631671
Analyzed: 12/11/2018 08:01	**Analyzed:** 12/11/2018 11:57	**Analyzed:** 12/11/2018 14:42
Units: ug/L	**Units:** ug/L	**Units:** ug/L
Criteria: ± 15%	**Criteria:** ± 15%	**Criteria:** ± 15%

Analyte	Result	Target	% Rec.	Result	Target	% Rec.	Result	Target	% Rec.
Perchlorate	25.8	25.0	103	23.6	25.0	94.3	23.8	25.0	95.3

Interference Check Sample

ICSA: 631666
Analyzed: 12/11/2018 08:30
Units: ug/L
Criteria: ± 30%

Analyte	Result	Target	% Rec.
Perchlorate	1.11	1.00	111

Limit of Detection Verification

LODV: 631665	**LODV:** 631670	**LODV:** 631672
Analyzed: 12/11/2018 08:16	**Analyzed:** 12/11/2018 12:10	**Analyzed:** 12/11/2018 14:56
Units: ug/L	**Units:** ug/L	**Units:** ug/L
Criteria: ± 50%	**Criteria:** ± 50%	**Criteria:** ± 50%

Analyte	Result	Target	% Rec.	Result	Target	% Rec.	Result	Target	% Rec.
Perchlorate	1.08	1.00	108	0.932	1.00	93.2	1.01	1.00	101

Quality Control Sample
Batch Report

Analysis Information

Workorder: 1833875

Limits:	Client SOW/Contract Specified	**Preparation:**	NA	**Analysis:**	EPA 6850, DoD QSM
Basis:	DoD QSM	**Batch:**	NA	**Batch:**	ELMS/2179 (HBN: 229053)
		Prepared By:	NA	**Analyzed By:**	Thom as Bosch

Comments

Field samples 1833461004/05 and 1833875002 were analyzed and reported from 1:100 dilutions. Field sample 1833461006 was analyzed and reported from 1:10,000 dilution. The reporting limits have been adjusted accordingly.

QC Report Authorization (/S/ is an electronic signature that complies with 21 CFR Part 11)

Analyst	Peer Review
/S/ Thomas Bosch	/S/ Stephen Brose
12/12/2018 10:58	12/13/2018 14:23

Symbols and Definitions

* - Analyte above reporting limit or outside of control limits
▲ - Sample result is greater than 4 times the spike added
◓ - Sample and Matrix Duplicate less than 5 times the reporting limit
● - Result is above the calibration range
- The Matrix Spike, Matrix Spike duplicate or Matrix Duplicate is reported for your information only. The sample matrix may be inappropriate for the method selected.

RPD - Relative % Difference (Spike / Spike Duplicate)
ND - Not Detected (U - Qualifier also flags analyte as not detected)
NA - Not Applicable
QC results are not adjusted for moisture correction, where applicable

18698/#2

10450 Stancliff Rd, Ste 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887
www.alsglobal.com

1833875

Subcontract Chain of Custody

COC ID: 10326

1833875

SUBCONTRACT TO:

ALS Laboratory Group
960 LeVoy Dr
Salt Lake City, UT 84123

Phone: +1 801 266 7700

CUSTOMER INFORMATION:

Company:	ALS Houston
Contact:	RJ Modashia
Address:	10450 Stancliff Rd, Ste 210
Phone:	+1 281 530 5656
Email:	RJ.Modashia@alsglobal.com
Alternate Contact:	Jumoke M. Lawal
Email:	jumoke.lawal@alsglobal.com

INVOICE INFORMATION:

Company:	ALS Houston
Contact:	Accounts Payable
Address:	10450 Stancliff Rd, Ste 210
Phone:	+1 281 530 5656
Reference:	HS18111497
TSR:	Sonia West

	LAB SAMPLE ID	CLIENT SAMPLE ID	MATRIX	COLLECT DATE
	ANALYSIS REQUESTED			DUE DATE
1.	**HS18111497-01**	**50WW06-181129**	**Groundwater**	**29 Nov 2018 15:25**
	SUB_Perch-6850			14 Dec 2018
2.	**HS18111497-02**	**50WW13-181129**	**Groundwater**	**29 Nov 2018 11:15**
	SUB_Perch-6850			14 Dec 2018
3.	**HS18111497-03**	**50WW14-181129**	**Groundwater**	**29 Nov 2018 13:20**
	SUB_Perch-6850			14 Dec 2018

Comments: Please analyze for the analysis listed above.
Send report to the emails shown above.

QC Level: DOD IV (DoD Data Package)

Relinquished By:	R Cuga	Date/Time:	11/30/18 18:00
Received By:		Date/Time:	12/1/18 913
Cooler ID(s):		Temperature(s):	3

ALS-SALT LAKE CITY-RELATED INFORMATION REPORT (CRIR)

COOLER OR CONTAINER INFORMATION CHECKLIST (Fill In or Circle)

1833875

Client Name: ALS Houston

Project/Task/Site:

Date/Time of Receipt: 12/1/18 1915

Number of Coolers Received: 1

Condition of Coolers:	Acceptable/Unacceptable	Temperature Control:	Present/Not Included
Cooler Custody Seals:	Present/Absent/NA Intact/Broken/NA	Location Temp Taken:	Control/Between Samples
Container Custody Seals:	Present/Absent/NA Intact/Broken/NA	Are all temperatures within project specific guidelines?	Yes/No/NA
Ice Present:	Yes/No/NA Frozen/Melted/NA	VOA Headspace Present?	Yes/No/NA

pH Check Performed:							
	Metals	Yes/No/NA	Total Phenolics	Yes/No/NA	NO3/NO2	Yes/No/NA
	Cyanide	Yes/No/NA	TPH – 418.1	Yes/No/NA	Oil & Grease	Yes/No/NA
	Sulfide	Yes/No/NA	COD	Yes/No/NA	Total Phosphorous	Yes/No/NA
	Ammonia	Yes/No/NA	TKN	Yes/No/NA	Gross A.B, Gamma Spec	Yes/No/NA

Cooler Received	DCL Cooler No.	Temp.	Cooler Received	DCL Cooler No.	Temp.	Cooler Received	DCL Cooler No.	Temp.
1	C18 8982	3 °C	4	C18	°C	7	C18	°C
2	C18	°C	5	C18	°C	8	C18	°C
3	C18	°C	6	C18	°C	9	C18	°C

Taken By: [signature] (Signature) Mead Kibbey (Printed Name) 12/1/18 (Date)

CLIENT-RELATED INFORMATION

☐ Missing Cooler	☐ Missing Samples/Bottles	☐ Incorrect Preservation	☐ Insufficient Sample Volume
☐ Cooler Conditions	☐ Broken/Leaking Samples	☐ pH Criteria Not Met	☐ Chain of Custody Problems
☐ Missing Paperwork	☐ Incorrect Bottle Type	☐ Residual Chlorine Present	☐ Other:
☐ Missing/Incorrect Bottle Labels	☐ Cooler Temperatures Out of Range	☐ Head Space in Bottles	

BRIEFLY DESCRIBE THE PROBLEM AND THE ACTION TAKEN:

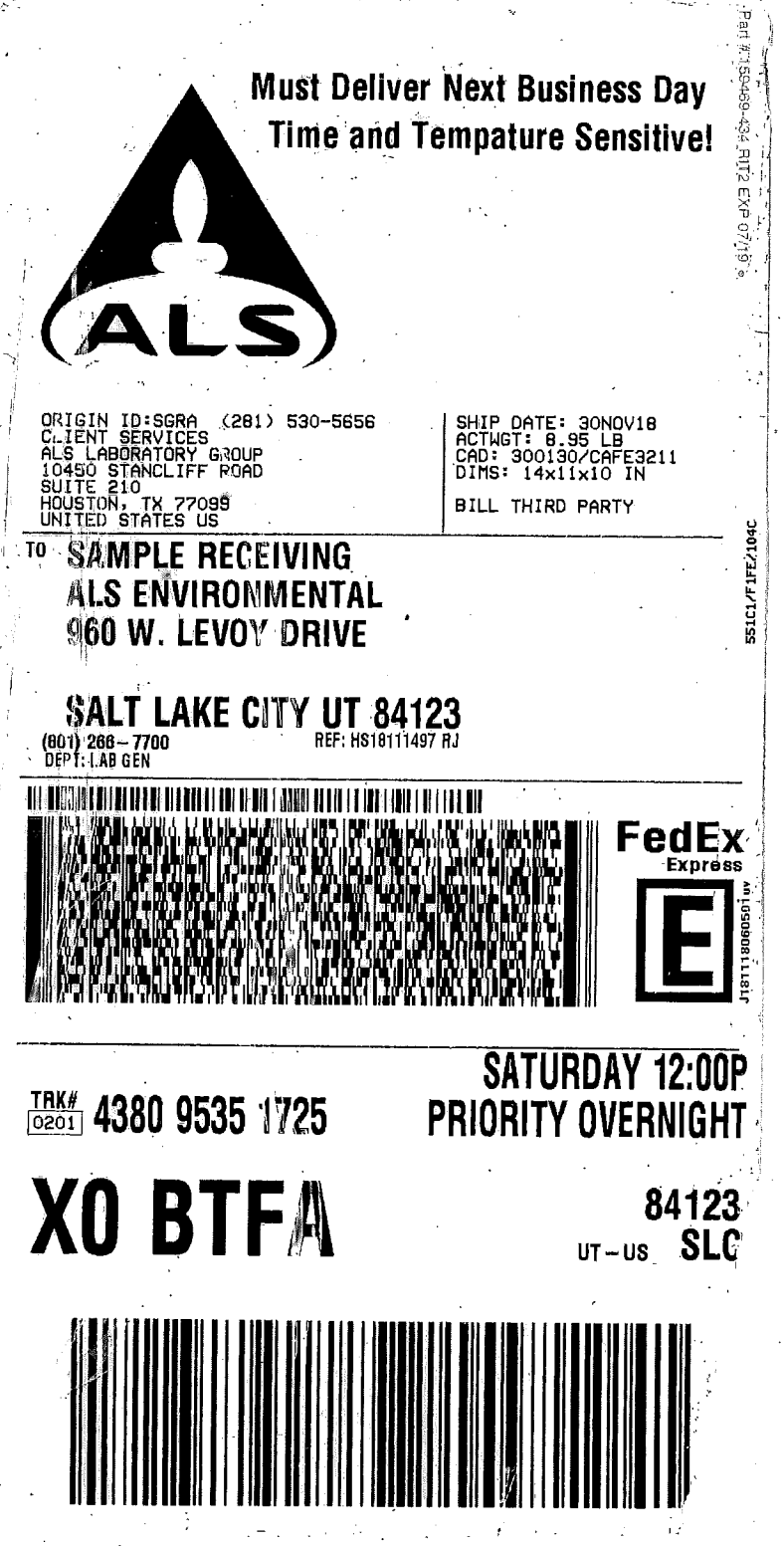
Client Notified? YES ☐ NO ☐

Response Required Within 24 Hours

PROJECT MANAGEMENT

PROJECT MANAGER COMMENTS:

ALS Project Manager: _____ (Printed Name) Returned to Sample Receipt by: _____ (Signature) Date: _____



Must Deliver Next Business Day
Time and Tempature Sensitive!

Part #:159469-434 RIT2 EXP 07/19

ORIGIN ID:SGRA (281) 530-5656
CLIENT SERVICES
ALS LABORATORY GROUP
10450 STANCLIFF ROAD
SUITE 210
HOUSTON, TX 77099
UNITED STATES US

SHIP DATE: 30NOV18
ACTWGT: 8.95 LB
CAD: 300130/CAFE3211
DIMS: 14x11x10 IN

BILL THIRD PARTY

TO SAMPLE RECEIVING
ALS ENVIRONMENTAL
960 W. LEVOY DRIVE

SALT LAKE CITY UT 84123
(801) 266-7700
DEPT: LAB GEN
REF: HS18111497 RJ

551C1/F1FE/104C

FedEx Express

J181111160605090

TRK# 0201 4380 9535 1725

SATURDAY 12:00P
PRIORITY OVERNIGHT

XO BTFA

84123
UT-US SLC

ALS Environmental
CHAIN-OF-CUSTODY

Project / Job / Task: HS18111497 | ***Split:*** | **Workorder ID:** 1833875 | **Level:** ENV_LVL4

Client: ALS Environmental (Houston) | **Account:** 8101 | **Type:** 125Poly

Comments:

Preservatives: COOL

Requested Analysis: EPA 6850, DoD QSM

Item	Collect Date/Time	Sample ID	Lab ID	QC	Matrix	Containers ID(s)	Containers Count	Requested Analysis
1	11/29/2018 15:25	50WW06-181129	1833875001		Water	A	1	A
2	11/29/2018 11:15	50WW13-181129	1833875002		Water	A	1	A
3	11/29/2018 13:20	50WW14-181129	1833875003		Water	A	1	A
4								
5								
6								
7								
8								
9								
10								

Page 123 of 1284

ORIGINAL FIELD SAMPLE CHAIN-OF-CUSTODY

Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Reason for Transfer / Storage Location
Warath, Julie	12/01/2018 09:23	ALS Sample Receiving	Sample Login
[signature]	12/4/18 1400	YB	Storage
R-33-1	12/10-18/10:10	T. Boad	6850

SAMPLE PREPARATION / ANALYSIS CHAIN-OF-CUSTODY

Sample Prep / Analysis for: _____ Lab Notebook No.: _____

Prepared / Analyzed by: _____ Date / Time: _____

Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Reason for Transfer / Storage Location

00964045

Batch Worklist

Batch: ELMS/ 2179 **Created:** 12/10/2018 16:16 **Instrument:** **HBN:** 229053

Rule: EPA 6850, DoD QSM Water **Analyst:** T. Bosch **Status:** WP

Workorder: 1833461 [ENV_LVL4]
Workorder: 1833875 [ENV_LVL4]
Workorder: 1833980 [ENV_LVL4]

Pos	Lab ID	Sample ID	Prep Initial	Prep Final	Dust Weight	Type	Mx	Container	Procedure	Mgr	Expire Date	Due Date	Run Date
1	631664	CCV for HBN 229053 [ELMS/2179]				CCV	3		E685041C3Q	5311		12/13/2018	
2	631665	LODV for HBN 229053 [ELMS/2179				LODV	3		E6850..D3Q	5311		12/13/2018	
3	631666	ICS for HBN 229053 [ELMS/2179]				ICS	3		E6850..D3Q	5311		12/13/2018	
4	631667	LMB for HBN 229053 [ELMS/2179]				LMB	3		E6850Q413Q	5311		12/13/2018	
5	631668	LCS for HBN 229053 [ELMS/2179]				LCS	3		E6850Q413Q	5311		12/13/2018	
6	1833461001	50WW16-181128				SAMPLE	3	1833461001-A	E6850Q41.3	5480	12/26/2018	12/13/2018	
7	1833461002	50WW16-181128MS				MS	3	1833461002-A	E6850Q413Q	5480		12/13/2018	
8	1833461003	50WW16-181128MSD				MSD	3	1833461003-A	E6850Q413Q	5480		12/13/2018	
9	1833461004	50WW11-181128				SAMPLE	3	1833461004-A	E6850Q41.3	5480	12/26/2018	12/13/2018	
10	1833461005	50WW11-181128-FD				FLDDUP	3	1833461005-A	E6850Q41.3	5480	12/26/2018	12/13/2018	
11	1833461006	50WW12-181128				SAMPLE	3	1833461006-A	E6850Q41.3	5480	12/26/2018	12/13/2018	
12	1833461007	50WW08-181128				SAMPLE	3	1833461007-A	E6850Q41.3	5480	12/26/2018	12/13/2018	
13	1833875001	50WW06-181129				SAMPLE	3	1833875001-A	E6850Q41.3	5480	12/27/2018	12/13/2018	
14	1833875002	50WW13-181129				SAMPLE	3	1833875002-A	E6850Q41.3	5480	12/27/2018	12/13/2018	
15	1833875003	50WW14-181129				SAMPLE	3	1833875003-A	E6850Q41.3	5480	12/27/2018	12/13/2018	
16	1833980001	50WW18-181130				SAMPLE	3	1833980001-A	E6850Q41.3	5480	12/28/2018	12/18/2018	
17	1833980002	50WW17-181130				SAMPLE	3	1833980002-A	E6850Q41.3	5480	12/28/2018	12/18/2018	
18	631669	CCV for HBN 229053 [ELMS/2179]				CCV	3		E685041C3Q	5311		12/13/2018	
19	631670	LODV for HBN 229053 [ELMS/2179				LODV	3		E6850..D3Q	5311		12/13/2018	
20	1833980003	50WW24-181130				SAMPLE	3	1833980003-A	E6850Q41.3	5480	12/28/2018	12/18/2018	
21	1833980004	50WW21-181130				SAMPLE	3	1833980004-A	E6850Q41.3	5480	12/28/2018	12/18/2018	
22	1833980005	50WW15-181130				SAMPLE	3	1833980005-A	E6850Q41.3	5480	12/28/2018	12/18/2018	
23	1833980006	50WW23-181203				SAMPLE	3	1833980006-A	E6850Q41.3	5480	12/31/2018	12/18/2018	
24	1833980007	50WW22-181203				SAMPLE	3	1833980007-A	E6850Q41.3	5480	12/31/2018	12/18/2018	
25	1833980008	50WW05-181203				SAMPLE	3	1833980008-A	E6850Q41.3	5480	12/31/2018	12/18/2018	
26	1833980009	50WW27-181203				SAMPLE	3	1833980009-A	E6850Q41.3	5480	12/31/2018	12/18/2018	
27	1833980010	50WW27-181203FD				FLDDUP	3	1833980010-A	E6850Q41.3	5480	12/31/2018	12/18/2018	

Batch Worklist

Pos	Lab ID	Sample ID	Prep Initial	Prep Final	Dust Weight	Type	Mx	Container	Procedure	Mgr	Expire Date	Due Date	Run Date
28	1833980011	50WW09-181203				SAMPLE	3	1833980011-A	E6850Q41.3	5480	12/31/2018	12/18/2018	
29	1833980012	50WW10-181203				SAMPLE	3	1833980012-A	E6850Q41.3	5480	12/31/2018	12/18/2018	
30	631671	CCV for HBN 229053 [ELMS/2179]				CCV	3		E685041C3Q	5311		12/13/2018	
31	631672	LODV for HBN 229053 [ELMS/2179				LODV	3		E6850..D3Q	5311		12/13/2018	

00964047

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Analytical Documentation

ALS Work Order #'s & Sample #( )'s: 1833461 (001-07); 1833875 (001-03); 1833980 (001-12)
ELMS Batch/HBN ID: 2179 (229053)
Prep Date: 12/10/2018 Analysis Date: 12/11/2018 Analyst: T. Bosch
Analyte: **Perchlorate** Matrix: **Water** Method: **6850**
Sequence: \\HPCHEM\1\SEQUENCE\CLO4\2018\NOV\11DEC18D.s
Reported DL: **1.0µg/L** Reported LOD: **2.0µg/L** Reported LOQ: **4.0µg/L**

SAMPLE PREPARATION/ANALYSIS:
Water: Samples were prepared by TNB. 10.0mL of each sample was pipetted into a 15-mL centrifuge tube, and 50µL of an oxygen-18 labeled perchlorate solution was added as an internal standard. The samples were capped, vortexed, and filtered with Phenex PES membrane 0.45µm Syringe filters prior to analysis.

REAGENTS: Eluent A1: 95% ASTM Type II water (ALS)/ 5% ACN (B&J Lot AH015-4)/0.1% glacial acetic acid (JT-Baker Lot 04802).
Eluent B1: 95% ACN (B&J Lot AH015-4)/ 5% ASTM Type II water (ALS)/0.1% glacial acetic acid (JT-Baker Lot 04802).

STANDARDS: Internal Standard Spiking Solution Horizon# 43730. Dilutions of Working Standard Solution ID 43702 used for CCV's, LODV's, RLVS and IPC.

CALIBRATION CURVE: Used curve from 10/08/2018, sequence 08OCT18D.s Offline Quantitation Method: CLO4-DPR.M

INSTRUMENT CONDITIONS: Samples were analyzed with an Agilent 1100 LC/MSD system, in negative SIM mode, monitoring m/z 83, 85, and 89.
Instrument ID: LCMS04 Online Acquisition Method: CLO4-AQN.M Fragmentor: 160 Output Gain: 3 Injection Volume: 30µL
Column: KP-RPPX C8 separator, 250mm Mobile Phase: 70% Eluent A1; 30% Eluent B1

FLOW GRADIENT:

Time (min.)	Flow (mL/min)
0	0.50
5.0	0.50
5.3	0.25
10.0	0.25
10.5	0.50
12.0	0.50

QC DATA: 5.0µL of QC Solution Horizon ID 41830 was used for LCS 631668; Target = 5.0µg/L. ASTM type II water was used for LMB 631667.

MS/MSD: MS/MSD was performed on samples 1833461002/03 (Client ID: 50WW16-181128). 5.0µl of Working Standard Solution Horizon ID 43701 was added to 10.0mL of sample preparation. Spike target = 5.0µg/L.

COMMENTS:
1) Results reported in µg/L. Field samples 1833461004/05 and 1833875002 were analyzed and reported from 1:100 dilutions. Field sample 1833461006 was analyzed and reported from 1:10,000 dilution. The reporting limits have been adjusted accordingly.
2) All QC, Blank, CCV, and MS/MSD results were within method parameters.
3) Sample data can be viewed at two directories within the ALS system: \\ALSLTWS013\LCMS\LCMS04\2018\DEC\HBN# or through NuGenesis\Tree\PrintData\LCMS\DefaultView.
4) Notebook: \\alsltws013\ORGANIC\BOSCH\LCMS\Perchlorates\Waters\2018\229053-DoD-ALS-Hstn LCMS4 or through \\ALSLTWS013\DATAREVIEW\HBN#

5.5 Chromatography (GC, HPLC and LC/MS) Technical Review

Note: It is the peer reviewer's responsibility to ensure that appropriate criteria are used as defined in the HORIZON PROFILE. The evaluation criteria are prioritized as per Section 2.2 of this SOP. These items must be checked for all projects. The following checklist will be completed by both the analyst and the peer reviewer and scanned into the HBN folder with the raw data.

Chromatography (GC, HPLC, LC/MS) Technical Review Criteria **Batch(es)/SDG:** ELMS: 2179 HBN: 229053 **Sample Set IDs if Applicable:** 1833461 / 1833875/1833980	**Analyst Initials**	**Reviewer Initials**
Calibration standards analyzed and meets criteria	TB	SB
Standards traceability checked and meets criteria	TB	SB
Standard curve coefficients evaluated and meet criteria	TB	SB
ICVs analyzed and meet acceptance criteria	TB	SB
CCVs analyzed and meet acceptance criteria	TB	SB
Method Blanks analyzed and meet acceptance criteria	TB	SB
Retention Time Windows checked	TB	SB
For method 8081A, Endrin/DDT Breakdown is checked for compliance	—	—
Surrogate recoveries checked and appropriately addressed	—	—
Method Preparation Blanks analyzed and meet acceptance criteria	TB	SB
MSs, MSDs, and/or MDs analyzed and calculations checked; applicable flags applied on QC reports; LCSs analyzed and meet acceptance criteria when performed	TB	SB
RLVS analyzed	TB	SB
Preparation and analysis hold times met	TB	SB
Preparation deviations and re-preparations noted when performed	TB	SB
Analysis deviations and re-analyses noted when performed	TB	SB
Sample dilution factors noted on reports	TB	SB
Electronic records in HBN transcription accuracy and completeness checked	TB	SB
Preparation and analysis calculations checked	TB	SB
NCRs are completed as necessary NC/CAR# _____	—	—
Report forms are complete and accurate	TB	SB
Manual integrations checked	TB	SB

STANDARD REPORT

Working Standard - CLO4 WRK

CLO4 WRK — **Description - 6850 WKG Std 100.ug/L**

Standard: 43702
MFG: ALS/SLC
MFG Lot: TNB: 09/18/2018
Pipette ID: Not Provided

Created By: Thomas Bosch
Create Date: 09/18/2018 02:09PM

Amount: 10 mL
Expires: 09/18/2019
Usable: Yes
Lab Lot: CLO4 WRK

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	0.1 ug/mL

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
109	ASTM H2O	ASTM Type II Water	LAB 109	9.9 mL	11/07/2025
43701	CLO4 INT	6850 Intermdt AccStd 10.ug/mL	CLO4 INT	0.1 mL	09/18/2019

STANDARD REPORT

Constituent

Stock Standard - CLO4 STOCK

CLO4 STOCK — **Description - 6850 Stock AccStd 1,000ug/mL**

Standard: 43659
MFG: AccuStandard
MFG Lot: 218065075
Part ID: IC-PER-10X-1

Created By: Thomas Bosch
Create Date: 09/17/2018 09:09AM

Amount: 100 mL
Expires: 07/25/2020
Usable: No
Lab Lot: CLO4 STOCK

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	1000 ug/mL

STANDARD REPORT

Constituent

Solvent Standard - ASTM H2O

ASTM H2O		Description - ASTM Type II Water
Standard: 109	**Created By:** ALS Support (Lims)	**Amount:** 1000 L
MFG: DCL In House	**Create Date:** 10/06/2005 09:10AM	**Expires:** 11/07/2025
MFG Lot: Not Provided		**Usable:** Yes
Part ID: Not Provided		**Lab Lot:** LAB 109

Pos.	Analyte	Name	Concentration
Solvent - Analyte(s) not applicable			

STANDARD REPORT

Constituent

Working Standard - CLO4 INT

CLO4 INT — **Description - 6850 Intermdt AccStd 10.ug/mL**

Standard: 43701
MFG: ALS/SLC
MFG Lot: TNB: 09/18/2018
Pipette ID: Not Provided

Created By: Thomas Bosch
Create Date: 09/18/2018 02:09PM

Amount: 10 mL
Expires: 09/18/2019
Usable: Yes
Lab Lot: CLO4 INT

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	10 ug/mL

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
109	ASTM H2O	ASTM Type II Water	LAB 109	9.9 mL	11/07/2025
43659	CLO4 STOCK	6850 Stock AccStd 1,000ug/mL	CLO4 STOCK	0.1 mL	07/25/2020

STANDARD REPORT

Working Standard - CLO4 QC WRK

CLO4 QC WRK — **Description - 6850 QC WKG STD 100ug/L**

Standard: 41831
MFG: ALS/SLC
MFG Lot: TNB: 05/09/2018
Pipette ID: Not Provided

Created By: Thomas Bosch
Create Date: 05/09/2018 10:05AM

Amount: 10 mL
Expires: 05/09/2019
Usable: Yes
Lab Lot: CLO4 QC WRK 100.ug/L

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	100 ug/L

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
109	ASTM H2O	ASTM Type II Water	LAB 109	9.9 mL	11/07/2025
41830	CLO4 QC INT	6850 QC Intrmdt Std-QC 10ug/mL	CLO4 QC INT 10.ug/mL	0.1 mL	05/09/2019

STANDARD REPORT

Constituent

Working Standard - CLO4 QC INT

CLO4 QC INT — **Description** - 6850 QC Intrmdt Std-QC 10ug/mL

Standard: 41830
MFG: ALS/SLC
MFG Lot: TNB: 05/09/2018
Pipette ID: Not Provided

Created By: Thomas Bosch
Create Date: 05/09/2018 10:05AM

Amount: 10 mL
Expires: 05/09/2019
Usable: Yes
Lab Lot: CLO4 QC INT 10.ug/mL

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	10 ug/mL

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
109	ASTM H2O	ASTM Type II Water	LAB 109	9.9 mL	11/07/2025
36748	CLO4 QCSTOCK	6850 QC Stock STD 1,000ug/mL	CLO4 QC STOCK	0.1 mL	03/31/2020

STANDARD REPORT

Constituent

Solvent Standard - ASTM H2O

ASTM H2O		Description - ASTM Type II Water
Standard: 109	Created By: ALS Support (Lims)	Amount: 1000 L
MFG: DCL In House	Create Date: 10/06/2005 09:10AM	Expires: 11/07/2025
MFG Lot: Not Provided		Usable: Yes
Part ID: Not Provided		Lab Lot: LAB 109

Pos.	Analyte	Name	Concentration
Solvent - Analyte(s) not applicable			

STANDARD REPORT

Constituent

Stock Standard - CLO4 QCSTOCK

CLO4 QCSTOCK — **Description** - 6850 QC Stock STD 1,000ug/mL

Standard: 36748
MFG: Ultra Scientific
MFG Lot: CP-0860
Part ID: ICC-013

Created By: Thomas Bosch
Create Date: 05/11/2017 01:05PM

Amount: 100 mL
Expires: 03/31/2020
Usable: Yes
Lab Lot: CLO4 QC STOCK

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	1000 ug/mL

STANDARD REPORT

Working Standard - CLO4ISTDWRK

CLO4ISTDWRK — **Description - Perchlorate ISTD Wrk 1,000ug/L**

Standard: 43730
MFG: ALS/SLC
MFG Lot: TNB: 05/09/2018
Pipette ID: Not Provided

Created By: Thomas Bosch
Create Date: 09/20/2018 09:09AM
Verified By: Thomas Bosch
Verify Date:

Amount: 25 mL
Expires: 09/20/2019
Usable: Yes
Lab Lot: CLO4ISTDWRK

Pos.	Analyte	Name	Concentration
1	14797-73-0-8385	Perchlorate 83:85 Ratio	1000 ug/L
2	14797-73-0-89	Perchlorate 89	1000 ug/L

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
43729	CLO4ISTDSTK	Perchlorate ISTD Stock	CLO4ISTDSTK	0.25 mL	04/28/2026

STANDARD REPORT

Constituent

Stock Standard - CLO4ISTDSTK

CLO4ISTDSTK		Description - Perchlorate ISTD Stock
Standard: 43729	**Created By:** Thomas Bosch	**Amount:** 1 mL
MFG: Cambridge Isotope	**Create Date:** 09/20/2018 09:09AM	**Expires:** 04/28/2026
MFG Lot: SDFF-012A	**Verified By:** Thomas Bosch	**Usable:** Yes
Part ID: OLM-7310-S	**Verify Date:**	**Lab Lot:** CLO4ISTDSTK

Pos.	Analyte	Name	Concentration
1	14797-73-0-8385	Perchlorate 83:85 Ratio	100 ug/mL
2	14797-73-0-89	Perchlorate 89	100 ug/mL

ULTRA SCIENTIFIC
Analytical Solutions

Certificate of Analysis

ISO Guide 34 Reference Material

Product Number: ICC-013
Lot Number: CP-0860

Lot Issue Date: 29-Feb 2016
Expiration Date: 31-Mar 2020

Product Name: Perchlorate IC Standard

Description:
This Reference Material (RM) was gravimetrically prepared in accordance with ISO Guide 34 and under ULTRA Scientific's ISO 9001 registered quality system. The neat materials used for this product have been verified by ULTRA's ISO 17025 laboratory and under ULTRA's ISO Guide 34 accreditation. The analyte concentrations were verified by ULTRA's ISO 17025 accredited laboratory. For each analyte, the true value, with its uncertainty value calculated at the 95% confidence level, is reported below.

Analyte	Starting Material	Lot Number	Purity (%)	Calculated Value	True Value	Traceability & Method
perchlorate	potassium perchlorate	RM07987	100	1001 ± 5 µg/mL	976 ± 6 µg/mL	NIST SRM 3141A; ICP-OES

Solvent: water (low TOC, < 50 ppb)

Storage: Store at Room Temperature (15° to 30°C).

Traceability:
Traceability has been established through an unbroken chain of comparisons, each having stated uncertainties. Comparisons are based on appropriate physical or chemical measurements, including gravimetric or volumetric dilution, where the mass or volume of a solution before and after dilution is measured. The balances used for these measurements are calibrated with weights traceable to NIST in compliance with ANSI/NCSL Z-540-1, ISO 9001, ISO 17025, and ISO Guide 34. Calibrated Class A glassware is used for volumetric measurements. Thermometers are calibrated against a NIST traceable thermometer in accordance with NIST Special Publication 819.

Estimation of Uncertainties:
The true value is reported, with its uncertainty value calculated at the 95% confidence level.

Homogeneity:
This RM was formulated and unitized according to an in-house procedure and is guaranteed to be homogeneous. There is no minimum sub-sample size required.

Intended Use:
This RM is intended for the preparation of working reference samples for use in routine laboratory analyses, calibration of instruments, validation of analytical methods, assessments of measurement methods and continuing calibration verification.

Instructions for Use:
Sample aliquots for analysis should be withdrawn at 20°C to 25°C immediately after opening and should be processed without delay for the true value to be valid within the stated uncertainties. Do not pipet from the bottle. Do not return any material removed for pipetting to the bottle. Tightly cap the bottle after removing any material and store according to the instructions noted above.

Hazards:
Refer to the Safety Data Sheet for information regarding this RM.

Expiration of Certification:
The certification of this RM is valid, within the measurement uncertainty specified, until the expiration date specified above, provided the RM is handled and stored in accordance with the instructions given in this certificate. This certification is nullified if the RM is damaged, contaminated, or otherwise modified.

ULTRA SCIENTIFIC
Analytical Solutions

Certificate of Analysis

ISO Guide 34 Reference Material

Product Number: ICC-013
Lot Number: CP-0860

Lot Issue Date: 29-Feb 2016
Expiration Date: 31-Mar 2020

Maintenance of Certification:
The real-time, long term stability of the RM may be monitored over the lifetime of the certification. If substantive changes occur that affect the certification before the expiration of this certificate, ULTRA Scientific will notify the purchaser.

Peter A. King, Ph.D.
VP, Technical Operations

Daniel J. Lamendola
Director of QA/RA

125 Market Street
New Haven, CT 06513
USA

AccuStandard®

Tel (203)786-5290
Fax (203)786-5287
www.AccuStandard.com

CERTIFICATE OF ANALYSIS

S 43659

AccuTrace™ Reference Standard

Catalog No: IC-PER-10X-1
Description: Perchlorate Standard
Element: Perchlorate (ClO_4)
SRM: Ind. Std.
Lot: 218065075
Matrix: Water
Hazards: *Refer to SDS for complete safety information*

Signal Word: None

Date Certified: Jun 25, 2018
Expiration: Jul 25, 2020
Sample Size: 100 mL
Components: 1
Storage Condition: Ambient (>5 °C)
Included on ISO/IEC 17025 Scope of Accreditation: Yes
Included on ISO 17034 Scope of Accreditation: Yes

Component		SRM #	Prepared Concentration (µg/mL)
ClO_4	Perchlorate	Ind. Std.	1000

AccuStandard

The gravimetric uncertainty for this product is ±0.24%.
The final solution was checked against an independent standard to verify its concentration.
We use the highest purity raw materials available to minimize impurity levels in the final solution. Typically 99.999%+ pure starting materials are used as well as ASTM Type I 18 megohm deionized water.
All solutions are filtered through a 0.2 µm filter prior to being bottled.
All glassware used in preparation is Class A and calibrated regularly.
All weights are traceable through NIST, Test No. 822-275872-11
All bottles are triple rinsed with deionized water prior to use.
Shake bottle prior to use and do not pipette directly out of the bottle. Use only cleaned Class A volumetric glassware.
We certify the accuracy of this standard to be ±0.5% of the stated value until its expiration date provided it is kept tightly capped and stored under the conditions stated above.

Certified By: Meigan O'Leary
Meigan O'Leary, Inorganic QC Manager

For use in routine laboratory analysis.

AccuStandard is accredited to ISO 17034, ISO/IEC 17025 and certified to ISO 9001:2015

QR-ORG/INO-001
Rev. 5/18

Cambridge Isotope Laboratories, Inc.

Certificate of Analysis

Quality Standards:
ISO Guide 34 • ISO/IEC 17025 • ISO 13485 • cGMP

23118

Product Name: (Isotopic Label & Enrichment Specification)	PERCHLORIC ACID, SODIUM SALT (18O4, 90%+) 100 UG/ML IN WATER
Lot Number:	SDDG-013
Catalog Number:	OLM-7310-S

Product Information

Chemical Purity Specification:	≥98%
Labeled CAS Number:	NA
Unlabeled CAS Number:	7601-89-0
MW*:	130.4
Chemical Formula:	NaCl*O4
Storage:	Store at room temperature away from light and moisture.
Stability:	See storage and expiration date.

Certification

Cambridge Isotope Laboratories, Inc. guarantees that this material meets or exceeds the specifications stated. Absolute identity as well as chemical and isotopic purities are assured by the use of unambiguous synthetic routes and multiple chemical analyses whenever possible. Results are representative of QC testing at time of release from Quality Control unless otherwise stated.

Volumetric measurements were made with Class A glassware. Gravimetry is traceable to the NIST through calibrated balances and certified, calibrated, standard weights. The calibrations are traceable to the NIST under Test No. 822/270236-04. The calibrations also meet specifications outlined in ISO 9001, ISO/IEC 17025, ANSI/NSCL Z540-1-1994, NCR Document 10CFR50 Appendix B, and applicable subdocuments.

This COA references the bulk catalog number before packaging. The COA also applies to the CIL finished good catalog number. Some possible packaging sizes and their corresponding suffix are -1.2, -1, -0.5, -10, or -0.1.

* *For isotopically labeled compounds, MW listed is for the fully enriched product.*

Approved by: T. J. Eckersley

Timothy J. Eckersley, Ph.D., Quality Assurance

Quality Control Tests and Results

QC Release Date	2/27/2014
Expiration Date	2/27/2024
Concentration Based on Gravimetry	102 µg/mL
Chemical Purity of Neat Material(s)	98%
LC/MS for Concentration	109.4 ± 2.8 µg/mL (k=2)

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Raw Data

atch Report: C:\HPCHEM\1\DATA\11DEC18D\11DEC18S.B

Batch Review Method:
C:\HPCHEM\1\METHODS\CLO4-DPR.M

['#' ==> Run has not been reprocessed with Batch Review Method
'*' ==> Run has been saved with batch file]

#	Sample	Location	Inj	SampleType	Run	Perchlorate Area	Perchlorate RT	Perchlorate Amount
#*	631664 C	Vial 71	1	Control	1	3.48124e6	7.871	25.75214
#*	631665 L	Vial 72	1	Control	2	8.19641e4	7.889	1.08395
#*	631666 I	Vial 73	1	Control	3	6.66958e4	7.879	1.10767
#*	631667 L	Vial 74	1	Control	4	0.00000	0.000	0.00000
#*	631668 Q	Vial 75	1	Control	5	4.08977e5	7.891	4.57756
#*	1833461001	Vial 76	1	Sample	6	0.00000	0.000	0.00000
#*	1833461002	Vial 77	1	Sample	7	5.87665e5	7.876	4.85131
#*	1833461003	Vial 78	1	Sample	8	6.44190e5	7.865	5.01118
#*	1833461004	Vial 79	1	Sample	9	2.89111e6	7.906	2851.92545
#*	1833461005	Vial 80	1	Sample	10	3.29822e6	7.906	3211.78490
#*	1833461006	Vial 81	1	Sample	11	4.76196e5	7.903	4.73259e4
#*	1833461007	Vial 82	1	Sample	12	4.51305e6	7.852	50.94588
#*	1833875001	Vial 83	1	Sample	13	2.74604e6	7.870	24.07175
#*	1833875002	Vial 84	1	Sample	14	1.14039e6	7.899	1052.75983
#*	1833875003	Vial 85	1	Sample	15	1.68396e5	7.864	1.85043
#*	1833980001	Vial 86	1	Sample	16	0.00000	0.000	0.00000
#*	1833980002	Vial 87	1	Sample	17	0.00000	0.000	0.00000
#*	631669 C	Vial 71	1	Control	18	2.47816e6	7.907	23.56695
#*	631670 L	Vial 72	1	Control	19	5.69947e4	7.914	9.31810e-1
#*	1833980003	Vial 88	1	Sample	20	0.00000	0.000	0.00000
#*	1833980004	Vial 89	1	Sample	21	2.99274e4	7.855	5.87268e-1
#*	1833980005	Vial 90	1	Sample	22	0.00000	0.000	0.00000
#*	1833980006	Vial 91	1	Sample	23	0.00000	0.000	0.00000
#*	1833980007	Vial 92	1	Sample	24	4.79408e4	7.817	6.85344e-1
#*	1833980008	Vial 93	1	Sample	25	0.00000	0.000	0.00000
#*	1833980009	Vial 94	1	Sample	26	0.00000	0.000	0.00000
#*	1833980010	Vial 95	1	Sample	27	0.00000	0.000	0.00000
#*	1833980011	Vial 96	1	Sample	28	0.00000	0.000	0.00000
#*	1833980012	Vial 97	1	Sample	29	0.00000	0.000	0.00000
#*	631671 C	Vial 71	1	Control	30	2.59417e6	7.853	23.82186
*	631672 L	Vial 72	1	Control	31	6.79751e4	7.883	1.00534

#	Sample	Location	Inj	SampleType	Run	CLO4-85 Area	CLO4-85 RT	CLO4-85 Amount
#*	631664 C	Vial 71	1	Control	1	1.01321e6	7.889	24.86780
#*	631665 L	Vial 72	1	Control	2	2.63912e4	7.895	1.03937
#*	631666 I	Vial 73	1	Control	3	2.77513e4	7.895	1.35059
#*	631667 L	Vial 74	1	Control	4	0.00000	0.000	0.00000
#*	631668 Q	Vial 75	1	Control	5	1.28593e5	7.908	4.72010
#*	1833461001	Vial 76	1	Sample	6	0.00000	0.000	0.00000
#*	1833461002	Vial 77	1	Sample	7	1.87638e5	7.892	5.08460
#*	1833461003	Vial 78	1	Sample	8	1.92804e5	7.883	4.93604
#*	1833461004	Vial 79	1	Sample	9	8.51631e5	7.924	2782.22156
#*	1833461005	Vial 80	1	Sample	10	9.78590e5	7.922	3149.58587
#*	1833461006	Vial 81	1	Sample	11	1.52823e5	7.915	4.98186e4
#*	1833461007	Vial 82	1	Sample	12	1.38970e6	7.868	51.21926
#*	1833875001	Vial 83	1	Sample	13	8.29390e5	7.886	24.08637
#*	1833875002	Vial 84	1	Sample	14	3.43364e5	7.914	1052.74290
#*	1833875003	Vial 85	1	Sample	15	6.11284e4	7.880	2.09974
#*	1833980001	Vial 86	1	Sample	16	0.00000	0.000	0.00000
#*	1833980002	Vial 87	1	Sample	17	0.00000	0.000	0.00000
#*	631669 C	Vial 71	1	Control	18	7.61945e5	7.924	23.98608
#*	631670 L	Vial 72	1	Control	19	2.16085e4	7.928	1.01329
#*	1833980003	Vial 88	1	Sample	20	0.00000	0.000	0.00000
#*	1833980004	Vial 89	1	Sample	21	1.41879e4	7.866	6.93161e-1
#*	1833980005	Vial 90	1	Sample	22	0.00000	0.000	0.00000
#*	1833980006	Vial 91	1	Sample	23	0.00000	0.000	0.00000
#*	1833980007	Vial 92	1	Sample	24	1.99684e4	7.830	7.57624e-1
#*	1833980008	Vial 93	1	Sample	25	0.00000	0.000	0.00000
#*	1833980009	Vial 94	1	Sample	26	0.00000	0.000	0.00000

atch Report: C:\HPCHEM\1\DATA\11DEC18D\11DEC18S.B

#	Sample	Location	Inj	SampleType	Run	CLO4-85 Area	CLO4-85 RT	CLO4-85 Amount
#*	1833980010	Vial 95	1	Sample	27	0.00000	0.000	0.00000
#*	1833980011	Vial 96	1	Sample	28	0.00000	0.000	0.00000
#*	1833980012	Vial 97	1	Sample	29	0.00000	0.000	0.00000
#*	631671 C	Vial 71	1	Control	30	7.92460e5	7.872	24.09514
*	631672 L	Vial 72	1	Control	31	2.40769e4	7.903	1.04045

#	Sample	Location	Inj	SampleType	Run	CLO4-89-ISTD Area	CLO4-89-ISTD RT	CLO4-89-ISTD Amount
#*	631664 C	Vial 71	1	Control	1	4.02870e5	7.899	5.00000
#*	631665 L	Vial 72	1	Control	2	2.89019e5	7.911	5.00000
#*	631666 I	Vial 73	1	Control	3	2.28966e5	7.912	5.00000
#*	631667 L	Vial 74	1	Control	4	3.22648e5	7.925	5.00000
#*	631668 Q	Vial 75	1	Control	5	2.87169e5	7.921	5.00000
#*	1833461001	Vial 76	1	Sample	6	3.60792e5	7.921	5.00000
#*	1833461002	Vial 77	1	Sample	7	3.88117e5	7.903	5.00000
#*	1833461003	Vial 78	1	Sample	8	4.11170e5	7.891	5.00000
#*	1833461004	Vial 79	1	Sample	9	3.00445e5	7.933	500.00000
#*	1833461005	Vial 80	1	Sample	10	3.02235e5	7.931	500.00000
#*	1833461006	Vial 81	1	Sample	11	3.22820e5	7.929	5.00000e4
#*	1833461007	Vial 82	1	Sample	12	2.52017e5	7.879	5.00000
#*	1833875001	Vial 83	1	Sample	13	3.41152e5	7.897	5.00000
#*	1833875002	Vial 84	1	Sample	14	3.35467e5	7.926	500.00000
#*	1833875003	Vial 85	1	Sample	15	3.16169e5	7.893	5.00000
#*	1833980001	Vial 86	1	Sample	16	3.00388e5	7.891	5.00000
#*	1833980002	Vial 87	1	Sample	17	2.47847e5	7.882	5.00000
#*	631669 C	Vial 71	1	Control	18	3.14800e5	7.936	5.00000
#*	631670 L	Vial 72	1	Control	19	2.43309e5	7.942	5.00000
#*	1833980003	Vial 88	1	Sample	20	3.22751e5	7.879	5.00000
#*	1833980004	Vial 89	1	Sample	21	2.44118e5	7.893	5.00000
#*	1833980005	Vial 90	1	Sample	22	2.69834e5	7.873	5.00000
#*	1833980006	Vial 91	1	Sample	23	2.09759e5	7.843	5.00000
#*	1833980007	Vial 92	1	Sample	24	3.10572e5	7.850	5.00000
#*	1833980008	Vial 93	1	Sample	25	2.90513e5	7.867	5.00000
#*	1833980009	Vial 94	1	Sample	26	2.96165e5	7.855	5.00000
#*	1833980010	Vial 95	1	Sample	27	2.96909e5	7.863	5.00000
#*	1833980011	Vial 96	1	Sample	28	3.18562e5	7.861	5.00000
#*	1833980012	Vial 97	1	Sample	29	3.26637e5	7.918	5.00000
#*	631671 C	Vial 71	1	Control	30	3.25836e5	7.882	5.00000
*	631672 L	Vial 72	1	Control	31	2.63374e5	7.913	5.00000

*** End of Report ***

equence: C:\HPCHEM\1\SEQUENCE\CLO4\2018\DEC\11DEC18D.S

Sequence Table:

Method and Injection Info Part:

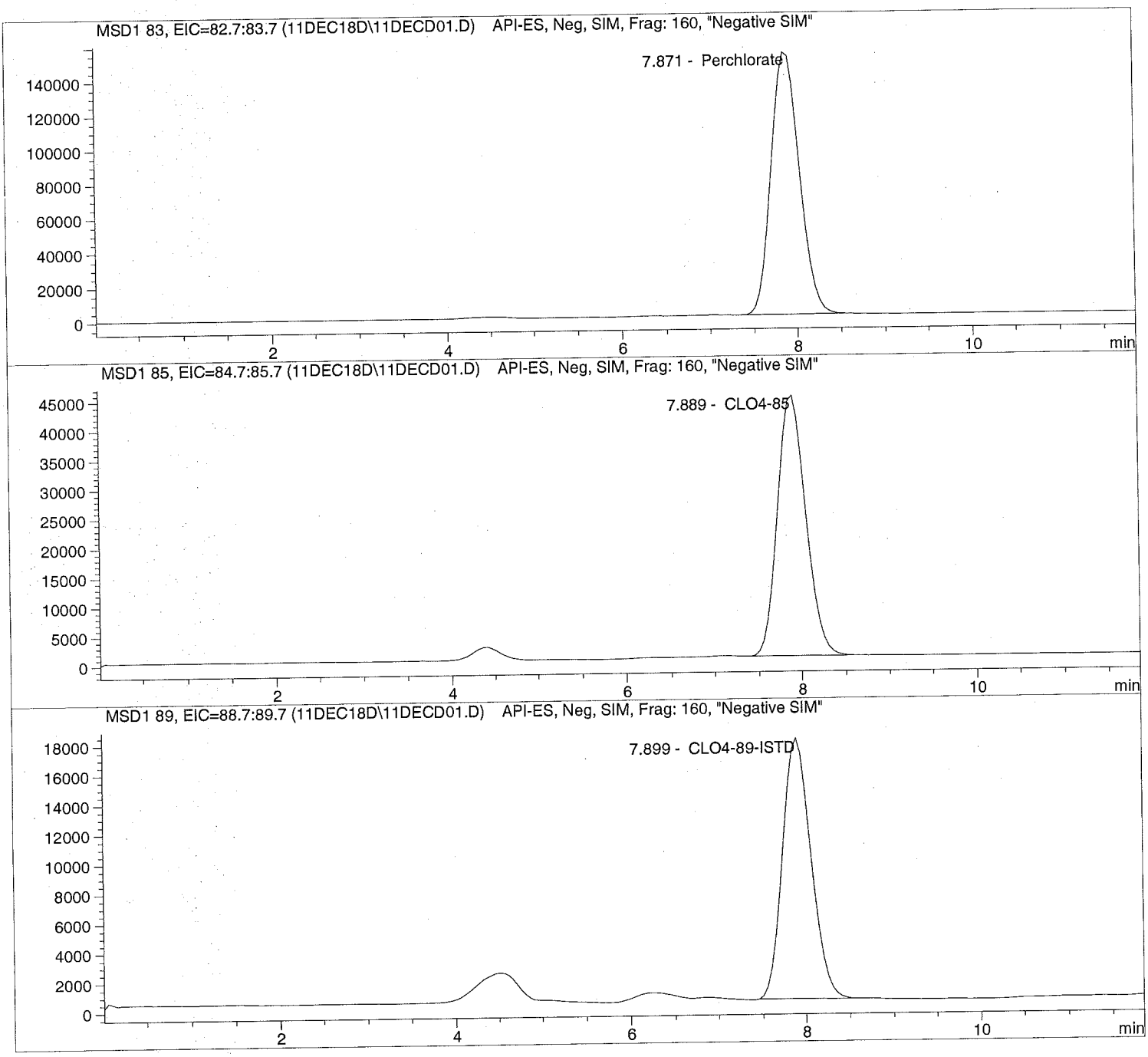
Line	Location	SampleName		Method	Inj	SampleType	InjVolume	DataFile
1	Vial 71	631664	CCV@25	CLO4-AQN	1	Ctrl Samp		
2	Vial 72	631665	LODV@1.	CLO4-AQN	1	Ctrl Samp		
3	Vial 73	631666	ICS@1.0	CLO4-AQN	1	Ctrl Samp		
4	Vial 74	631667	LMB	CLO4-AQN	1	Ctrl Samp		
5	Vial 75	631668	QC@5.0	CLO4-AQN	1	Ctrl Samp		
6	Vial 76	1833461001		CLO4-AQN	1	Sample		
7	Vial 77	1833461002	MS	CLO4-AQN	1	Sample		
8	Vial 78	1833461003	MSD	CLO4-AQN	1	Sample		
9	Vial 79	1833461004	100	CLO4-AQN	1	Sample		
10	Vial 80	1833461005	100	CLO4-AQN	1	Sample		
11	Vial 81	1833461006	10K	CLO4-AQN	1	Sample		
12	Vial 82	1833461007		CLO4-AQN	1	Sample		
13	Vial 83	1833875001		CLO4-AQN	1	Sample		
14	Vial 84	1833875002	100	CLO4-AQN	1	Sample		
15	Vial 85	1833875003		CLO4-AQN	1	Sample		
16	Vial 86	1833980001		CLO4-AQN	1	Sample		
17	Vial 87	1833980002		CLO4-AQN	1	Sample		
18	Vial 71	631669	CCV@25	CLO4-AQN	1	Ctrl Samp		
19	Vial 72	631670	LODV@1.	CLO4-AQN	1	Ctrl Samp		
20	Vial 88	1833980003		CLO4-AQN	1	Sample		
21	Vial 89	1833980004		CLO4-AQN	1	Sample		
22	Vial 90	1833980005		CLO4-AQN	1	Sample		
23	Vial 91	1833980006		CLO4-AQN	1	Sample		
24	Vial 92	1833980007		CLO4-AQN	1	Sample		
25	Vial 93	1833980008		CLO4-AQN	1	Sample		
26	Vial 94	1833980009		CLO4-AQN	1	Sample		
27	Vial 95	1833980010		CLO4-AQN	1	Sample		
28	Vial 96	1833980011		CLO4-AQN	1	Sample		
29	Vial 97	1833980012		CLO4-AQN	1	Sample		
30	Vial 71	631671	CCV@25	CLO4-AQN	1	Ctrl Samp		
31	Vial 72	631672	LODV@1.	CLO4-AQN	1	Ctrl Samp		

Data file: C:\HPCHEM\1\DATA\11DEC18D\11DECD01.D Sample Name: 631664 CCV@25

Injection Date:	12/11/2018 08:01:38	Seq Line:	1
Sample Name:	631664 CCV@25	Location:	Vial 71
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 12/3/2018 12:46:06

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\11DEC18D\11DECD01.D Sample Name: 631664 CCV@25

Injection Date:	12/11/2018 08:01:38	Seq Line:	1
Sample Name:	631664 CCV@25	Location:	Vial 71
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 12/3/2018 12:46:06

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 3. Dec. 2018, 00:29:27 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	25.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.871	PBA	3481236.5	25.7521	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.889	PBA	1013205.2	24.8678	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.899	PBA	402869.5	5.0000	CLO4-89-ISTD

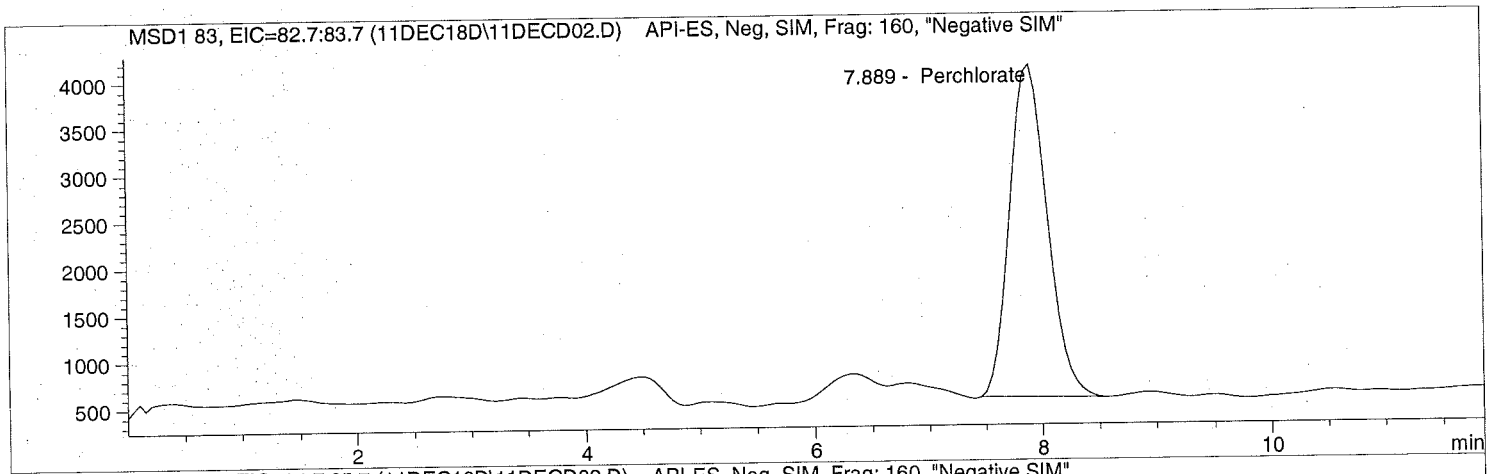
*** End of Report ***

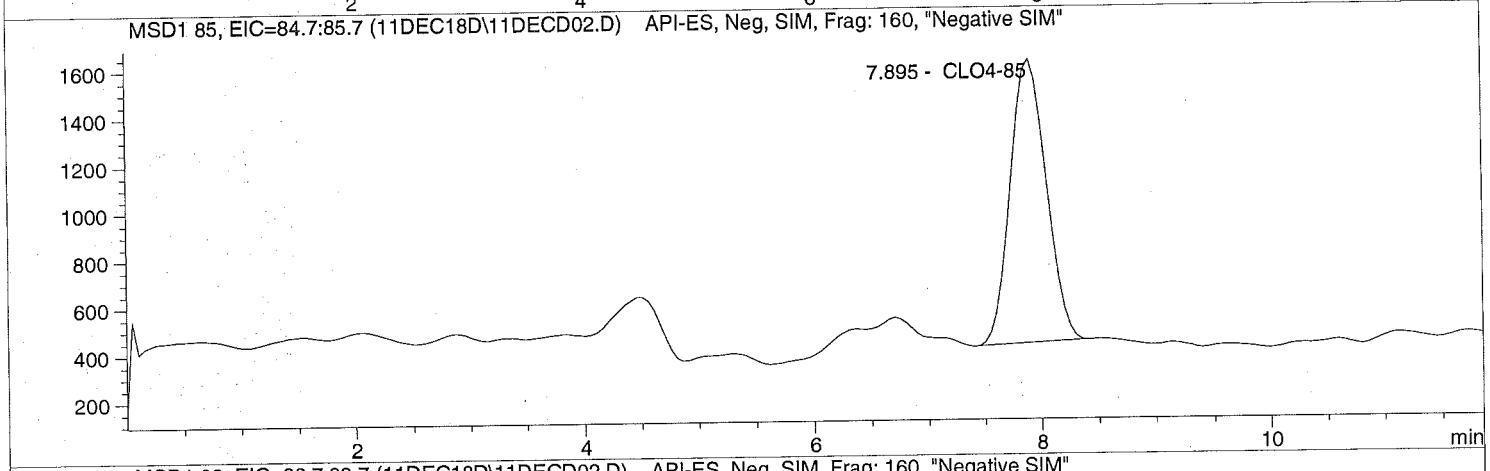
Data file: C:\HPCHEM\1\DATA\11DEC18D\11DECD02.D Sample Name: 631665 LODV@1.

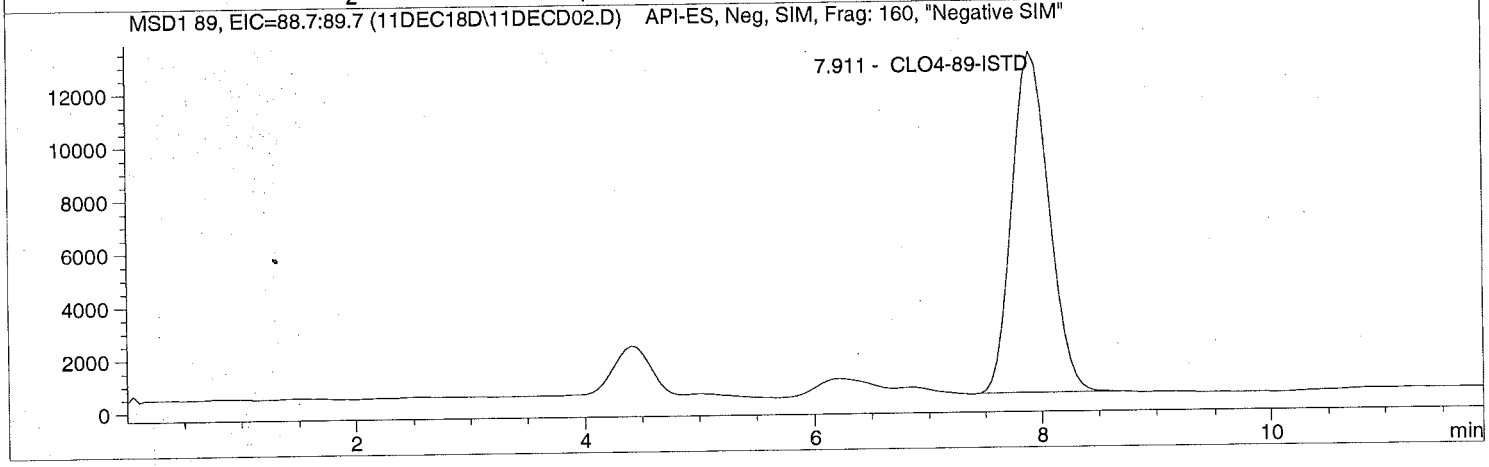
Injection Date:	12/11/2018 08:16:29	Seq Line:	2
Sample Name:	631665 LODV@1.	Location:	Vial 72
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 12/3/2018 12:46:06

Perchlorate analysis







Data file: C:\HPCHEM\1\DATA\11DEC18D\11DECD02.D Sample Name: 631665 LODV@1.

Injection Date:	12/11/2018 08:16:29	Seq Line:	2
Sample Name:	631665 LODV@1.	Location:	Vial 72
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 12/3/2018 12:46:06

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 3. Dec. 2018, 00:29:27 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	1.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.889	PBA	81964.1	1.0839	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.895	PBA	26391.2	1.0394	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.911	PBA	289018.6	5.0000	CLO4-89-ISTD

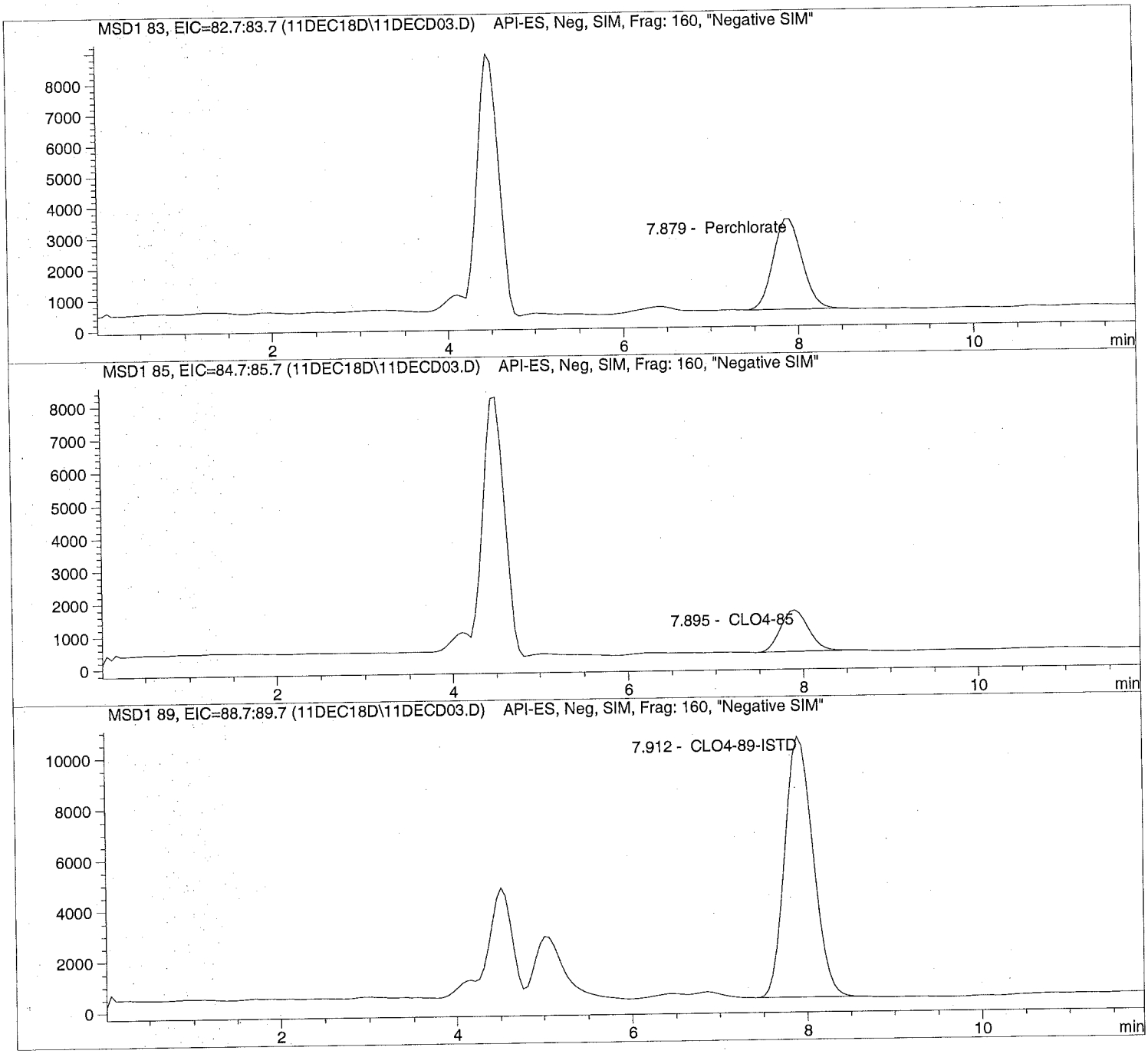
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\11DEC18D\11DECD03.D Sample Name: 631666 ICS@1.0

Injection Date:	12/11/2018 08:30:20	Seq Line:	3
Sample Name:	631666 ICS@1.0	Location:	Vial 73
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 12/3/2018 12:46:06

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\11DEC18D\11DECD03.D Sample Name: 631666 ICS@1.0

Injection Date:	12/11/2018 08:30:20	Seq Line:	3
Sample Name:	631666 ICS@1.0	Location:	Vial 73
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 12/3/2018 12:46:06

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 3. Dec. 2018, 00:29:27 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	1.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.879	PBA	66695.8	1.1077	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.895	PBA	27751.3	1.3506	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.912	PBA	228966.4	5.0000	CLO4-89-ISTD

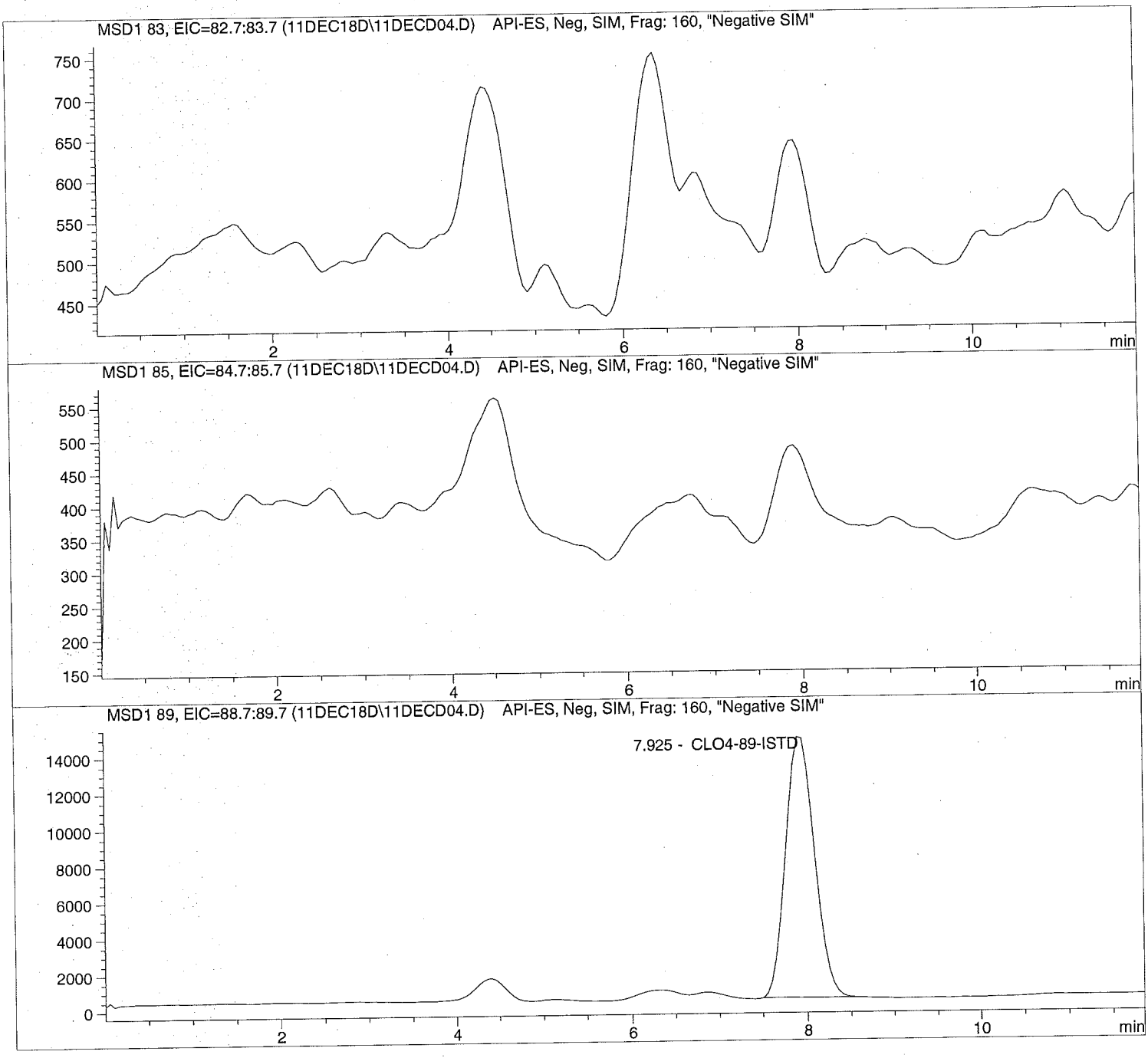
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\11DEC18D\11DECD04.D Sample Name: 631667 LMB

Injection Date:	12/11/2018 08:44:10	Seq Line:	4
Sample Name:	631667 LMB	Location:	Vial 74
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 12/3/2018 12:46:06

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\11DEC18D\11DECD04.D Sample Name: 631667 LMB

Injection Date:	12/11/2018 08:44:10	Seq Line:	4
Sample Name:	631667 LMB	Location:	Vial 74
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method:	CLO4-AQN.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	12/3/2018 12:46:06

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 3. Dec. 2018, 00:29:27 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.925	PBA	322647.7	5.0000	CLO4-89-ISTD

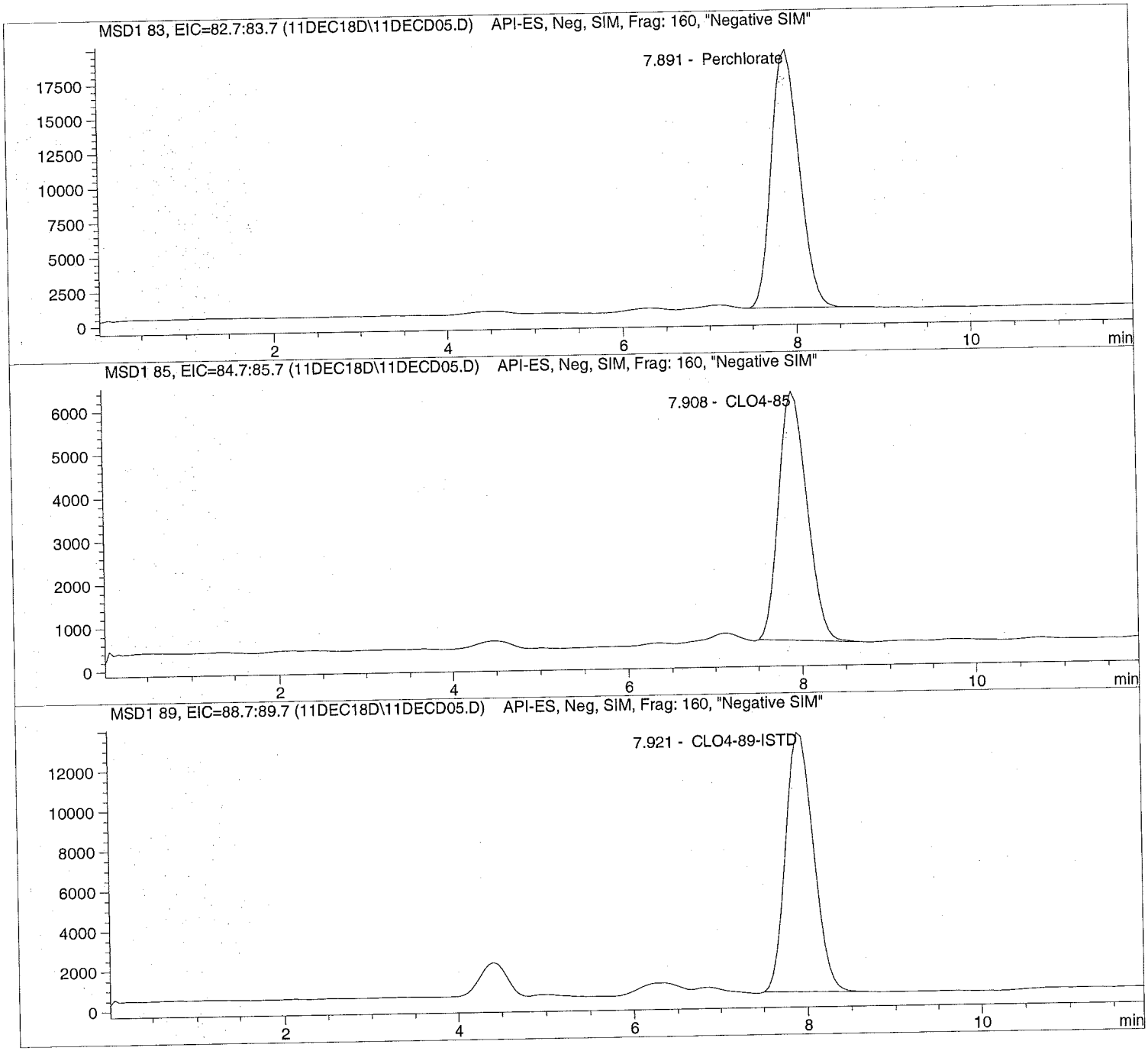
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\11DEC18D\11DECD05.D Sample Name: 631668 QC@5.0

Injection Date:	12/11/2018 08:57:58	Seq Line:	5
Sample Name:	631668 QC@5.0	Location:	Vial 75
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 12/3/2018 12:46:06

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\11DEC18D\11DECD05.D Sample Name: 631668 QC@5.0

Injection Date:	12/11/2018 08:57:58	Seq Line:	5
Sample Name:	631668 QC@5.0	Location:	Vial 75
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 12/3/2018 12:46:06

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 3. Dec. 2018, 00:29:27 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	5.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.891	PBA	408977.5	4.5776	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.908	PBA	128593.4	4.7201	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.921	PBA	287168.8	5.0000	CLO4-89-ISTD

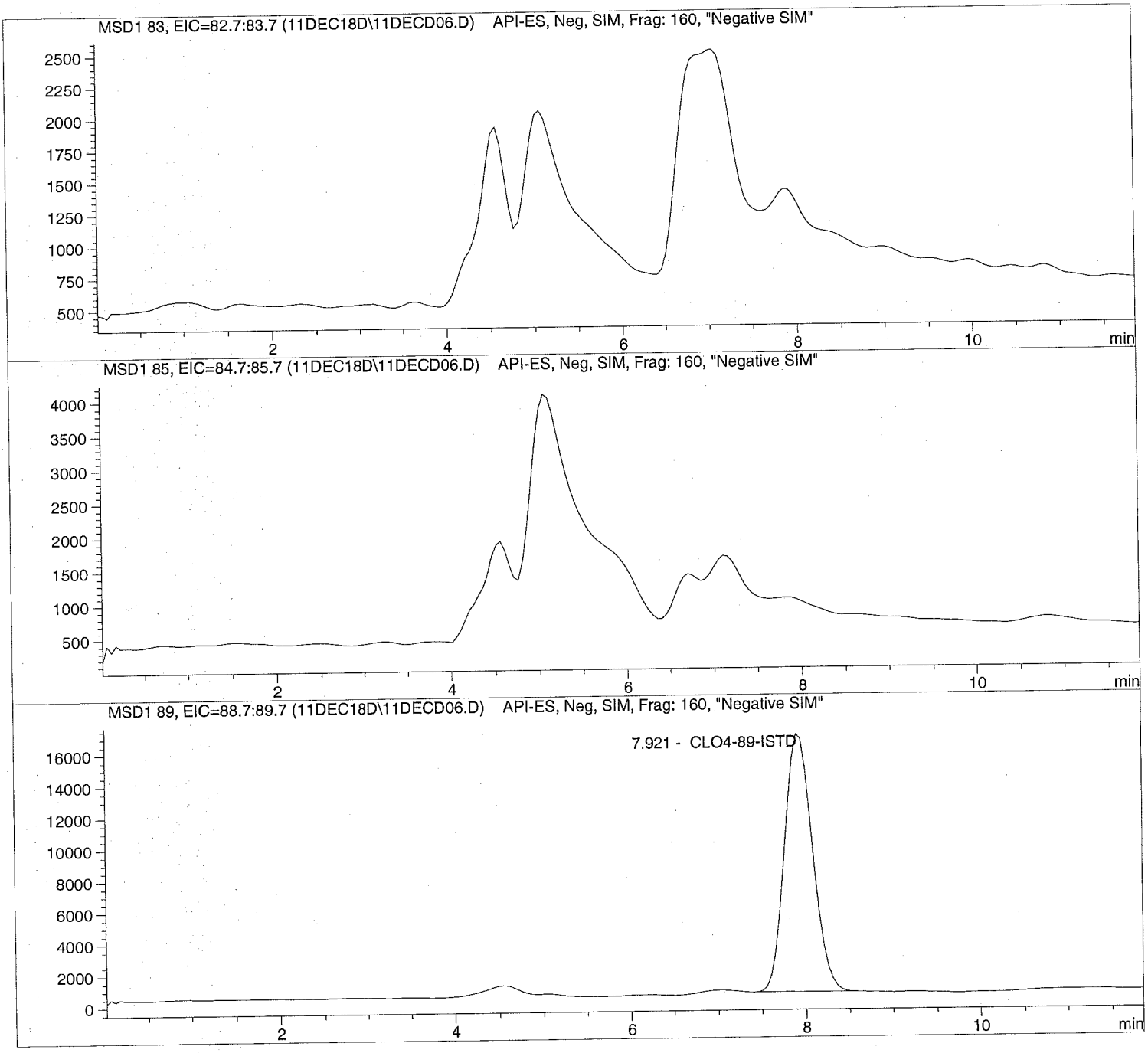
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\11DEC18D\11DECD06.D Sample Name: 1833461001

Injection Date:	12/11/2018 09:11:48	Seq Line:	6
Sample Name:	1833461001	Location:	Vial 76
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 12/3/2018 12:46:06

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\11DEC18D\11DECD06.D Sample Name: 1833461001

Injection Date:	12/11/2018 09:11:48	Seq Line:	6
Sample Name:	1833461001	Location:	Vial 76
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 12/3/2018 12:46:06

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 3. Dec. 2018, 00:29:27 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.921	PBA	360792.0	5.0000	CLO4-89-ISTD

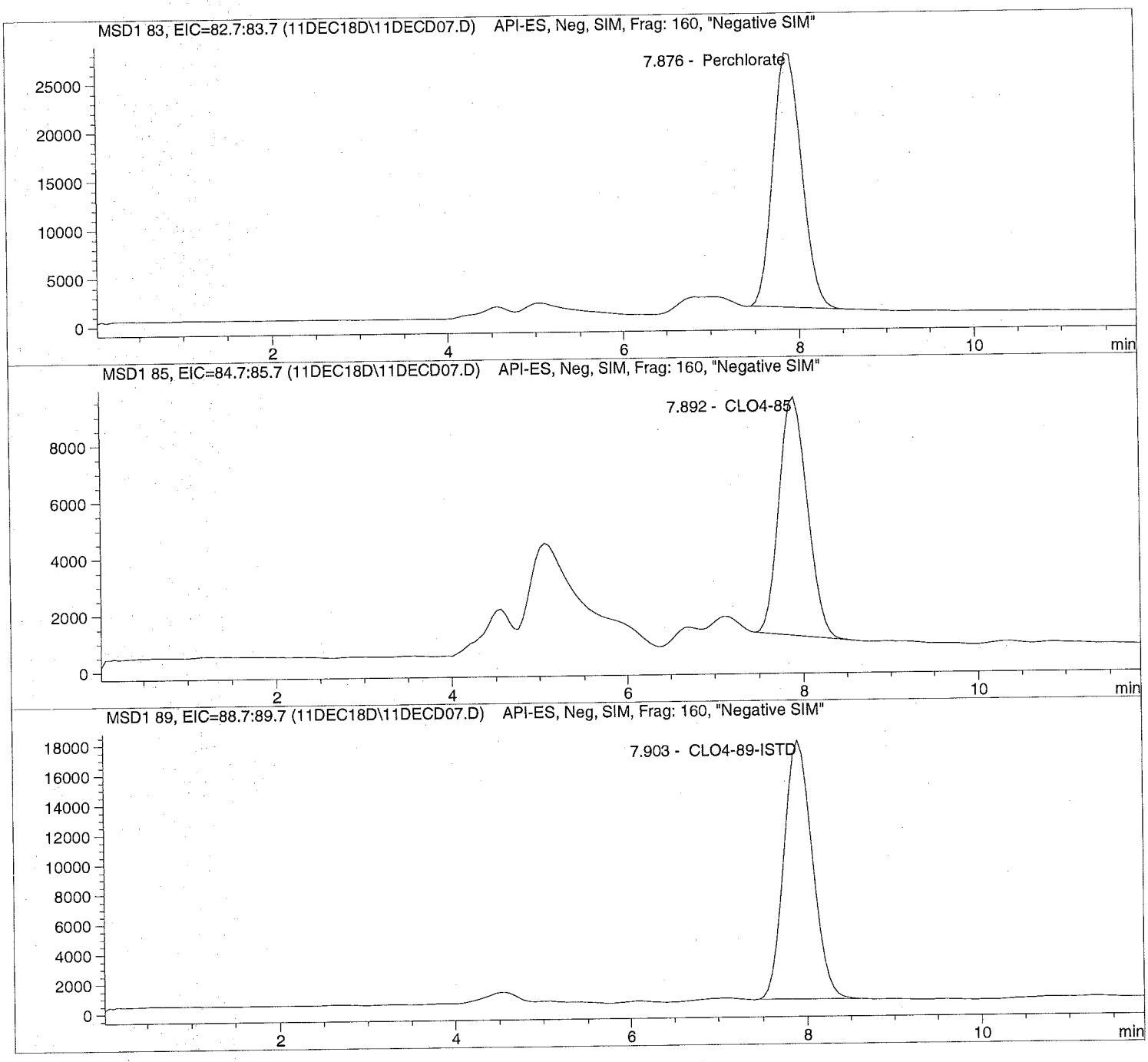
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\11DEC18D\11DECD07.D Sample Name: 1833461002 MS

Injection Date:	12/11/2018 09:25:39	Seq Line:	7
Sample Name:	1833461002 MS	Location:	Vial 77
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 12/3/2018 12:46:06

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\11DEC18D\11DECD07.D Sample Name: 1833461002 MS

Injection Date:	12/11/2018 09:25:39	Seq Line:	7
Sample Name:	1833461002 MS	Location:	Vial 77
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 12/3/2018 12:46:06

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 3. Dec. 2018, 00:29:27 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.876	PBA	587664.7	4.8513	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.892	VBA	187637.6	5.0846	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.903	PBA	388117.1	5.0000	CLO4-89-ISTD

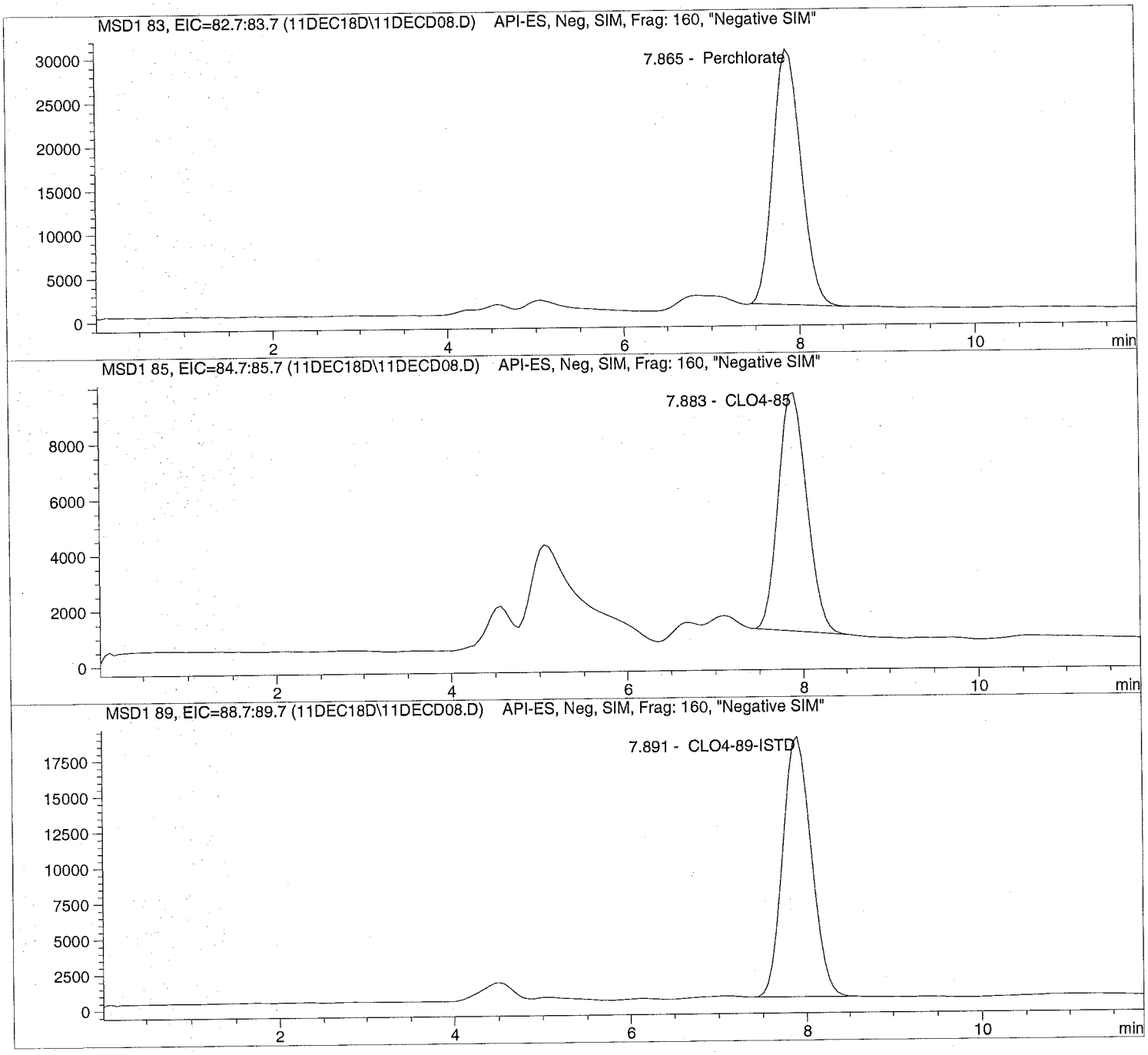
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\11DEC18D\11DECD08.D Sample Name: 1833461003 MSD

Injection Date:	12/11/2018 09:39:25	Seq Line:	8
Sample Name:	1833461003 MSD	Location:	Vial 78
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 12/3/2018 12:46:06

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\11DEC18D\11DECD08.D Sample Name: 1833461003 MSD

Injection Date:	12/11/2018 09:39:25	Seq Line:	8
Sample Name:	1833461003 MSD	Location:	Vial 78
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method:	CLO4-AQN.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	12/3/2018 12:46:06

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 3. Dec. 2018, 00:29:27 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.865	PBA	644190.4	5.0112	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.883	PBA	192803.6	4.9360	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.891	PBA	411169.7	5.0000	CLO4-89-ISTD

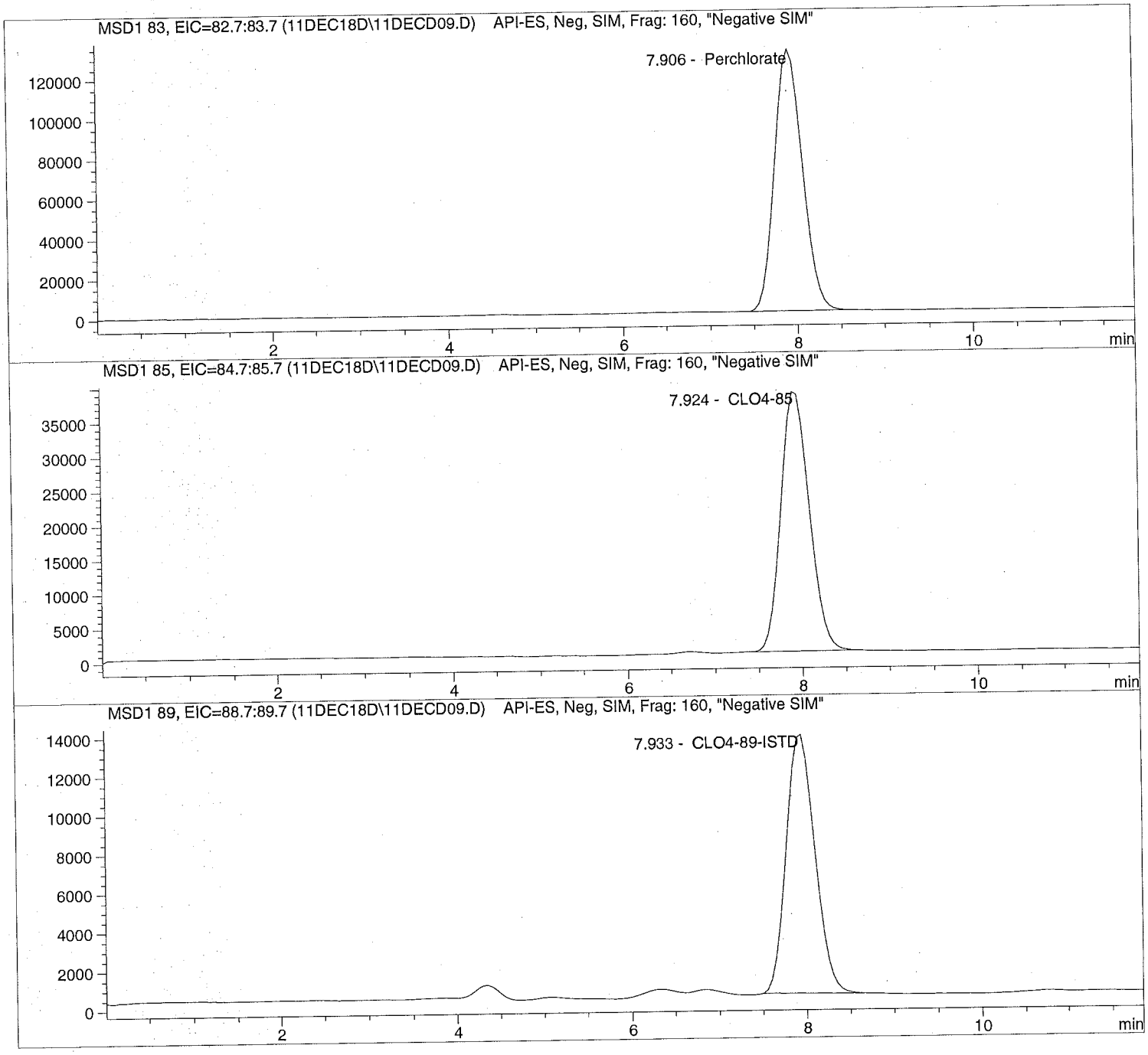
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\11DEC18D\11DECD09.D Sample Name: 1833461004 100

Injection Date:	12/11/2018 09:53:11	Seq Line:	9
Sample Name:	1833461004 100	Location:	Vial 79
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 12/3/2018 12:46:06

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\11DEC18D\11DECD09.D Sample Name: 1833461004 100

Injection Date:	12/11/2018 09:53:11	Seq Line:	9
Sample Name:	1833461004 100	Location:	Vial 79
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method:	CLO4-AQN.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	12/3/2018 12:46:06

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 3. Dec. 2018, 00:29:27 pm
Multiplier:	1.000000
Dilution:	100.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.906	PBA	2891111.8	2851.9254	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.924	BBA	851631.1	2782.2216	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.933	PBA	300444.9	500.0000	CLO4-89-ISTD

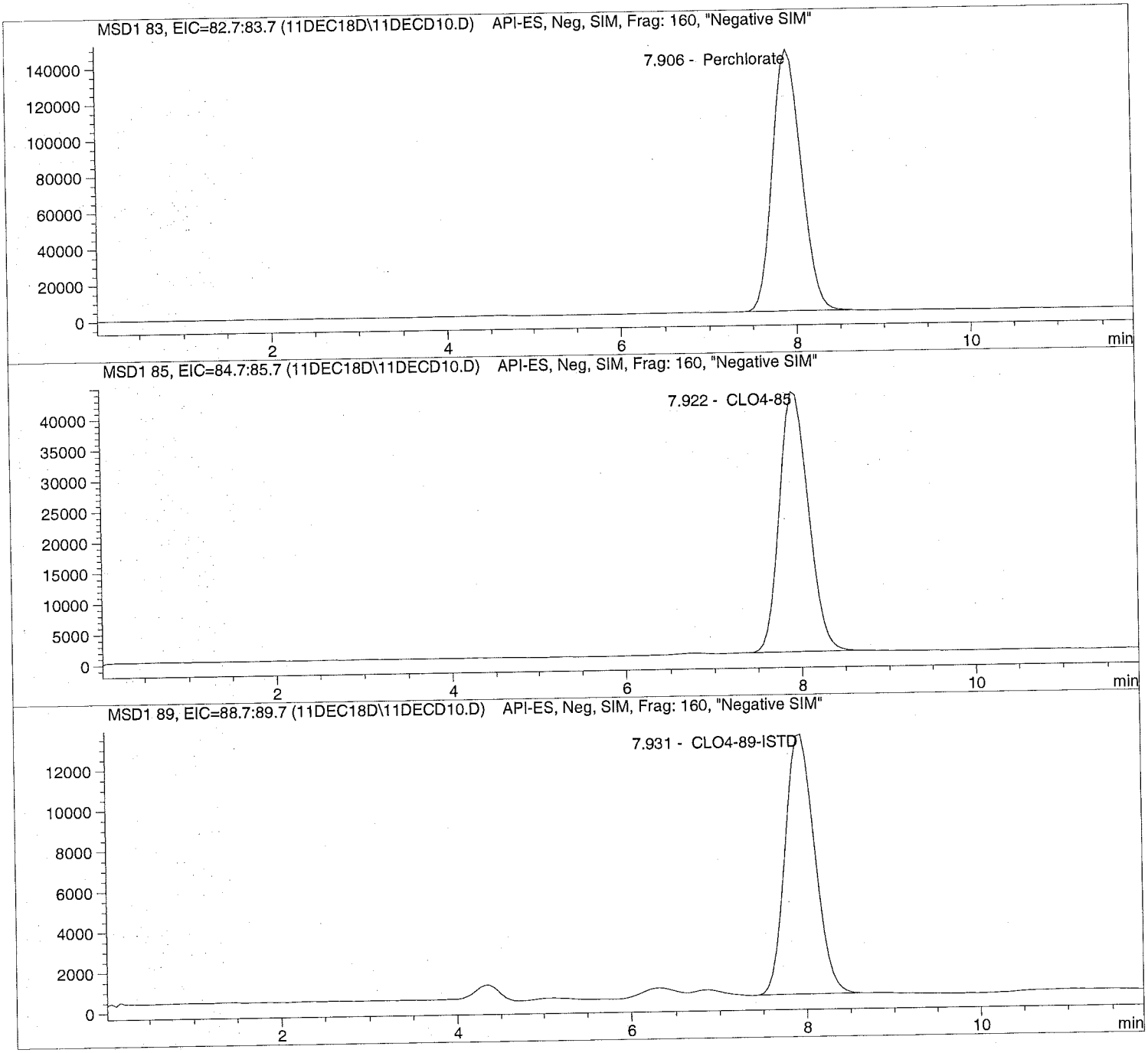
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\11DEC18D\11DECD10.D Sample Name: 1833461005 100

Injection Date:	12/11/2018 10:06:58	Seq Line:	10
Sample Name:	1833461005 100	Location:	Vial 80
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 12/3/2018 12:46:06

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\11DEC18D\11DECD10.D Sample Name: 1833461005 100

Injection Date:	12/11/2018 10:06:58	Seq Line:	10
Sample Name:	1833461005 100	Location:	Vial 80
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method:	CLO4-AQN.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	12/3/2018 12:46:06

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 3. Dec. 2018, 00:29:27 pm
Multiplier:	1.000000
Dilution:	100.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.906	PBA	3298217.8	3211.7849	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.922	PBA	978589.6	3149.5859	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.931	PBA	302235.4	500.0000	CLO4-89-ISTD

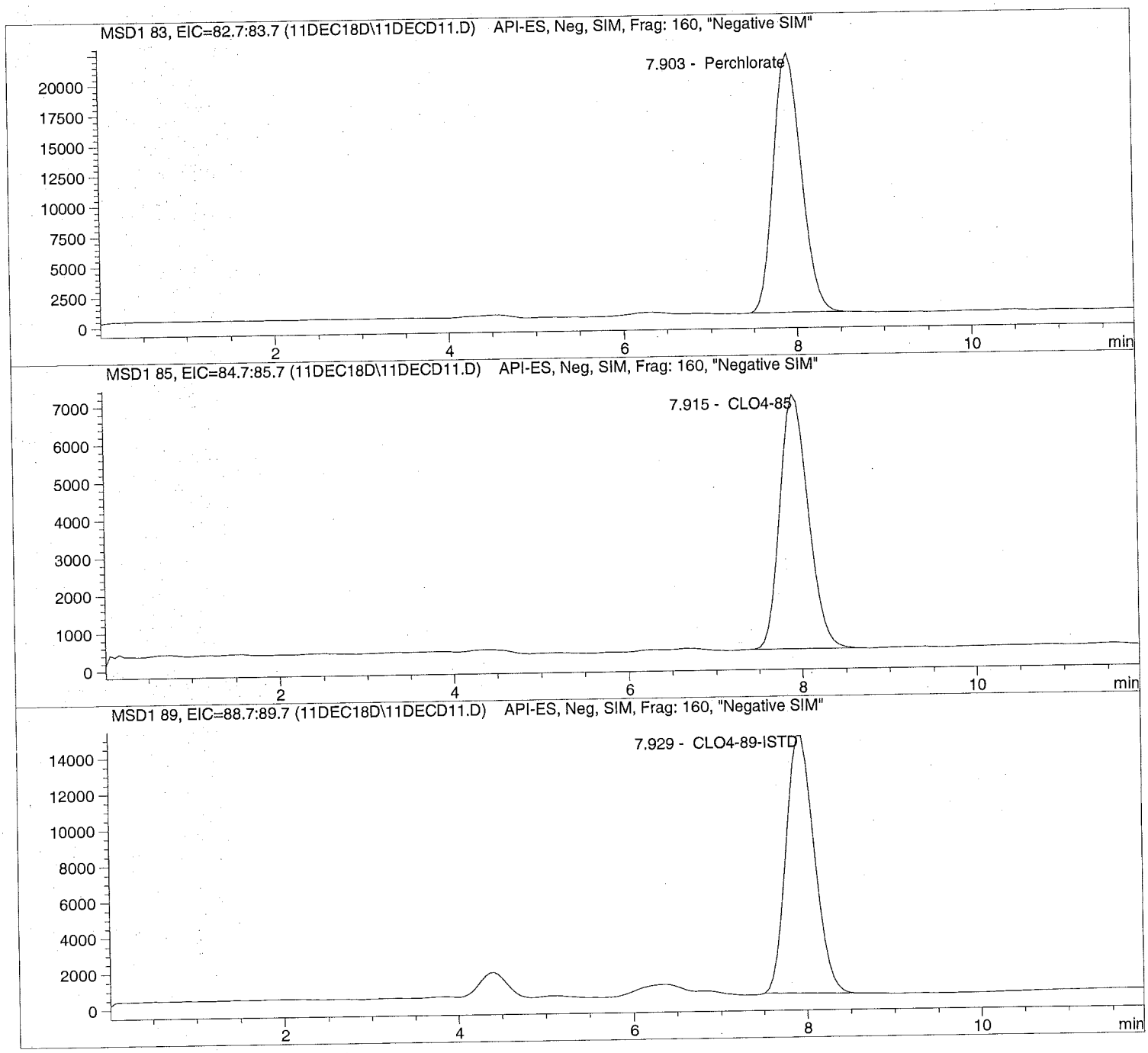
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\11DEC18D\11DECD11.D Sample Name: 1833461006 10K

Injection Date:	12/11/2018 10:20:44	Seq Line:	11
Sample Name:	1833461006 10K	Location:	Vial 81
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 12/3/2018 12:46:06

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\11DEC18D\11DECD11.D Sample Name: 1833461006 10K

Injection Date:	12/11/2018 10:20:44	Seq Line:	11
Sample Name:	1833461006 10K	Location:	Vial 81
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method:	CLO4-AQN.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	12/3/2018 12:46:06

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 3. Dec. 2018, 00:29:27 pm
Multiplier:	1.000000
Dilution:	10000.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.903	PBA	476196.3	47325.9026	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.915	BBA	152822.6	49818.5957	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.929	PBA	322820.2	50000.0000	CLO4-89-ISTD

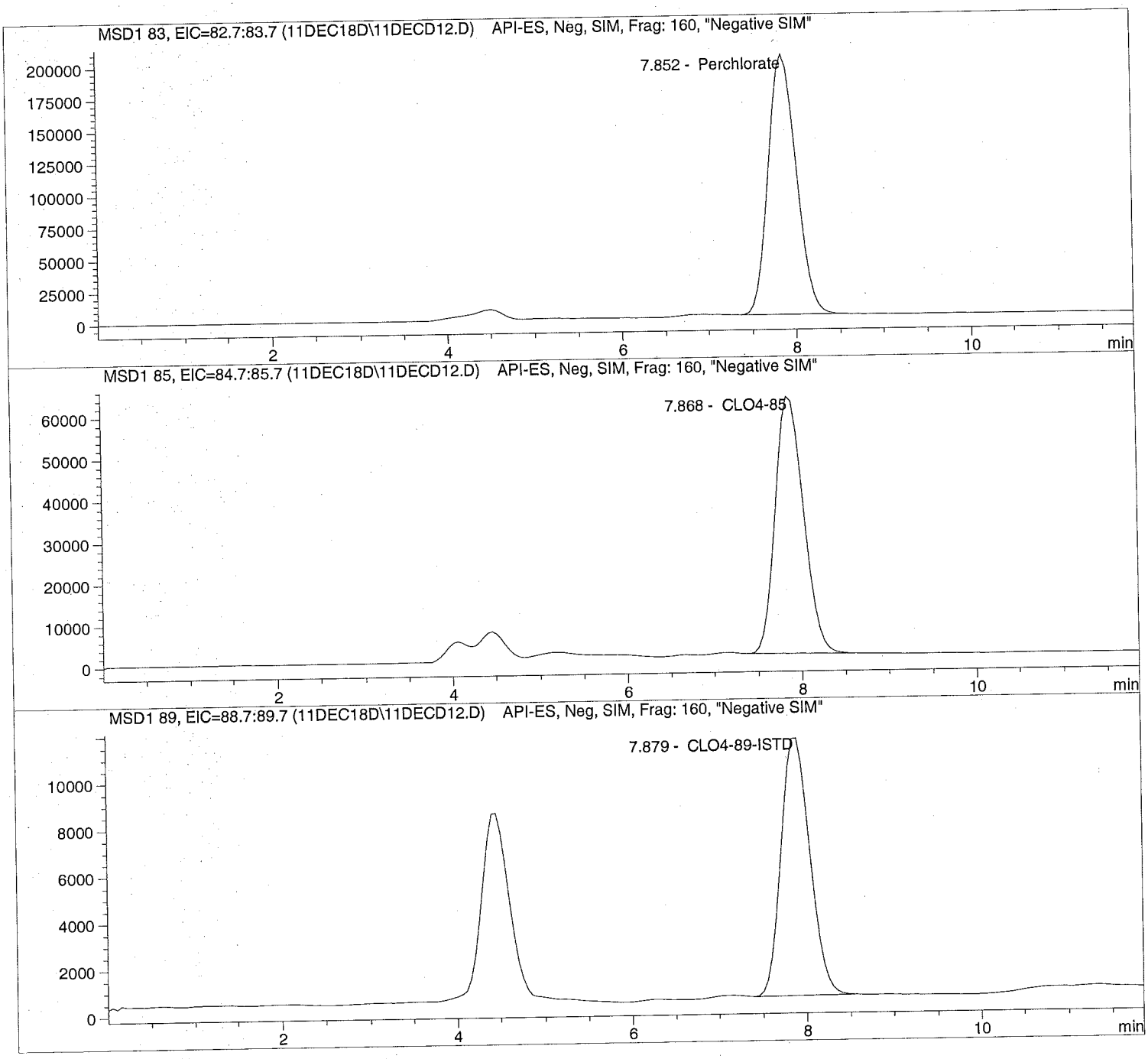
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\11DEC18D\11DECD12.D Sample Name: 1833461007

Injection Date:	12/11/2018 10:34:29	Seq Line:	12
Sample Name:	1833461007	Location:	Vial 82
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 12/3/2018 12:46:06

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\11DEC18D\11DECD12.D Sample Name: 1833461007

Injection Date:	12/11/2018 10:34:29	Seq Line:	12
Sample Name:	1833461007	Location:	Vial 82
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method:	CLO4-AQN.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	12/3/2018 12:46:06

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 3. Dec. 2018, 00:29:27 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.852	PBA	4513045.5	50.9459	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.868	VBA	1389702.0	51.2193	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.879	PBA	252017.3	5.0000	CLO4-89-ISTD

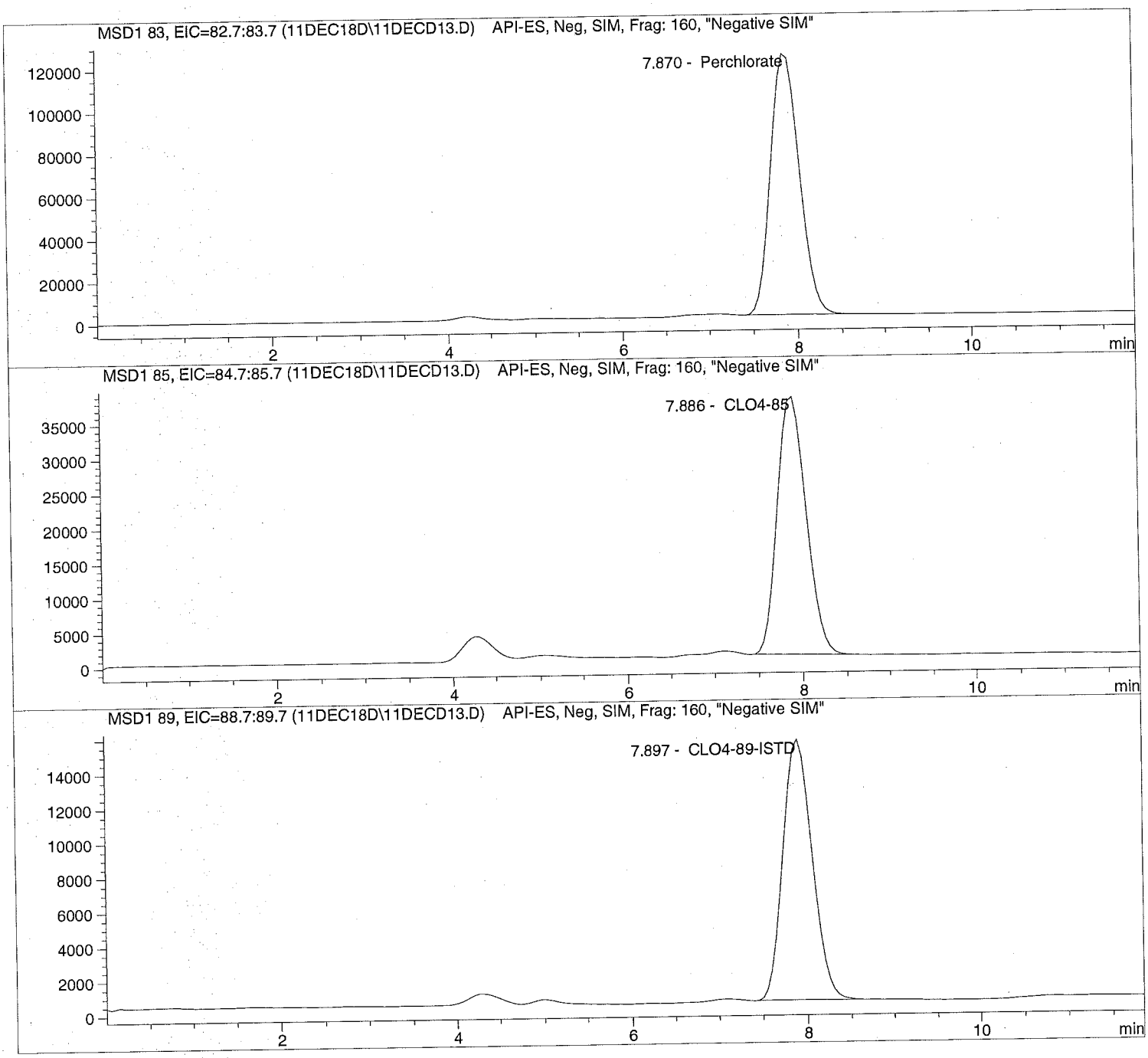
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\11DEC18D\11DECD13.D Sample Name: 1833875001

Injection Date:	12/11/2018 10:48:16	Seq Line:	13
Sample Name:	1833875001	Location:	Vial 83
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 12/3/2018 12:46:06

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\11DEC18D\11DECD13.D Sample Name: 1833875001

Injection Date:	12/11/2018 10:48:16	Seq Line:	13
Sample Name:	1833875001	Location:	Vial 83
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method:	CLO4-AQN.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	12/3/2018 12:46:06

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 3. Dec. 2018, 00:29:27 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.870	PBA	2746040.0	24.0717	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.886	PBA	829390.4	24.0864	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.897	PBA	341152.2	5.0000	CLO4-89-ISTD

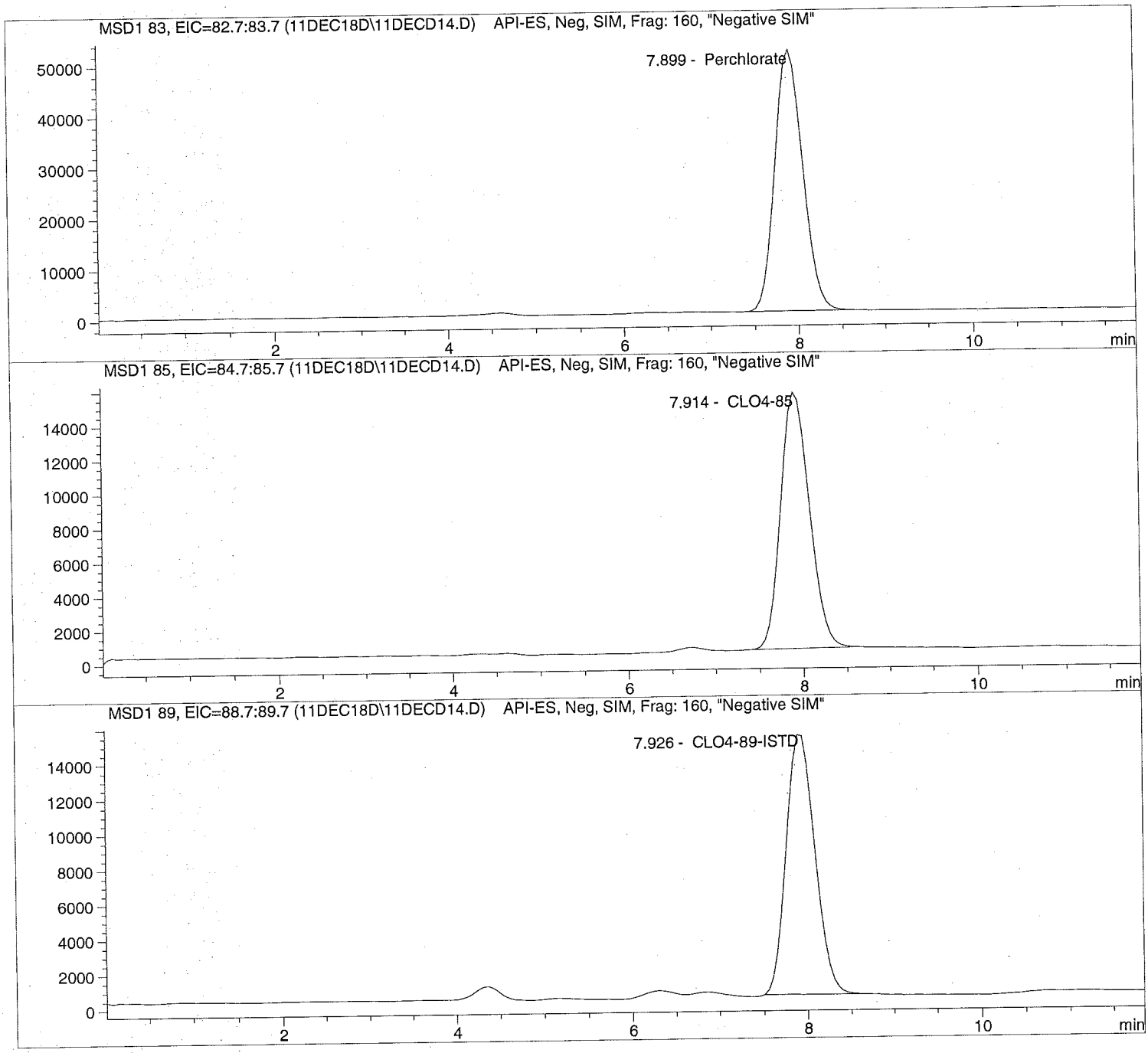
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\11DEC18D\11DECD14.D Sample Name: 1833875002 100

Injection Date:	12/11/2018 11:02:02	Seq Line:	14
Sample Name:	1833875002 100	Location:	Vial 84
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 12/3/2018 12:46:06

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\11DEC18D\11DECD14.D Sample Name: 1833875002 100

Injection Date:	12/11/2018 11:02:02	Seq Line:	14
Sample Name:	1833875002 100	Location:	Vial 84
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 12/3/2018 12:46:06

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 3. Dec. 2018, 00:29:27 pm
Multiplier:	1.000000
Dilution:	100.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.899	PBA	1140387.5	1052.7598	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.914	PBA	343363.9	1052.7429	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.926	PBA	335466.7	500.0000	CLO4-89-ISTD

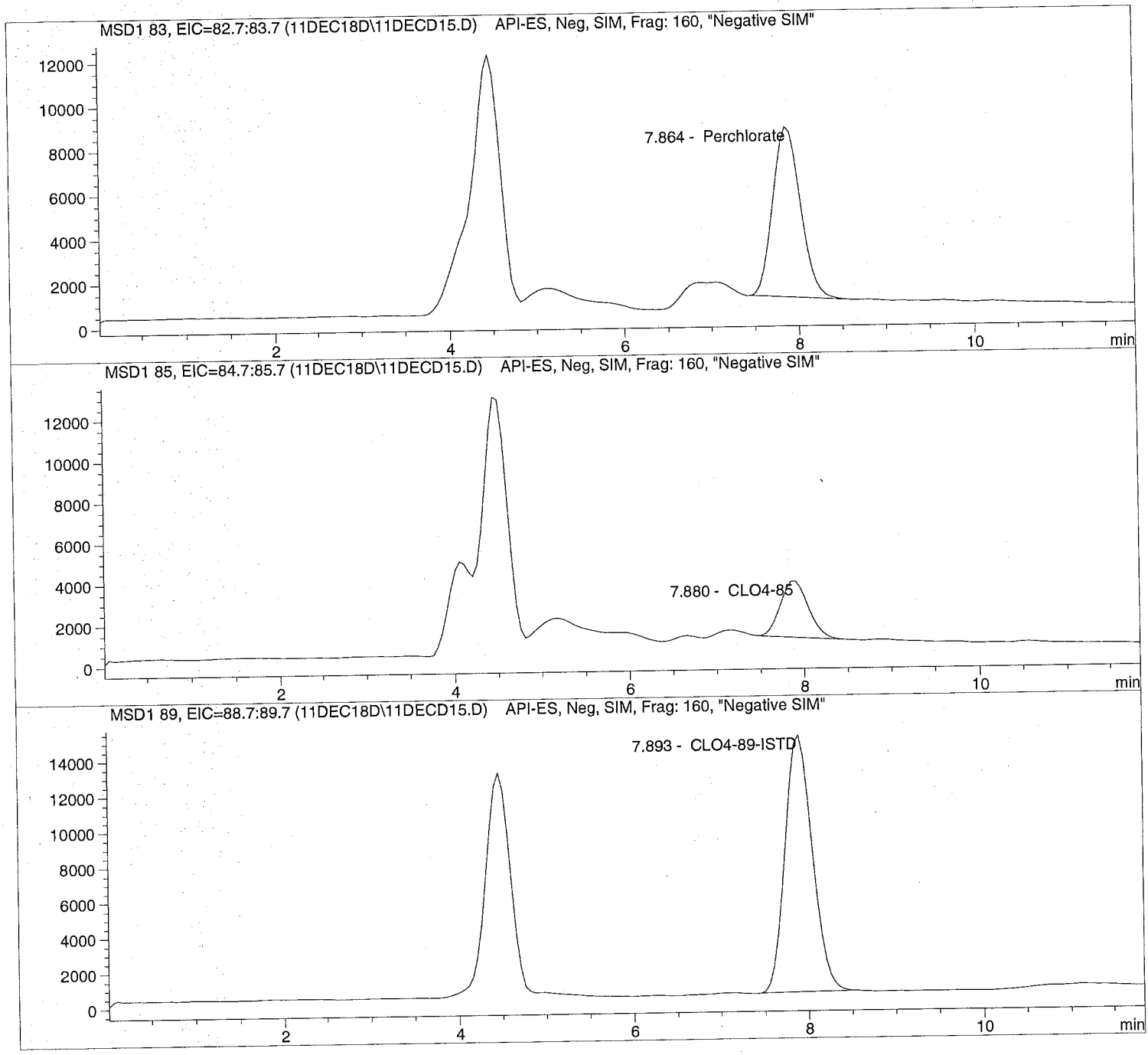
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\11DEC18D\11DECD15.D Sample Name: 1833875003

Injection Date:	12/11/2018 11:15:49	Seq Line:	15
Sample Name:	1833875003	Location:	Vial 85
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 12/3/2018 12:46:06

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\11DEC18D\11DECD15.D Sample Name: 1833875003

Injection Date:	12/11/2018 11:15:49	Seq Line:	15
Sample Name:	1833875003	Location:	Vial 85
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method:	CLO4-AQN.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	12/3/2018 12:46:06

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 3. Dec. 2018, 00:29:27 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.864	PBA	168396.0	1.8504	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.880	VBA	61128.4	2.0997	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.893	PBA	316168.6	5.0000	CLO4-89-ISTD

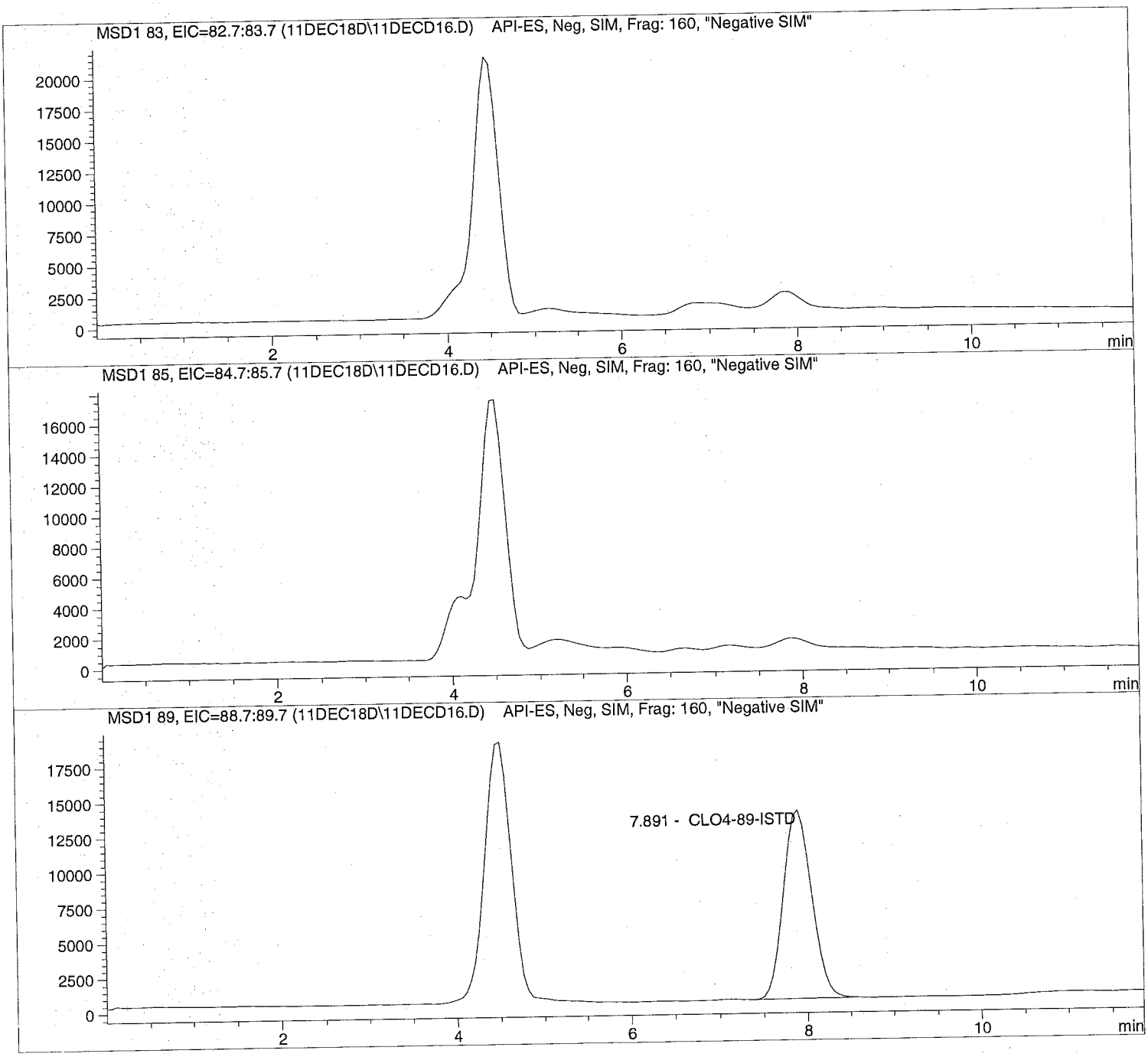
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\11DEC18D\11DECD16.D Sample Name: 1833980001

Injection Date:	12/11/2018 11:29:36	Seq Line:	16
Sample Name:	1833980001	Location:	Vial 86
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 12/3/2018 12:46:06

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\11DEC18D\11DECD16.D Sample Name: 1833980001

Injection Date:	12/11/2018 11:29:36	Seq Line:	16
Sample Name:	1833980001	Location:	Vial 86
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method:	CLO4-AQN.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	12/3/2018 12:46:06

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 3. Dec. 2018, 00:29:27 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.891	PBA	300388.2	5.0000	CLO4-89-ISTD

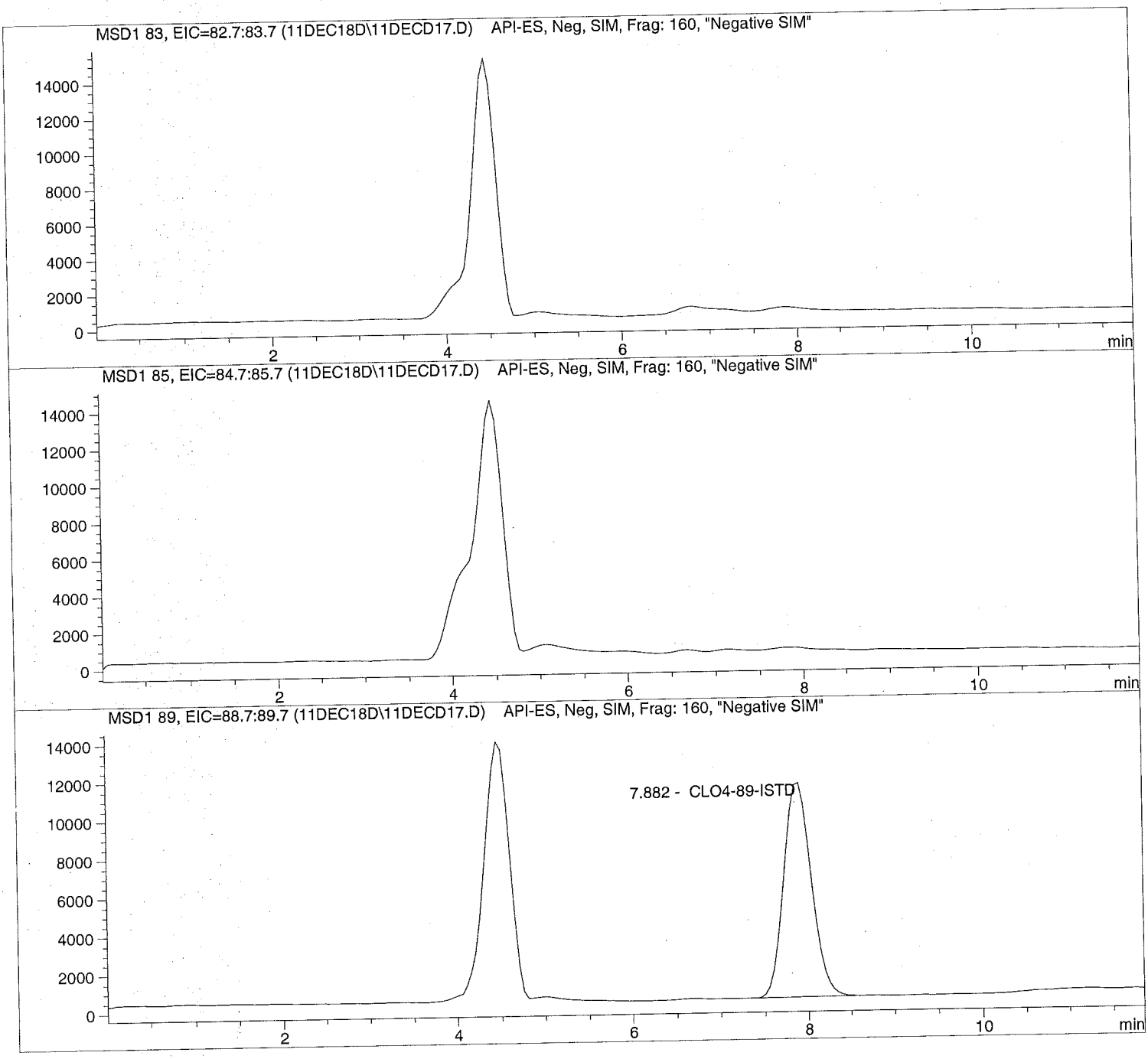
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\11DEC18D\11DECD17.D Sample Name: 1833980002

Injection Date:	12/11/2018 11:43:23	Seq Line:	17
Sample Name:	1833980002	Location:	Vial 87
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 12/3/2018 12:46:06

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\11DEC18D\11DECD17.D Sample Name: 1833980002

Injection Date:	12/11/2018 11:43:23	Seq Line:	17
Sample Name:	1833980002	Location:	Vial 87
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method:	CLO4-AQN.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	12/3/2018 12:46:06

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 3. Dec. 2018, 00:29:27 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.882	PBA	247846.6	5.0000	CLO4-89-ISTD

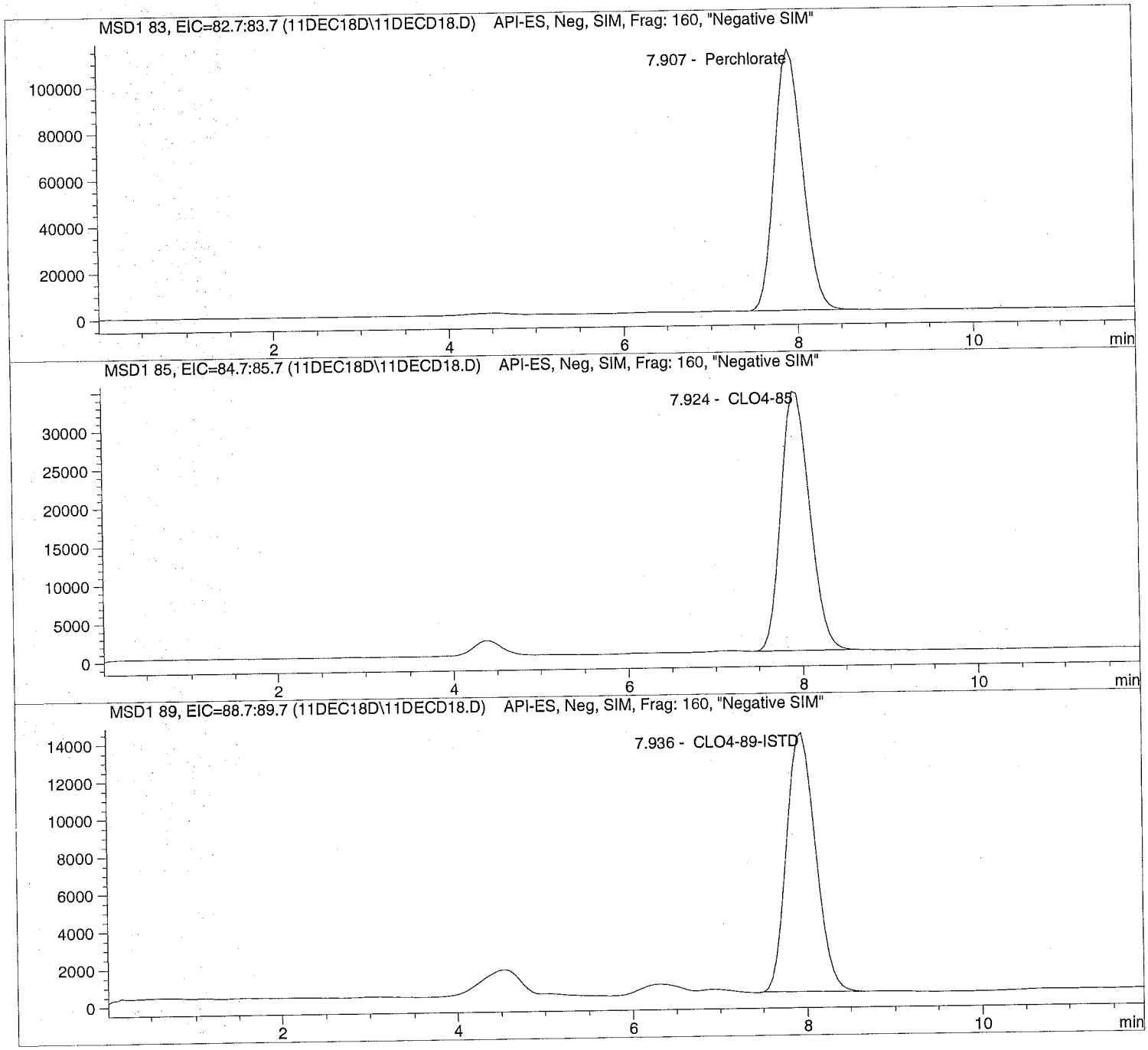
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\11DEC18D\11DECD18.D Sample Name: 631669 CCV@25

Injection Date:	12/11/2018 11:57:11	Seq Line:	18
Sample Name:	631669 CCV@25	Location:	Vial 71
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 12/3/2018 12:46:06

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\11DEC18D\11DECD18.D Sample Name: 631669 CCV@25

Injection Date:	12/11/2018 11:57:11	Seq Line:	18
Sample Name:	631669 CCV@25	Location:	Vial 71
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 12/3/2018 12:46:06

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 3. Dec. 2018, 00:29:27 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	25.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.907	PBA	2478161.8	23.5670	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.924	PBA	761944.6	23.9861	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.936	PBA	314800.1	5.0000	CLO4-89-ISTD

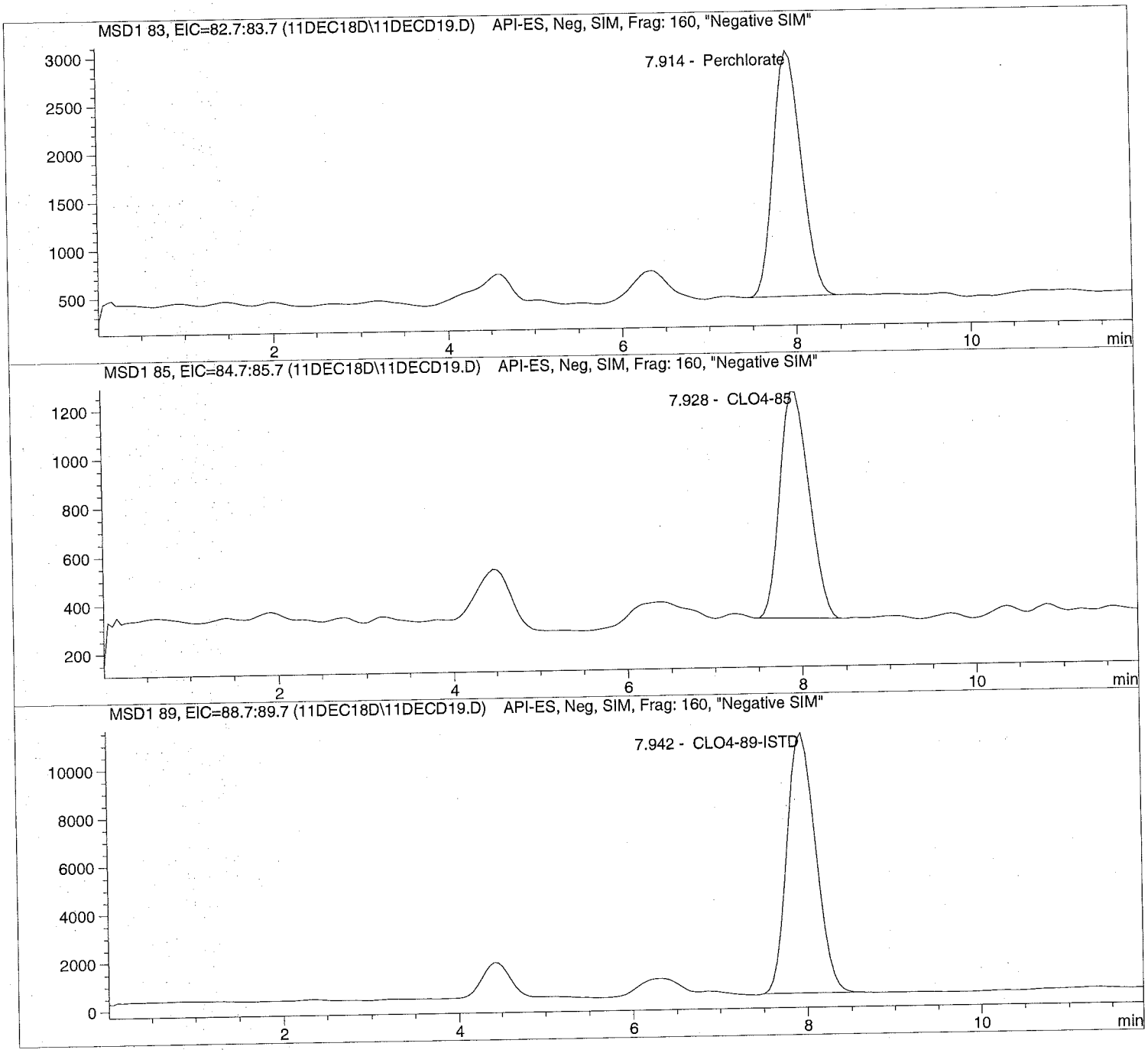
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\11DEC18D\11DECD19.D Sample Name: 631670 LODV@1.

Injection Date:	12/11/2018 12:10:56	Seq Line:	19
Sample Name:	631670 LODV@1.	Location:	Vial 72
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 12/3/2018 12:46:06

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\11DEC18D\11DECD19.D Sample Name: 631670 LODV@1.

Injection Date:	12/11/2018 12:10:56	Seq Line:	19
Sample Name:	631670 LODV@1.	Location:	Vial 72
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method:	CLO4-AQN.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	12/3/2018 12:46:06

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 3. Dec. 2018, 00:29:27 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	1.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.914	PBA	56994.7	0.9318	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.928	PBA	21608.5	1.0133	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.942	PBA	243309.5	5.0000	CLO4-89-ISTD

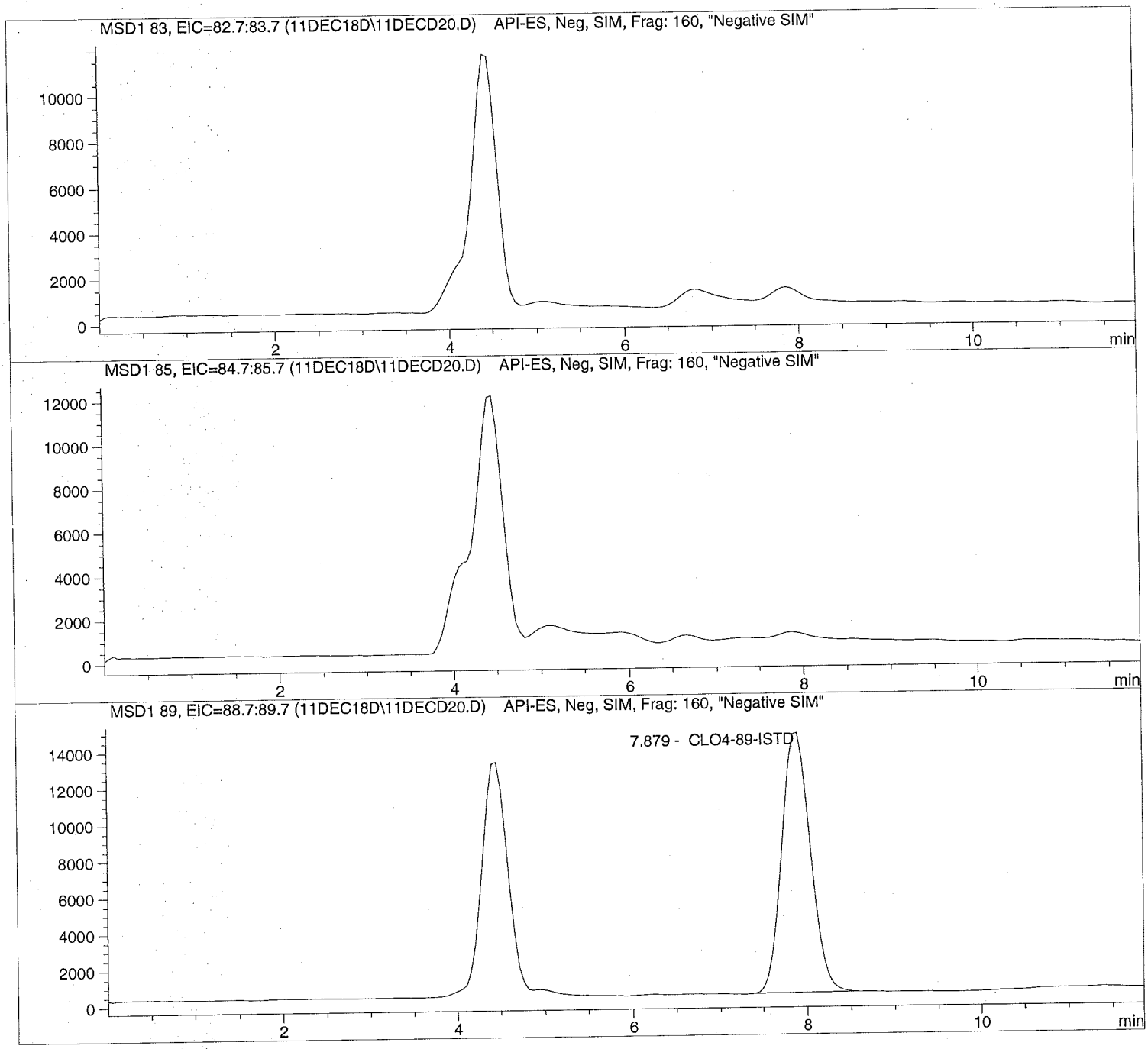
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\11DEC18D\11DECD20.D Sample Name: 1833980003

Injection Date:	12/11/2018 12:24:42	Seq Line:	20
Sample Name:	1833980003	Location:	Vial 88
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 12/3/2018 12:46:06

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\11DEC18D\11DECD20.D Sample Name: 1833980003

Injection Date:	12/11/2018 12:24:42	Seq Line:	20
Sample Name:	1833980003	Location:	Vial 88
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 12/3/2018 12:46:06

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 3. Dec. 2018, 00:29:27 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.879	PBA	322750.5	5.0000	CLO4-89-ISTD

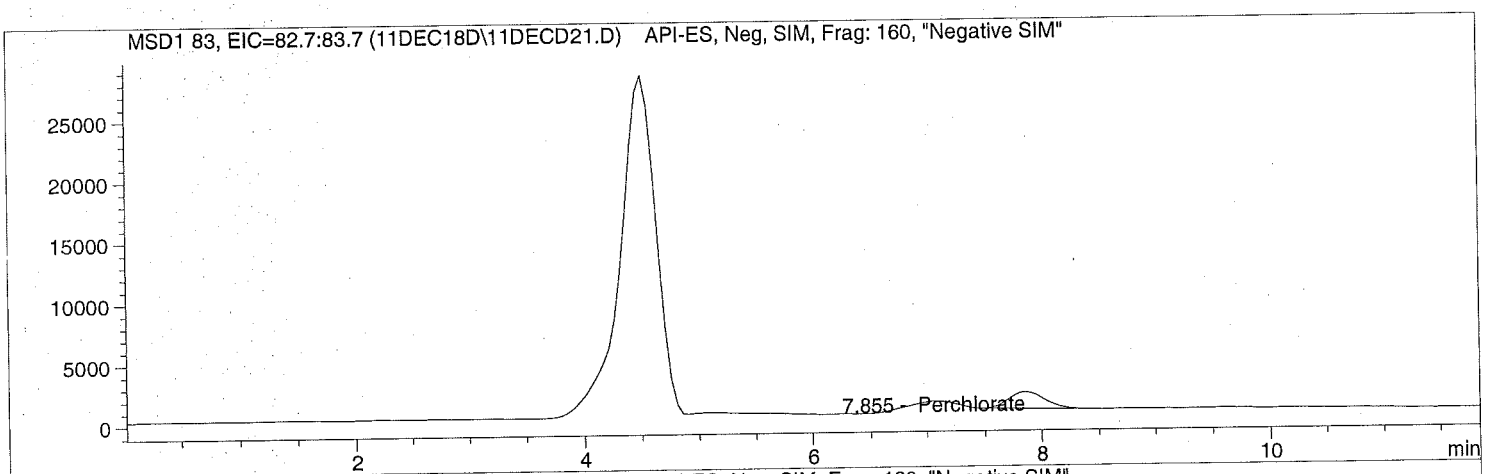
*** End of Report ***

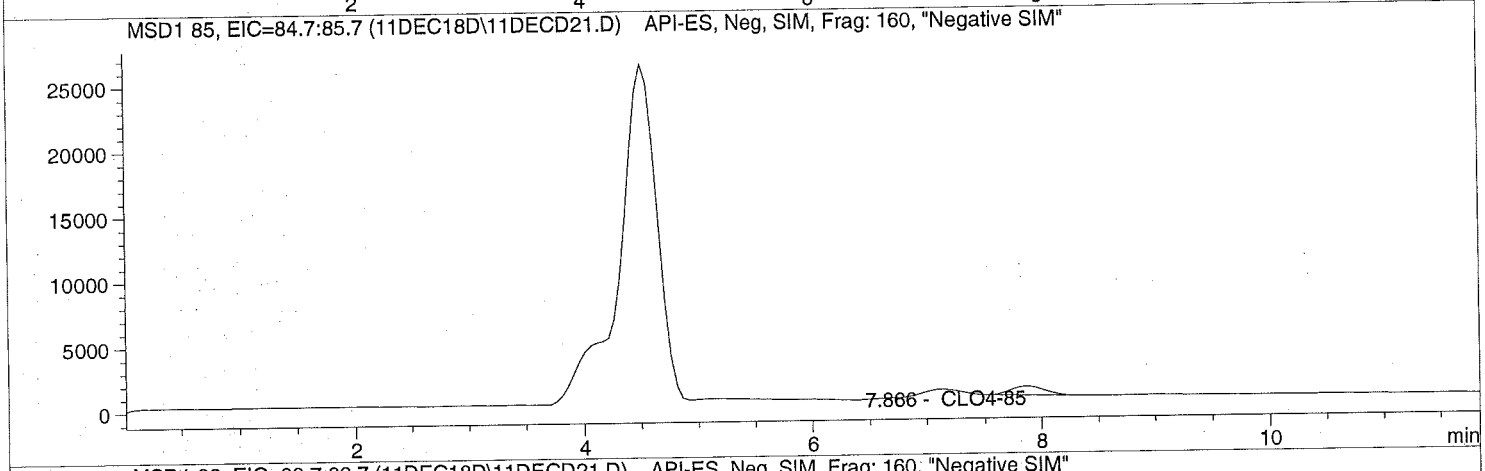
Data file: C:\HPCHEM\1\DATA\11DEC18D\11DECD21.D Sample Name: 1833980004

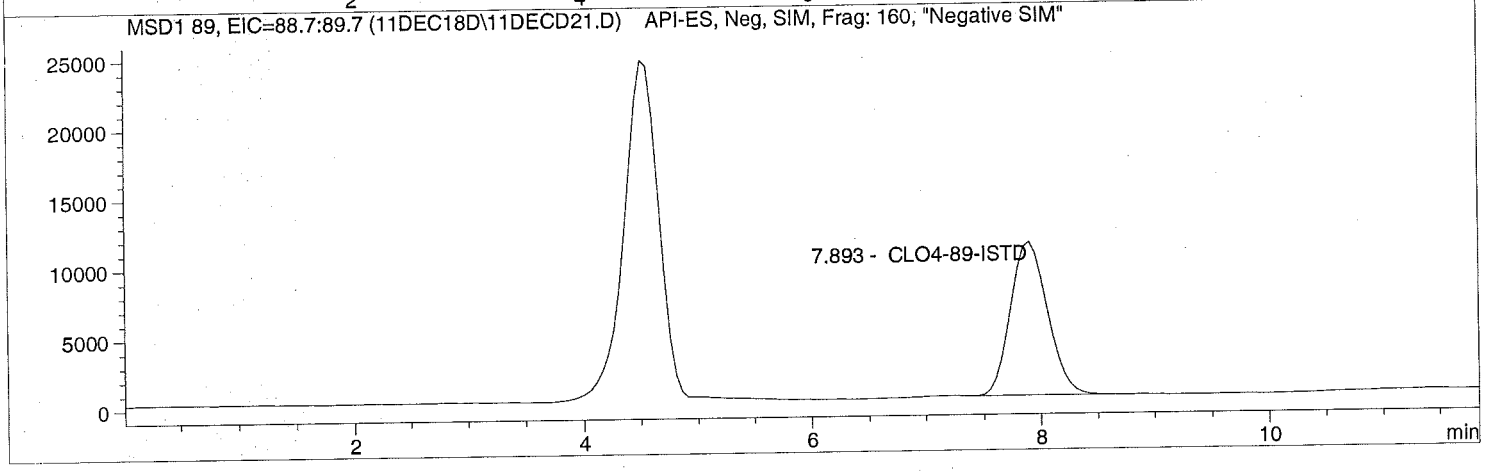
Injection Date:	12/11/2018 12:38:33	Seq Line:	21
Sample Name:	1833980004	Location:	Vial 89
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 12/3/2018 12:46:06

Perchlorate analysis







Data file: C:\HPCHEM\1\DATA\11DEC18D\11DECD21.D Sample Name: 1833980004

Injection Date:	12/11/2018 12:38:33	Seq Line:	21
Sample Name:	1833980004	Location:	Vial 89
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 12/3/2018 12:46:06

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 3. Dec. 2018, 00:29:27 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.855	PBA	29927.4	0.5873	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.866	VBA	14187.9	0.6932	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.893	BBA	244118.1	5.0000	CLO4-89-ISTD

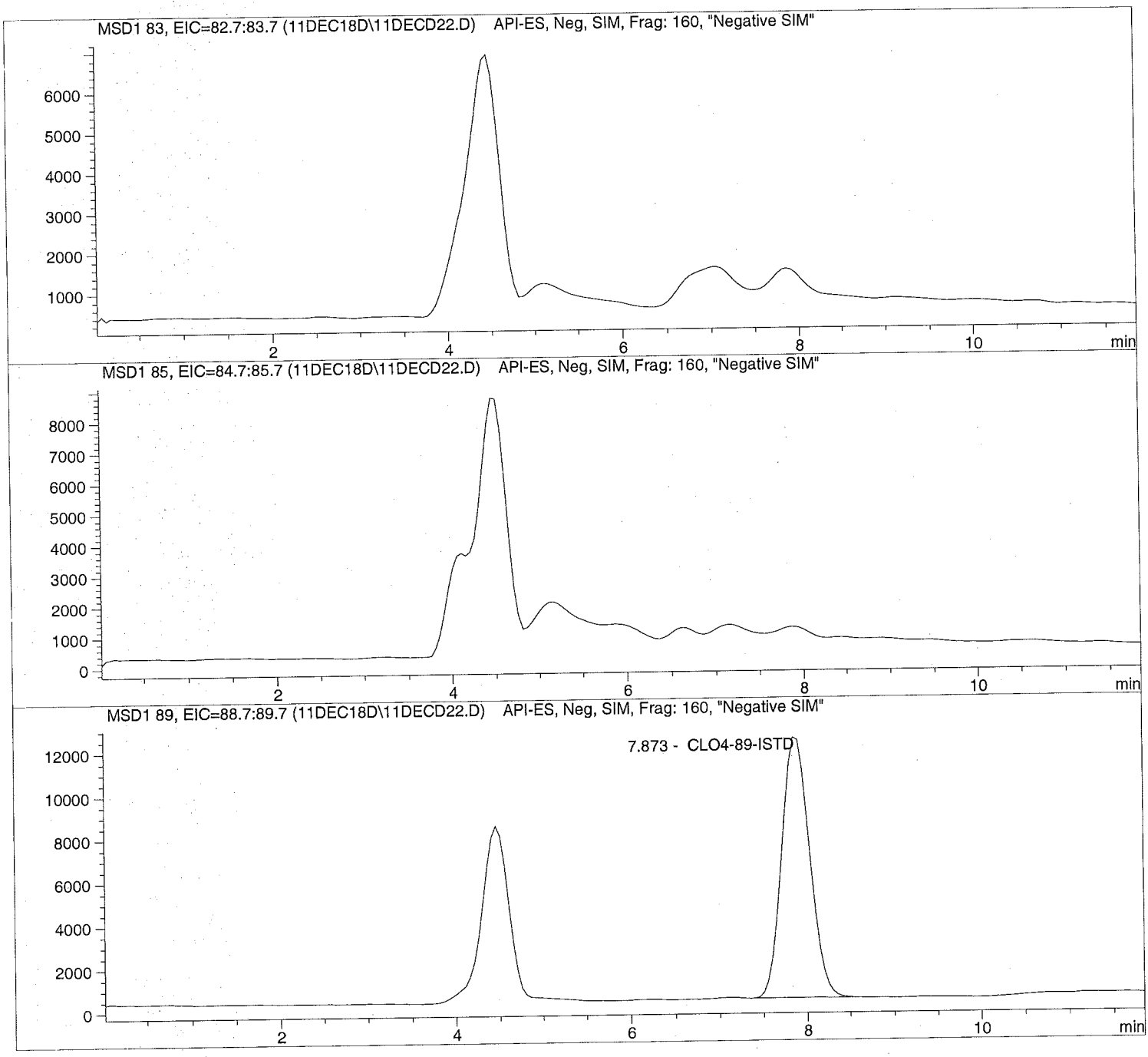
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\11DEC18D\11DECD22.D Sample Name: 1833980005

Injection Date:	12/11/2018 12:52:19	Seq Line:	22
Sample Name:	1833980005	Location:	Vial 90
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 12/3/2018 12:46:06

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\11DEC18D\11DECD22.D Sample Name: 1833980005

Injection Date:	12/11/2018 12:52:19	Seq Line:	22
Sample Name:	1833980005	Location:	Vial 90
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 12/3/2018 12:46:06

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 3. Dec. 2018, 00:29:27 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.873	PBA	269834.5	5.0000	CLO4-89-ISTD

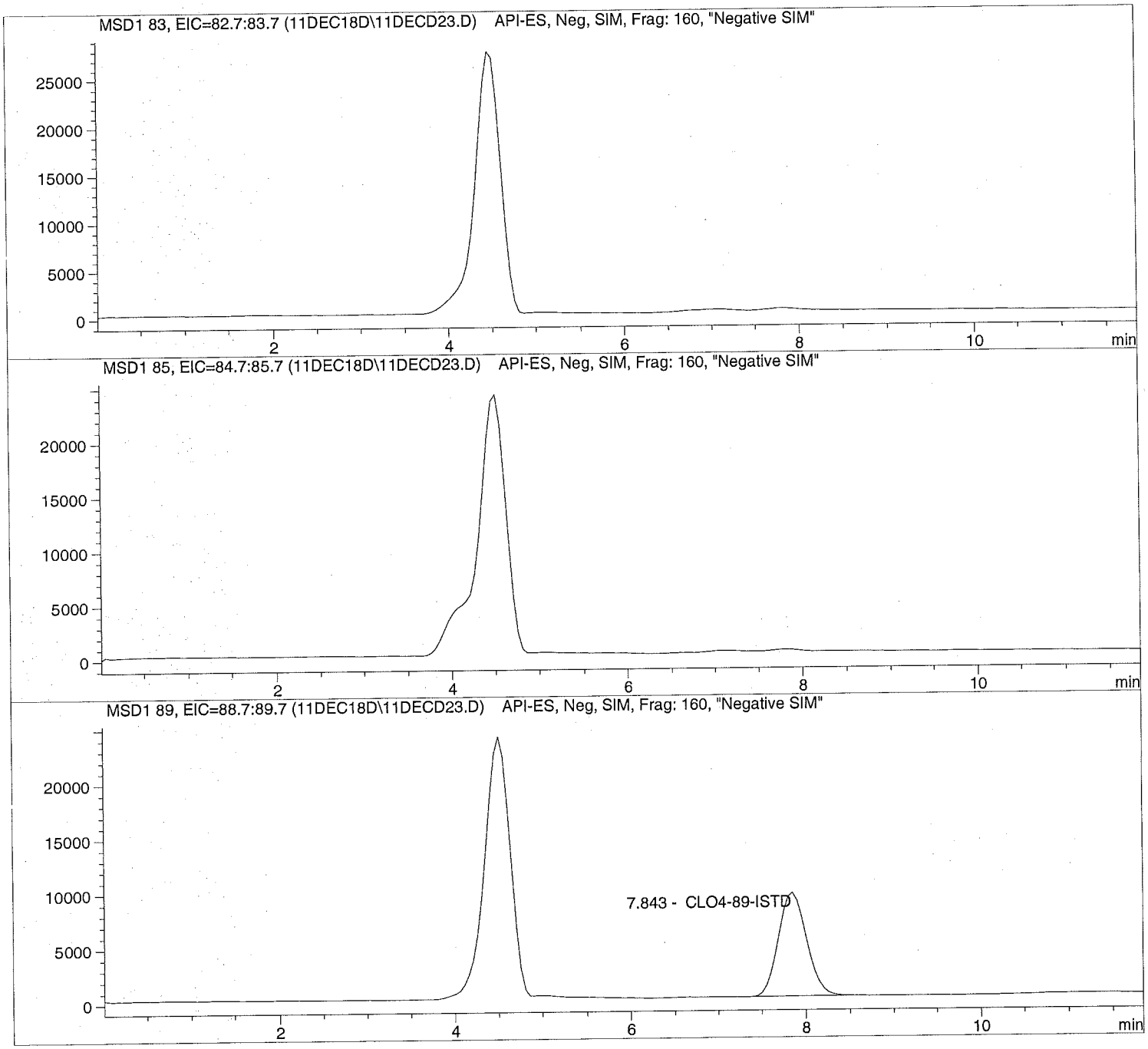
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\11DEC18D\11DECD23.D Sample Name: 1833980006

Injection Date:	12/11/2018 13:06:07	Seq Line:	23
Sample Name:	1833980006	Location:	Vial 91
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 12/3/2018 12:46:06

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\11DEC18D\11DECD23.D Sample Name: 1833980006

Injection Date:	12/11/2018 13:06:07	Seq Line:	23
Sample Name:	1833980006	Location:	Vial 91
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 12/3/2018 12:46:06

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 3. Dec. 2018, 00:29:27 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.843	PBA	209759.2	5.0000	CLO4-89-ISTD

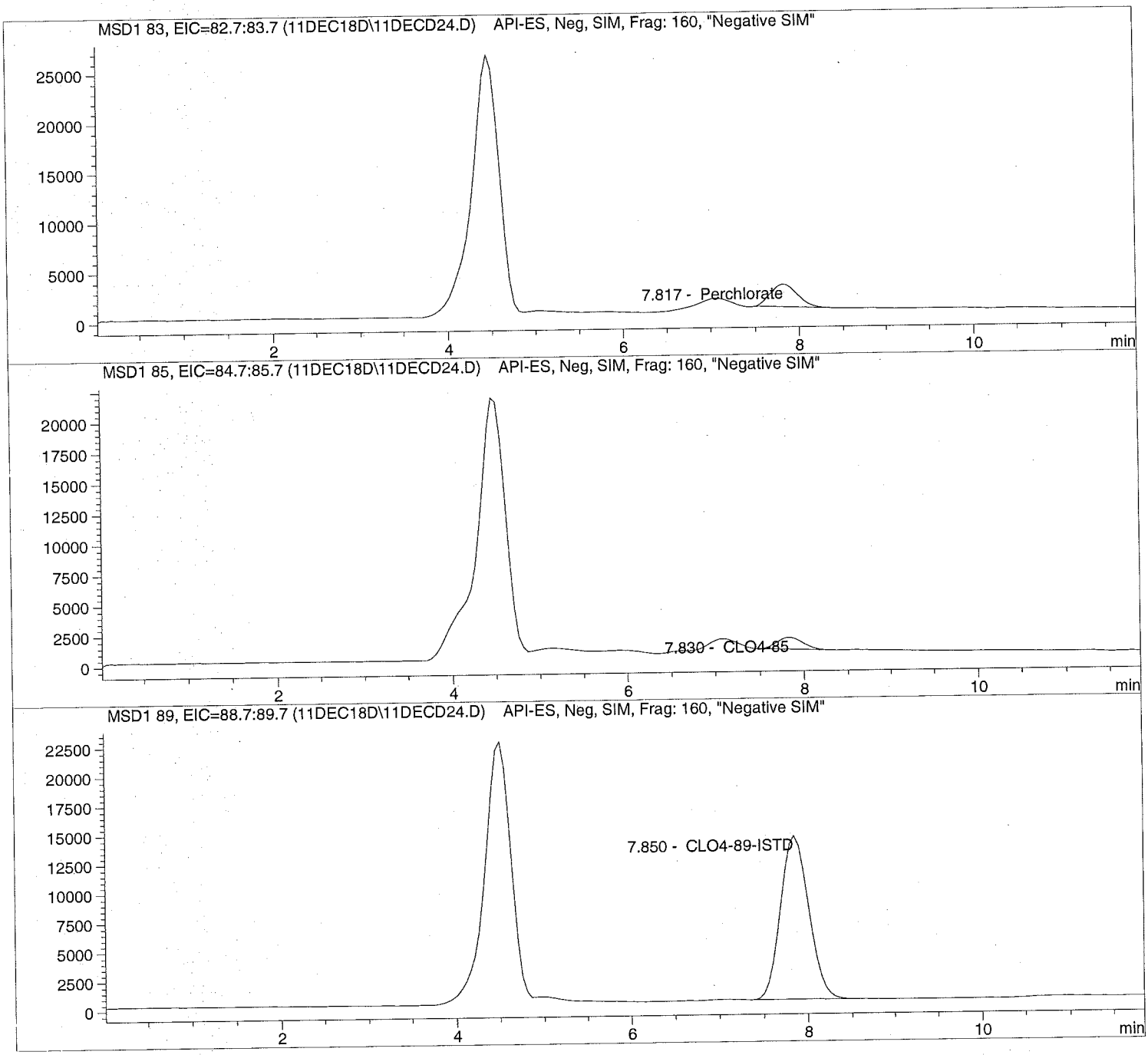
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\11DEC18D\11DECD24.D Sample Name: 1833980007

Injection Date:	12/11/2018 13:19:52	Seq Line:	24
Sample Name:	1833980007	Location:	Vial 92
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 12/3/2018 12:46:06

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\11DEC18D\11DECD24.D Sample Name: 1833980007

Injection Date:	12/11/2018 13:19:52	Seq Line:	24
Sample Name:	1833980007	Location:	Vial 92
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method:	CLO4-AQN.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	12/3/2018 12:46:06

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 3. Dec. 2018, 00:29:27 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.817	PBA	47940.8	0.6853	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.830	PBA	19968.4	0.7576	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.850	PBA	310571.8	5.0000	CLO4-89-ISTD

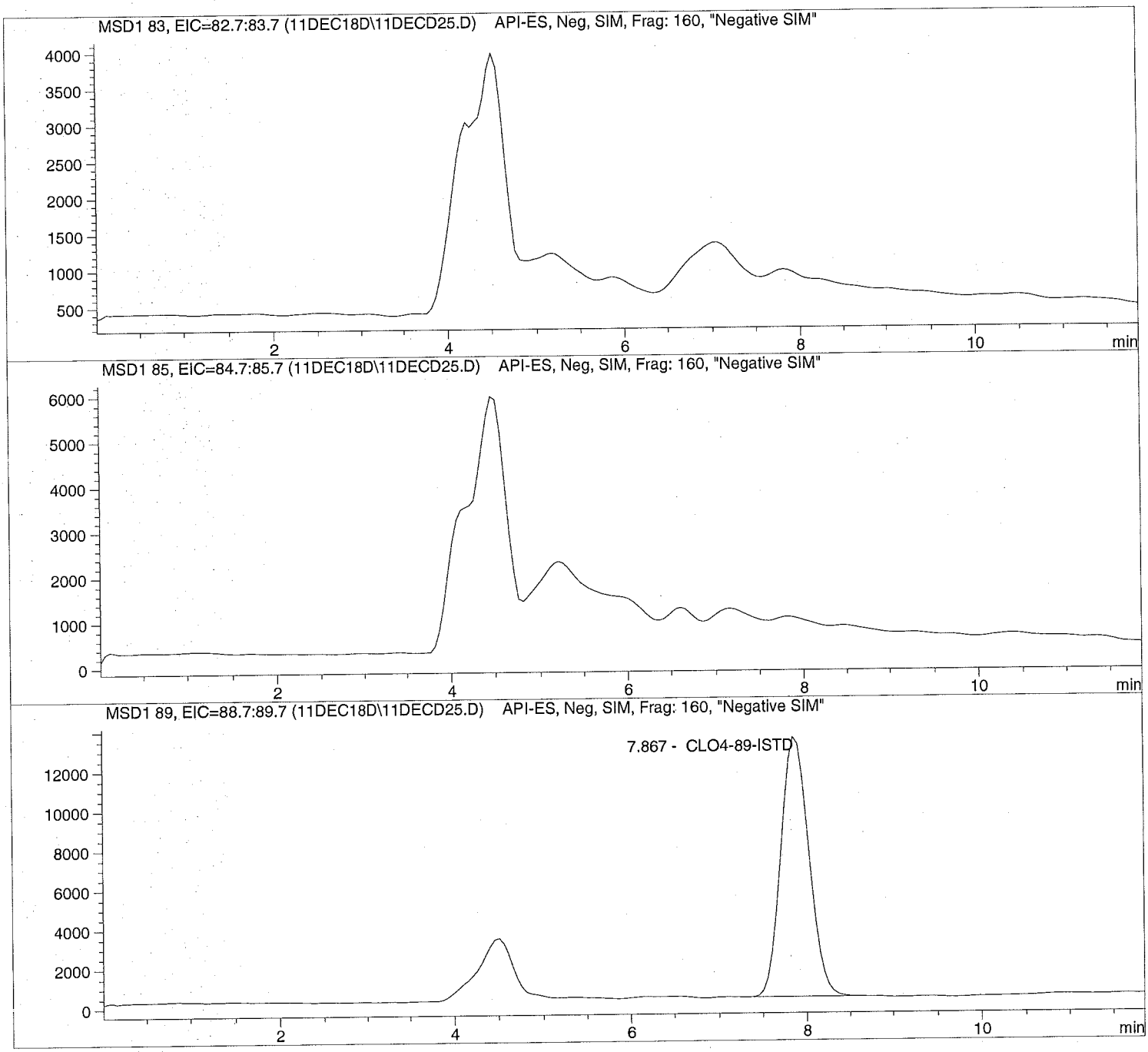
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\11DEC18D\11DECD25.D Sample Name: 1833980008

Injection Date:	12/11/2018 13:33:40	Seq Line:	25
Sample Name:	1833980008	Location:	Vial 93
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 12/3/2018 12:46:06

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\11DEC18D\11DECD25.D Sample Name: 1833980008

Injection Date:	12/11/2018 13:33:40	Seq Line:	25
Sample Name:	1833980008	Location:	Vial 93
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 12/3/2018 12:46:06

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 3. Dec. 2018, 00:29:27 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.867	PBA	290513.1	5.0000	CLO4-89-ISTD

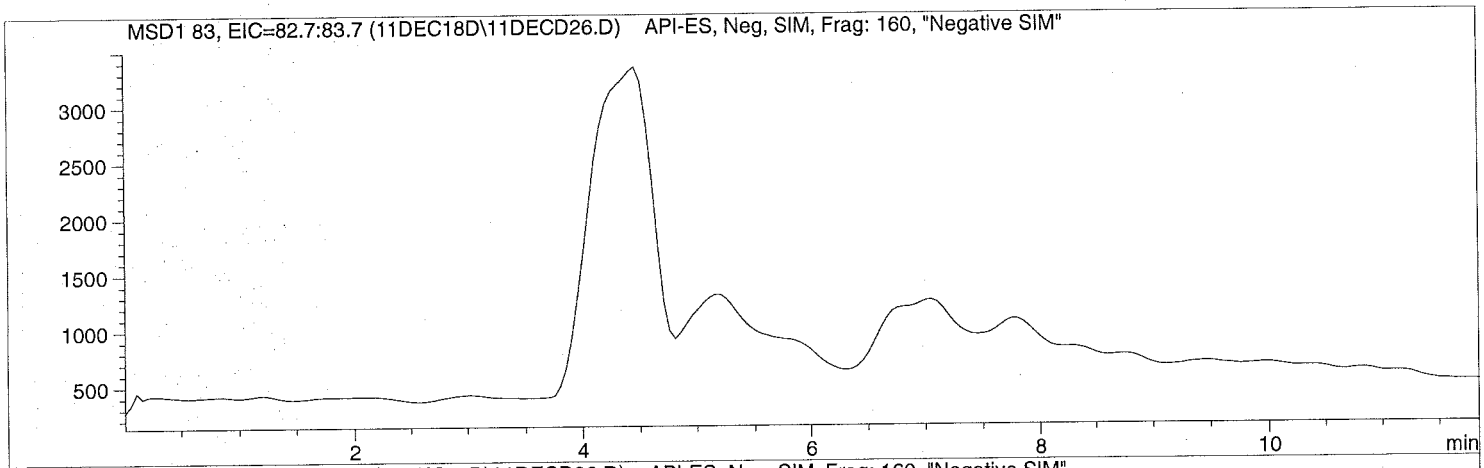
*** End of Report ***

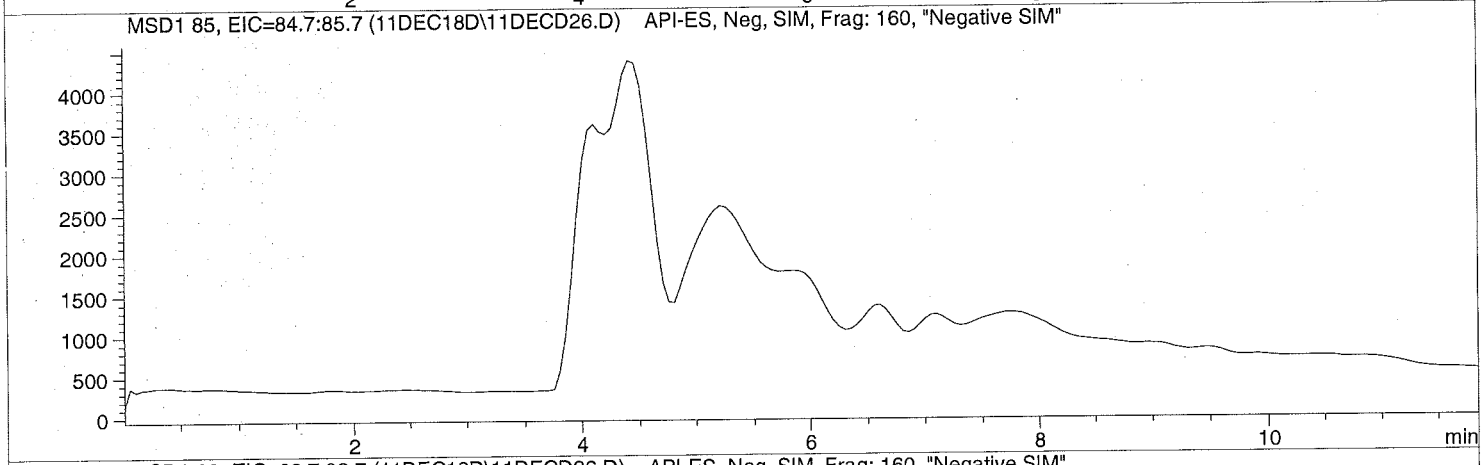
Data file: C:\HPCHEM\1\DATA\11DEC18D\11DECD26.D Sample Name: 1833980009

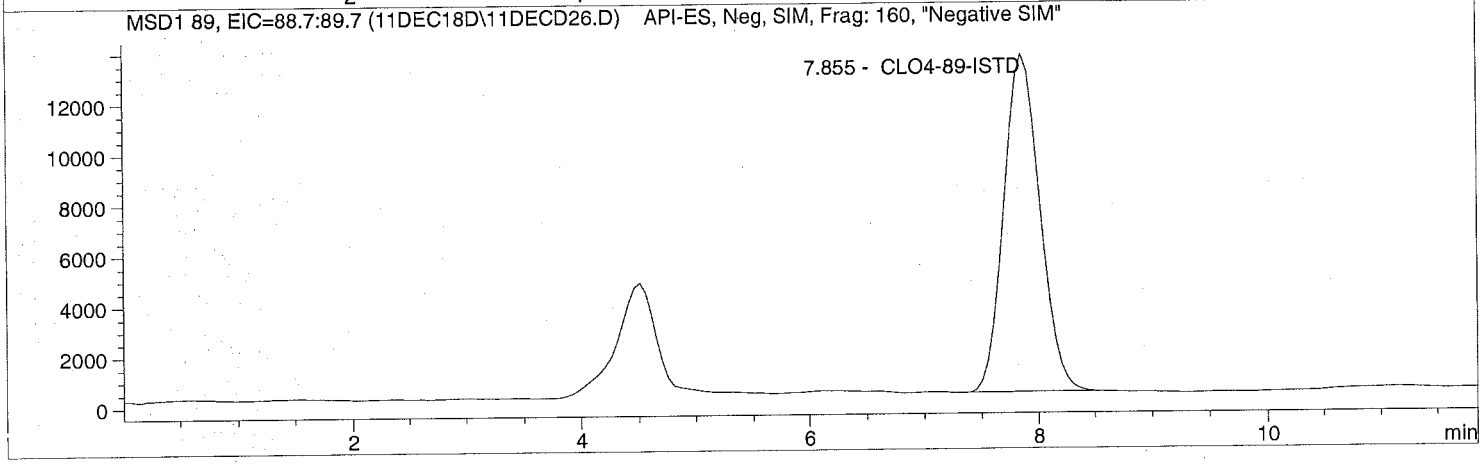
Injection Date:	12/11/2018 13:47:28	Seq Line:	26
Sample Name:	1833980009	Location:	Vial 94
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 12/3/2018 12:46:06

Perchlorate analysis







Data file: C:\HPCHEM\1\DATA\11DEC18D\11DECD26.D Sample Name: 1833980009

Injection Date:	12/11/2018 13:47:28	Seq Line:	26
Sample Name:	1833980009	Location:	Vial 94
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method:	CLO4-AQN.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	12/3/2018 12:46:06

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 3. Dec. 2018, 00:29:27 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.855	PBA	296165.2	5.0000	CLO4-89-ISTD

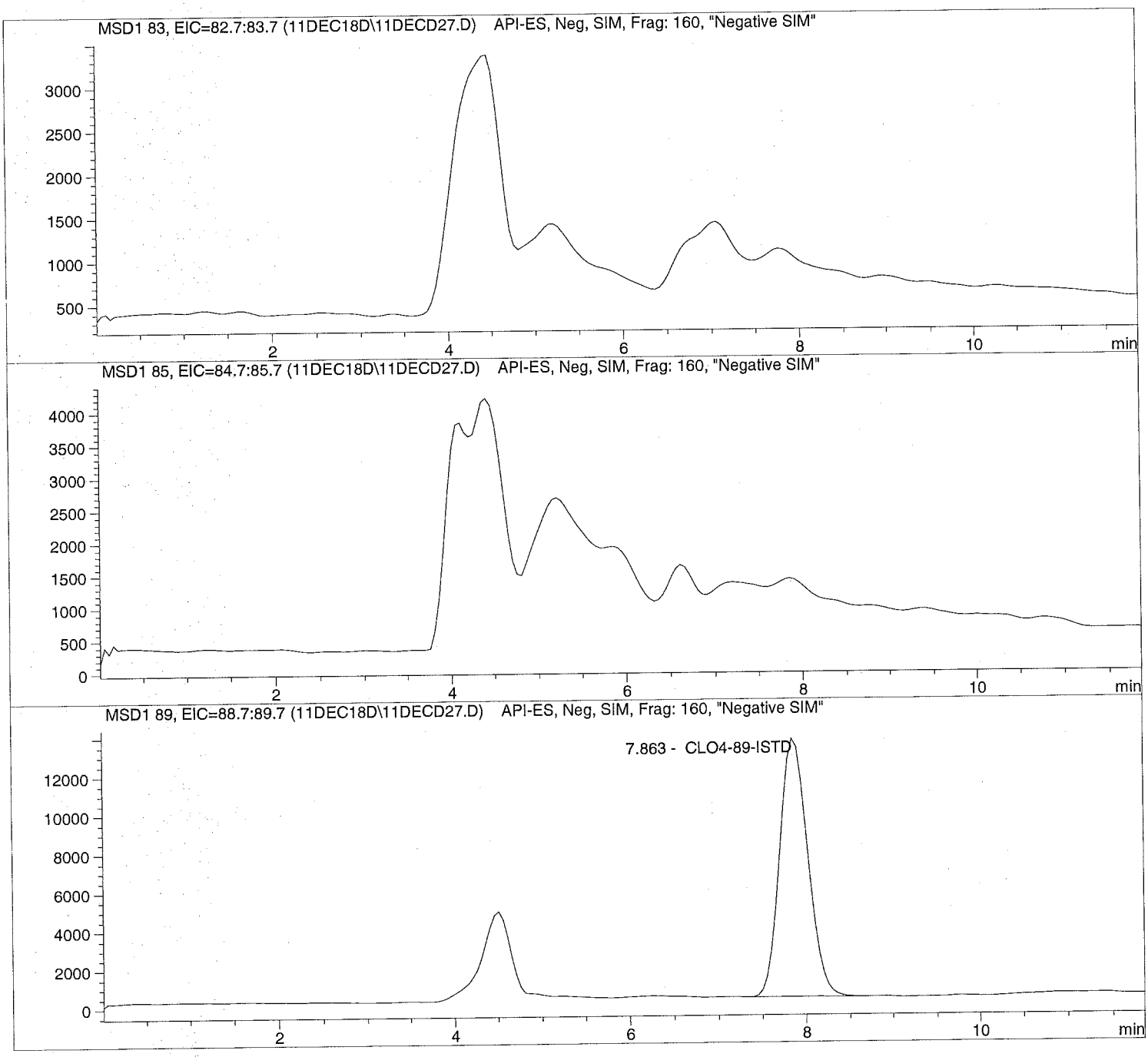
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\11DEC18D\11DECD27.D Sample Name: 1833980010

Injection Date:	12/11/2018 14:01:12	Seq Line:	27
Sample Name:	1833980010	Location:	Vial 95
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 12/3/2018 12:46:06

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\11DEC18D\11DECD27.D Sample Name: 1833980010

Injection Date:	12/11/2018 14:01:12	Seq Line:	27
Sample Name:	1833980010	Location:	Vial 95
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method:	CLO4-AQN.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	12/3/2018 12:46:06

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 3. Dec. 2018, 00:29:27 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.863	PBA	296908.7	5.0000	CLO4-89-ISTD

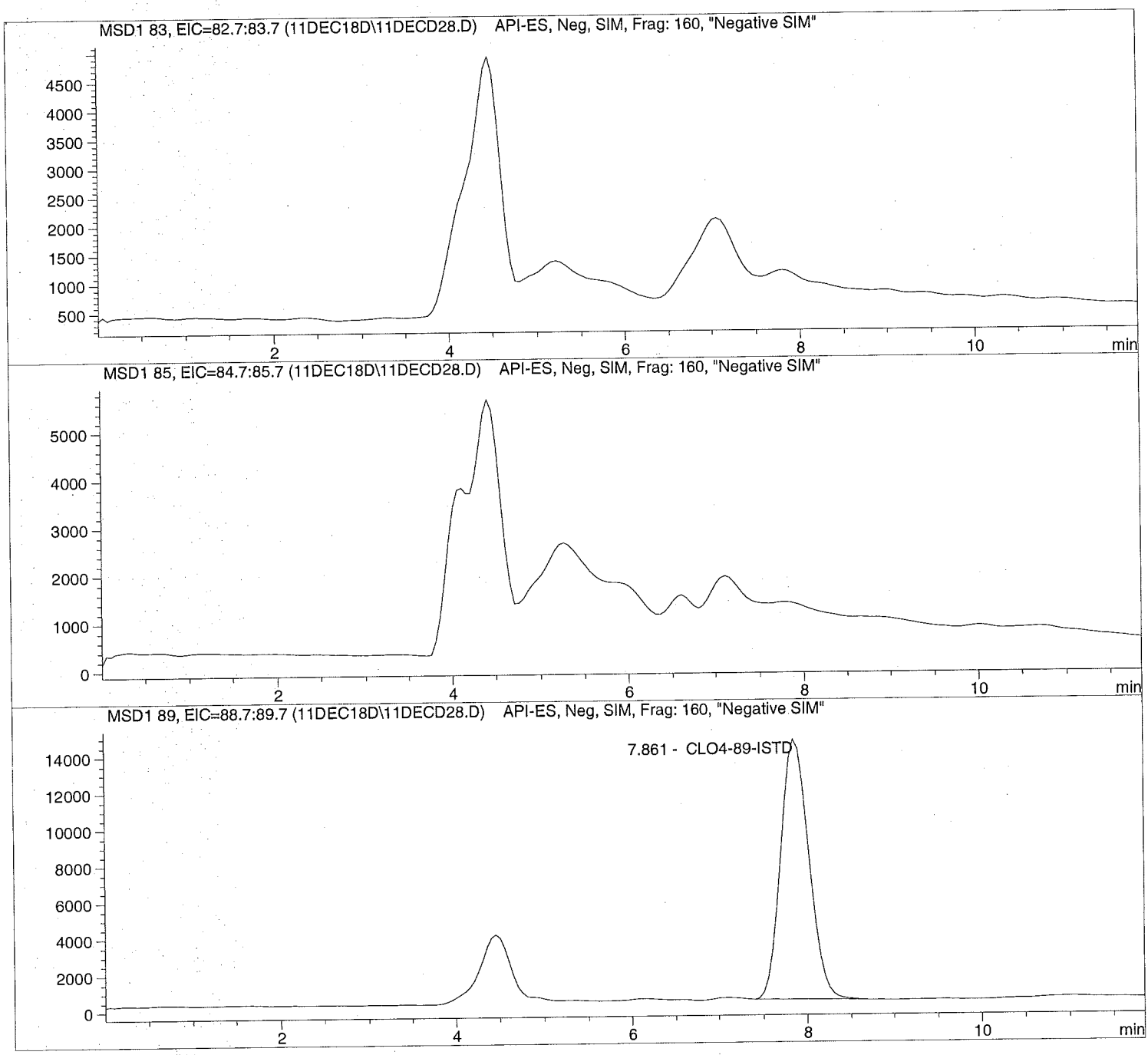
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\11DEC18D\11DECD28.D Sample Name: 1833980011

Injection Date:	12/11/2018 14:14:57	Seq Line:	28
Sample Name:	1833980011	Location:	Vial 96
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 12/3/2018 12:46:06

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\11DEC18D\11DECD28.D Sample Name: 1833980011

Injection Date:	12/11/2018 14:14:57	Seq Line:	28
Sample Name:	1833980011	Location:	Vial 96
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 12/3/2018 12:46:06

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 3. Dec. 2018, 00:29:27 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.861	PBA	318562.2	5.0000	CLO4-89-ISTD

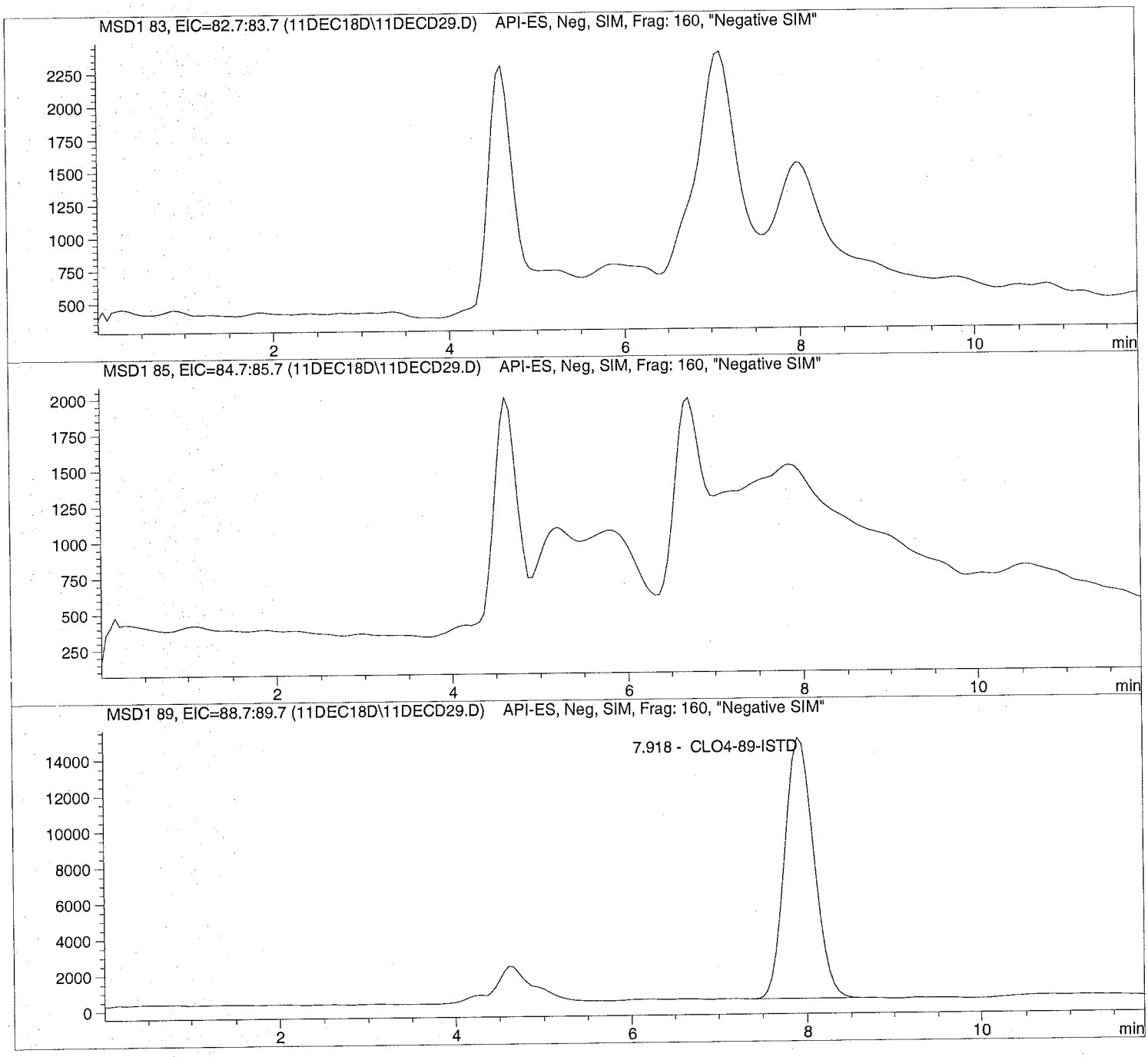
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\11DEC18D\11DECD29.D Sample Name: 1833980012

Injection Date:	12/11/2018 14:28:41	Seq Line:	29
Sample Name:	1833980012	Location:	Vial 97
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 12/3/2018 12:46:06

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\11DEC18D\11DECD29.D Sample Name: 1833980012

Injection Date:	12/11/2018 14:28:41	Seq Line:	29
Sample Name:	1833980012	Location:	Vial 97
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 12/3/2018 12:46:06

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 3. Dec. 2018, 00:29:27 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.918	PBA	326637.3	5.0000	CLO4-89-ISTD

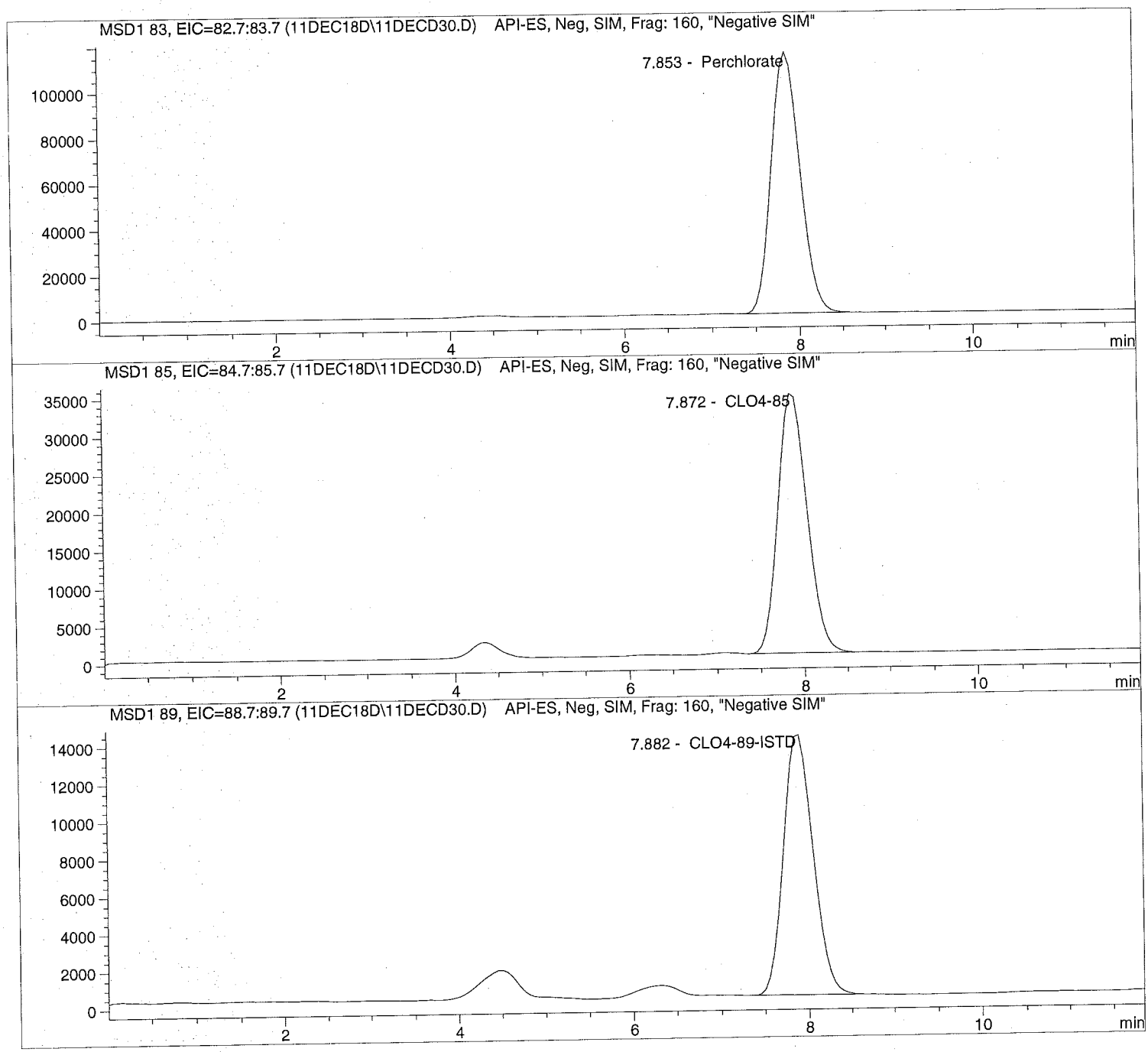
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\11DEC18D\11DECD30.D Sample Name: 631671 CCV@25

Injection Date:	12/11/2018 14:42:25	Seq Line:	30
Sample Name:	631671 CCV@25	Location:	Vial 71
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 12/3/2018 12:46:06

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\11DEC18D\11DECD30.D Sample Name: 631671 CCV@25

Injection Date:	12/11/2018 14:42:25	Seq Line:	30
Sample Name:	631671 CCV@25	Location:	Vial 71
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 12/3/2018 12:46:06

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 3. Dec. 2018, 00:29:27 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	25.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.853	PBA	2594170.3	23.8219	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.872	PBA	792459.8	24.0951	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.882	PBA	325835.8	5.0000	CLO4-89-ISTD

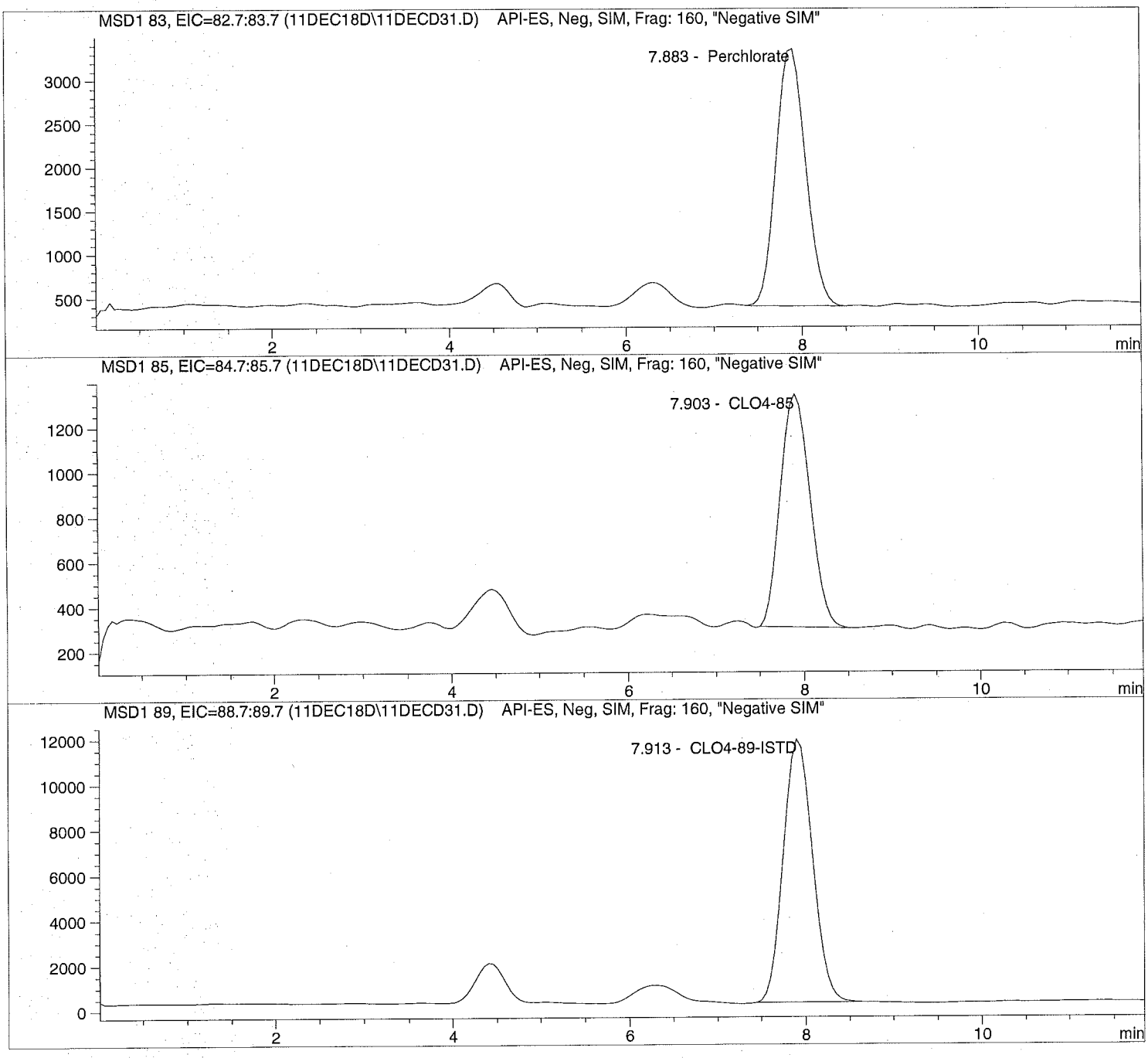
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\11DEC18D\11DECD31.D Sample Name: 631672 LODV@1.

Injection Date:	12/11/2018 14:56:09	Seq Line:	31
Sample Name:	631672 LODV@1.	Location:	Vial 72
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 12/3/2018 12:46:06

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\11DEC18D\11DECD31.D Sample Name: 631672 LODV@1.

Injection Date:	12/11/2018 14:56:09	Seq Line:	31
Sample Name:	631672 LODV@1.	Location:	Vial 72
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 12/3/2018 12:46:06

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 3. Dec. 2018, 00:29:27 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	1.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.883	BBA	67975.1	1.0053	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.903	PBA	24076.9	1.0404	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.913	PBA	263374.5	5.0000	CLO4-89-ISTD

*** End of Report ***

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Raw Data

Initial Calibration

atch Report: C:\HPCHEM\1\DATA\08OCT18I\08OCT18D.B

Batch Review Method:
C:\HPCHEM\1\METHODS\CLO4-DPR.M

['#' ==> Run has not been reprocessed with Batch Review Method
'*' ==> Run has been saved with batch file]

#	Sample	Location	Inj	SampleType	Run	Perchlorate Area	Perchlorate RT	Perchlorate Amount
#*	CLO4@ 1.0u	Vial 74	1	Control	4	9.40790e4	9.287	9.73826e-1
#*	CLO4@ 2.0u	Vial 75	1	Control	5	2.26957e5	9.259	2.19167
#*	CLO4@ 5.0u	Vial 76	1	Control	6	5.50307e5	9.208	4.80912
#*	CLO4@ 10.u	Vial 77	1	Control	7	1.07623e6	9.246	9.38291
#*	CLO4@ 25.u	Vial 78	1	Control	8	2.88097e6	9.175	25.83039
#*	CLO4@ 50.u	Vial 79	1	Control	9	6.29507e6	9.261	49.91981
#*	CLO4@ 75.u	Vial 80	1	Control	10	9.45737e6	9.236	74.88523
*	ICAL Verf@	Vial 81	1	Control	11	1.10069e6	9.244	9.38952

#	Sample	Location	Inj	SampleType	Run	CLO4-89-ISTD Area	CLO4-89-ISTD RT	CLO4-89-ISTD Amount
#*	CLO4@ 1.0u	Vial 74	1	Control	4	3.79545e5	9.314	5.00000
#*	CLO4@ 2.0u	Vial 75	1	Control	5	3.52582e5	9.297	5.00000
#*	CLO4@ 5.0u	Vial 76	1	Control	6	3.66805e5	9.223	5.00000
#*	CLO4@ 10.u	Vial 77	1	Control	7	3.56815e5	9.266	5.00000
#*	CLO4@ 25.u	Vial 78	1	Control	8	3.32340e5	9.196	5.00000
#*	CLO4@ 50.u	Vial 79	1	Control	9	3.59393e5	9.277	5.00000
#*	CLO4@ 75.u	Vial 80	1	Control	10	3.45193e5	9.253	5.00000
*	ICAL Verf@	Vial 81	1	Control	11	3.64657e5	9.264	5.00000

#	Sample	Location	Inj	SampleType	Run	CLO4-85 Area	CLO4-85 RT	CLO4-85 Amount
#*	CLO4@ 1.0u	Vial 74	1	Control	4	3.17987e4	9.316	9.60861e-1
#*	CLO4@ 2.0u	Vial 75	1	Control	5	7.05436e4	9.273	2.16955
#*	CLO4@ 5.0u	Vial 76	1	Control	6	1.69833e5	9.217	4.87565
#*	CLO4@ 10.u	Vial 77	1	Control	7	3.31565e5	9.259	9.58732
#*	CLO4@ 25.u	Vial 78	1	Control	8	8.62978e5	9.187	25.62680
#*	CLO4@ 50.u	Vial 79	1	Control	9	1.91847e6	9.278	49.74848
#*	CLO4@ 75.u	Vial 80	1	Control	10	2.93835e6	9.251	75.02646
*	ICAL Verf@	Vial 81	1	Control	11	3.27974e5	9.261	9.28908

*** End of Report ***

[ethod C:\HPCHEM\1\METHODS\CLO4-DPR.M

Calibration Table

Perchlorate

Calib. Data Modified : 10/9/2018 8:01:57 AM

Calculate : Internal Standard
Based on : Peak Area

Rel. Reference Window : 20.000 %
Abs. Reference Window : 0.000 min
Rel. Non-ref. Window : 20.000 %
Abs. Non-ref. Window : 0.000 min
Use Multiplier & Dilution Factor with ISTDs
Uncalibrated Peaks : not reported
Partial Calibration : No recalibration if peaks missing

Curve Type : Quadratic (some peaks differ, see below)
Origin : Ignored (some peaks differ, see below)
Weight : Linear (Amnt) (some peaks differ, see below)

Recalibration Settings:
Average Response : Average all calibrations
Average Retention Time: Floating Average New 75%

Calibration Report Options :
Printout of recalibrations within a sequence:
Calibration Table after Recalibration
Normal Report after Recalibration
If the sequence is done with bracketing:
Results of first cycle (ending previous bracket)

Default Sample ISTD Information (if not set in sample table):

ISTD #	ISTD Amount	Name
1	5.00000	CLO4-89-ISTD

Signal 1: MSD1 83, EIC=82.7:83.7
Signal 2: MSD1 85, EIC=84.7:85.7
Signal 3: MSD1 89, EIC=88.7:89.7

RetTime [min]	Sig	Lvl	Amount	Area	Amt/Area	Ref	Grp	Name
9.287	1	1	1.00000	9.40790e4	1.06294e-5	1		Perchlorate
		2	2.00000	2.26957e5	8.81224e-6			
		3	5.00000	5.50307e5	9.08584e-6			
		4	10.00000	1.07623e6	9.29172e-6			
		5	25.00000	2.88097e6	8.67764e-6			
		6	50.00000	6.29507e6	7.94272e-6			
		7	75.00000	9.45737e6	7.93033e-6			
9.314	3	1	5.00000	3.79545e5	1.31737e-5	+I1		CLO4-89-ISTD
		2	5.00000	3.52582e5	1.41811e-5			
		3	5.00000	3.66805e5	1.36312e-5			
		4	5.00000	3.56815e5	1.40129e-5			
		5	5.00000	3.32340e5	1.50448e-5			
		6	5.00000	3.59393e5	1.39124e-5			
		7	5.00000	3.45193e5	1.44847e-5			
9.316	2	1	1.00000	3.17987e4	3.14479e-5	1		CLO4-85
		2	2.00000	7.05436e4	2.83513e-5			
		3	5.00000	1.69833e5	2.94406e-5			
		4	10.00000	3.31565e5	3.01600e-5			
		5	25.00000	8.62978e5	2.89695e-5			
		6	50.00000	1.91847e6	2.60625e-5			

ethod C:\HPCHEM\1\METHODS\CLO4-DPR.M

RetTime [min]	Sig	Lvl	Amount	Area	Amt/Area	Ref	Grp	Name
		7	75.00000	2.93835e6	2.55246e-5			

More compound-specific settings:

Compound: Perchlorate
- Time Window : From 7.196 min To 11.196 min
- Curve Type : Quadratic
- Origin : Ignored
- Calibration Level Weights:/
  - Level 1 : 1
  - Level 2 : 0.5
  - Level 3 : 0.2
  - Level 4 : 0.1
  - Level 5 : 0.04
  - Level 6 : 0.02
  - Level 7 : 0.013333

Compound: CLO4-89-ISTD
- Time Window : From 7.207 min To 11.192 min
- Curve Type : Linear
- Origin : Included
- Calibration Level Weights:/
  - Level 1 : 1
  - Level 2 : 1
  - Level 3 : 1
  - Level 4 : 1
  - Level 5 : 1
  - Level 6 : 1
  - Level 7 : 1

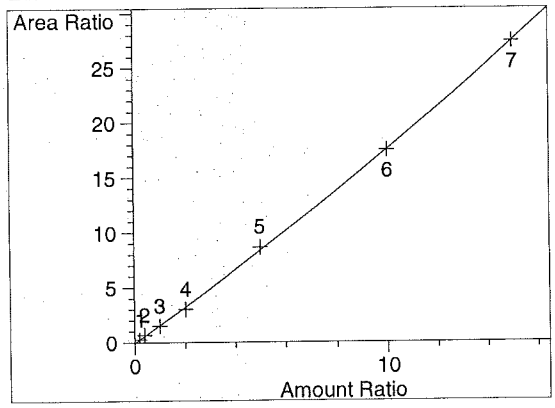
Compound: CLO4-85
- Time Window : From 7.211 min To 11.211 min
- Curve Type : Quadratic
- Origin : Ignored
- Calibration Level Weights:/
  - Level 1 : 1
  - Level 2 : 0.5
  - Level 3 : 0.2
  - Level 4 : 0.1
  - Level 5 : 0.04
  - Level 6 : 0.02
  - Level 7 : 0.013333

Peak Sum Table

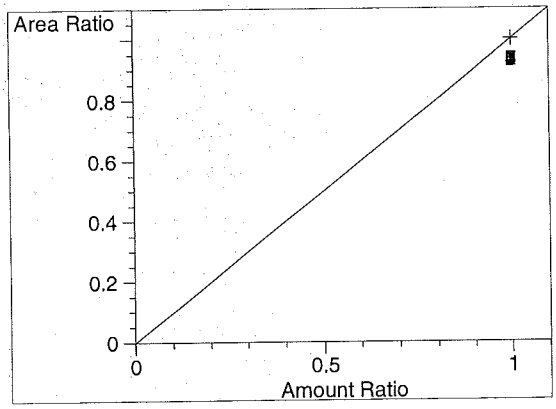
No Entries in table

[ethod C:\HPCHEM\1\METHODS\CLO4-DPR.M

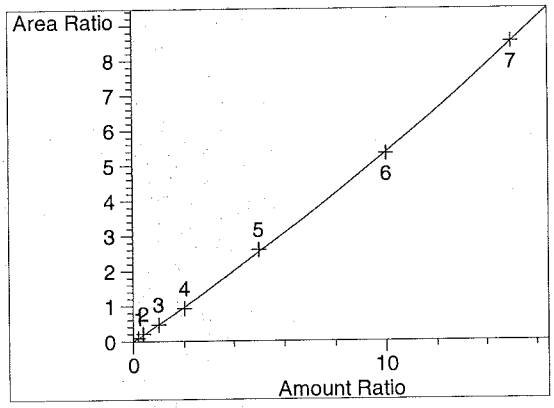
Calibration Curves



Perchlorate at exp. RT: 9.287
MSD1 83, EIC=82.7:83.7
Correlation: 0.99971
Residual Std. Dev.: 0.16701
Formula: $y = ax^2 + bx + c$
a: 1.45482e-2
b: 1.61590
c: -6.73998e-2
x: Amount Ratio
y: Area Ratio
Calibration Level Weights:
Level 1 : 1
Level 2 : 0.5
Level 3 : 0.2
Level 4 : 0.1
Level 5 : 0.04
Level 6 : 0.02
Level 7 : 0.013333



CLO4-89-ISTD at exp. RT: 9.314
MSD1 89, EIC=88.7:89.7
Correlation: 1.00000
Residual Std. Dev.: 0.00000
Formula: $y = mx + b$
m: 1.00000
b: 0.00000
x: Amount Ratio
y: Area Ratio
Calibration Level Weights:
Level 1 : 1
Level 2 : 1
Level 3 : 1
Level 4 : 1
Level 5 : 1
Level 6 : 1
Level 7 : 1



CLO4-85 at exp. RT: 9.316
MSD1 85, EIC=84.7:85.7
Correlation: 0.99984
Residual Std. Dev.: 0.03901
Formula: $y = ax^2 + bx + c$
a: 6.03220e-3
b: 4.77309e-1
c: -8.16718e-3
x: Amount Ratio
y: Area Ratio
Calibration Level Weights:
Level 1 : 1
Level 2 : 0.5
Level 3 : 0.2
Level 4 : 0.1
Level 5 : 0.04
Level 6 : 0.02
Level 7 : 0.013333

equence: C:\HPCHEM\1\SEQUENCE\CLO4\2018\OCT\08OCT18I.S

Sequence Table:

Method and Injection Info Part:

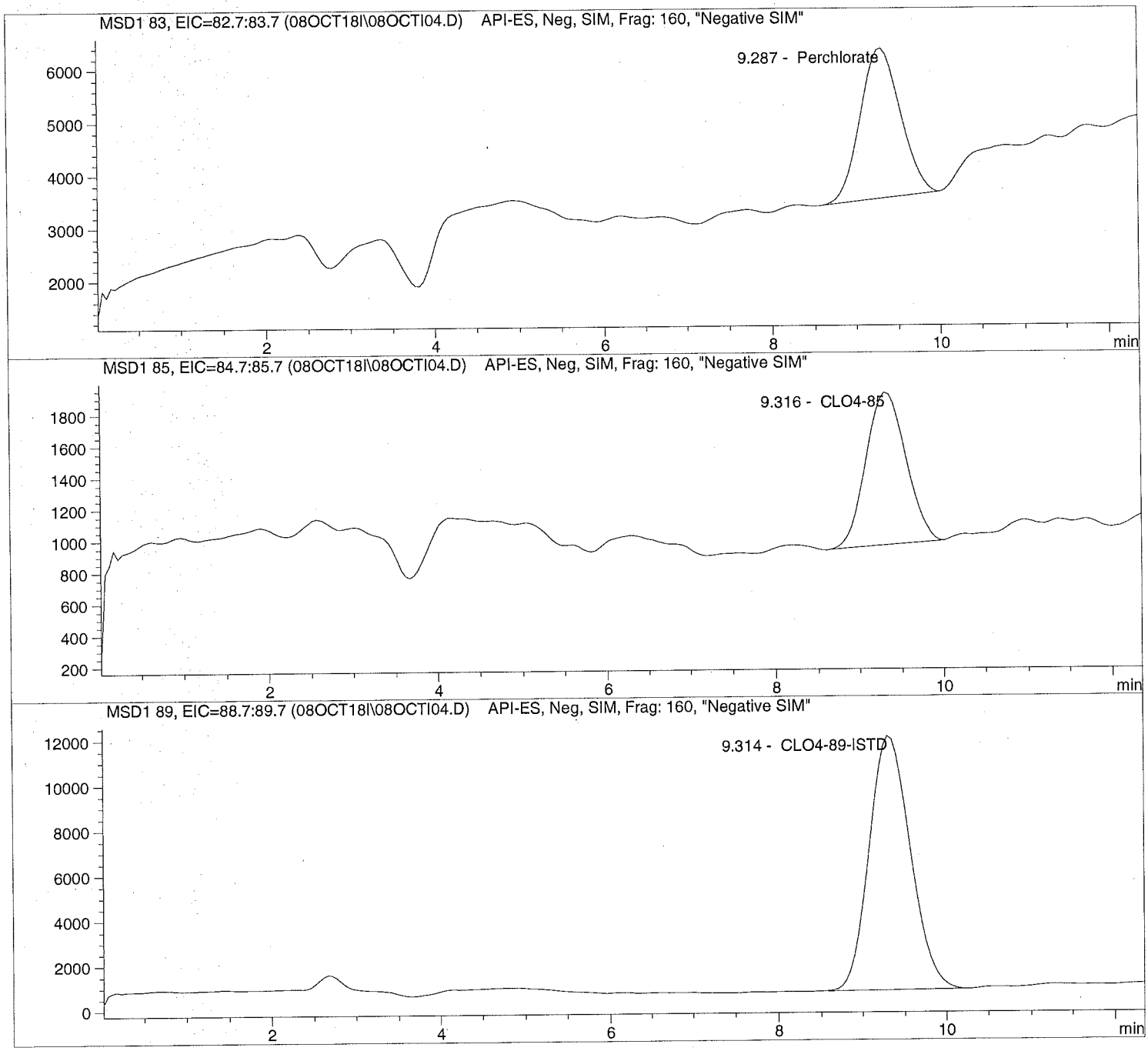
Line	Location	SampleName	Method	Inj	SampleType	InjVolume	DataFile
1	Vial 71	CLO4@ .10ug/L	CLO4-AQN	1	Ctrl Samp		
2	Vial 72	CLO4@ .20ug/L	CLO4-AQN	1	Ctrl Samp		
3	Vial 73	CLO4@ 0.5ug/L	CLO4-AQN	1	Ctrl Samp		
4	Vial 74	CLO4@ 1.0ug/L	CLO4-AQN	1	Ctrl Samp		
5	Vial 75	CLO4@ 2.0ug/L	CLO4-AQN	1	Ctrl Samp		
6	Vial 76	CLO4@ 5.0ug/L	CLO4-AQN	1	Ctrl Samp		
7	Vial 77	CLO4@ 10.ug/L	CLO4-AQN	1	Ctrl Samp		
8	Vial 78	CLO4@ 25.ug/L	CLO4-AQN	1	Ctrl Samp		
9	Vial 79	CLO4@ 50.ug/L	CLO4-AQN	1	Ctrl Samp		
10	Vial 80	CLO4@ 75.ug/L	CLO4-AQN	1	Ctrl Samp		
11	Vial 81	ICAL Verf@10ug/L	CLO4-AQN	1	Ctrl Samp		

Data file: C:\HPCHEM\1\DATA\08OCT18I\08OCTI04.D Sample Name: CLO4@ 1.0ug/L

Injection Date:	10/08/2018 11:37:35	Seq Line:	4
Sample Name:	CLO4@ 1.0ug/L	Location:	Vial 74
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 10/9/2018 08:22:51

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\08OCT18I\08OCTI04.D Sample Name: CLO4@ 1.0ug/L

Injection Date:	10/08/2018 11:37:35	Seq Line:	4
Sample Name:	CLO4@ 1.0ug/L	Location:	Vial 74
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 10/9/2018 08:22:51

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Tue, 9. Oct. 2018, 08:01:57 am
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	1.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.287	PBA	94079.0	0.9738	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.316	PBA	31798.7	0.9609	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.314	PBA	379544.7	5.0000	CLO4-89-ISTD

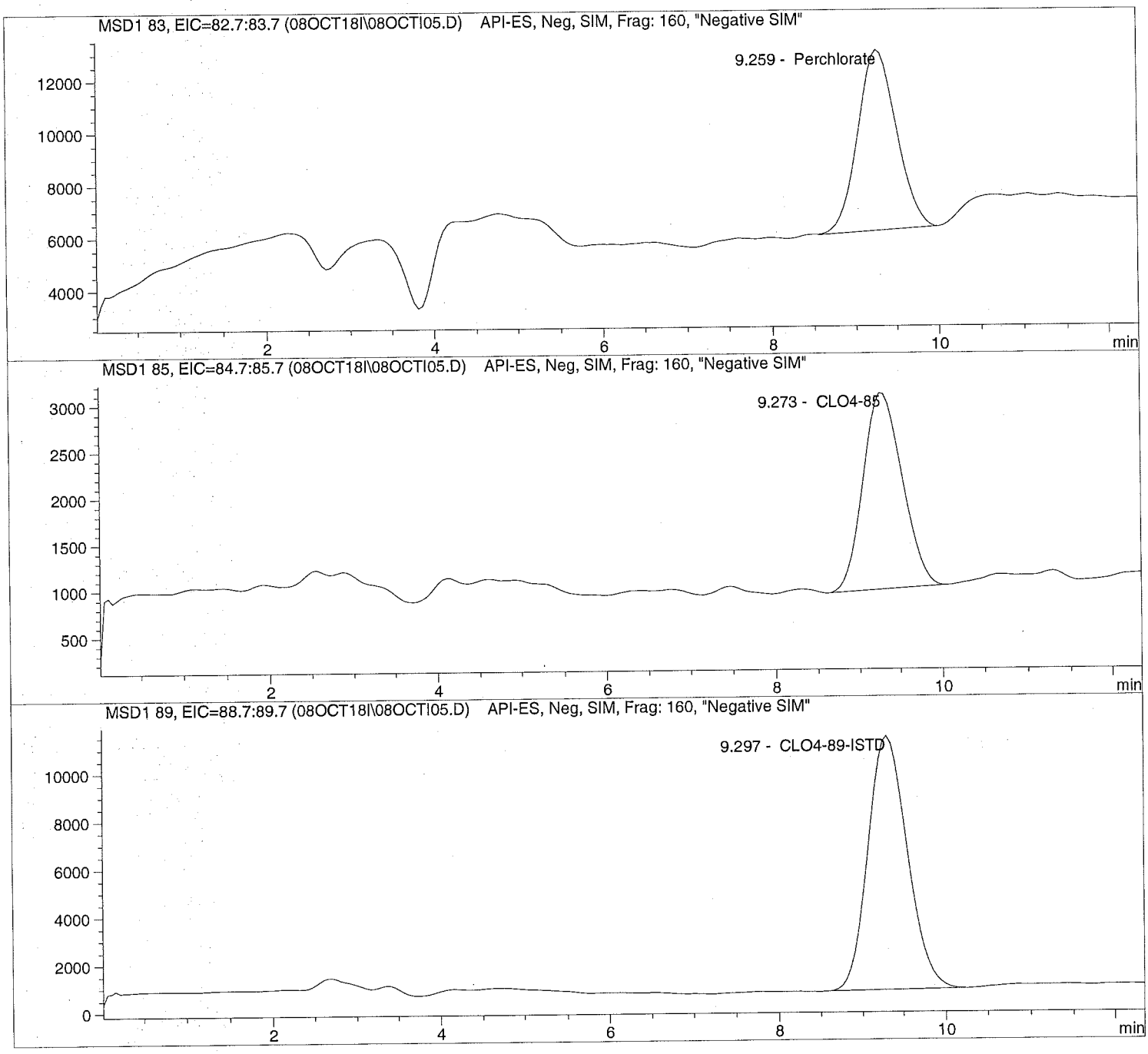
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\08OCT18I\08OCTI05.D Sample Name: CLO4@ 2.0ug/L

Injection Date:	10/08/2018 11:51:45	Seq Line:	5
Sample Name:	CLO4@ 2.0ug/L	Location:	Vial 75
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 10/9/2018 08:22:51

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\08OCT18I\08OCTI05.D Sample Name: CLO4@ 2.0ug/L

Injection Date:	10/08/2018 11:51:45	Seq Line:	5
Sample Name:	CLO4@ 2.0ug/L	Location:	Vial 75
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 10/9/2018 08:22:51

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Tue, 9. Oct. 2018, 08:01:57 am
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	2.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.259	BBA	226957.1	2.1917	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.273	PBA	70543.6	2.1695	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.297	PBA	352581.8	5.0000	CLO4-89-ISTD

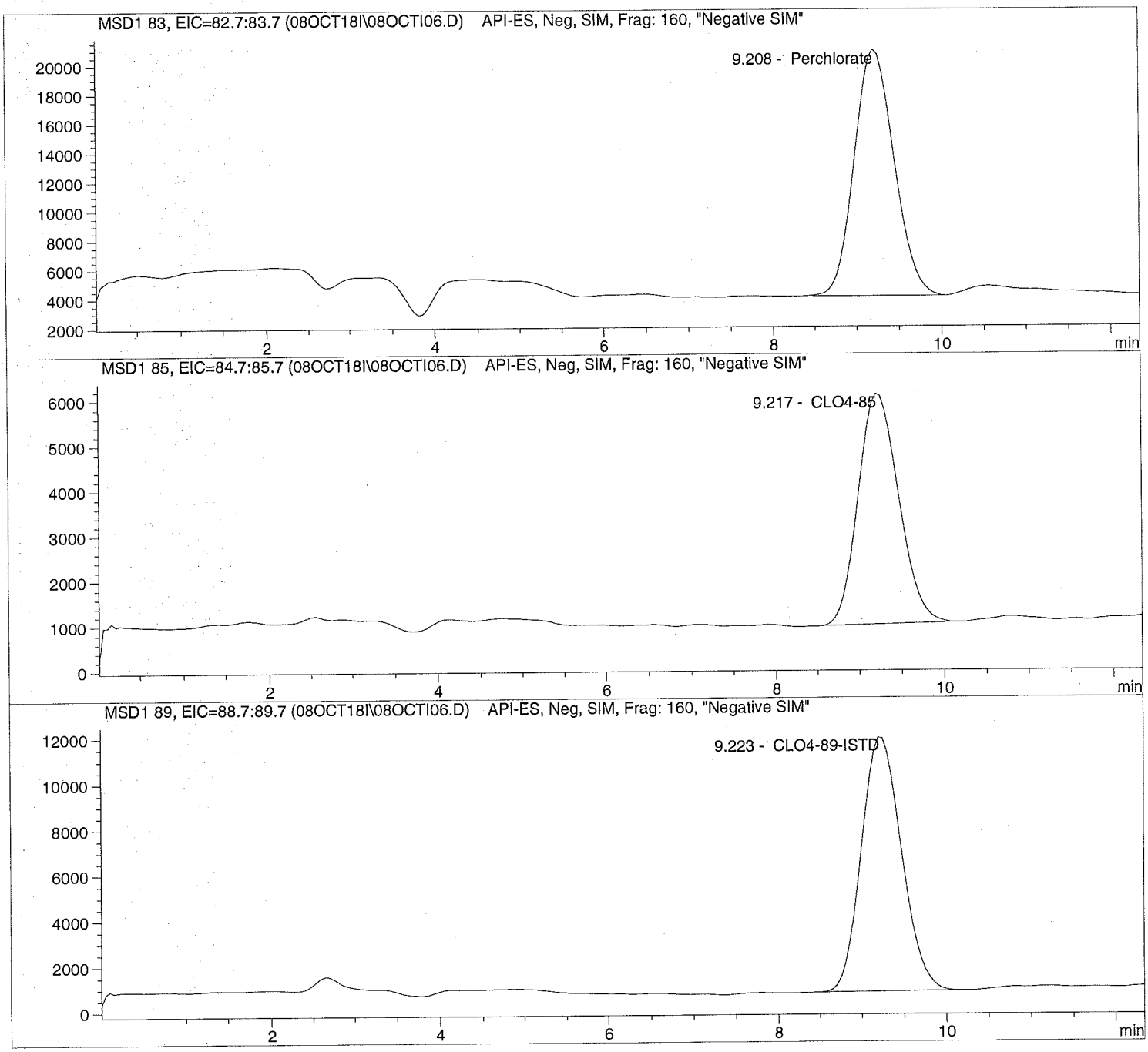
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\08OCT18I\08OCTI06.D Sample Name: CLO4@ 5.0ug/L

Injection Date:	10/08/2018 12:05:59	Seq Line:	6
Sample Name:	CLO4@ 5.0ug/L	Location:	Vial 76
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 10/9/2018 08:22:51

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\08OCT18I\08OCTI06.D Sample Name: CLO4@ 5.0ug/L

Injection Date:	10/08/2018 12:05:59	Seq Line:	6
Sample Name:	CLO4@ 5.0ug/L	Location:	Vial 76
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 10/9/2018 08:22:51

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Tue, 9. Oct. 2018, 08:01:57 am
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	5.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.208	BBA	550306.9	4.8091	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.217	PBA	169833.3	4.8757	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.223	PBA	366804.8	5.0000	CLO4-89-ISTD

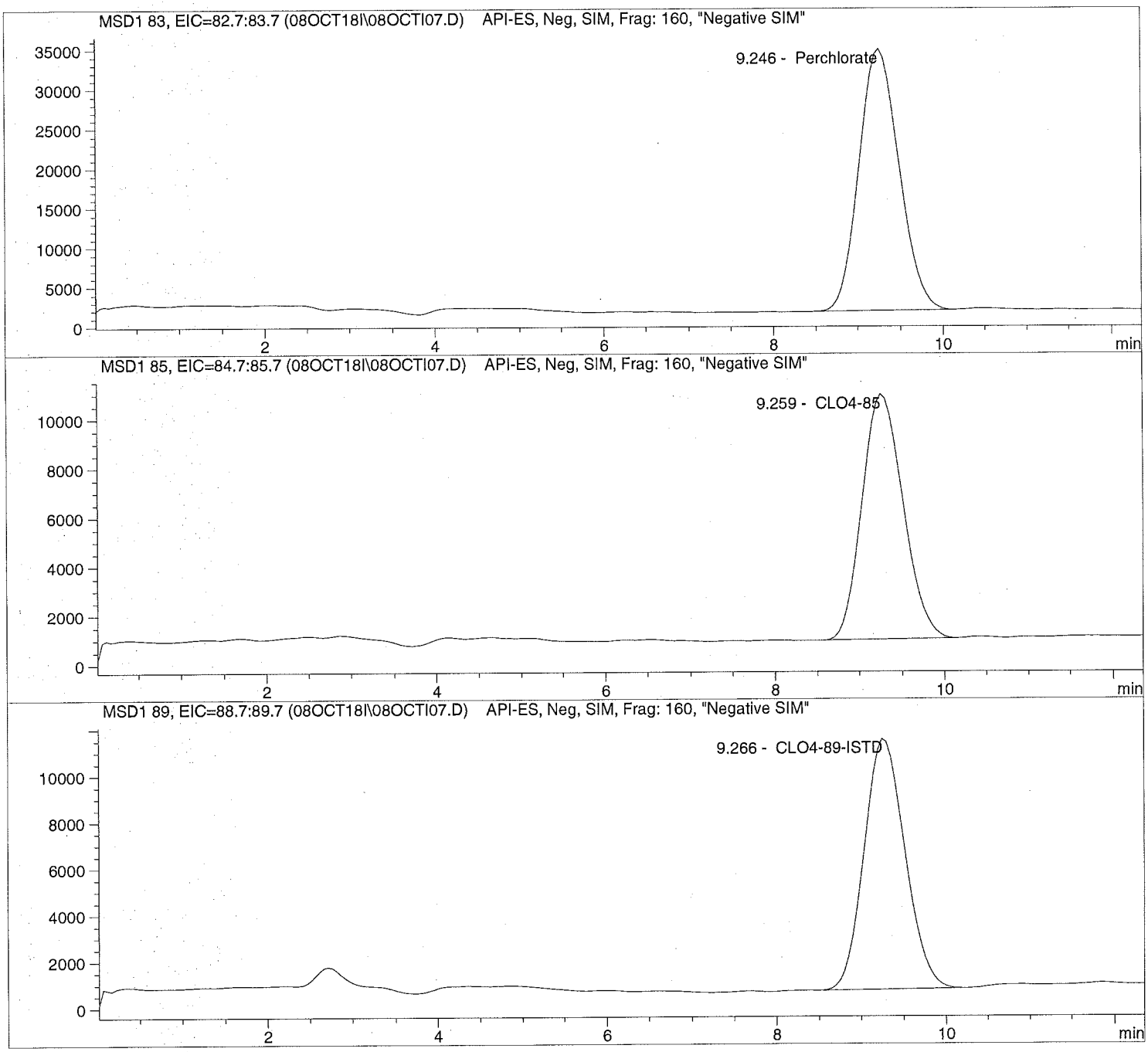
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\08OCT18I\08OCTI07.D Sample Name: CLO4@ 10.ug/L

Injection Date:	10/08/2018 12:20:10	Seq Line:	7
Sample Name:	CLO4@ 10.ug/L	Location:	Vial 77
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 10/9/2018 08:22:51

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\08OCT18I\08OCTI07.D Sample Name: CLO4@ 10.ug/L

Injection Date:	10/08/2018 12:20:10	Seq Line:	7
Sample Name:	CLO4@ 10.ug/L	Location:	Vial 77
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method:	CLO4-AQN.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	10/9/2018 08:22:51

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Tue, 9. Oct. 2018, 08:01:57 am
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	10.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.246	PBA	1076227.4	9.3829	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.259	PBA	331564.9	9.5873	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.266	PBA	356815.3	5.0000	CLO4-89-ISTD

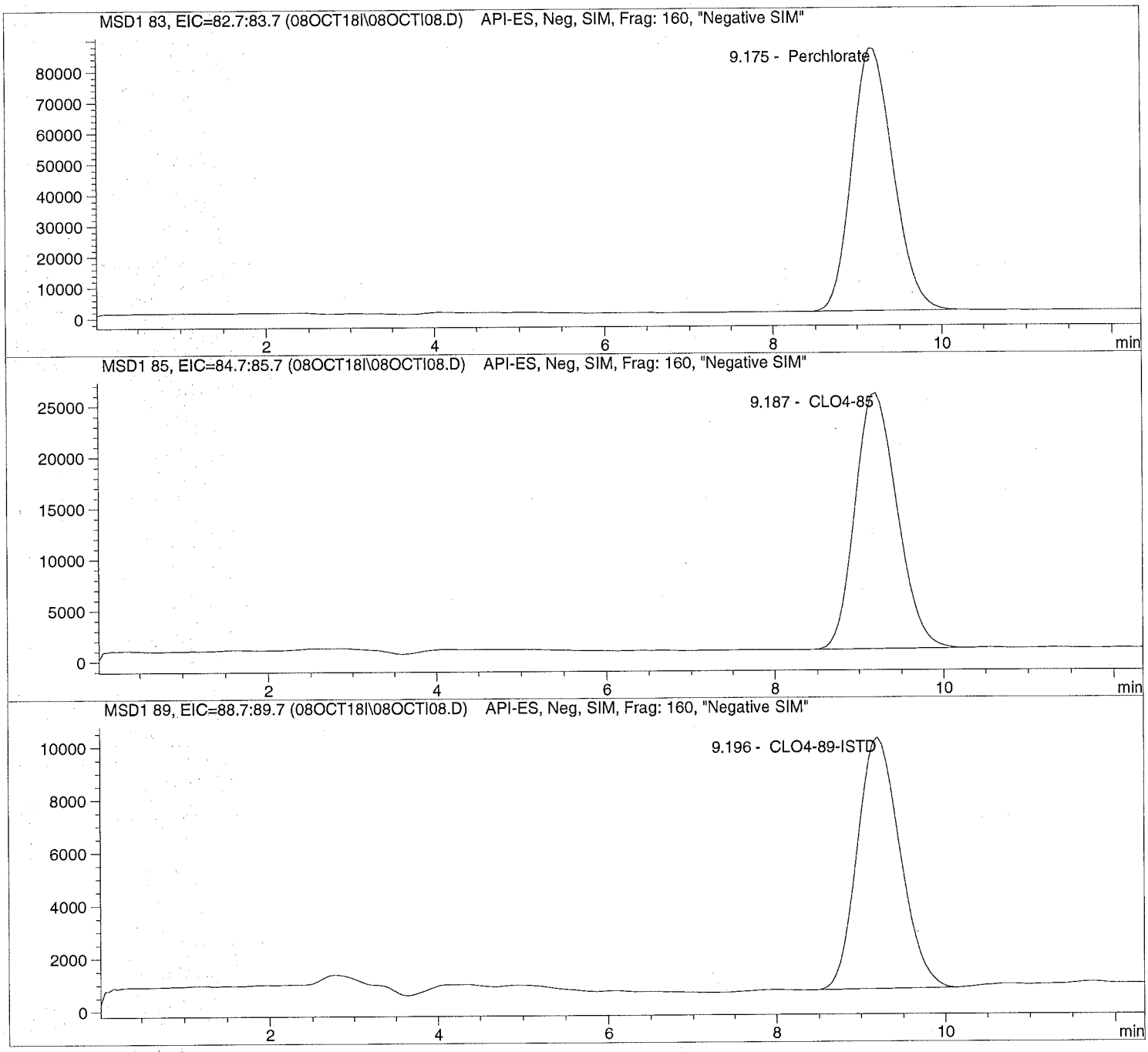
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\08OCT18I\08OCTI08.D Sample Name: CLO4@ 25.ug/L

Injection Date:	10/08/2018 12:34:24	Seq Line:	8
Sample Name:	CLO4@ 25.ug/L	Location:	Vial 78
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 10/9/2018 08:22:51

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\08OCT18I\08OCTI08.D Sample Name: CLO4@ 25.ug/L

Injection Date:	10/08/2018 12:34:24	Seq Line:	8
Sample Name:	CLO4@ 25.ug/L	Location:	Vial 78
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 10/9/2018 08:22:51

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Tue, 9. Oct. 2018, 08:01:57 am
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	25.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.175	PBA	2880966.0	25.8304	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.187	PBA	862978.0	25.6268	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.196	PBA	332339.7	5.0000	CLO4-89-ISTD

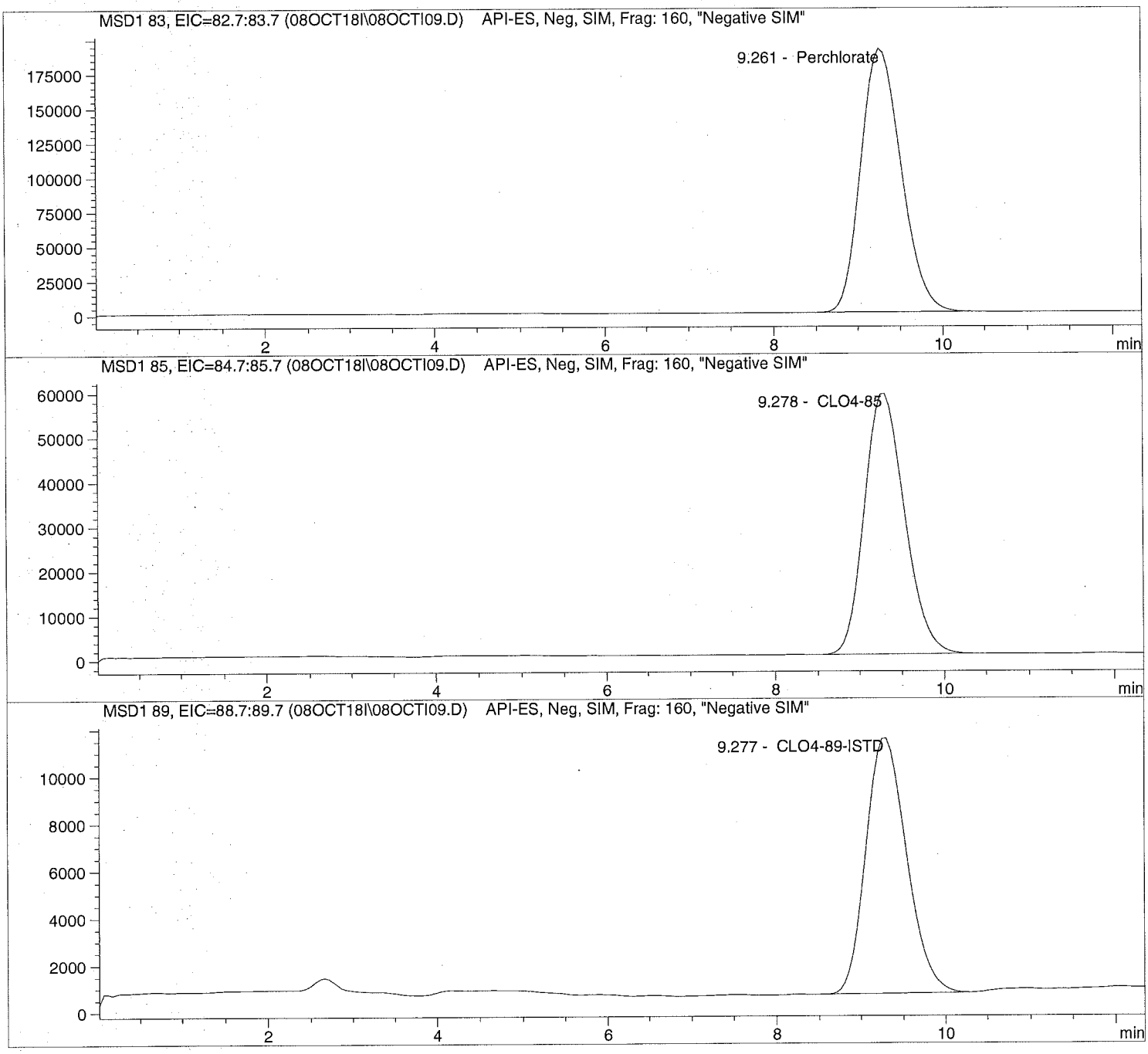
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\08OCT18I\08OCTI09.D Sample Name: CLO4@ 50.ug/L

Injection Date:	10/08/2018 12:48:34	Seq Line:	9
Sample Name:	CLO4@ 50.ug/L	Location:	Vial 79
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 10/9/2018 08:22:51

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\08OCT18I\08OCTI09.D Sample Name: CLO4@ 50.ug/L

Injection Date:	10/08/2018 12:48:34	Seq Line:	9
Sample Name:	CLO4@ 50.ug/L	Location:	Vial 79
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 10/9/2018 08:22:51

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Tue, 9. Oct. 2018, 08:01:57 am
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	50.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.261	PBA	6295070.5	49.9198	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.278	PBA	1918466.9	49.7485	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.277	PBA	359392.8	5.0000	CLO4-89-ISTD

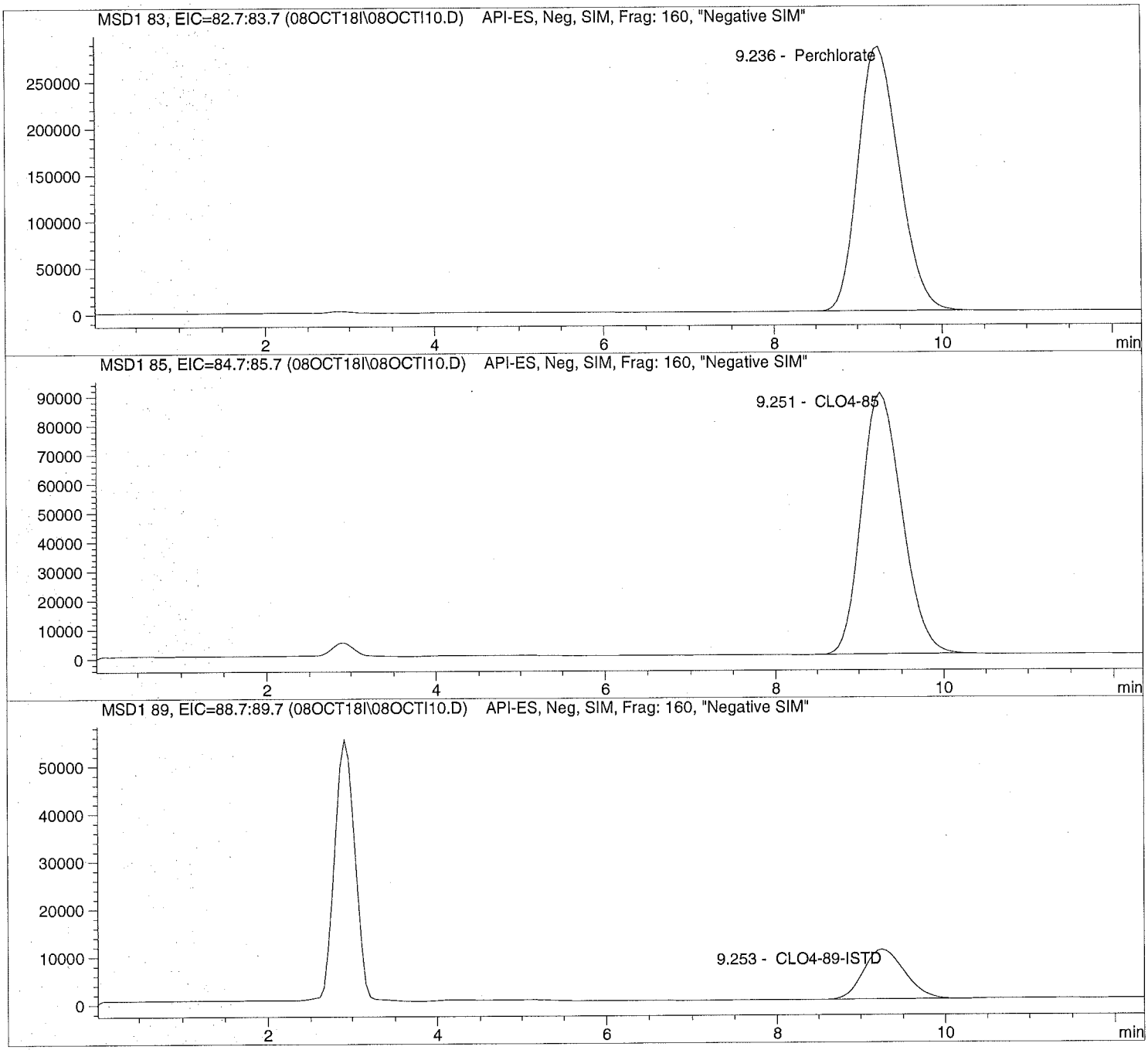
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\08OCT18I\08OCTI10.D Sample Name: CLO4@ 75.ug/L

Injection Date:	10/08/2018 13:02:48	Seq Line:	10
Sample Name:	CLO4@ 75.ug/L	Location:	Vial 80
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 10/9/2018 08:22:51

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\08OCT18I\08OCTI10.D Sample Name: CLO4@ 75.ug/L

Injection Date:	10/08/2018 13:02:48	Seq Line:	10
Sample Name:	CLO4@ 75.ug/L	Location:	Vial 80
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 10/9/2018 08:22:51

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Tue, 9. Oct. 2018, 08:01:57 am
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	75.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.236	PBA	9457367.0	74.8852	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.251	PBA	2938347.5	75.0265	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.253	PBA	345192.7	5.0000	CLO4-89-ISTD

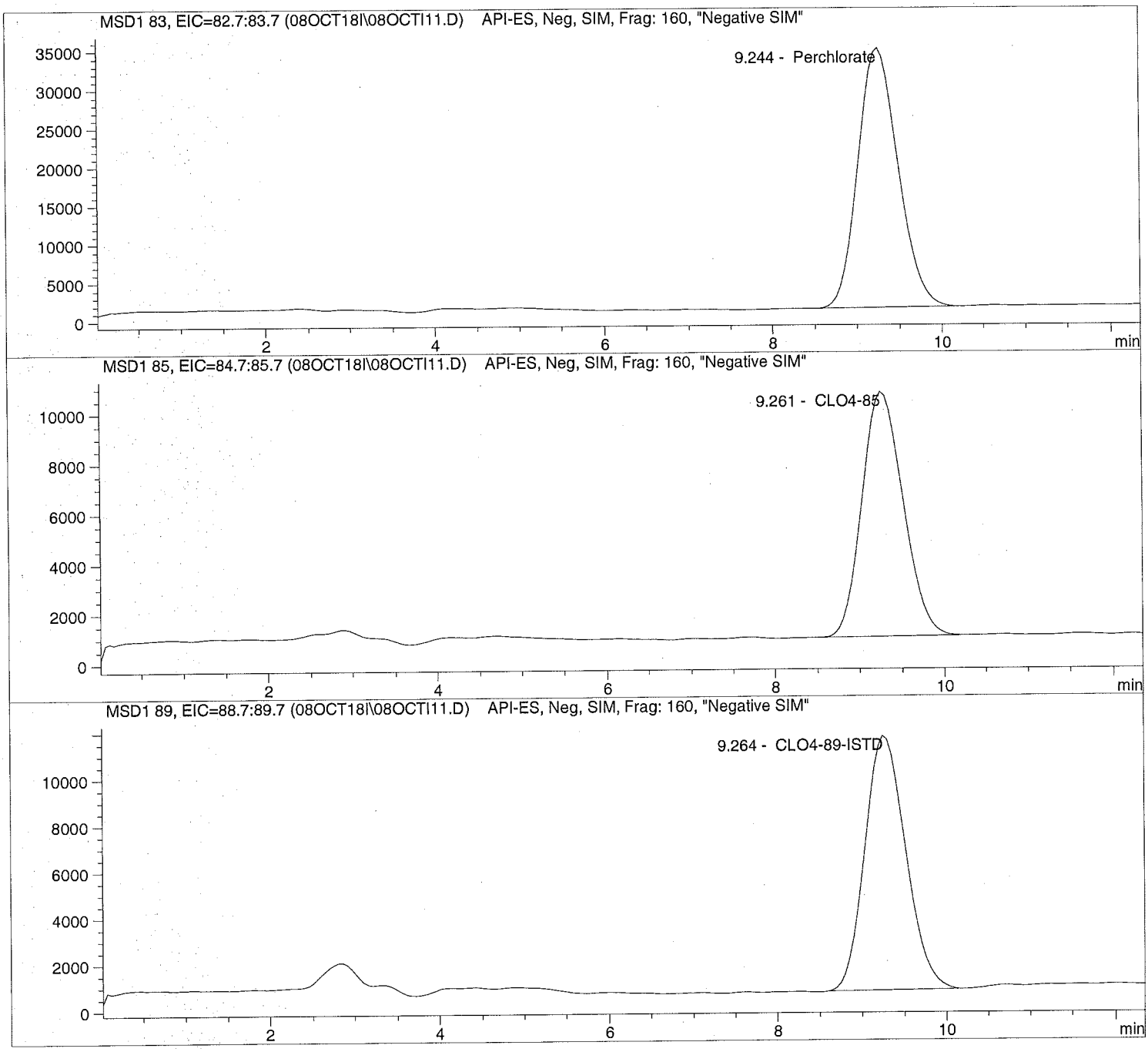
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\08OCT18I\08OCTI11.D Sample Name: ICAL Verf@10ug/L

Injection Date:	10/08/2018 13:17:00	Seq Line:	11
Sample Name:	ICAL Verf@10ug/L	Location:	Vial 81
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 10/9/2018 08:22:51

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\08OCT18I\08OCTI11.D Sample Name: ICAL Verf@10ug/L

Injection Date:	10/08/2018 13:17:00	Seq Line:	11
Sample Name:	ICAL Verf@10ug/L	Location:	Vial 81
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method:	CLO4-AQN.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	10/9/2018 08:22:51

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Tue, 9. Oct. 2018, 08:01:57 am
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	10.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.244	PBA	1100685.7	9.3895	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.261	PBA	327974.4	9.2891	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.264	PBA	364657.2	5.0000	CLO4-89-ISTD

*** End of Report ***

LABORATORY REPORT

December 11, 2018

RJ Modashia
ALS Laboratory Group
10450 Stancliff Road Suite 210
Houston, TX 77099-4338

RE: HS18111497

Dear RJ:

Enclosed are the results of the samples submitted to our laboratory on December 1, 2018. For your reference, these analyses have been assigned our service request number P1806587.

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

Kate Kaneko

By Kate Kaneko at 2:36 pm, 12/11/18

Kate Kaneko
Laboratory Director

Client: ALS Laboratory Group Service Request No: P1806587
Project: HS18111497

CASE NARRATIVE

The samples were received intact under chain of custody on December 1, 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.

Carbon Dioxide Analysis

The samples were analyzed for carbon dioxide using a gas chromatograph equipped with a thermal conductivity detector (TCD). A known amount of liquid was displaced by injecting 8.0 milliliters of helium creating a headspace in the sample vial. Each sample vial was agitated using a sonic disrupter for fifteen minutes and then allowed to equilibrate for at least four hours. A volume of the headspace was withdrawn using a gas-tight syringe and analyzed using a manual injection technique. The amount of dissolved gases (carbon dioxide) in the original sample was calculated using Henry's Law. This method was performed with guidance from RSK 175 as described in laboratory SOP VOA-DISGAS. This analyte is included on the laboratory's NELAP and DoD-ELAP scope of accreditation.

Methane, Ethene and Ethane Analysis

The samples were also analyzed for methane, ethene and ethane using a gas chromatograph equipped with a flame ionization detector (FID). A known amount of liquid was displaced by injecting 8.0 milliliters of helium creating a headspace in the sample vial. Each sample vial was agitated using a sonic disrupter for fifteen minutes and then allowed to equilibrate for at least two hours. A volume of the headspace was withdrawn using a gas-tight syringe and analyzed using a manual injection technique. The amount of dissolved gases (methane, ethene and ethane) in the original sample was calculated using Henry's Law. This method was performed with guidance from RSK 175. 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 laboratory's NELAP or DoD-ELAP accreditation.

The results of analyses are given in the attached laboratory report. All results are intended to be considered in their entirety, and ALS Environmental (ALS) is not responsible for utilization of less than the complete report.

Use of ALS Environmental (ALS)'s Name. Client shall not use ALS's name or trademark in any marketing or reporting materials, press releases or in any other manner ("Materials") whatsoever and shall not attribute to ALS any test result, tolerance or specification derived from ALS's data ("Attribution") without ALS's prior written consent, which may be withheld by ALS for any reason in its sole discretion. To request ALS's consent, Client shall provide copies of the proposed Materials or Attribution and describe in writing Client's proposed use of such Materials or Attribution. If ALS has not provided written approval of the Materials or Attribution within ten (10) days of receipt from Client, Client's request to use ALS's name or trademark in any Materials or Attribution shall be deemed denied. ALS may, in its discretion, reasonably charge Client for its time in reviewing Materials or Attribution requests. Client acknowledges and agrees that the unauthorized use of ALS's name or trademark may cause ALS to incur irreparable harm for which the recovery of money damages will be inadequate. Accordingly, Client acknowledges and agrees that a violation shall justify preliminary injunctive relief. For questions contact the laboratory.

ALS Environmental – Simi Valley

CERTIFICATIONS, ACCREDITATIONS, AND REGISTRATIONS

Agency	Web Site	Number
Alaska DEC	http://dec.alaska.gov/eh/lab.aspx	17-019
Arizona DHS	http://www.azdhs.gov/preparedness/state-laboratory/lab-licensure-certification/index.php#laboratory-licensure-home	AZ0694
Florida DOH (NELAP)	http://www.floridahealth.gov/licensing-and-regulation/environmental-laboratories/index.html	E871020
Louisiana DEQ (NELAP)	http://www.deq.louisiana.gov/page/la-lab-accreditation	05071
Maine DHHS	http://www.maine.gov/dhhs/mecdc/environmental-health/dwp/professionals/labCert.shtml	2018027
Minnesota DOH (NELAP)	http://www.health.state.mn.us/accreditation	1347317
New Jersey DEP (NELAP)	http://www.nj.gov/dep/enforcement/oqa.html	CA009
New York DOH (NELAP)	http://www.wadsworth.org/labcert/elap/elap.html	11221
Oregon PHD (NELAP)	http://www.oregon.gov/oha/ph/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	4068-005
Pennsylvania DEP	http://www.dep.pa.gov/Business/OtherPrograms/Labs/Pages/Laboratory-Accreditation-Program.aspx	68-03307 (Registration)
PJLA (DoD ELAP)	http://www.pjlabs.com/search-accredited-labs	65818 (Testing)
Texas CEQ (NELAP)	http://www.tceq.texas.gov/agency/qa/env_lab_accreditation.html	T104704413-18-9
Utah DOH (NELAP)	http://health.utah.gov/lab/lab_cert_env	CA016272018-9
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: ALS Laboratory Group
Project ID: HS18111497

Service Request: P1806587

Date Received: 12/1/2018
Time Received: 11:04

Client Sample ID	Lab Code	Matrix	Date Collected	Time Collected	RSK 175 - CO2	RSK 175 - Gases
50WW06-181129	P1806587-001	Water	11/29/2018	15:25	X	X
50WW13-181129	P1806587-002	Water	11/29/2018	11:15	X	X
50WW14-181129	P1806587-003	Water	11/29/2018	13:20	X	X

10450 Stancliff Rd, Ste 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887
www.alsglobal.com

P1806587

Subcontract Chain of Custody

COC ID: 10327

SUBCONTRACT TO:

ALS Environmental
2655 Park Center Drive, Suite A
Simi Valley, CA 93065

Phone: +1 805 526 7161

CUSTOMER INFORMATION:

Company:	ALS Houston
Contact:	RJ Modashia
Address:	10450 Stancliff Rd, Ste 210
Phone:	+1 281 530 5656
Email:	RJ.Modashia@alsglobal.com
Alternate Contact:	Jumoke M. Lawal
Email:	jumoke.lawal@alsglobal.com

INVOICE INFORMATION:

Company:	ALS Houston
Contact:	Accounts Payable
Address:	10450 Stancliff Rd, Ste 210
Phone:	+1 281 530 5656
Reference:	HS18111497
TSR:	Sonia West

	LAB SAMPLE ID / ANALYSIS REQUESTED	CLIENT SAMPLE ID	MATRIX	COLLECT DATE / DUE DATE
1.	**HS18111497-01**	**50WW06-181129**	**Groundwater**	**29 Nov 2018 15:25**
	MEE + CO2. DOD IV. Equis EDD			14 Dec 2018
2.	**HS18111497-02**	**50WW13-181129**	**Groundwater**	**29 Nov 2018 11:15**
	MEE + CO2. DOD IV. Equis EDD			14 Dec 2018
3.	**HS18111497-03**	**50WW14-181129**	**Groundwater**	**29 Nov 2018 13:20**
	MEE + CO2. DOD IV. Equis EDD			14 Dec 2018

Comments: Please analyze for the analysis listed above.
Send report to the emails shown above.

QC Level: DOD IV (DoD Data Package)

Relinquished By: R Cuga — Date/Time: 11/30/18 1800

Received By: Kate Kanelco ALS — Date/Time: 12/1/18 1104

Cooler ID(s): Received AG — Temperature(s): 0.9°C wet ice

ALS Environmental
Sample Acceptance Check Form

Client: ALS Laboratory Group Work order: P1806587

Project: HS18111497

Sample(s) received on: 12/1/18 Date opened: 12/1/18 by: AARON GONZALEZ

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?	☒	☐	☐
	Cooler Temperature: 0.9° C Blank Temperature: ° C Thermometer ID CO907034581 Wet Ic			
8	Were **custody seals** on outside of cooler/Box/Container?	☒	☐	☐
	Location of seal(s)? Cooler Lid 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
P1806587-001.01	40mL VOA NP		7			MR 12/7/18
P1806587-001.02	40mL VOA NP					
P1806587-001.04	40ml VOA HCL		1			MR 12/4/18
P1806587-001.05	40ml VOA HCL					
P1806587-001.06	40ml VOA HCL					
P1806587-002.01	40mL VOA NP		7			MR 12/7/18
P1806587-002.07	40mL VOA NP					
P1806587-002.08	40ml VOA HCL		1			MR 12/4/18
P1806587-002.09	40ml VOA HCL					
P1806587-002.10	40ml VOA HCL					
P1806587-003.01	40mL VOA NP		7			MR 12/7/18
P1806587-003.02	40mL VOA NP					
P1806587-003.04	40ml VOA HCL		1			MR 12/4/18
P1806587-003.05	40ml VOA HCL					
P1806587-003.06	40ml VOA HCL					

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: **ALS Laboratory Group**
Client Project ID: **HS18111497** ALS Project ID: P1806587

Carbon Dioxide

Test Code: RSK 175
Instrument ID: HP5890A/GC10/TCD
Analyst: Magaly Rodriguez
Matrix: Water
Test Notes:

Date(s) Collected: 11/29/18
Date Received: 12/1/18
Date Analyzed: 12/7/18

Client Sample ID	ALS Sample ID	Injection Volume ml(s)	Result µg/L	LOQ µg/L	LOD µg/L	MDL µg/L	Data Qualifier
50WW06-181129	P1806587-001	0.10	**84,000**	1,000	860	370	
50WW13-181129	P1806587-002	0.10	**110,000**	1,000	860	370	
50WW14-181129	P1806587-003	0.10	**78,000**	1,000	860	370	
Method Control Sample	P181207-MB	0.10	860	1,000	860	370	**U**

The Method Control Sample is laboratory water carried through the entire analytical process.
U = Compound was analyzed for, but not detected above the laboratory detection limit.
LOQ = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

LABORATORY CONTROL SAMPLE / DUPLICATE LABORATORY CONTROL SAMPLE SUMMARY

Client: **ALS Laboratory Group**
Client Sample ID: **Duplicate Lab Control Sample** ALS Project ID: P1806587
Client Project ID: **HS18111497** ALS Sample ID: P181207-DLCS

Test Code: RSK 175 Date Collected: NA
Instrument ID: HP5890A/GC10/TCD Date Received: NA
Analyst: Magaly Rodriguez Date Analyzed: 12/07/18
Matrix: Water Volume(s) Analyzed: NA ml(s)
Test Notes:

CAS #	Compound	Spike Amount LCS / DLCS ug/L	Result$_1$ LCS ug/L	Result$_1$ DLCS ug/L	% Recovery LCS	% Recovery DLCS	DOD Acceptance Limits	RPD	RPD Limit	Data Qualifier
124-38-9	Carbon Dioxide	22,900	18,400	18,400	**80**	**80**	80-122	0	12	

$_1$ = The concentration shown includes a subtraction of the Method Control Sample value, even if the result is less than the MRL.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **ALS Laboratory Group**
Client Sample ID: **50WW06-181129**
Client Project ID: **HS18111497**

ALS Project ID: P1806587
ALS Sample ID: P1806587-001

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Magaly Rodriguez
Matrix: Water
Test Notes:

Date Collected: 11/29/18
Date Received: 12/1/18
Date Analyzed: 12/4/18
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Result µg/L	LOQ µg/L	LOD µg/L	MDL µg/L	Data Qualifier
74-82-8	Methane	**19**	1.3	1.0	0.51	
74-85-1	Ethene	0.55	1.0	0.55	0.24	**U**
74-84-0	Ethane	0.47	0.60	0.47	0.16	**U**

U = Compound was analyzed for, but not detected above the laboratory detection limit.
LOQ = 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: **ALS Laboratory Group**
Client Sample ID: **50WW13-181129**
Client Project ID: **HS18111497**

ALS Project ID: P1806587
ALS Sample ID: P1806587-002

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Magaly Rodriguez
Matrix: Water
Test Notes:

Date Collected: 11/29/18
Date Received: 12/1/18
Date Analyzed: 12/4/18
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Result µg/L	LOQ µg/L	LOD µg/L	MDL µg/L	Data Qualifier
74-82-8	Methane	**5.6**	1.3	1.0	0.51	
74-85-1	Ethene	0.55	1.0	0.55	0.24	**U**
74-84-0	Ethane	0.47	0.60	0.47	0.16	**U**

U = Compound was analyzed for, but not detected above the laboratory detection limit.
LOQ = 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: **ALS Laboratory Group**
Client Sample ID: **50WW14-181129**
Client Project ID: **HS18111497**

ALS Project ID: P1806587
ALS Sample ID: P1806587-003

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Magaly Rodriguez
Matrix: Water
Test Notes:

Date Collected: 11/29/18
Date Received: 12/1/18
Date Analyzed: 12/4/18
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Result µg/L	LOQ µg/L	LOD µg/L	MDL µg/L	Data Qualifier
74-82-8	Methane	**1.1**	1.3	1.0	0.51	**J**
74-85-1	Ethene	0.55	1.0	0.55	0.24	**U**
74-84-0	Ethane	0.47	0.60	0.47	0.16	**U**

U = Compound was analyzed for, but not detected above the laboratory detection limit.
LOQ = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **ALS Laboratory Group**
Client Sample ID: **Method Control Sample**
Client Project ID: **HS18111497**

ALS Project ID: P1806587
ALS Sample ID: P181204-MB

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Magaly Rodriguez
Matrix: Water
Test Notes:

Date Collected: NA
Date Received: NA
Date Analyzed: 12/04/18
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Result µg/L	LOQ µg/L	LOD µg/L	MDL µg/L	Data Qualifier
74-82-8	Methane	1.0	1.3	1.0	0.51	**U**
74-85-1	Ethene	0.55	1.0	0.55	0.24	**U**
74-84-0	Ethane	0.47	0.60	0.47	0.16	**U**

The Method Control Sample is laboratory water carried through the entire analytical process.
U = Compound was analyzed for, but not detected above the laboratory detection limit.
LOQ = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

LABORATORY CONTROL SAMPLE / DUPLICATE LABORATORY CONTROL SAMPLE SUMMARY

Client: **ALS Laboratory Group**
Client Sample ID: **Duplicate Lab Control Sample**
Client Project ID: **HS18111497**

ALS Project ID: P1806587
ALS Sample ID: P181204-LCS
P181204-DLCS

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Magaly Rodriguez
Matrix: Water
Test Notes:

Date Collected: NA
Date Received: NA
Date Analyzed: 12/04/18
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Spike Amount LCS / DLCS µg/L	Result$_1$ LCS µg/L	Result$_1$ DLCS µg/L	% Recovery LCS	% Recovery DLCS	DOD Acceptance Limits	RPD	RPD Limit	Data Qualifier
74-82-8	Methane	2.50	2.43	2.76	**97**	**110**	73-125	13	26	
74-85-1	Ethene	4.37	4.78	4.80	**109**	**110**	72-133	0.9	11	
74-84-0	Ethane	4.69	5.04	4.91	**107**	**105**	74-131	2	10	

$_1$ = The concentration shown includes a subtraction of the Method Control Sample value, even if the result is less than the MRL.

Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_TCD\2018_12\07\
Data File : 12071811.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 07-Dec-2018, 14:22:08
Operator : MR
Sample : P1806587-001 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Dec 10 10:01:59 2018
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

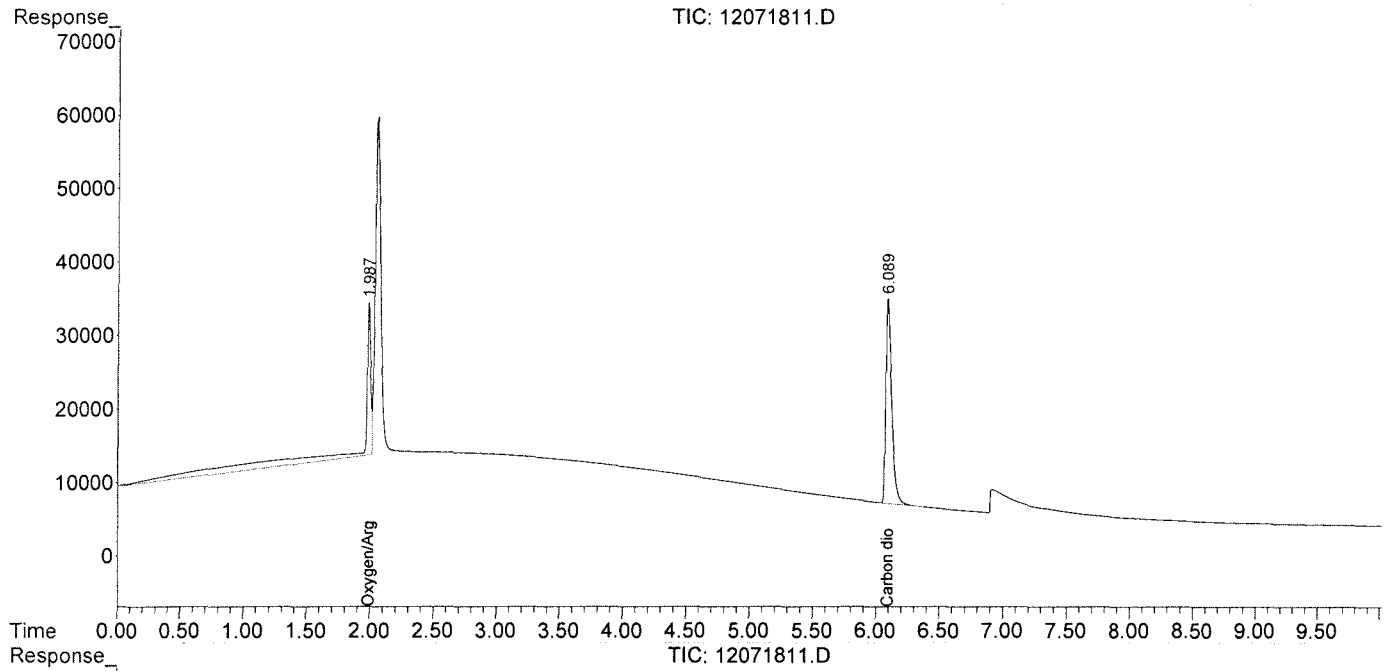
	Compound	R.T.	Response	Conc	Units
	Target Compounds				
1)	Oxygen/Argon	1.988f	1076781	0.226	ppm
2)	Carbon monoxide	1.988f	1076781	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	6.090	900124	3834.733	ppm
6)	Methane (FID)	1.118	86378	9.143	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	0.000	0	N.D.	ppm
10)	Propane	0.000	0	N.D.	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

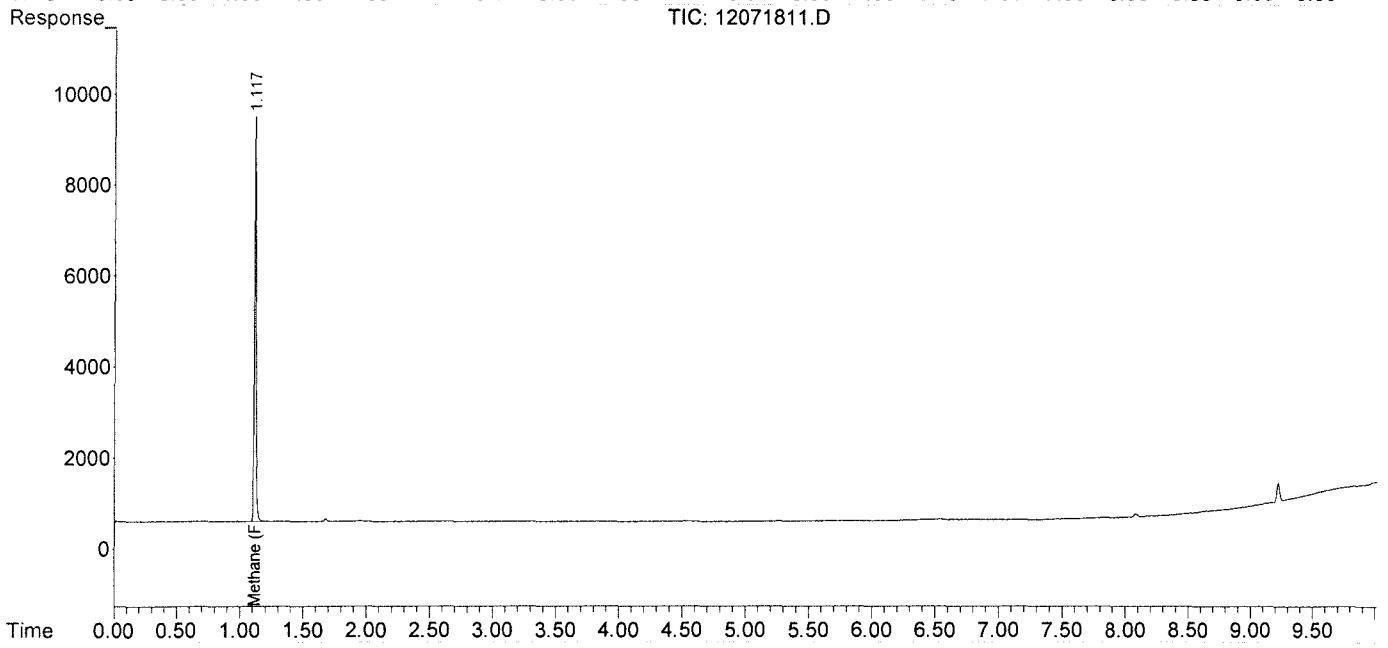
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_TCD\2018_12\07\
Data File : 12071811.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 07-Dec-2018, 14:22:08
Operator : MR
Sample : P1806587-001 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Dec 10 10:01:59 2018
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_TCD\2018_12\07\
Data File : 12071812.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 07-Dec-2018, 14:35:39
Operator : MR
Sample : P1806587-002 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Dec 10 10:02:20 2018
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

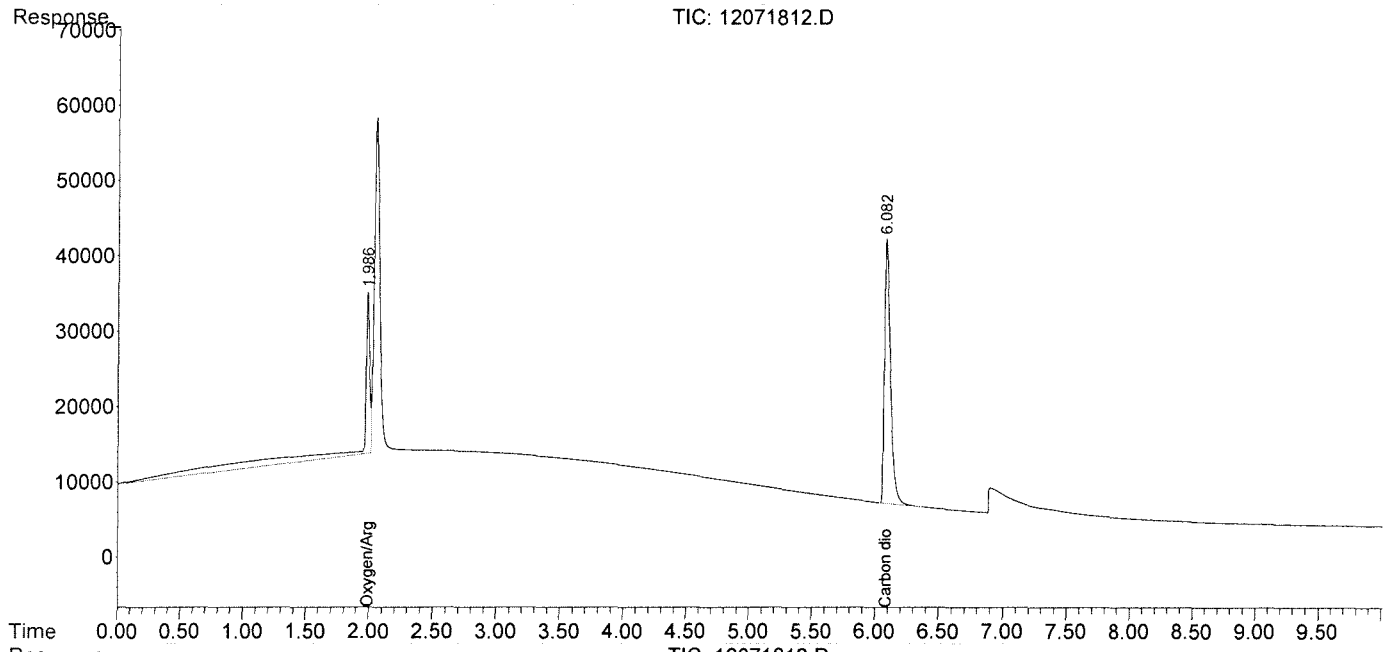
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.987f	1083850	0.228	ppm
2)	Carbon monoxide	1.987f	1083850	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	6.083	1177797	5017.685	ppm
6)	Methane (FID)	1.117	27692	2.931	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	0.000	0	N.D.	ppm
10)	Propane	0.000	0	N.D.	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

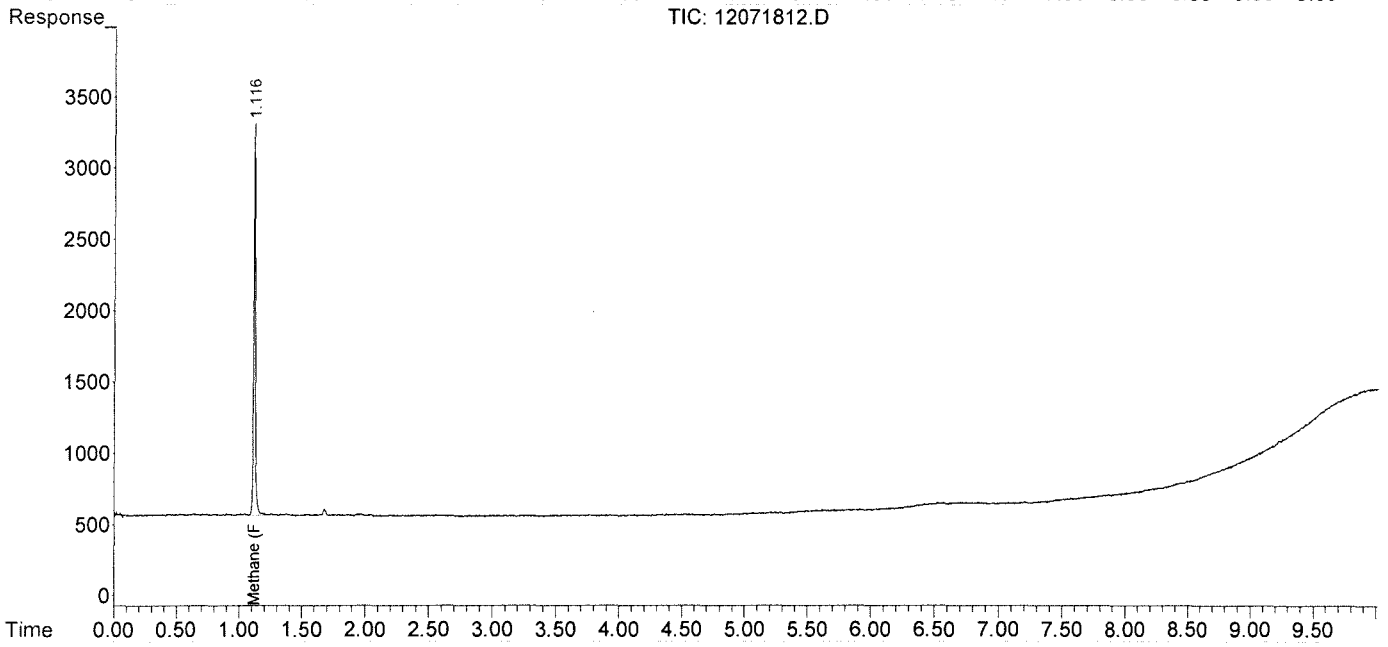
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_TCD\2018_12\07\
Data File : 12071812.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 07-Dec-2018, 14:35:39
Operator : MR
Sample : P1806587-002 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Dec 10 10:02:20 2018
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_TCD\2018_12\07\
Data File : 12071813.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 07-Dec-2018, 14:48:58
Operator : MR
Sample : P1806587-003 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Dec 10 10:02:41 2018
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

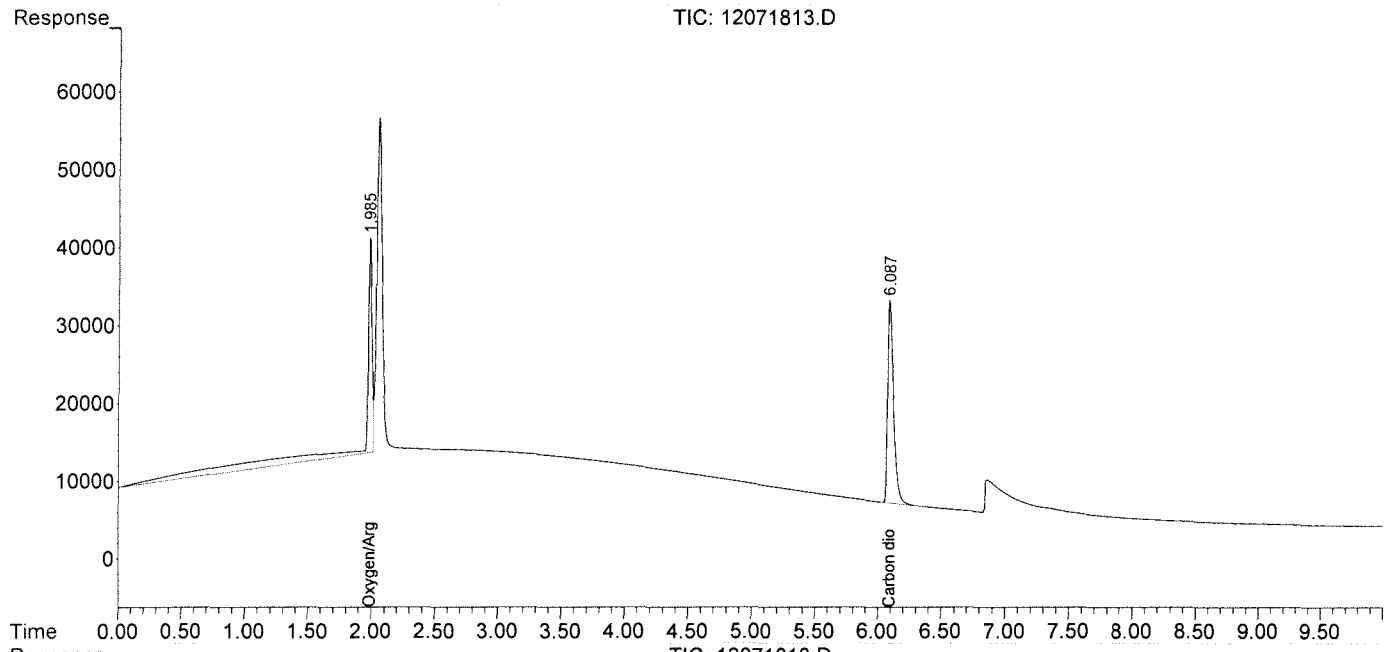
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.985f	1231355	0.259	ppm
2)	Carbon monoxide	1.985f	1231355	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	6.088	833921	3552.695	ppm
6)	Methane (FID)	1.086	1268	0.134	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	0.000	0	N.D.	ppm
10)	Propane	0.000	0	N.D.	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

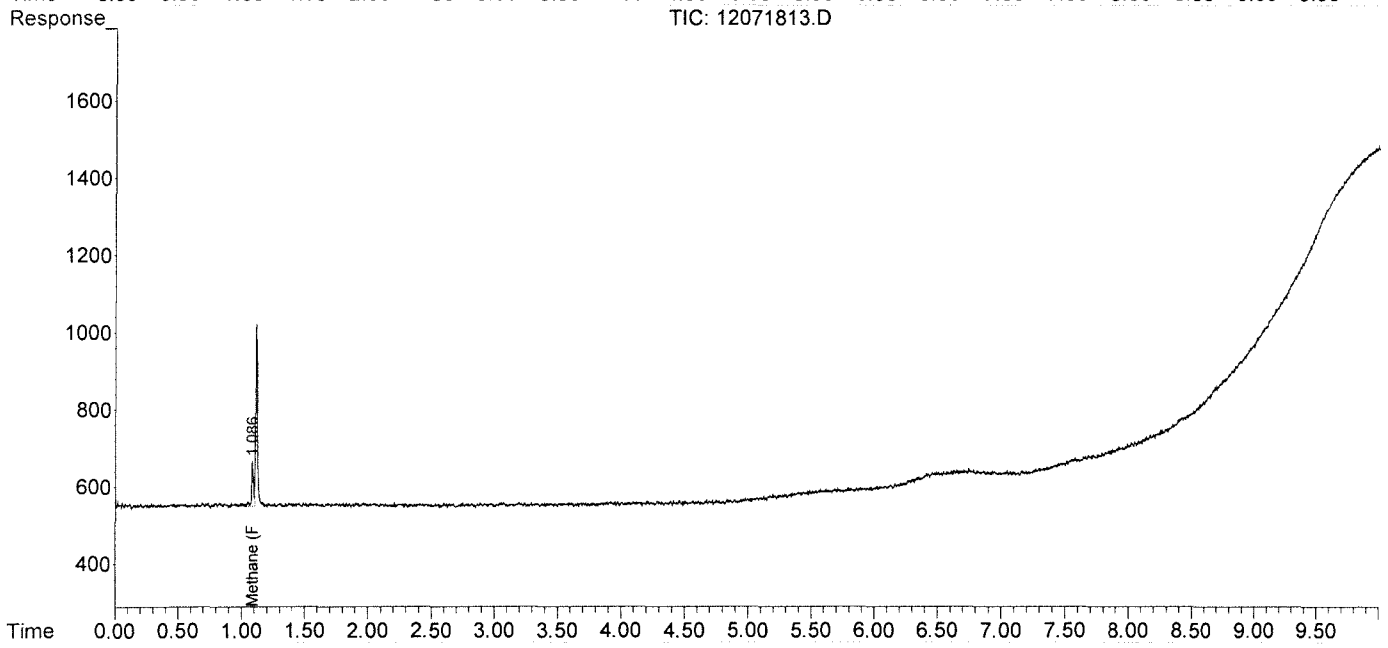
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_TCD\2018_12\07\
Data File : 12071813.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 07-Dec-2018, 14:48:58
Operator : MR
Sample : P1806587-003 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Dec 10 10:02:41 2018
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_TCD\2018_12\07\
Data File : 12071803.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 07-Dec-2018, 11:59:04
Operator : MR
Sample : mcs 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Dec 07 16:22:27 2018
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

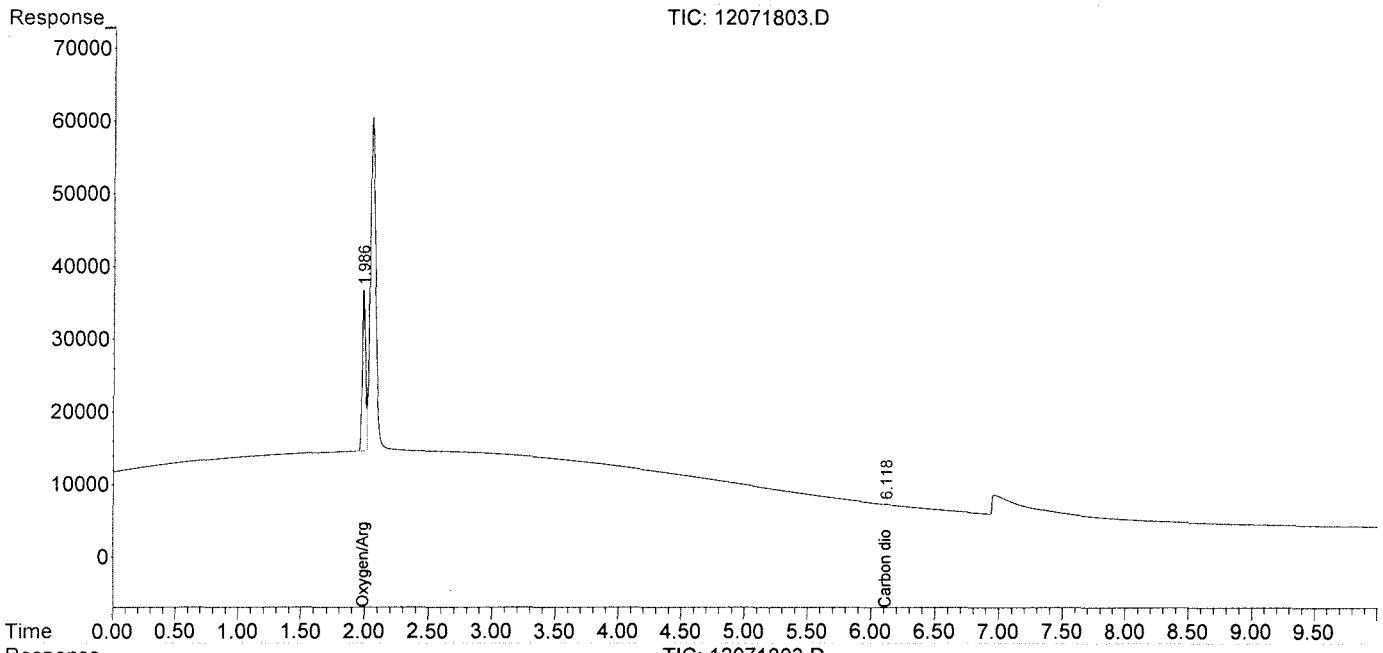
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	1.987f	395636	0.083	ppm	
2)	Carbon monoxide	1.987f	395636	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	
4)	Carbon dioxide	6.118	1885	8.031	ppm	m
6)	Methane (FID)	1.118	2631	0.278	ppm	
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

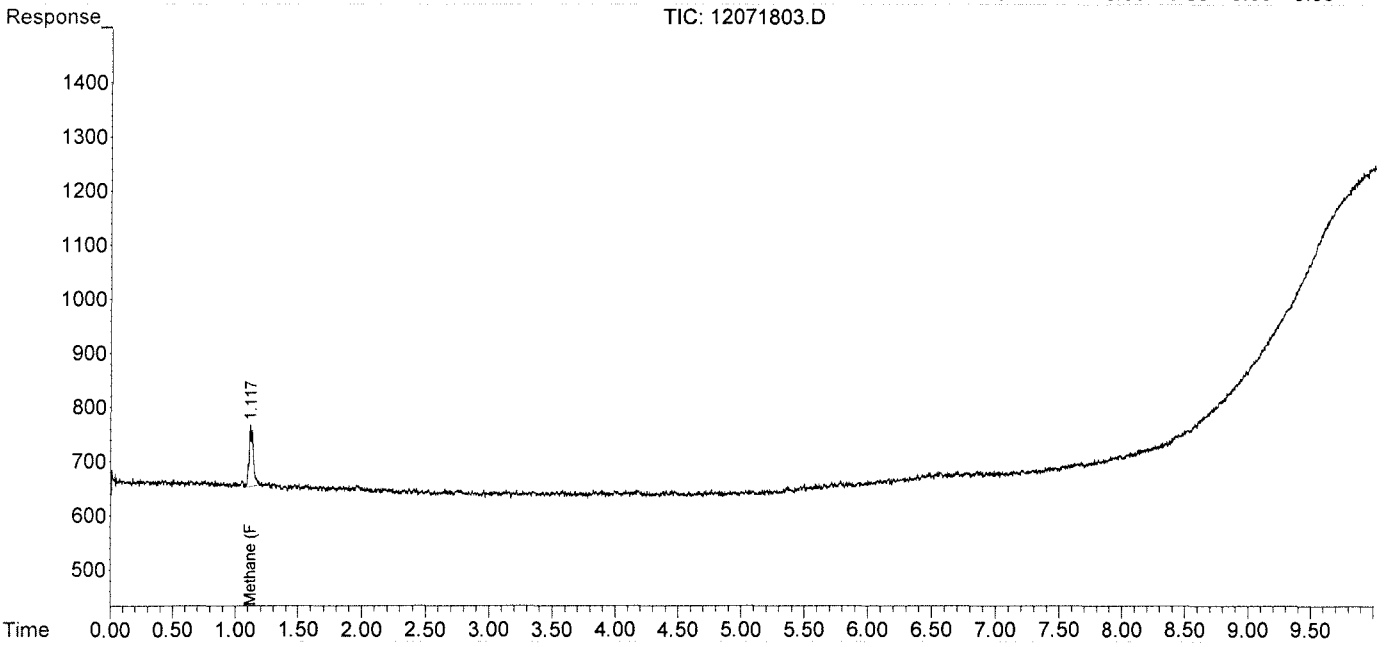
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_TCD\2018_12\07\
Data File : 12071803.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 07-Dec-2018, 11:59:04
Operator : MR
Sample : mcs 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Dec 07 16:22:27 2018
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

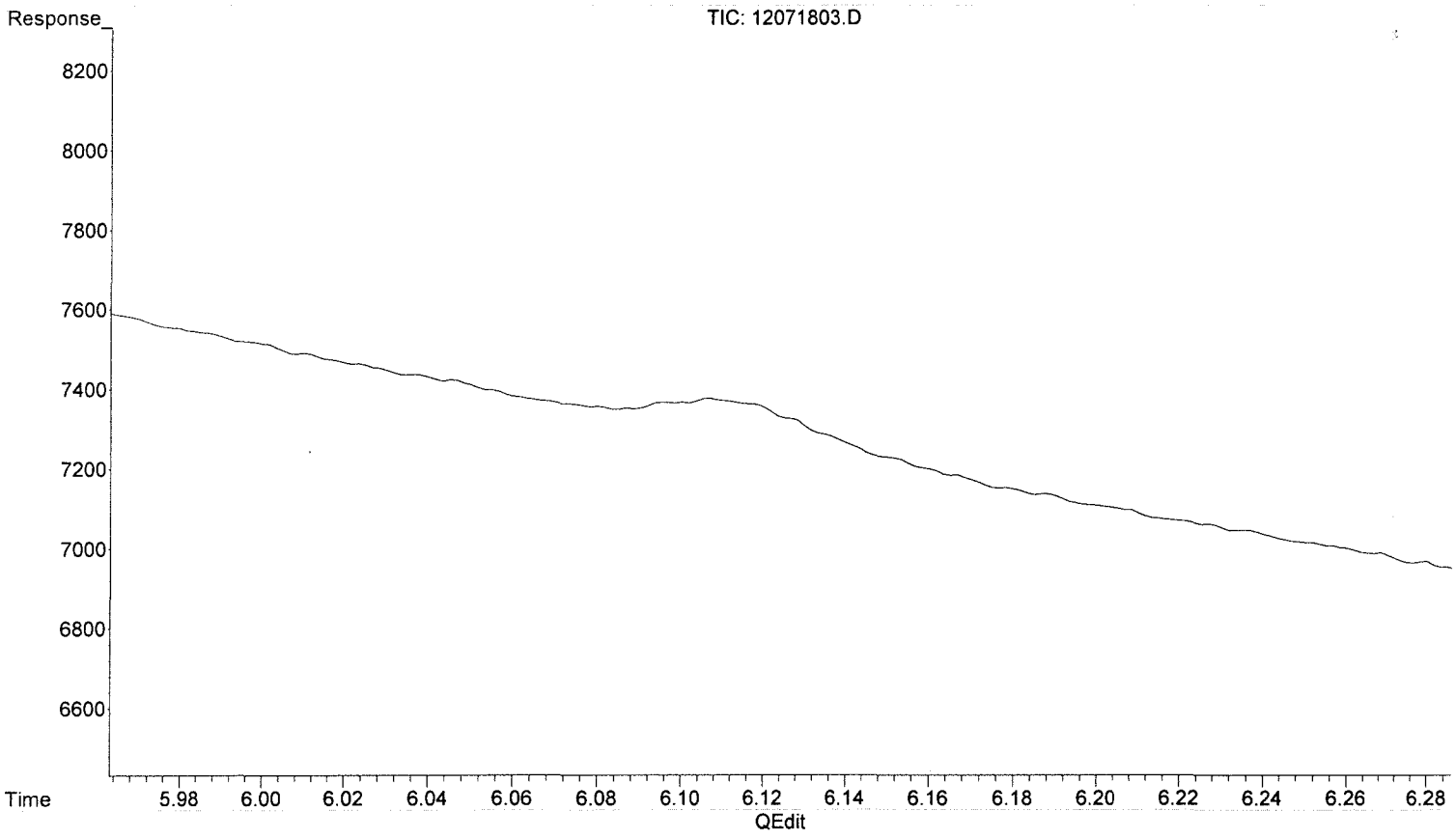




Data Path : J:\GC10\DATA\RSK_FID\2018_12\07\
Data File : 12071803.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 07-Dec-2018, 11:59:04
Operator : MR
Sample : mcs 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Dec 07 16:22:27 2018
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



(4) Carbon dioxide

6.039min 0.000 ppm

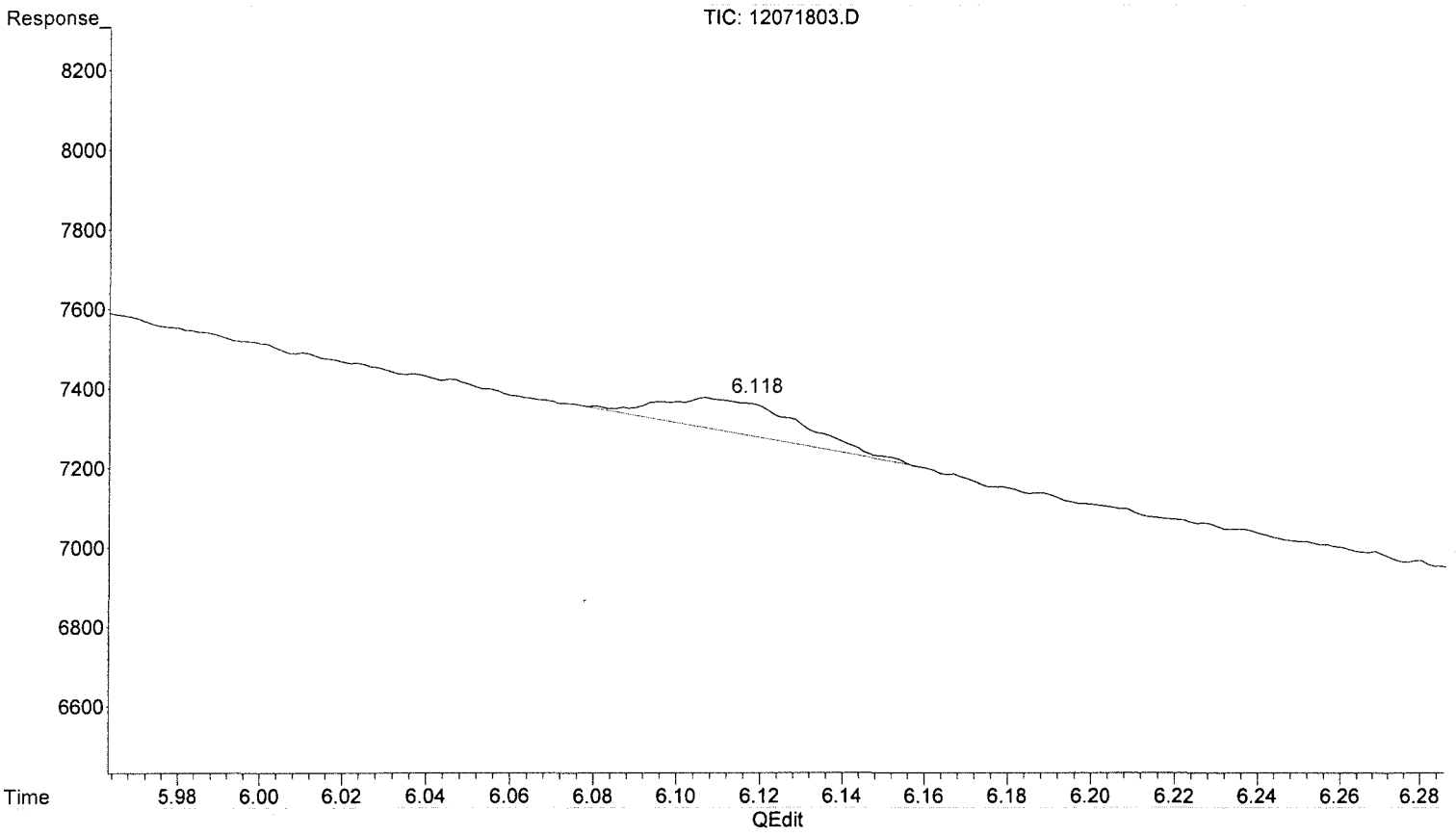
response 0

(+) = Expected Retention Time

Data Path : J:\GC10\DATA\RSK_FID\2018_12\07\
Data File : 12071803.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 07-Dec-2018, 11:59:04
Operator : MR
Sample : mcs 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Dec 07 16:22:27 2018
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



(4) Carbon dioxide

6.118min 8.031 ppm m

response 1885

MR 12/7/18
MP

(+) = Expected Retention Time
RS082817_CO2.M Fri Dec 07 16:23:09 2018 Page: 1

Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_TCD\2018_12\07\
Data File : 12071805.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 07-Dec-2018, 12:53:12
Operator : MR
Sample : tcd lcs s32-10081801
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Dec 07 16:23:48 2018
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

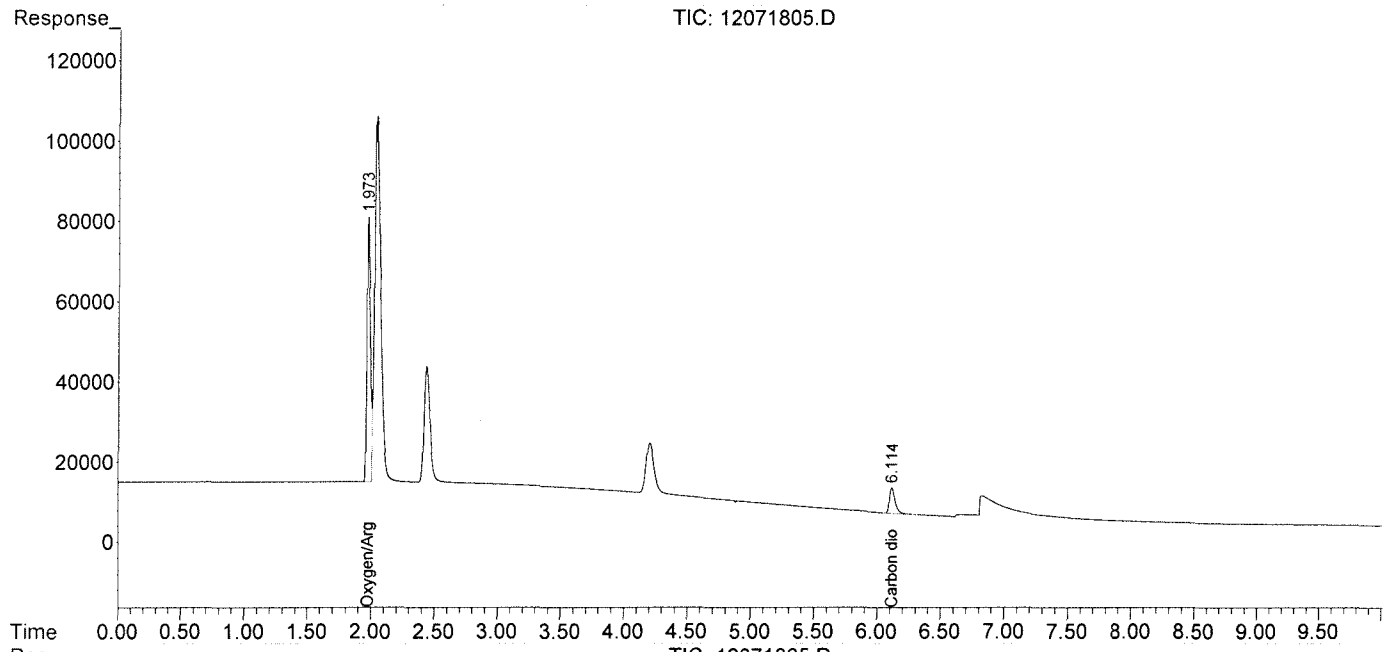
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	1.974f	1191913	0.250	ppm	
2)	Carbon monoxide	1.974f	1191913	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	
4)	Carbon dioxide	6.114	199503	849.928	ppm	m
6)	Methane (FID)	1.117	33494235	3545.183	ppm	
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

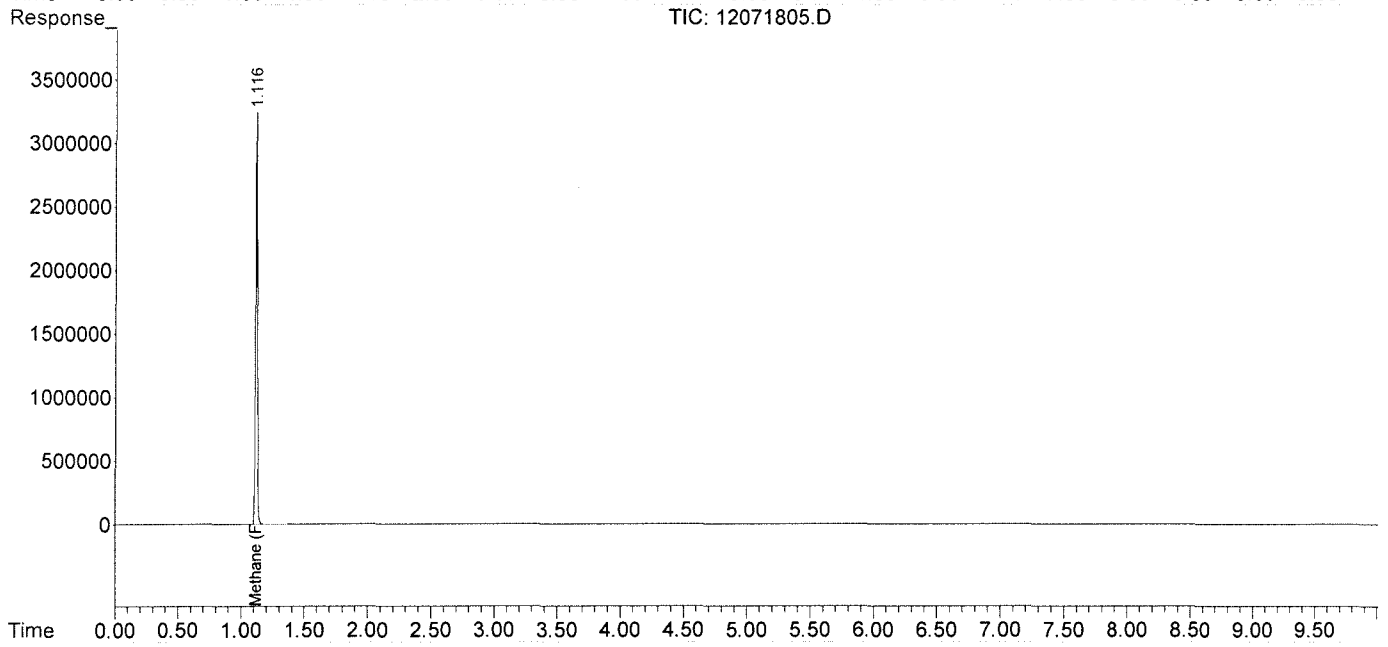
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_TCD\2018_12\07\
Data File : 12071805.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 07-Dec-2018, 12:53:12
Operator : MR
Sample : tcd lcs s32-10081801
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Dec 07 16:23:48 2018
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

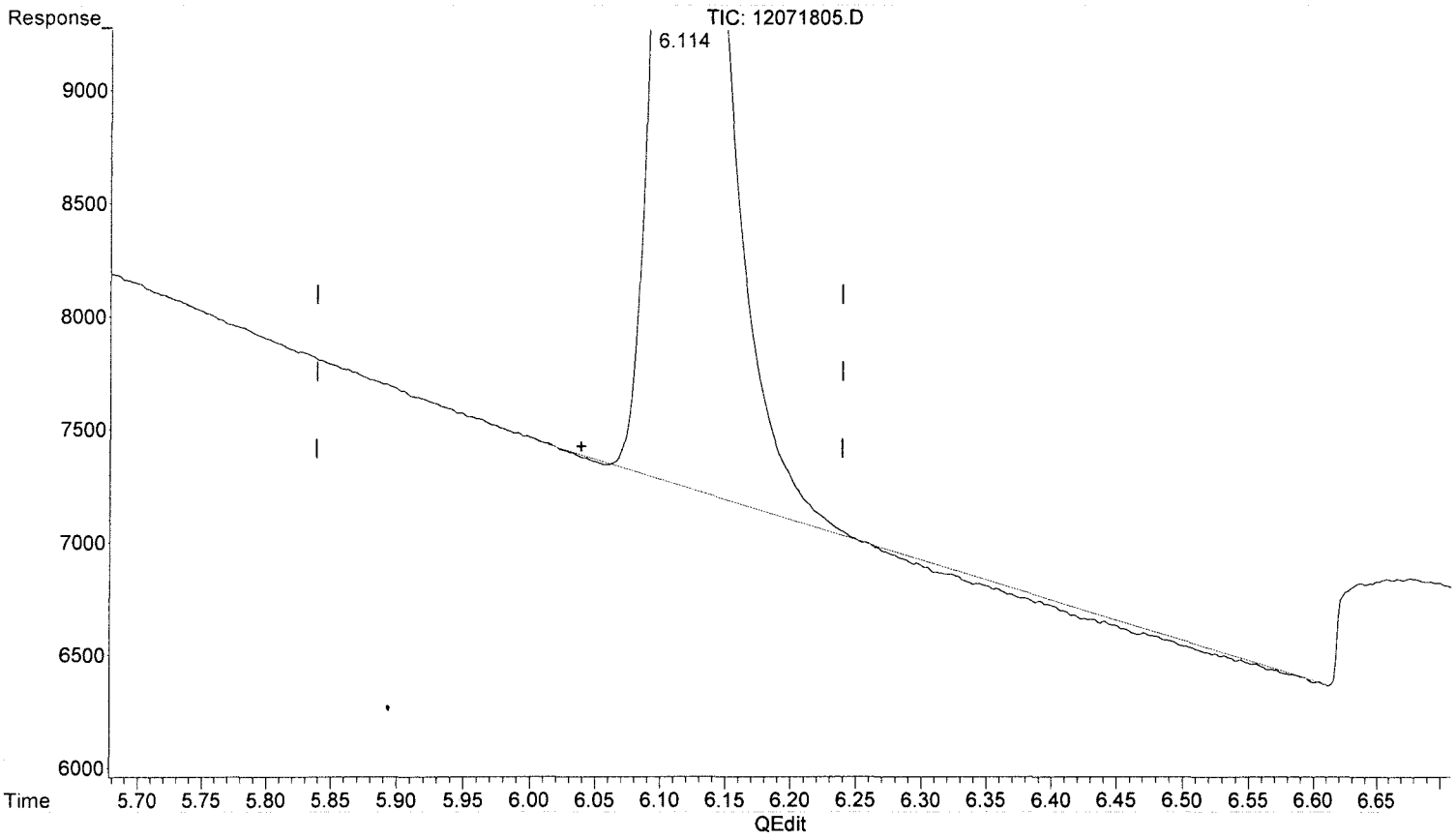




Data Path : J:\GC10\DATA\RSK_FID\2018_12\07\
Data File : 12071805.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 07-Dec-2018, 12:53:12
Operator : MR
Sample : tcd lcs s32-10081801
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Dec 07 16:23:48 2018
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



(4) Carbon dioxide

6.115min 816.574 ppm

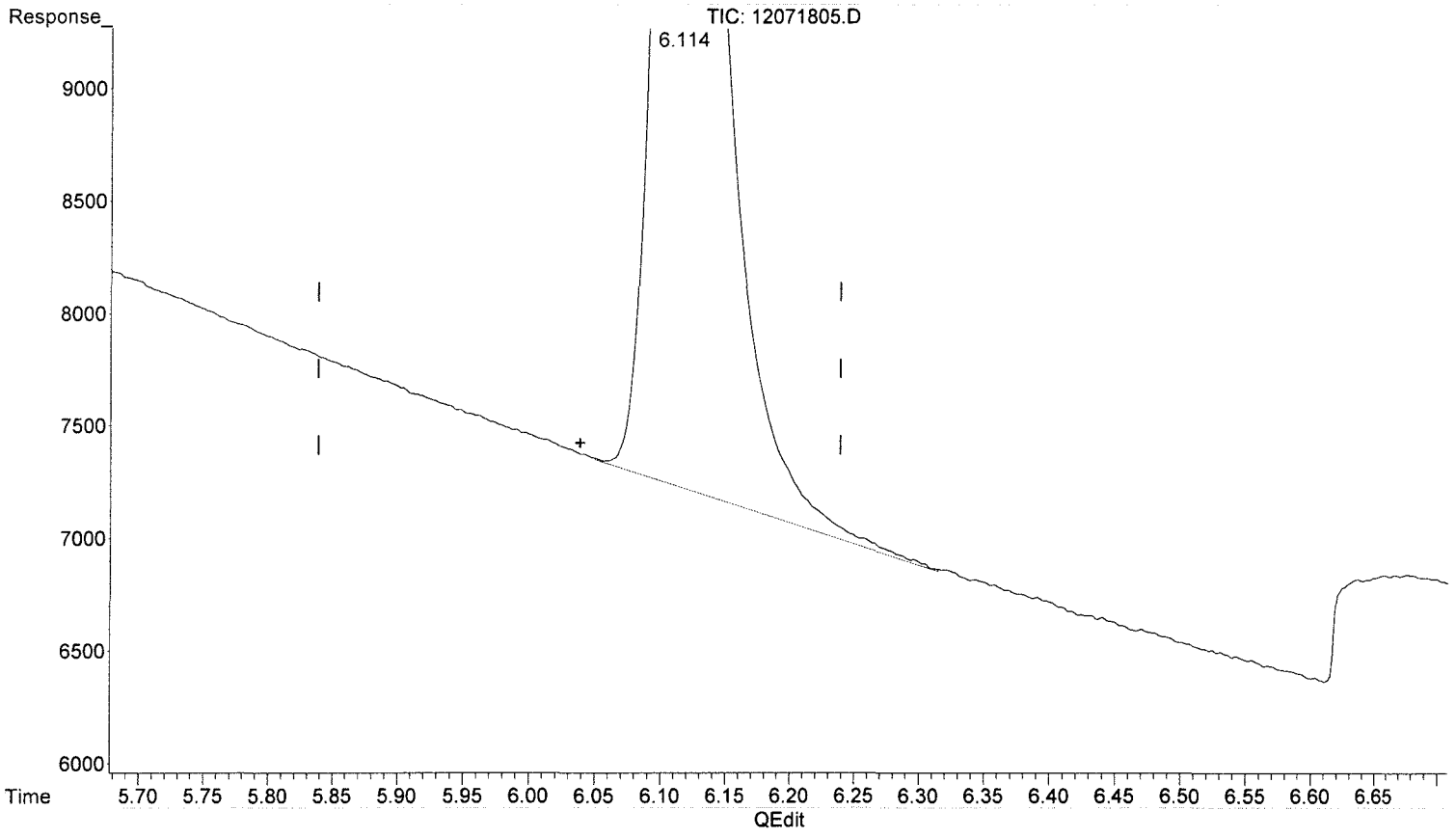
response 191674

(+) = Expected Retention Time

Data Path : J:\GC10\DATA\RSK_FID\2018_12\07\
Data File : 12071805.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 07-Dec-2018, 12:53:12
Operator : MR
Sample : tcd lcs s32-10081801
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Dec 07 16:23:48 2018
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



(4) Carbon dioxide

6.114min 849.928 ppm m

response 199503

MR 12/7/18
BLC

(+) = Expected Retention Time

RS082817_CO2.M Fri Dec 07 16:24:23 2018 Page: 1

Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_TCD\2018_12\07\
Data File : 12071815.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 07-Dec-2018, 15:16:21
Operator : MR
Sample : tcd lcsd s32-10081801
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Dec 07 16:24:55 2018
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

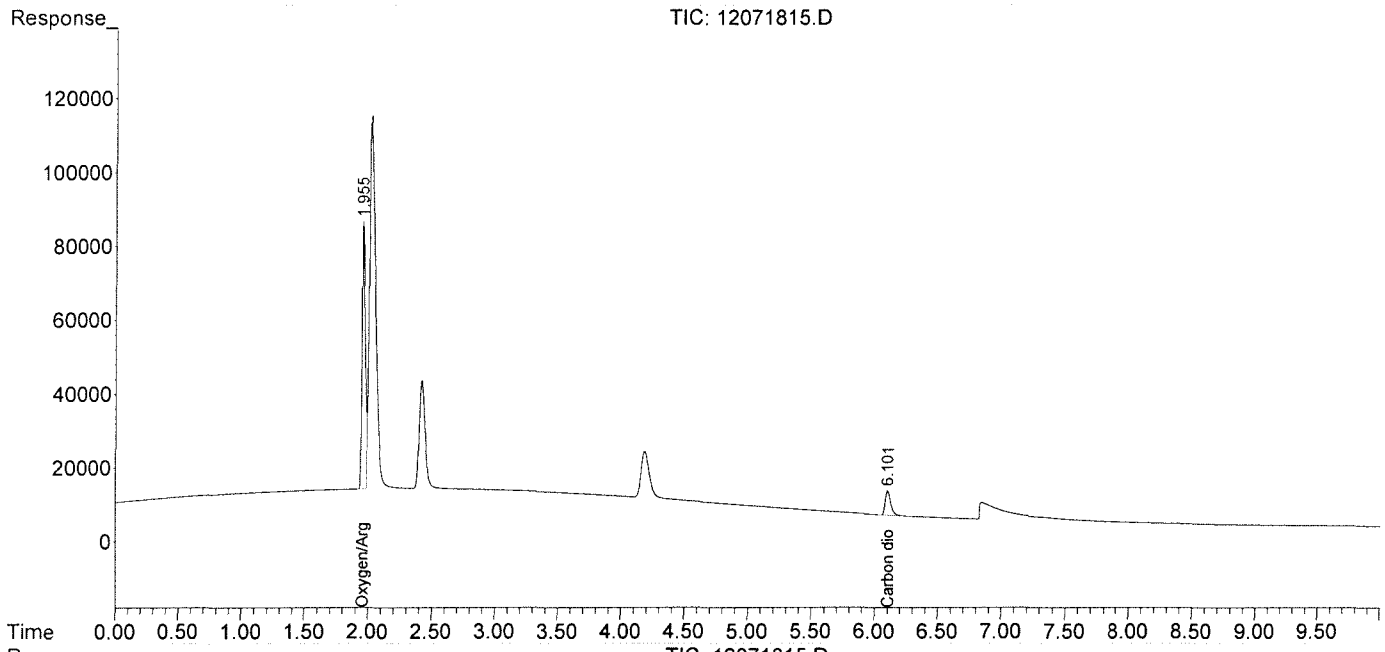
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	1.956f	1294006	0.272	ppm	
2)	Carbon monoxide	1.956f	1294006	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	
4)	Carbon dioxide	6.101	199445	849.681	ppm	m
6)	Methane (FID)	1.105	33145216	3508.241	ppm	
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

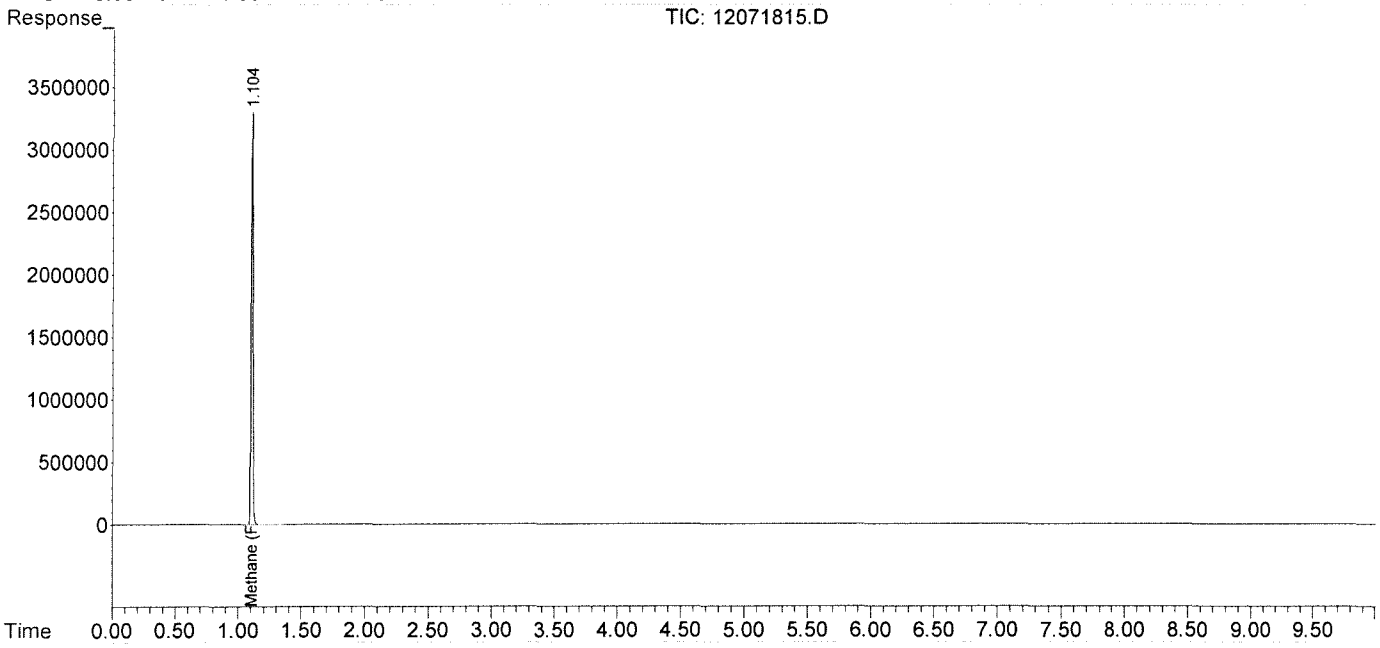
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_TCD\2018_12\07\
Data File : 12071815.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 07-Dec-2018, 15:16:21
Operator : MR
Sample : tcd lcsd s32-10081801
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Dec 07 16:24:55 2018
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

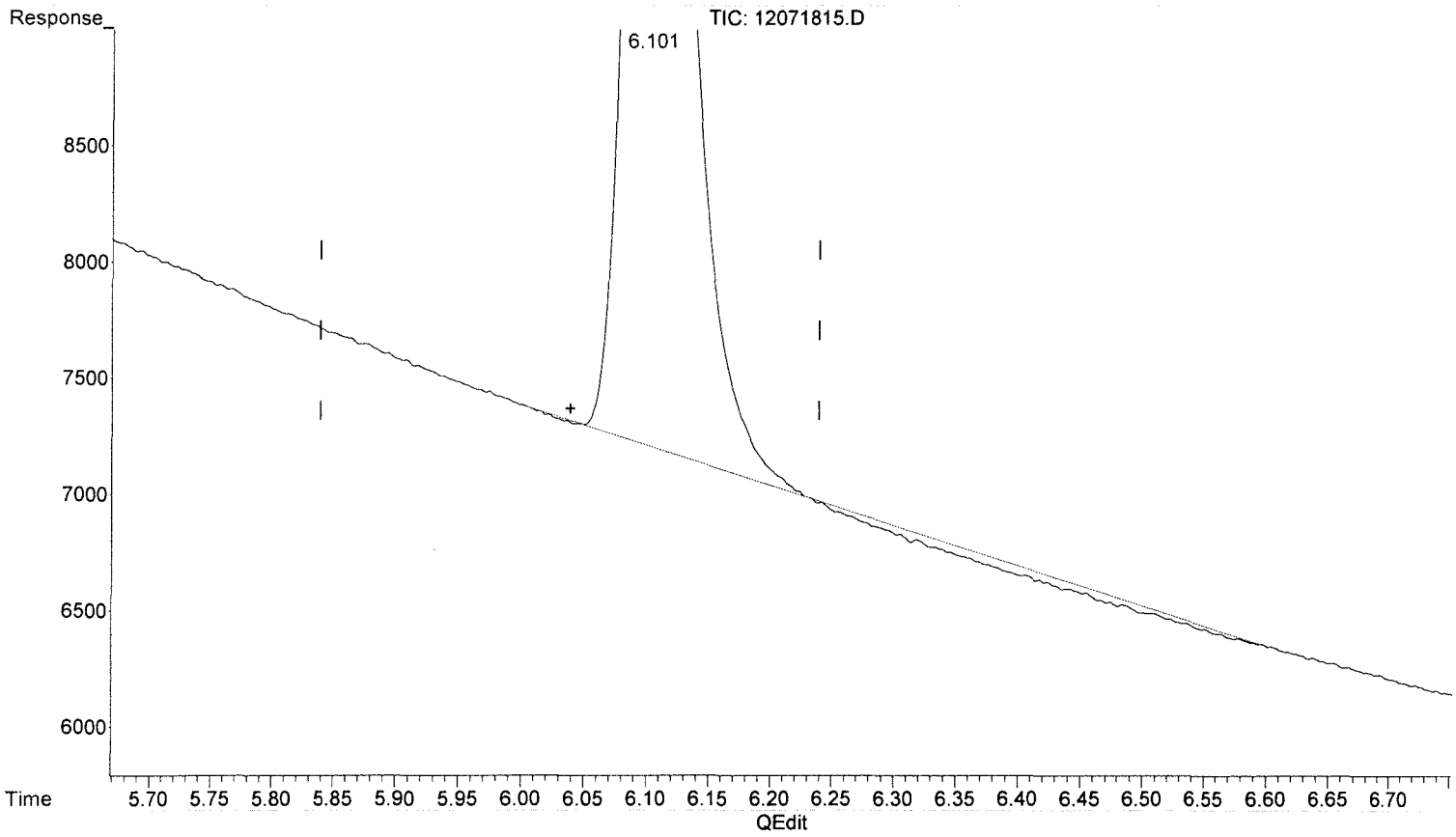




Data Path : J:\GC10\DATA\RSK_FID\2018_12\07\
Data File : 12071815.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 07-Dec-2018, 15:16:21
Operator : MR
Sample : tcd lcsd s32-10081801
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Dec 07 16:24:55 2018
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



(4) Carbon dioxide

6.102min 810.129 ppm

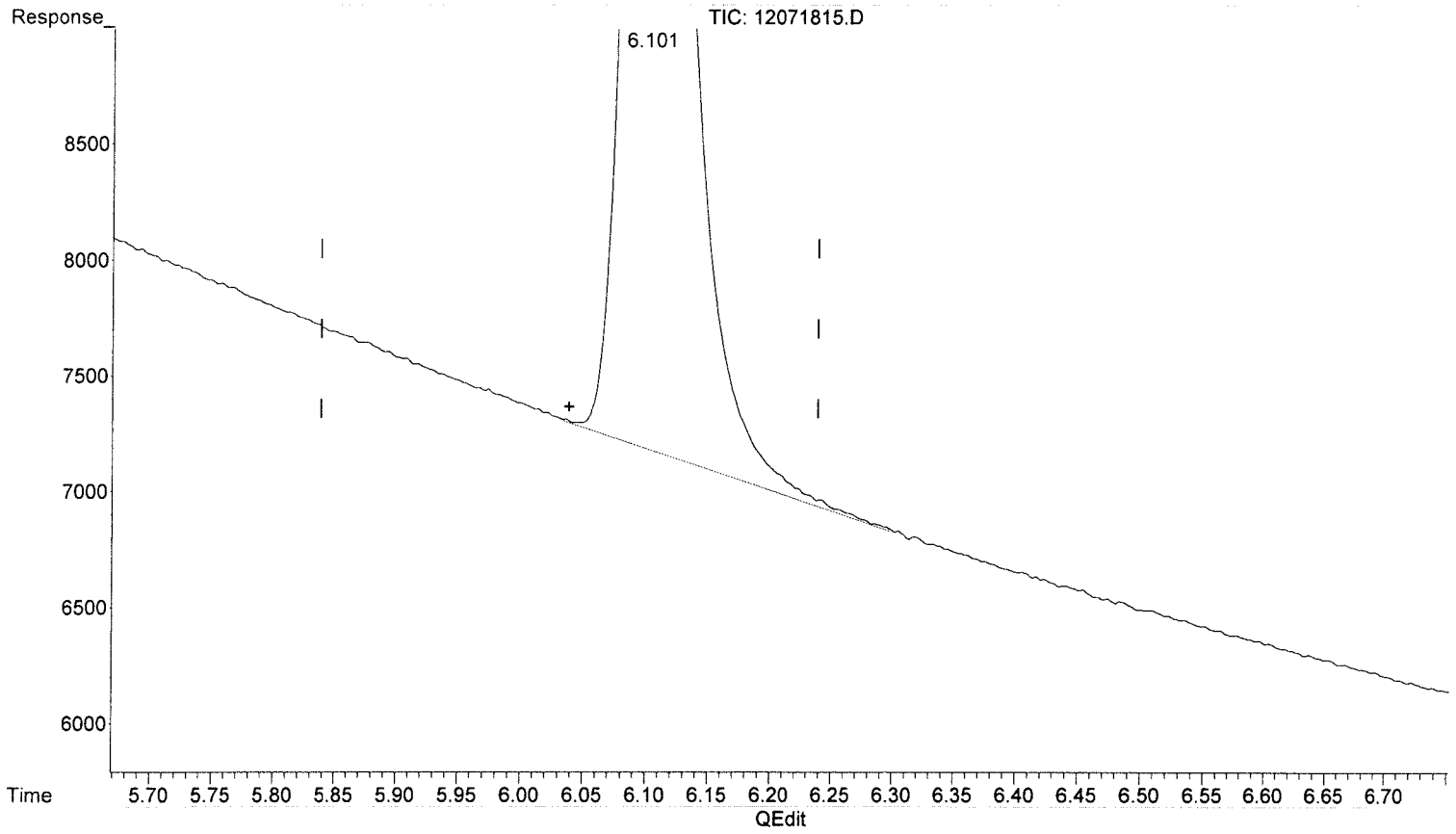
response 190161

(+) = Expected Retention Time

Data Path : J:\GC10\DATA\RSK_FID\2018_12\07\
Data File : 12071815.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 07-Dec-2018, 15:16:21
Operator : MR
Sample : tcd lcsd s32-10081801
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Dec 07 16:24:55 2018
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



(4) Carbon dioxide

6.101min 849.681 ppm m

response 199445

MK 12/7/18
BLC

(+) = Expected Retention Time

RS082817_CO2.M Fri Dec 07 16:25:20 2018 Page: 1

Response Factor Report HP5890

Method Path : I:\GC10\METHODS\
Method File : RS082817_CO2.M
Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
Last Update : Tue Aug 29 16:13:13 2017
Response Via : Initial Calibration

Calibration Files
1 =08291715.D 2 =08291716.D 3 =08291717.D
4 =08291719.D 5 =08291720.D 6 =08291721.D

	Compound	1	2	3	4	5	6	Avg		%RSD
1)	Oxygen/Argon	4.760						4.760	E6	0.00
2)	Carbon monoxide	2.775		1.066	0.043	0.033	0.027	0.657	E6	170.12
3)	Methane (TCD)							9.457		0.00
4)	Carbon dioxide	2.717	2.193	2.338	2.272	2.265	2.298	2.347	E2	7.99

Signal #2 Calibration Files
1 =08291715.D 2 =08291716.D 3 =08291717.D
4 =08291719.D 5 =08291720.D 6 =08291721.D

	Compound	1	2	3	4	5	6	Avg		%RSD
6)	Methane (FID)	1.253	1.160	1.005	0.927	0.848	0.848	0.945	E4	15.85
7)	Ethylene	1.677	1.605	1.900	1.749	1.597	1.579	1.684	E4	7.30
8)	Ethane	1.769	1.631	1.866	1.767	1.639	1.667	1.723	E4	5.40
9)	Propylene	2.402	2.309	2.767	2.551	2.331	2.333	2.449	E4	7.32
10)	Propane	2.906	2.737	2.817	2.639	2.410	2.420	2.655	E4	7.75
11)	Isobutylene							0.000		-1.00
12)	Isobutane							0.000		-1.00
13)	n-Butane							0.000		-1.00

(#) = Out of Range ### Number of calibration levels exceeded format ###

RS082817_CO2.M Wed Aug 30 13:24:19 2017

Compounds -- Compound #4 -- Carbon dioxide

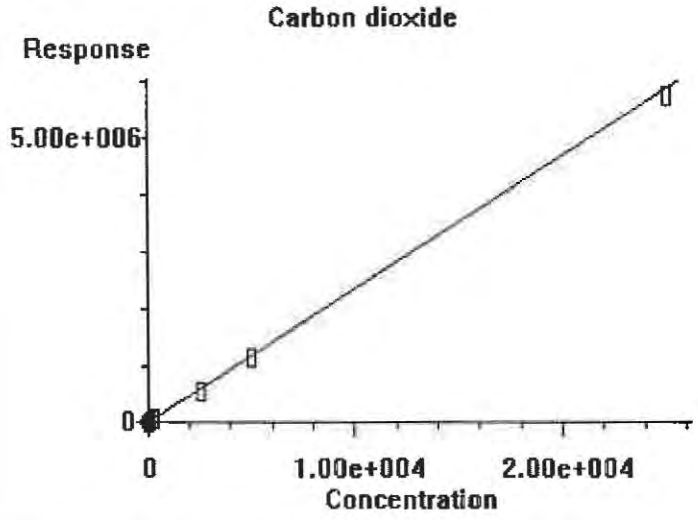
Search by: Ret Time | Name | Index — Find Compound

- Compound Database
- External Standard Compoun
  - Oxygen/Argon
  - Carbon monoxide
  - Methane (TCD)
  - Carbon dioxide
  - Signal #2
  - Methane (FID)
  - Ethylene
  - Ethane
  - Propylene
  - Propane
  - Isobutylene
  - Isobutane
  - n-Butane

Identification | Calibration | User-Defined | Advanced | Reporting

Lvl ID	Concentration	Response
1	25.000000	6793.665186
2	100.000000	21932.418000
3	250.000000	58460.642510
4	2500.000000	568043.388750
5	5000.000000	1132363.215937
6	25000.000000	5744294.891563
7	25000.000000	
8	25000.000000	
9	2000.000000	
10	30000.000000	

Lvl ID	Concentration	Response



0.000e+000	Quadratic term
2.347e+002	Linear term
0.000e+000	Constant term
7.987%	RF Rel Std Dev

OK | Cancel | Help | Print Calibration Curve | Copy Calibration Curve

Calibration Status Report HP5890

Method Path : I:\GC10\METHODS\
Method File : RS082817_CO2.M
Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
Last Update : Tue Aug 29 16:13:13 2017
Response Via : Initial Calibration

#	ID	Conc	ISTD Conc	Path\File
1	1	0	0	J:\GC10\DATA\RSK_FID\2017_08\29\08291715.D
2	2	0	0	J:\GC10\DATA\RSK_FID\2017_08\29\08291716.D
3	3	3	0	J:\GC10\DATA\RSK_FID\2017_08\29\08291717.D
4	4	10	0	J:\GC10\DATA\RSK_FID\2017_08\29\08291719.D
5	5	25	0	J:\GC10\DATA\RSK_FID\2017_08\29\08291720.D
6	6	125	0	J:\GC10\DATA\RSK_FID\2017_08\29\08291721.D
7	7	5000	0	J:\GC10\DATA\RSK_FID\2017_08\24\08241708.D
8	8	25000	0	J:\GC10\DATA\RSK_FID\2017_08\24\08241709.D
9	9	2000	0	J:\GC10\DATA\RSK_FID\2017_08\24\08241710.D
10	10	30000	0	J:\GC10\DATA\RSK_FID\2017_08\24\08241711.D

#	ID	Update Time	Quant Time	Acquisition Time
1	1	Aug 29 14:21 2017	Aug 29 14:20 2017	29-Aug-2017, 14:07
2	2	Aug 29 14:52 2017	Aug 29 14:51 2017	29-Aug-2017, 14:22
3	3	Aug 29 15:04 2017	Aug 29 15:04 2017	29-Aug-2017, 14:53
4	4	Aug 29 15:36 2017	Aug 29 15:36 2017	29-Aug-2017, 15:23
5	5	Aug 29 15:57 2017	Aug 29 15:57 2017	29-Aug-2017, 15:44
6	6	Aug 29 16:13 2017	Aug 29 16:13 2017	29-Aug-2017, 16:00
7	7	Aug 25 09:05 2017	Aug 24 16:00 2017	24-Aug-2017, 15:44
8	8	Aug 25 09:06 2017	Aug 24 16:13 2017	24-Aug-2017, 16:02
9	9	Aug 25 09:06 2017	Aug 24 16:31 2017	24-Aug-2017, 16:16
10	10	Aug 25 09:07 2017	Aug 24 16:42 2017	24-Aug-2017, 16:33

RS082817_CO2.M Wed Aug 30 13:24:30 2017

Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291715.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 14:07
Operator : MC
Sample : 25ppm s32-08291701 0.25ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 14:20:06 2017
Quant Method : I:\GC10\METHODS\RS082417.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Fri Aug 25 09:19:14 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	0.000	0	N.D.	ppm	d
2)	Carbon monoxide	1.776	277465	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	
4)	Carbon dioxide	5.978	6794	27.870	ppm	m
6)	Methane (FID)	0.000	0	N.D.	ppm	d
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

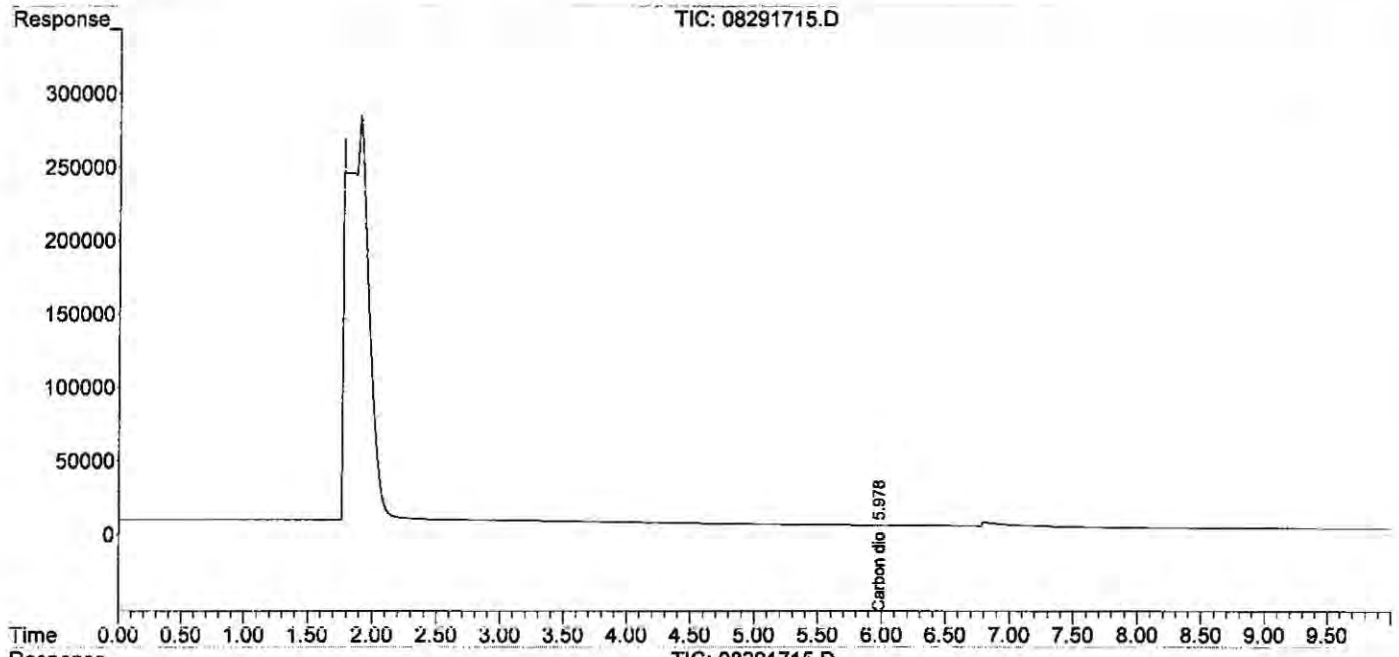
(f)=RT Delta > 1/2 Window (m)=manual int.

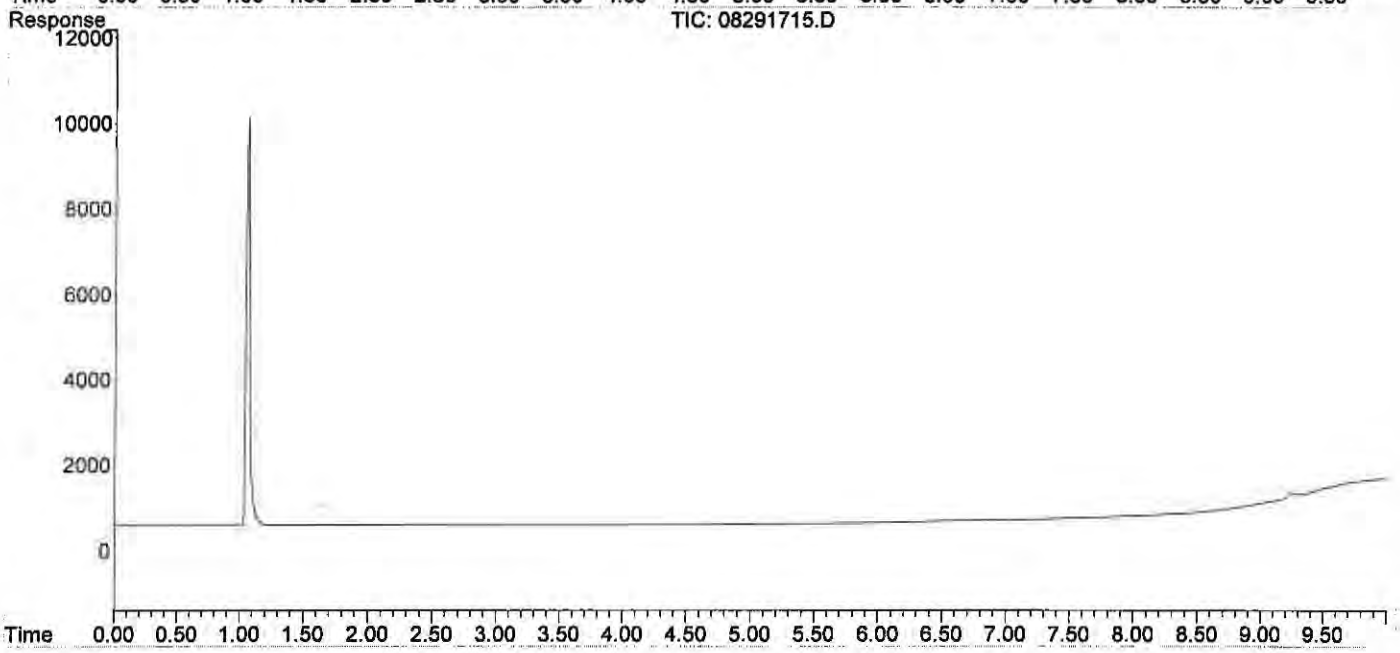
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291715.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 14:07
Operator : MC
Sample : 25ppm s32-08291701 0.25ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 14:20:06 2017
Quant Method : I:\GC10\METHODS\RS082417.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Fri Aug 25 09:19:14 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



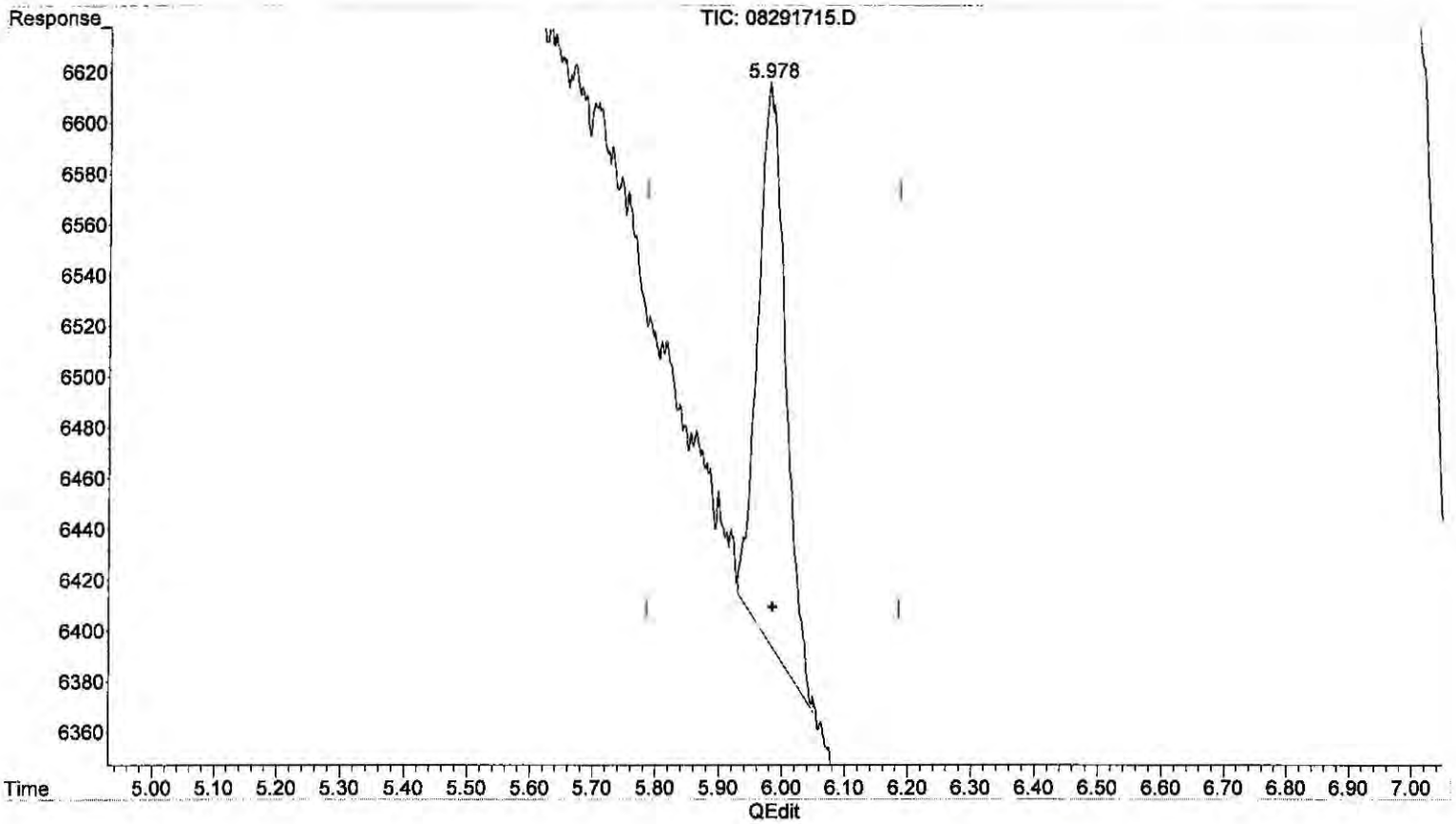


Quantitation Report (Qedit)

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291715.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 14:07
Operator : MC
Sample : 25ppm s32-08291701 0.25ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 14:20:06 2017
Quant Method : I:\GC10\METHODS\RS082417.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Fri Aug 25 09:19:14 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



(4) Carbon dioxide
5.978min 27.870 ppm m
response 6794

(+) = Expected Retention Time

Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291716.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 14:22
Operator : MC
Sample : 100ppm s32-08291702 0.2ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 14:51:38 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 14:21:08 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	1.790	-598962	N.D.	ppm	
2)	Carbon monoxide	0.000	0	N.D.	ppm	d
3)	Methane (TCD)	0.000	0	N.D.	ppm	
4)	Carbon dioxide	5.978	21932	87.858	ppm	
6)	Methane (FID)	0.000	0	N.D.	ppm	d
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

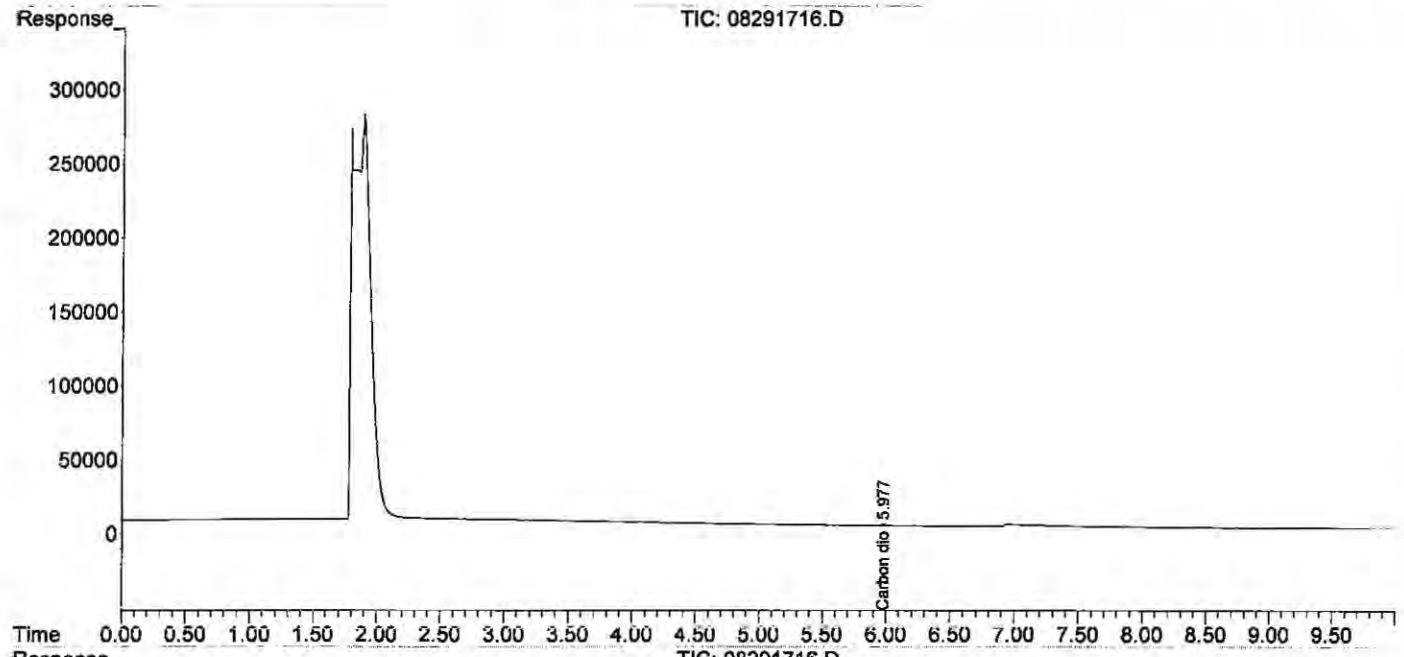
(f)=RT Delta > 1/2 Window (m)=manual int.

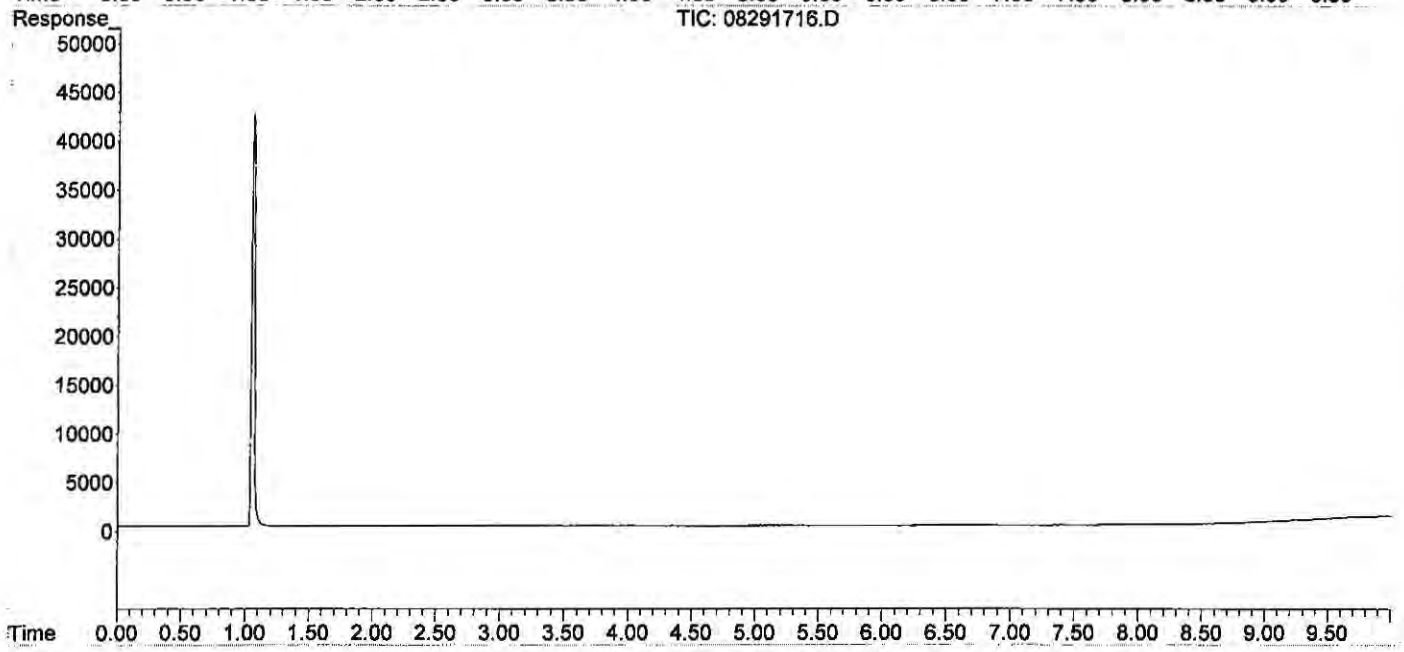
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291716.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 14:22
Operator : MC
Sample : 100ppm s32-08291702 0.2ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 14:51:38 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 14:21:08 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291717.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 14:53
Operator : MC
Sample : 250ppm s32-08291702 0.5ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 15:03:42 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 14:52:06 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	1.920f	-30716454	N.D.	ppm	
2)	Carbon monoxide	0.000	0	N.D.	ppm	d
3)	Methane (TCD)	0.000	0	N.D.	ppm	d
4)	Carbon dioxide	5.970	58461	240.204	ppm	m
6)	Methane (FID)	0.000	0	N.D.	ppm	d
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

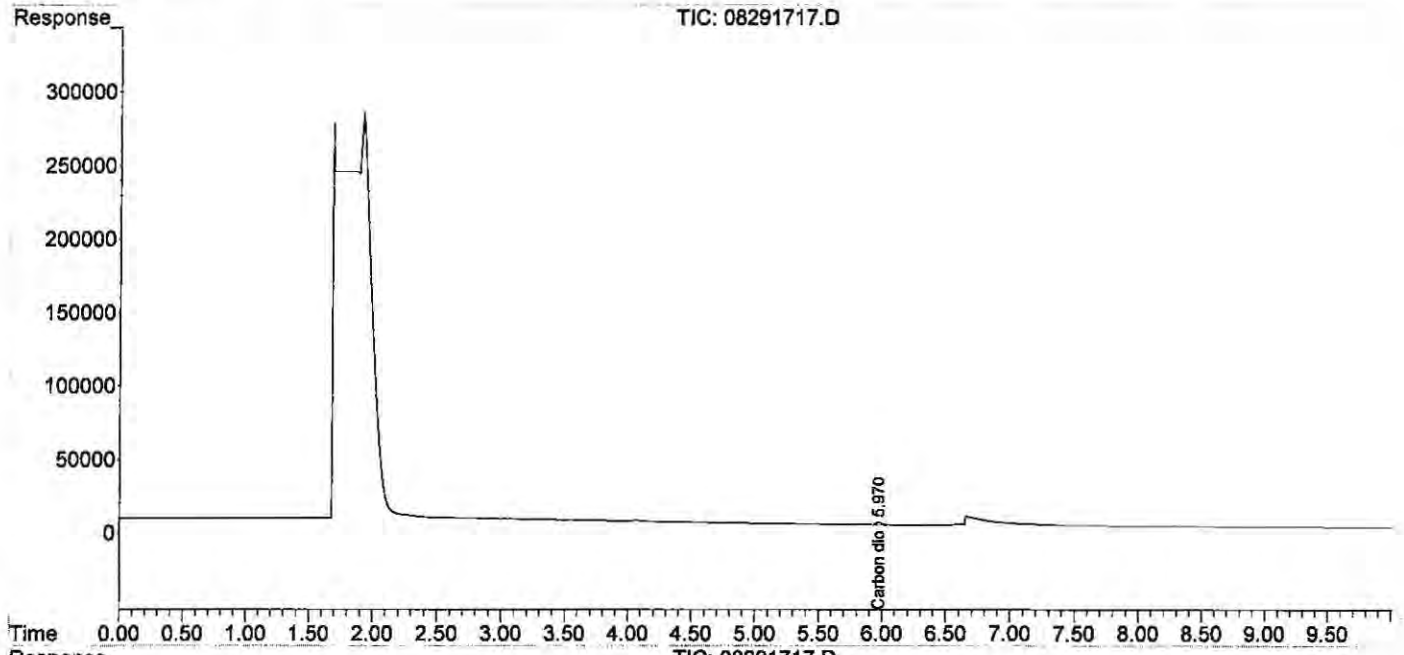
(f)=RT Delta > 1/2 Window (m)=manual int.

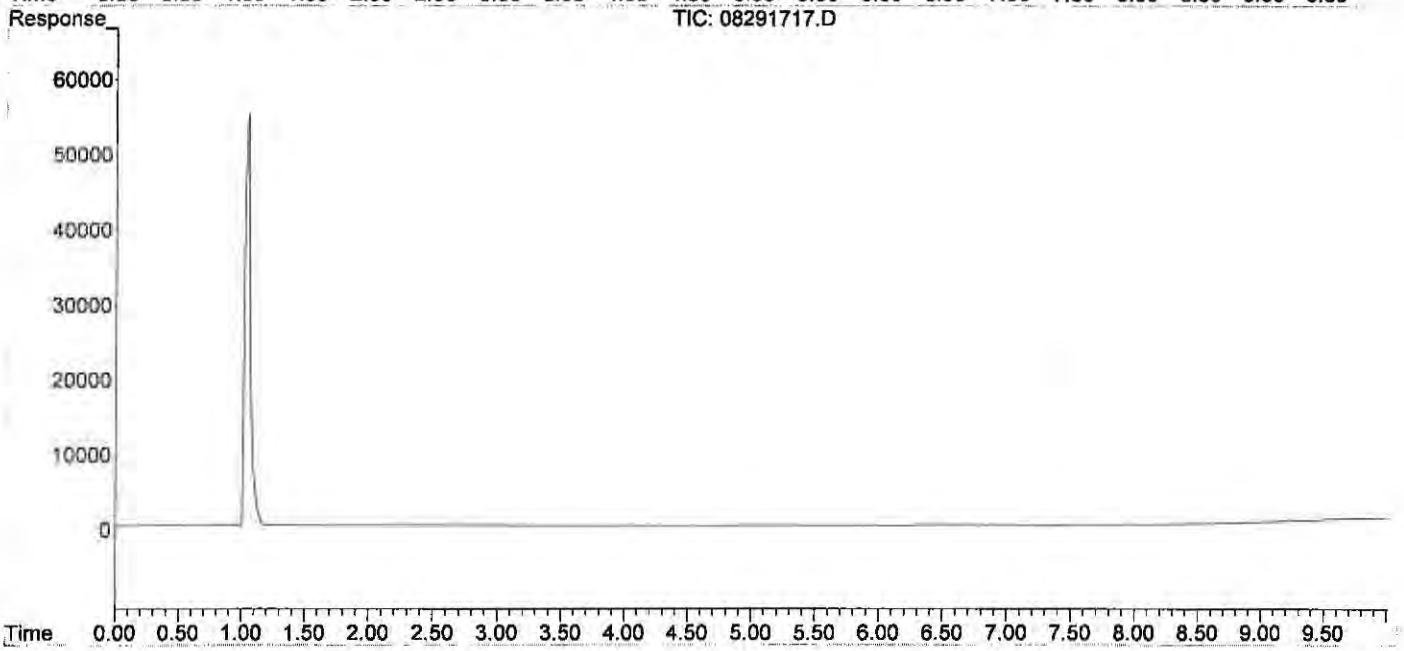
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291717.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 14:53
Operator : MC
Sample : 250ppm s32-08291702 0.5ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 15:03:42 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 14:52:06 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



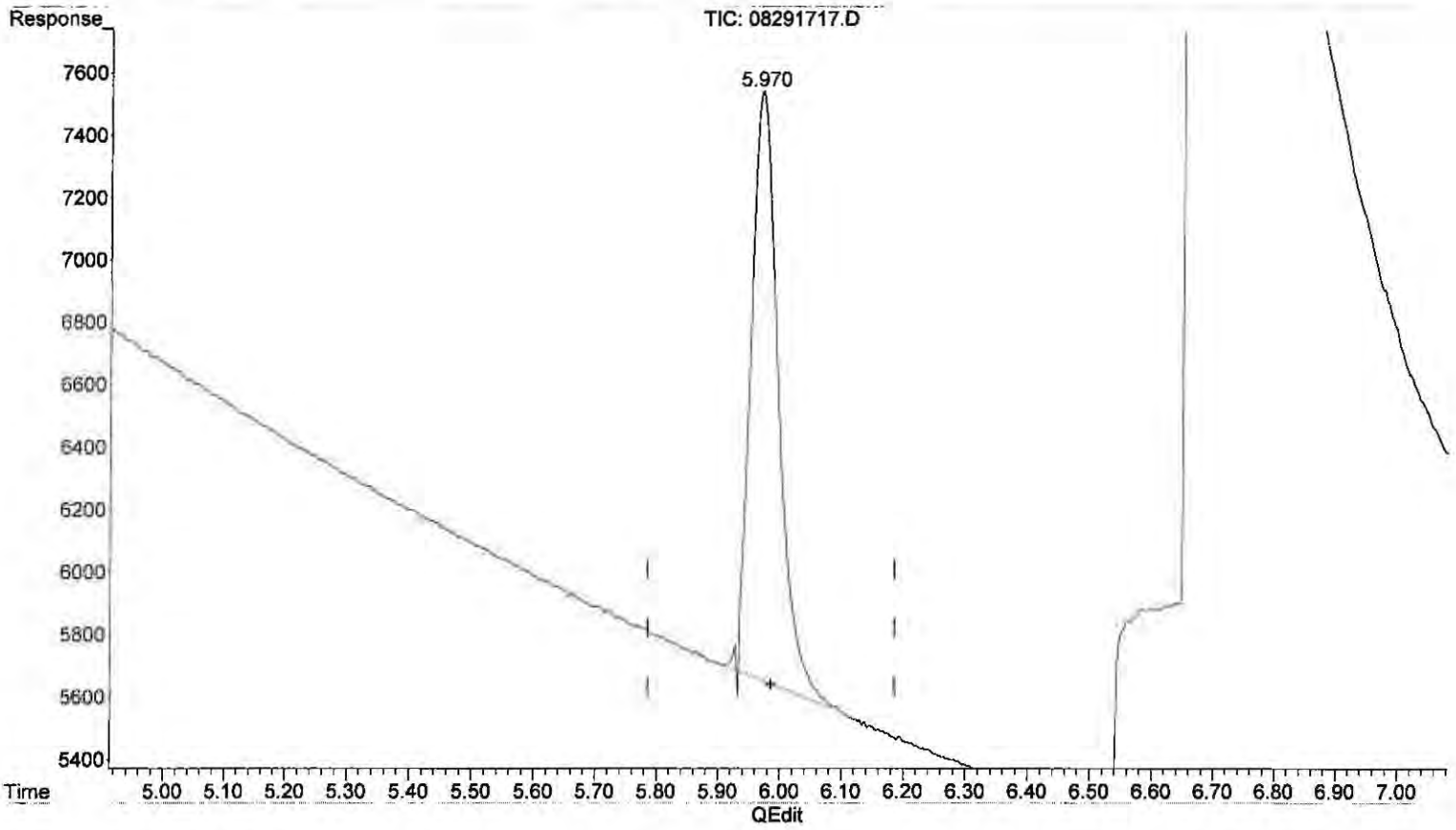


Quantitation Report (Qedit)

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291717.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 14:53
Operator : MC
Sample : 250ppm s32-08291702 0.5ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 15:03:42 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 14:52:06 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



(4) Carbon dioxide

5.970min 240.204 ppm m

response 58461

(+) = Expected Retention Time

RS082817_CO2.M Wed Aug 30 13:19:20 2017 Page: 1

Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291719.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 15:23
Operator : MC
Sample : 2500ppm s32-08231701 50ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 15:35:50 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 15:04:14 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	0.000	0	N.D.	ppm	d
2)	Carbon monoxide	1.891	425113	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	d
4)	Carbon dioxide	5.962	568043	2369.673	ppm	
6)	Methane (FID)	0.000	0	N.D.	ppm	d
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

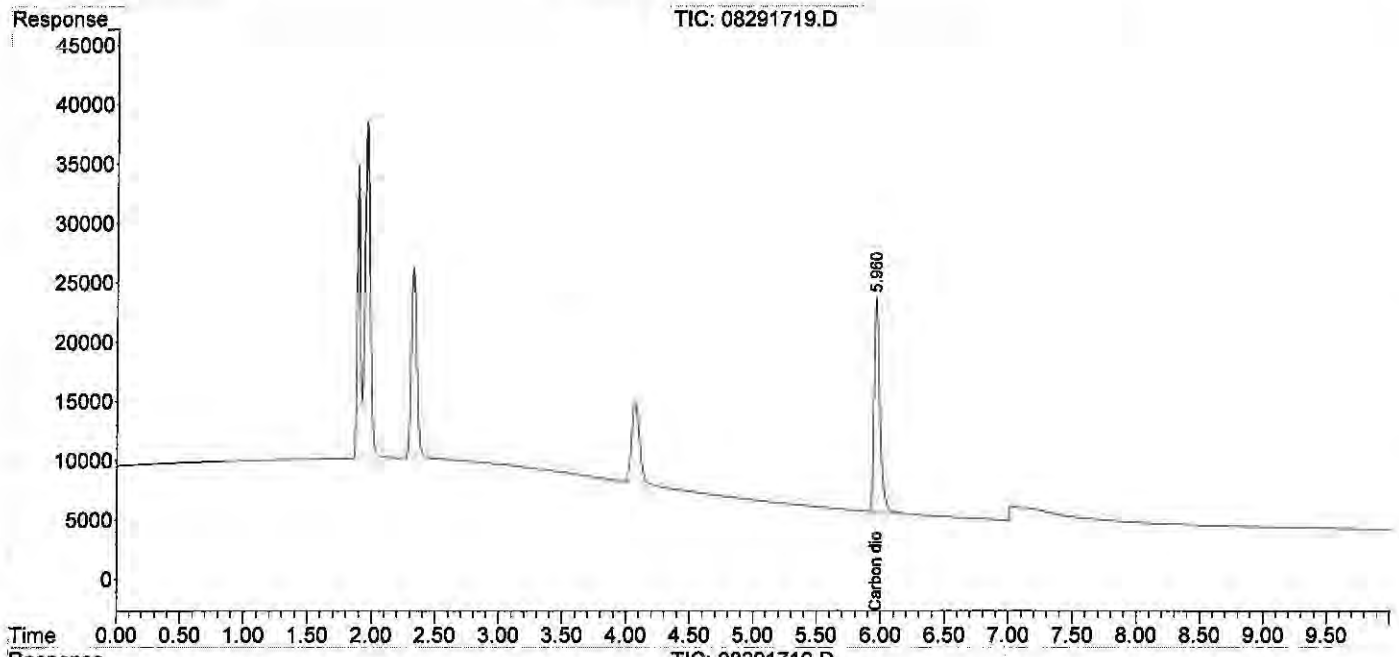
(f)=RT Delta > 1/2 Window (m)=manual int.

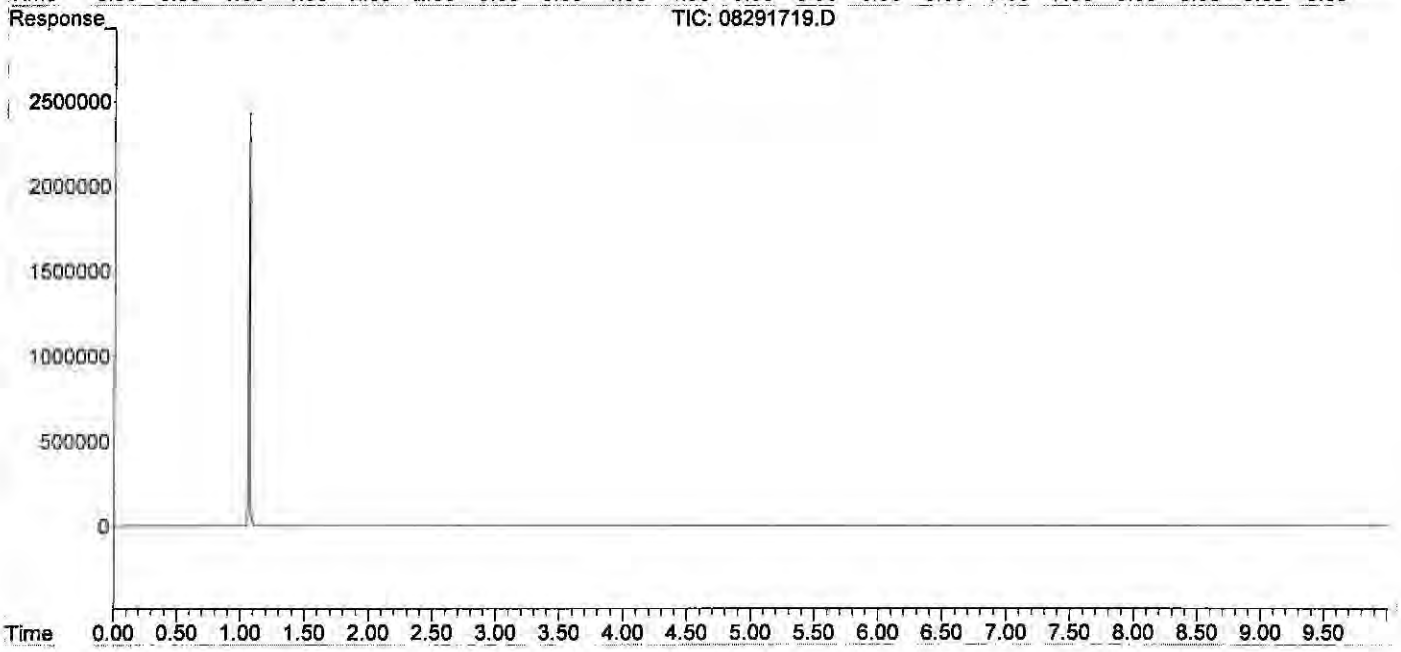
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291719.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 15:23
Operator : MC
Sample : 2500ppm s32-08231701 50ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 15:35:50 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 15:04:14 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291720.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 15:44
Operator : MC
Sample : 5000ppm s32-08231701 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 15:57:17 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 15:36:14 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	0.000	0	N.D.	ppm	d
2)	Carbon monoxide	1.880	819221	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	d
4)	Carbon dioxide	5.948	1132363	4753.126	ppm	
6)	Methane (FID)	0.000	0	N.D.	ppm	d
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

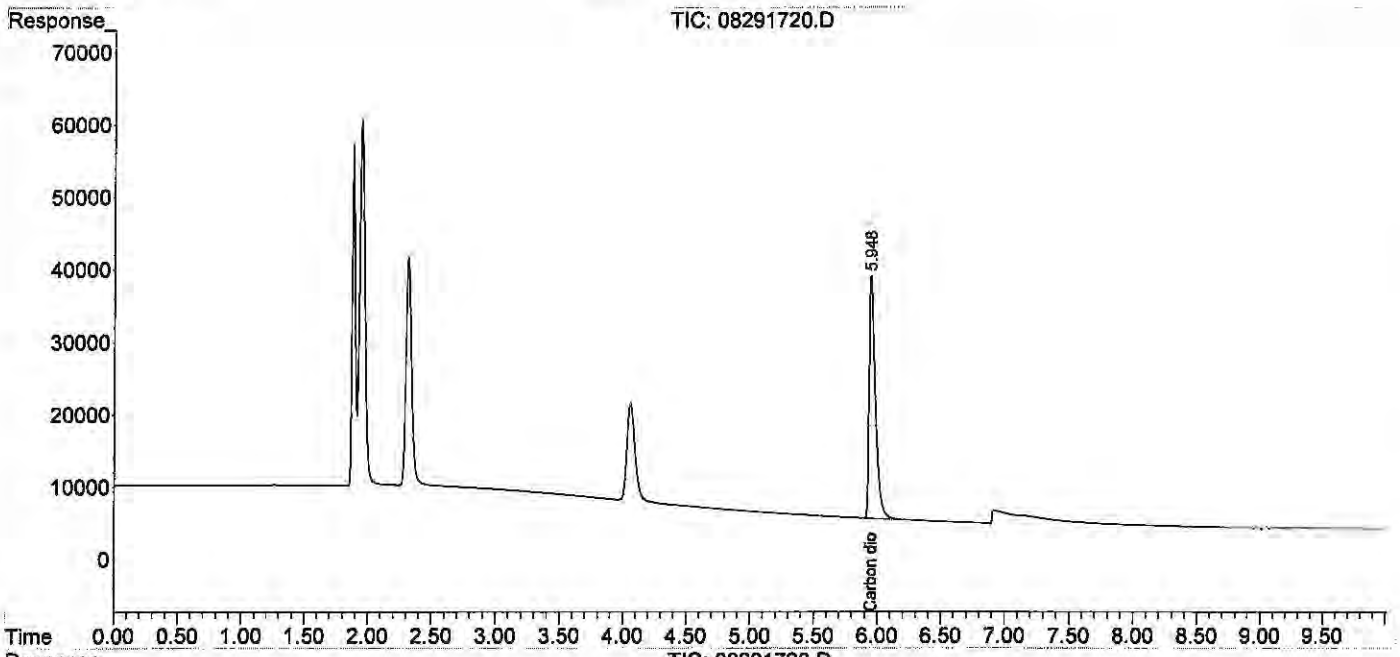
(f)=RT Delta > 1/2 Window (m)=manual int.

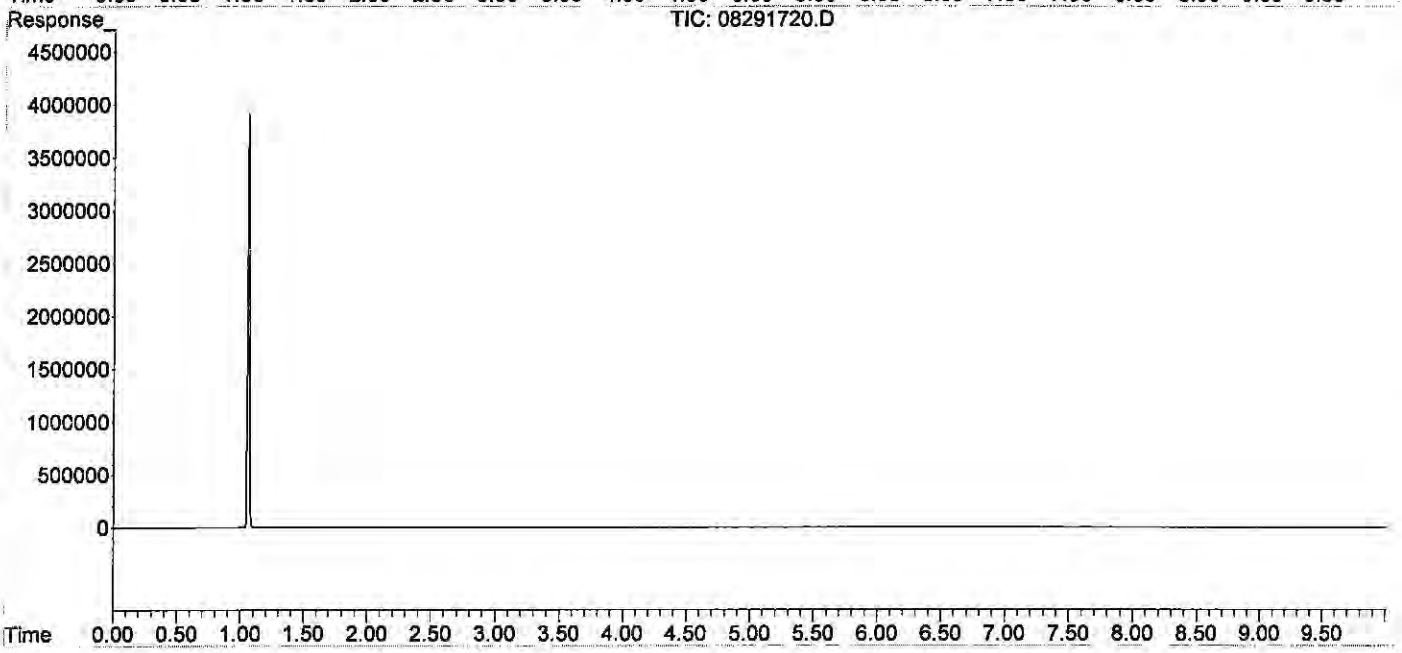
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291720.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 15:44
Operator : MC
Sample : 5000ppm s32-08231701 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 15:57:17 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 15:36:14 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291721.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 16:00
Operator : MC
Sample : 25000ppm s32-08231701 0.5ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 16:12:53 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 15:57:37 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	0.000	0	N.D.	ppm	d
2)	Carbon monoxide	1.827	3325463	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	d
4)	Carbon dioxide	5.879f	5744295	24443.288	ppm	
6)	Methane (FID)	0.000	0	N.D.	ppm	d
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

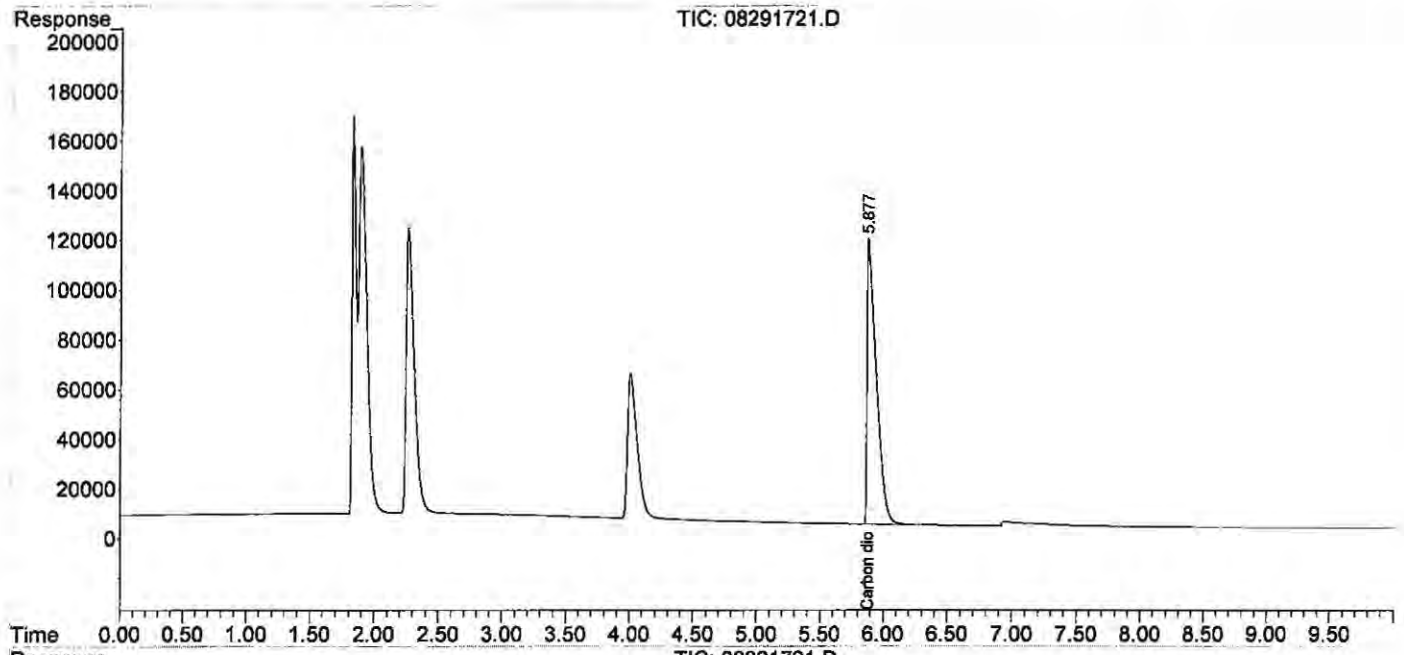
(f)=RT Delta > 1/2 Window (m)=manual int.

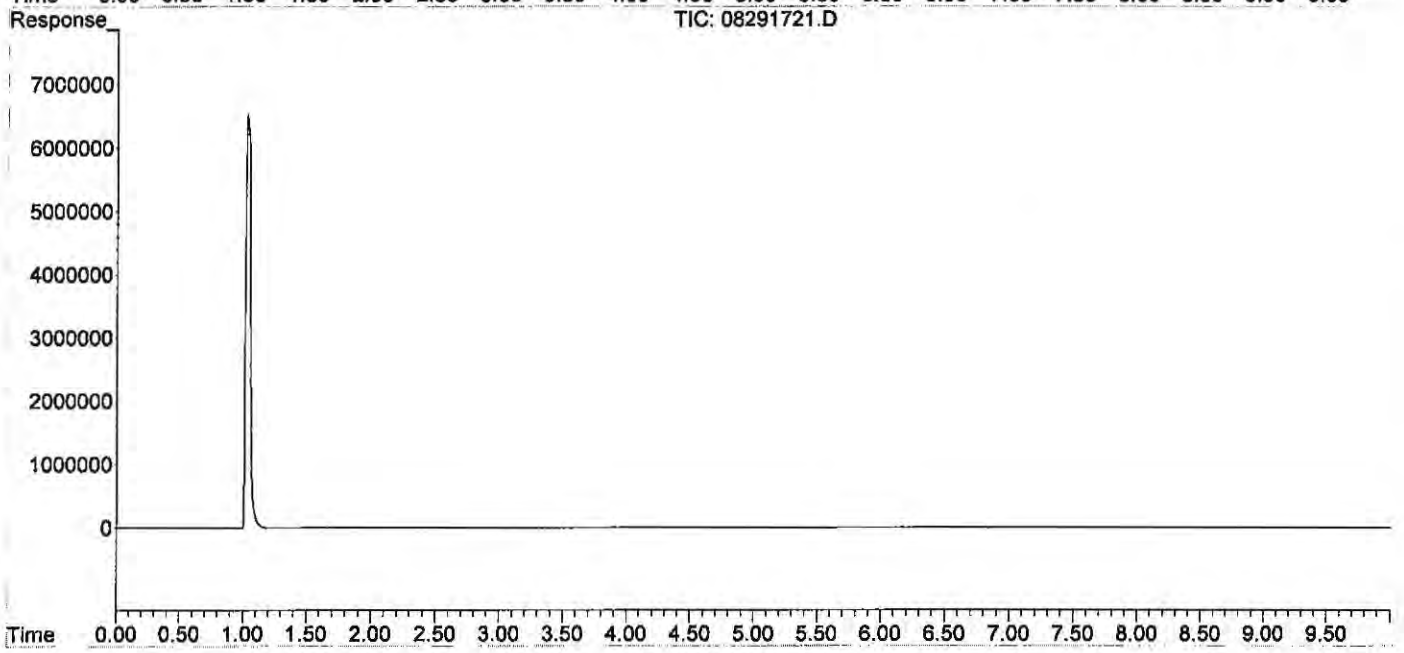
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291721.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 16:00
Operator : MC
Sample : 25000ppm s32-08231701 0.5ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 16:12:53 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 15:57:37 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291723.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 16:35
Operator : MC
Sample : icv s30-07071701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 16:54:07 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.886	536422	0.113	ppm
2)	Carbon monoxide	1.886	536422	N.D.	ppm
3)	Methane (TCD)	4.059f	626500	66244.710	ppm
4)	Carbon dioxide	5.947	1163775	4957.948	ppm
6)	Methane (FID)	1.062	37290742	3947.023	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	0.000	0	N.D.	ppm
10)	Propane	0.000	0	N.D.	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

Actual %D
5000 99.16

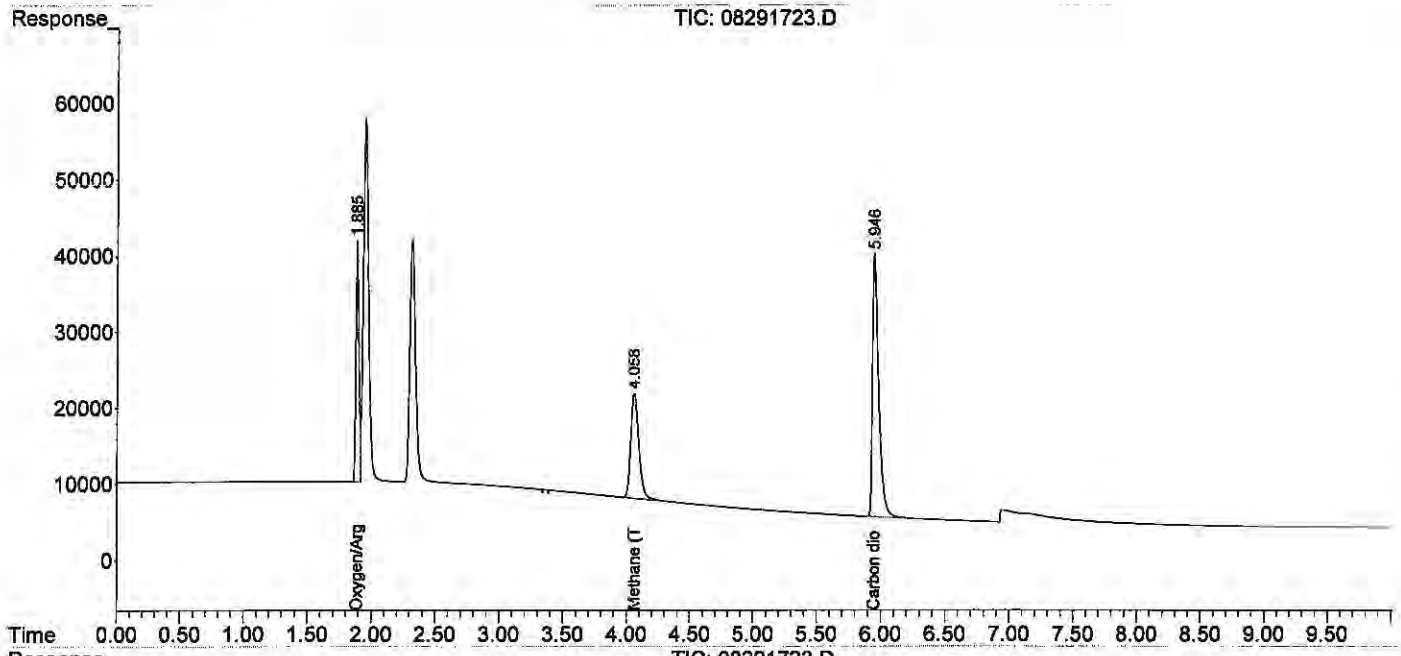
(f)=RT Delta > 1/2 Window (m)=manual int.

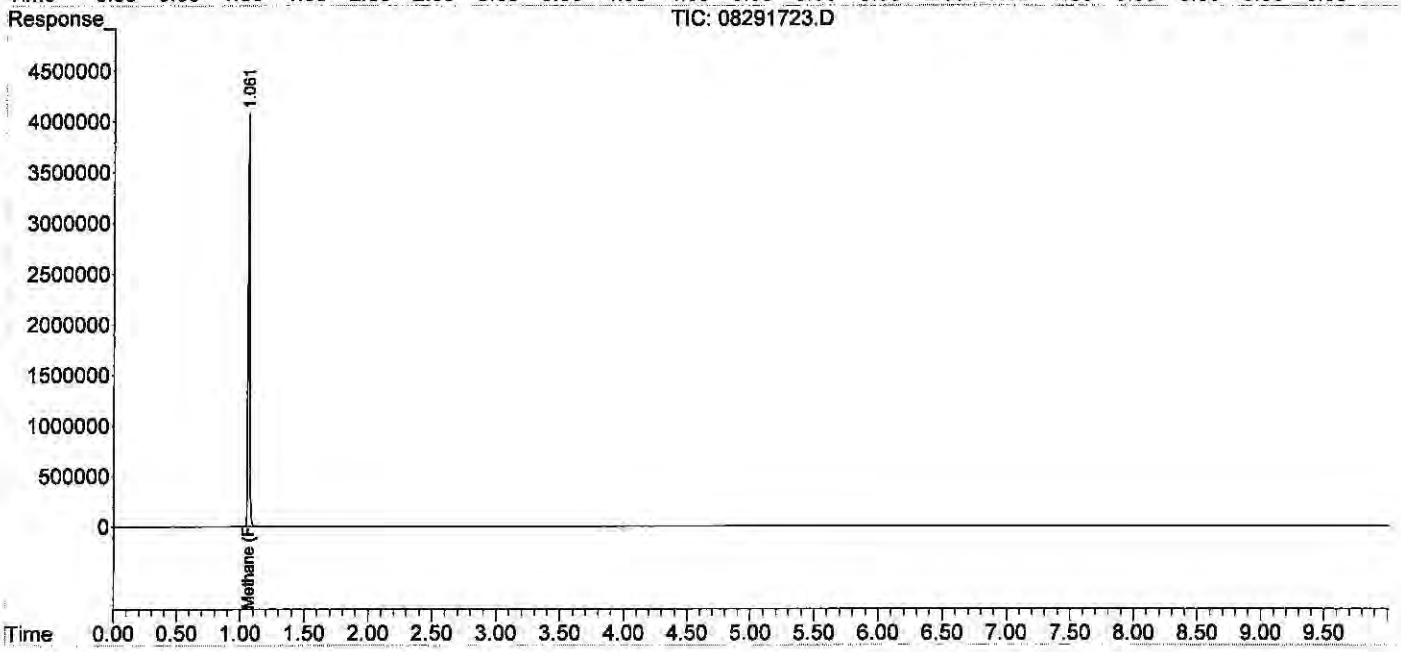
W 9/4/17

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291723.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 16:35
Operator : MC
Sample : icv s30-07071701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 16:54:07 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





ALS Environmental

Method : RSK175 Headspace Method for Dissolved Hydrocarbon in Water by FID/TCD

Client : ALS Laboratory Group | Analyst : MR | Instrument : GC#10

Service Request: P1806587 | Date Analysis : 12/07/18 | Detector : FID#10, TCD#10

Sample Vol. (ml) : 32.00 ml | Head Space Vol.(ml) : 8.00 ml | Gas Constant : 24.05684 (20°C)

HEAD SPACE RESULT (ppm)

Sample ID	Inj. Vol.	Carbon Dioxide
std s32-11091801	0.100	4912.902
ACTUAL		5000.00
%Difference		1.7%
mcs 0.1ml	0.100	8.031
rb 0.1ml	0.100	0.000
tcd lcs s32-10081801	0.100	849.928
tcd lcsd s32-10081801	0.100	849.681
P1806587-001 0.1ml	0.100	3834.733
P1806587-002 0.1ml	0.100	5017.685
P1806587-003 0.1ml	0.100	3552.695

FINAL HEAD SPACE RESULT (ppm)

	Carbon Dioxide
WWt.	44.10
HENRY'S CONSTANT	1.42E+03
RL	100.00
mcs 0.1ml	80.310
tcd lcs s32-10081801	8499.280
tcd lcsd s32-10081801	8496.810
P1806587-001 0.1ml	38347.330
P1806587-002 0.1ml	50176.850
P1806587-003 0.1ml	35526.950

std s32-11091801	4995.339
ACTUAL	5000.00
%Difference	0.1%

00964203

Data Path : J:\GC10\DATA\RSK_TCD\2018_12\07\
Data File : 12071801.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 07-Dec-2018, 11:29:47
Operator : MR
Sample : std s32-11091801
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Dec 07 11:42:08 2018
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	1.983f	522071	0.110	ppm	
2)	Carbon monoxide	1.983f	522071	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	
4)	Carbon dioxide	6.085	1153201	4912.902	ppm	m
6)	Methane (FID)	1.114	36227742	3834.510	ppm	
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

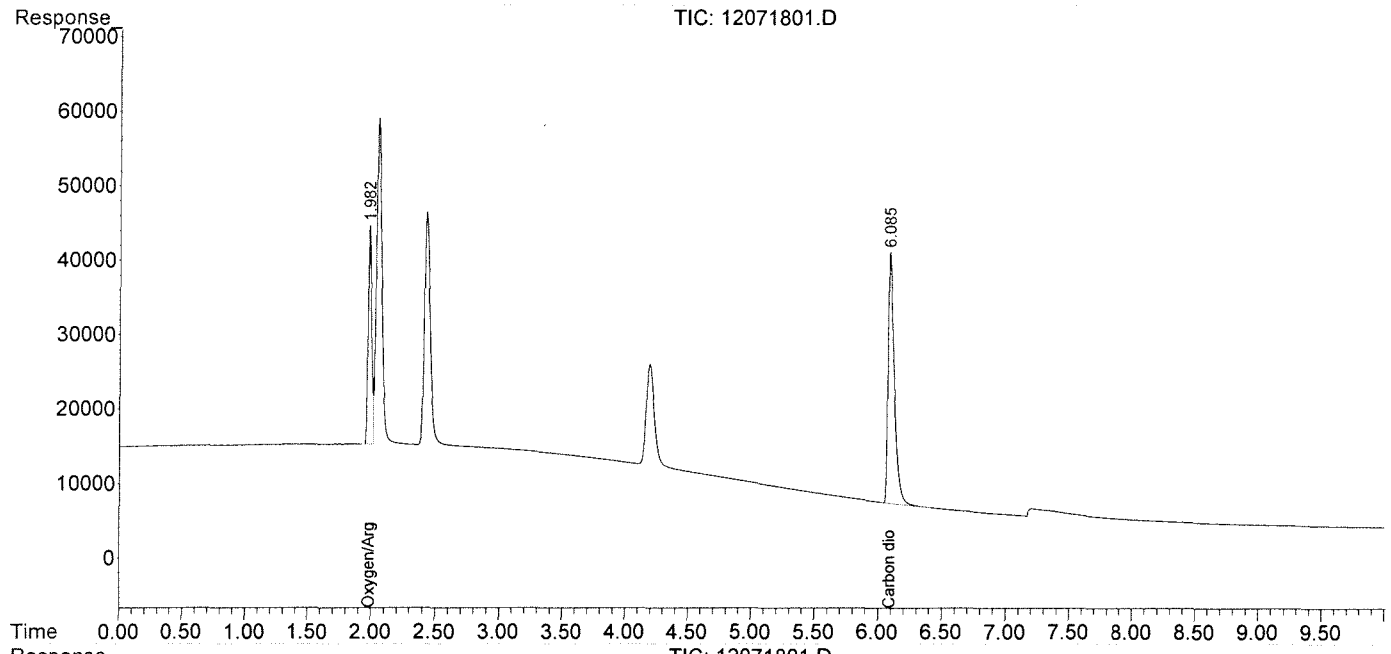
(f)=RT Delta > 1/2 Window (m)=manual int.

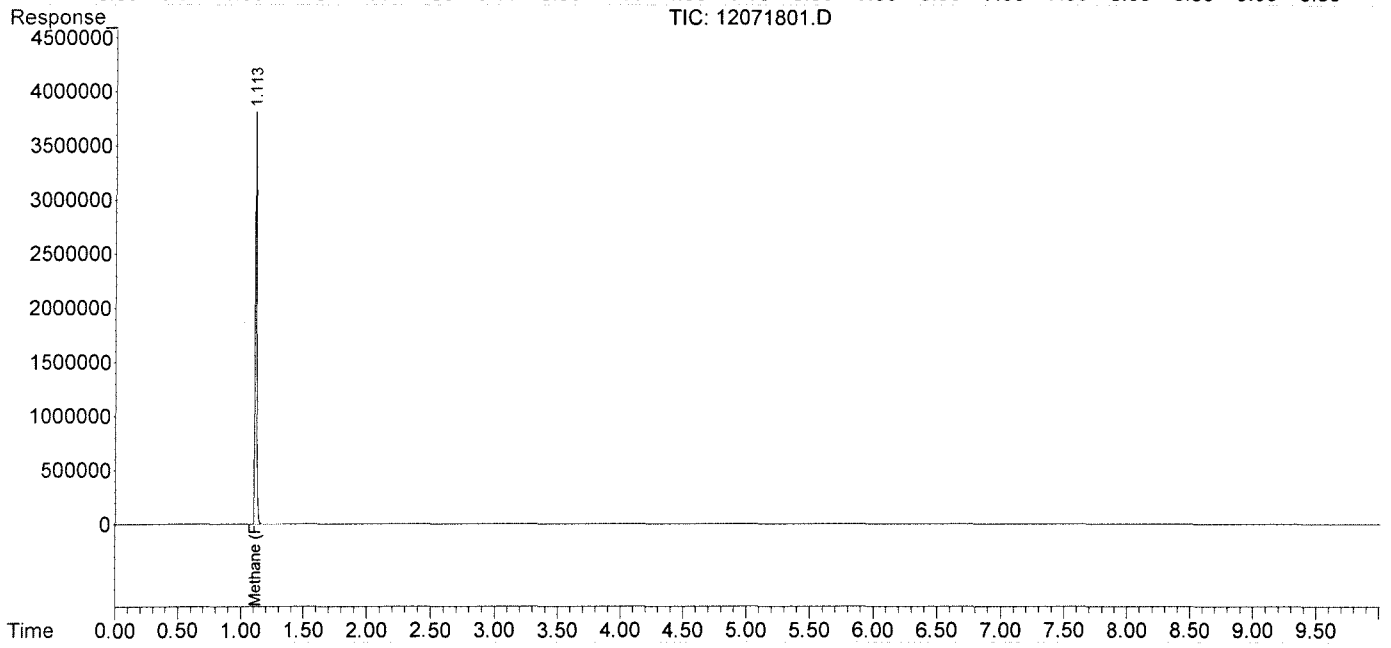
MK 12/10/18

Data Path : J:\GC10\DATA\RSK_TCD\2018_12\07\
Data File : 12071801.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 07-Dec-2018, 11:29:47
Operator : MR
Sample : std s32-11091801
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Dec 07 11:42:08 2018
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

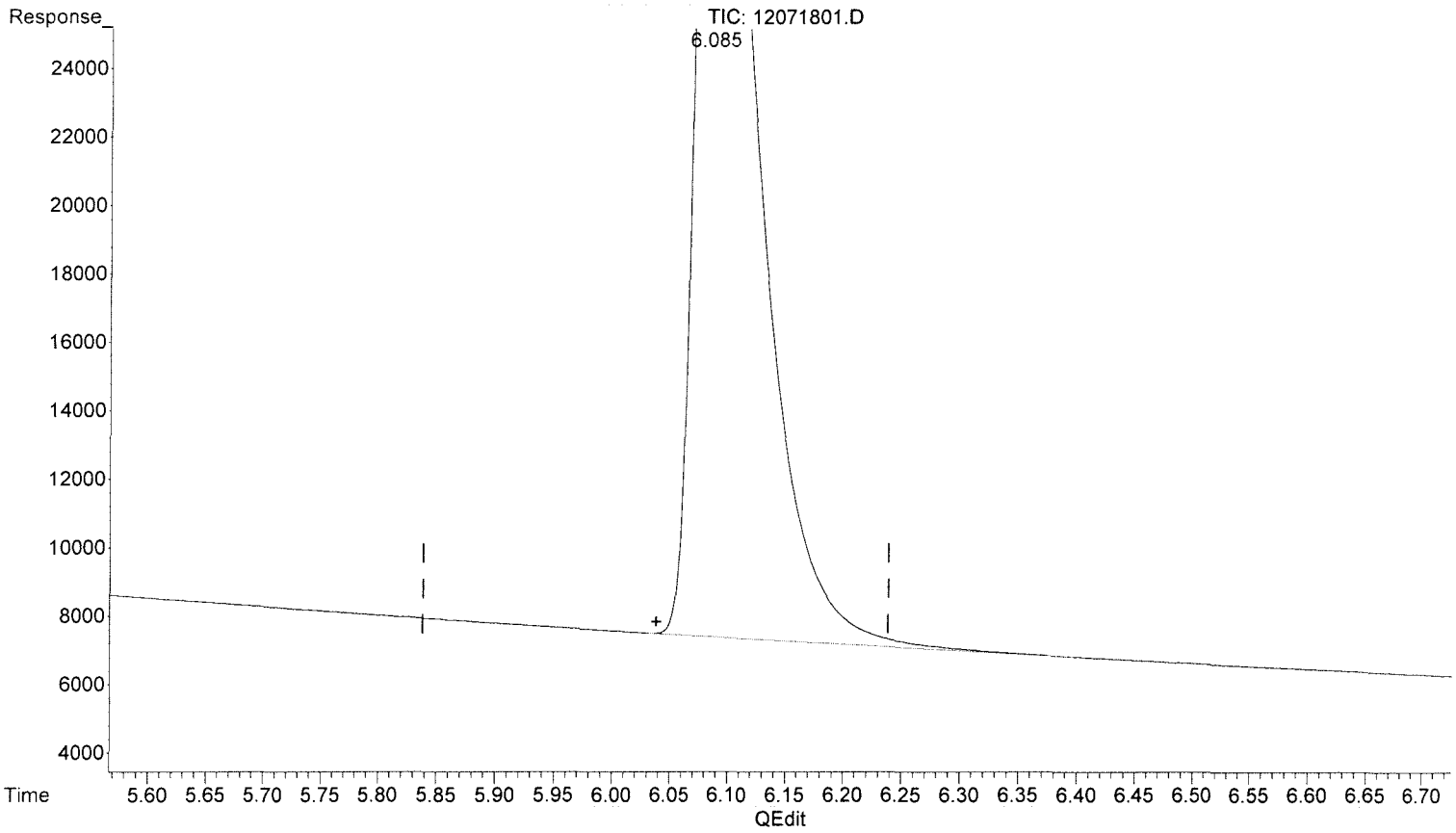




Data Path : J:\GC10\DATA\RSK_TCD\2018_12\07\
Data File : 12071801.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 07-Dec-2018, 11:29:47
Operator : MR
Sample : std s32-11091801
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Dec 07 11:42:08 2018
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



(4) Carbon dioxide

6.085min 4912.902 ppm m

response 1153201

MR 12/10/18
BLC
no previous

(+) = Expected Retention Time

RS082817_CO2.M Mon Dec 10 10:04:38 2018 Page: 1

Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_TCD\2018_12\07\
Data File : 12071816.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 07-Dec-2018, 15:35:36
Operator : MR
Sample : std s32-11091801
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Dec 07 16:06:13 2018
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

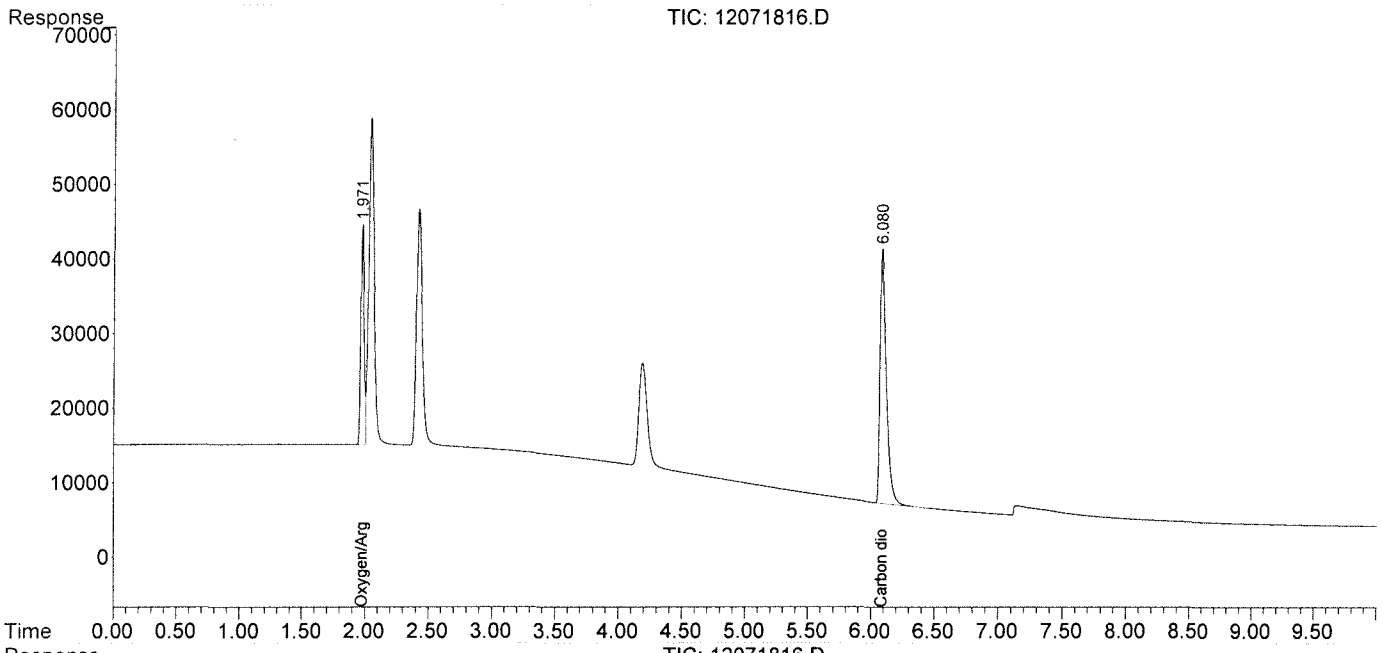
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.972f	527365	0.111	ppm
2)	Carbon monoxide	1.972f	527365	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	6.082	1172552	4995.339	ppm
6)	Methane (FID)	1.104	36158659	3827.198	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	0.000	0	N.D.	ppm
10)	Propane	0.000	0	N.D.	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

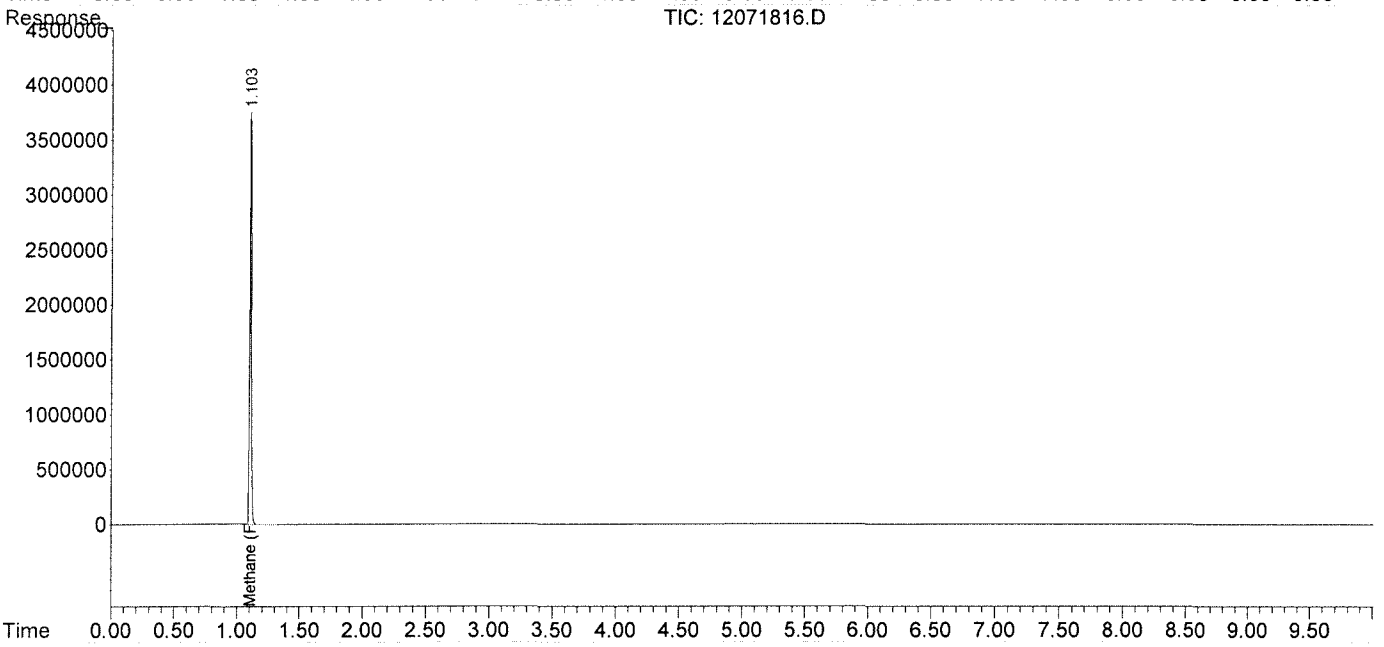
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_TCD\2018_12\07\
Data File : 12071816.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 07-Dec-2018, 15:35:36
Operator : MR
Sample : std s32-11091801
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Dec 07 16:06:13 2018
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Injection Log

Directory: I:\GC10\DATA\RSK_FID\2017_08\29\

	Date/Time	File Name	Sample ID	Misc Info	Operator	Acquisition Method	Comments
1	29-Aug-17, 07:58:00	08291701.D	std s30-06161601		MC	RSKBOTH.M	Pass
2	29-Aug-17, 08:11:02	08291702.D	mb 0.5ml		MC	RSKBOTH.M	Pass
3	29-Aug-17, 08:24:13	08291703.D	4089-001 0.5ml		MC	RSKBOTH.M	
4	29-Aug-17, 08:39:29	08291704.D	4089-002 0.5ml		MC	RSKBOTH.M	
5	29-Aug-17, 08:53:38	08291705.D	4089-003 0.5ml		MC	RSKBOTH.M	
6	29-Aug-17, 09:33:52	08291706.D	4089-004 0.5ml		MC	RSKBOTH.M	
7	29-Aug-17, 09:50:51	08291707.D	4089-005 0.5ml		MC	RSKBOTH.M	
8	29-Aug-17, 10:07:54	08291708.D	4089-006 0.5ml		MC	RSKBOTH.M	
9	29-Aug-17, 10:42:34	08291709.D	4089-007 0.5ml		MC	RSKBOTH.M	
10	29-Aug-17, 11:06:01	08291710.D	4089-008 0.5ml		MC	RSKBOTH.M	
11	29-Aug-17, 11:23:53	08291711.D	4089-009 0.5ml		MC	RSKBOTH.M	
12	29-Aug-17, 11:37:17	08291712.D	lcs s30-05241604		MC	RSKBOTH.M	Pass
13	29-Aug-17, 11:50:31	08291713.D	lcs s30-05241604		MC	RSKBOTH.M	Pass
14	29-Aug-17, 12:29:45	08291714.D	std s30-06161601		MC	RSKBOTH.M	Pass
15	29-Aug-17, 14:07:01	08291715.D	25ppm s32-08291701 0.25ml		MC	RSKBOTH.M	Curve
16	29-Aug-17, 14:22:12	08291716.D	100ppm s32-08291702 0.2ml		MC	RSKBOTH.M	Curve
17	29-Aug-17, 14:53:00	08291717.D	250ppm s32-08291702 0.5ml		MC	RSKBOTH.M	Curve
18	29-Aug-17, 15:07:43	08291718.D	mls inject		MC	RSKBOTH.M	
19	29-Aug-17, 15:23:21	08291719.D	2500ppm s32-08231701 50ul		MC	RSKBOTH.M	Curve
20	29-Aug-17, 15:44:54	08291720.D	5000ppm s32-08231701 0.1ml		MC	RSKBOTH.M	Curve
21	29-Aug-17, 16:00:09	08291721.D	25000ppm s32-08231701 0.5ml		MC	RSKBOTH.M	Curve
22	29-Aug-17, 16:15:43	08291722.D	mb 0.1ml		MC	RSKBOTH.M	Pass
23	29-Aug-17, 16:35:37	08291723.D	lcv s30-07071701		MC	RSKBOTH.M	Pass

Injection Log

Directory: I:\GC10\DATA\RSK_TCD\2018_12\07\

	Date/Time	File Name	Sample ID	Misc Info	Operator	Acquisition Method	Comments
1	07-Dec-18, 11:29:47	12071801.D	std s32-11091801		MR	RSKBOTH.M	pass
2	07-Dec-18, 11:44:59	12071802.D	rb 0.1ml		MR	RSKBOTH.M	pass
3	07-Dec-18, 11:59:04	12071803.D	mcs 0.1ml		MR	RSKBOTH.M	pass
4	07-Dec-18, 12:12:51	12071804.D	XXtcd lcs		MR	RSKBOTH.M	
5	07-Dec-18, 12:53:12	12071805.D	tcd lcs s32-10081801		MR	RSKBOTH.M	pass
6	07-Dec-18, 13:07:01	12071806.D	P1806583-001 0.1ml		MR	RSKBOTH.M	
7	07-Dec-18, 13:21:35	12071807.D	P1806583-002 0.1ml		MR	RSKBOTH.M	
8	07-Dec-18, 13:37:07	12071808.D	P1806583-003 0.1ml		MR	RSKBOTH.M	
9	07-Dec-18, 13:52:35	12071809.D	XXP1806583-004 0.1		MR	RSKBOTH.M	
10	07-Dec-18, 14:08:45	12071810.D	P1806583-005 0.1ml		MR	RSKBOTH.M	
11	07-Dec-18, 14:22:08	12071811.D	P1806587-001 0.1ml		MR	RSKBOTH.M	
12	07-Dec-18, 14:35:39	12071812.D	P1806587-002 0.1ml		MR	RSKBOTH.M	
13	07-Dec-18, 14:48:58	12071813.D	P1806587-003 0.1ml		MR	RSKBOTH.M	
14	07-Dec-18, 15:02:35	12071814.D	P1806583-004 50ul		MR	RSKBOTH.M	
15	07-Dec-18, 15:16:21	12071815.D	tcd lcsd s32-10081801		MR	RSKBOTH.M	pass
16	07-Dec-18, 15:35:36	12071816.D	std s32-11091801		MR	RSKBOTH.M	pass

Data Path : J:\GC10\DATA\RSK_FID\2018_12\04\
Data File : 12041811.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 04-Dec-2018, 12:11:55
Operator : MR
Sample : P1806587-001 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Dec 05 11:20:11 2018
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

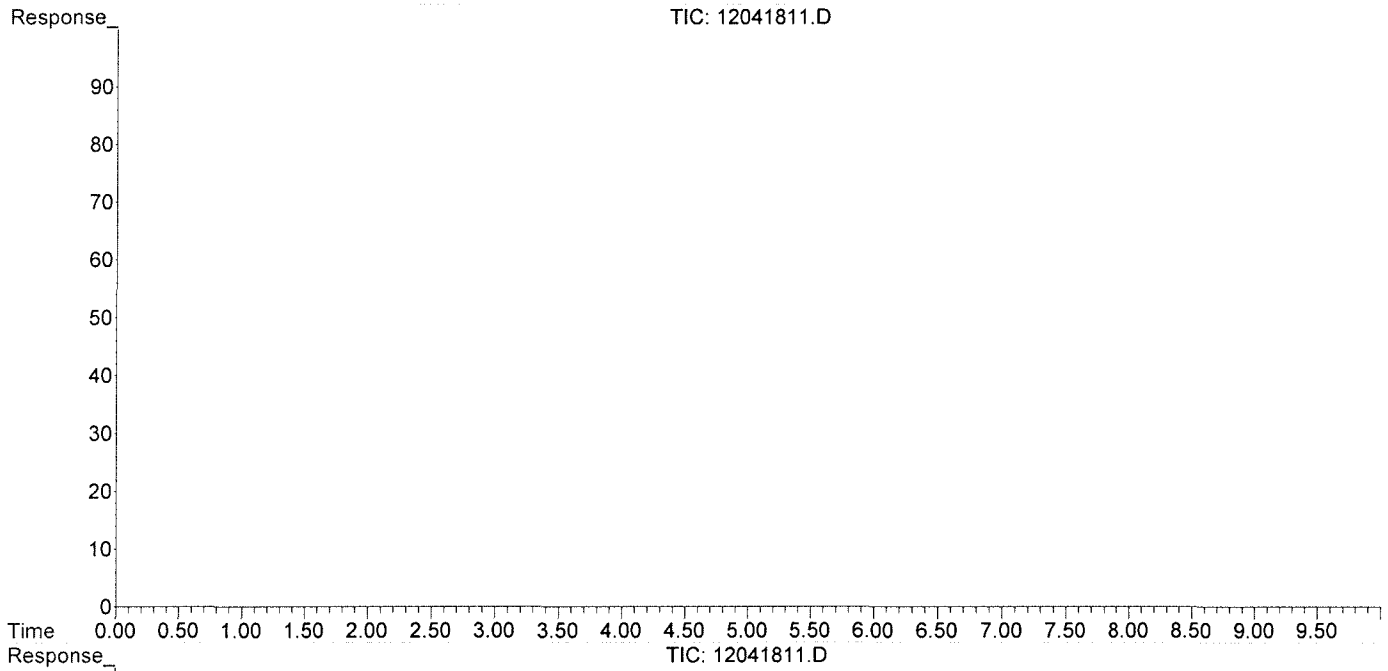
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	0.000	0	N.D.	ppm
2)	Carbon monoxide	0.000	0	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.127	92812	10.232	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	0.000	0	N.D.	ppm
10)	Propane	0.000	0	N.D.	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

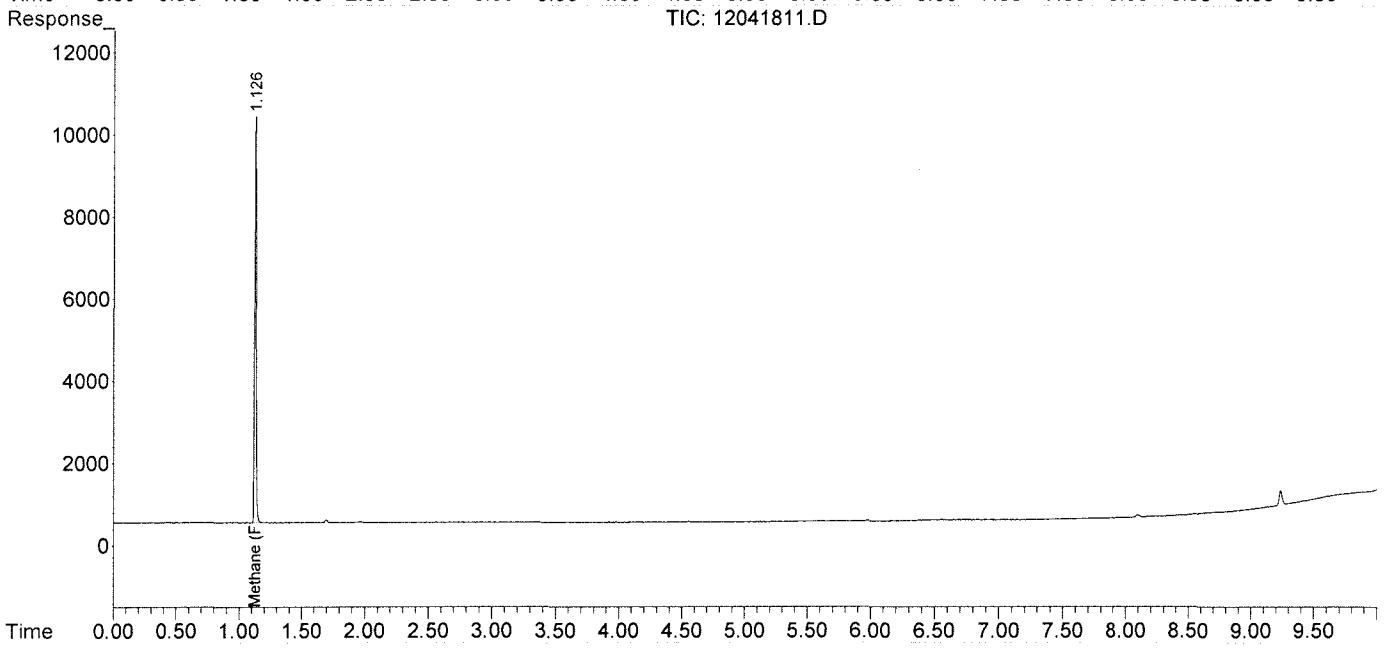
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2018_12\04\
Data File : 12041811.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 04-Dec-2018, 12:11:55
Operator : MR
Sample : P1806587-001 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Dec 05 11:20:11 2018
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_FID\2018_12\04\
Data File : 12041812.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 04-Dec-2018, 12:29:30
Operator : MR
Sample : P1806587-002 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Dec 05 11:20:56 2018
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

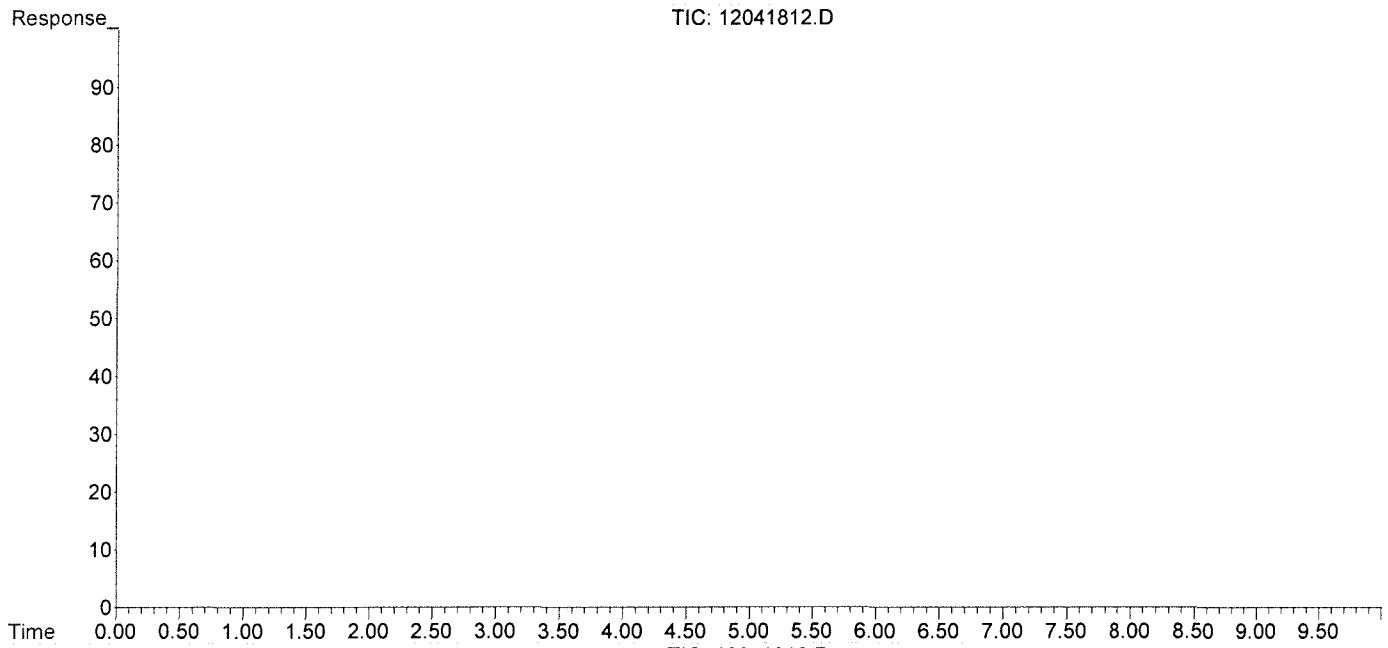
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	0.000	0	N.D.	ppm
2)	Carbon monoxide	0.000	0	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.127	26608	2.933	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	0.000	0	N.D.	ppm
10)	Propane	0.000	0	N.D.	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

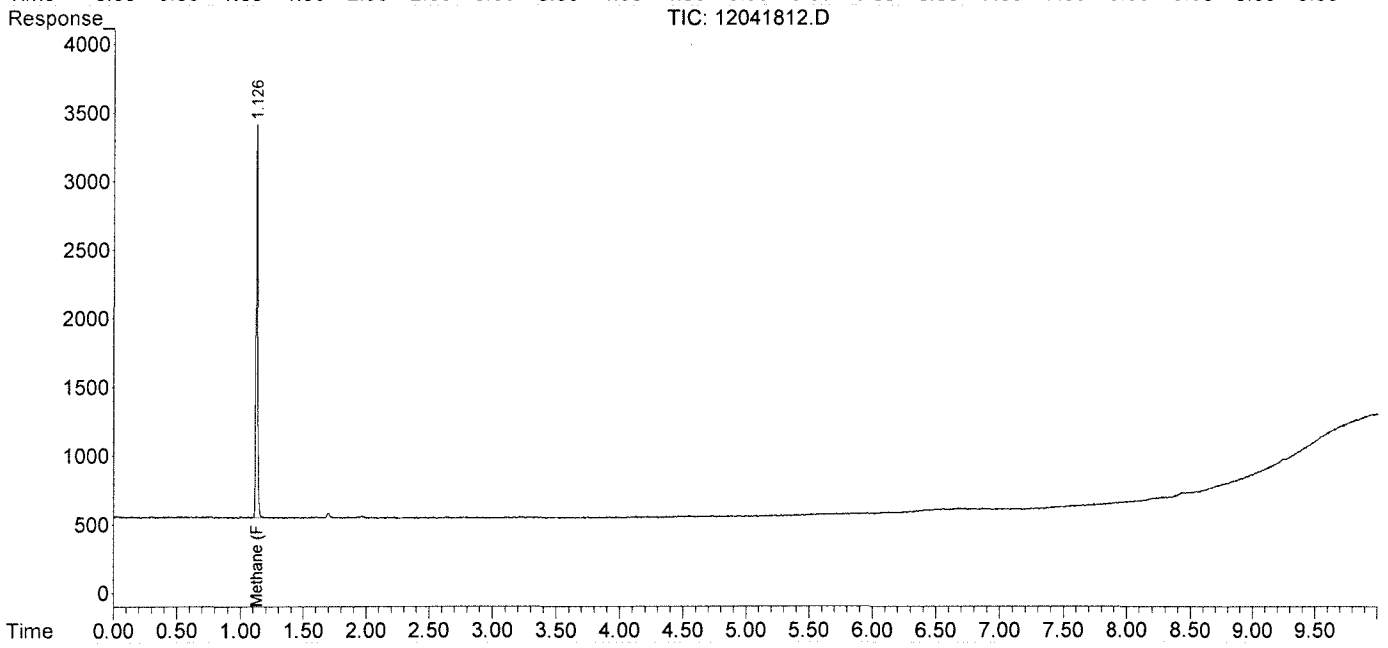
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2018_12\04\
Data File : 12041812.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 04-Dec-2018, 12:29:30
Operator : MR
Sample : P1806587-002 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Dec 05 11:20:56 2018
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_FID\2018_12\04\
Data File : 12041813.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 04-Dec-2018, 13:33:26
Operator : MR
Sample : P1806587-003 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Dec 05 11:21:20 2018
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

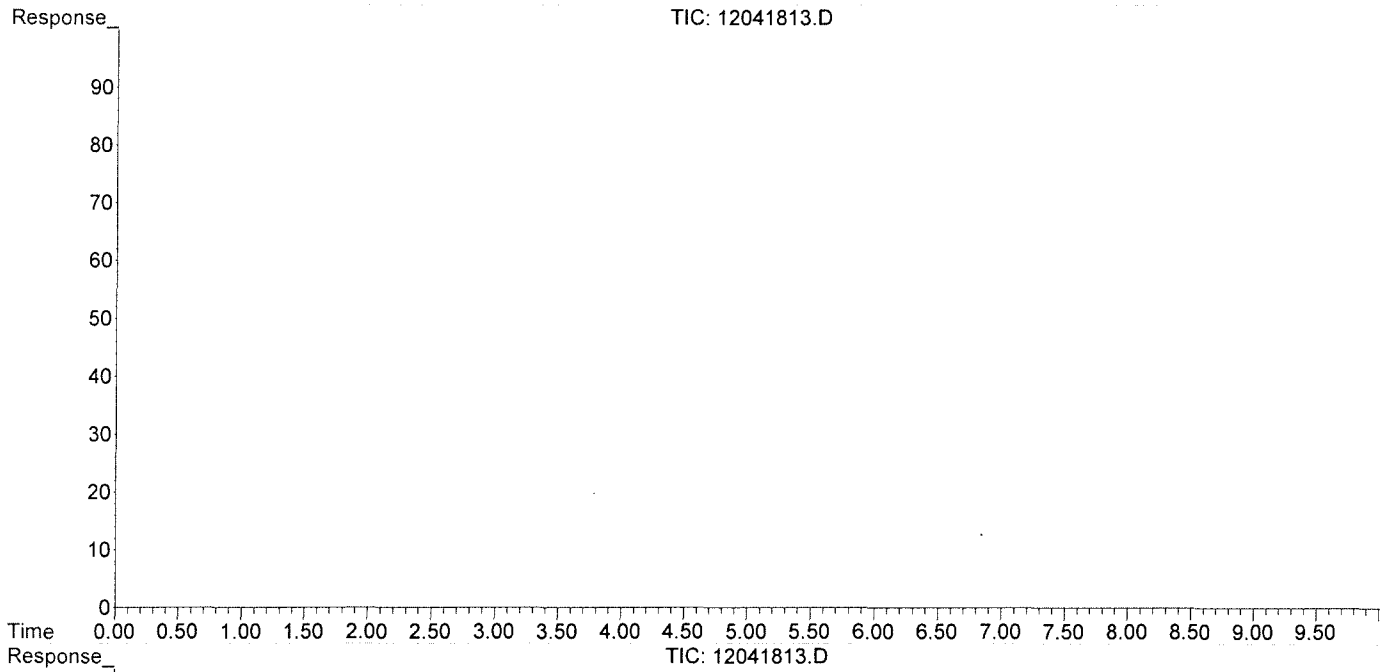
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	0.000	0	N.D.	ppm
2)	Carbon monoxide	0.000	0	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.128	5340	0.589	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	0.000	0	N.D.	ppm
10)	Propane	0.000	0	N.D.	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

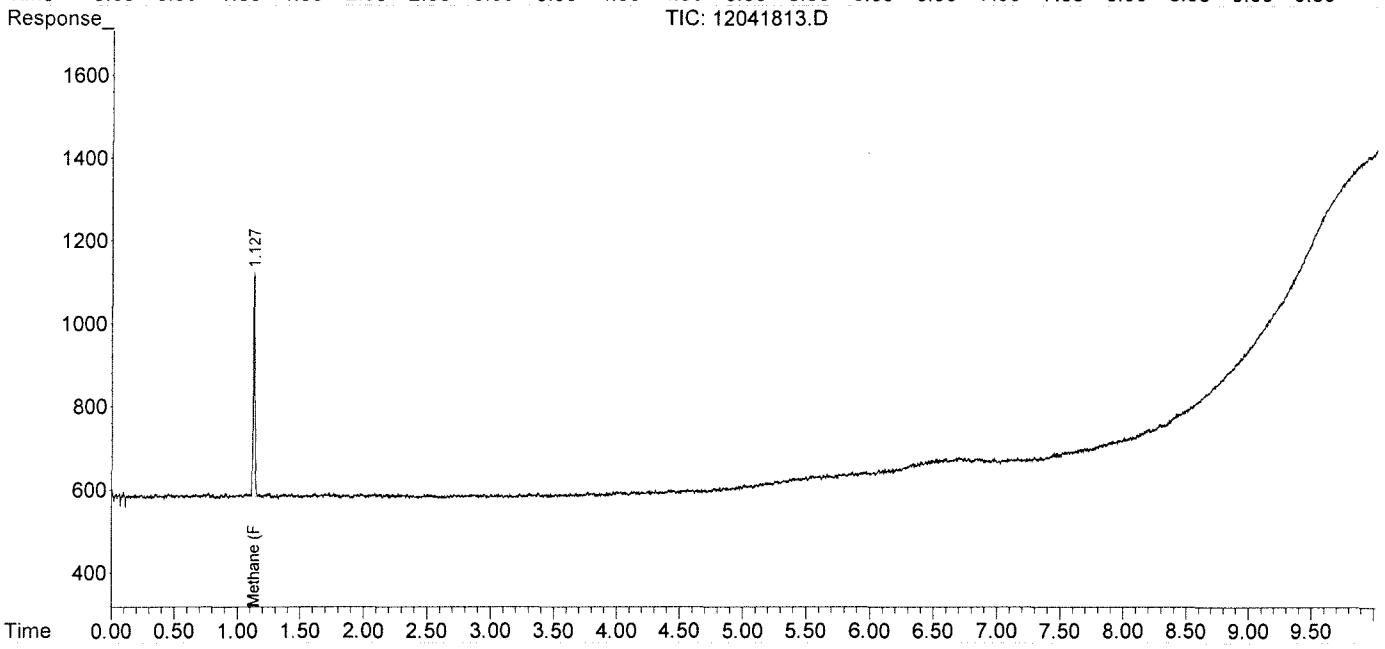
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2018_12\04\
Data File : 12041813.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 04-Dec-2018, 13:33:26
Operator : MR
Sample : P1806587-003 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Dec 05 11:21:20 2018
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_FID\2018_12\04\
Data File : 12041803.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 04-Dec-2018, 10:03:37
Operator : MR
Sample : mcs 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Dec 05 10:33:17 2018
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

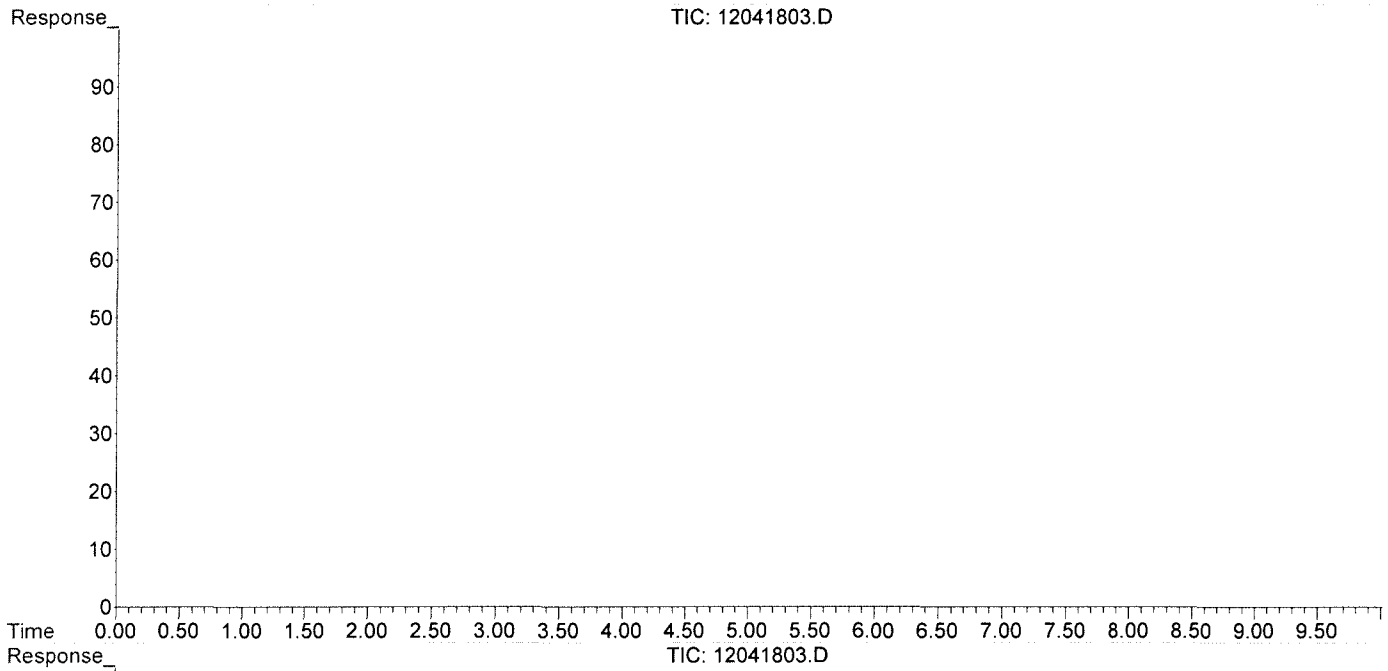
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	0.000	0	N.D.	ppm	
2)	Carbon monoxide	0.000	0	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	
4)	Carbon dioxide	0.000	0	N.D.	ppm	
6)	Methane (FID)	1.124	2239	0.247	ppm	m
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

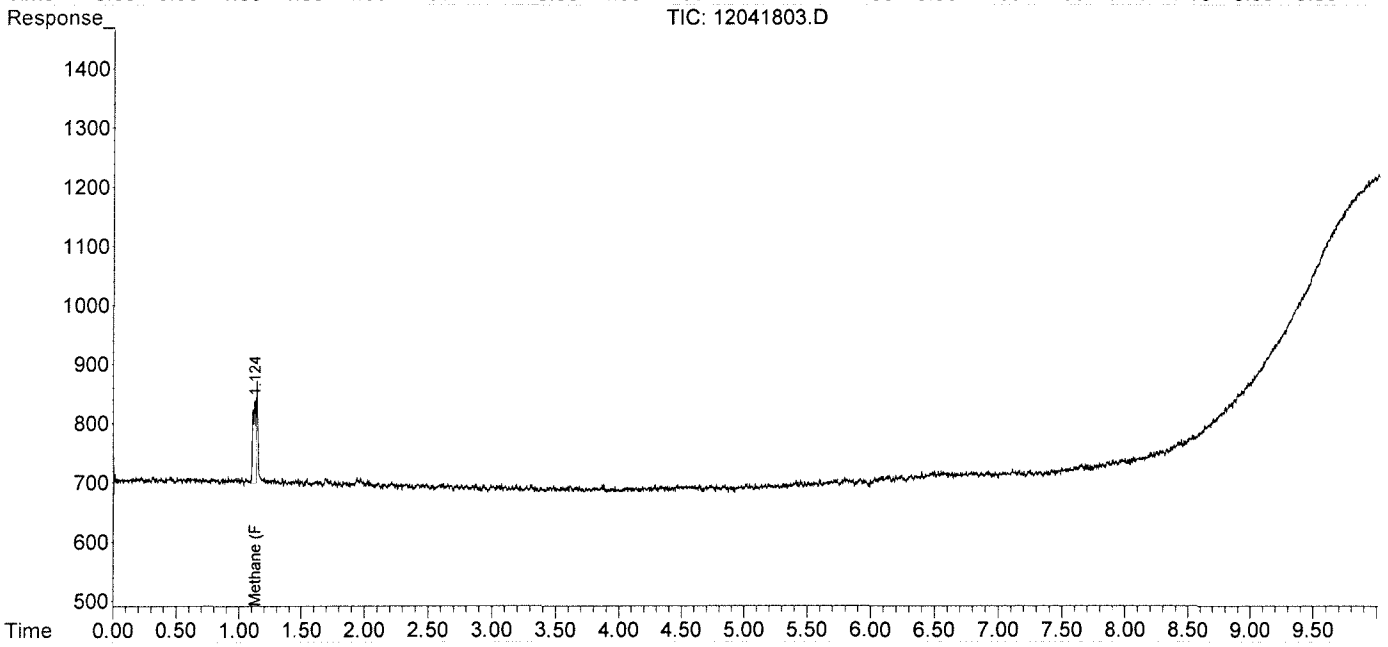
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2018_12\04\
Data File : 12041803.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 04-Dec-2018, 10:03:37
Operator : MR
Sample : mcs 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Dec 05 10:33:17 2018
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

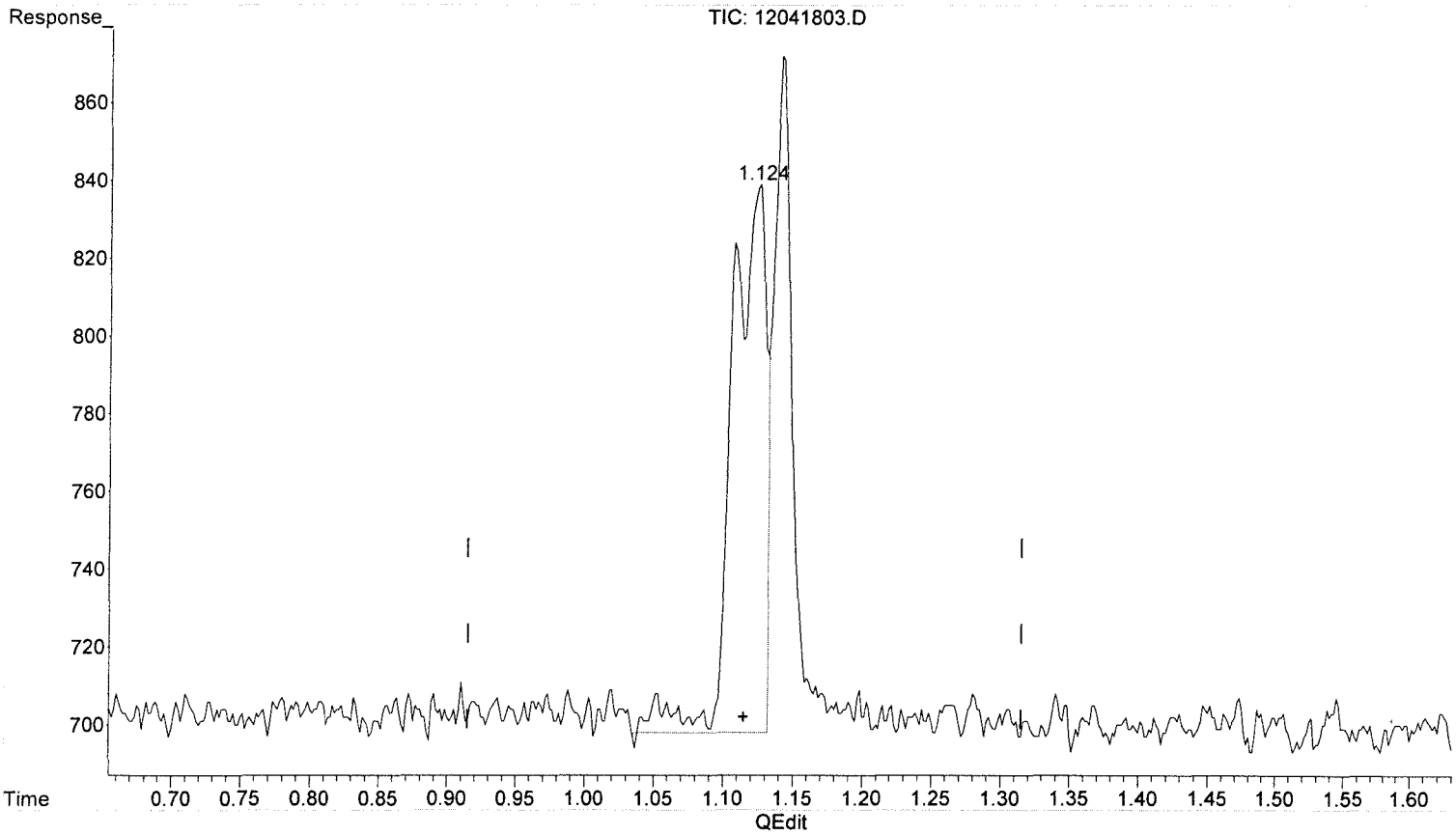




Data Path : J:\GC10\DATA\RSK_FID\2018_12\04\
Data File : 12041803.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 04-Dec-2018, 10:03:37
Operator : MR
Sample : mcs 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Dec 05 10:33:17 2018
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



(6) Methane (FID)

1.124min 0.254 ppm

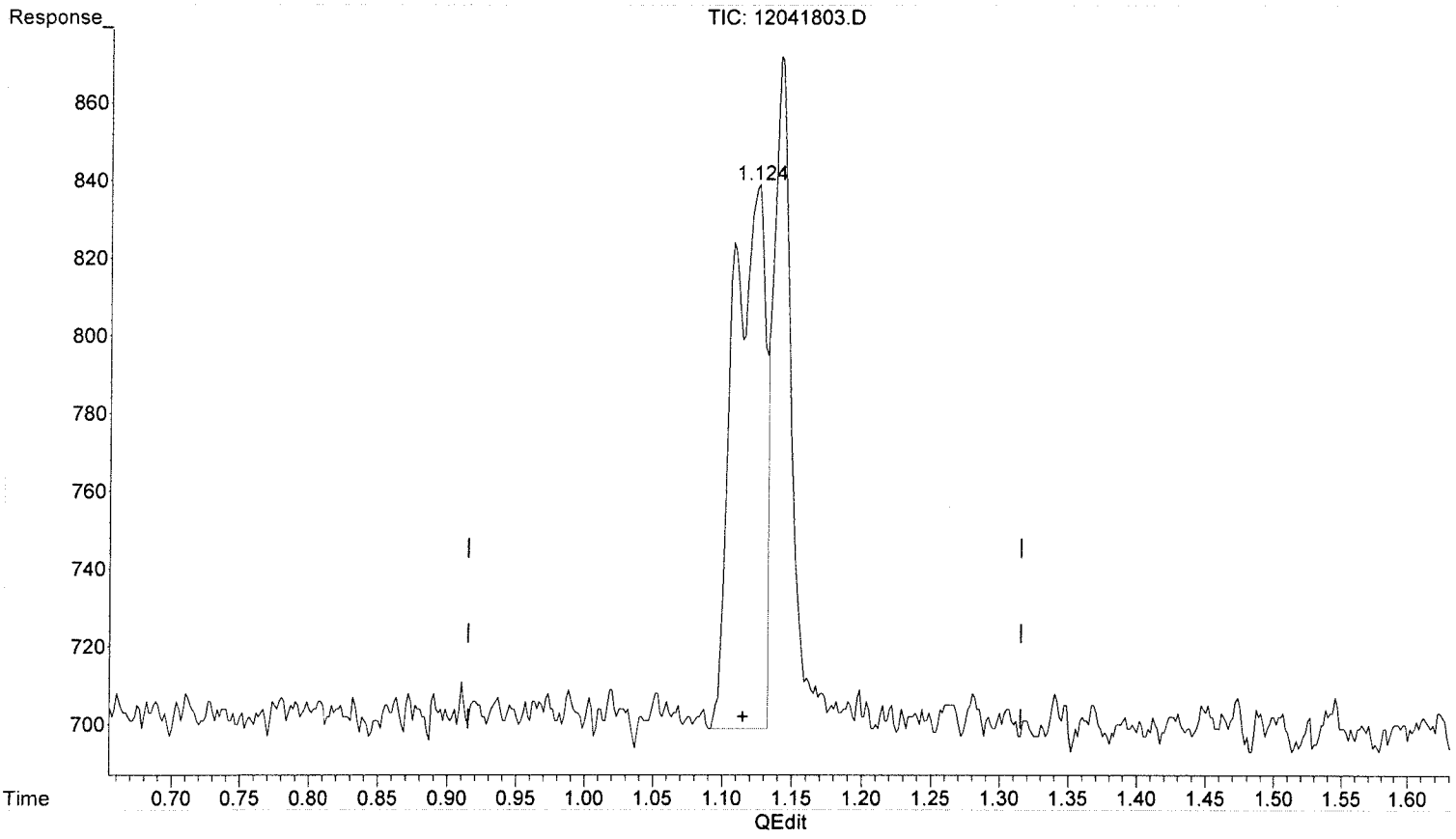
response 2305

(+) = Expected Retention Time

Data Path : J:\GC10\DATA\RSK_FID\2018_12\04\
Data File : 12041803.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 04-Dec-2018, 10:03:37
Operator : MR
Sample : mcs 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Dec 05 10:33:17 2018
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



(6) Methane (FID)

1.124min 0.247 ppm m

response 2239

MR 12/5/18
BLC

MR 12/5/18

(+) = Expected Retention Time

RS091217_R.M Wed Dec 05 10:33:42 2018 Page: 1

Data Path : J:\GC10\DATA\RSK_FID\2018_12\04\
Data File : 12041804.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 04-Dec-2018, 10:16:54
Operator : MR
Sample : fid lcs s30-05241604
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Dec 04 10:36:58 2018
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

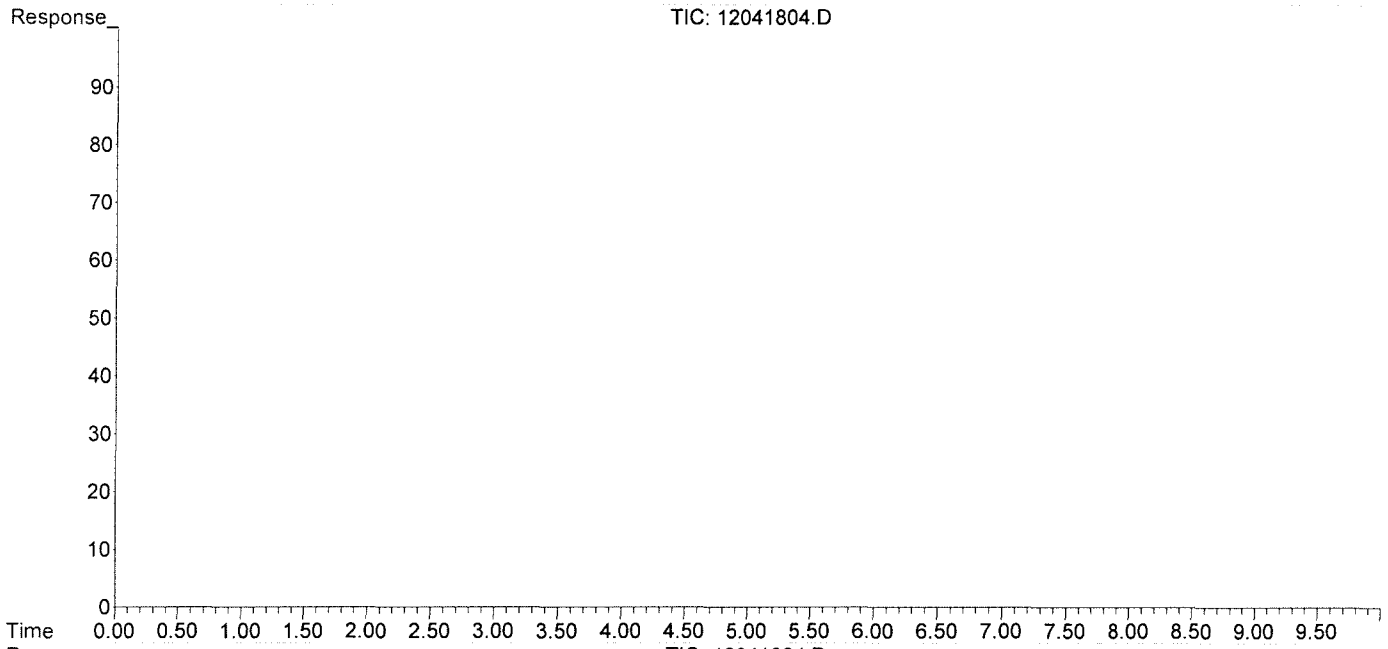
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	0.000	0	N.D.	ppm
2)	Carbon monoxide	0.000	0	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.123	13811	1.523	ppm
7)	Ethylene	1.686	18017	1.077	ppm
8)	Ethane	1.950	22719	1.340	ppm
9)	Propylene	4.334	25182	1.075	ppm
10)	Propane	4.456	35201	1.415	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	6.672	46457	1.745	ppm
13)	n-Butane	6.672	46457	1.745	ppm

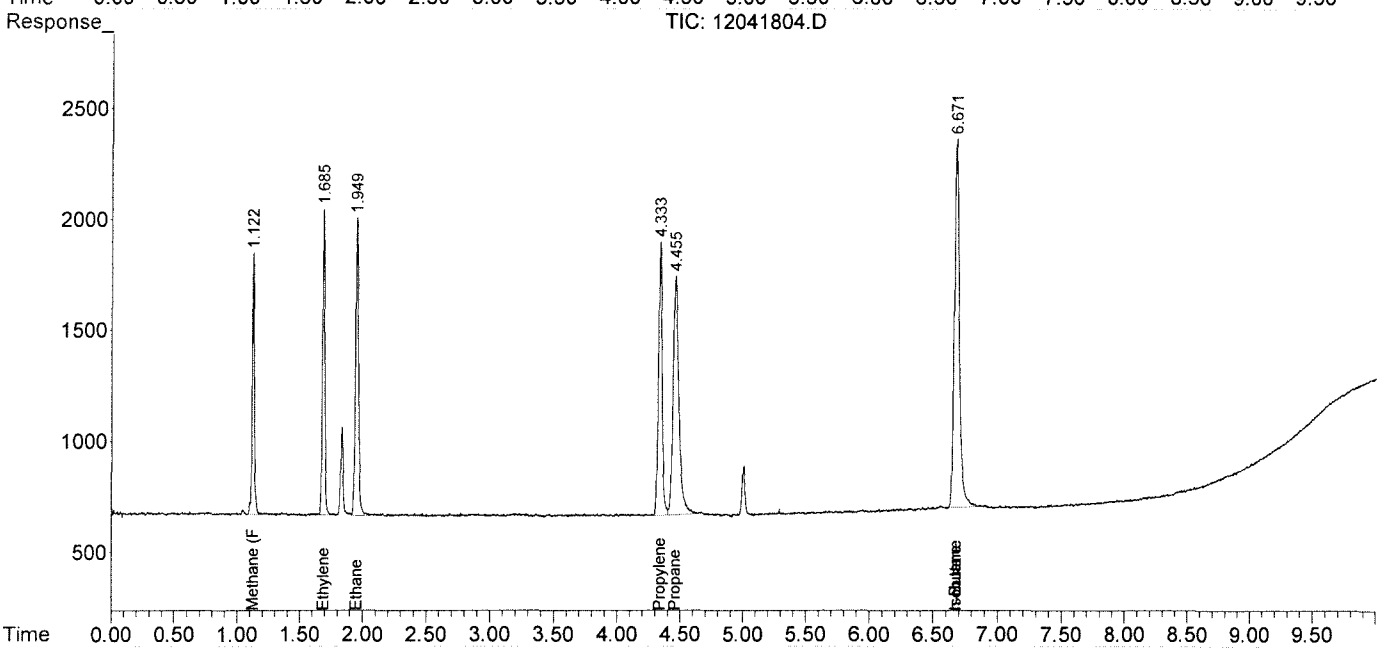
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2018_12\04\
Data File : 12041804.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 04-Dec-2018, 10:16:54
Operator : MR
Sample : fid lcs s30-05241604
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Dec 04 10:36:58 2018
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_FID\2018_12\04\
Data File : 12041805.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 04-Dec-2018, 10:30:54
Operator : MR
Sample : fid lcsd s30-05241604
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Dec 04 10:44:04 2018
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

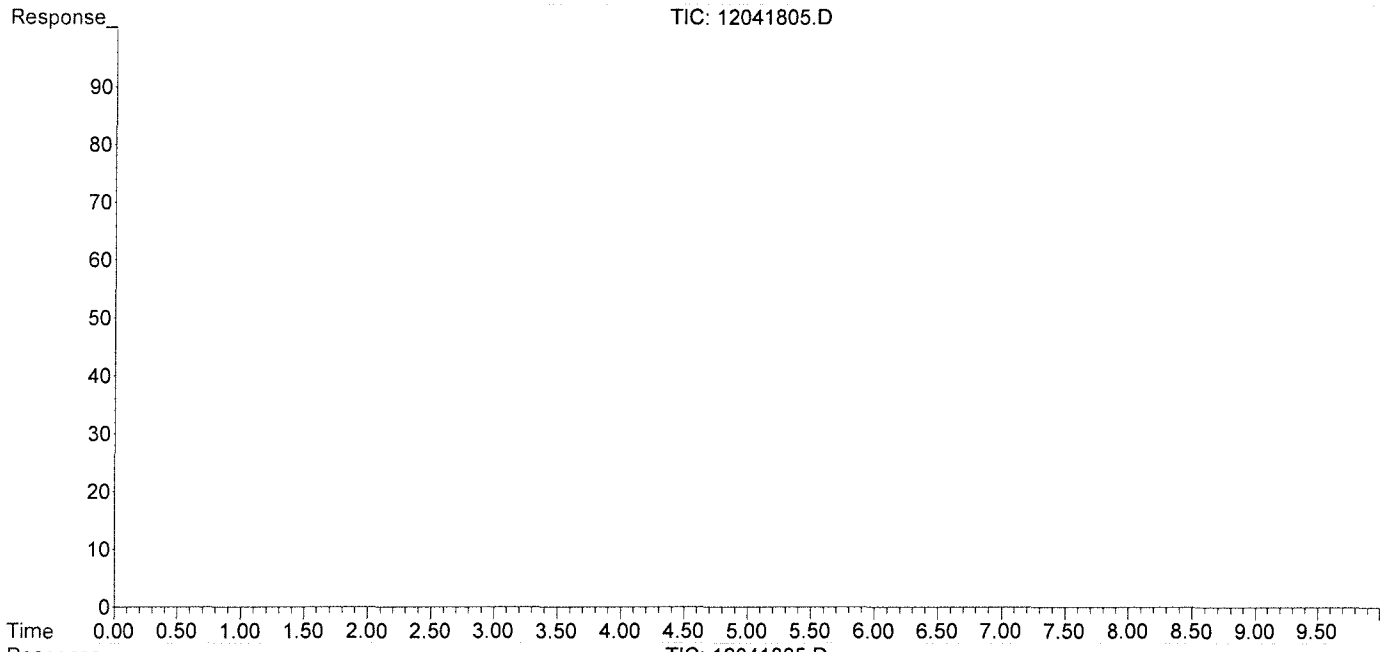
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	0.000	0	N.D.	ppm
2)	Carbon monoxide	0.000	0	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.123	15412	1.699	ppm
7)	Ethylene	1.689	18081	1.080	ppm
8)	Ethane	1.954	22112	1.305	ppm
9)	Propylene	4.338	24180	1.032	ppm
10)	Propane	4.461	34141	1.372	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	6.673	44725	1.680	ppm
13)	n-Butane	6.673	44725	1.680	ppm

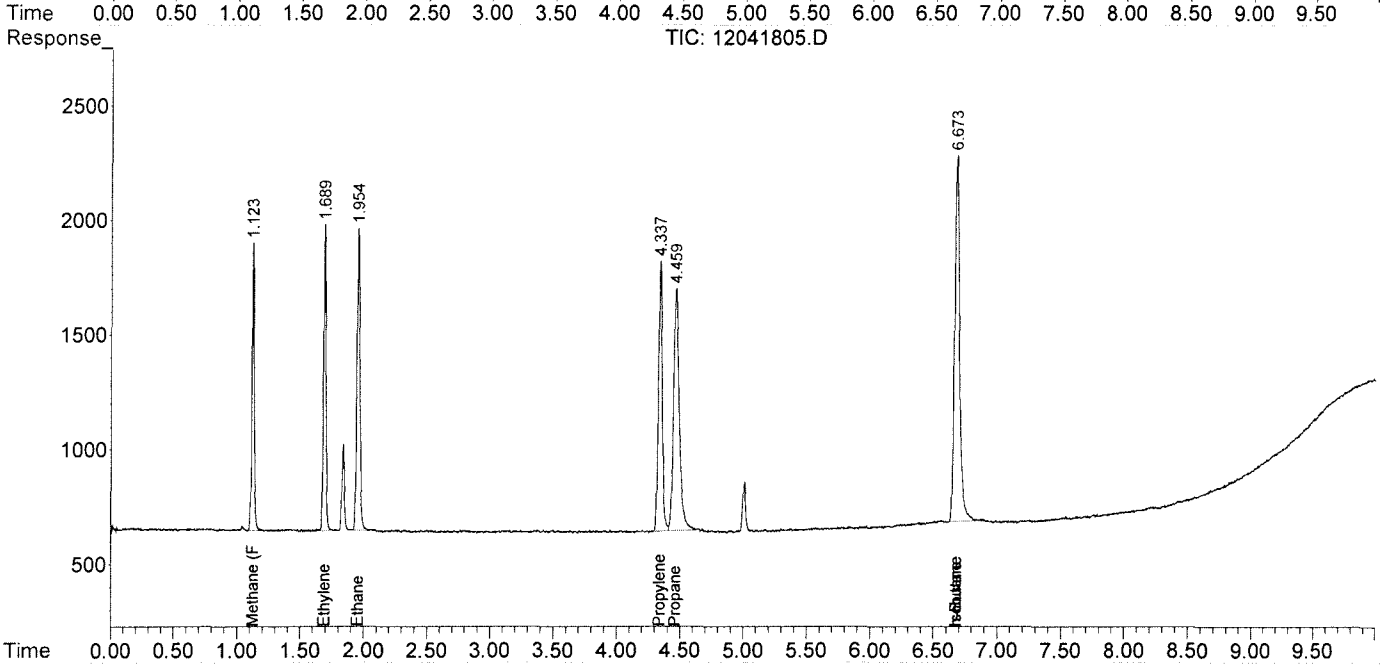
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2018_12\04\
Data File : 12041805.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 04-Dec-2018, 10:30:54
Operator : MR
Sample : fid lcsd s30-05241604
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Dec 04 10:44:04 2018
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Response Factor Report HP5890

Method Path : J:\GC10\METHODS\
Method File : RS091217_R.M
Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
Last Update : Wed Sep 13 11:14:47 2017
Response Via : Initial Calibration

Calibration Files
1 =09121702.D 2 =09121703.D 3 =09121704.D
4 =09121705.D 5 =09121706.D 6 =09121707.D

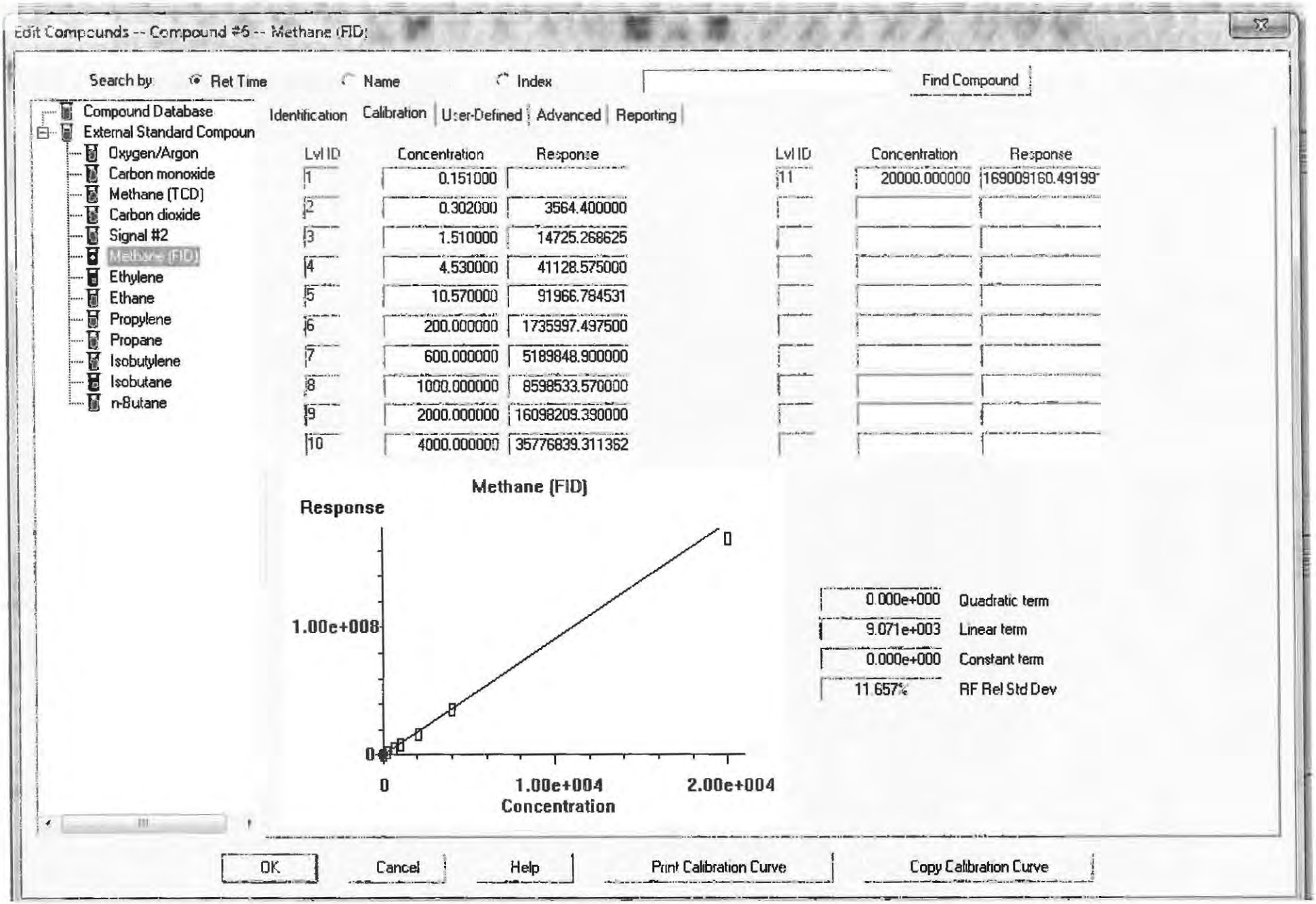
	Compound	1	2	3	4	5	6	Avg		%RSD
1)	Oxygen/Argon	3.739		1.014			0.001	0.793	E6	189.17
2)	Carbon monoxide	3.739		1.014			0.001	0.594	E6	221.92
3)	Methane (TCD)						2.161	0.951	E2	106.37
4)	Carbon dioxide	2.365	2.569	2.558	2.361	2.459	2.314	2.438	E2	4.44

Signal #2 Calibration Files
1 =09121702.D 2 =09121703.D 3 =09121704.D
4 =09121705.D 5 =09121706.D 6 =09121707.D

	Compound	1	2	3	4	5	6	Avg		%RSD
6)	Methane (FID)		1.180	0.975	0.908	0.870	0.868	0.907	E4	11.66
7)	Ethylene	1.736	1.638	1.780	1.720	1.628	1.670	1.673	E4	3.90
8)	Ethane	1.781	1.676	1.784	1.730	1.692	1.675	1.695	E4	3.83
9)	Propylene	2.505	2.296	2.592	2.480	2.346	2.252	2.343	E4	6.56
10)	Propane	2.439	2.283	2.645	2.555	2.433	2.522	2.488	E4	4.20
11)	Isobutylene							0.652	E1	138.46
12)	Isobutane	6.058	4.793	2.214	1.553	1.353		2.662	E4	86.17
13)	n-Butane	6.058	4.793	2.214	1.553	1.353		2.662	E4	86.17

(#) = Out of Range ### Number of calibration levels exceeded format ###

RS091217_R.M Wed Sep 13 15:11:48 2017


Edit Compounds -- Compound #6 -- Methane (FID)
Search by: Ret Time Name Index
Find Compound
Compound Database
External Standard Compoun
Oxygen/Argon
Carbon monoxide
Methane (TCD)
Carbon dioxide
Signal #2
Methane (FID)
Ethylene
Ethane
Propylene
Propane
Isobutylene
Isobutane
n-Butane
Identification Calibration User-Defined Advanced Reporting
Lvl ID Concentration Response
1 0.151000
2 0.302000 3564.400000
3 1.510000 14725.268625
4 4.530000 41128.575000
5 10.570000 91966.784531
6 200.000000 1735997.497500
7 600.000000 5189848.900000
8 1000.000000 8598533.570000
9 2000.000000 16098209.390000
10 4000.000000 35776839.311362
11 20000.000000 169009160.49199
Methane (FID)
Response
1.00e+008
0
0
1.00e+004
2.00e+004
Concentration
0.000e+000 Quadratic term
9.071e+003 Linear term
0.000e+000 Constant term
11.657% RF Rel Std Dev
OK
Cancel
Help
Print Calibration Curve
Copy Calibration Curve

00964226

Edit Compounds -- Compound #7 -- Ethylene

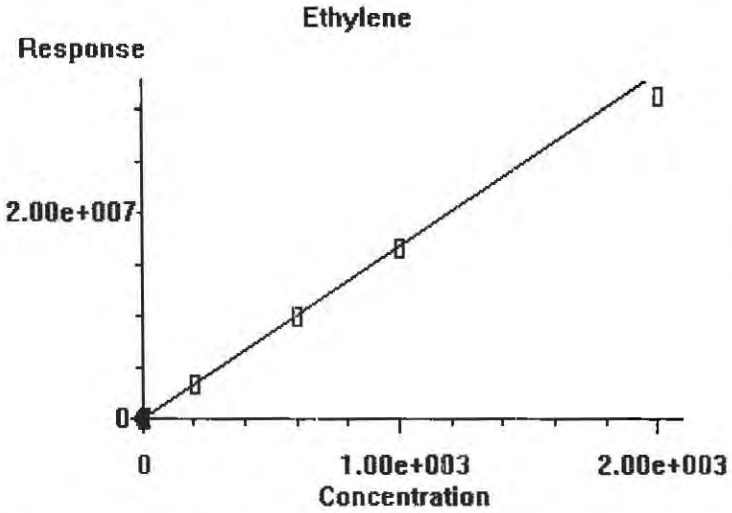
Search by: Ret Time | Name | Index | Find Compound

Compound Database
External Standard Compoun
- Oxygen/Argon
- Carbon monoxide
- Methane (TCD)
- Carbon dioxide
- Signal #2
- Methane (FID)
- Ethylene
- Ethane
- Propylene
- Propane
- Isobutylene
- Isobutane
- n-Butane

Identification | Calibration | User-Defined | Advanced | Reporting

Lvl ID	Concentration	Response
1	0.151000	2621.970000
2	0.302000	4946.731301
3	1.510000	26884.746847
4	4.530000	77902.721497
5	10.570000	172085.529560
6	200.000000	3339702.313219
7	600.000000	10007758.776971
8	1000.000000	16608503.805988
9	2000.000000	31192443.898600
10	4000.000000	

Lvl ID	Concentration	Response
11	20000.000000	



0.000e+000	Quadratic term
1.673e+004	Linear term
0.000e+000	Constant term
3.897%	RF Rel Std Dev

OK | Cancel | Help | Print Calibration Curve | Copy Calibration Curve

00964227

Edit Compounds -- Compound #8 -- Ethane

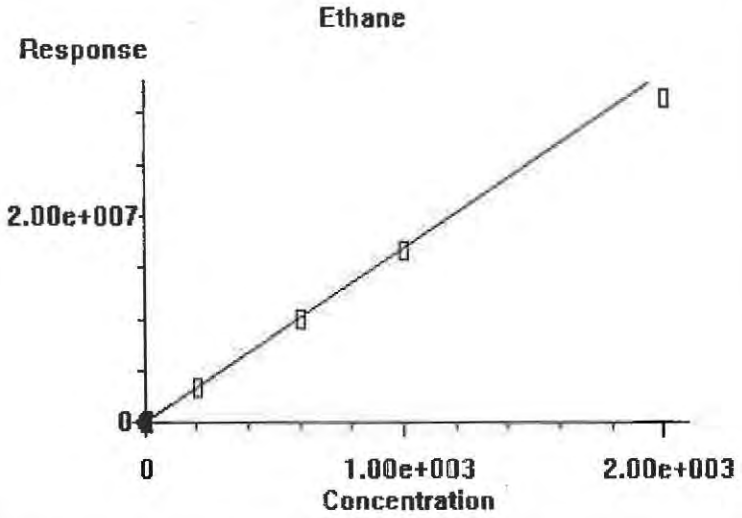
Search by: Ret Time | Name | Index — Find Compound

- Compound Database
- External Standard Compoun
  - Oxygen/Argon
  - Carbon monoxide
  - Methane (TCD)
  - Carbon dioxide
  - Signal #2
  - Methane (FID)
  - Ethylene
  - Ethane
  - Propylene
  - Propane
  - Isobutylene
  - Isobutane
  - n-Butane

Identification | Calibration | User-Defined | Advanced | Reporting

Lvl ID	Concentration	Response
1	0.151000	2689.928008
2	0.302000	5060.331943
3	1.510000	26943.667500
4	4.530000	78353.525045
5	10.570000	178840.731148
6	200.000000	3350442.319129
7	600.000000	10048964.218029
8	1000.000000	16703164.879012
9	2000.000000	31424217.938900
10	4000.000000	

Lvl ID	Concentration	Response
11	20000.000000	



0.000e+000	Quadratic term
1.695e+004	Linear term
0.000e+000	Constant term
3.831%	RF Rel Std Dev

OK | Cancel | Help | Print Calibration Curve | Copy Calibration Curve

Edit Compounds -- Compound #9 -- Propylene

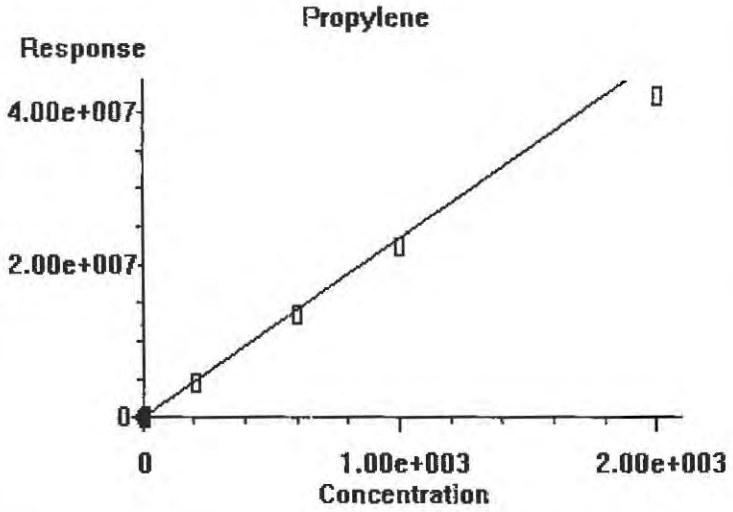
Search by: Ret Time | Name | Index | Find Compound

- Compound Database
- External Standard Compoun
  - Oxygen/Argon
  - Carbon monoxide
  - Methane (TCD)
  - Carbon dioxide
  - Signal #2
  - Methane (FID)
  - Ethylene
  - Ethane
  - Propylene
  - Propane
  - Isobutylene
  - Isobutane
  - n-Butane

Identification | Calibration | User-Defined | Advanced | Reporting

Lvl ID	Concentration	Response
1	0.151000	3782.537646
2	0.302000	6933.285530
3	1.510000	39139.518208
4	4.530000	112341.896872
5	10.570000	248003.903623
6	200.000000	4504060.086084
7	600.000000	13569342.761419
8	1000.000000	22494887.720990
9	2000.000000	42124689.656800
10	4000.000000	

Lvl ID	Concentration	Response
11	20000.000000	



0.000e+000	Quadratic term
2.343e+004	Linear term
0.000e+000	Constant term
6.559%	RF Rel Std Dev

OK | Cancel | Help | Print Calibration Curve | Copy Calibration Curve

00964229

Edit Compounds -- Compound #10 -- Propane

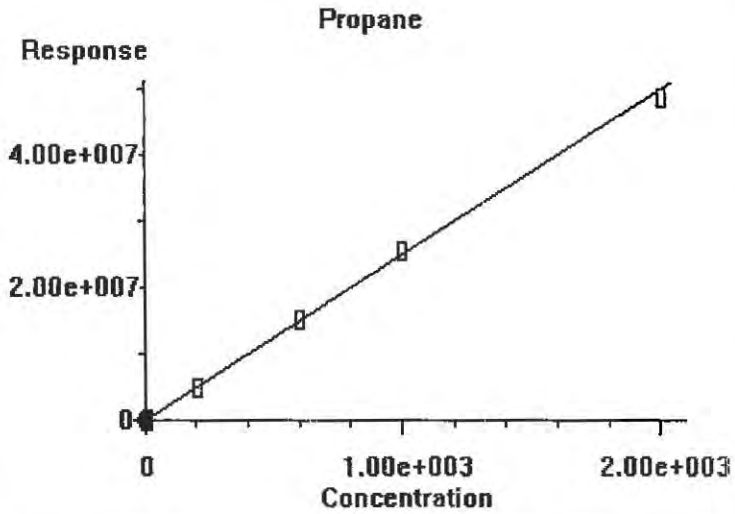
Search by: Ret Time | Name | Index — Find Compound

Compound Database
External Standard Compoun
- Oxygen/Argon
- Carbon monoxide
- Methane (TCD)
- Carbon dioxide
- Signal #2
- Methane (FID)
- Ethylene
- Ethane
- Propylene
- Propane
- Isobutylene
- Isobutane
- n-Butane

Identification | Calibration | User-Defined | Advanced | Reporting

Lvl ID	Concentration	Response
1	0.151000	3682.897354
2	0.302000	6894.237803
3	1.510000	39934.166792
4	4.530000	115723.428128
5	10.570000	257124.432806
6	200.000000	5043035.663916
7	600.000000	15251325.797404
8	1000.000000	25459410.657938
9	2000.000000	48583085.287451
10	4000.000000	

Lvl ID	Concentration	Response
11	20000.000000	



0.000e+000	Quadratic term
2.488e+004	Linear term
0.000e+000	Constant term
4.200%	RF Rel Std Dev

OK | Cancel | Help | Print Calibration Curve | Copy Calibration Curve

Calibration Status Report HP5890

Method Path : J:\GC10\METHODS\
Method File : RS091217_R.M
Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
Last Update : Wed Sep 13 11:14:47 2017
Response Via : Initial Calibration

#	ID	Conc	ISTD Conc	Path\File
1	1	0	0	J:\GC10\DATA\RSK_FID\2017_09\12\09121702.D
2	2	0	0	J:\GC10\DATA\RSK_FID\2017_09\12\09121703.D
3	3	3	0	J:\GC10\DATA\RSK_FID\2017_09\12\09121704.D
4	4	10	0	J:\GC10\DATA\RSK_FID\2017_09\12\09121705.D
5	5	25	0	J:\GC10\DATA\RSK_FID\2017_09\12\09121706.D
6	6	125	0	J:\GC10\DATA\RSK_FID\2017_09\12\09121707.D
7	7	5000	0	J:\GC10\DATA\RSK_FID\2017_09\12\09121708.D
8	8	25000	0	J:\GC10\DATA\RSK_FID\2017_09\12\09121709.D
9	9	2000	0	J:\GC10\DATA\RSK_FID\2017_09\12\09121710.D
10	10	30000	0	J:\GC10\DATA\RSK_FID\2017_09\12\09121711.D
11	11	20000	0	J:\GC10\DATA\RSK_FID\2017_09\12\09121712.D

#	ID	Update Time	Quant Time	Acquisition Time
1	1	Sep 13 11:04 2017	Sep 12 15:03 2017	12-Sep-2017, 10:52
2	2	Sep 13 11:05 2017	Sep 13 11:05 2017	12-Sep-2017, 11:05
3	3	Sep 13 11:06 2017	Sep 13 11:05 2017	12-Sep-2017, 11:45
4	4	Sep 13 11:09 2017	Sep 13 11:06 2017	12-Sep-2017, 12:09
5	5	Sep 13 11:09 2017	Sep 13 11:09 2017	12-Sep-2017, 12:30
6	6	Sep 13 11:10 2017	Sep 13 11:10 2017	12-Sep-2017, 12:47
7	7	Sep 13 11:11 2017	Sep 13 11:10 2017	12-Sep-2017, 13:00
8	8	Sep 13 11:12 2017	Sep 13 11:11 2017	12-Sep-2017, 13:47
9	9	Sep 13 11:12 2017	Sep 13 11:12 2017	12-Sep-2017, 14:07
10	10	Sep 13 11:14 2017	Sep 13 11:13 2017	12-Sep-2017, 14:48
11	11	Sep 13 11:14 2017	Sep 13 11:14 2017	12-Sep-2017, 15:21

RS091217_R.M Wed Sep 13 15:11:22 2017

Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121702.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 10:52
Operator : MC
Sample : 0.151ppm 0.250ml s32-09121702
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 12 11:03:15 2017
Quant Method : I:\GC10\METHODS\RS082417.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Fri Aug 25 09:19:14 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	1.767	373920	0.128	ppm	
2)	Carbon monoxide	1.767	373920	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	
4)	Carbon dioxide	0.000	0	N.D.	ppm	
6)	Methane (FID)	0.000	0	N.D.	ppm	d
7)	Ethylene	1.595	2622	0.156	ppm	
8)	Ethane	1.848	2690	0.156	ppm	
9)	Propylene	4.222	3783	0.154	ppm	
10)	Propane	4.348	3683	0.139	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	6.582f	6058	NoCal	ppm	
13)	n-Butane	6.582f	6058	NoCal	ppm	

(f)=RT Delta > 1/2 Window (m)=manual int.

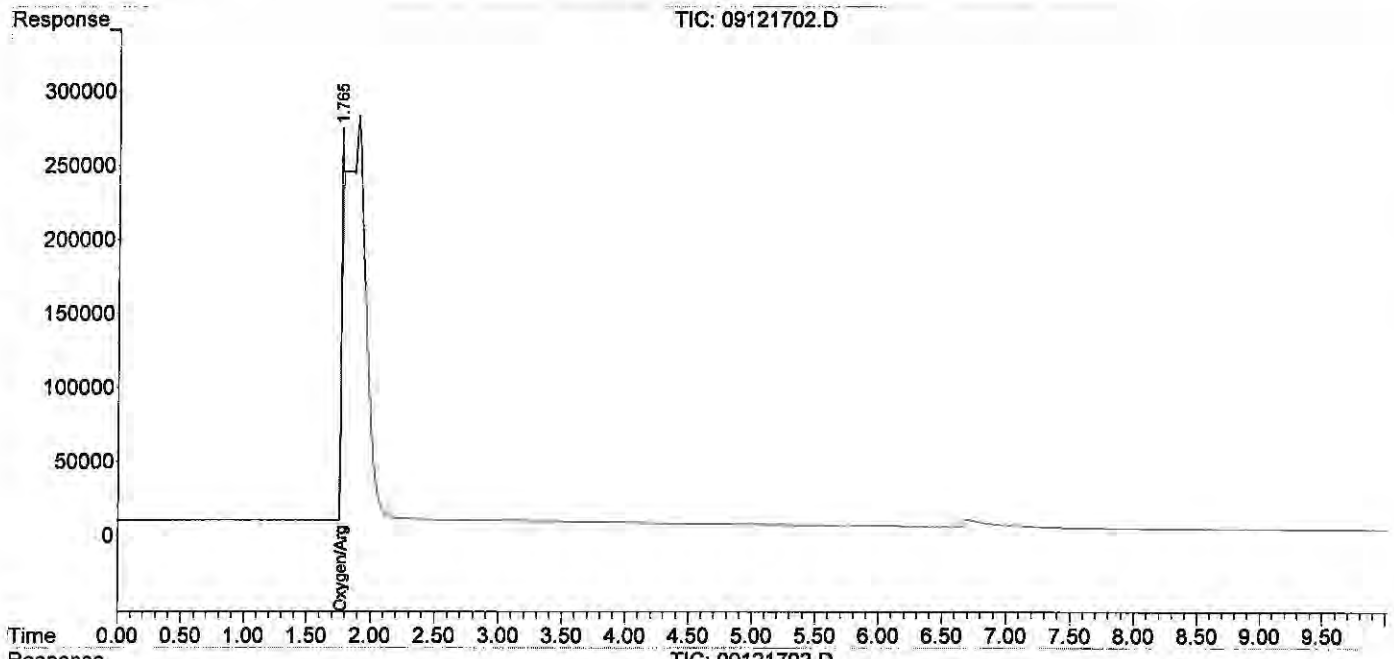
9/13/17

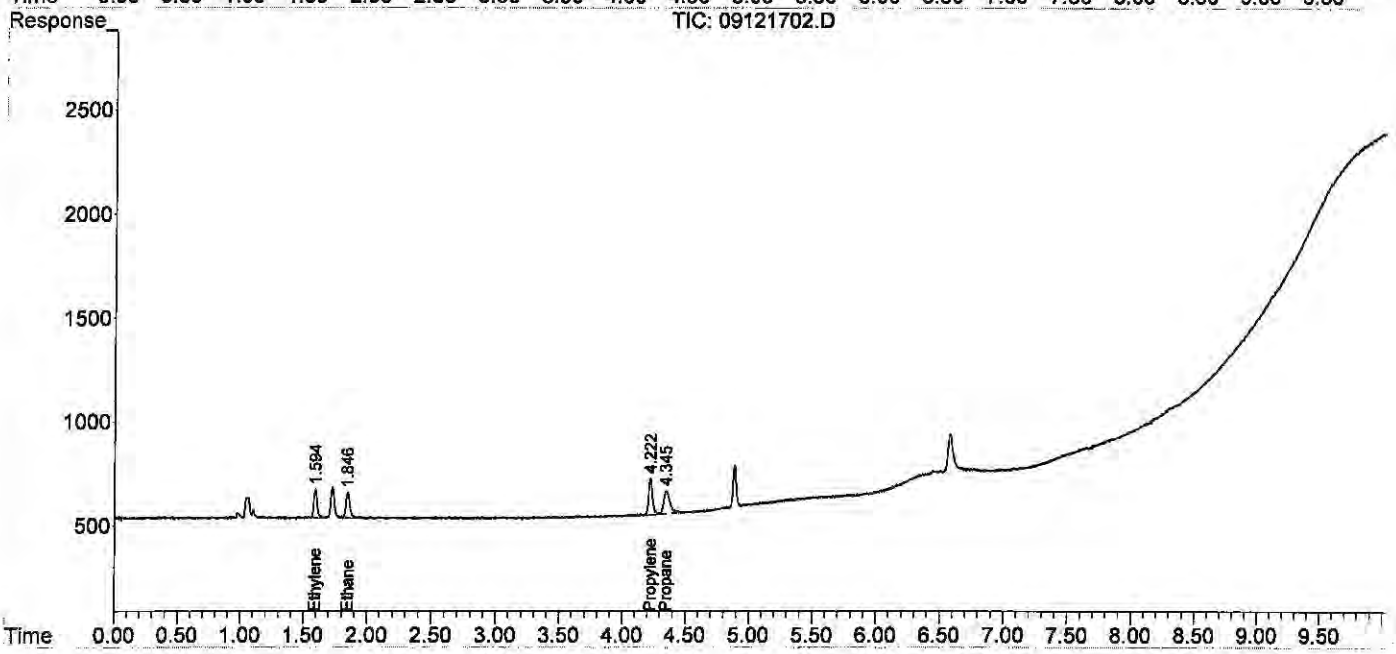
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121702.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 10:52
Operator : MC
Sample : 0.151ppm 0.250ml s32-09121702
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 12 11:03:15 2017
Quant Method : I:\GC10\METHODS\RS082417.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Fri Aug 25 09:19:14 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





RS091217_R.M Wed Sep 13 14:58:18 2017 Page: 2

Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121703.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 11:05
Operator : MC
Sample : 0.302ppm 0.5ml s32-09121702
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:05:03 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:04:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	1.913f	-25181981	N.D.	ppm	
2)	Carbon monoxide	1.913f	-25181981	1.089	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	
4)	Carbon dioxide	0.000	0	N.D.	ppm	
6)	Methane (FID)	1.049	3564	0.391	ppm	m
7)	Ethylene	1.577	4947	0.292	ppm	
8)	Ethane	1.828	5060	0.293	ppm	
9)	Propylene	4.207	6933	0.281	ppm	
10)	Propane	4.337	6894	0.268	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	6.579f	9587	0.158	ppm	
13)	n-Butane	6.579f	9587	0.158	ppm	

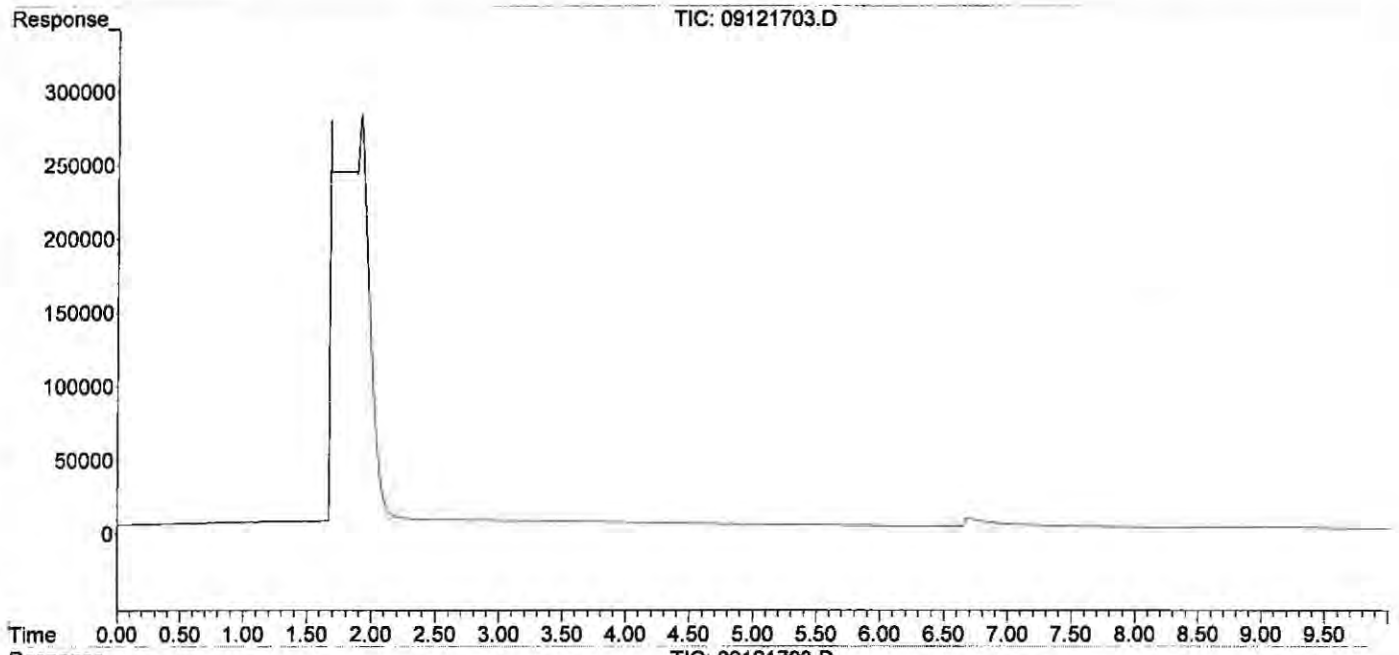
(f)=RT Delta > 1/2 Window (m)=manual int.

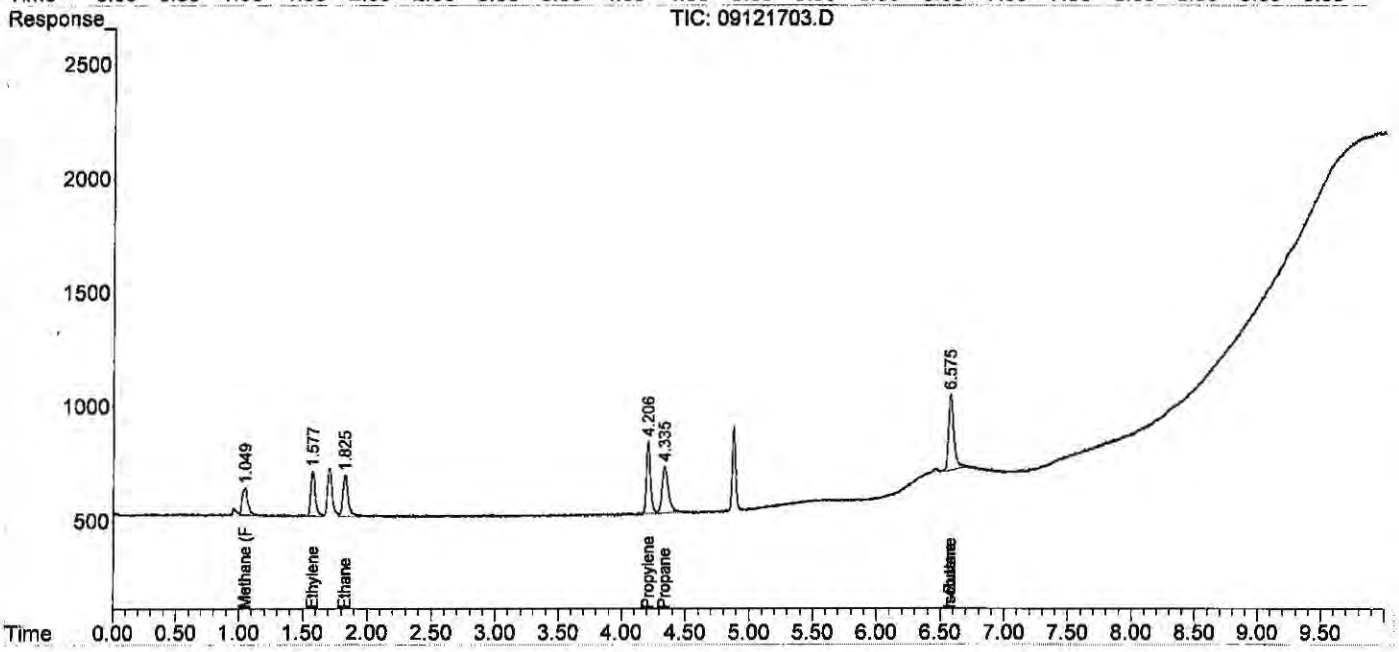
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121703.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 11:05
Operator : MC
Sample : 0.302ppm 0.5ml s32-09121702
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:05:03 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:04:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



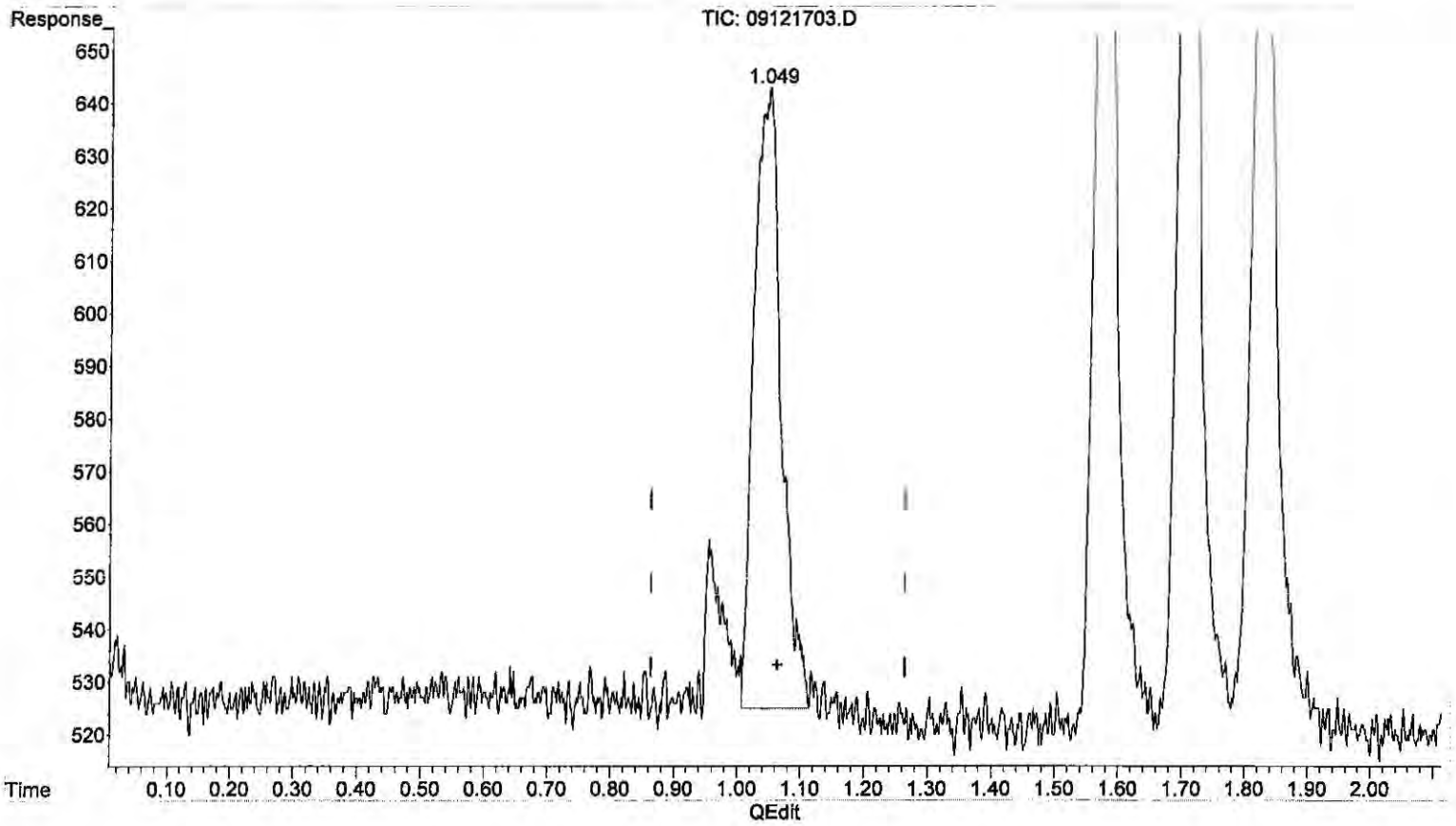


Quantitation Report (Qedit)

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121703.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 11:05
Operator : MC
Sample : 0.302ppm 0.5ml s32-09121702
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:05:03 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:04:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



(6) Methane (FID)

1.049min 0.391 ppm m

response 3564

(+) = Expected Retention Time

RS091217_R.M Wed Sep 13 15:00:03 2017 Page: 1

Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121704.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 11:45
Operator : MC
Sample : 1.51ppm 0.1ml s32-09051701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:05:55 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:04:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

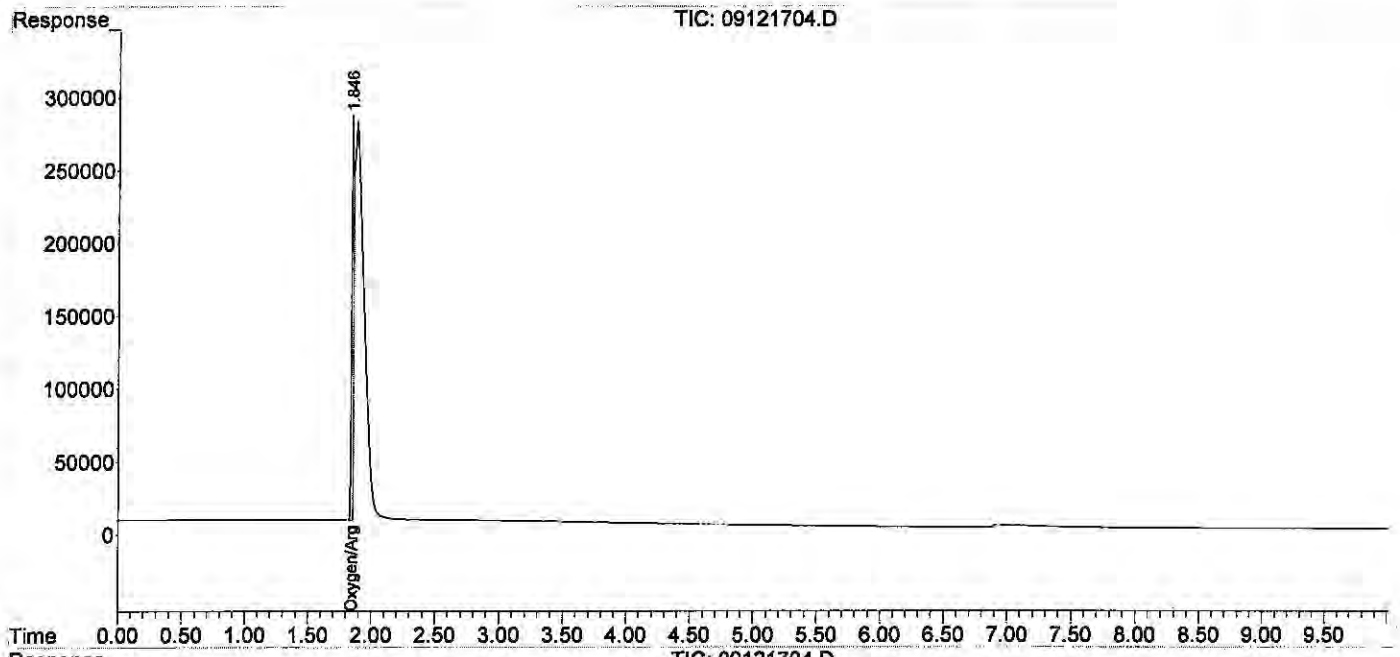
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.847	2536230	1.056	ppm
2)	Carbon monoxide	1.847	2536230	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.064	14725	1.613	ppm
7)	Ethylene	1.598	26885	1.582	ppm
8)	Ethane	1.851	26944	1.555	ppm
9)	Propylene	4.220	39140	1.589	ppm
10)	Propane	4.349	39934	1.596	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	6.578f	55348	1.020	ppm
13)	n-Butane	6.578f	55348	1.020	ppm

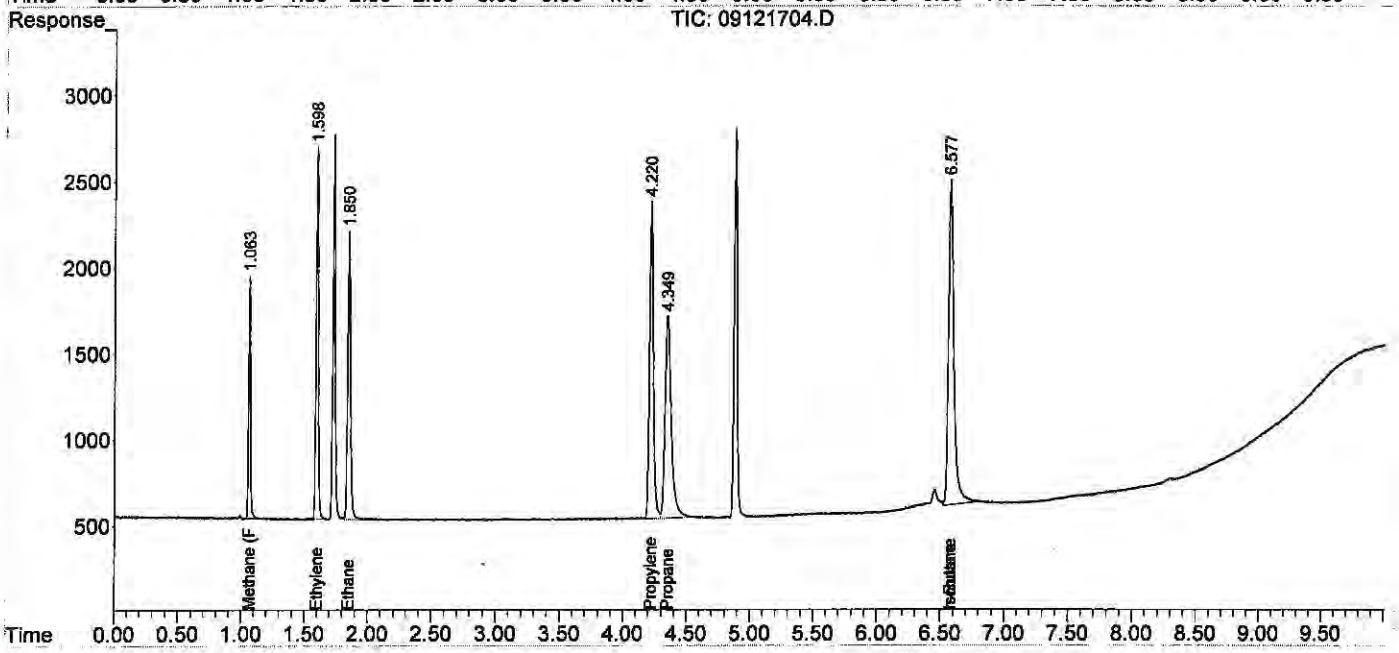
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121704.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 11:45
Operator : MC
Sample : 1.51ppm 0.1ml s32-09051701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:05:55 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:04:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121705.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 12:09
Operator : MC
Sample : 4.53ppm 0.3ml s32-09051701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:06:32 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:04:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

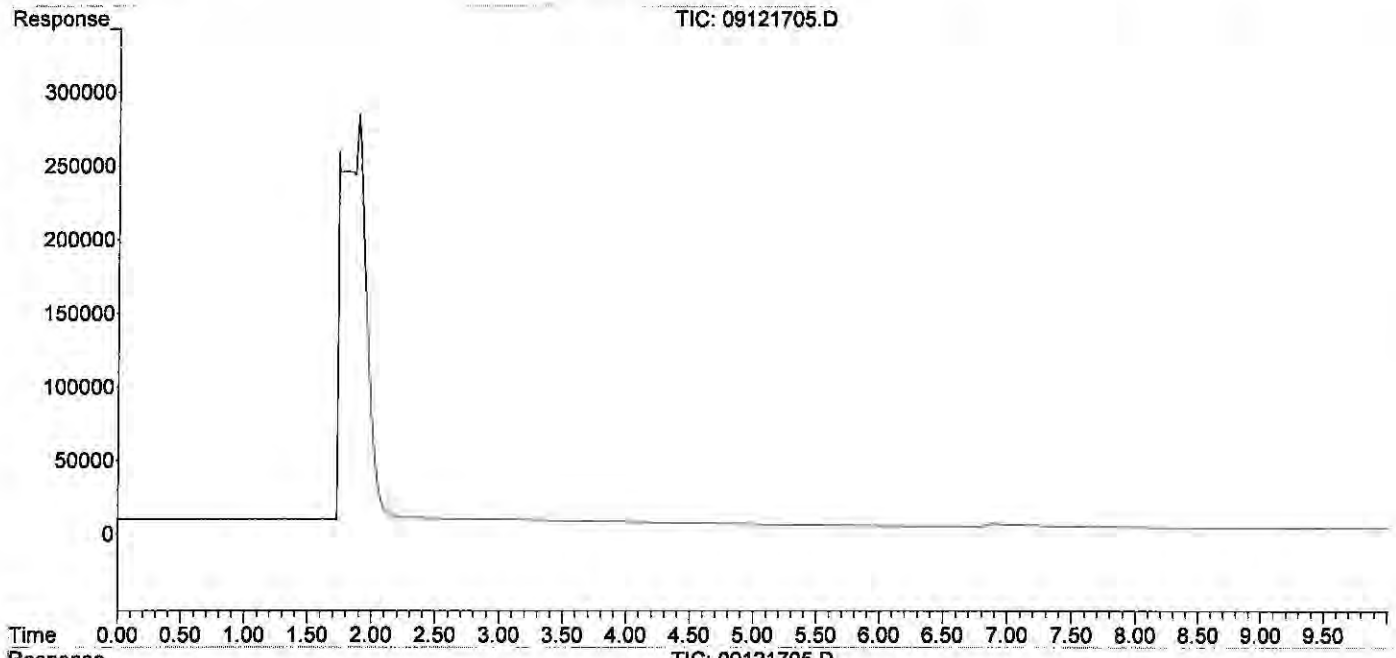
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.738	-331216	N.D.	ppm
2)	Carbon monoxide	1.738	-331216	0.019	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.052	41129	4.522	ppm
7)	Ethylene	1.586	77903	4.637	ppm
8)	Ethane	1.838	78354	4.558	ppm
9)	Propylene	4.218	112342	4.614	ppm
10)	Propane	4.347	115723	4.680	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	6.580f	155256	3.565	ppm
13)	n-Butane	6.580f	155256	3.565	ppm

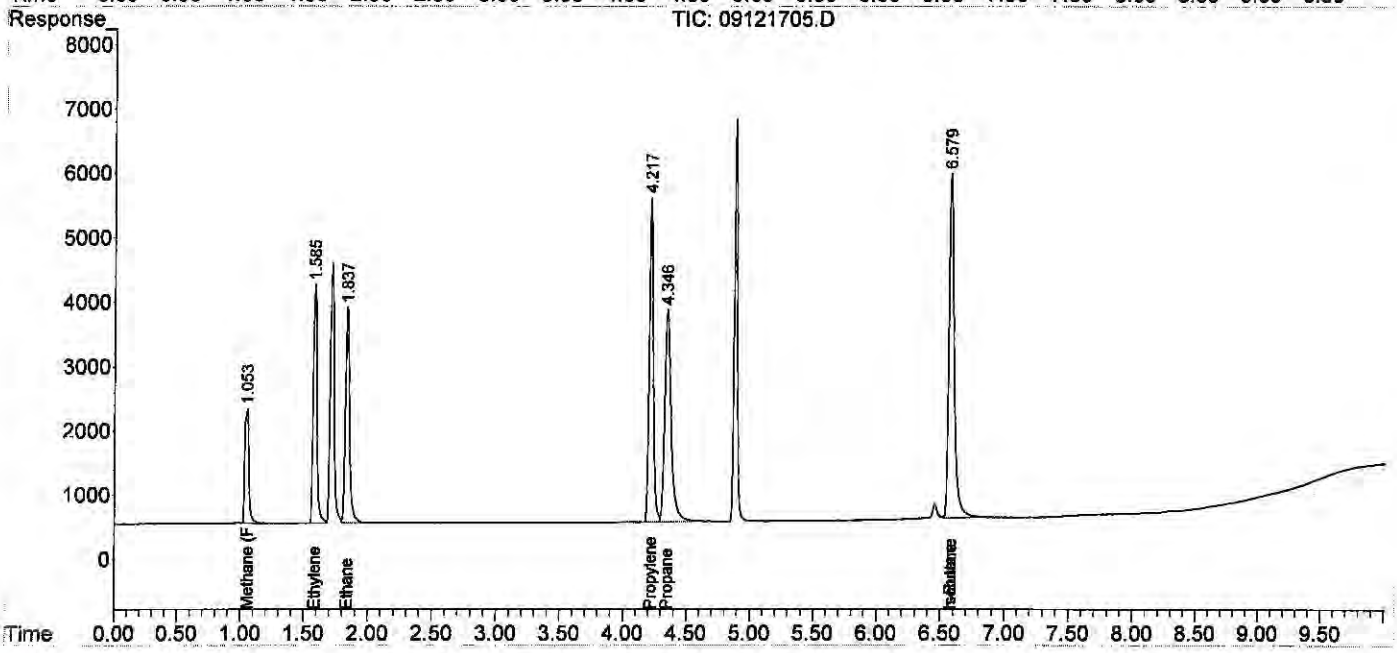
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121705.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 12:09
Operator : MC
Sample : 4.53ppm 0.3ml s32-09051701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:06:32 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:04:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121706.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 12:30
Operator : MC
Sample : 10.57ppm 0.7ml s32-09051701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:09:24 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:04:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.929f	-31871242	N.D.	ppm
2)	Carbon monoxide	1.929f	-31871242	1.818	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.025	91967	10.135	ppm
7)	Ethylene	1.568	172086	10.273	ppm
8)	Ethane	1.822	178841	10.441	ppm
9)	Propylene	4.214	248004	10.236	ppm
10)	Propane	4.344	257124	10.458	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	6.578f	338181	9.254	ppm
13)	n-Butane	6.578f	338181	9.254	ppm

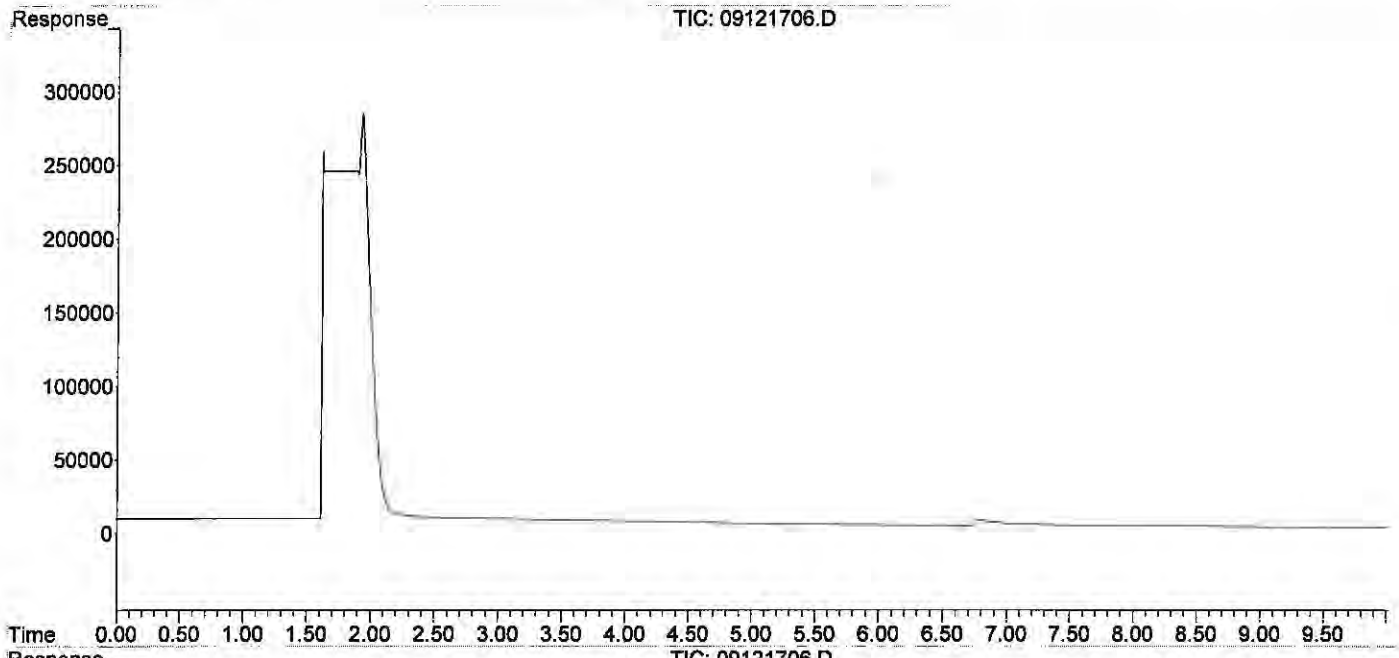
(f)=RT Delta > 1/2 Window (m)=manual int.

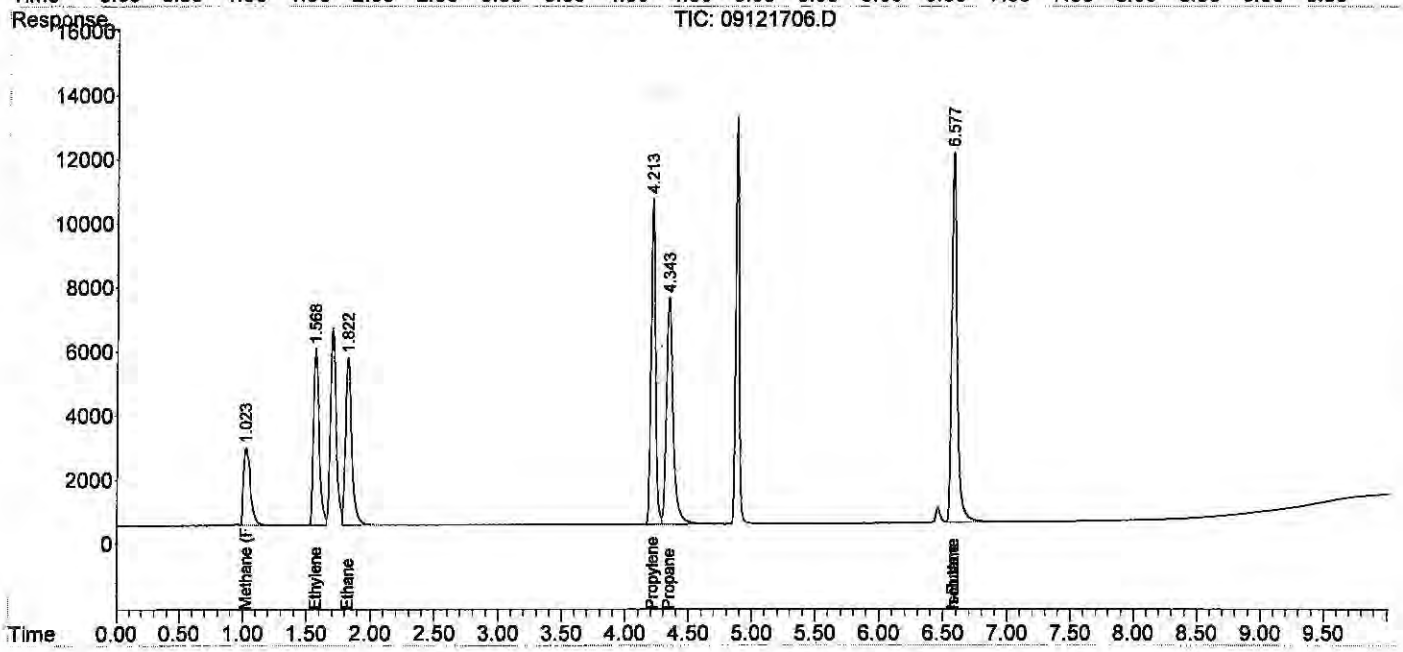
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121706.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 12:30
Operator : MC
Sample : 10.57ppm 0.7ml s32-09051701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:09:24 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:04:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121707.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 12:47
Operator : MC
Sample : 200ppm 0.1ml s32-09121701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:09:59 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:04:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.897	155286	0.065	ppm
2)	Carbon monoxide	1.897	155286	N.D.	ppm
3)	Methane (TCD)	4.079f	27015	2856.472	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.063	1735997	190.792	ppm
7)	Ethylene	1.597	3339702	198.758	ppm
8)	Ethane	1.849	3350442	194.597	ppm
9)	Propylene	4.201	4504060	185.706	ppm
10)	Propane	4.333	5043036	204.809	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

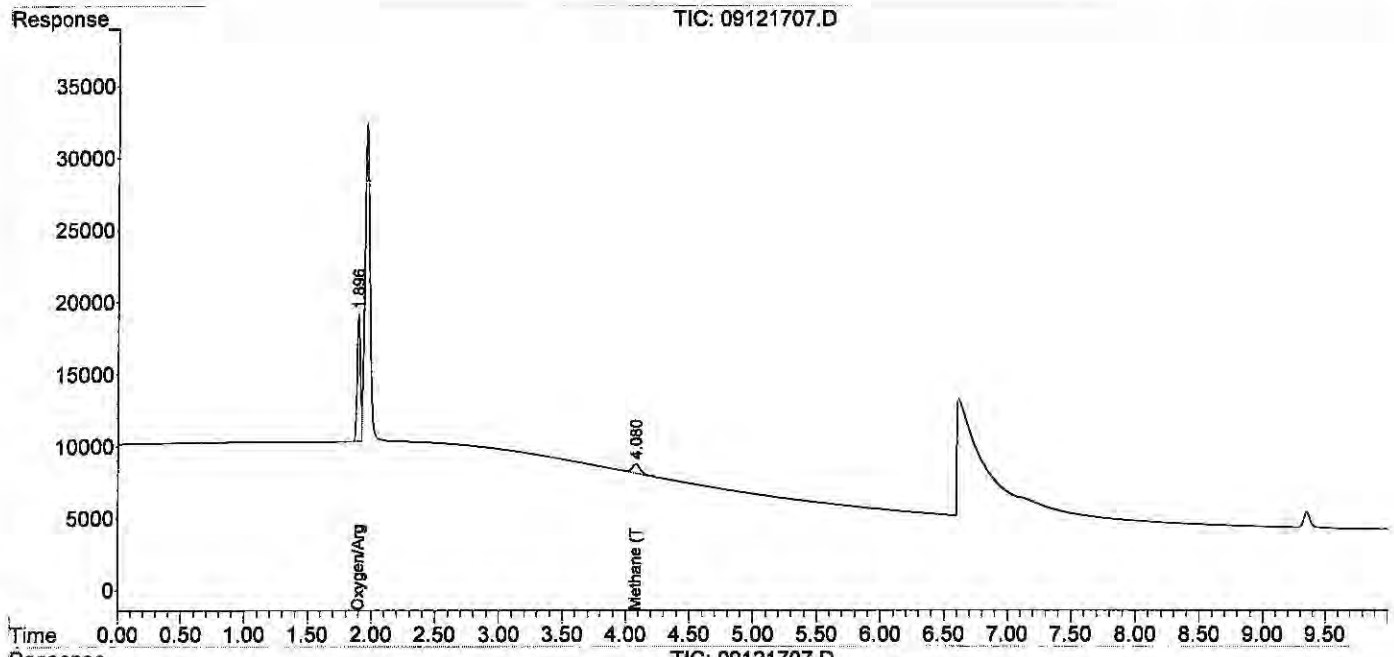
(f)=RT Delta > 1/2 Window (m)=manual int.

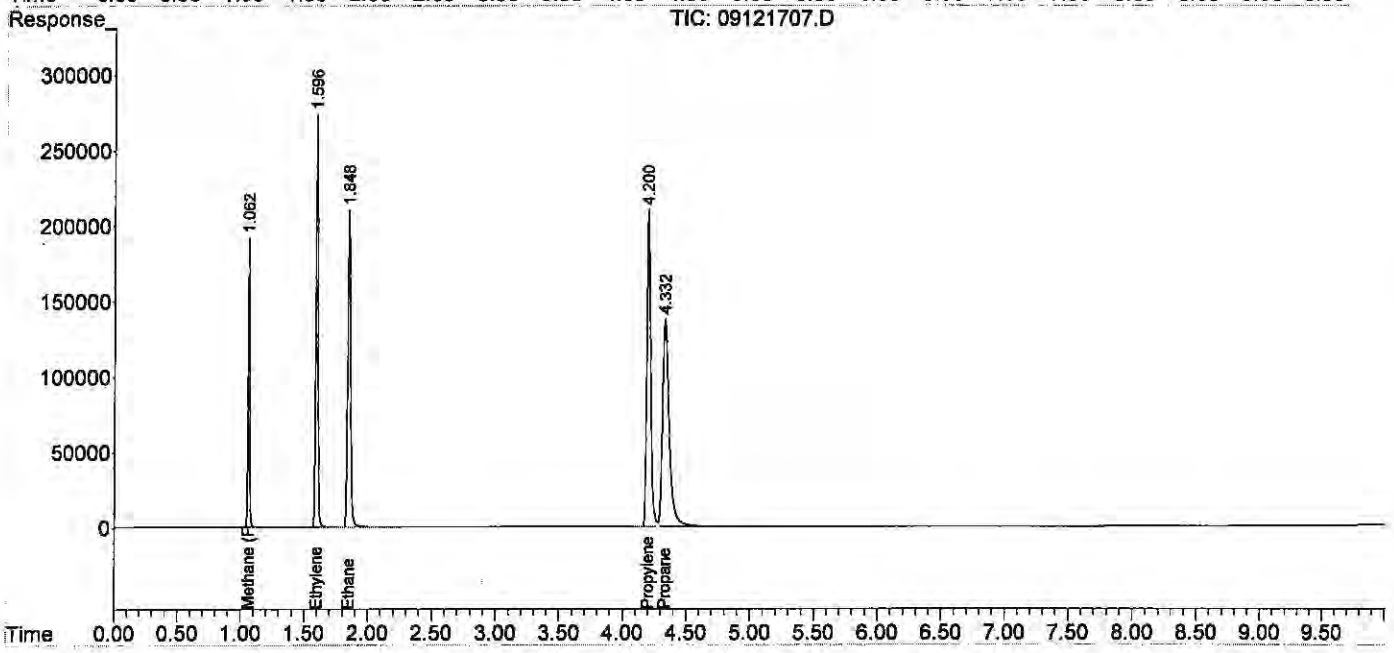
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121707.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 12:47
Operator : MC
Sample : 200ppm 0.1ml s32-09121701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:09:59 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:04:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121708.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 13:00
Operator : MC
Sample : 600ppm 0.3ml s32-09121701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:10:57 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:10:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.884	196022	0.124	ppm
2)	Carbon monoxide	1.884	196022	N.D.	ppm
3)	Methane (TCD)	4.070f	88282	782.730	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.044	5189849	539.759	ppm
7)	Ethylene	1.573	10007759	590.286	ppm
8)	Ethane	1.822	10048964	583.213	ppm
9)	Propylene	4.160	13569343	562.612	ppm
10)	Propane	4.300	15251326	615.171	ppm
11)	Isobutylene	6.143	9815	NoCal	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

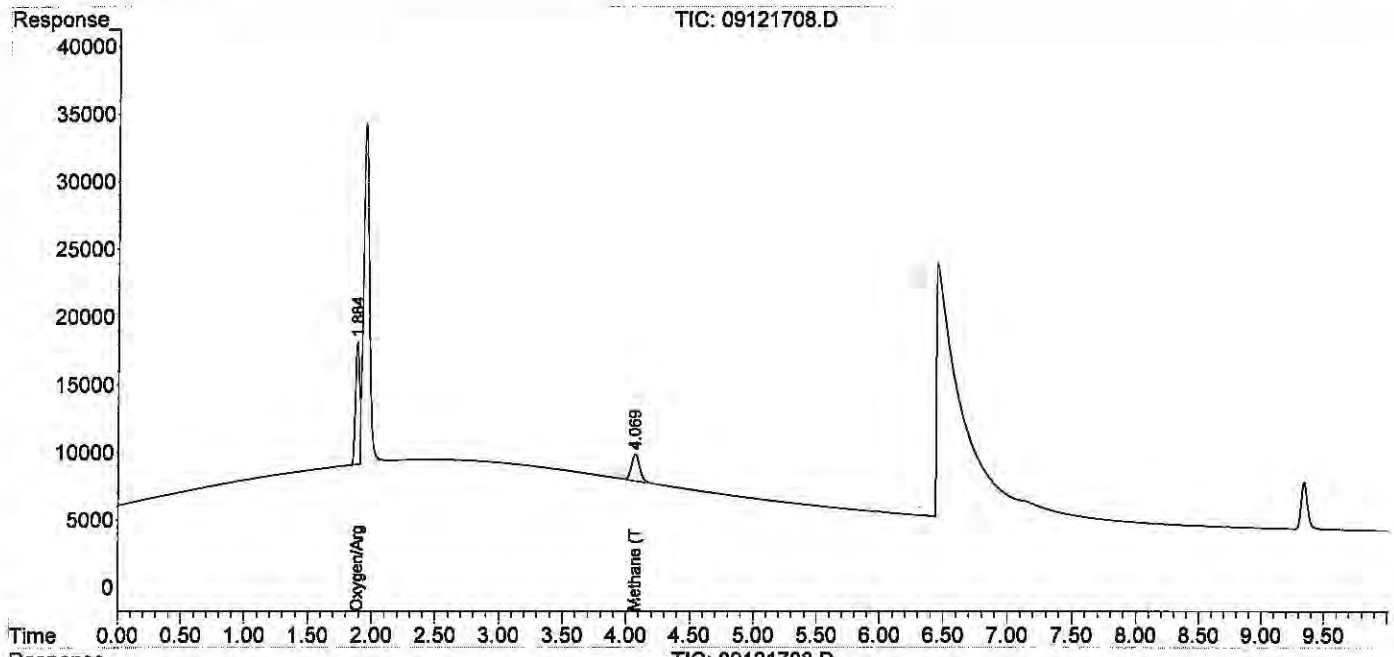
(f)=RT Delta > 1/2 Window (m)=manual int.

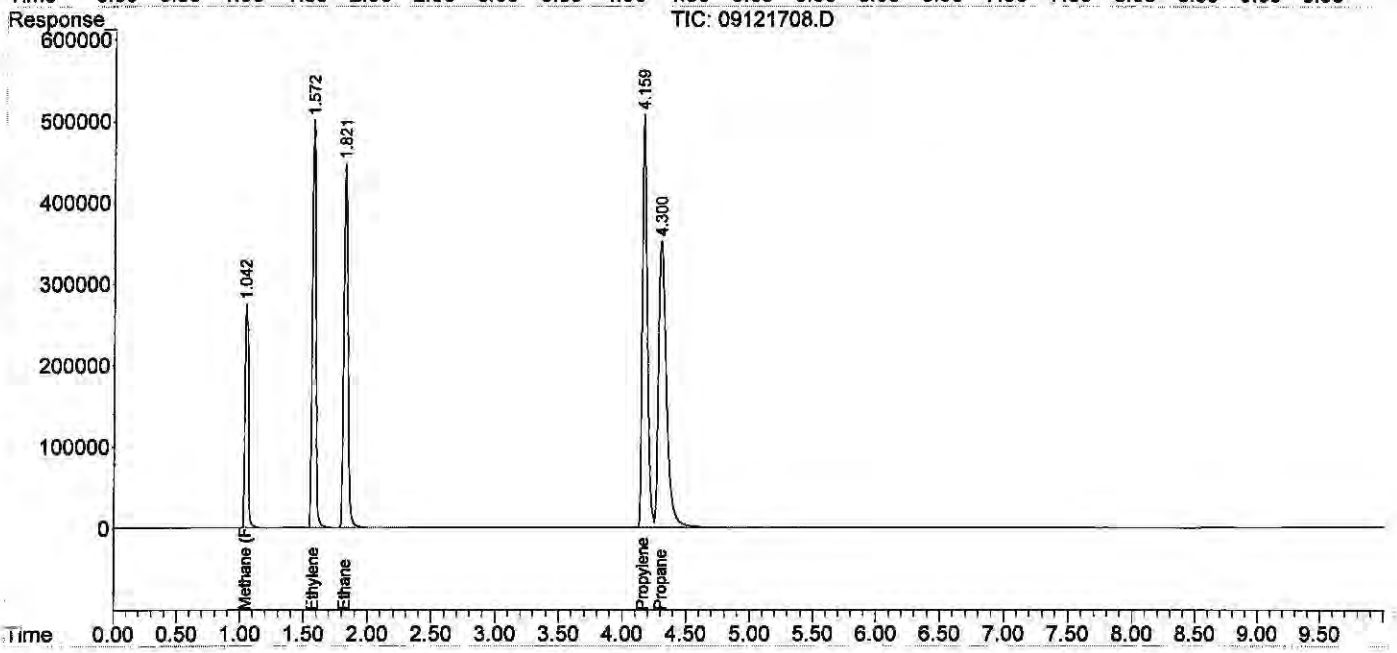
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121708.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 13:00
Operator : MC
Sample : 600ppm 0.3ml s32-09121701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:10:57 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:10:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121709.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 13:47
Operator : MC
Sample : 1000ppm 0.5ml s32-09121701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:11:46 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:11:38 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

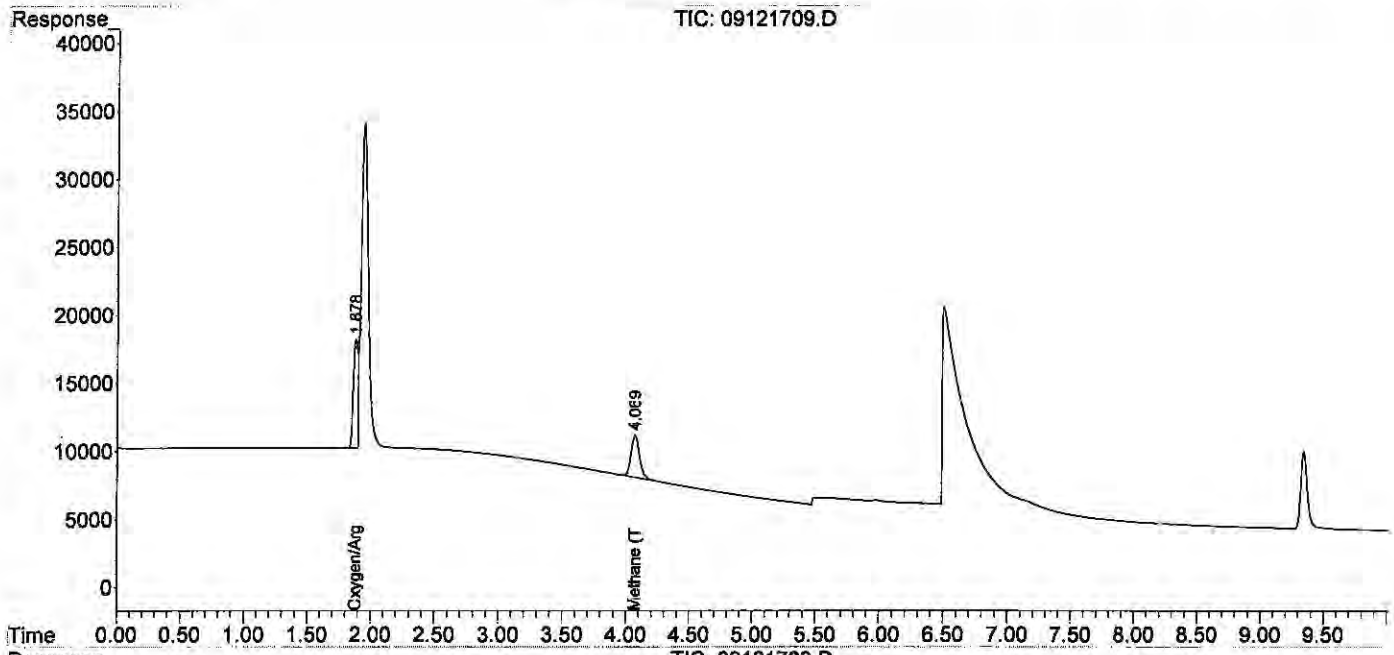
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.879	192611	0.162	ppm
2)	Carbon monoxide	1.879	192611	N.D.	ppm
3)	Methane (TCD)	4.070f	145492	1244.729	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.039	8598534	945.644	ppm
7)	Ethylene	1.576	16608504	981.887	ppm
8)	Ethane	1.827	16709165	973.644	ppm
9)	Propylene	4.161	22494888	941.060	ppm
10)	Propane	4.298	25459411	1023.223	ppm
11)	Isobutylene	6.138	16970	8645.243	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

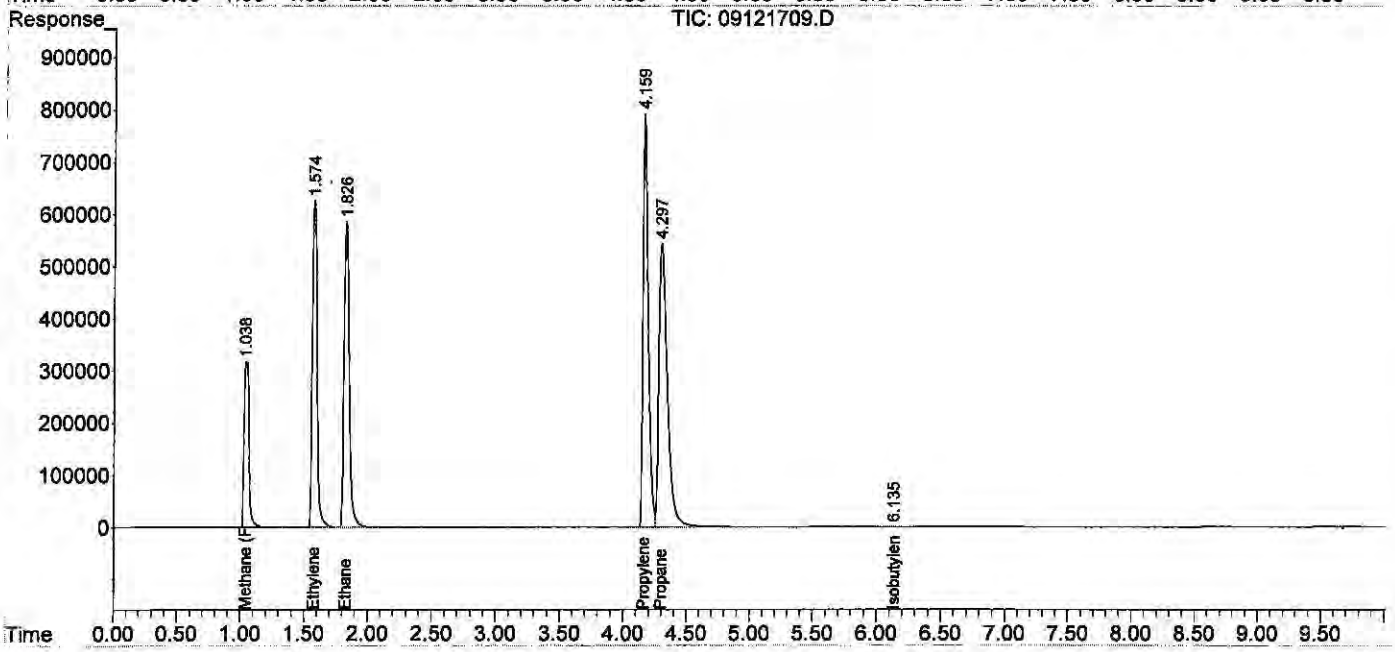
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121709.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 13:47
Operator : MC
Sample : 1000ppm 0.5ml s32-09121701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:11:46 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:11:38 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121710.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 14:07
Operator : MC
Sample : 2000ppm 1ml s32-09121701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:12:33 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:12:25 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

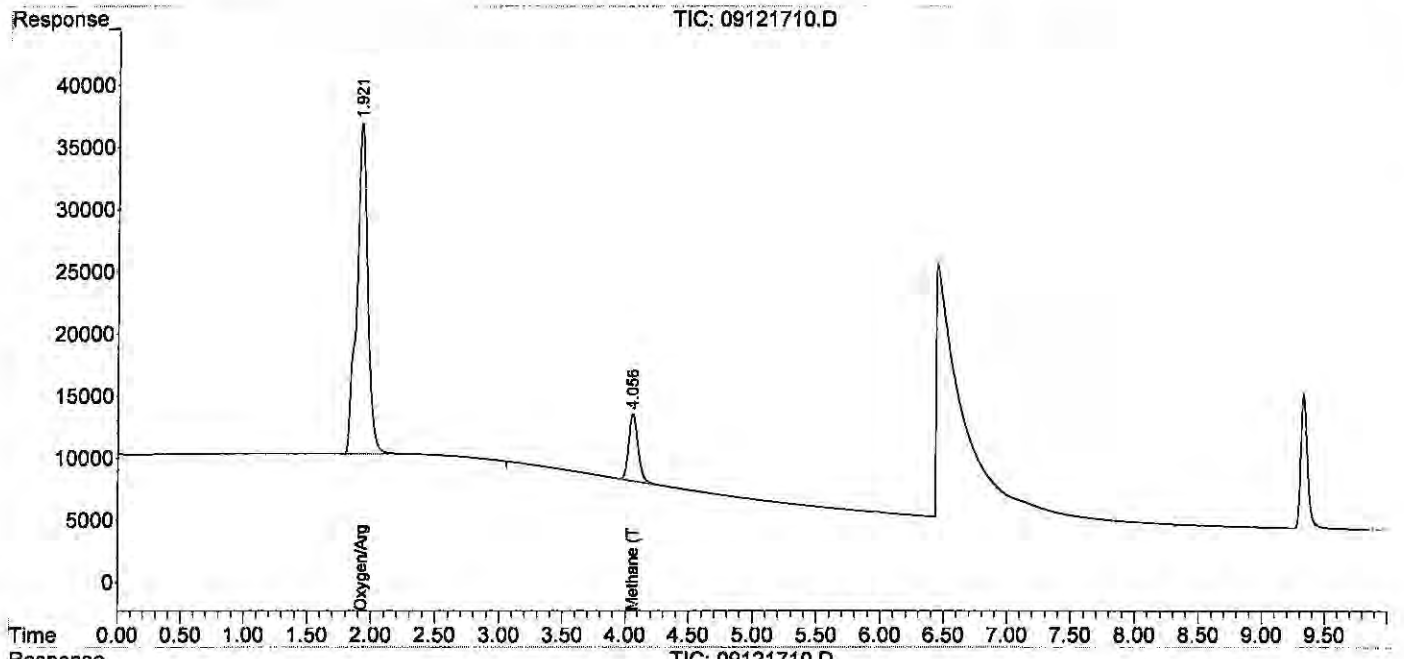
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	1.922f	1578147	1.659	ppm	
2)	Carbon monoxide	1.922f	1578147	N.D.	ppm	
3)	Methane (TCD)	4.057f	281651	3526.607	ppm	
4)	Carbon dioxide	0.000	0	N.D.	ppm	
6)	Methane (FID)	1.016	16098209	1763.622	ppm	
7)	Ethylene	1.552	31192444	1848.268	ppm	
8)	Ethane	1.801	31424218	1837.143	ppm	
9)	Propylene	4.129	42124690	1775.341	ppm	m
10)	Propane	4.269	48583085	1946.921	ppm	
11)	Isobutylene	6.136	33832	25613.603	ppm	
12)	Isobutane	6.576f	3845	0.120	ppm	
13)	n-Butane	6.576f	3845	0.120	ppm	

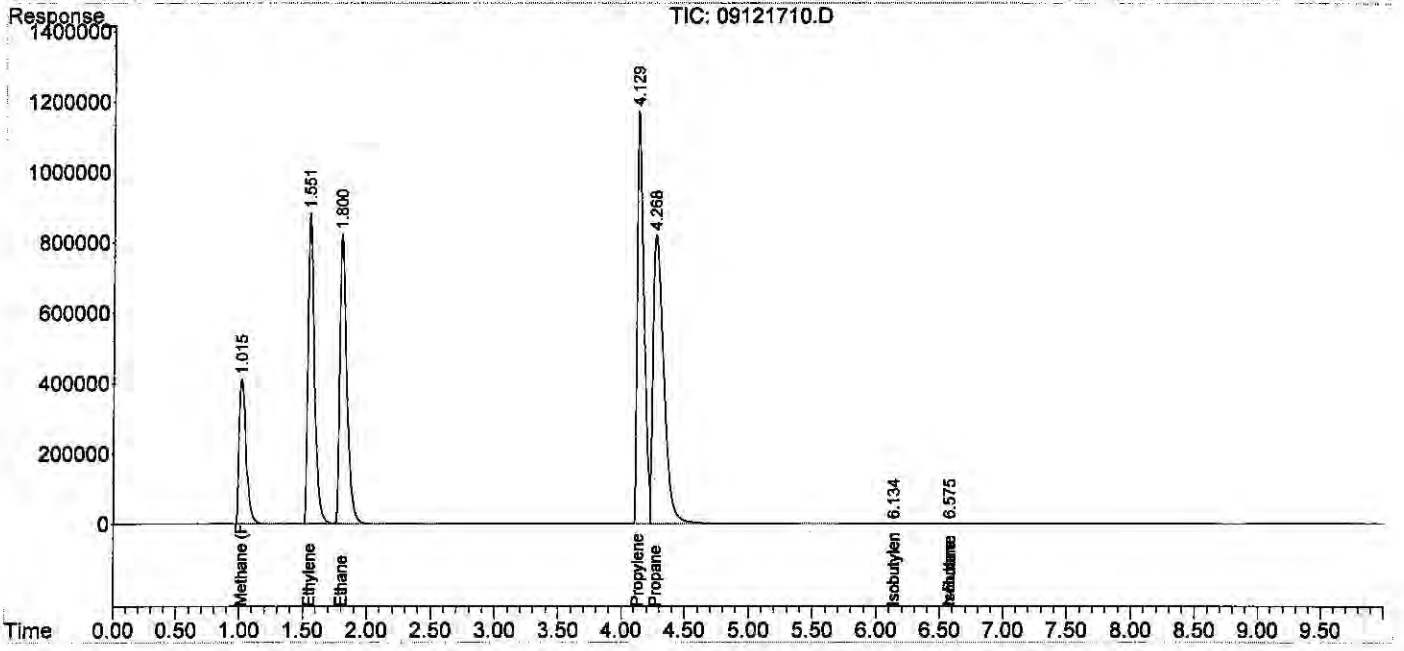
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121710.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 14:07
Operator : MC
Sample : 2000ppm 1ml s32-09121701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:12:33 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:12:25 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



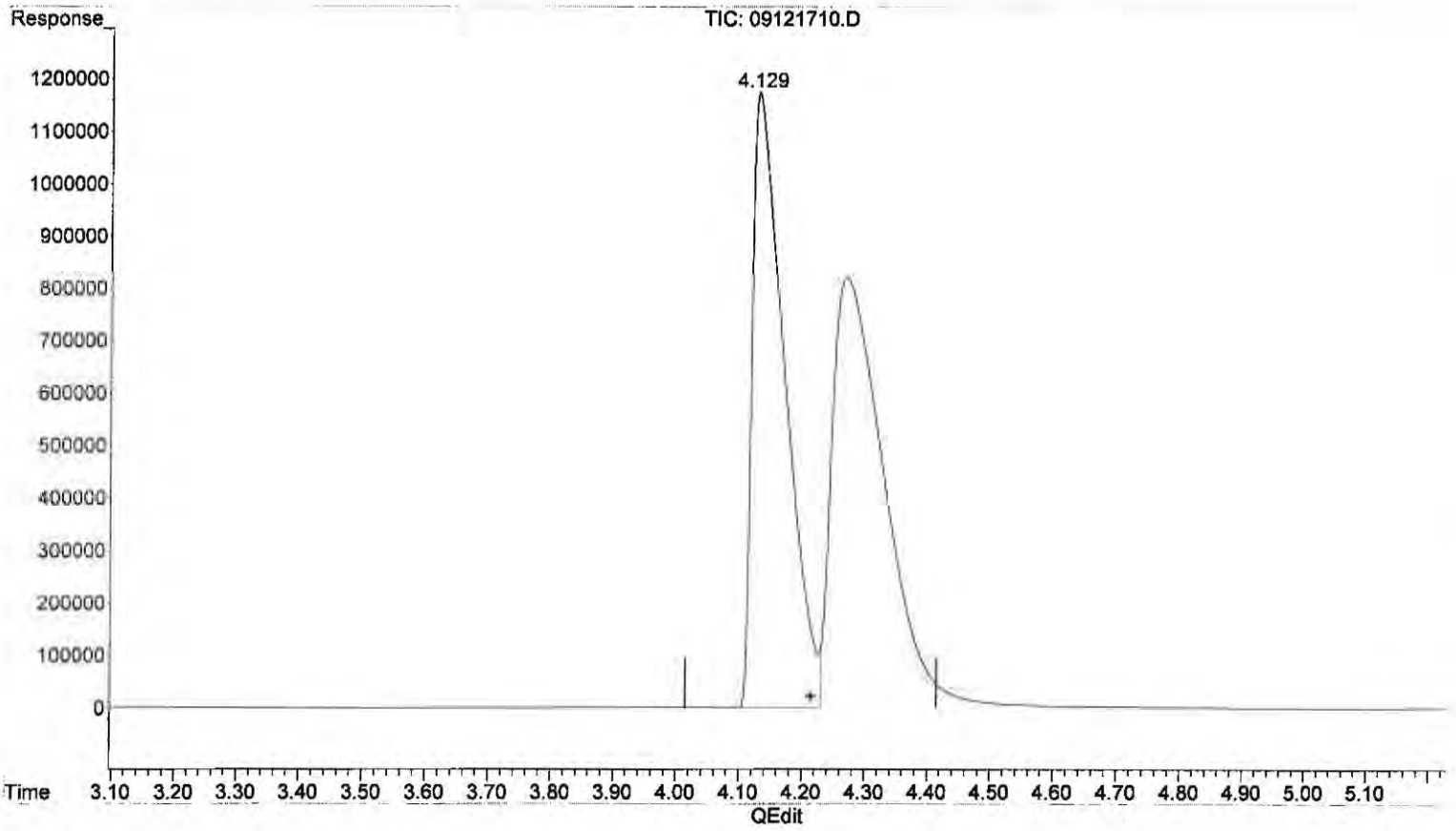


Quantitation Report (Qedit)

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121710.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 14:07
Operator : MC
Sample : 2000ppm 1ml s32-09121701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:12:33 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:12:25 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



(9) Propylene

4.129min 1775.341 ppm m

response 42124690

(+) = Expected Retention Time

RS091217_R.M Wed Sep 13 15:08:03 2017 Page: 1

Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121711.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 14:48
Operator : MC
Sample : 4000ppm 0.1ml s32-08231701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:13:37 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:13:29 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

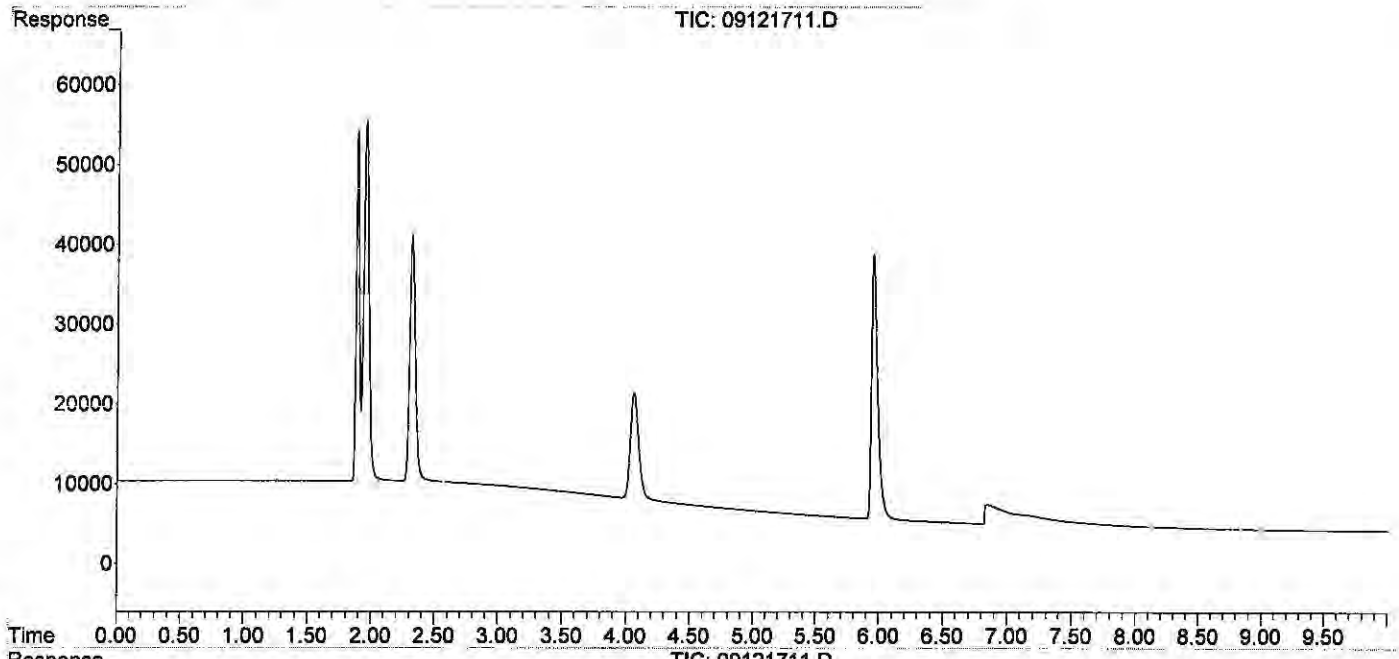
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	0.000	0	N.D.	ppm	d
2)	Carbon monoxide	0.000	0	N.D.	ppm	d
3)	Methane (TCD)	0.000	0	N.D.	ppm	d
4)	Carbon dioxide	0.000	0	N.D.	ppm	d
6)	Methane (FID)	1.059	35776839	3925.122	ppm	
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

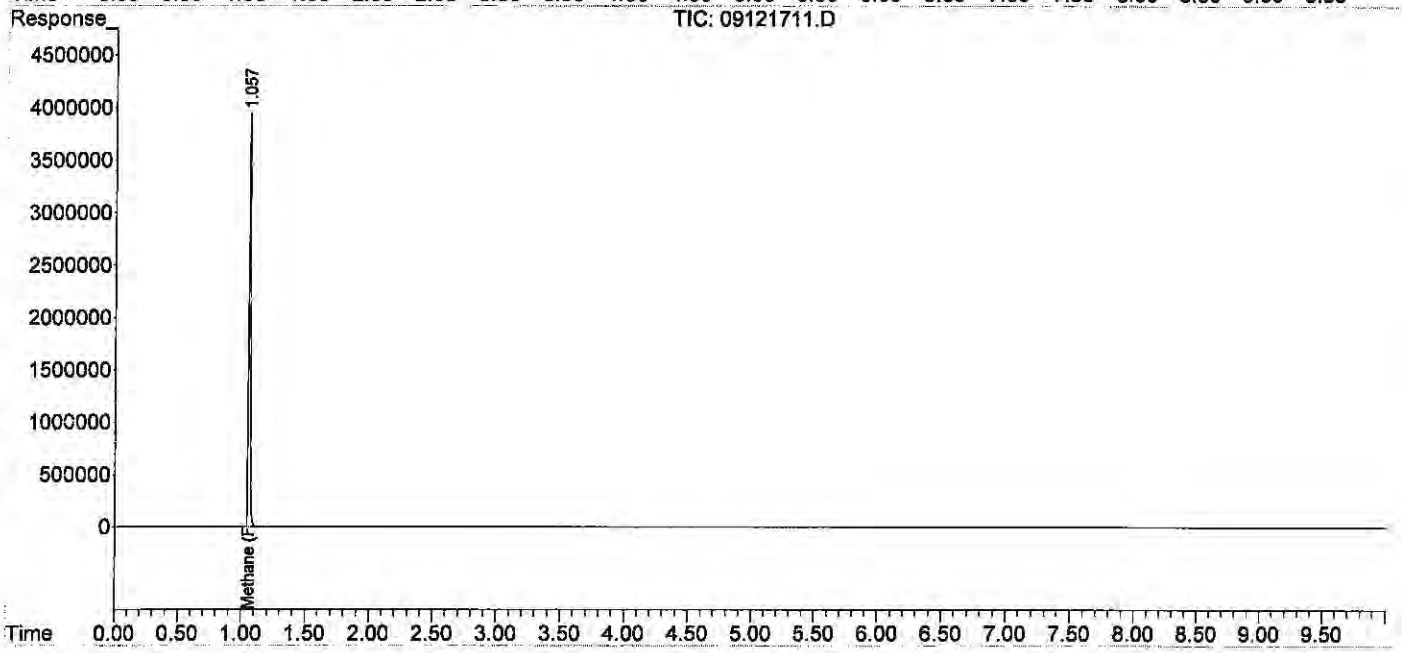
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121711.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 14:48
Operator : MC
Sample : 4000ppm 0.1ml s32-08231701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:13:37 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:13:29 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase :
Signal #1 Info :
Signal #2 Phase:
Signal #2 Info :





Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121712.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 15:21
Operator : MC
Sample : 20000ppm 0.5ml s32-08231701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:14:17 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:13:29 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

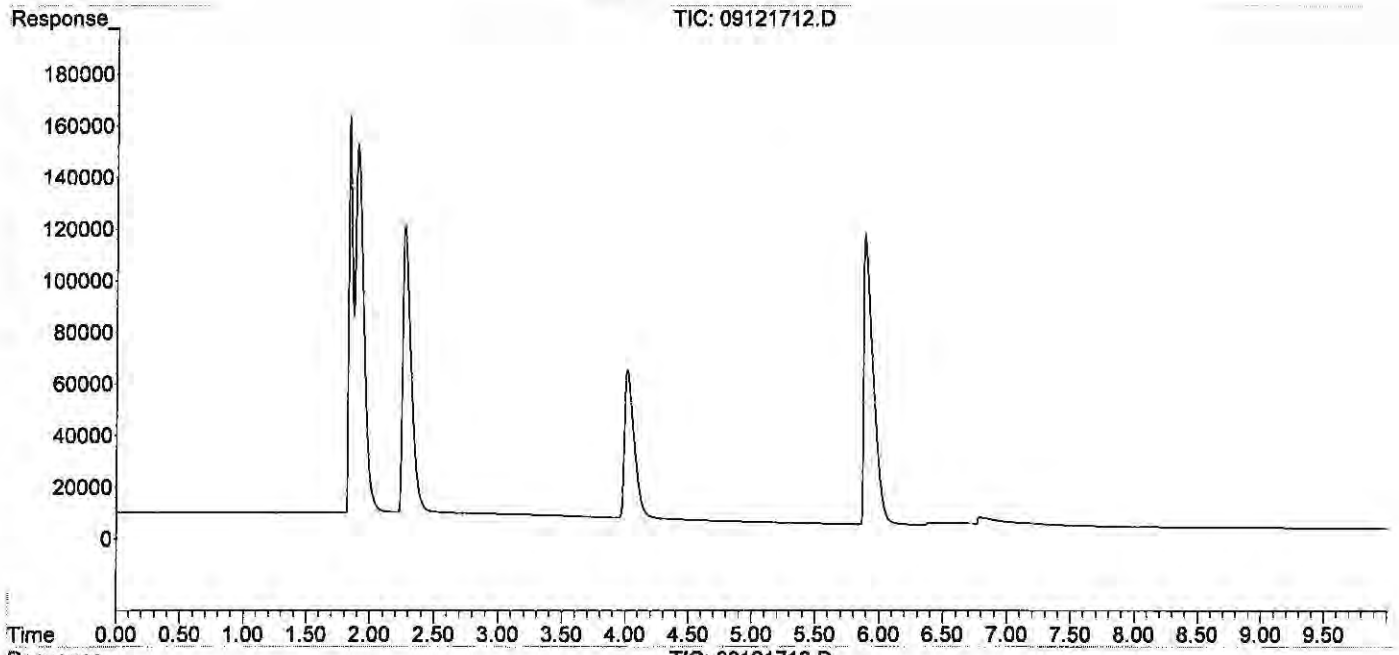
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	0.000	0	N.D.	ppm	d
2)	Carbon monoxide	1.836	3190788	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	d
4)	Carbon dioxide	0.000	0	N.D.	ppm	d
6)	Methane (FID)	1.034	169009160	18492.064	ppm	
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

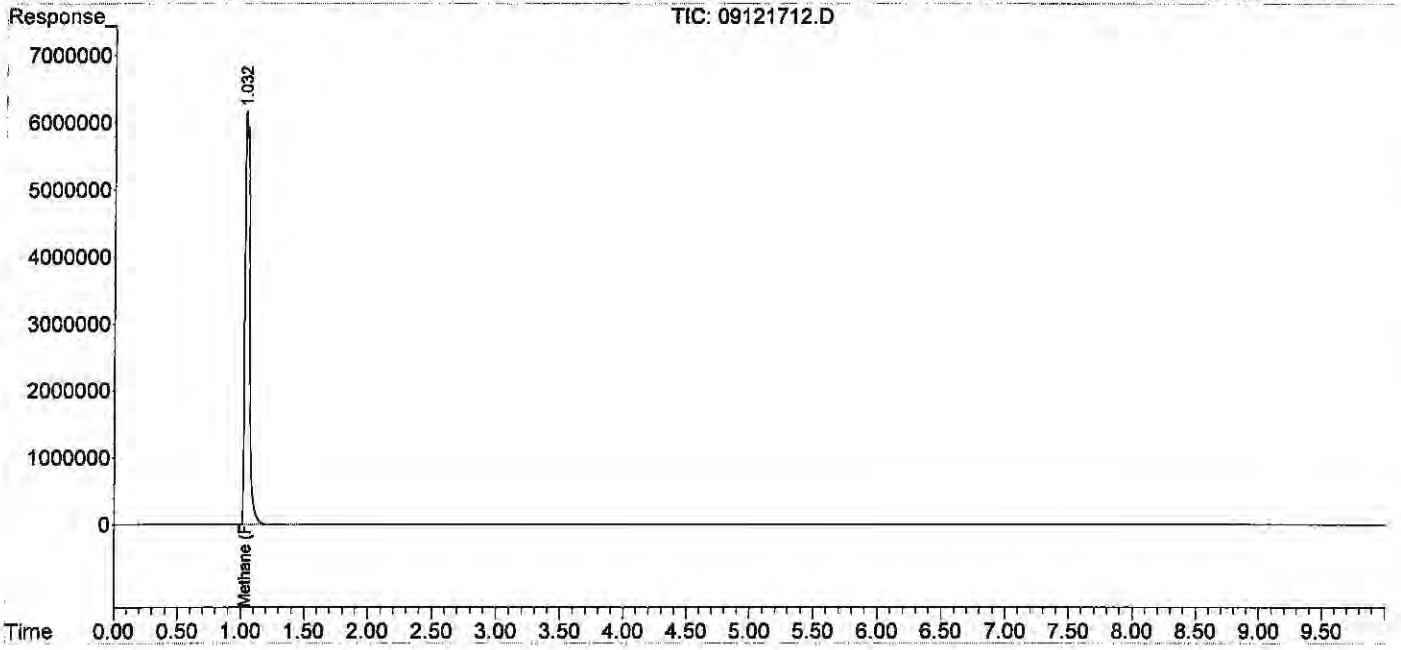
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121712.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 15:21
Operator : MC
Sample : 20000ppm 0.5ml s32-08231701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:14:17 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:13:29 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121715.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 16:15
Operator : MC
Sample : icv s30-05241604
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:15:11 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:13:29 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	1.843	2922459	3.687	ppm	
2)	Carbon monoxide	1.843	2922459	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	actual %D
4)	Carbon dioxide	0.000	0	N.D.	ppm	
6)	Methane (FID)	1.063	13748	1.516	ppm	1510 1.50 101.1
7)	Ethylene	1.598	24153	1.443	ppm	1470 1.50 96.2
8)	Ethane	1.850	24488	1.445	ppm	1510 1.50 96.3
9)	Propylene	4.221	36004	1.537	ppm	1540 1.50 102.5
10)	Propane	4.350	37738	1.517	ppm	1511 1.51 100.5
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	6.579f	48019	1.804	ppm	9/14/2
13)	n-Butane	6.579f	48019	1.804	ppm	

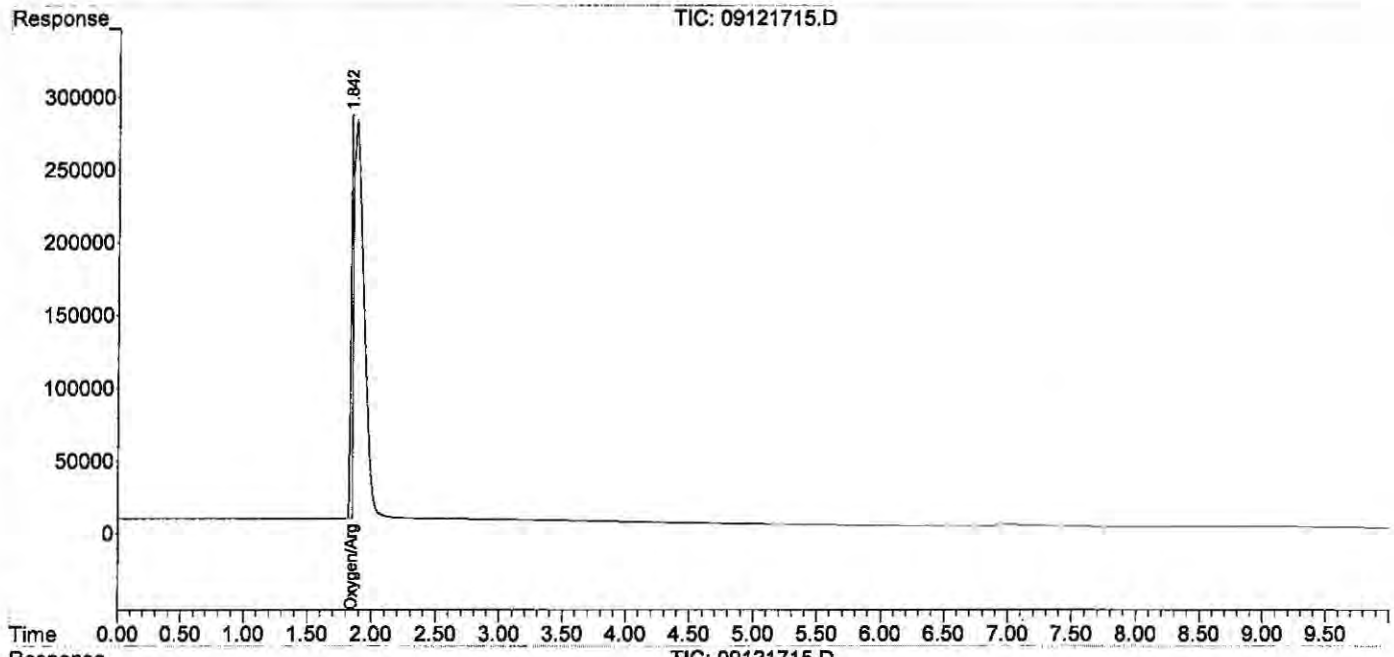
(f)=RT Delta > 1/2 Window (m)=manual int.

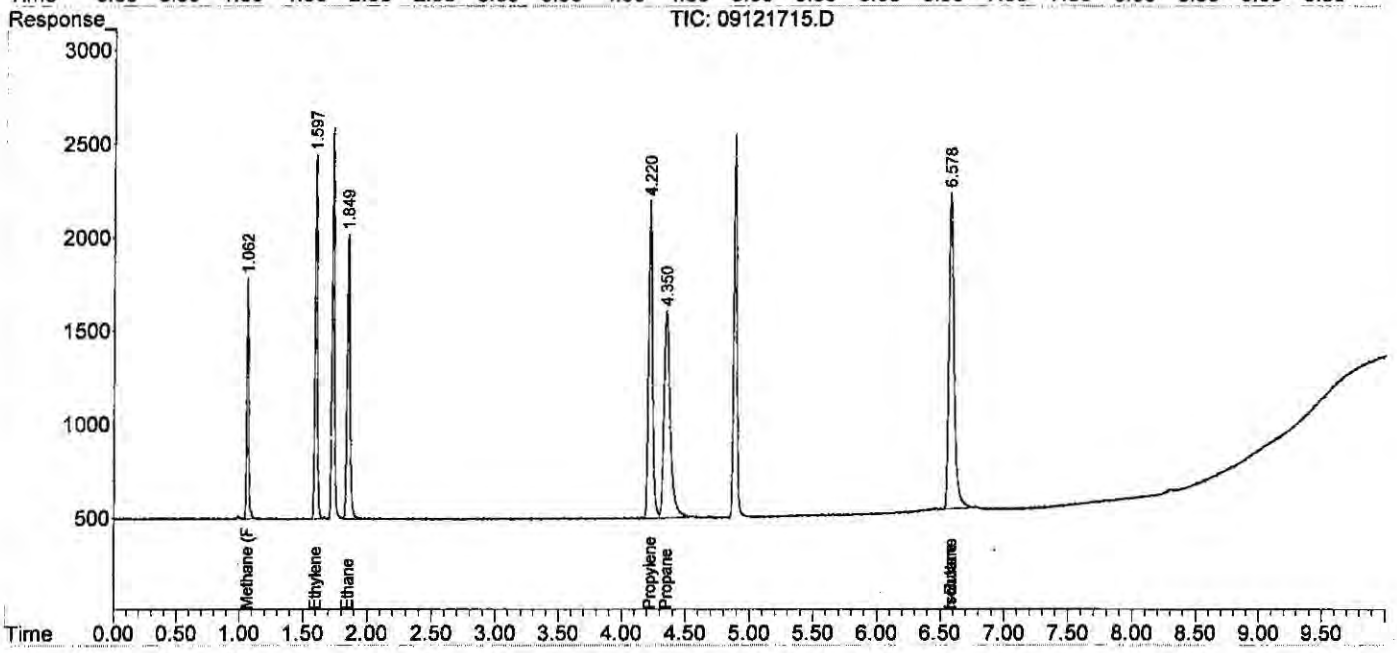
9/14/2017

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121715.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 16:15
Operator : MC
Sample : icv s30-05241604
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:15:11 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:13:29 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





ALS Environmental

Method : RSK175 Headspace Method for Dissolved Hydrocarbon in Water by FID/TCD
Client : ALS Laboratory Group
Service Request: P1806587
Sample Vol. (ml) : 32.00 ml
Analyst : MR
Date Analysis : 12/04/18
Head Space Vol.(ml) : 8.00 ml
Instrument : GC#10
Detector : FID#10, TCD#10
Gas Constant : 24.05684 (20°C)

HEAD SPACE RESULT (ppm)

Sample ID	Inj. Vol.	Methane	Ethylene	Ethane
std s32-07231801	0.100	1.620	1.601	1.573
ACTUAL		1.51	1.51	1.51
%Difference		7.3%	6.0%	4.2%
mcs 0.1ml	0.100	0.247	0.000	0.000
rb 0.1ml	0.100	0.133	0.000	0.000
fid lcs s30-05241604	0.100	1.523	1.077	1.340
fid lcsd s30-05241604	0.100	1.699	1.080	1.305
P1806587-001 0.1ml	0.100	10.232	0.000	0.000
P1806587-002 0.1ml	0.100	2.933	0.000	0.000
P1806587-003 0.1ml	0.100	0.589	0.000	0.000

FINAL HEAD SPACE RESULT (ppm)

	Methane	Ethylene	Ethane
WWt.	16.04	28.05	30.07
HENRY'S CONSTANT	3.76E+04	1.02E+04	2.63E+04
RL	1.30	1.00	0.60
mcs 0.1ml	2.470	0.000	0.000
fid lcs s30-05241604	15.230	10.770	13.400
fid lcsd s30-05241604	16.990	10.800	13.050
P1806587-001 0.1ml	102.320	0.000	0.000
P1806587-002 0.1ml	29.330	0.000	0.000
P1806587-003 0.1ml	5.890	0.000	0.000

std s32-07231801	1.596	1.634	1.597
ACTUAL	1.51	1.51	1.51
%Difference	5.7%	8.2%	5.8%

00964258

Data Path : J:\GC10\DATA\RSK_FID\2018_12\04\
Data File : 12041801.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 04-Dec-2018, 09:34:14
Operator : MR
Sample : std s32-07231801
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Dec 04 09:48:07 2018
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	0.000	0	N.D.	ppm
2)	Carbon monoxide	0.000	0	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.120	14692	1.620	ppm
7)	Ethylene	1.684	26789	1.601	ppm
8)	Ethane	1.949	26656	1.573	ppm
9)	Propylene	4.335	37197	1.587	ppm
10)	Propane	4.459	37820	1.520	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	6.673	48007	1.804	ppm
13)	n-Butane	6.673	48007	1.804	ppm

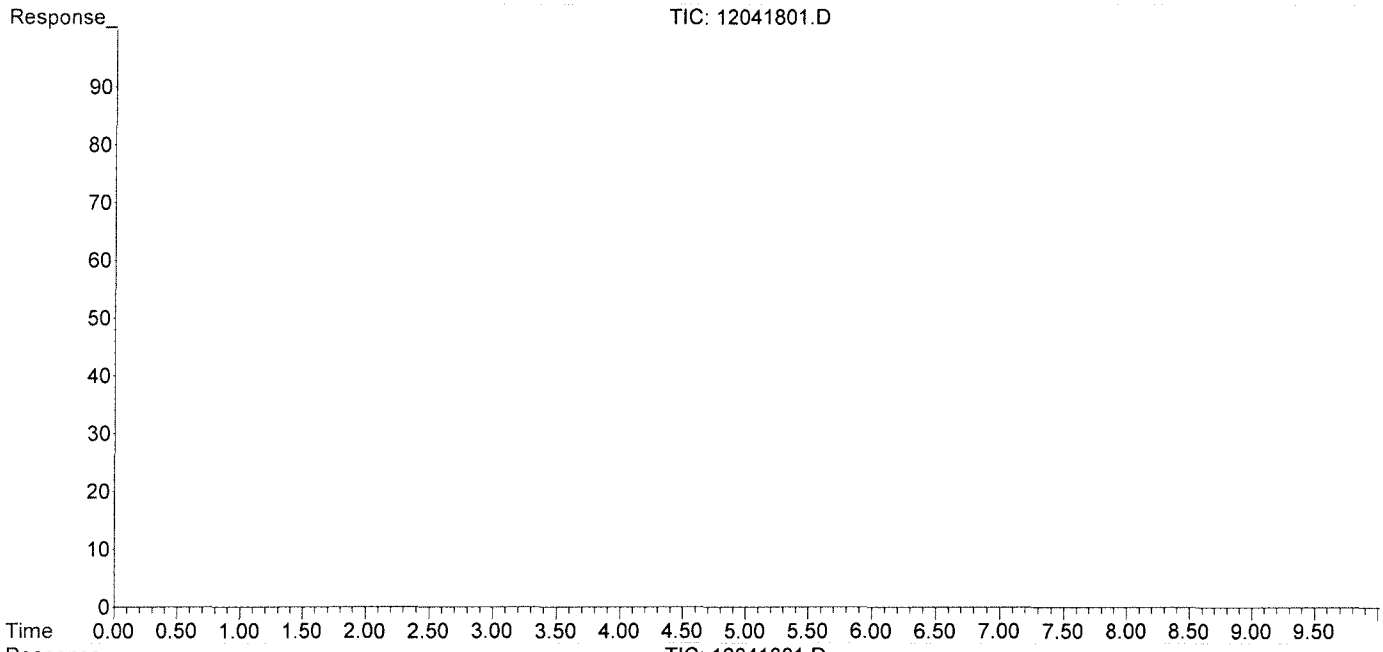
(f)=RT Delta > 1/2 Window (m)=manual int.

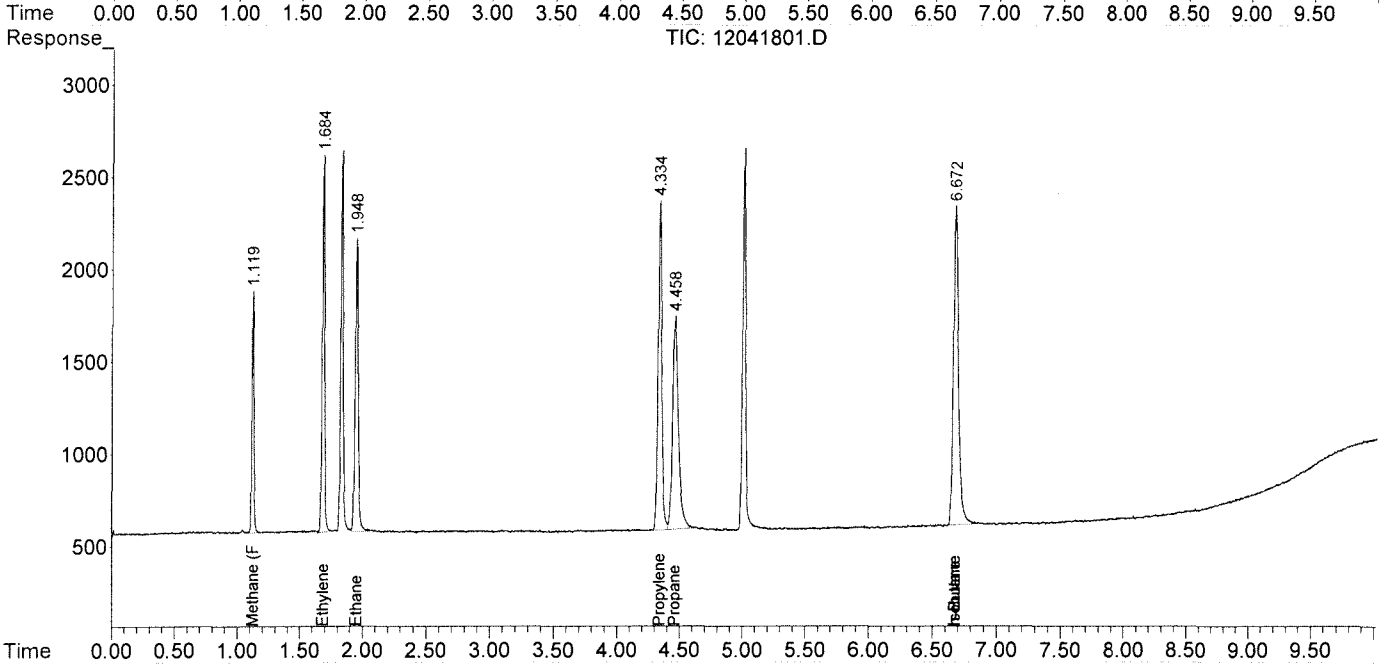
MR 12/5/18

Data Path : J:\GC10\DATA\RSK_FID\2018_12\04\
Data File : 12041801.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 04-Dec-2018, 09:34:14
Operator : MR
Sample : std s32-07231801
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Dec 04 09:48:07 2018
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_FID\2018_12\04\
Data File : 12041814.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 04-Dec-2018, 13:54:56
Operator : MR
Sample : std s32-07231801
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Dec 04 14:35:00 2018
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

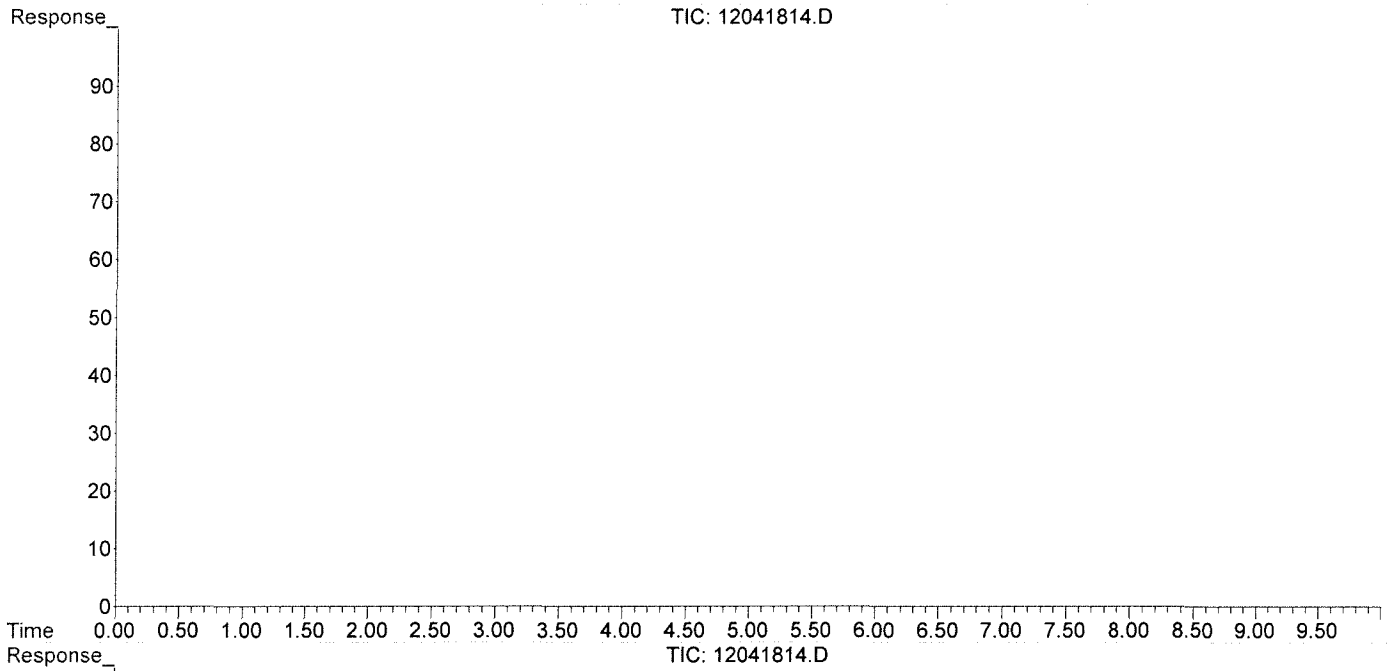
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	0.000	0	N.D.	ppm
2)	Carbon monoxide	0.000	0	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.125	14473	1.596	ppm
7)	Ethylene	1.692	27343	1.634	ppm
8)	Ethane	1.957	27067	1.597	ppm
9)	Propylene	4.336	39361	1.680	ppm
10)	Propane	4.460	40907	1.644	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	6.670	53110	1.995	ppm
13)	n-Butane	6.670	53110	1.995	ppm

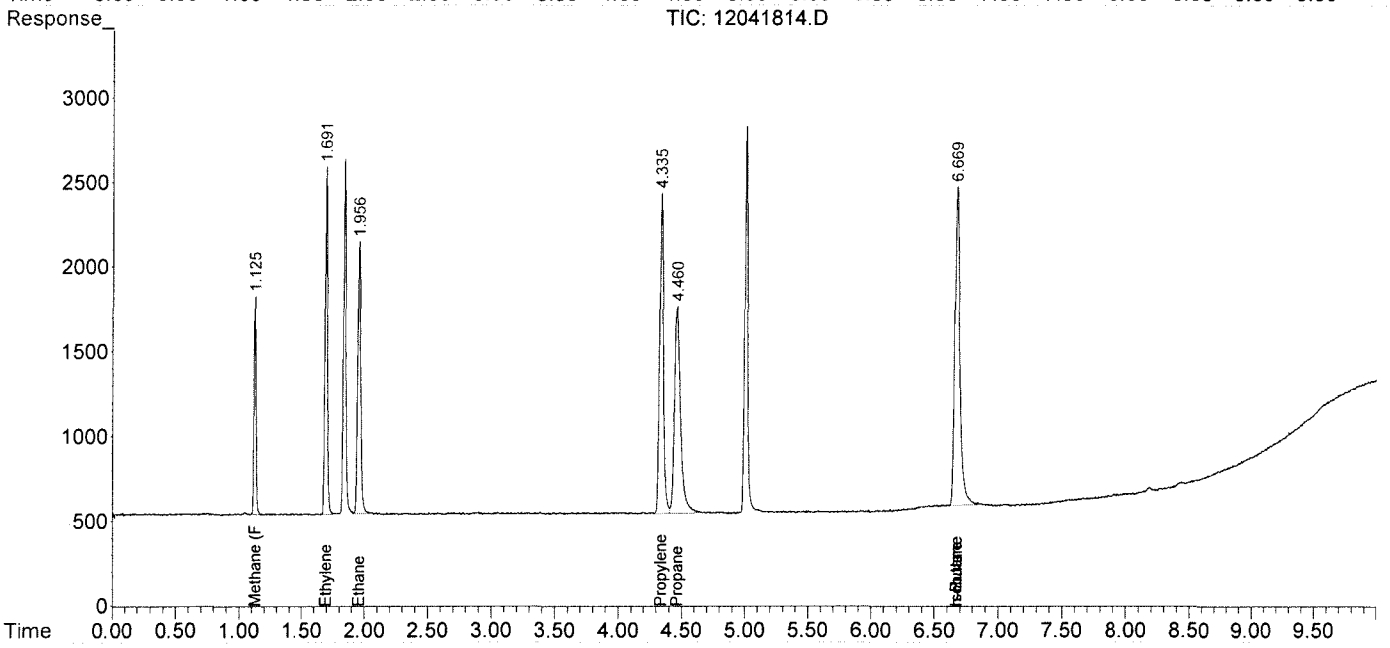
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2018_12\04\
Data File : 12041814.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 04-Dec-2018, 13:54:56
Operator : MR
Sample : std s32-07231801
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Dec 04 14:35:00 2018
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Injection Log

Directory: I:\GC10\DATA\RSK_FID\2017_09\12\

	Date/Time	File Name	Sample ID	Misc Info	Operator	Acquisition Method	Comments
1	12-Sep-17, 08:38:08	09121701.D	test		MC	RSKBOTH.M	
2	12-Sep-17, 10:52:40	09121702.D	0.151ppm 0.250ml s32-09121702		MC	RSKBOTH.M	Curve
3	12-Sep-17, 11:05:49	09121703.D	0.302ppm 0.5ml s32-09121702		MC	RSKBOTH.M	Curve
4	12-Sep-17, 11:45:34	09121704.D	1.51ppm 0.1ml s32-09051701		MC	RSKBOTH.M	Curve
5	12-Sep-17, 12:09:33	09121705.D	4.53ppm 0.3ml s32-09051701		MC	RSKBOTH.M	Curve
6	12-Sep-17, 12:30:23	09121706.D	10.57ppm 0.7ml s32-09051701		MC	RSKBOTH.M	Curve
7	12-Sep-17, 12:47:18	09121707.D	200ppm 0.1ml s32-09121701		MC	RSKBOTH.M	Curve
8	12-Sep-17, 13:00:22	09121708.D	600ppm 0.3ml s32-09121701		MC	RSKBOTH.M	Curve
9	12-Sep-17, 13:47:48	09121709.D	1000ppm 0.5ml s32-09121701		MC	RSKBOTH.M	Curve
10	12-Sep-17, 14:07:58	09121710.D	2000ppm 1ml s32-09121701		MC	RSKBOTH.M	Curve
11	12-Sep-17, 14:48:48	09121711.D	4000ppm 0.1ml s32-08231701		MC	RSKBOTH.M	Curve
12	12-Sep-17, 15:21:51	09121712.D	20000ppm 0.5ml s32-08231701		MC	RSKBOTH.M	Curve
13	12-Sep-17, 15:38:59	09121713.D	mb 0.5ml		MC	RSKBOTH.M	Pass
14	12-Sep-17, 15:55:35	09121714.D	mb 0.1ml		MC	RSKBOTH.M	Pass
15	12-Sep-17, 16:15:26	09121715.D	icv s30-05241604		MC	RSKBOTH.M	Pass

Injection Log

Directory: I:\GC10\DATA\RSK_FID\2018_12\04\

	Date/Time	File Name	Sample ID	Misc Info	Operator	Acquisition Method	Comments
1	04-Dec-18, 09:34:14	12041801.D	std s32-07231801		MR	RSKBOTH.M	pass
2	04-Dec-18, 09:49:42	12041802.D	rb 0.1ml		MR	RSKBOTH.M	pass
3	04-Dec-18, 10:03:37	12041803.D	mcs 0.1ml		MR	RSKBOTH.M	pass
4	04-Dec-18, 10:16:54	12041804.D	fid lcs s30-05241604		MR	RSKBOTH.M	pass
5	04-Dec-18, 10:30:54	12041805.D	fid lcsd s30-05241604		MR	RSKBOTH.M	pass
6	04-Dec-18, 10:45:03	12041806.D	P1806583-001 0.1ml		MR	RSKBOTH.M	
7	04-Dec-18, 11:00:26	12041807.D	P1806583-002 0.1ml		MR	RSKBOTH.M	
8	04-Dec-18, 11:13:52	12041808.D	P1806583-003 0.1ml		MR	RSKBOTH.M	
9	04-Dec-18, 11:27:08	12041809.D	P1806583-004 0.1ml		MR	RSKBOTH.M	
10	04-Dec-18, 11:56:26	12041810.D	P1806583-005 0.1ml		MR	RSKBOTH.M	
11	04-Dec-18, 12:11:55	12041811.D	P1806587-001 0.1ml		MR	RSKBOTH.M	
12	04-Dec-18, 12:29:30	12041812.D	P1806587-002 0.1ml		MR	RSKBOTH.M	
13	04-Dec-18, 13:33:26	12041813.D	P1806587-003 0.1ml		MR	RSKBOTH.M	
14	04-Dec-18, 13:54:56	12041814.D	std s32-07231801		MR	RSKBOTH.M	pass

HS18111497 8260 Raw Data

ALS WO# HS18111497

MSVOA09 -Logbook

Batch: 33625
Date: 11-13-2018
Method: 8260
Comments:

Analyst: Presenta Cabascango
Reviewer: Anjana Poluri
Laboratory: Houston

#	Samp ID	Type	Analyzed	DF	Init Wt/Vol	Final Vol	File ID	Matrix	Status	pH
1	BFB	TUNE	11-13-2018 10:58 am	1.00	50 mL	50 mL	U111301.D	Liquid	Y	NA
	Auto find/purged									
2	VSTD000.25	ICAL1	11-13-2018 11:23 am	1.00	50 mL	50 mL	U111302.D	Liquid	Y	NA
	0.25 uL cal std/250 mL DI									
3	VSTD000.5	ICAL2	11-13-2018 11:47 am	1.00	50 mL	50 mL	U111303.D	Liquid	Y	NA
	0.5 uL cal std/250 mL DI									
4	VSTD001	ICAL3	11-13-2018 12:36 pm	1.00	50 mL	50 mL	U111304.D	Liquid	Y	NA
	1 uL cal std/250 mL DI									
5	VSTD002	ICAL4	11-13-2018 01:01 pm	1.00	50 mL	50 mL	U111305.D	Liquid	Y	NA
	2 uL cal std/250 mL DI									
6	VSTD005	ICAL5	11-13-2018 01:25 pm	1.00	50 mL	50 mL	U111306.D	Liquid	Y	NA
	5 uL cal std/250 mL DI									
7	VSTD020	ICAL6	11-13-2018 01:50 pm	1.00	50 mL	50 mL	U111307.D	Liquid	Y	NA
	4 uL cal std/50 mL DI									
8	VSTD050	ICAL7	11-13-2018 02:15 pm	1.00	50 mL	50 mL	U111308.D	Liquid	Y	NA
	10 uL cal std/50 mL DI									
9	VSTD100	ICAL8	11-13-2018 02:39 pm	1.00	50 mL	50 mL	U111309.D	Liquid	Y	NA
	20 uL cal std/50 mL DI									
10	VSTD150	ICAL9	11-13-2018 03:04 pm	1.00	50 mL	50 mL	U111310.D	Liquid	Y	NA
	30 uL cal std/50 mL DI									
11	VSTD200	ICAL	11-13-2018 03:28 pm	1.00	50 mL	50 mL	U111311.D	Liquid	Y	NA
	40 uL cal std/50 mL DI									
12	BLANK	SAMP	11-13-2018 03:53 pm	1.00	50 mL	50 mL	U111312.D	Liquid	Y	NA
	Cleanup blk									
13	VSTD050	ICV	11-13-2018 04:18 pm	1.00	50 mL	50 mL	U111313.D	Liquid	Y	NA
	10 uL ICV std/50 mL DI									
14	BFB	TUNE	11-13-2018 05:07 pm	1.00	50 mL	50 mL	V111301.D	Liquid	Y	NA
	Auto find/purged									
15	VSTD050	CCV	11-13-2018 05:32 pm	1.00	50 mL	50 mL	V111302.D	Liquid	Y	NA
	10 uL cal std/50 mL DI									
16	VSTD050	CCV	11-13-2018 05:56 pm	1.00	50 mL	50 mL	V111303.D	Liquid	Y	NA
	10 uL cal std/50 mL DI									
17	VLCSW-181113	LCS	11-13-2018 06:21 pm	1.00	50 mL	50 mL	V111304.D	Liquid	Y	NA
	4 uL cal std/50 mL DI									
18	BLANK	SAMP	11-13-2018 06:46 pm	1.00	50 mL	50 mL	V111305.D	Liquid	Y	NA
19	VBLKW-181113	MBLK	11-13-2018 07:10 pm	1.00	50 mL	50 mL	V111306.D	Liquid	Y	NA
20	HS18110428-01	SAMP	11-13-2018 07:35 pm	1.00	50 mL	50 mL	V111307.D	Liquid	Y	<2
21	HS18110496-01	SAMP	11-13-2018 08:00 pm	1.00	50 mL	50 mL	V111308.D	Liquid	Y	<2
22	HS18110428-02	SAMP	11-13-2018 08:25 pm	1.00	50 mL	50 mL	V111309.D	Liquid	Y	<2
23	HS18110428-03	SAMP	11-13-2018 08:49 pm	1.00	50 mL	50 mL	V111310.D	Liquid	Y	<2
24	HS18110428-04	SAMP	11-13-2018 09:14 pm	1.00	50 mL	50 mL	V111311.D	Liquid	Y	<2
25	HS18110496-04	SAMP	11-13-2018 09:39 pm	1.00	50 mL	50 mL	V111312.D	Liquid	Y	<2
26	HS18110496-05	SAMP	11-13-2018 10:04 pm	1.00	50 mL	50 mL	V111313.D	Liquid	Y	<2
27	HS18110496-06	SAMP	11-13-2018 10:28 pm	1.00	50 mL	50 mL	V111314.D	Liquid	Y	<2
28	HS18110428-08	SAMP	11-13-2018 10:53 pm	1.00	50 mL	50 mL	V111315.D	Liquid	Y	<2
29	HS18110428-09	SAMP	11-13-2018 11:18 pm	1.00	50 mL	50 mL	V111316.D	Liquid	Y	<2
30	HS18110496-04MS	MS	11-13-2018 11:43 pm	1.00	50 mL	50 mL	V111317.D	Liquid	Y	<2
	8 uL cal std/40 mL Sample									
31	HS18110496-04MSD	MSD	11-14-2018 12:07 am	1.00	50 mL	50 mL	V111318.D	Liquid	Y	<2
	8 uL cal std/40 mL Sample									

MSVOA09 -Logbook

#	Samp ID	Type	Analyzed	DF	Init Wt/Vol	Final Vol	File ID	Matrix	Status	pH
32	HS18110650-09	SAMP	11-14-2018 12:32 am	1.00	50 mL	50 mL	V111319.D	Liquid	Y	<2
33	HS18110428-05	SAMP	11-14-2018 12:57 am	5.00	10 mL	50 mL	V111320.D	Liquid	Y	<2
34	HS18110428-05	SAMP	11-14-2018 01:22 am	25.00	2 mL	50 mL	V111321.D	Liquid	Y	<2
35	HS18110428-06	SAMP	11-14-2018 01:46 am	5.00	10 mL	50 mL	V111322.D	Liquid	Y	<2
36	HS18110428-06	SAMP	11-14-2018 02:11 am	25.00	2 mL	50 mL	V111323.D	Liquid	Y	<2
37	HS18110428-07	SAMP	11-14-2018 02:36 am	100.0(	500 µL	50 mL	V111324.D	Liquid	Y	<2
38	HS18110428-07	SAMP	11-14-2018 03:01 am	10.00	5 mL	50 mL	V111325.D	Liquid	Y	<2
39	HS18110650-05	SAMP	11-14-2018 03:25 am	1.00	50 mL	50 mL	V111326.D	Liquid	Y	<2
40	HS18110650-06	SAMP	11-14-2018 03:50 am	1.00	50 mL	50 mL	V111327.D	Liquid	Y	<2
41	VSTD050-END	CCV	11-14-2018 04:15 am	1.00	50 mL	50 mL	V111328.D	Liquid	Y	NA

10 uL cal std/50 mL DI

Chemical	Value
SURR SPK ID	30502-51-03
IS ID	30502-51-03
ICV STD ID	30603-41-01
LCS/MS ID	30502-51-01/02
CAL STD ID	30502-51-01/02
BFB ID	30502-51-03

FORM 3
WATER VOLATILE METHOD SPIKE RECOVERY

Lab Name: ALS LABORATORY GROUP Contract:

Lab Code: ALS-HS Case No.: SAS No.: SDG No.: HS18111497

Matrix Spike - Sample No.: VICV050

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE AMOUNT ()	% REC #	QC. LIMITS REC.
cis-1,3-Dichloropropene	50.00	53.22	106	80-120
trans-1,3-Dichloroprope	50.00	47.39	95	80-120
1,3-Dichlorobenzene	50.00	45.55	91	80-120
2,2-Dichloropropane	50.00	51.21	102	80-120
1,1-Dichloropropene	50.00	46.61	93	80-120
Dibromomethane	50.00	47.16	94	80-120
1,2-Dibromoethane	50.00	48.42	97	80-120
trans-1,2-Dichloroethen	50.00	46.36	93	80-120
1,1,1,2-Tetrachloroetha	50.00	49.98	100	80-120
1,1,1-Trichloroethane	50.00	48.15	96	80-120
1,1,2,2-Tetrachloroetha	50.00	45.96	92	80-120
Freon TF	50.00	46.03	92	80-120
1,1,2-Trichloroethane	50.00	45.83	92	80-120
1,1-Dichloroethane	50.00	45.57	91	80-120
1,1-Dichloroethene	50.00	45.66	91	80-120
Trichlorofluoromethane	50.00	46.76	94	80-120
1,2,3-Trichlorobenzene	50.00	48.30	97	80-120
Toluene	50.00	46.16	92	80-120
1,2,4-Trichlorobenzene	50.00	47.47	95	80-120
1,2,4-Trimethylbenzene	50.00	47.71	95	80-120
Tetrachloroethene	50.00	45.53	91	80-120
Trichloroethene	50.00	46.38	93	80-120
1,2-Dichlorobenzene	50.00	44.93	90	80-120
1,2-Dichloroethane	50.00	45.18	90	80-120
1,2-Dichloropropane	50.00	47.27	94	80-120
1,3,5-Trimethylbenzene	50.00	47.70	95	80-120
1,3-Dichloropropane	50.00	46.16	92	80-120
1,4-Dichlorobenzene	50.00	48.32	97	80-120

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

COMMENTS: _____

_____

FORM III VOA

FORM 3
WATER VOLATILE METHOD SPIKE RECOVERY

Lab Name: ALS LABORATORY GROUP Contract:

Lab Code: ALS-HS Case No.: SAS No.: SDG No.: HS18111497

Matrix Spike - Sample No.: VICV050

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE AMOUNT ()	% REC #	QC. LIMITS REC.
2-Butanone	100.00	92.32	92	80-120
2-Chlorotoluene	50.00	45.71	91	80-120
2-Hexanone	100.00	99.26	99	80-120
4-Chlorotoluene	50.00	46.84	94	80-120
tert-Butylbenzene	50.00	47.82	96	80-120
4-Methyl-2-Pentanone	100.00	96.36	96	80-120
Acetone	100.00	95.46	95	80-120
Benzene	50.00	46.32	93	80-120
Bromobenzene	50.00	46.19	92	80-120
Bromochloromethane	50.00	50.90	102	80-120
Bromodichloromethane	50.00	48.53	97	80-120
Bromoform	50.00	47.71	95	80-120
Bromomethane	50.00	50.93	102	80-120
Carbon Disulfide	100.00	98.32	98	80-120
Carbon Tetrachloride	50.00	49.39	99	80-120
Chlorobenzene	50.00	45.35	91	80-120
Chloroethane	50.00	44.97	90	80-120
Chloroform	50.00	45.67	91	80-120
Chloromethane	50.00	46.70	93	80-120
cis-1,2-Dichloroethene	50.00	45.95	92	80-120
Dibromochloromethane	50.00	52.11	104	80-120
Dichlorodifluoromethane	50.00	47.87	96	80-120
Ethylbenzene	50.00	46.81	94	80-120
Hexachlorobutadiene	50.00	55.07	110	80-120
Isopropylbenzene	50.00	47.92	96	80-120
m,p-Xylenes	100.00	94.65	95	80-120
Methylene Chloride	50.00	48.07	96	80-120
n-Butylbenzene	50.00	49.50	99	80-120

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

COMMENTS: _____

_____

FORM III VOA

FORM 3
WATER VOLATILE METHOD SPIKE RECOVERY

Lab Name: ALS LABORATORY GROUP Contract:

Lab Code: ALS-HS Case No.: SAS No.: SDG No.: HS18111497

Matrix Spike - Sample No.: VICV050

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE AMOUNT ()	% REC #	QC. LIMITS REC.
n-Propylbenzene	50.00	47.57	95	80-120
Naphthalene	50.00	51.20	102	80-120
o-Xylene	50.00	47.39	95	80-120
sec-Butylbenzene	50.00	48.40	97	80-120
Styrene	50.00	49.81	100	80-120
Vinyl Chloride	50.00	47.66	95	80-120
1,2,3-Trichloropropane	50.00	49.28	98	80-120
p-Isopropyltoluene	50.00	49.15	98	80-120
1,2-Dibromo-3-Chloropro	50.00	47.82	96	80-120

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

COMMENTS: _____

_____

FORM III VOA

FORM 5
VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: ALS LABORATORY GROUP Contract:

Lab Code: ALS-HS Case No.: SAS No.: SDG No.: HS18111497

Lab File ID: U111301 BFB Injection Date: 11/13/18

Instrument ID: VOA9 BFB Injection Time: 1058

GC Column: DB624 ID: 0.25 (mm) Heated Purge: (Y/N) N

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	20.9
75	30.0 - 60.0% of mass 95	53.3
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	7.1
173	Less than 2.0% of mass 174	0.6 (1.0)1
174	Greater than 50.0% of mass 95	67.7
175	5.0 - 9.0% of mass 174	5.2 (7.7)1
176	95.0 - 101.0% of mass 174	64.6 (95.4)1
177	5.0 - 9.0% of mass 176	4.8 (7.4)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VSTD000.25	VSTD000.25	U111302	11/13/18	1123
02	VSTD000.5	VSTD000.5	U111303	11/13/18	1147
03	VSTD001	VSTD001	U111304	11/13/18	1236
04	VSTD002	VSTD002	U111305	11/13/18	1301
05	VSTD005	VSTD005	U111306	11/13/18	1325
06	VSTD020	VSTD020	U111307	11/13/18	1350
07	VSTD050	VSTD050	U111308	11/13/18	1415
08	VSTD100	VSTD100	U111309	11/13/18	1439
09	VSTD150	VSTD150	U111310	11/13/18	1504
10	VSTD200	VSTD200	U111311	11/13/18	1528
11	VICV050	VICV050	U111313	11/13/18	1618
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

FORM V VOA

FORM 6
VOLATILE INITIAL CALIBRATION DATA

Lab Name: ALS LABORATORY GROUP Contract:

Lab Code: ALS-HS Case No.: SAS No.: SDG No.: HS18111497

Instrument ID: VOA9 Calibration Date(s): 11/13/18 11/13/18

Column: DB624 ID: 0.18 (mm) Calibration Time(s): 1123 1528

LAB FILE ID: RF0.25: U111302 RF0.5: U111303 RF1: U111304
RF2: U111305 RF5: U111306 RF20: U111307

COMPOUND	RF0.25	RF0.5	RF1	RF2	RF5	RF20
cis-1,3-Dichloropropene		0.514	0.452	0.424	0.458	0.523
trans-1,3-Dichloropropene		3218	5482	10881	30108	147063
1,3-Dichlorobenzene		2.016	1.635	1.560	1.502	1.485
2,2-Dichloropropane		0.895	0.675	0.644	0.597	0.645
1,1-Dichloropropene		0.589	0.484	0.455	0.407	0.432
Dibromomethane		0.272	0.224	0.217	0.212	0.216
1,2-Dibromoethane		0.438	0.364	0.337	0.365	0.365
trans-1,2-Dichloroethene		0.776	0.676	0.607	0.562	0.575
1,1,1,2-Tetrachloroethane		0.357	0.286	0.272	0.294	0.309
1,1,1-Trichloroethane		1.047	0.838	0.848	0.741	0.818
1,1,2,2-Tetrachloroethane		1.478	1.172	1.145	1.215	1.150
Freon TF		0.612	0.528	0.532	0.409	0.460
1,1,2-Trichloroethane		0.411	0.336	0.304	0.314	0.307
1,1-Dichloroethane		1.465	1.215	1.128	1.077	1.065
1,1-Dichloroethene		0.736	0.626	0.565	0.474	0.526
Trichlorofluoromethane		1.241	1.099	1.043	0.817	0.913
1,2,3-Trichlorobenzene		1.196	0.776	0.891	0.911	0.922
Toluene		2.078	1.628	1.576	1.529	1.532
1,2,4-Trichlorobenzene		1.260	0.914	0.912	0.902	0.924
1,2,4-Trimethylbenzene		3.320	2.638	2.610	2.690	2.770
Tetrachloroethene		0.336	0.285	0.263	0.234	0.246
Trichloroethene		0.440	0.361	0.330	0.306	0.325
1,2-Dichlorobenzene		2.072	1.662	1.534	1.584	1.503
1,2-Dichloroethane		0.688	0.543	0.533	0.514	0.502
1,2-Dichloropropane		0.420	0.368	0.338	0.340	0.346
1,3,5-Trimethylbenzene		3.173	2.583	2.523	2.530	2.676
1,3-Dichloropropane		0.875	0.710	0.656	0.685	0.660
1,4-Dichlorobenzene		7995	11659	22453	55298	228900
2-Butanone		0.438	0.357	0.328	0.355	0.335
2-Chlorotoluene		3.108	2.512	2.344	2.371	2.366
2-Hexanone		0.309	0.250	0.264	0.296	0.296
4-Chlorotoluene		3.515	2.726	2.736	2.786	2.768
tert-Butylbenzene		2.788	2.149	2.208	2.094	2.254
4-Methyl-2-Pentanone		0.448	0.409	0.382	0.418	0.418
Acetone		5795	7657	12023	24249	87797
Benzene		1.791	1.472	1.332	1.296	1.322
Bromobenzene		1.057	0.812	0.769	0.798	0.781
Bromochloromethane		0.288	0.289	0.307	0.306	0.304
Bromodichloromethane		0.499	0.390	0.373	0.378	0.400
Bromoform		1478	2470	4530	13391	60993
Bromomethane		2224	4167	7606	17760	65394
Carbon Disulfide		2.186	1.775	1.666	1.469	1.640
Carbon Tetrachloride		0.413	0.348	0.330	0.290	0.344
Chlorobenzene		1.390	1.114	0.980	0.979	0.984

FORM VI VOA

FORM 6
VOLATILE INITIAL CALIBRATION DATA

Lab Name: ALS LABORATORY GROUP Contract:

Lab Code: ALS-HS Case No.: SAS No.: SDG No.: HS1811149

Instrument ID: VOA9 Calibration Date(s): 11/13/18 11/13/18

Column: DB624 ID: 0.18 (mm) Calibration Time(s): 1123 1528

LAB FILE ID: RF0.25: U111302 RF0.5: U111303 RF1: U111304
RF2: U111305 RF5: U111306 RF20: U111307

COMPOUND	RF0.25	RF0.5	RF1	RF2	RF5	RF20
Chloroethane		0.691	0.561	0.547	0.455	0.484
Chloroform		1.493	1.230	1.118	1.087	1.079
Chloromethane		4145	6506	12000	26431	114171
cis-1,2-Dichloroethene		0.890	0.758	0.706	0.655	0.674
Dibromochloromethane		0.340	0.262	0.256	0.287	0.314
Dichlorodifluoromethane		4116	6358	12615	24157	119108
Ethylbenzene		0.660	0.543	0.490	0.475	0.502
Hexachlorobutadiene		2273	2210	4667	8782	45235
Isopropylbenzene		1.845	1.478	1.459	1.431	1.486
m,p-Xylenes		0.830	0.625	0.602	0.602	0.634
Methylene Chloride		5188	7766	13586	29126	113894
n-Butylbenzene		11934	17894	36189	79206	381141
n-Propylbenzene		4.808	3.945	3.820	3.699	3.871
Naphthalene		2.957	2.577	2.535	2.887	3.092
o-Xylene		0.725	0.632	0.608	0.619	0.643
sec-Butylbenzene		4.052	3.193	3.096	2.852	3.218
Styrene		1.201	0.990	1.012	1.047	1.097
Vinyl Chloride		4801	7374	13465	29718	136290
1,2,3-Trichloropropane		1.381	1.095	1.101	1.220	1.204
p-Isopropyltoluene		3.227	2.386	2.598	2.465	2.727
1,2-Dibromo-3-Chloropropane		479	955	1762	5351	24969
1,2-Dichloroethane-d4		8937	11059	18531	38984	138453
Dibromofluoromethane		5664	7705	12925	27004	102630
Toluene-d8		23871	30489	51591	112942	412445
4-Bromofluorobenzene		8554	10512	18827	41214	154498

FORM VI VOA

FORM 6
VOLATILE INITIAL CALIBRATION DATA

Lab Name: ALS LABORATORY GROUP Contract:

Lab Code: ALS-HS Case No.: SAS No.: SDG No.: HS1811149

Instrument ID: VOA9 Calibration Date(s): 11/13/18 11/13/18

Column: DB624 ID: 0.18 (mm) Calibration Time(s): 1123 1528

LAB FILE ID: RF50: U111308 RF100: U111309 RF150: U111310
RF200: U111311

COMPOUND	RF50	RF100	RF150	RF200
cis-1,3-Dichloropropene	0.547	0.595	0.608	0.588
trans-1,3-Dichloropropene	407060	912116	1439550	1983766
1,3-Dichlorobenzene	1.441	1.512	1.522	1.494
2,2-Dichloropropane	0.668	0.740	0.784	0.738
1,1-Dichloropropene	0.414	0.457	0.468	0.451
Dibromomethane	0.214	0.221	0.220	0.212
1,2-Dibromoethane	0.363	0.366	0.360	0.353
trans-1,2-Dichloroethene	0.578	0.598	0.615	0.580
1,1,1,2-Tetrachloroethane	0.320	0.333	0.335	0.332
1,1,1-Trichloroethane	0.837	0.918	0.956	0.902
1,1,2,2-Tetrachloroethane	1.122	1.135	1.138	1.104
Freon TF	0.433	0.506	0.529	0.498
1,1,2-Trichloroethane	0.296	0.302	0.299	0.291
1,1-Dichloroethane	1.077	1.100	1.127	1.057
1,1-Dichloroethene	0.507	0.543	0.568	0.534
Trichlorofluoromethane	0.888	0.996	1.035	0.964
1,2,3-Trichlorobenzene	0.895	0.964	0.981	0.959
Toluene	1.480	1.511	1.507	1.445
1,2,4-Trichlorobenzene	0.918	0.997	1.018	1.004
1,2,4-Trimethylbenzene	2.646	2.808	2.798	2.714
Tetrachloroethene	0.231	0.253	0.257	0.253
Trichloroethene	0.310	0.331	0.336	0.327
1,2-Dichlorobenzene	1.470	1.530	1.529	1.486
1,2-Dichloroethane	0.482	0.494	0.487	0.468
1,2-Dichloropropane	0.339	0.355	0.356	0.342
1,3,5-Trimethylbenzene	2.552	2.731	2.750	2.658
1,3-Dichloropropane	0.642	0.647	0.644	0.623
1,4-Dichlorobenzene	576011	1240019	1907496	2606334
2-Butanone	0.340	0.348	0.343	0.318
2-Chlorotoluene	2.278	2.377	2.372	2.306
2-Hexanone	0.297	0.307	0.305	0.292
4-Chlorotoluene	2.640	2.769	2.781	2.705
tert-Butylbenzene	2.136	2.334	2.363	2.278
4-Methyl-2-Pentanone	0.416	0.431	0.421	0.410
Acetone	201617	430350	636098	869596
Benzene	1.290	1.330	1.333	1.271
Bromobenzene	0.757	0.802	0.810	0.796
Bromochloromethane	0.308	0.299	0.285	0.266
Bromodichloromethane	0.406	0.432	0.438	0.424
Bromoform	170886	383125	610635	844522
Bromomethane	154362	367005	609177	
Carbon Disulfide	1.661	1.759	1.826	1.705
Carbon Tetrachloride	0.337	0.388	0.405	0.392
Chlorobenzene	0.950	0.978	0.966	0.946

FORM 6
VOLATILE INITIAL CALIBRATION DATA

Lab Name: ALS LABORATORY GROUP Contract:

Lab Code: ALS-HS Case No.: SAS No.: SDG No.: HS1811149

Instrument ID: VOA9 Calibration Date(s): 11/13/18 11/13/18

Column: DB624 ID: 0.18 (mm) Calibration Time(s): 1123 1528

LAB FILE ID: RF50: U111308 RF100: U111309 RF150: U111310
RF200: U111311

COMPOUND	RF50	RF100	RF150	RF200
Chloroethane	0.482	0.493	0.509	0.472
Chloroform	1.082	1.104	1.121	1.047
Chloromethane	285521	595590	963160	1334230
cis-1,2-Dichloroethene	0.664	0.681	0.694	0.654
Dibromochloromethane	0.333	0.351	0.354	0.351
Dichlorodifluoromethane	293949	680233	1086406	1483355
Ethylbenzene	0.492	0.514	0.517	0.504
Hexachlorobutadiene	110558	270039	426795	
Isopropylbenzene	1.427	1.543	1.535	1.471
m,p-Xylenes	0.609	0.638	0.632	0.615
Methylene Chloride	276248	577262	911224	1246871
n-Butylbenzene	954951	2203969	3347969	
n-Propylbenzene	3.668	3.966	3.962	3.771
Naphthalene	3.062	3.229	3.212	3.095
o-Xylene	0.629	0.652	0.649	0.635
sec-Butylbenzene	3.062	3.389	3.420	3.284
Styrene	1.100	1.130	1.117	1.082
Vinyl Chloride	335638	744825	1189386	1622522
1,2,3-Trichloropropane	1.240	1.296	1.309	1.275
p-Isopropyltoluene	2.627	2.886	2.907	2.820
1,2-Dibromo-3-Chloropropane	66581	149236	234820	321770
1,2-Dichloroethane-d4	335901	696595	1062364	1441844
Dibromofluoromethane	255826	526814	809097	1112100
Toluene-d8	1045096	2142731	3238162	4386438
4-Bromofluorobenzene	396604	823996	1261578	1723103

FORM VI VOA

FORM 6
VOLATILE INITIAL CALIBRATION DATA

Lab Name: ALS LABORATORY GROUP Contract:

Lab Code: ALS-HS Case No.: SAS No.: SDG No.: HS1811149

Instrument ID: VOA9 Calibration Date(s): 11/13/18 11/13/18

Column: DB624 ID: 0.18 (mm) Calibration Time(s): 1123 1528

COMPOUND	CURVE	COEFFICENTS A0	A1	A2	%RSD OR R^2	MAX %RSD OR R^2
cis-1,3-Dichloropropene	AVRG		0.52317106		12.886	20.000
trans-1,3-Dichloropropene	LINR	2.955e-002	1.87475164		0.9992282	0.9900000
1,3-Dichlorobenzene	AVRG		1.57423339		11.066	20.000
2,2-Dichloropropane	AVRG		0.70955952		12.773	20.000
1,1-Dichloropropene	AVRG		0.46178698		11.618	20.000
Dibromomethane	AVRG		0.22310340		8.428	20.000
1,2-Dibromoethane	AVRG		0.36809182		7.515	20.000
trans-1,2-Dichloroethene	AVRG		0.61854084		10.984	20.000
1,1,1,2-Tetrachloroethane	AVRG		0.31538401		8.665	20.000
1,1,1-Trichloroethane	AVRG		0.87828248		10.125	20.000
1,1,2,2-Tetrachloroethane	AVRG		1.18433615		9.680	20.000
Freon TF	AVRG		0.50088227		12.161	20.000
1,1,2-Trichloroethane	AVRG		0.31787570		11.701	20.000
1,1-Dichloroethane	AVRG		1.14578561		11.273	20.000
1,1-Dichloroethene	AVRG		0.56438078		13.689	20.000
Trichlorofluoromethane	AVRG		0.99961564		12.536	20.000
1,2,3-Trichlorobenzene	AVRG		0.94398267		11.868	20.000
Toluene	AVRG		1.58742783		12.041	20.000
1,2,4-Trichlorobenzene	AVRG		0.98325969		11.514	20.000
1,2,4-Trimethylbenzene	AVRG		2.77717297		7.772	20.000
Tetrachloroethene	AVRG		0.26191977		12.290	20.000
Trichloroethene	AVRG		0.34069901		11.908	20.000
1,2-Dichlorobenzene	AVRG		1.59672308		11.731	20.000
1,2-Dichloroethane	AVRG		0.52321079		12.632	20.000
1,2-Dichloropropane	AVRG		0.35598971		7.249	20.000
1,3,5-Trimethylbenzene	AVRG		2.68643867		7.489	20.000
1,3-Dichloropropane	AVRG		0.68254990		11.227	20.000
1,4-Dichlorobenzene	LINR	-8.51e-004	0.64997268		0.9997856	0.9900000
2-Butanone	AVRG		0.35147036		9.867	20.000
2-Chlorotoluene	AVRG		2.44838115		10.438	20.000
2-Hexanone	AVRG		0.29065206		6.972	20.000
4-Chlorotoluene	AVRG		2.82514687		9.297	20.000
tert-Butylbenzene	AVRG		2.28952823		9.083	20.000
4-Methyl-2-Pentanone	AVRG		0.41710960		4.264	20.000
Acetone	LINR	-8.86e-002	4.54997798		0.9976530	0.9900000
Benzene	AVRG		1.38203708		11.842	20.000
Bromobenzene	AVRG		0.82019754		11.060	20.000
Bromochloromethane	AVRG		0.29476503		4.761	20.000
Bromodichloromethane	AVRG		0.41544996		9.300	20.000
Bromoform	2ORDR	2.367e-002	4.32863402	-0.1428982	0.9996117	0.9900000
Bromomethane	LINR	3.806e-002	2.31863844		0.9951529	0.9900000
Carbon Disulfide	AVRG		1.74293069		11.174	20.000
Carbon Tetrachloride	AVRG		0.36075188		11.334	20.000
Chlorobenzene	AVRG		1.03196120		13.892	20.000

FORM VI VOA

FORM 6
VOLATILE INITIAL CALIBRATION DATA

Lab Name: ALS LABORATORY GROUP Contract:

Lab Code: ALS-HS Case No.: SAS No.: SDG No.: HS1811149

Instrument ID: VOA9 Calibration Date(s): 11/13/18 11/13/18

Column: DB624 ID: 0.18 (mm) Calibration Time(s): 1123 1528

COMPOUND	CURVE	COEFFICENTS A0	A1	A2	%RSD OR R^2	MAX %RSD OR R^2
Chloroethane	AVRG		0.52169853		13.844	20.000
Chloroform	AVRG		1.15119170		11.977	20.000
Chloromethane	LINR	4.59e-003	1.49116761		0.9990790	0.9900000
cis-1,2-Dichloroethene	AVRG		0.70849189		10.610	20.000
Dibromochloromethane	AVRG		0.31638584		12.330	20.000
Dichlorodifluoromethane	LINR	2.002e-002	1.32602499		0.9979384	0.9900000
Ethylbenzene	AVRG		0.52179627		10.571	20.000
Hexachlorobutadiene	2ORDR	5.037e-003	3.37955533	-0.5103543	0.9988978	0.9900000
Isopropylbenzene	AVRG		1.51953048		8.449	20.000
m,p-Xylenes	AVRG		0.64297054		11.093	20.000
Methylene Chloride	LINR	-1.4e-002	1.58950727		0.9987446	0.9900000
n-Butylbenzene	2ORDR	7.523e-003	0.38680994	-2.96e-003	0.9992256	0.9900000
n-Propylbenzene	AVRG		3.94550864		8.657	20.000
Naphthalene	AVRG		2.96078148		8.567	20.000
o-Xylene	AVRG		0.64354428		5.210	20.000
sec-Butylbenzene	AVRG		3.28524136		10.228	20.000
Styrene	AVRG		1.08640200		5.880	20.000
Vinyl Chloride	LINR	1.016e-002	1.21438330		0.9982930	0.9900000
1,2,3-Trichloropropane	AVRG		1.23587941		7.613	20.000
p-Isopropyltoluene	AVRG		2.73812048		9.374	20.000
1,2-Dibromo-3-Chloropropane	2ORDR	2.08e-002	5.38876079	-0.2033476	0.9995316	0.9900000
1,2-Dichloroethane-d4	LINR	-3.55e-002	1.36996396		0.9980055	0.9900000
Dibromofluoromethane	LINR	-2.51e-002	1.78351549		0.9987270	0.9900000
Toluene-d8	LINR	-3.42e-002	0.80924260		0.9991601	0.9900000
4-Bromofluorobenzene	LINR	-2.13e-002	2.06564990		0.9996344	0.9900000

FORM VI VOA

Data File: \\NAHSTWS005\Target\chem\voa9.i\U181113.b\U111301.D

Date : 13-NOV-2018 10:58

Client ID: BFB

Instrument: VOA9.i

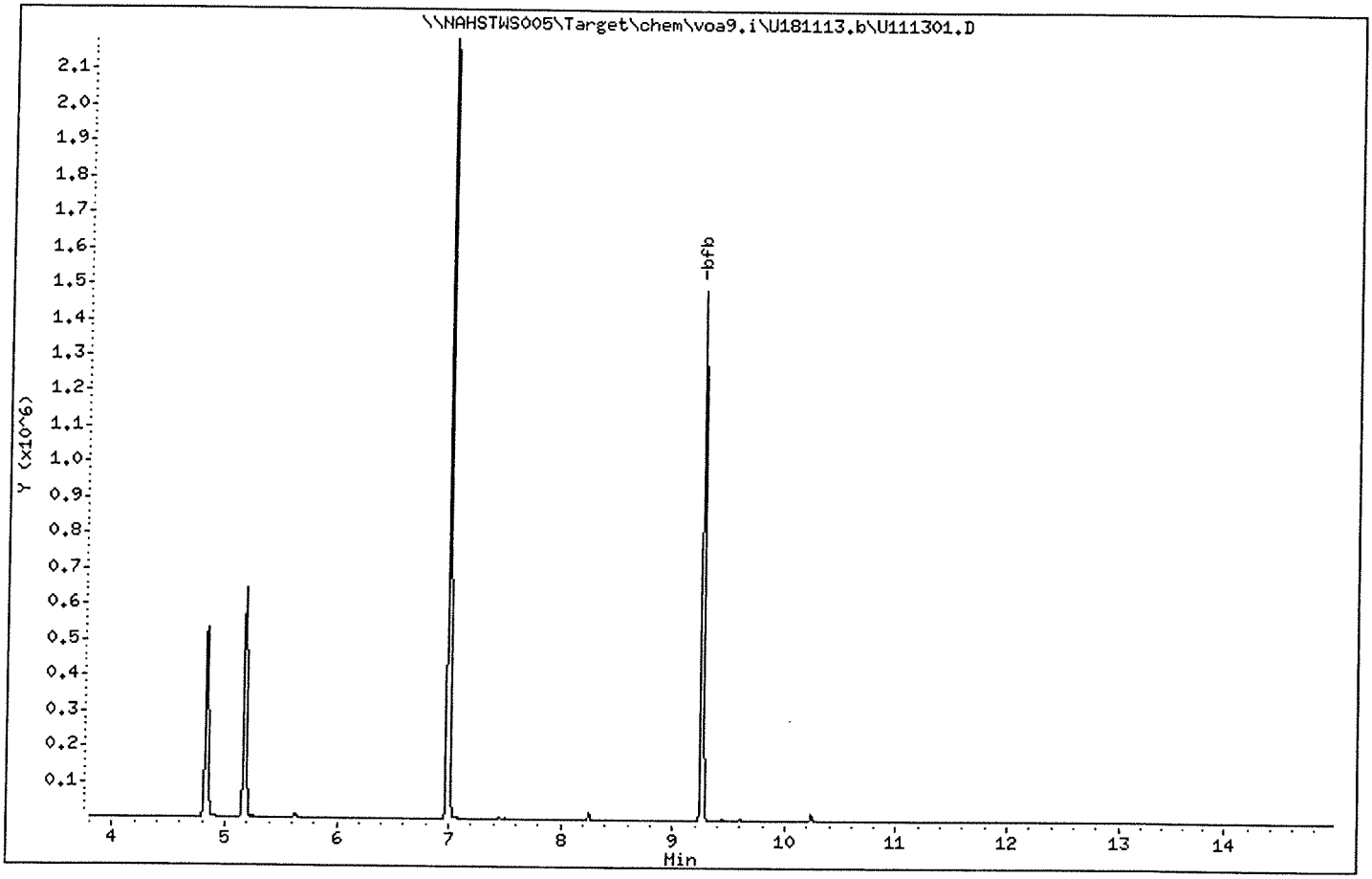
Sample Info: BFB;BFB;3;;BFB

Volume Injected (uL): 2.0

Operator: PC

Column phase: DB624

Column diameter: 0.25



Data File: \\NAHSTWS005\Target\chem\voa9.i\U181113.b\U111301.D

Date : 13-NOV-2018 10:58

Client ID: BFB

Instrument: VOA9.i

Sample Info: BFB;BFB;3;;BFB

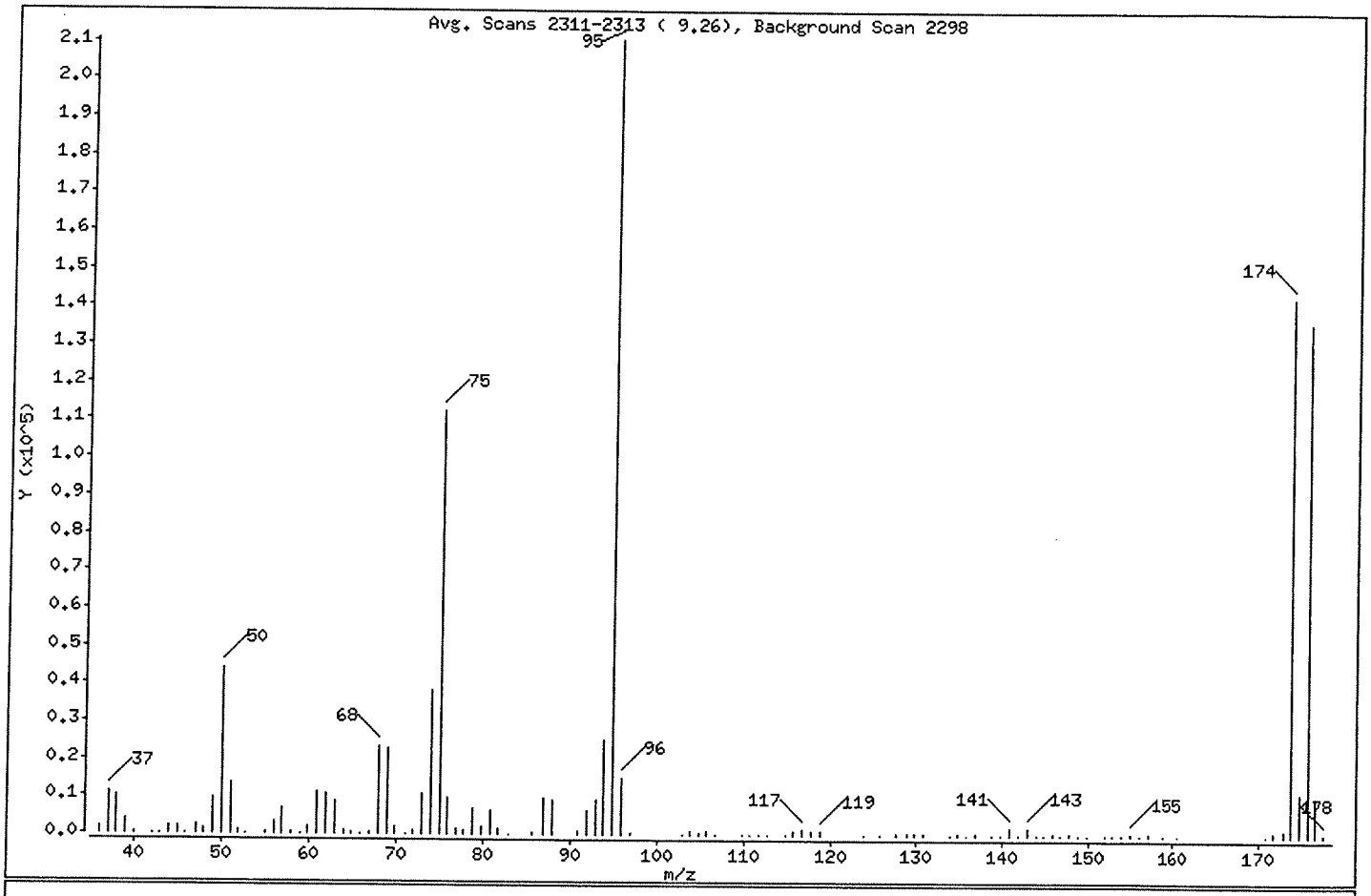
Volume Injected (uL): 2.0

Operator: PC

Column phase: DB624

Column diameter: 0.25

1 bfb



m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
95	Base Peak, 100% relative abundance	100.00
50	15.00 - 40.00% of mass 95	20.93
75	30.00 - 60.00% of mass 95	53.26
96	5.00 - 9.00% of mass 95	7.05
173	Less than 2.00% of mass 174	0.64 (0.95)
174	Greater than 50.00% of mass 95	67.71
175	5.00 - 9.00% of mass 174	5.22 (7.70)
176	95.00 - 101.00% of mass 174	64.61 (95.42)
177	5.00 - 9.00% of mass 176	4.79 (7.41)

Data File: \\NAHSTWS005\Target\chem\voa9.i\U181113.b\U111301.D

Date : 13-NOV-2018 10:58

Client ID: BFB

Instrument: VOA9.i

Sample Info: BFB;BFB;3;;BFB

Volume Injected (uL): 2.0

Operator: PC

Column phase: DB624

Column diameter: 0.25

Data File: U111301.D

Spectrum: Avg. Scans 2311-2313 (9.26), Background Scan 2298

Location of Maximum: 94.95

Number of points: 108

m/z	Y	m/z	Y	m/z	Y	m/z	Y
36.00	2069	65.90	90	102.90	106	142.80	1933
37.00	11082	66.90	610	103.80	947	143.90	71
38.00	10274	67.90	23360	104.80	338	144.70	179
39.00	3978	69.00	22944	105.80	973	145.70	325
40.00	381	69.90	1893	106.80	216	146.60	113
42.00	60	71.00	66	109.80	116	147.70	442
42.90	178	71.90	1065	110.70	166	148.60	101
43.90	1871	72.90	10562	111.80	126	149.70	180
45.00	2116	73.90	38432	112.70	189	151.80	82
45.90	123	75.00	112016	114.80	219	152.70	121
47.00	2495	75.90	9870	115.70	740	153.70	104
48.00	1426	76.90	1360	116.70	1240	154.70	552
49.00	9563	77.80	949	117.80	730	155.80	58
50.00	44016	78.80	6592	118.80	907	156.70	431
51.00	13714	79.80	1796	123.80	120	158.70	192
51.90	746	80.80	6503	125.70	57	160.60	164
52.70	59	81.80	1400	127.70	639	170.70	72
55.00	590	82.90	197	128.90	349	171.70	746
56.00	3508	85.70	252	129.70	626	172.80	1355
57.00	6688	86.90	9661	130.80	249	173.70	142400
57.90	351	87.90	8961	133.90	56	174.70	10971
58.90	116	90.80	826	134.70	394	175.70	135872
59.90	2009	91.90	6125	135.70	82	176.70	10067
60.90	11206	92.90	9048	136.70	337	177.70	296
62.00	10418	93.90	25168	138.70	60		
63.00	8677	94.90	210304	139.60	79		
63.90	848	95.90	14829	140.70	1870		
64.90	610	96.90	545	141.80	179		

Data File: \\NAHSTWS005\Target\chem\voa9.i\U181113.b\U111302.D Page 1
Report Date: 24-Jan-2019 18:55

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa9.i\U181113.b\U111302.D
Lab Smp Id: VSTD000.25 Client Smp ID: VSTD000.25
Inj Date : 13-NOV-2018 11:23
Operator : PC Inst ID: VOA9.i
Smp Info : VSTD000.25;VSTD000.25;1;1;
Misc Info : 180315V9;WATER;0;1;
Comment :
Method : \\NAHSTWS005\Target\chem\voa9.i\U181113.b\8260C.m
Meth Date : 24-Jan-2019 18:55 VOA9.i Quant Type: ISTD
Cal Date : 13-NOV-2018 11:23 Cal File: U111302.D
Als bottle: 2 Calibration Sample, Level: 1
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: LHAAP.sub
Target Version: 4.14
Processing Host: NAHSTW7087

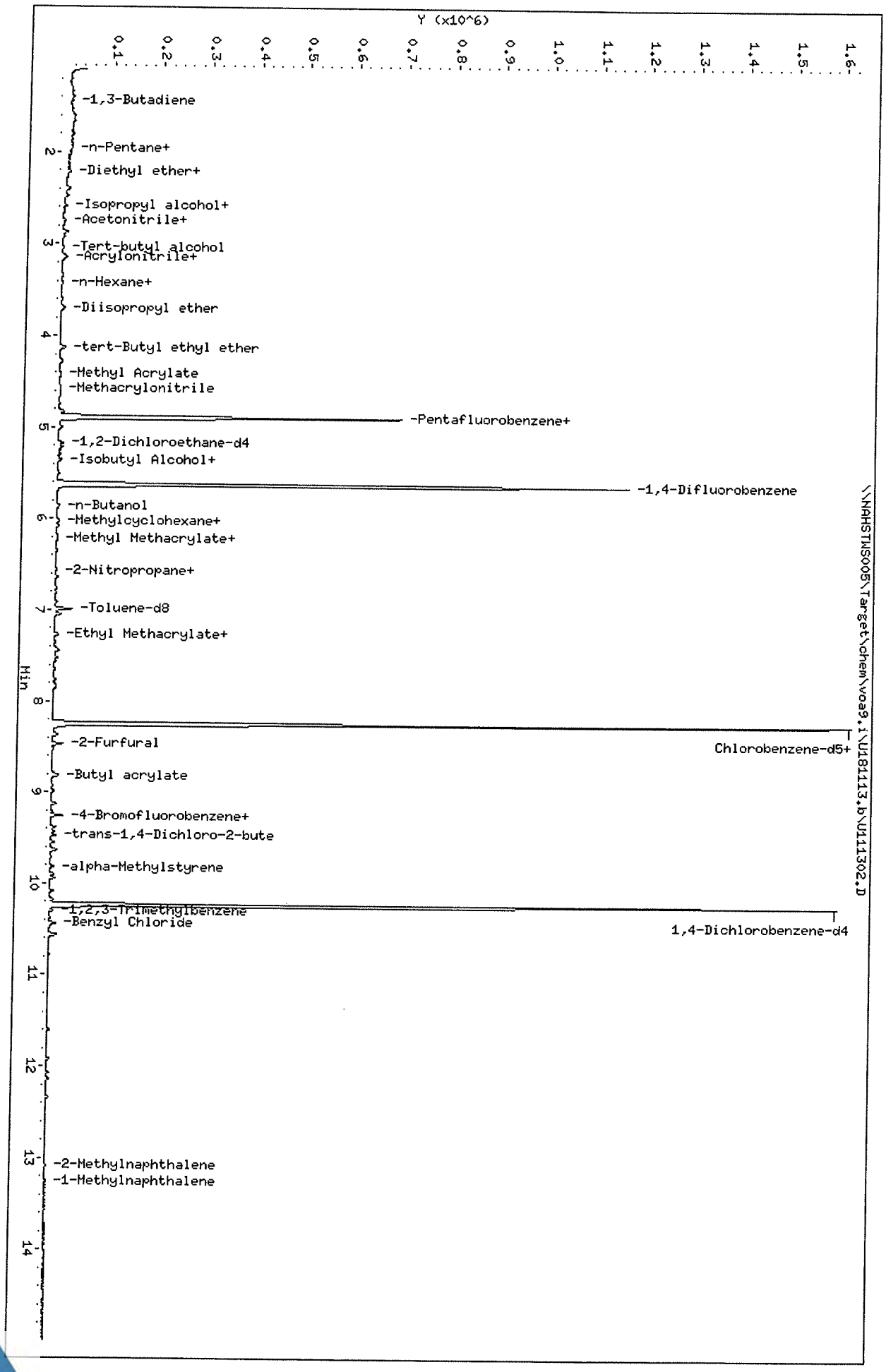
Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)	
* 1 Pentafluorobenzene	168	4.894	4.894	(1.000)	421654	50.0000		
* 36 1,4-Difluorobenzene	114	5.625	5.625	(1.000)	823585	50.0000		
* 47 Chlorobenzene-d5	117	8.249	8.249	(1.000)	757808	50.0000		
* 70 1,4-Dichlorobenzene-d4	152	10.236	10.236	(1.000)	346489	50.0000		
$ 30 Dibromofluoromethane	113	4.830	4.830	(0.987)	4873	0.25000		(a)
$ 35 1,2-Dichloroethane-d4	65	5.171	5.171	(1.057)	7659	0.25000		(a)
$ 48 Toluene-d8	98	6.989	6.989	(0.847)	19596	0.25000		(a)
$ 69 4-Bromofluorobenzene	95	9.257	9.257	(1.122)	7125	0.25000		(a)

QC Flag Legend

a - Target compound detected but, quantitated amount
Below Limit Of Quantitation(BLOQ).



Data File: \\NAHSTWS005\Target\chem\voa9.i\U181113.b\U111302.D
Date : 13-NOV-2018 11:23
Client ID: VSTD000.25
Sample Info: VSTD000.25;VSTD000.25;1;1;
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA9.i
Operator: PC
Column diameter: 0.18

Data File: \\NAHSTWS005\Target\chem\voa9.i\U181113.b\U111303.D Page 1
Report Date: 24-Jan-2019 18:55

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa9.i\U181113.b\U111303.D
Lab Smp Id: VSTD000.5 Client Smp ID: VSTD000.5
Inj Date : 13-NOV-2018 11:47
Operator : PC Inst ID: VOA9.i
Smp Info : VSTD000.5;VSTD000.5;1;2;
Misc Info : 180315V9;WATER;0;1;
Comment :
Method : \\NAHSTWS005\Target\chem\voa9.i\U181113.b\8260C.m
Meth Date : 24-Jan-2019 18:55 VOA9.i Quant Type: ISTD
Cal Date : 13-NOV-2018 11:23 Cal File: U111302.D
Als bottle: 3 Calibration Sample, Level: 2
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: LHAAP.sub
Target Version: 4.14
Processing Host: NAHSTW7087

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Cpnd Variable		Local Compound Variable

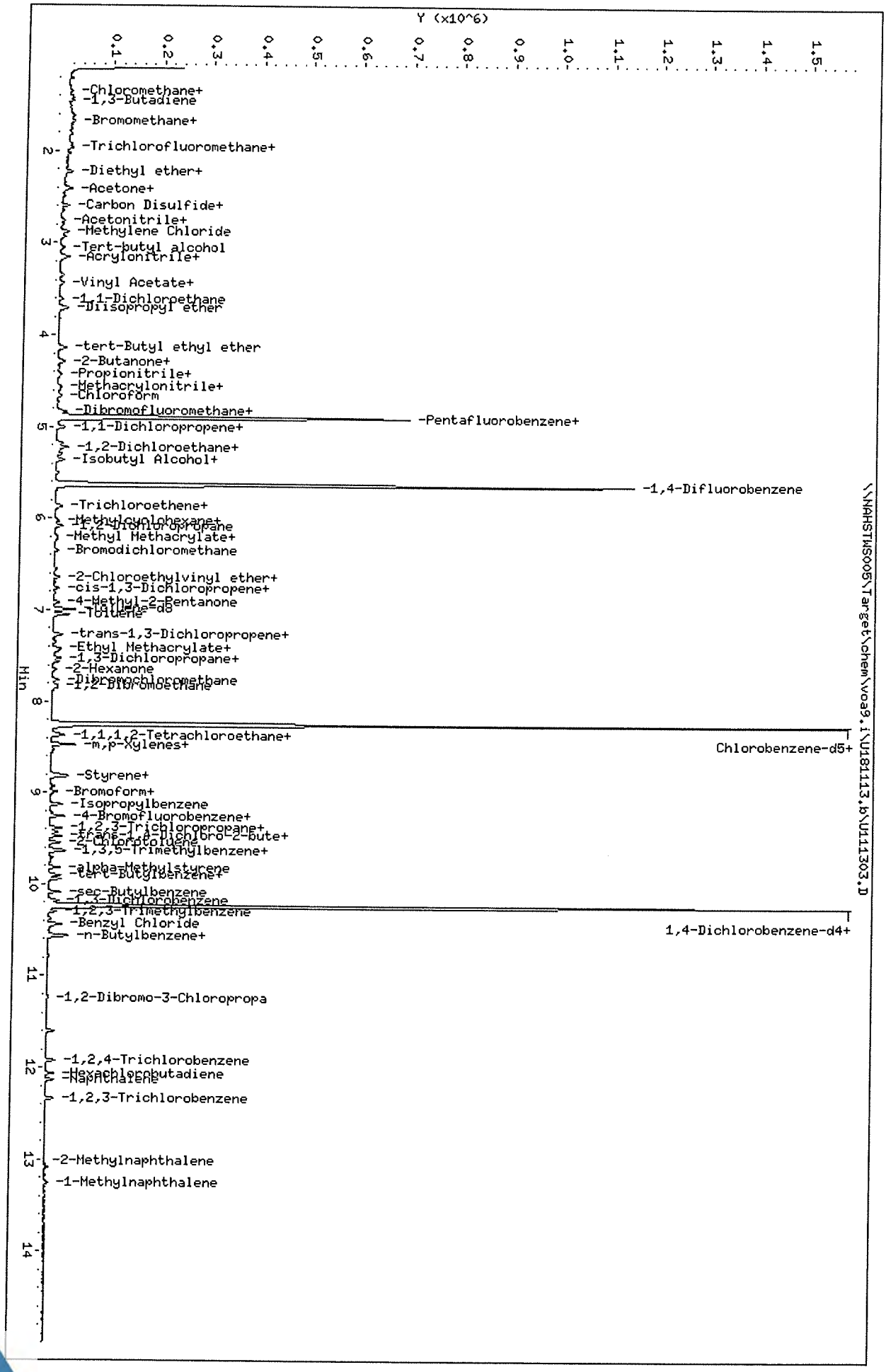
Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
* 1 Pentafluorobenzene	168	4.898	4.898	(1.000)	421285	50.0000	
* 36 1,4-Difluorobenzene	114	5.629	5.629	(1.000)	817288	50.0000	
* 47 Chlorobenzene-d5	117	8.249	8.249	(1.000)	753573	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	10.236	10.236	(1.000)	345123	50.0000	
$ 30 Dibromofluoromethane	113	4.834	4.834	(0.987)	5664	0.50000	(a)
$ 35 1,2-Dichloroethane-d4	65	5.179	5.179	(1.057)	8937	0.50000	(a)
$ 48 Toluene-d8	98	6.990	6.990	(0.847)	23871	0.50000	(a)
$ 69 4-Bromofluorobenzene	95	9.257	9.257	(1.122)	8554	0.50000	0.10(a)
60 1,1,1,2-Tetrachloroethane	131	8.350	8.350	(1.012)	2690	0.50000	0.56(a)
31 1,1,1-Trichloroethane	97	4.830	4.830	(0.986)	4410	0.50000	0.59(a)
68 1,1,2,2-Tetrachloroethane	83	9.392	9.392	(0.918)	5102	0.50000	0.62(aM)
138 Freon TF	101	2.409	2.409	(0.492)	2580	0.50000	0.61(a)
53 1,1,2-Trichloroethane	83	7.421	7.421	(0.900)	3095	0.50000	0.64(a)
22 1,1-Dichloroethane	63	3.608	3.608	(0.737)	6173	0.50000	0.63(a)
11 1,1-Dichloroethene	96	2.409	2.409	(0.492)	3102	0.50000	0.65(a)
32 1,1-Dichloropropene	75	5.006	5.006	(0.889)	4812	0.50000	0.63(a)
93 1,2,3-Trichlorobenzene	180	12.339	12.339	(1.205)	4127	0.50000	0.63(a)
71 1,2,3-Trichloropropane	75	9.426	9.426	(0.921)	4767	0.50000	0.55(a)
90 1,2,4-Trichlorobenzene	180	11.927	11.927	(1.165)	4348	0.50000	0.64(a)
79 1,2,4-Trimethylbenzene	105	9.943	9.943	(0.971)	11460	0.50000	0.59(a)
89 1,2-Dibromo-3-Chloropropane	155	11.237	11.237	(1.098)	479	0.50000	1.41(aM)
57 1,2-Dibromoethane	107	7.852	7.852	(0.952)	3298	0.50000	0.59(a)

Data File: \\NAHSTWS005\Target\chem\voa9.i\U181113.b\U111303.D Page 2
Report Date: 24-Jan-2019 18:55

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
88	1,2-Dichlorobenzene	146	10.573	10.573	(1.033)	7152	0.50000	0.64(a)
33	1,2-Dichloroethane	62	5.258	5.258	(0.934)	5619	0.50000	0.65(aM)
42	1,2-Dichloropropane	63	6.082	6.082	(1.081)	3429	0.50000	0.58(a)
75	1,3,5-Trimethylbenzene	105	9.625	9.625	(0.940)	10952	0.50000	0.59(a)
83	1,3-Dichlorobenzene	146	10.180	10.180	(0.995)	6957	0.50000	0.64(a)
54	1,3-Dichloropropane	76	7.567	7.567	(0.917)	6595	0.50000	0.64(a)
84	1,4-Dichlorobenzene	146	10.258	10.258	(1.002)	7995	0.50000	0.71(a)
26	2,2-Dichloropropane	77	4.279	4.279	(0.874)	3772	0.50000	0.63(a)
24	2-Butanone	43	4.354	4.354	(0.889)	3689	1.00000	1.24(a)
76	2-Chlorotoluene	91	9.546	9.546	(0.933)	10726	0.50000	0.63(a)
52	2-Hexanone	43	7.649	7.649	(0.927)	4658	1.00000	1.06(a)
77	4-Chlorotoluene	91	9.640	9.640	(0.942)	12130	0.50000	0.62(a)
82	p-Isopropyltoluene	119	10.213	10.213	(0.998)	11138	0.50000	0.58(a)
45	4-Methyl-2-Pentanone	43	6.915	6.915	(0.838)	6749	1.00000	1.07(a)
10	Acetone	43	2.487	2.487	(0.508)	5795	1.00000	(a)
37	Benzene	78	5.220	5.220	(0.927)	14635	0.50000	0.64(a)
74	Bromobenzene	156	9.381	9.381	(0.917)	3648	0.50000	0.64(a)
29	Bromochloromethane	128	4.560	4.560	(0.931)	1212	0.50000	0.48(a)
39	Bromodichloromethane	83	6.348	6.348	(1.128)	4075	0.50000	0.60(aM)
66	Bromoform	173	8.988	8.988	(1.090)	1478	0.50000	1.60(Ta)
6	Bromomethane	94	1.678	1.678	(0.343)	2224	0.50000	2.51(a)
19	Carbon Disulfide	76	2.596	2.596	(0.530)	18415	1.00000	1.25(a)
34	Carbon Tetrachloride	117	4.995	4.995	(0.887)	3377	0.50000	0.57(a)
59	Chlorobenzene	112	8.275	8.275	(1.003)	10477	0.50000	0.67(a)
7	Chloroethane	64	1.760	1.760	(0.359)	2912	0.50000	0.66(aM)
28	Chloroform	83	4.662	4.662	(0.952)	6289	0.50000	0.64(a)
3	Chloromethane	50	1.348	1.348	(0.275)	4145	0.50000	0.96(a)
27	cis-1,2-Dichloroethene	96	4.294	4.294	(0.877)	3748	0.50000	0.62(a)
46	cis-1,3-Dichloropropene	75	6.761	6.761	(1.201)	4205	0.50000	0.49(a)
55	Dibromochloromethane	129	7.758	7.758	(0.940)	2561	0.50000	0.53(a)
44	Dibromomethane	93	6.191	6.191	(1.100)	2223	0.50000	0.60(aM)
2	Dichlorodifluoromethane	85	1.213	1.213	(0.248)	4116	0.50000	1.64(a)
61	Ethylbenzene	106	8.373	8.373	(1.015)	4972	0.50000	0.63(a)
91	Hexachlorobutadiene	225	12.065	12.065	(1.179)	2273	0.50000	1.36(a)
67	Isopropylbenzene	105	9.126	9.126	(1.106)	13902	0.50000	0.60(a)
62	m,p-Xylenes	106	8.474	8.474	(1.027)	12504	1.00000	1.29(a)
17	Methylene Chloride	84	2.877	2.877	(0.587)	5188	0.50000	0.27(a)
87	n-Butylbenzene	91	10.558	10.558	(1.031)	11934	0.50000	1.04(a)
73	n-Propylbenzene	91	9.475	9.475	(0.926)	16592	0.50000	0.60(a)
92	Naphthalene	128	12.133	12.133	(1.185)	10205	0.50000	0.49(a)
63	o-Xylene	106	8.811	8.811	(1.068)	5464	0.50000	0.56(aH)
81	sec-Butylbenzene	105	10.086	10.086	(0.985)	13984	0.50000	0.61(a)
64	Styrene	104	8.826	8.826	(1.070)	9048	0.50000	0.55(a)
78	tert-Butylbenzene	119	9.902	9.902	(0.967)	9624	0.50000	0.60(a)
56	Tetrachloroethene	164	7.526	7.526	(0.912)	2536	0.50000	0.64(a)
50	Toluene	91	7.049	7.049	(0.855)	15656	0.50000	0.65(a)
20	trans-1,2-Dichloroethene	96	3.143	3.143	(0.642)	3270	0.50000	0.62(a)
51	trans-1,3-Dichloropropene	75	7.263	7.263	(1.290)	3218	0.50000	1.84(a)
38	Trichloroethene	130	5.865	5.865	(1.042)	3600	0.50000	0.64(a)
8	Trichlorofluoromethane	101	1.963	1.963	(0.401)	5229	0.50000	0.62(a)
5	Vinyl Chloride	62	1.426	1.426	(0.291)	4801	0.50000	1.20(a)

QC Flag Legend

T - Target compound detected outside RT window.
a - Target compound detected but, quantitated amount
Below Limit Of Quantitation(BLOQ).
M - Compound response manually integrated.
H - Operator selected an alternate compound hit.



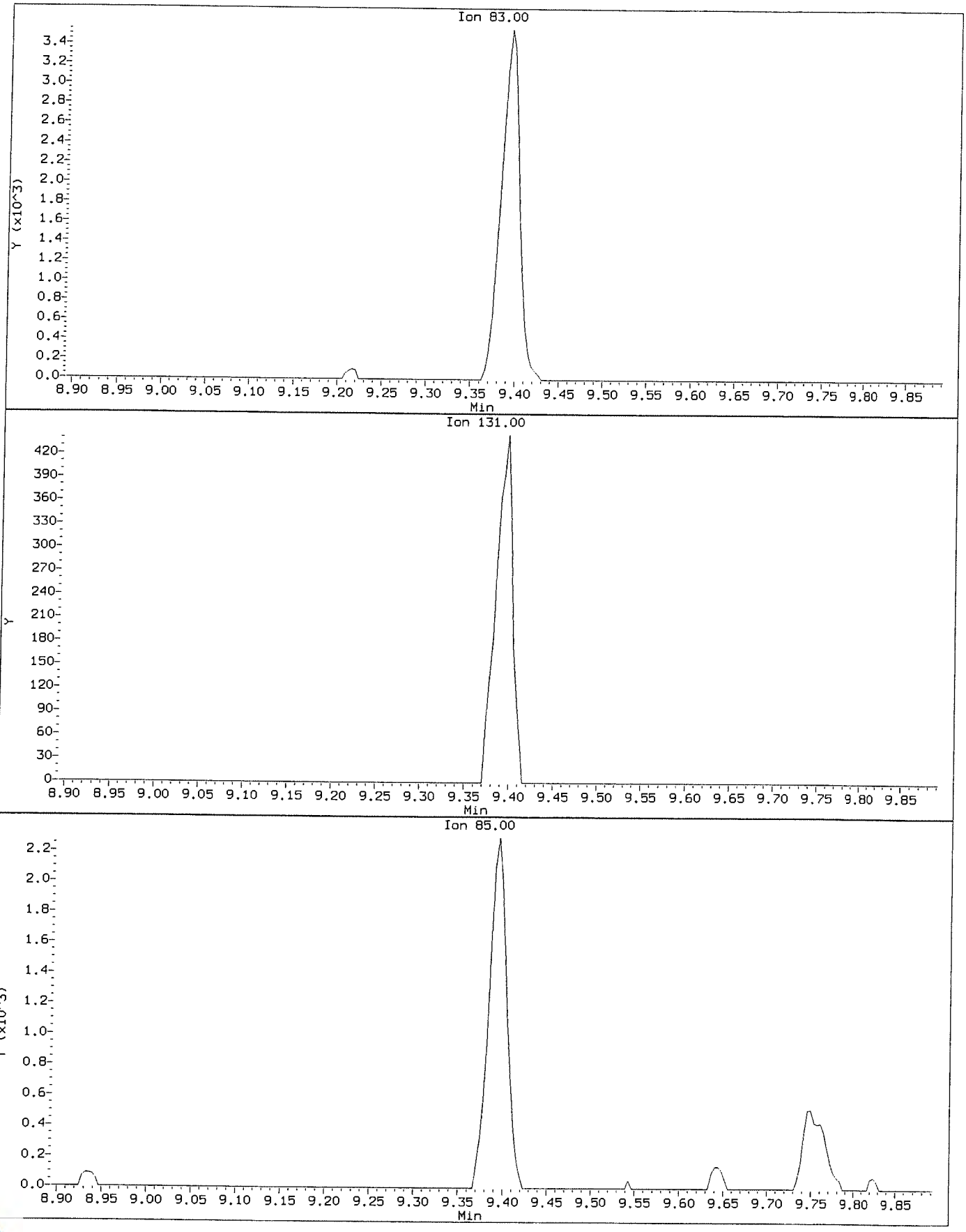
Data File: \\NAHSTWS005\Target\chem\voa9.i\U181113.b\U111303.D
Date : 13-NOV-2018 11:47
Client ID: VSTD000.5
Sample Info: VSTD000.5;VSTD000.5;1;2;
Purge Volume: 5.0
Column phase: DB624

\\NAHSTWS005\Target\chem\voa9.i\U181113.b\U111303.D

Instrument: VOA9.i
Operator: PC
Column diameter: 0.18

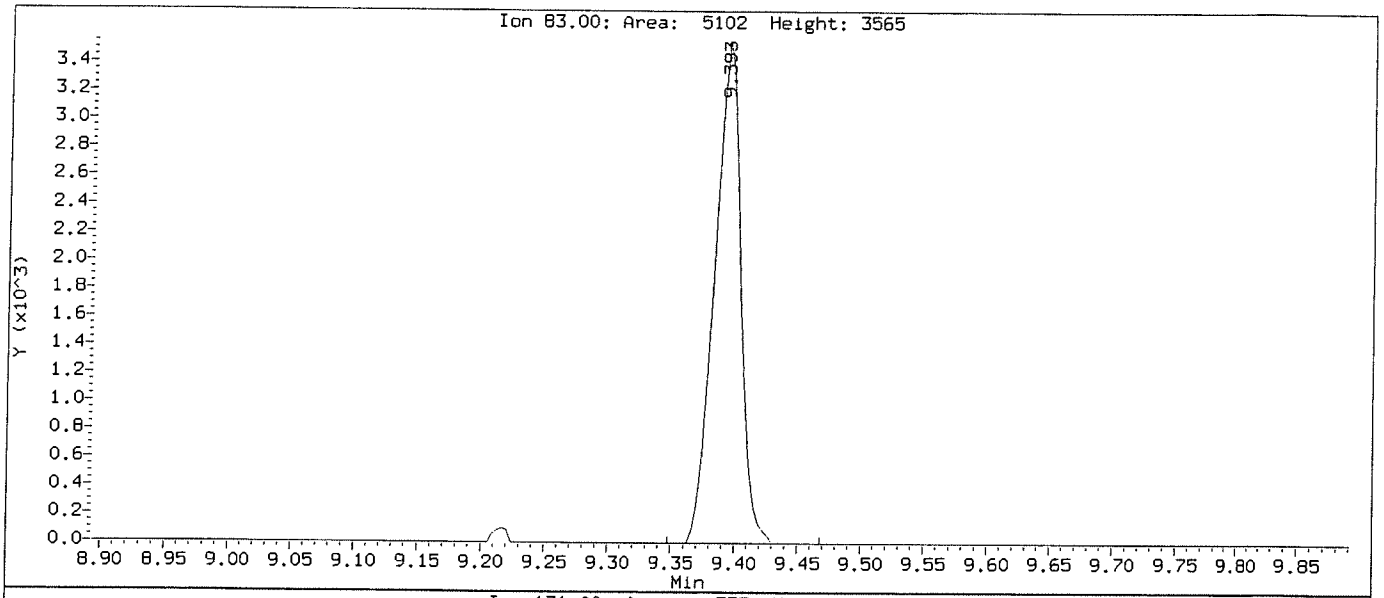
Data File: \\NAHSTWS005\Target\chem\voa9.i\U181113.b\Before\U111303.D
Injection Date: 13-NOV-2018 11:47
Instrument: VOA9.i
Client Sample ID: VSTD000.5

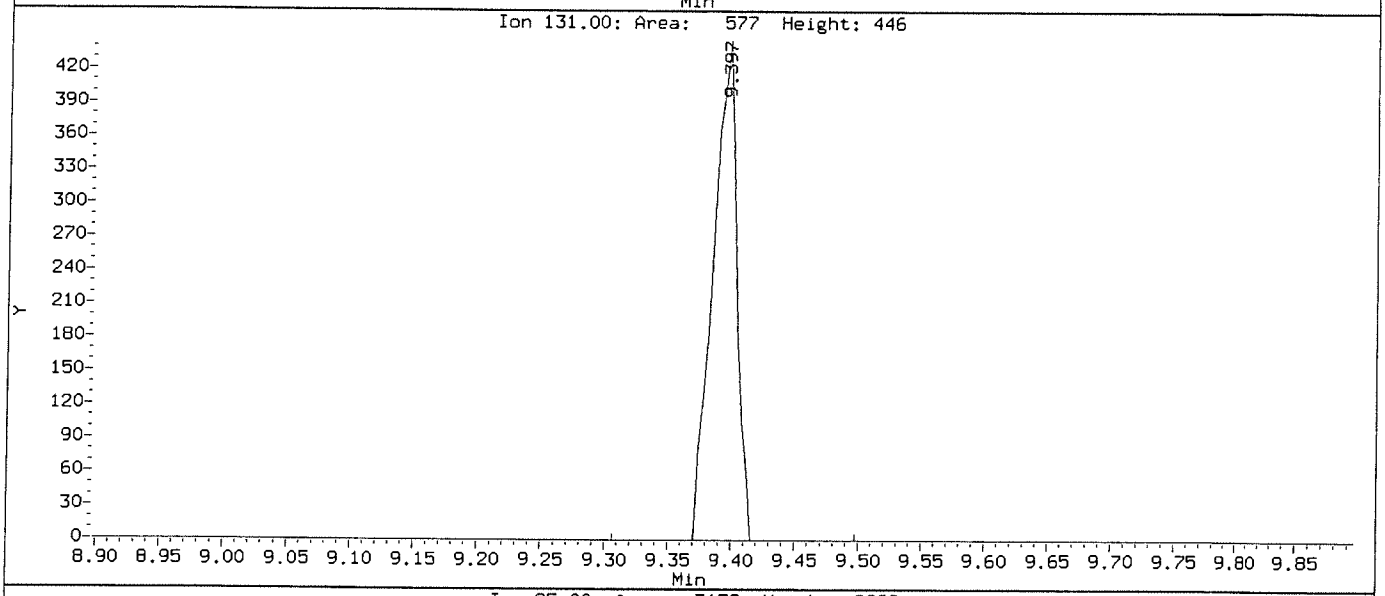
Compound: 1,1,2,2-Tetrachloroethane
CAS Number: 79-34-5

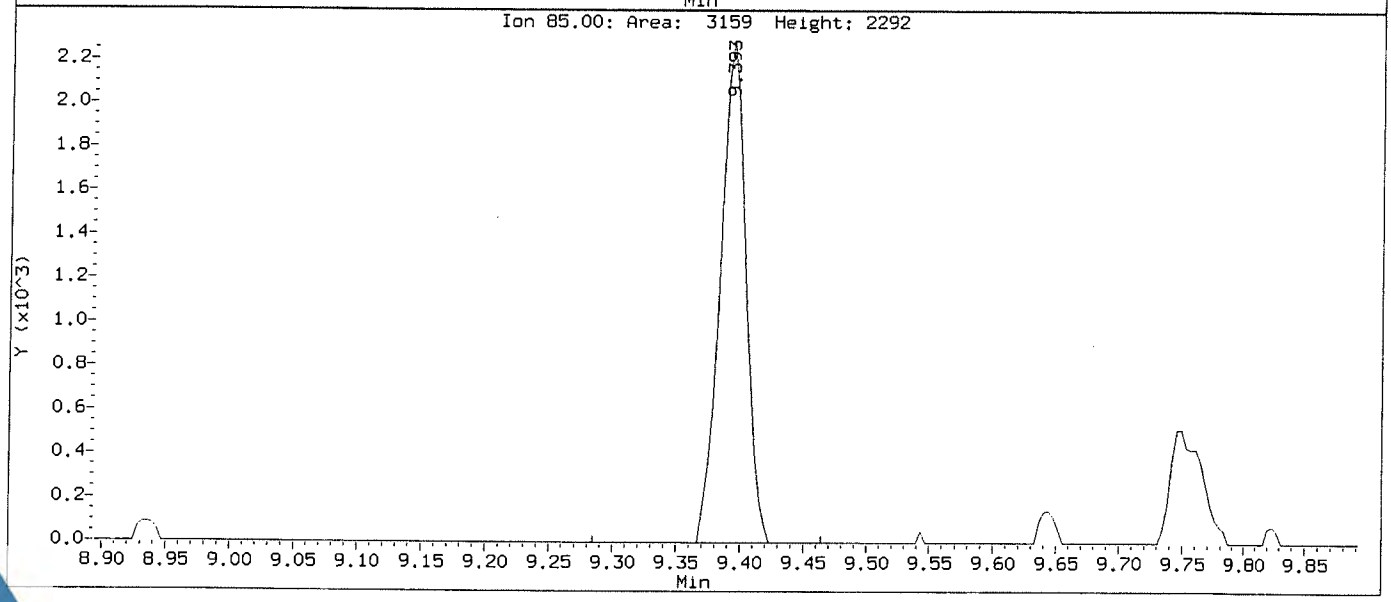


Data File: \\NAHSTWS005\Target\chem\voa9.i\U181113.b\U111303.D
Injection Date: 13-NOV-2018 11:47
Instrument: VOA9.i
Client Sample ID: VSTD000.5

Compound: 1,1,2,2-Tetrachloroethane
CAS Number: 79-34-5

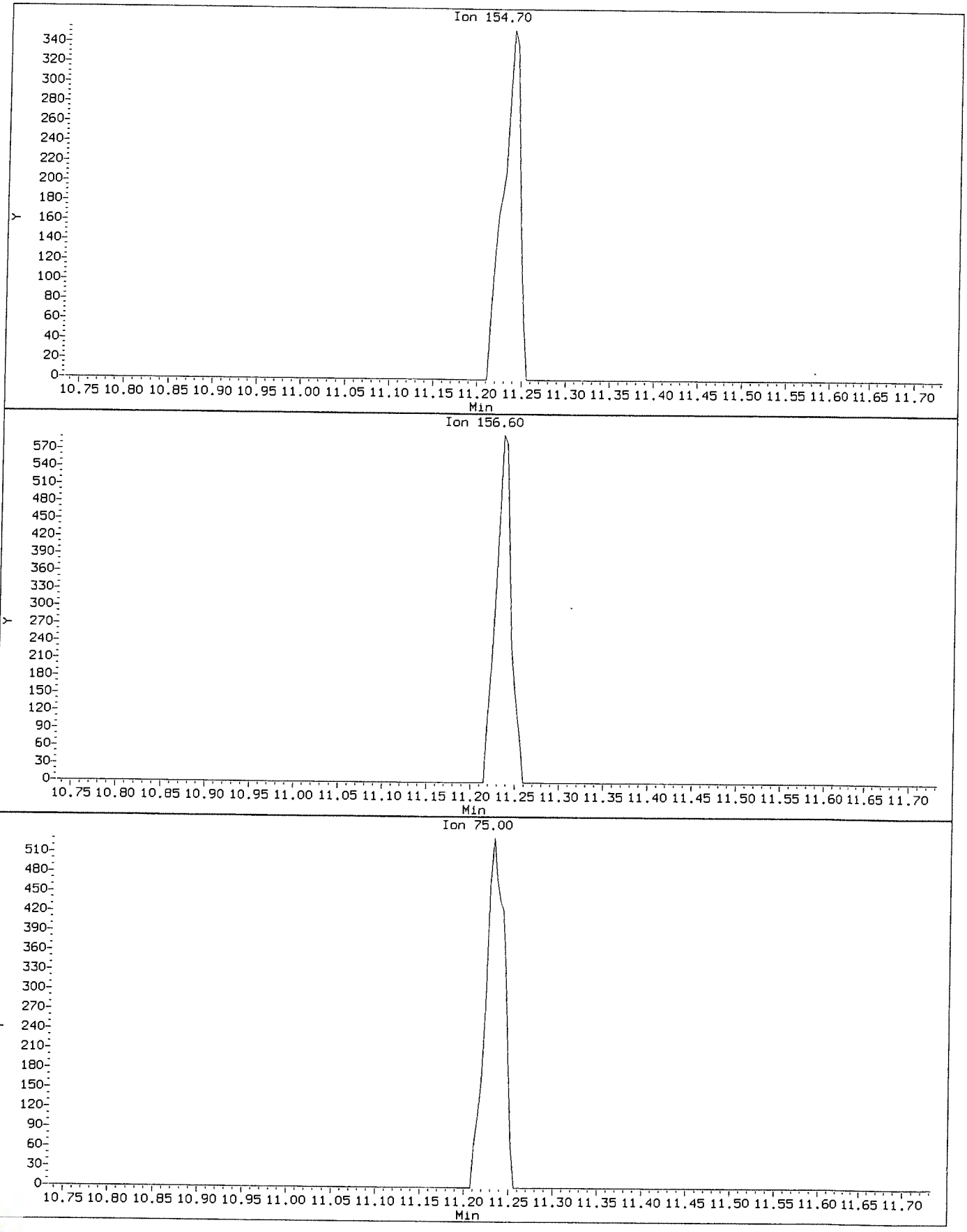






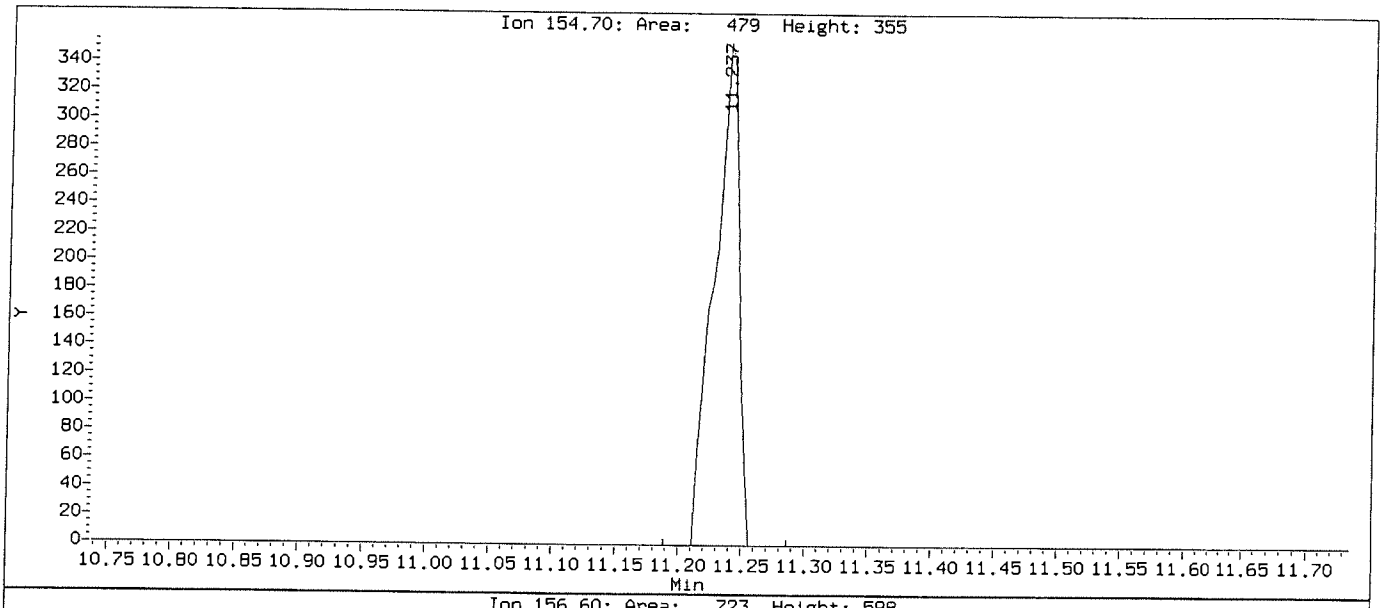
Data File: \\NAHSTWS005\Target\chem\voa9.i\U181113.b\Before\U111303.D
Injection Date: 13-NOV-2018 11:47
Instrument: VOA9.i
Client Sample ID: VSTD000.5

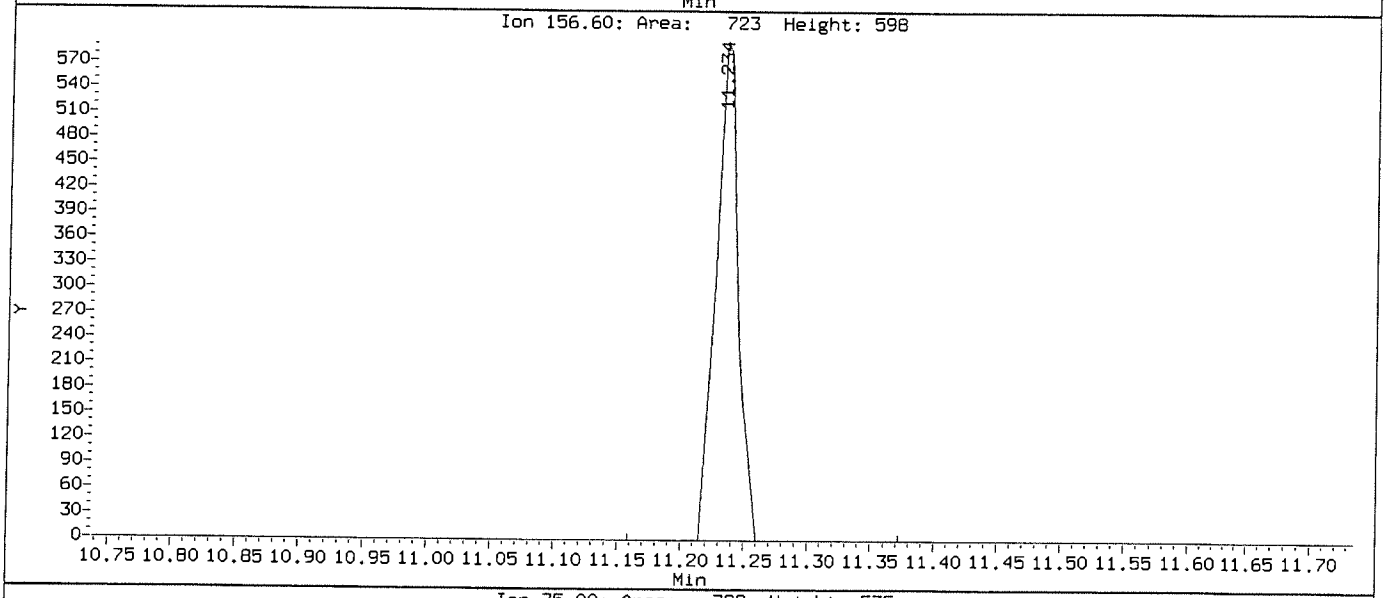
Compound: 1,2-Dibromo-3-Chloropropane
CAS Number: 96-12-8

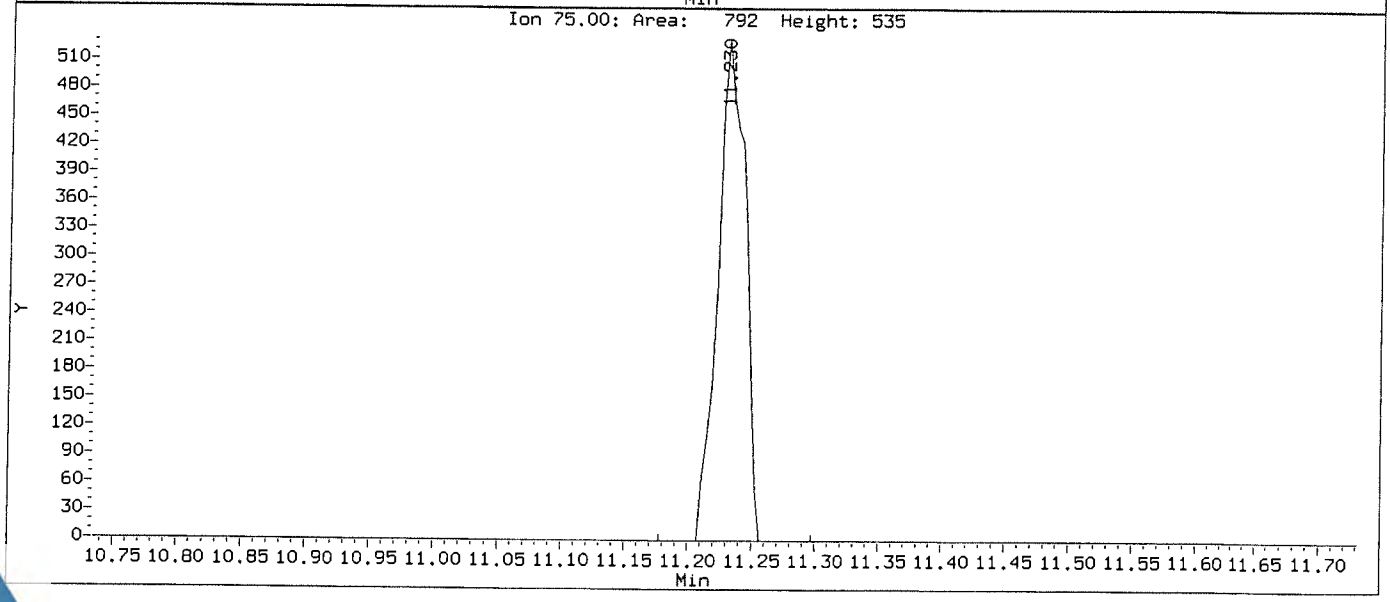


Data File: \\NAHSTWS005\Target\chem\voa9.i\U181113.b\U111303.D
Injection Date: 13-NOV-2018 11:47
Instrument: VOA9.i
Client Sample ID: VSTD000.5

Compound: 1,2-Dibromo-3-Chloropropane
CAS Number: 96-12-8

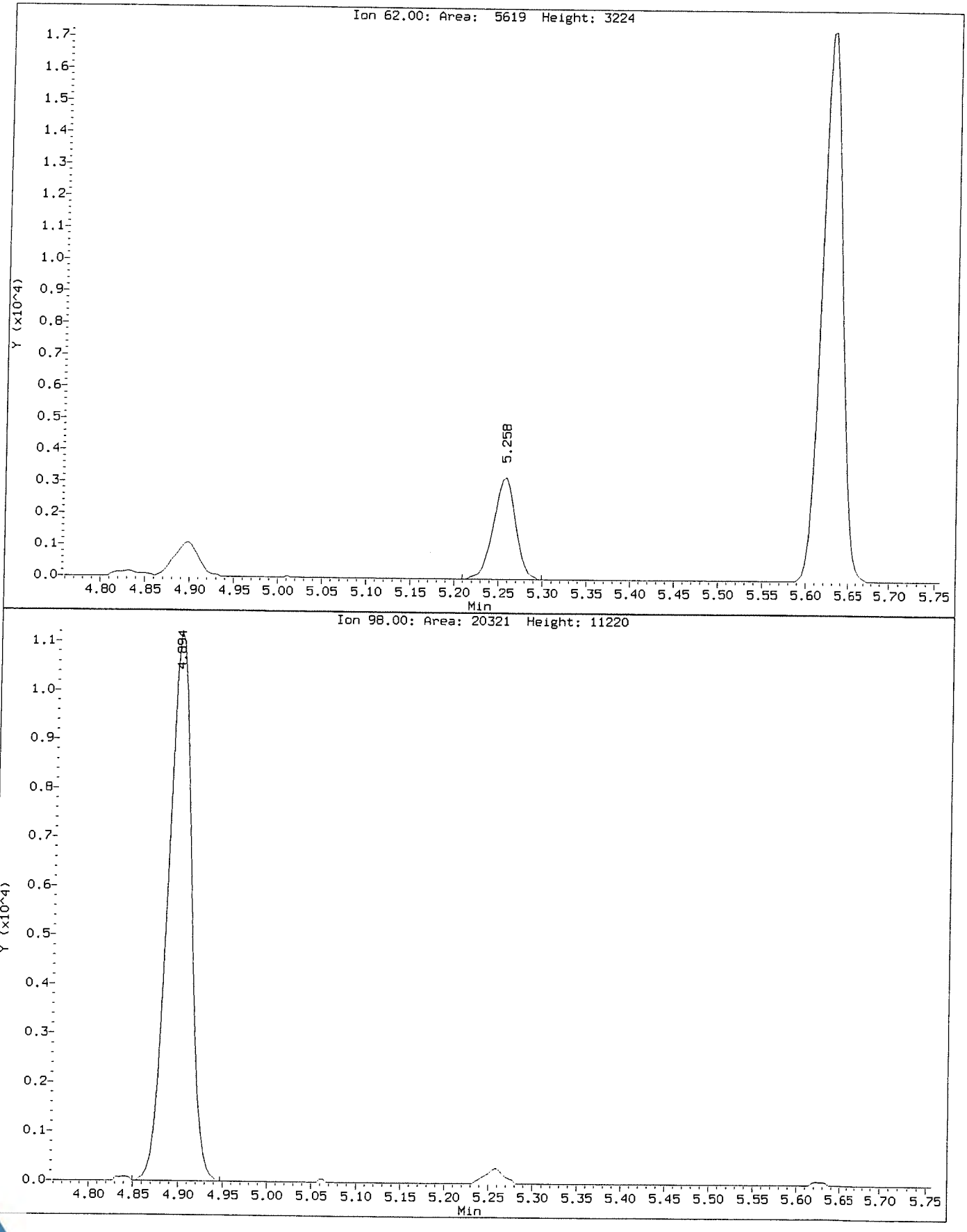






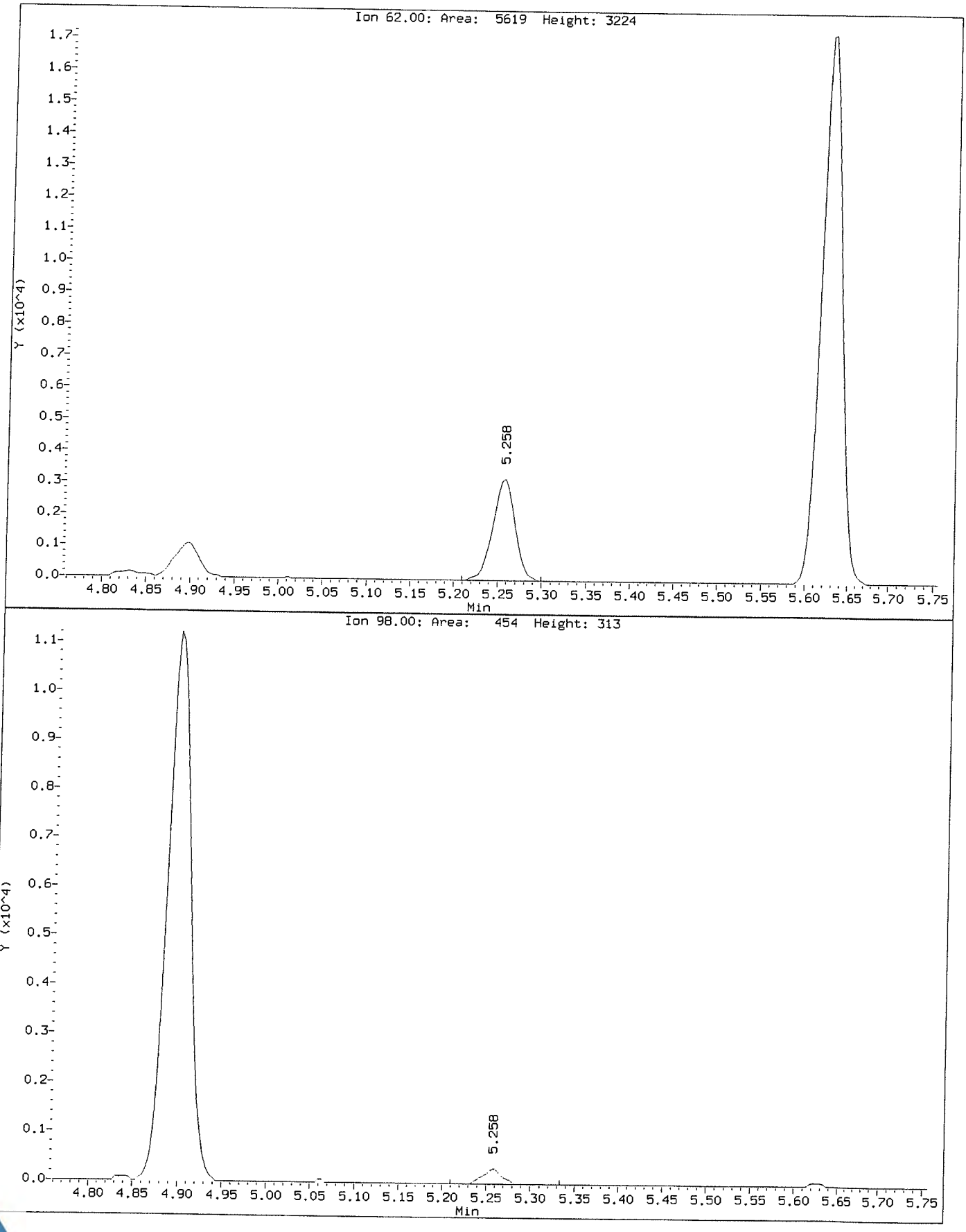
Data File: \\NAHSTWS005\Target\chem\voa9.i\U181113.b\Before\U111303.D
Injection Date: 13-NOV-2018 11:47
Instrument: VOA9.i
Client Sample ID: VSTD000.5

Compound: 1,2-Dichloroethane
CAS Number: 107-06-2



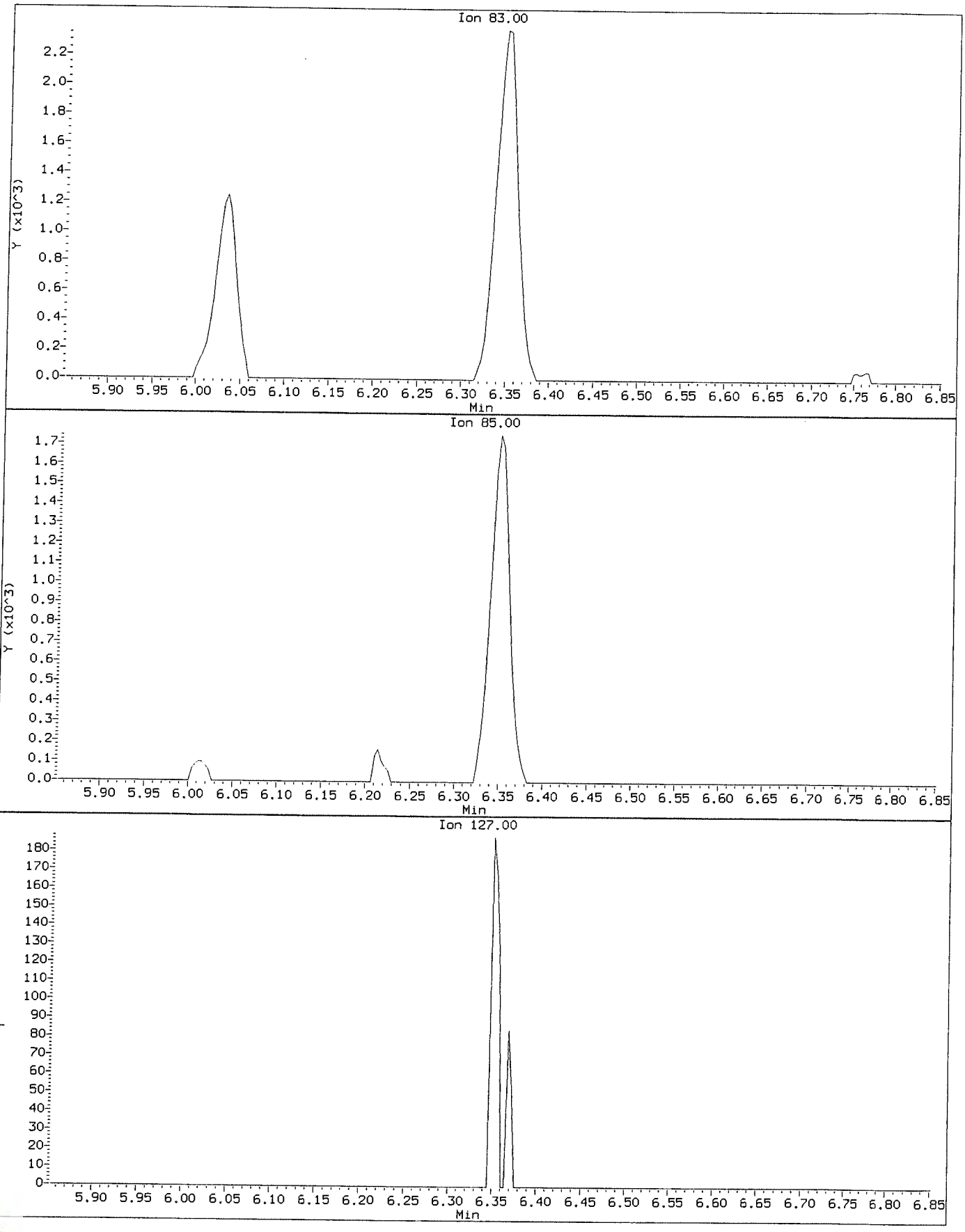
Data File: \\NAHSTWS005\Target\chem\voa9.i\U181113.b\U111303.D
Injection Date: 13-NOV-2018 11:47
Instrument: VOA9.i
Client Sample ID: VSTD000.5

Compound: 1,2-Dichloroethane
CAS Number: 107-06-2



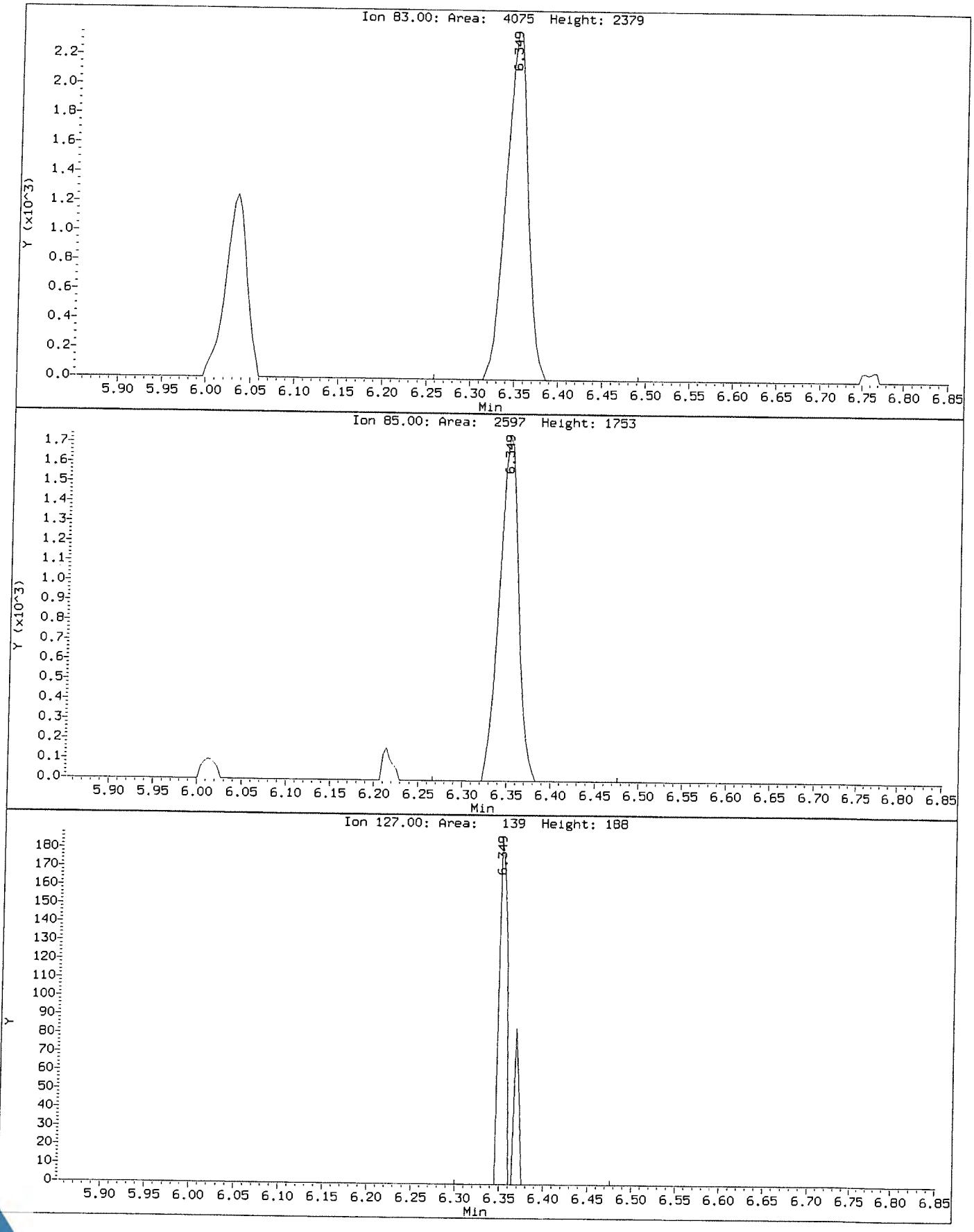
Data File: \\NAHSTWS005\Target\chem\voa9.i\U181113.b\Before\U111303.D
Injection Date: 13-NOV-2018 11:47
Instrument: VOA9.i
Client Sample ID: VSTD000.5

Compound: Bromodichloromethane
CAS Number: 75-27-4



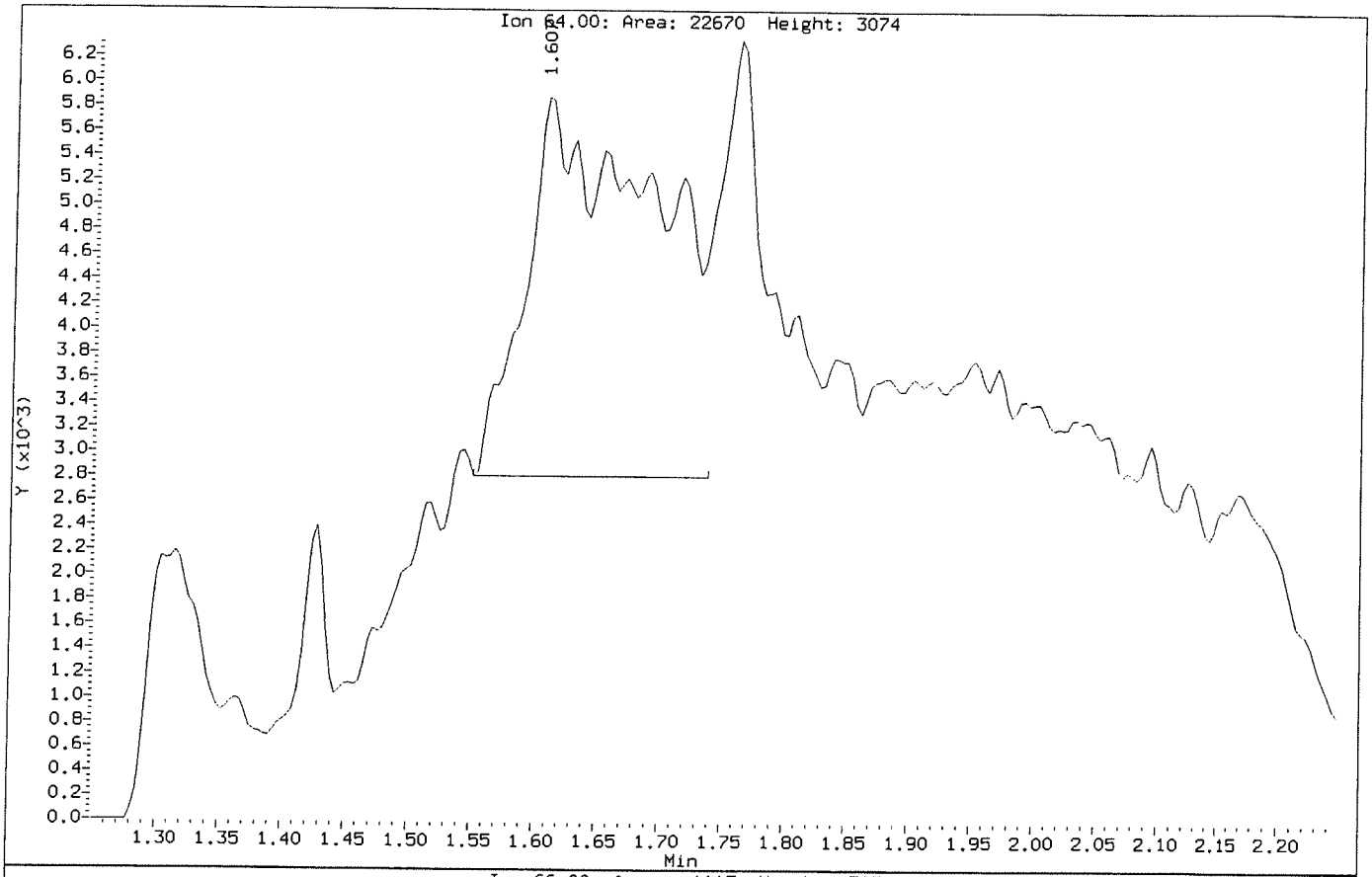
Data File: \\NAHSTWS005\Target\chem\voa9.i\U181113.b\U111303.D
Injection Date: 13-NOV-2018 11:47
Instrument: VOA9.i
Client Sample ID: VSTD000.5

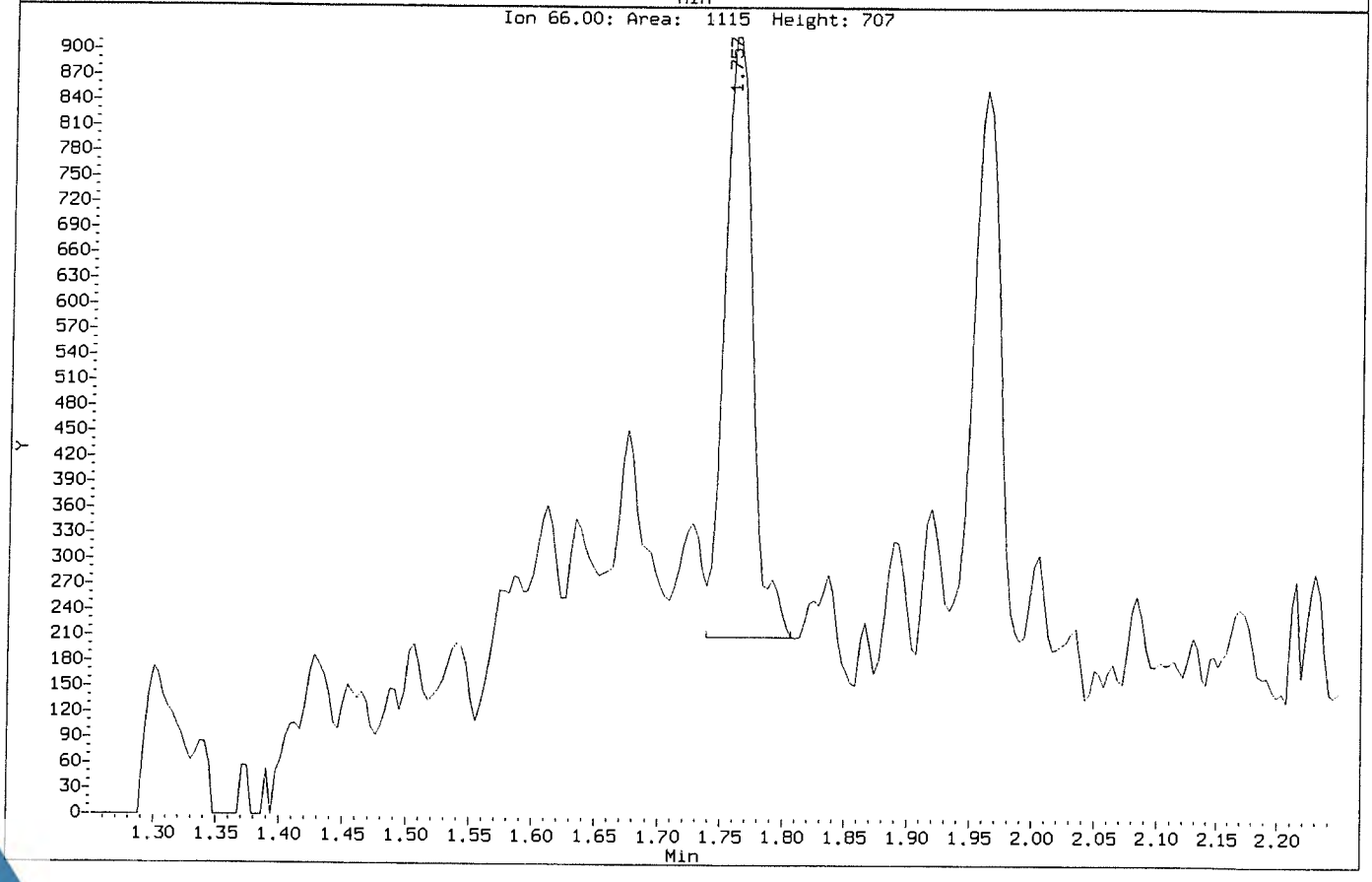
Compound: Bromodichloromethane
CAS Number: 75-27-4



Data File: \\NAHSTWS005\Target\chem\voa9.i\U181113.b\Before\U111303.D
Injection Date: 13-NOV-2018 11:47
Instrument: VOA9.i
Client Sample ID: VSTD000.5

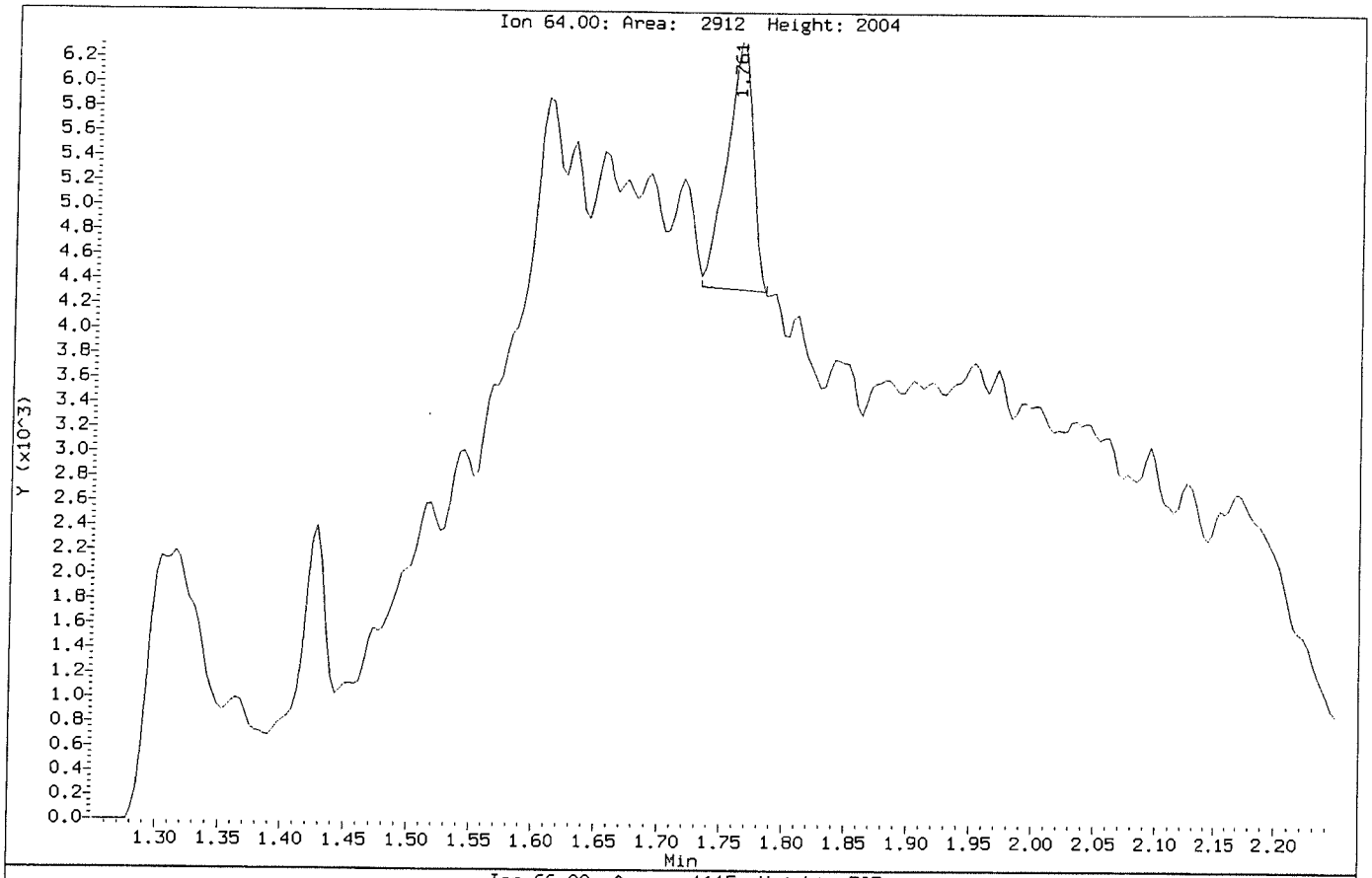
Compound: Chloroethane
CAS Number: 75-00-3

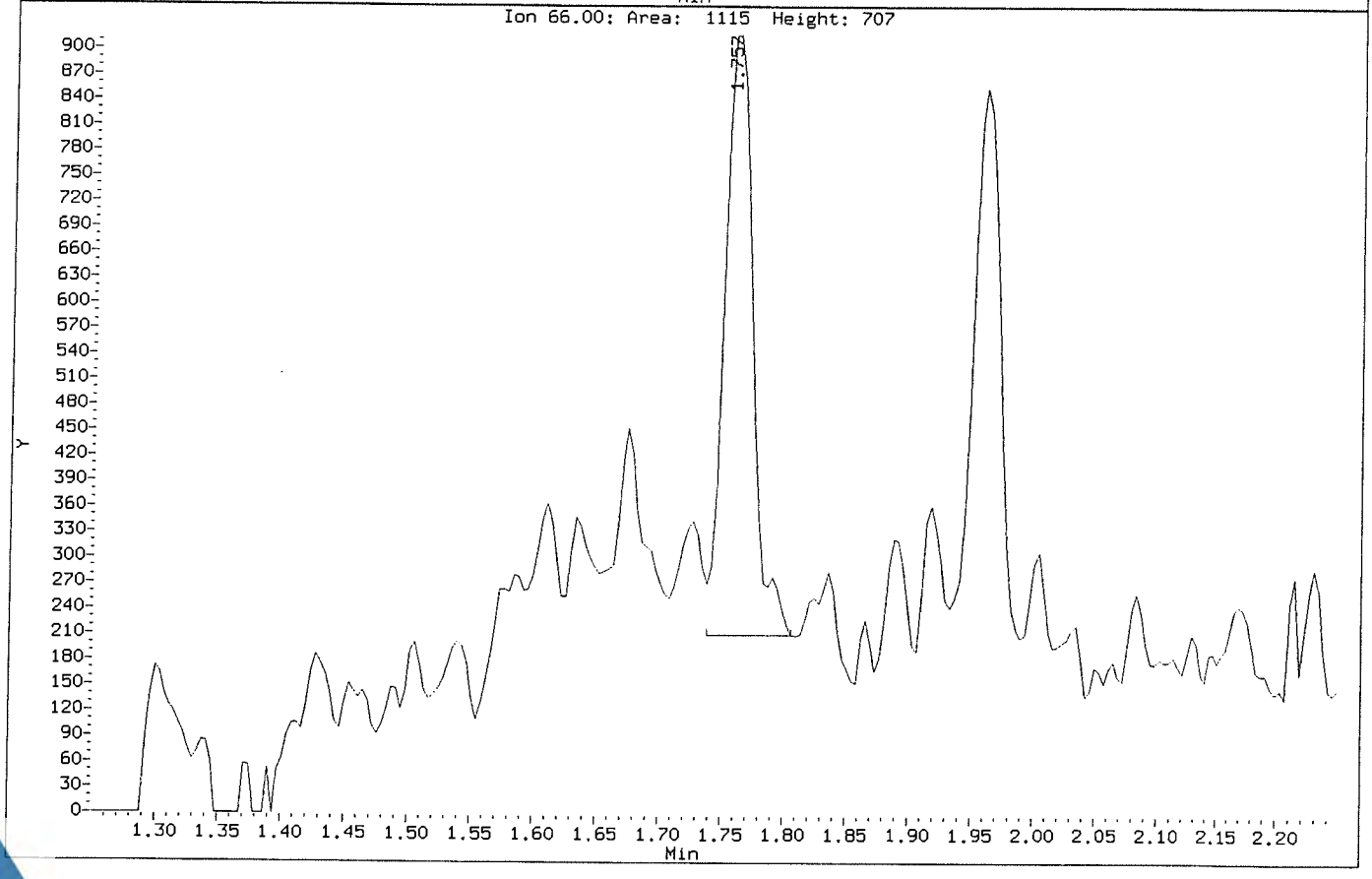




Data File: \\NAHSTWS005\Target\chem\voa9.i\U181113.b\U111303.D
Injection Date: 13-NOV-2018 11:47
Instrument: VOA9.i
Client Sample ID: VSTD000.5

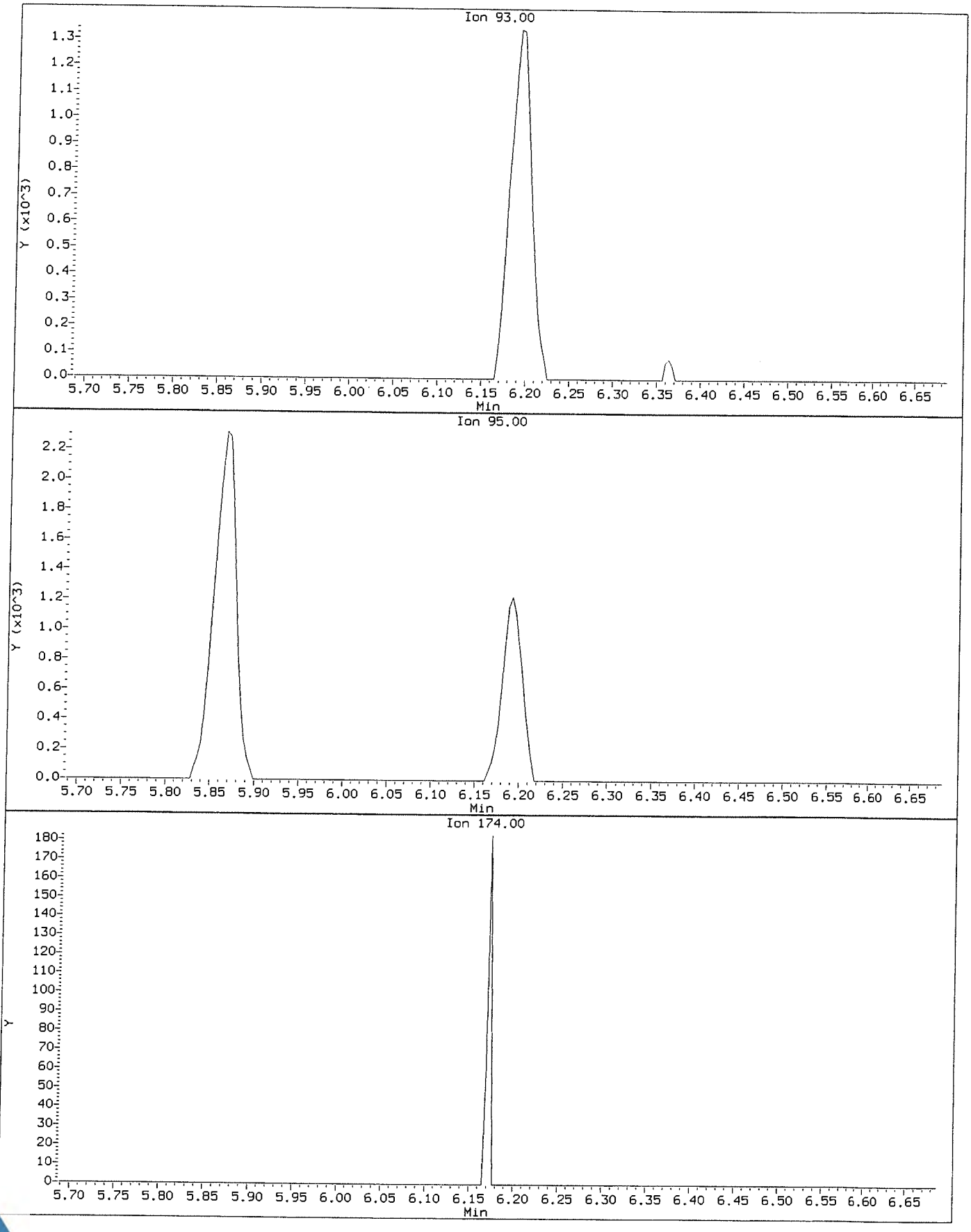
Compound: Chloroethane
CAS Number: 75-00-3





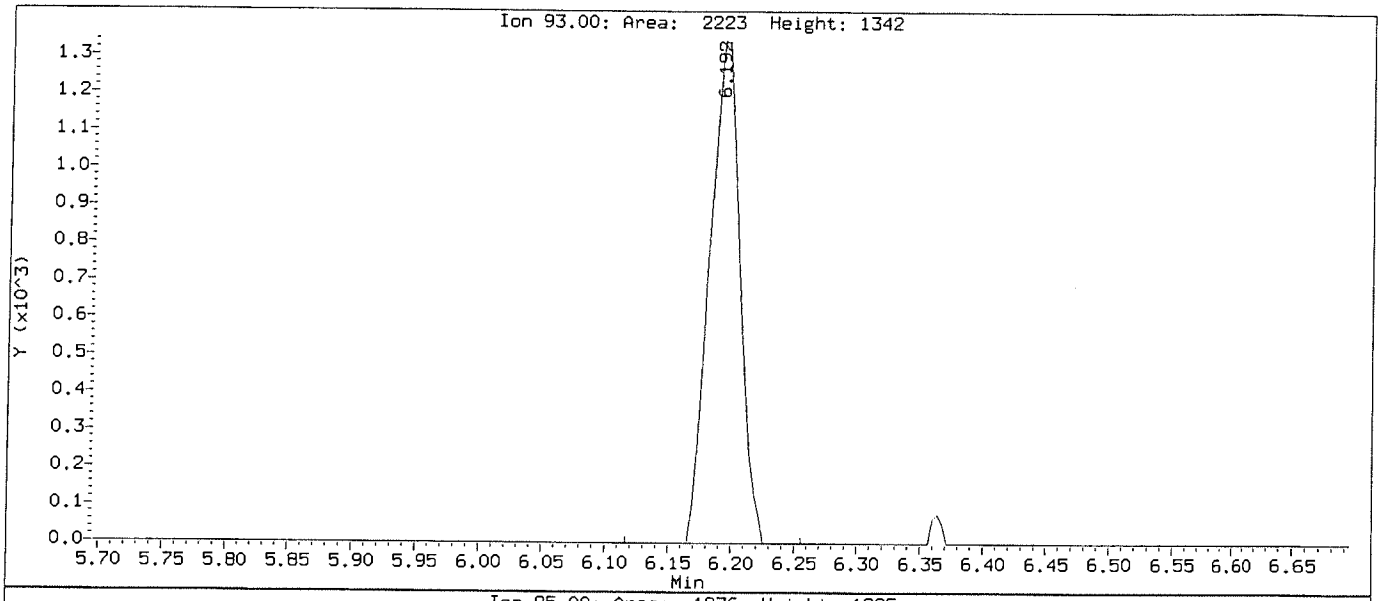
Data File: \\NAHSTWS005\Target\chem\voa9.i\U181113.b\Before\U111303.D
Injection Date: 13-NOV-2018 11:47
Instrument: VOA9.i
Client Sample ID: VSTD000.5

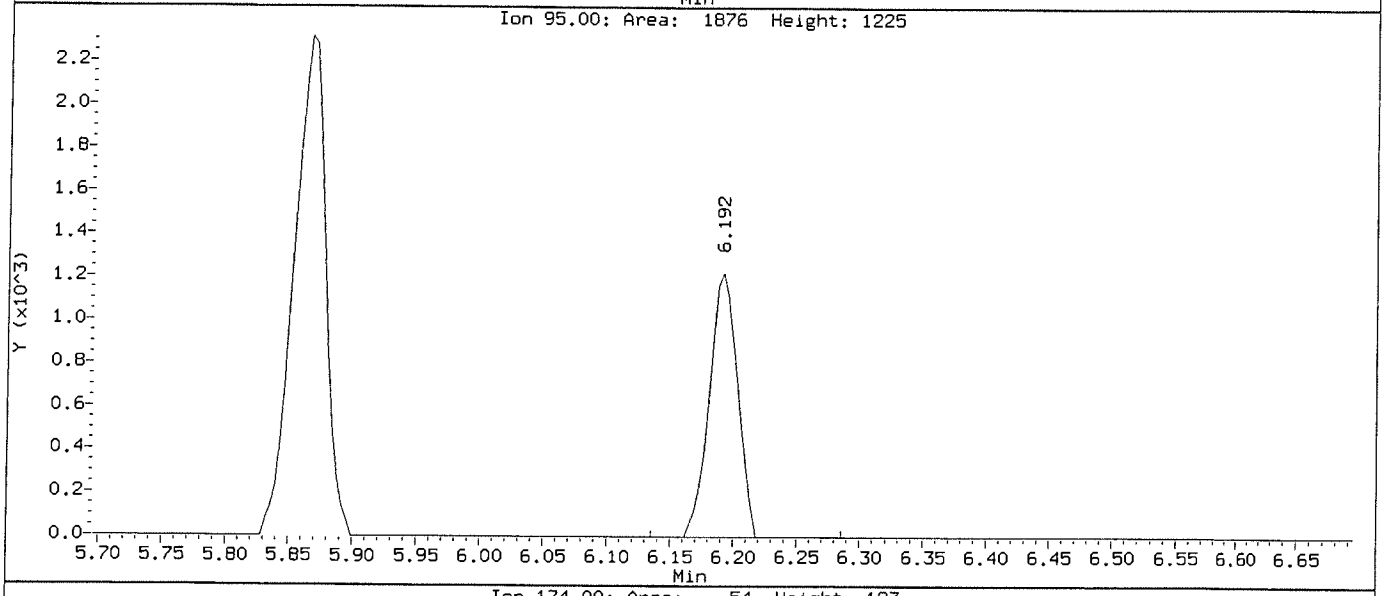
Compound: Dibromomethane
CAS Number: 74-95-3

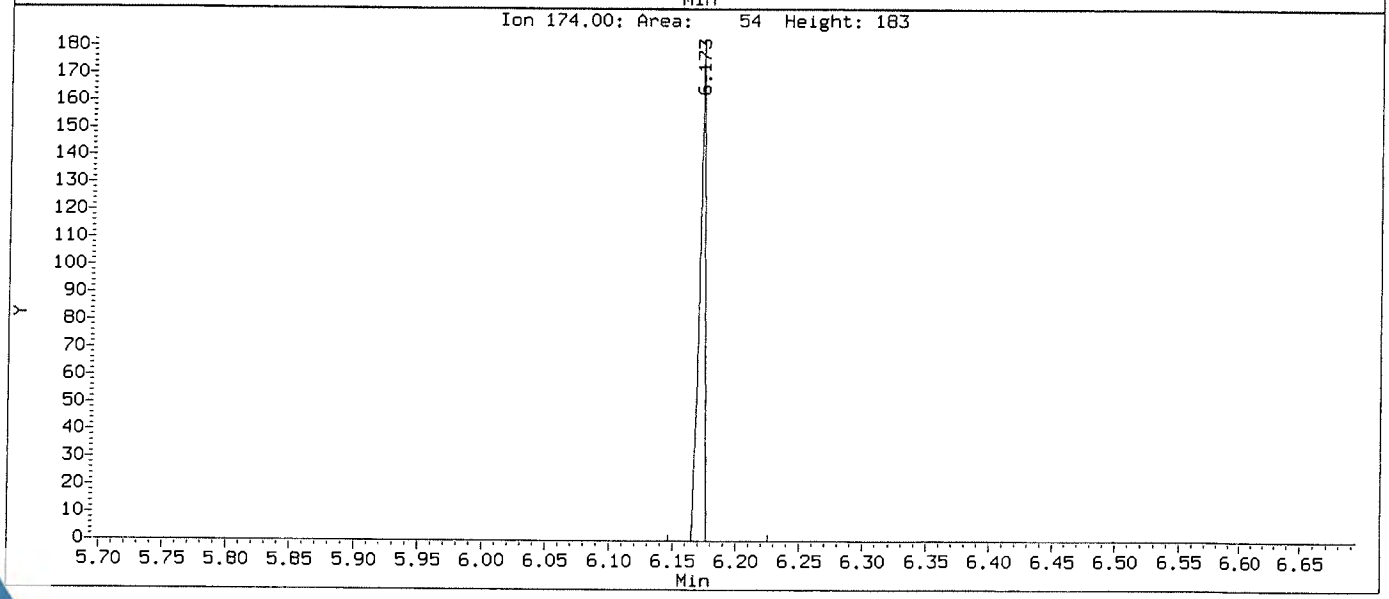


Data File: \\NAHSTWS005\Target\chem\voa9.i\U181113.b\U111303.D
Injection Date: 13-NOV-2018 11:47
Instrument: VOA9.i
Client Sample ID: VSTD000.5

Compound: Dibromomethane
CAS Number: 74-95-3

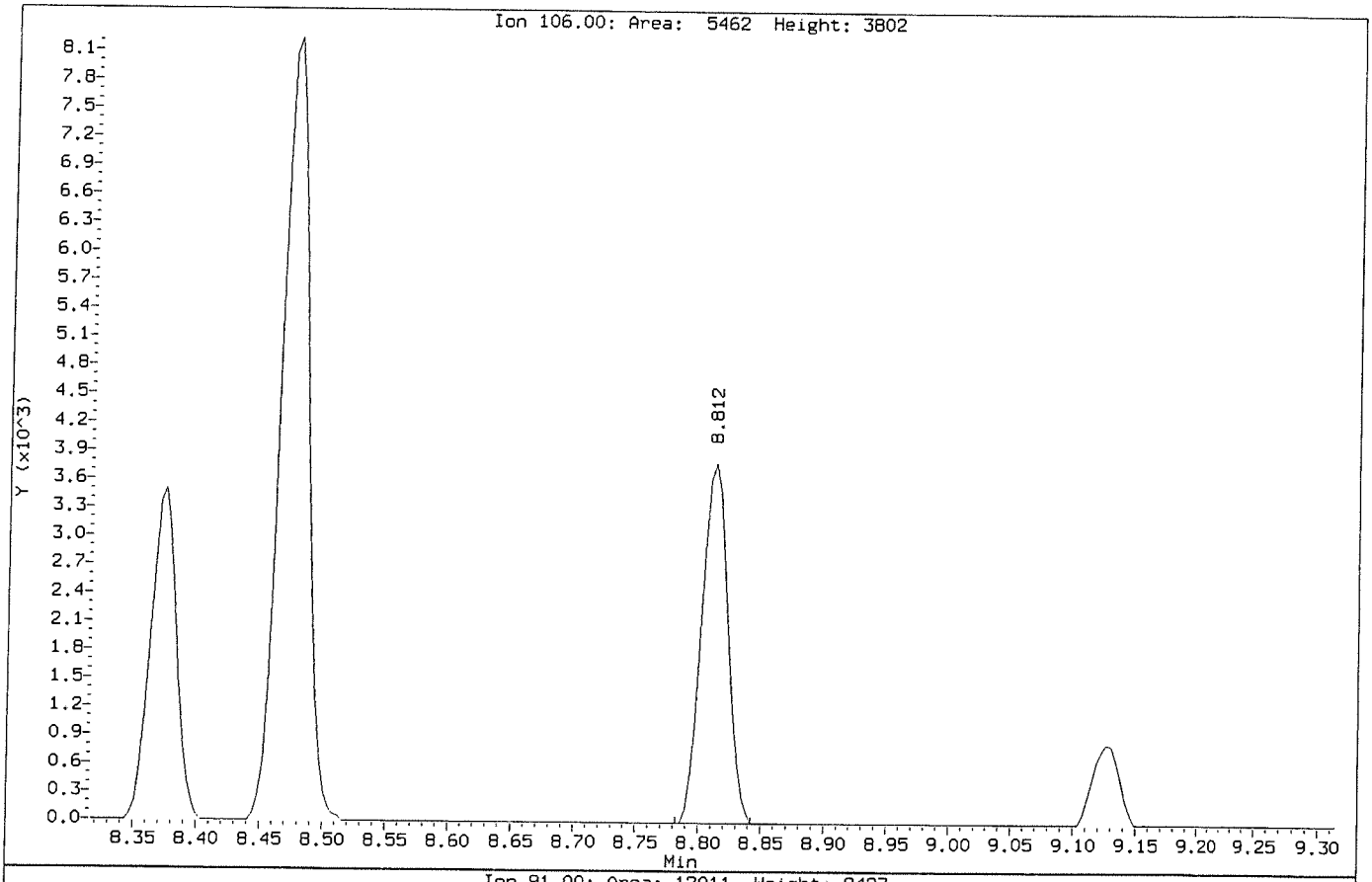


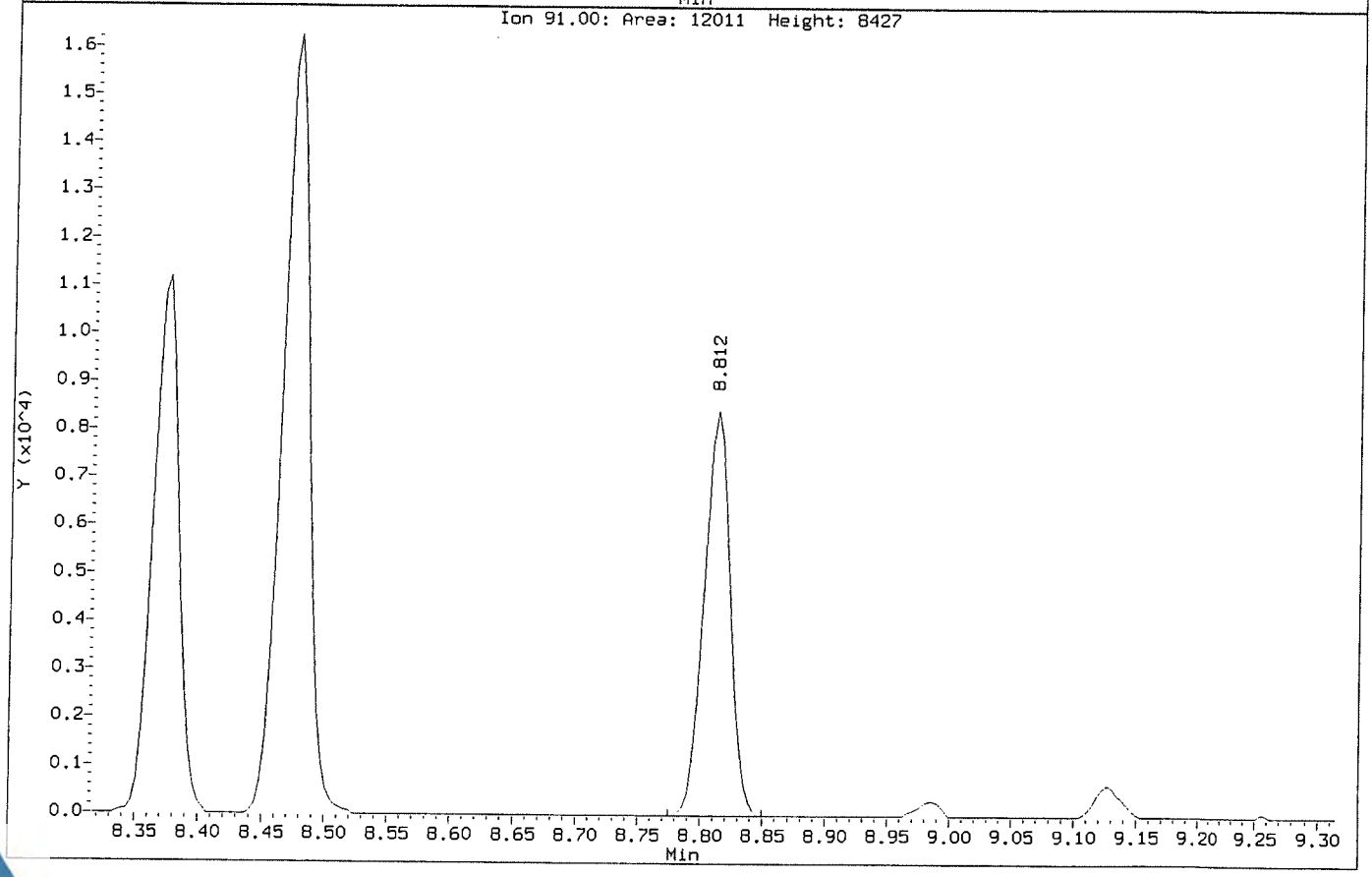




Data File: \\NAHSTWS005\Target\chem\voa9.i\U181113.b\Before\U111303.D
Injection Date: 13-NOV-2018 11:47
Instrument: VOA9.i
Client Sample ID: VSTD000.5

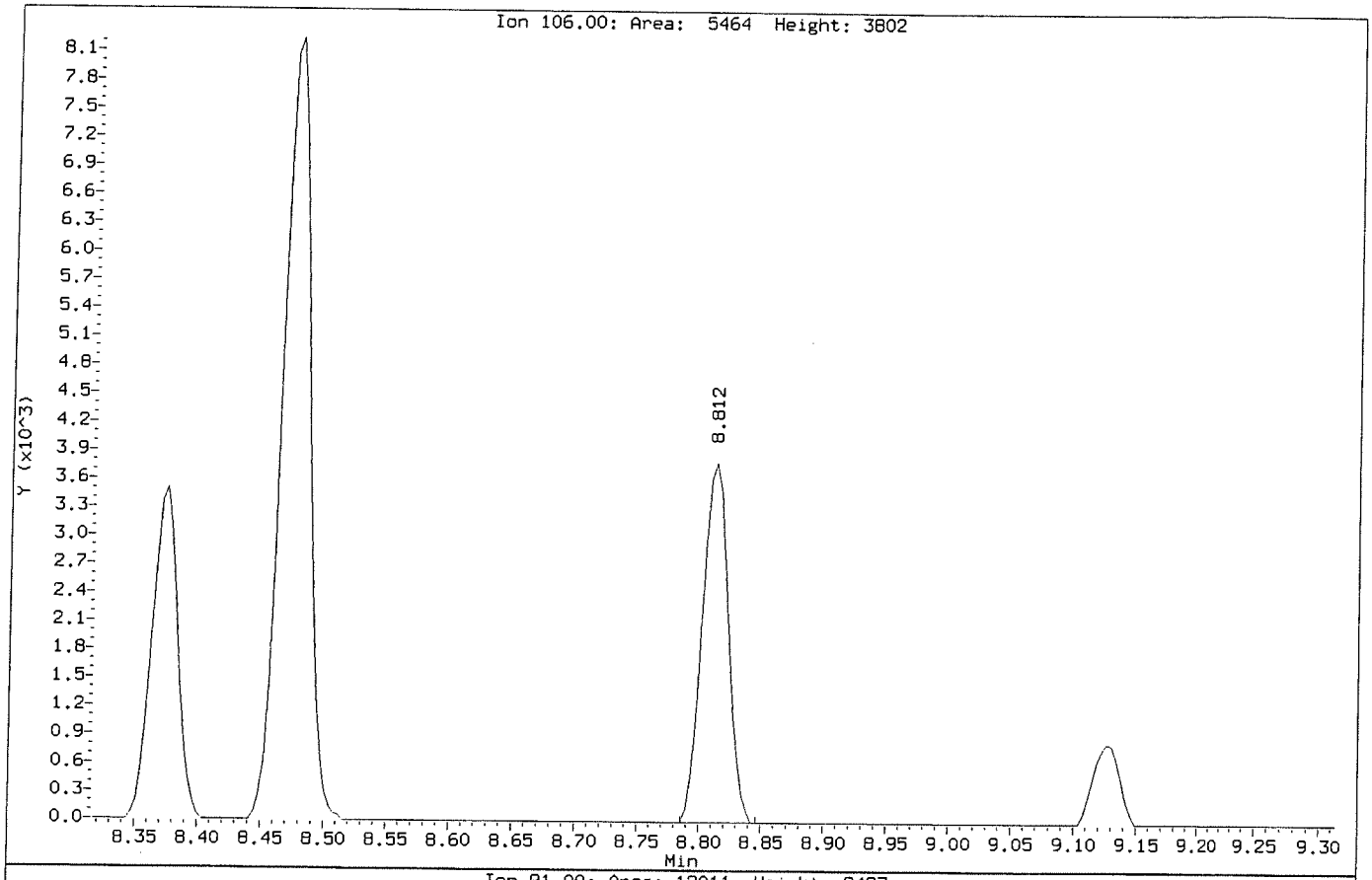
Compound: o-Xylene
CAS Number: 95-47-6

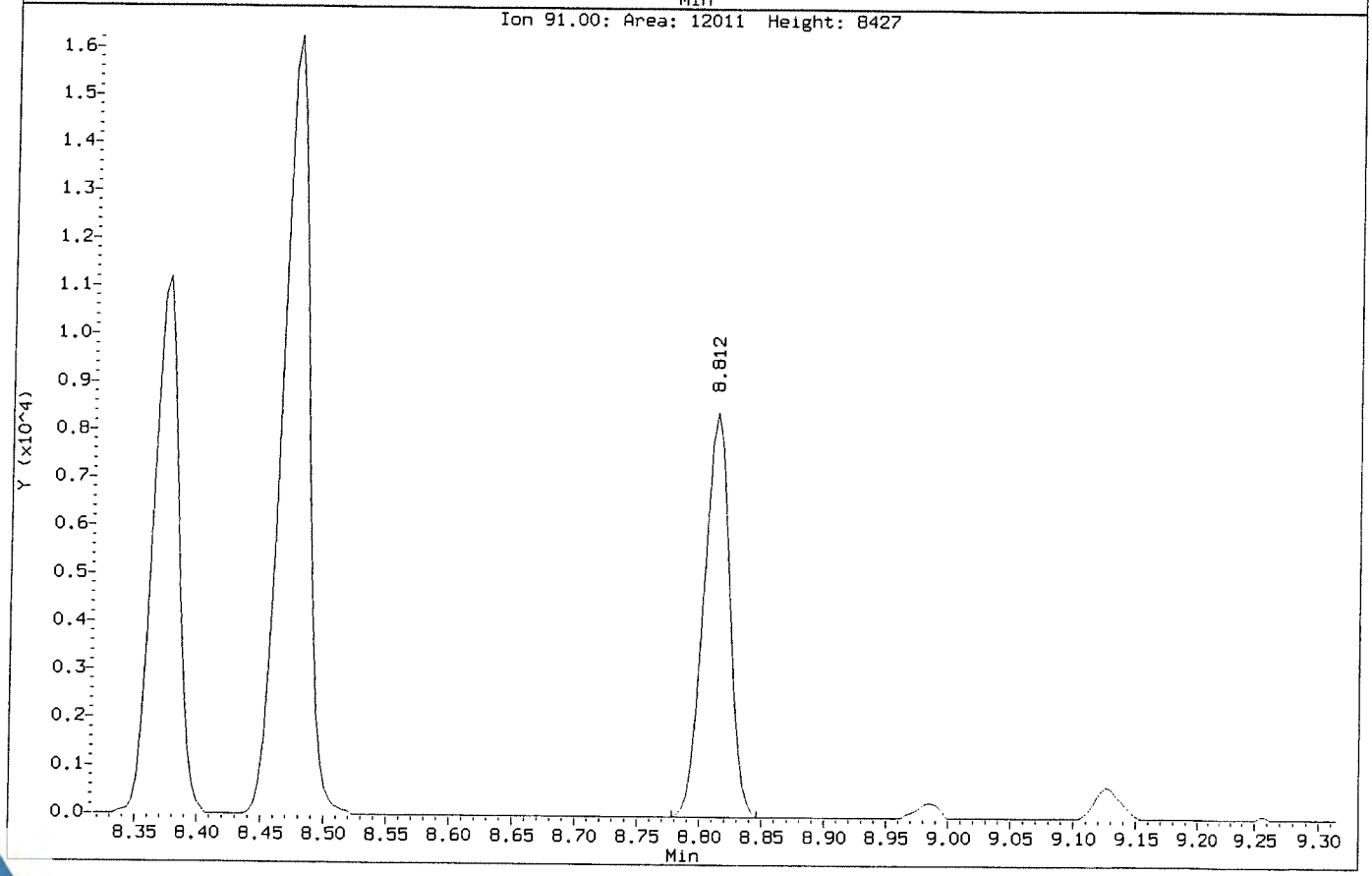




Data File: \\NAHSTWS005\Target\chem\voa9.i\U181113.b\U111303.D
Injection Date: 13-NOV-2018 11:47
Instrument: VOA9.i
Client Sample ID: VSTD000.5

Compound: o-Xylene
CAS Number: 95-47-6





Data File: \\NAHSTWS005\Target\chem\voa9.i\U181113.b\U111304.D Page 1
Report Date: 24-Jan-2019 18:55

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa9.i\U181113.b\U111304.D
Lab Smp Id: VSTD001 Client Smp ID: VSTD001
Inj Date : 13-NOV-2018 12:36
Operator : PC Inst ID: VOA9.i
Smp Info : VSTD001;VSTD001;1;3;
Misc Info : 180315V9;WATER;0;1;
Comment :
Method : \\NAHSTWS005\Target\chem\voa9.i\U181113.b\8260C.m
Meth Date : 24-Jan-2019 18:55 VOA9.i Quant Type: ISTD
Cal Date : 13-NOV-2018 11:47 Cal File: U111303.D
Als bottle: 5 Calibration Sample, Level: 3
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: LHAAP.sub
Target Version: 4.14
Processing Host: NAHSTW7087

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Cpnd Variable		Local Compound Variable

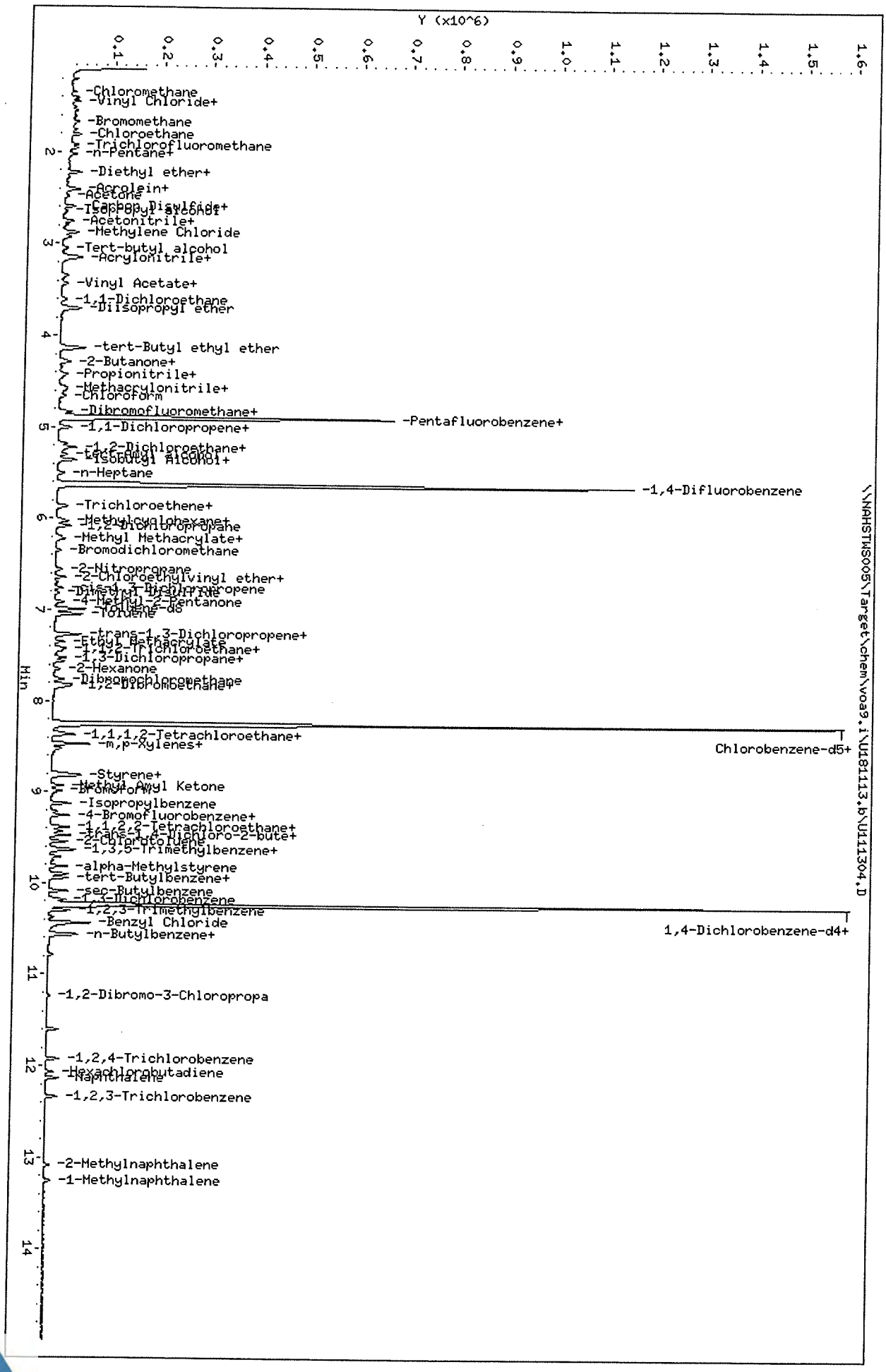
Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
* 1 Pentafluorobenzene	168	4.898	4.898	(1.000)	405565	50.0000	
* 36 1,4-Difluorobenzene	114	5.625	5.625	(1.000)	804218	50.0000	
* 47 Chlorobenzene-d5	117	8.249	8.249	(1.000)	748347	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	10.236	10.236	(1.000)	345100	50.0000	
$ 30 Dibromofluoromethane	113	4.834	4.834	(0.987)	7705	1.00000	0.43(a)
$ 35 1,2-Dichloroethane-d4	65	5.179	5.179	(1.057)	11059	1.00000	0.09(a)
$ 48 Toluene-d8	98	6.989	6.989	(0.847)	30489	1.00000	(a)
$ 69 4-Bromofluorobenzene	95	9.257	9.257	(1.122)	10512	1.00000	0.38(a)
60 1,1,1,2-Tetrachloroethane	131	8.350	8.350	(1.012)	4277	1.00000	0.90(a)
31 1,1,1-Trichloroethane	97	4.826	4.826	(0.985)	6795	1.00000	0.95(a)
68 1,1,2,2-Tetrachloroethane	83	9.392	9.392	(0.918)	8088	1.00000	0.98(a)
138 Freon TF	101	2.405	2.405	(0.491)	4282	1.00000	1.05(a)
53 1,1,2-Trichloroethane	83	7.421	7.421	(0.900)	5034	1.00000	1.05(a)
22 1,1-Dichloroethane	63	3.608	3.608	(0.737)	9857	1.00000	1.06(a)
11 1,1-Dichloroethene	96	2.405	2.405	(0.491)	5079	1.00000	1.10(a)
32 1,1-Dichloropropene	75	5.006	5.006	(0.890)	7778	1.00000	1.04(a)
93 1,2,3-Trichlorobenzene	180	12.339	12.339	(1.205)	5356	1.00000	0.82(a)
71 1,2,3-Trichloropropane	75	9.426	9.426	(0.921)	7560	1.00000	0.88(a)
90 1,2,4-Trichlorobenzene	180	11.926	11.926	(1.165)	6307	1.00000	0.92(a)
79 1,2,4-Trimethylbenzene	105	9.943	9.943	(0.971)	18207	1.00000	0.94(a)
89 1,2-Dibromo-3-Chloropropane	155	11.237	11.237	(1.098)	955	1.00000	1.78(a)
57 1,2-Dibromoethane	107	7.852	7.852	(0.952)	5452	1.00000	0.98(a)

Data File: \\NAHSTWS005\Target\chem\voa9.i\U181113.b\U111304.D Page 2
Report Date: 24-Jan-2019 18:55

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
88	1,2-Dichlorobenzene	146	10.569	10.569	(1.033)	11469	1.00000	1.04(a)
33	1,2-Dichloroethane	62	5.254	5.254	(0.934)	8729	1.00000	1.03(a)
42	1,2-Dichloropropane	63	6.082	6.082	(1.081)	5924	1.00000	1.03(a)
75	1,3,5-Trimethylbenzene	105	9.625	9.625	(0.940)	17829	1.00000	0.96(a)
83	1,3-Dichlorobenzene	146	10.180	10.180	(0.995)	11288	1.00000	1.03(a)
54	1,3-Dichloropropane	76	7.563	7.563	(0.917)	10633	1.00000	1.04(a)
84	1,4-Dichlorobenzene	146	10.255	10.255	(1.002)	11659	1.00000	1.05(a)
26	2,2-Dichloropropane	77	4.275	4.275	(0.873)	5473	1.00000	0.95(a)
24	2-Butanone	43	4.343	4.343	(0.887)	5794	2.00000	2.03(a)
76	2-Chlorotoluene	91	9.546	9.546	(0.933)	17337	1.00000	1.02(a)
52	2-Hexanone	43	7.653	7.653	(0.928)	7477	2.00000	1.71(a)
77	4-Chlorotoluene	91	9.640	9.640	(0.942)	18812	1.00000	0.96(a)
82	p-Isopropyltoluene	119	10.210	10.210	(0.997)	16467	1.00000	0.87(a)
45	4-Methyl-2-Pentanone	43	6.914	6.914	(0.838)	12236	2.00000	1.96(a)
10	Acetone	43	2.484	2.484	(0.507)	7657	2.00000	(a)
37	Benzene	78	5.220	5.220	(0.928)	23677	1.00000	1.06(a)
74	Bromobenzene	156	9.385	9.385	(0.917)	5602	1.00000	0.98(a)
29	Bromochloromethane	128	4.557	4.557	(0.930)	2347	1.00000	0.98(aM)
39	Bromodichloromethane	83	6.348	6.348	(1.129)	6268	1.00000	0.93(aM)
66	Bromoform	173	8.984	8.984	(1.089)	2470	1.00000	1.89(Ta)
6	Bromomethane	94	1.674	1.674	(0.342)	4167	1.00000	3.09(a)
19	Carbon Disulfide	76	2.592	2.592	(0.529)	28789	2.00000	2.03(a)
34	Carbon Tetrachloride	117	4.999	4.999	(0.889)	5592	1.00000	0.96(a)
59	Chlorobenzene	112	8.275	8.275	(1.003)	16679	1.00000	1.07(a)
7	Chloroethane	64	1.756	1.756	(0.359)	4550	1.00000	1.07(aM)
28	Chloroform	83	4.658	4.658	(0.951)	9975	1.00000	1.06(a)
3	Chloromethane	50	1.344	1.344	(0.274)	6506	1.00000	1.42(a)
27	cis-1,2-Dichloroethene	96	4.290	4.290	(0.876)	6147	1.00000	1.06(a)
46	cis-1,3-Dichloropropene	75	6.757	6.757	(1.201)	7263	1.00000	0.86(a)
55	Dibromochloromethane	129	7.758	7.758	(0.940)	3914	1.00000	0.82(a)
44	Dibromomethane	93	6.191	6.191	(1.101)	3612	1.00000	1.00(aM)
2	Dichlorodifluoromethane	85	1.209	1.209	(0.247)	6358	1.00000	2.04(a)
61	Ethylbenzene	106	8.373	8.373	(1.015)	8122	1.00000	1.03(a)
91	Hexachlorobutadiene	225	12.065	12.065	(1.179)	2210	1.00000	1.33(a)
67	Isopropylbenzene	105	9.126	9.126	(1.106)	22125	1.00000	0.97(a)
62	m,p-Xylenes	106	8.474	8.474	(1.027)	18714	2.00000	1.94(a)
17	Methylene Chloride	84	2.877	2.877	(0.587)	7766	1.00000	0.81(a)
87	n-Butylbenzene	91	10.558	10.558	(1.031)	17894	1.00000	1.37(a)
73	n-Propylbenzene	91	9.475	9.475	(0.926)	27227	1.00000	0.99(a)
92	Naphthalene	128	12.133	12.133	(1.185)	17787	1.00000	0.87(a)
63	o-Xylene	106	8.811	8.811	(1.068)	9461	1.00000	0.98(aH)
81	sec-Butylbenzene	105	10.086	10.086	(0.985)	22039	1.00000	0.97(a)
64	Styrene	104	8.826	8.826	(1.070)	14819	1.00000	0.91(a)
78	tert-Butylbenzene	119	9.902	9.902	(0.967)	14832	1.00000	0.93(a)
56	Tetrachloroethene	164	7.525	7.525	(0.912)	4264	1.00000	1.08(a)
50	Toluene	91	7.049	7.049	(0.855)	24363	1.00000	1.02(a)
20	trans-1,2-Dichloroethene	96	3.147	3.147	(0.643)	5480	1.00000	1.09(a)
51	trans-1,3-Dichloropropene	75	7.263	7.263	(1.291)	5482	1.00000	2.11(a)
38	Trichloroethene	130	5.861	5.861	(1.042)	5801	1.00000	1.05(a)
8	Trichlorofluoromethane	101	1.959	1.959	(0.400)	8913	1.00000	1.09(a)
5	Vinyl Chloride	62	1.423	1.423	(0.291)	7374	1.00000	1.61(a)

QC Flag Legend

T - Target compound detected outside RT window.
a - Target compound detected but, quantitated amount
    Below Limit Of Quantitation(BLOQ).
M - Compound response manually integrated.
H - Operator selected an alternate compound hit.

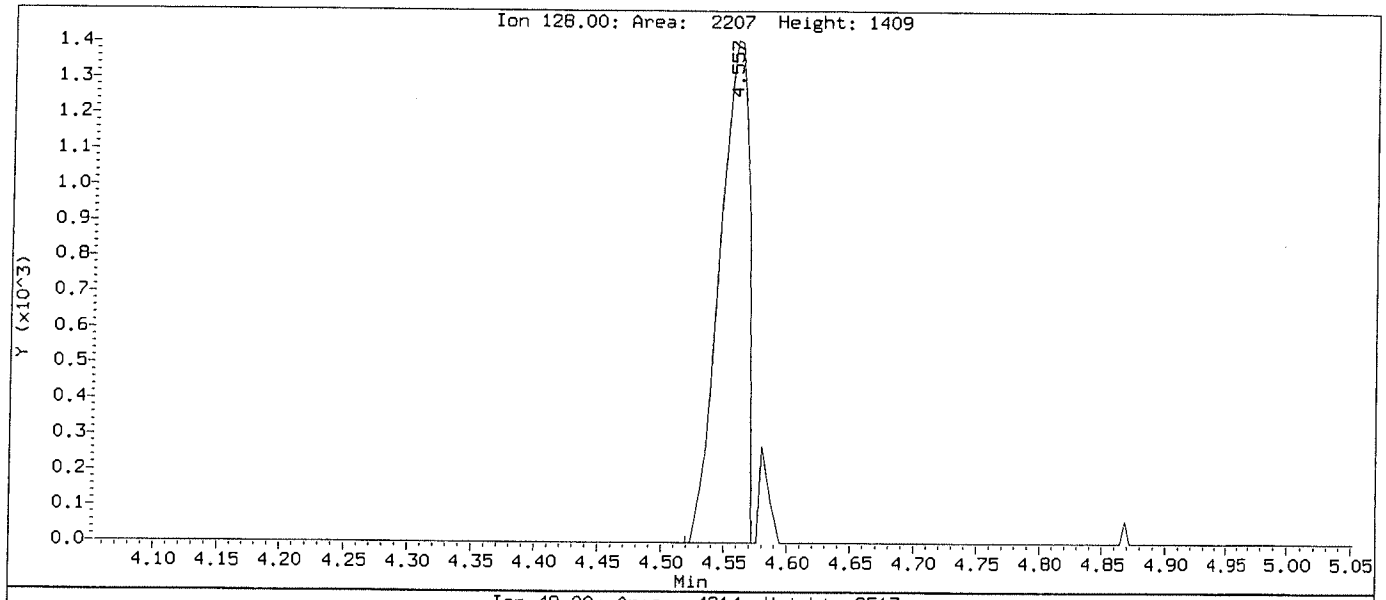


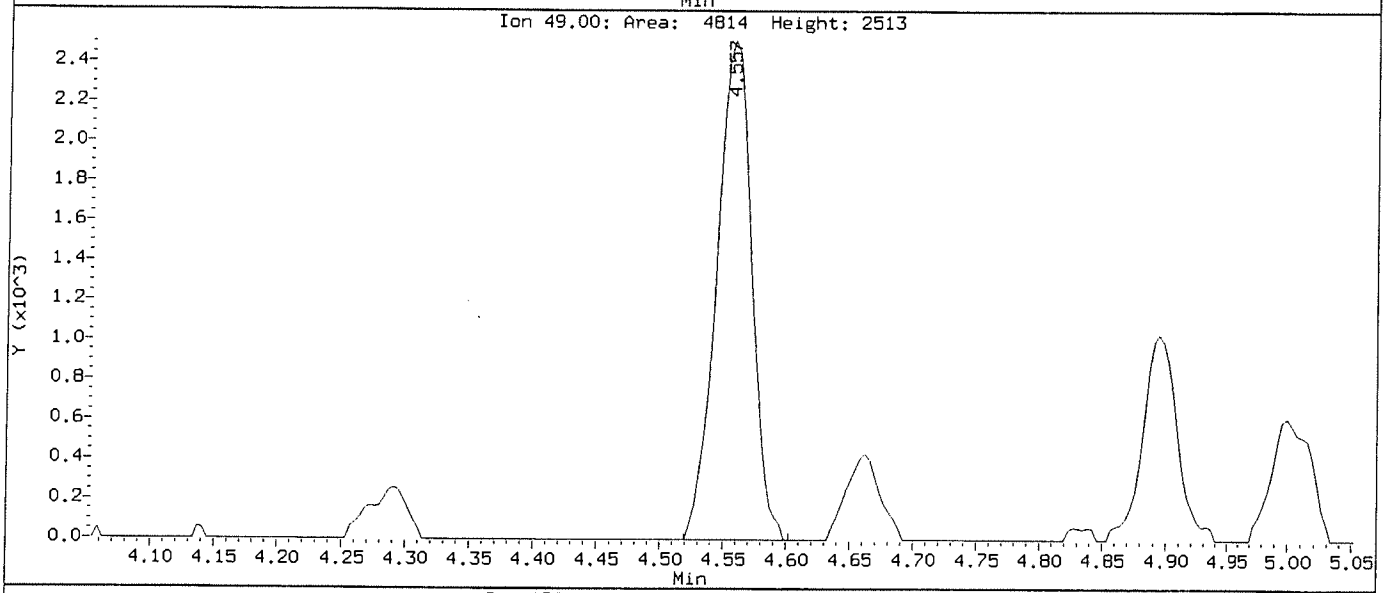
Data File: \\NAHSTWS005\Target\chem\voa9.i\U181113.b\U111304.D
Date : 13-NOV-2018 12:36
Client ID: VSTD001
Sample Info: VSTD001;VSTD001;1;3;
Purge Volume: 5.0
Column phase: DB624

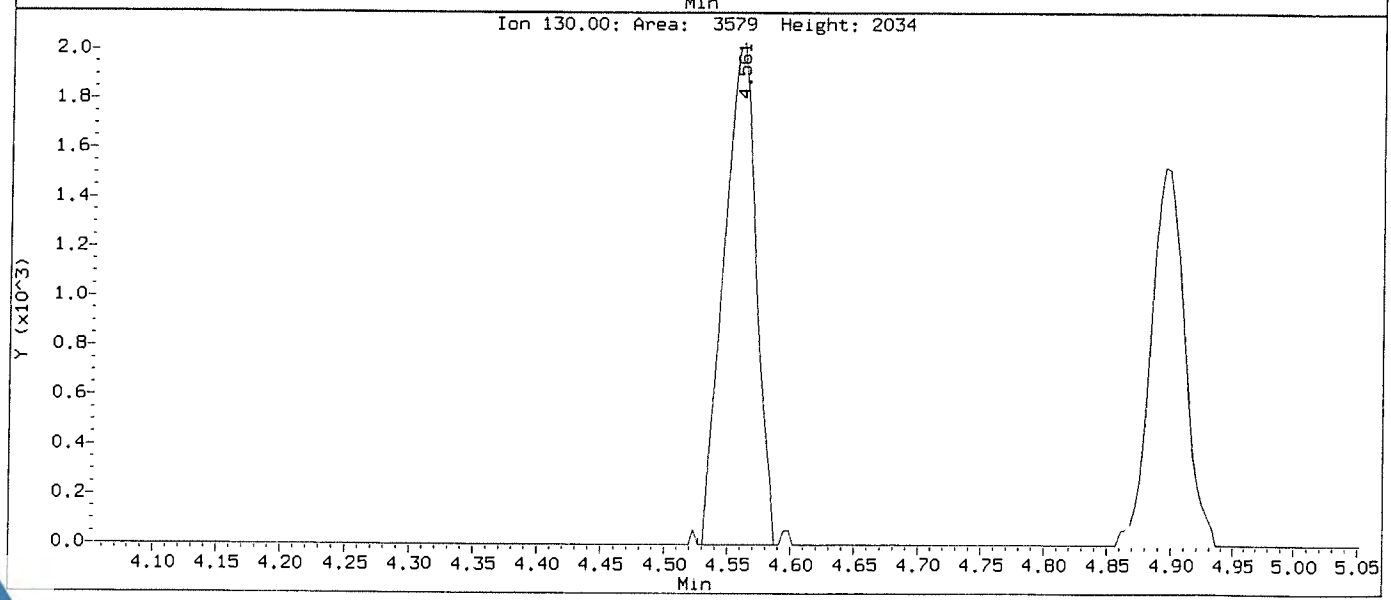
Instrument: VOA9.i
Operator: PC
Column diameter: 0.18

Data File: \\NAHSTWS005\Target\chem\voa9.i\U181113.b\Before\U111304.D
Injection Date: 13-NOV-2018 12:36
Instrument: VOA9.i
Client Sample ID: VSTD001

Compound: Bromochloromethane
CAS Number: 74-97-5

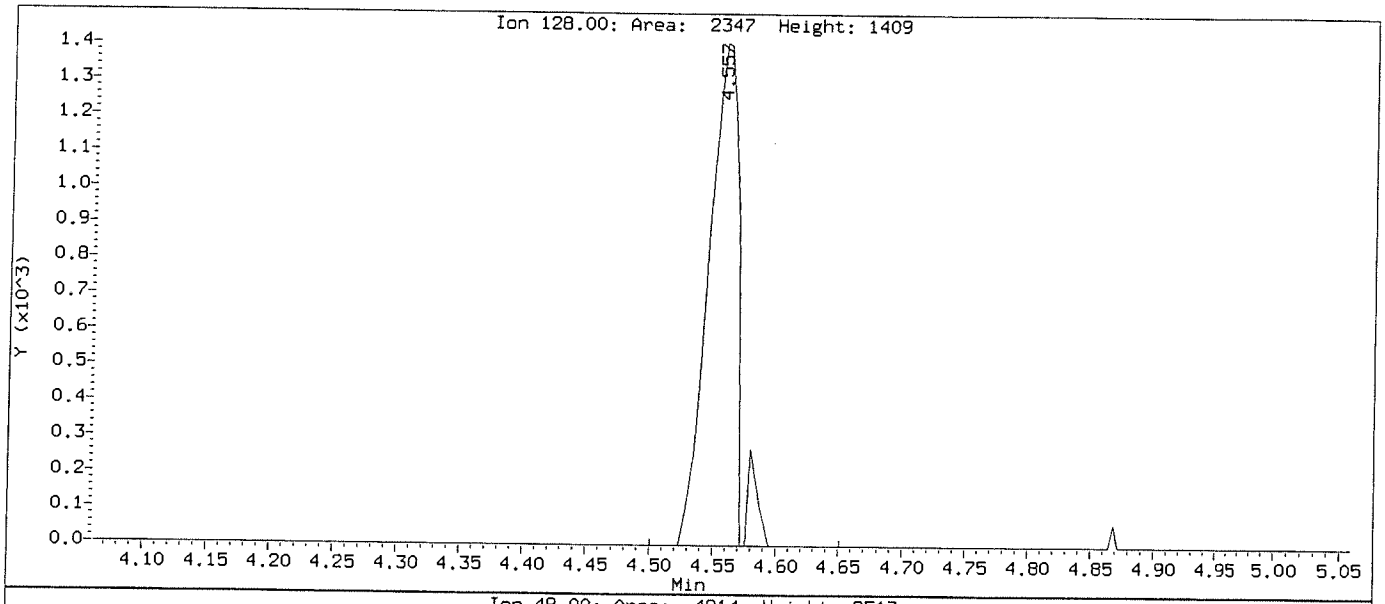


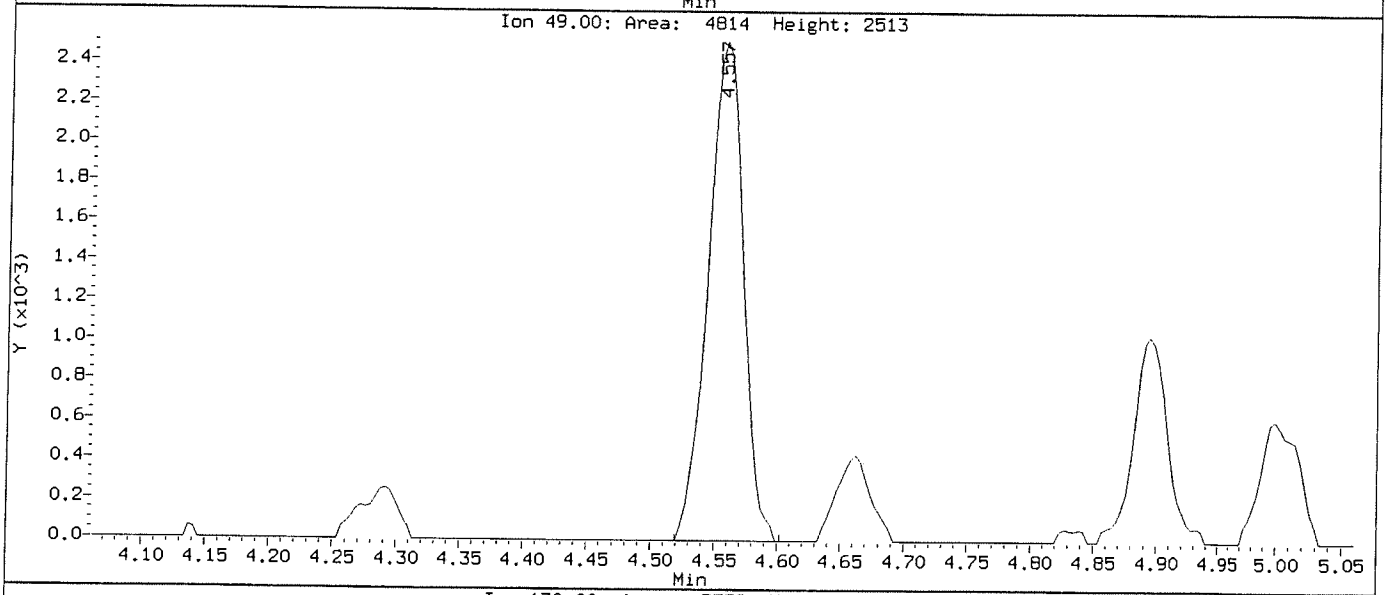


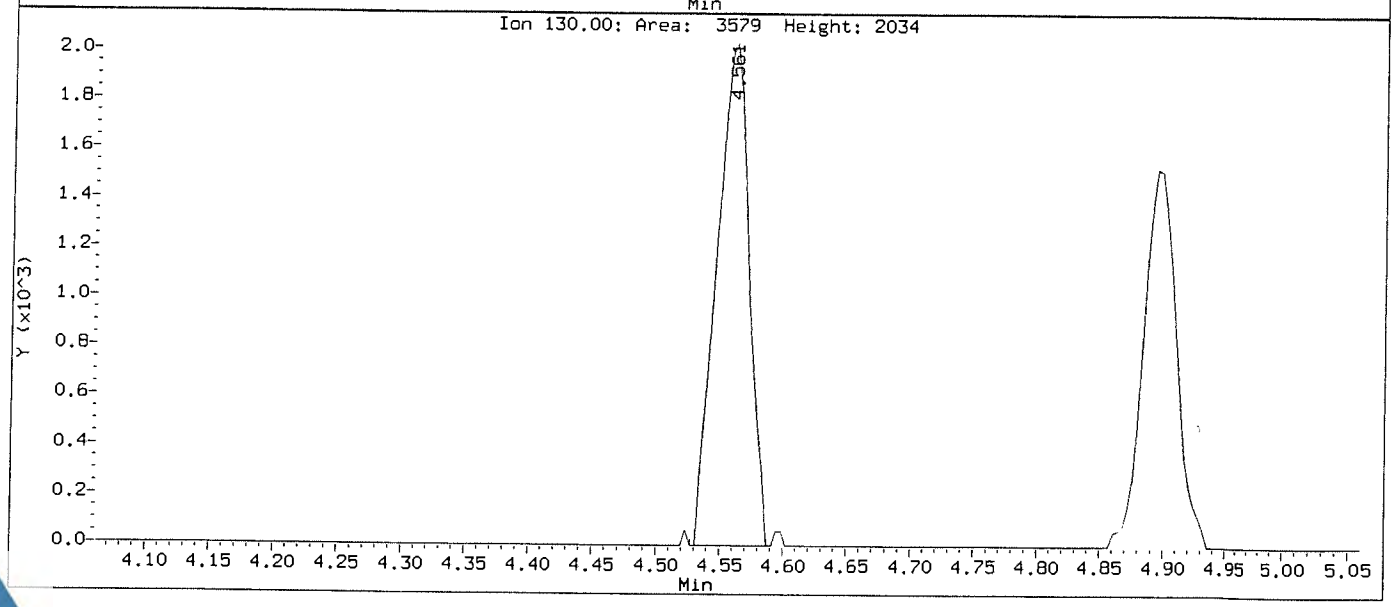


Data File: \\NAHSTWS005\Target\chem\voa9.i\U181113.b\U111304.D
Injection Date: 13-NOV-2018 12:36
Instrument: VOA9.i
Client Sample ID: VSTD001

Compound: Bromochloromethane
CAS Number: 74-97-5

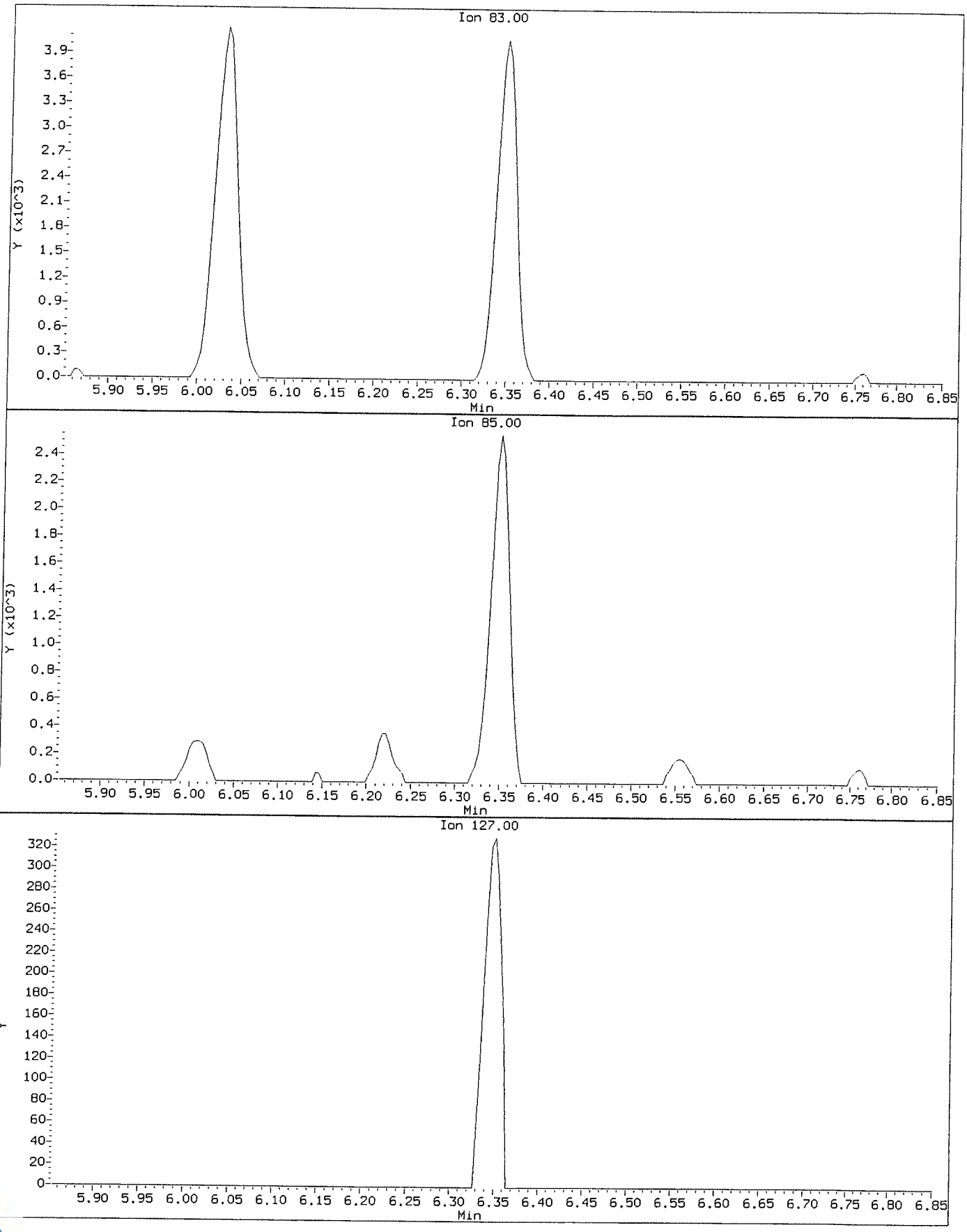






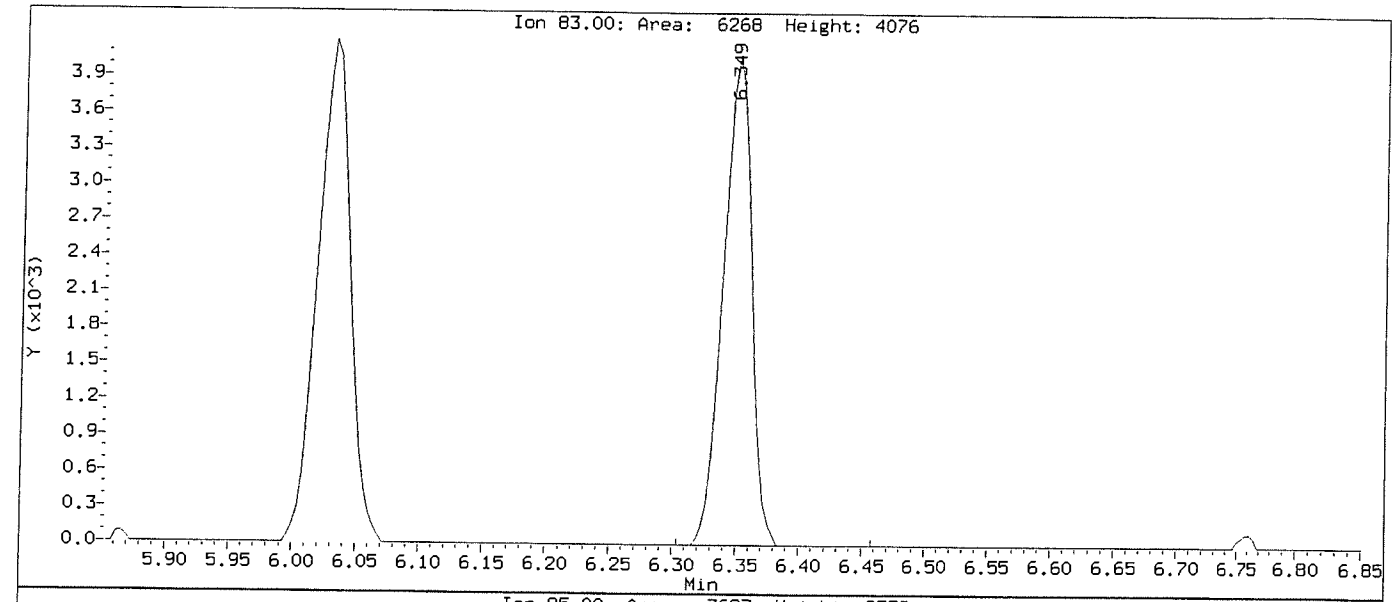
Data File: \\NAHSTWS005\Target\chem\voa9.i\U181113.b\Before\U111304.D
Injection Date: 13-NOV-2018 12:36
Instrument: VOA9.i
Client Sample ID: VSTD001

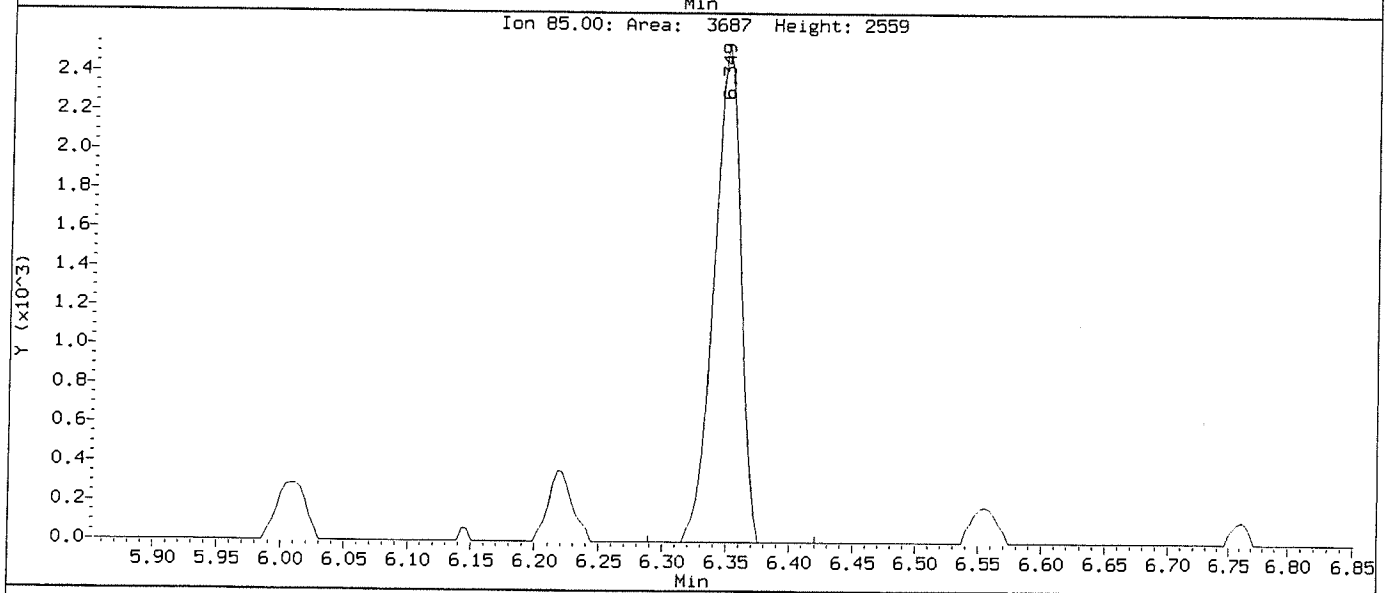
Compound: Bromodichloromethane
CAS Number: 75-27-4

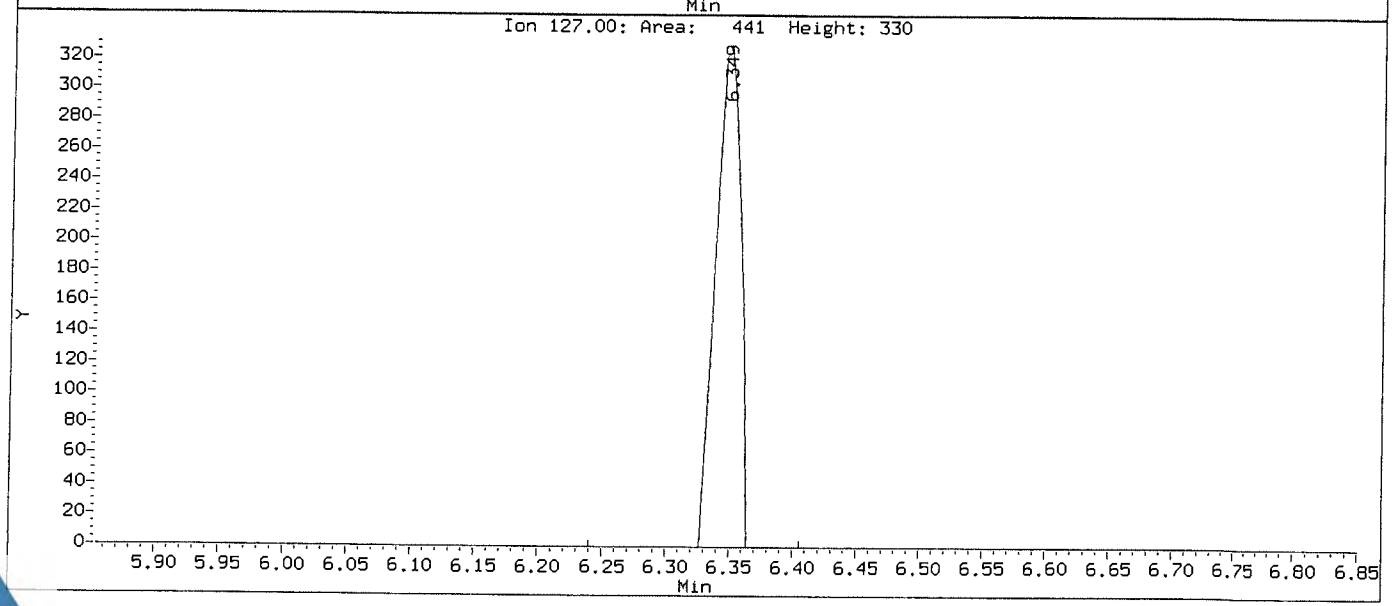


Data File: \\NAHSTWS005\Target\chem\voa9.i\U181113.b\U111304.D
Injection Date: 13-NOV-2018 12:36
Instrument: VOA9.i
Client Sample ID: VSTD001

Compound: Bromodichloromethane
CAS Number: 75-27-4

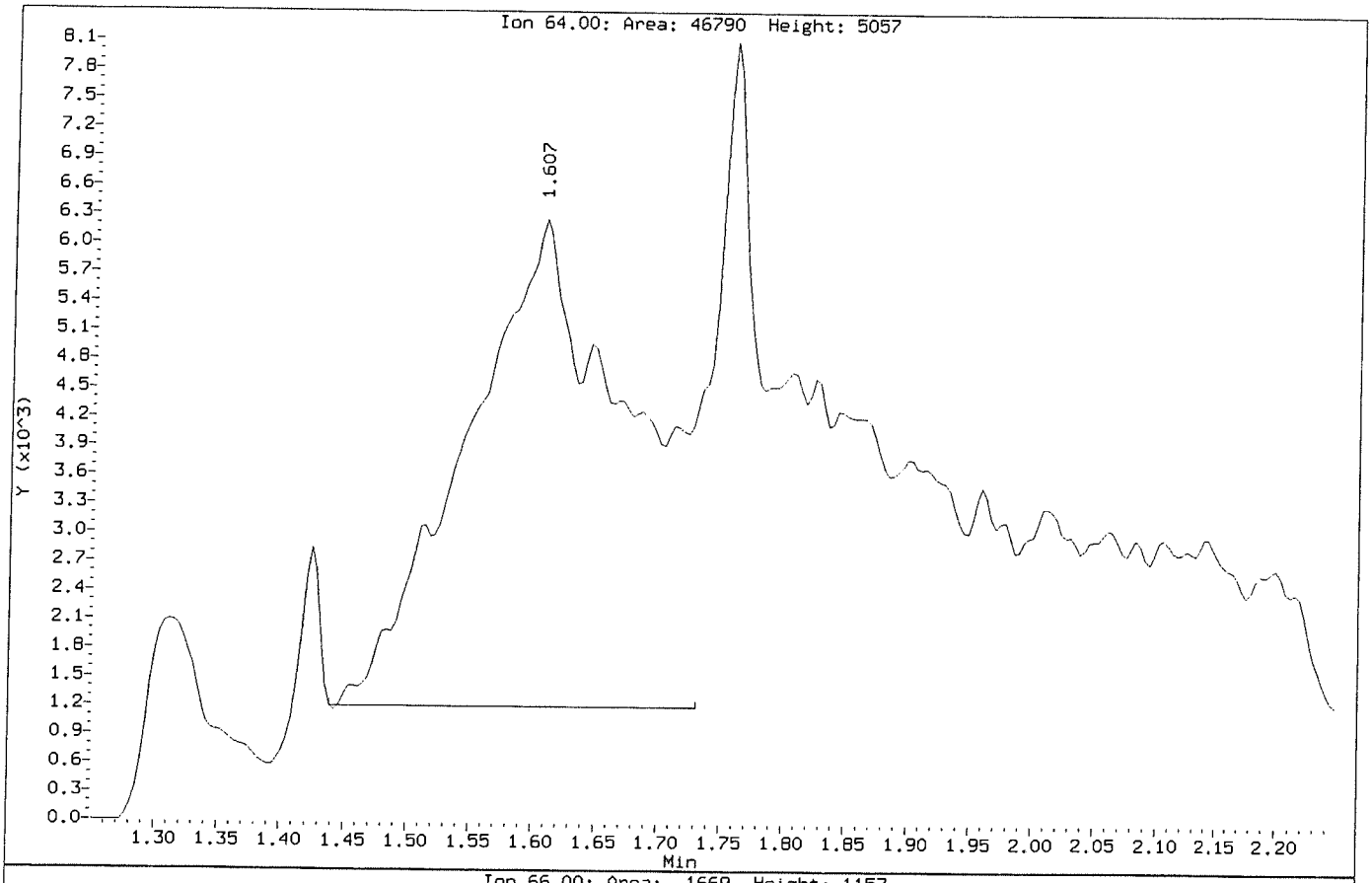


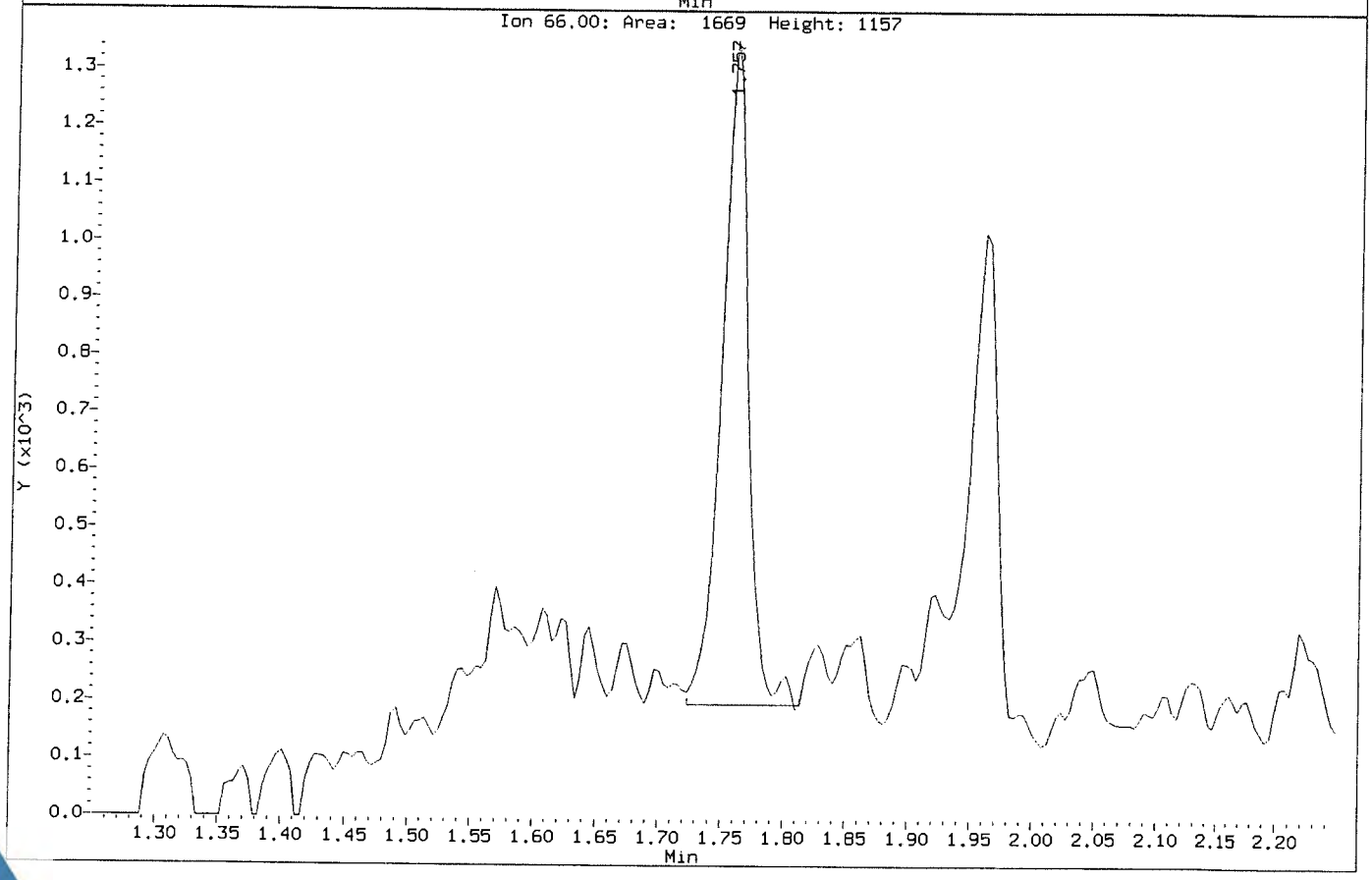




Data File: \\NAHSTWS005\Target\chem\voa9.i\U181113.b\Before\U111304.D
Injection Date: 13-NOV-2018 12:36
Instrument: VOA9.i
Client Sample ID: VSTD001

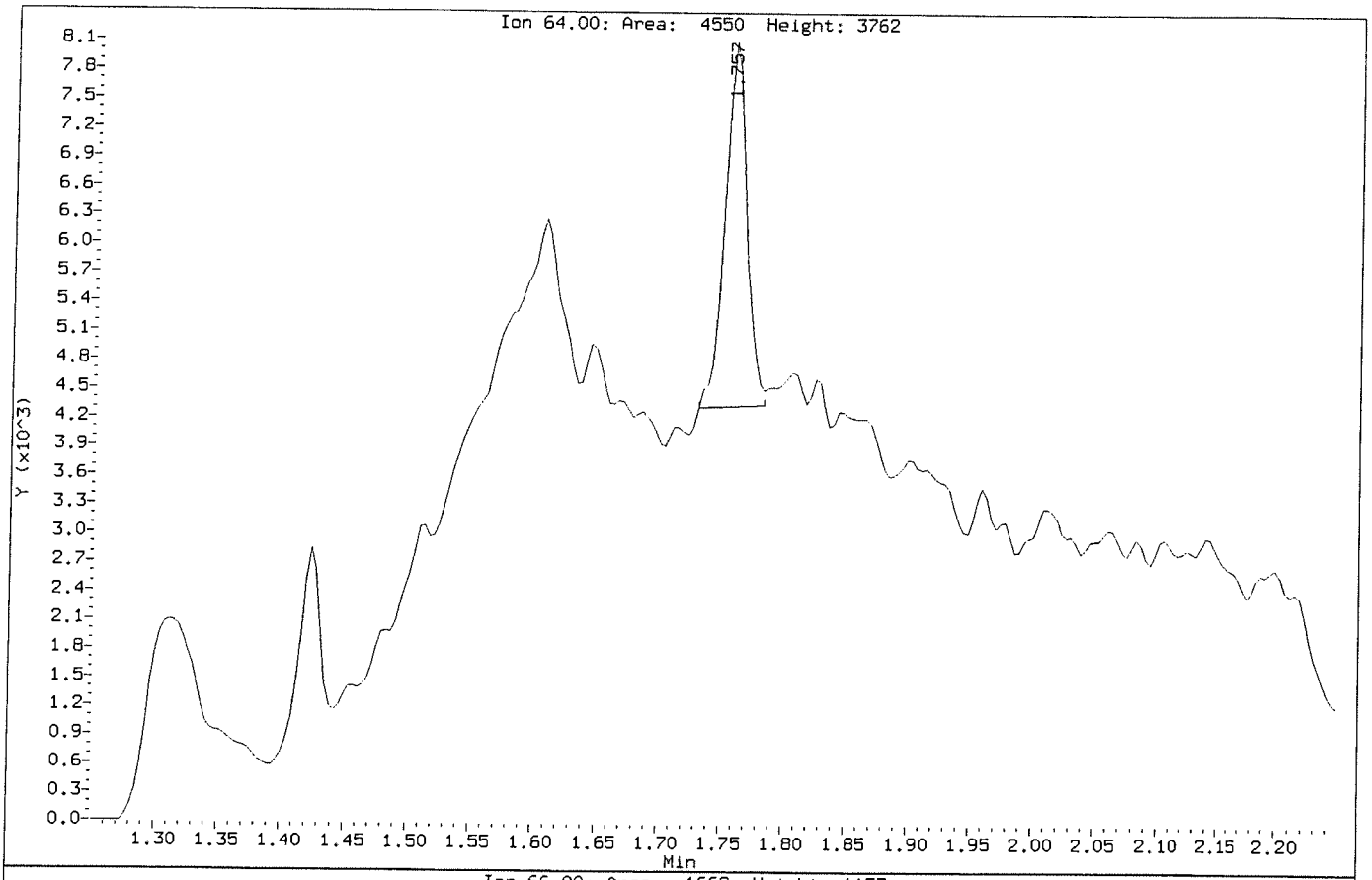
Compound: Chloroethane
CAS Number: 75-00-3

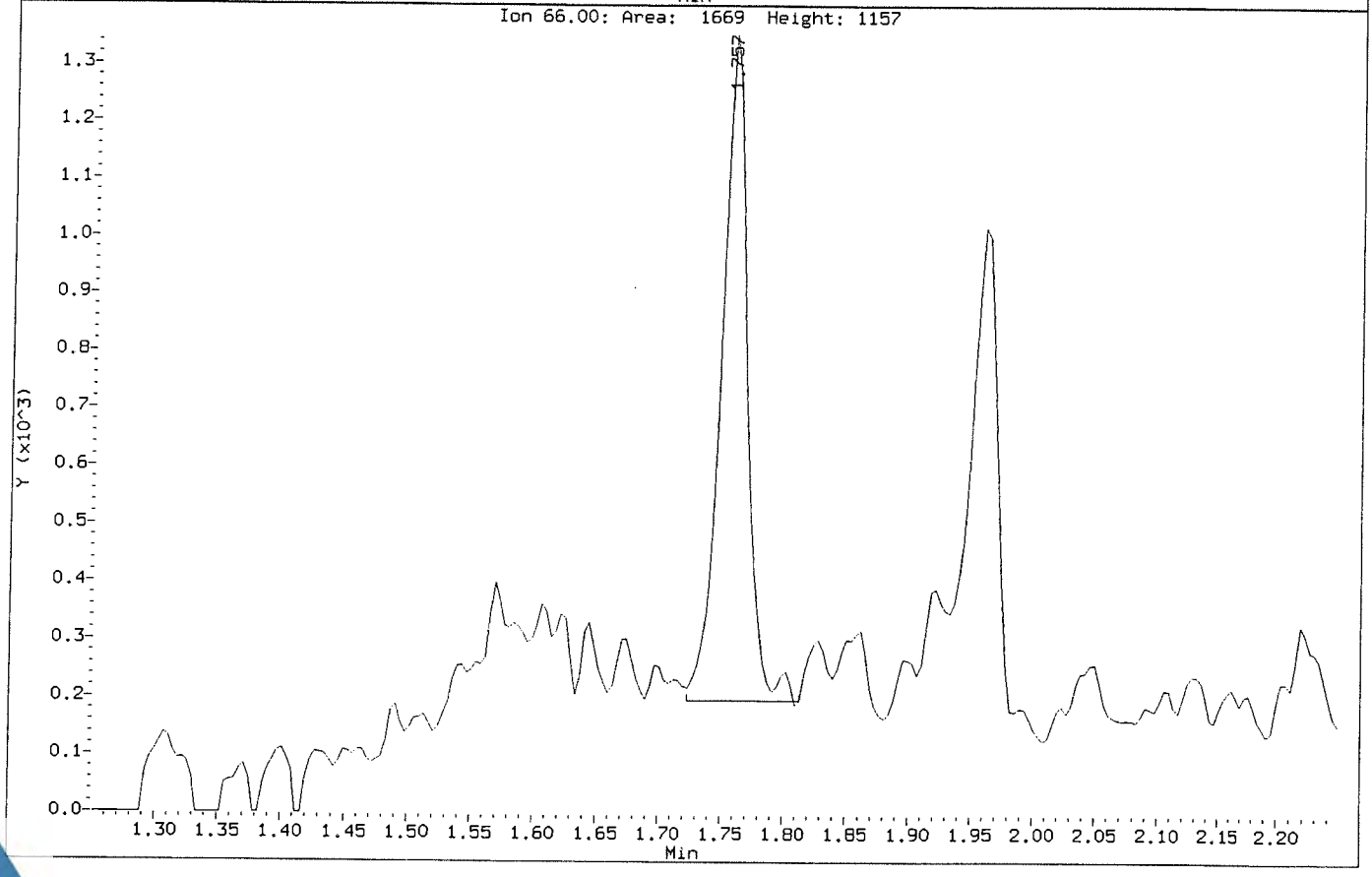




Data File: \\NAHSTWS005\Target\chem\voa9.i\U181113.b\U111304.D
Injection Date: 13-NOV-2018 12:36
Instrument: VOA9.i
Client Sample ID: VSTD001

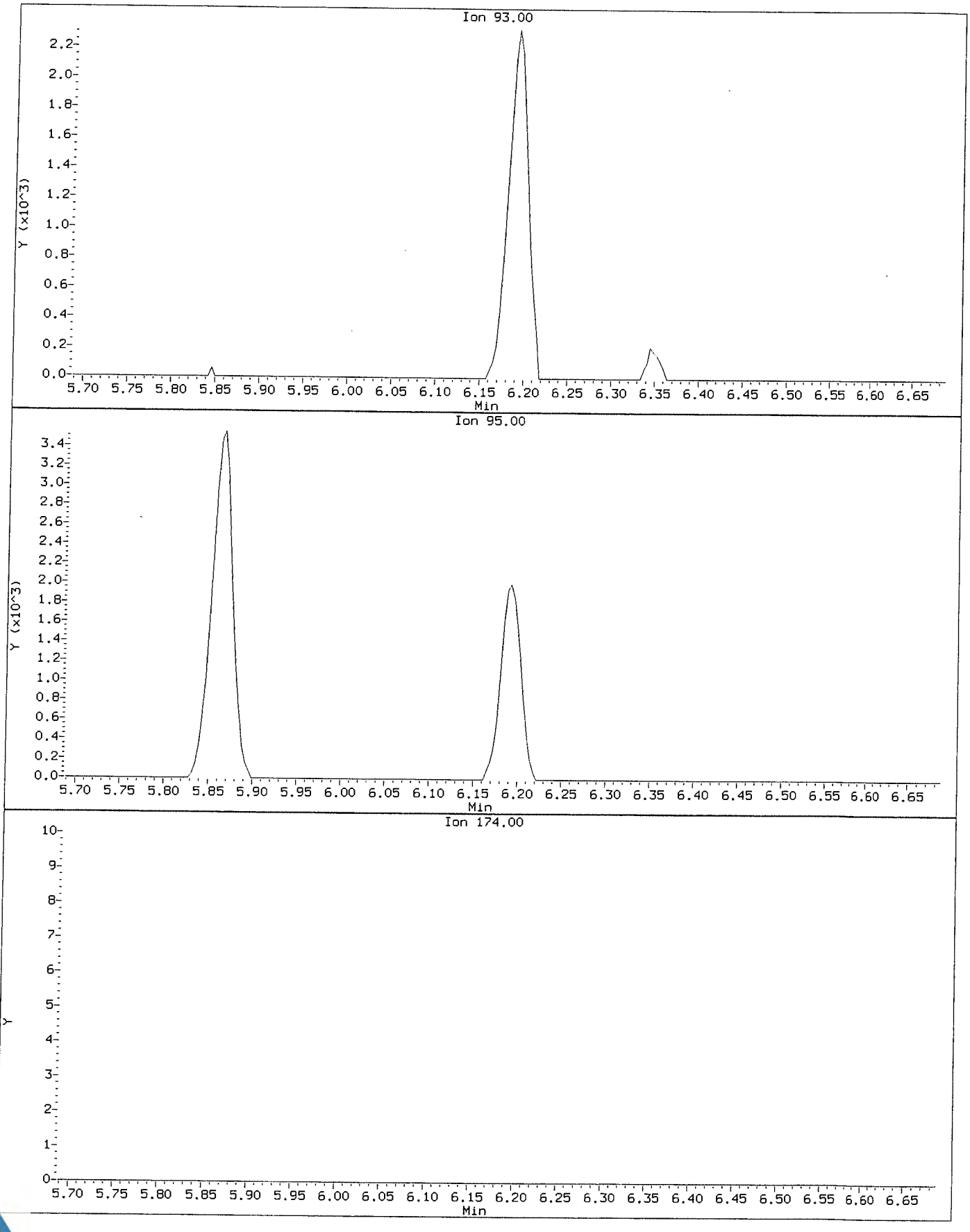
Compound: Chloroethane
CAS Number: 75-00-3





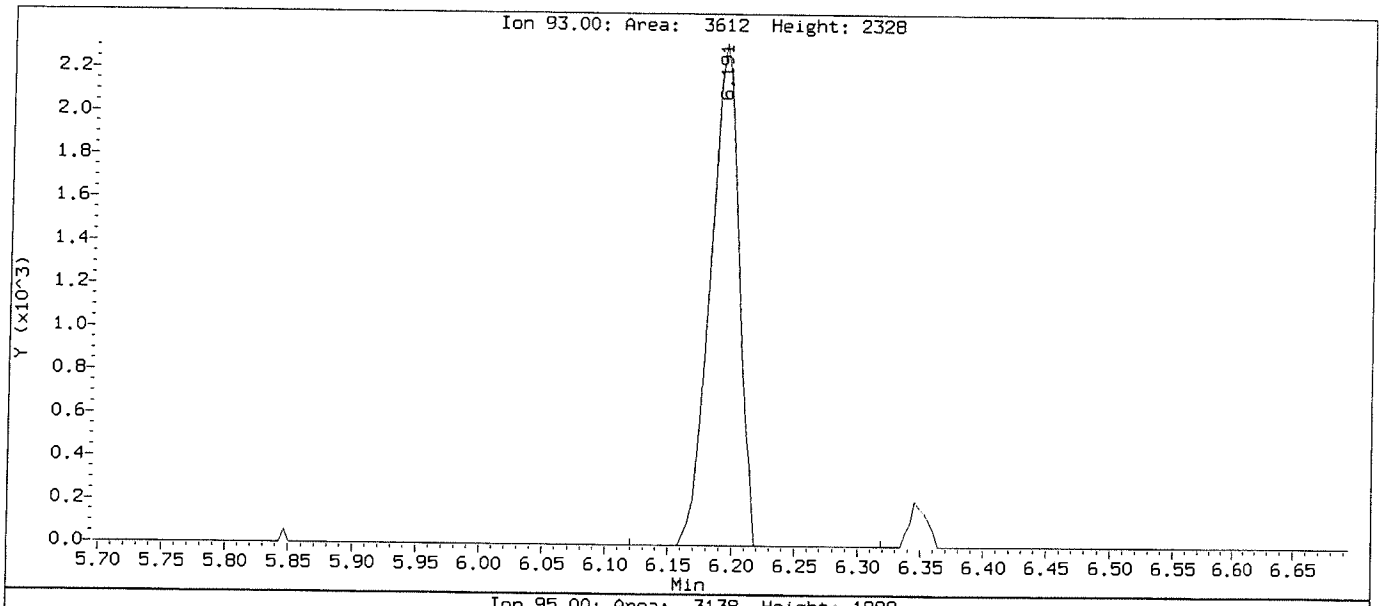
Data File: \\NAHSTWS005\Target\chem\voa9.i\U181113.b\Before\U111304.D
Injection Date: 13-NOV-2018 12:36
Instrument: VOA9.i
Client Sample ID: VSTD001

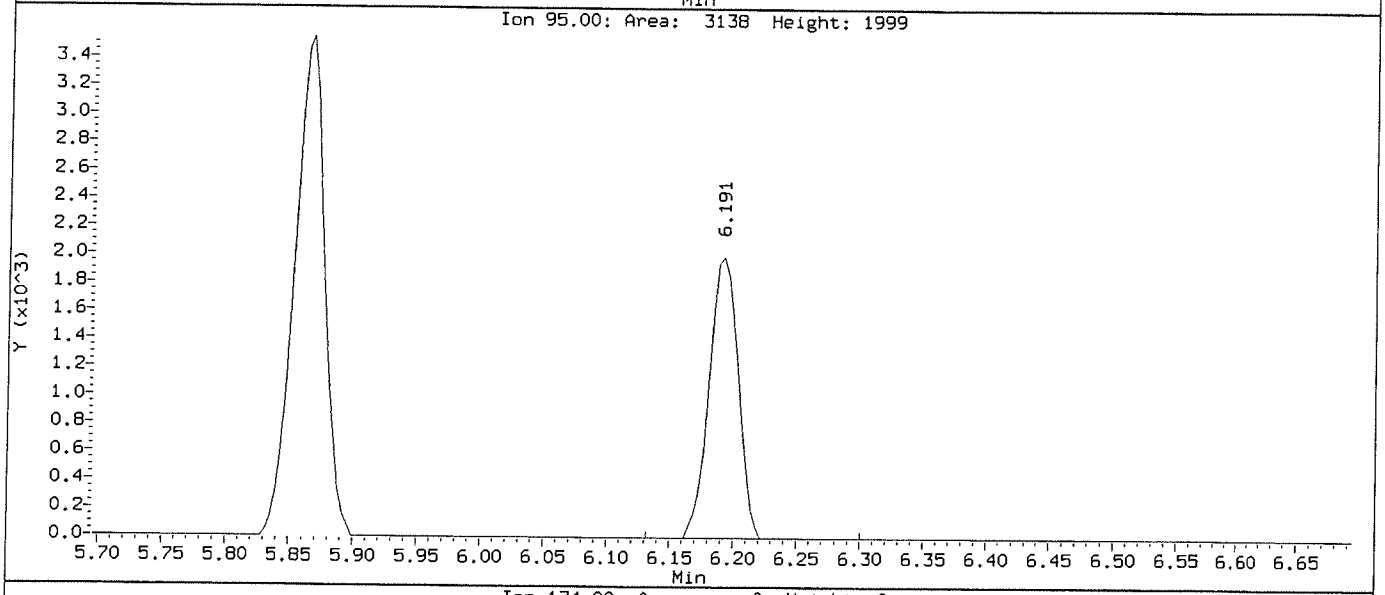
Compound: Dibromomethane
CAS Number: 74-95-3

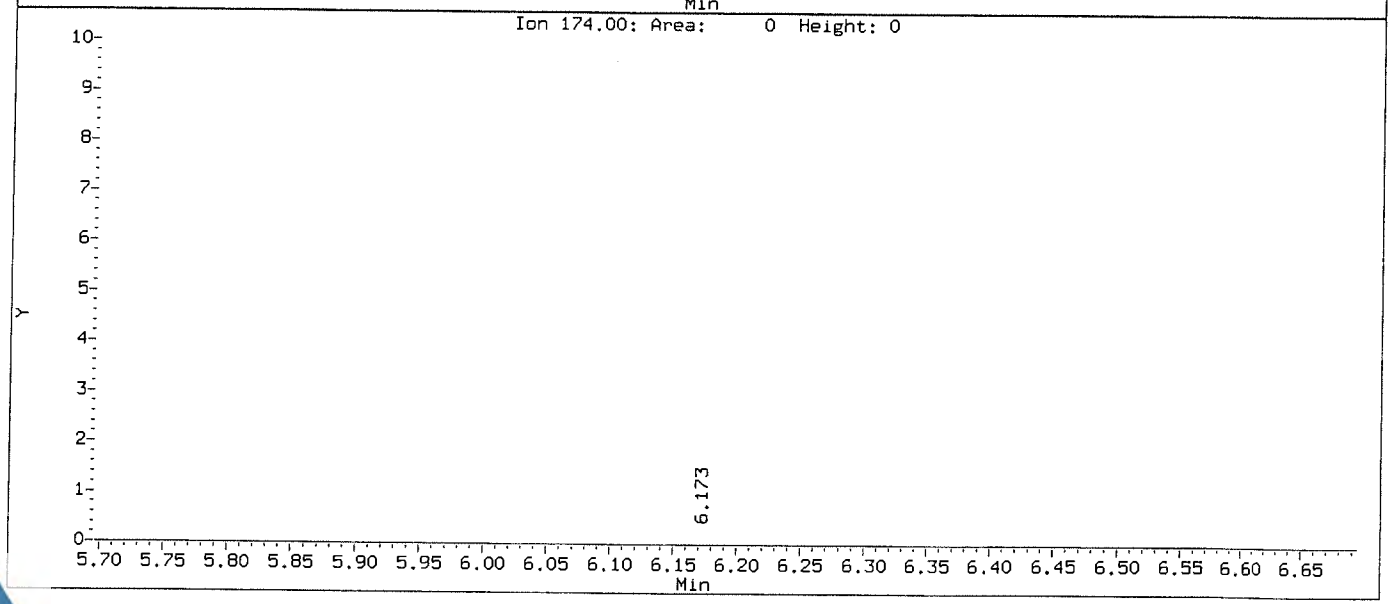


Data File: \\NAHSTWS005\Target\chem\voa9.i\U181113.b\U111304.D
Injection Date: 13-NOV-2018 12:36
Instrument: VOA9.i
Client Sample ID: VSTD001

Compound: Dibromomethane
CAS Number: 74-95-3

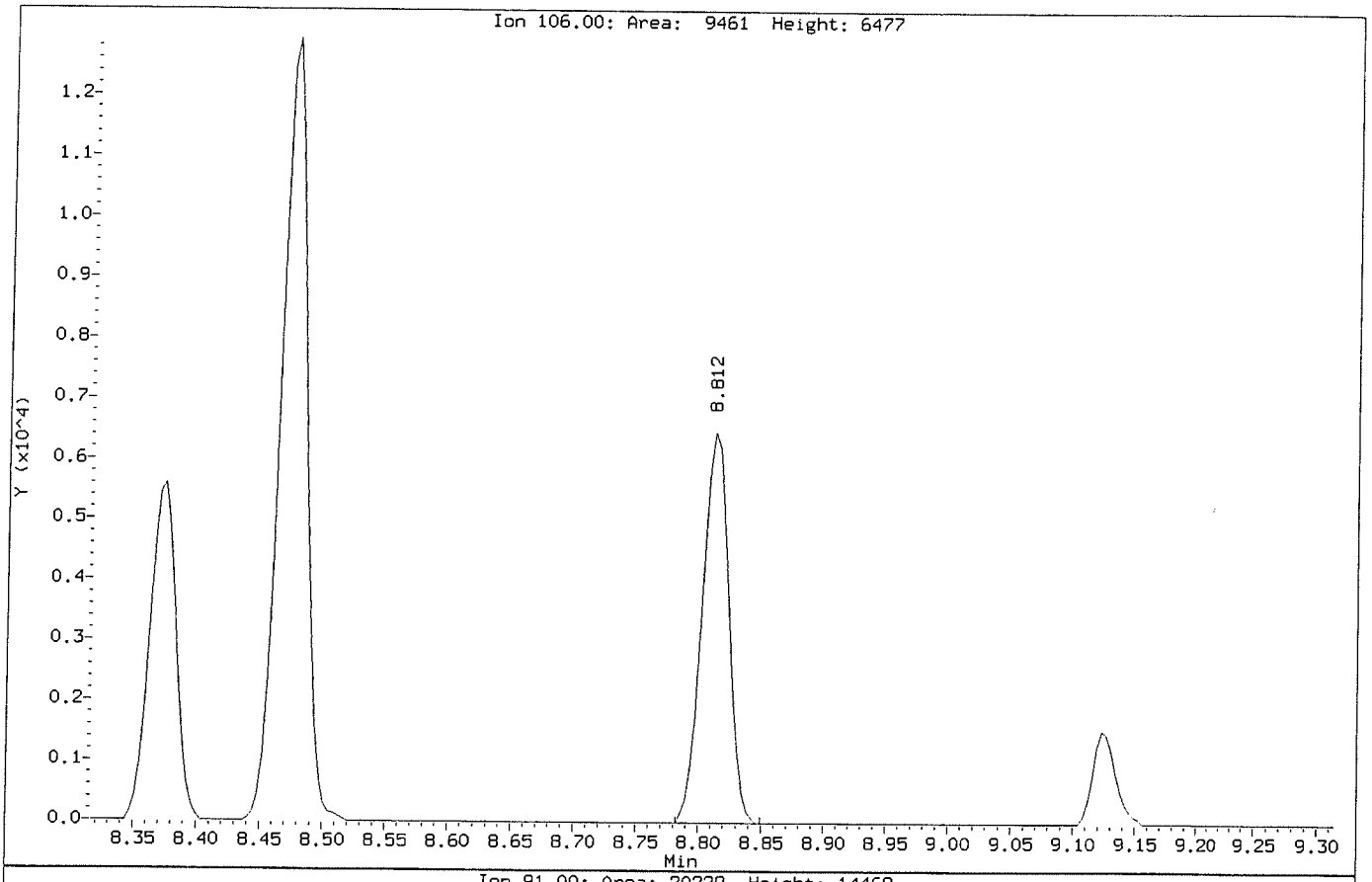


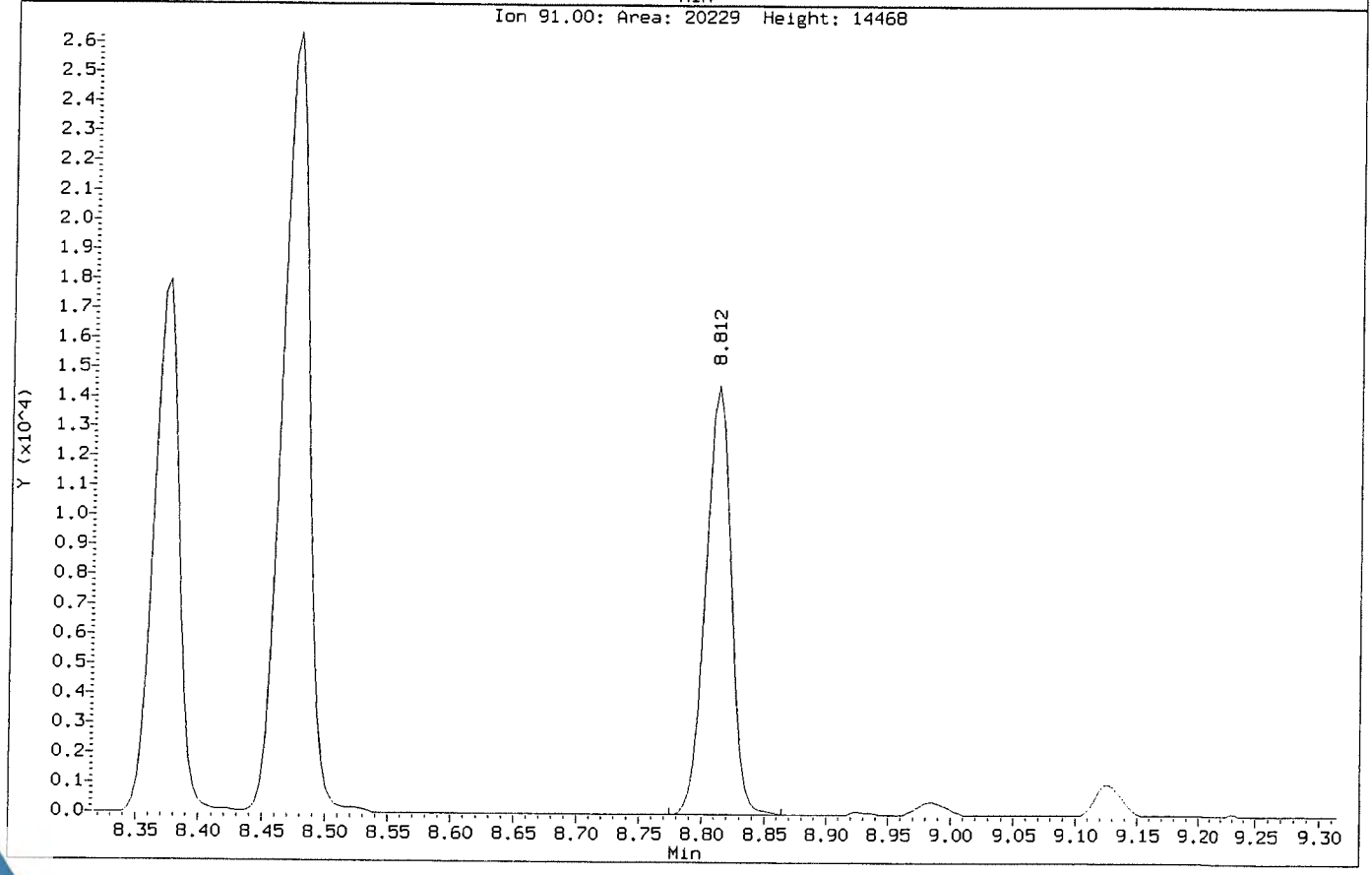




Data File: \\NAHSTWS005\Target\chem\voa9.i\U181113.b\Before\U111304.D
Injection Date: 13-NOV-2018 12:36
Instrument: VOA9.i
Client Sample ID: VSTD001

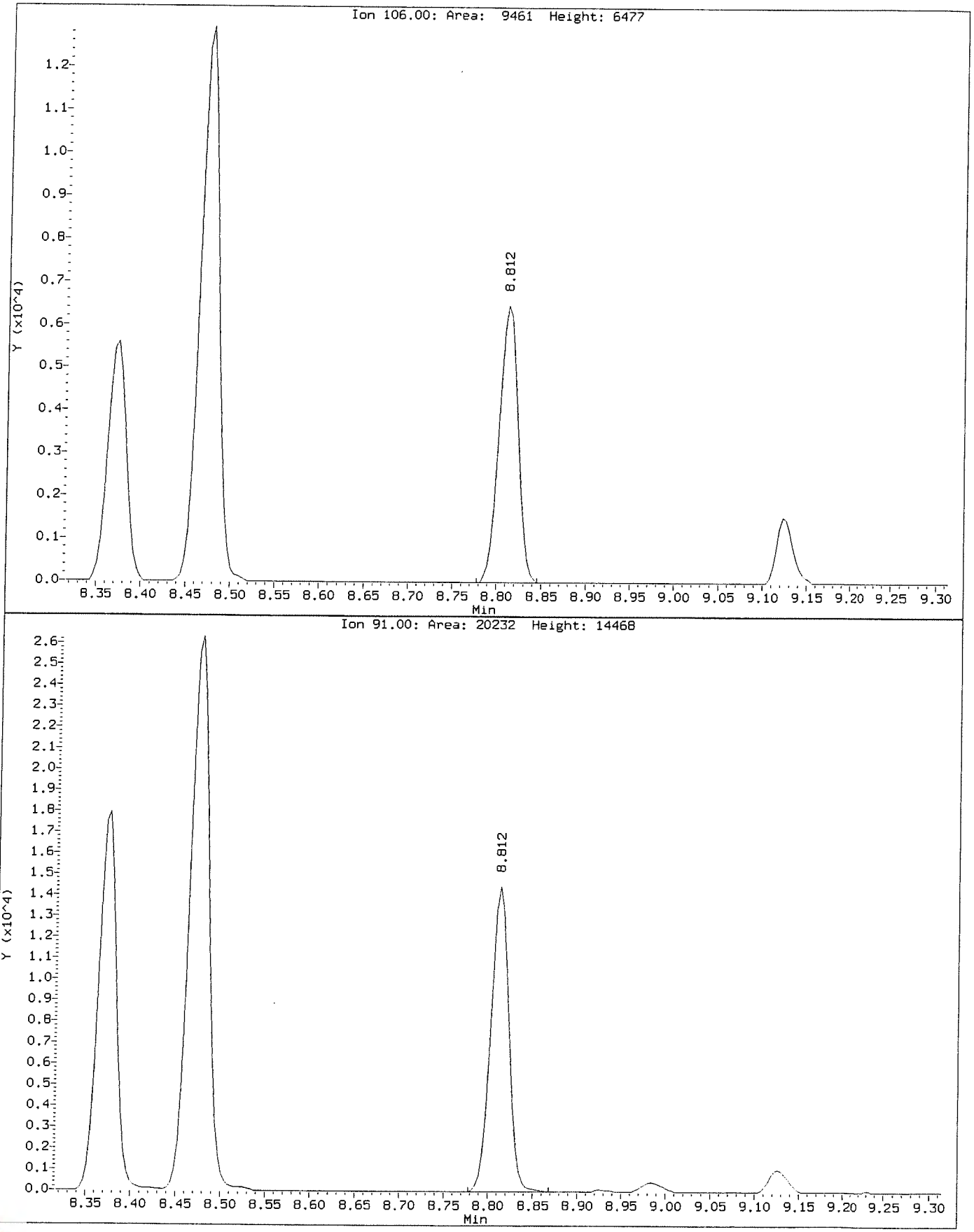
Compound: o-Xylene
CAS Number: 95-47-6





Data File: \\NAHSTWS005\Target\chem\voa9.i\U181113.b\U111304.D
Injection Date: 13-NOV-2018 12:36
Instrument: VOA9.i
Client Sample ID: VSTD001

Compound: o-Xylene
CAS Number: 95-47-6



Data File: \\NAHSTWS005\Target\chem\voa9.i\U181113.b\U111305.D Page 1
Report Date: 24-Jan-2019 18:55

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa9.i\U181113.b\U111305.D
Lab Smp Id: VSTD002 Client Smp ID: VSTD002
Inj Date : 13-NOV-2018 13:01
Operator : PC Inst ID: VOA9.i
Smp Info : VSTD002;VSTD002;1;4;
Misc Info : 180315V9;WATER;0;1;
Comment :
Method : \\NAHSTWS005\Target\chem\voa9.i\U181113.b\8260C.m
Meth Date : 24-Jan-2019 18:55 VOA9.i Quant Type: ISTD
Cal Date : 13-NOV-2018 12:36 Cal File: U111304.D
Als bottle: 6 Calibration Sample, Level: 4
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: LHAAP.sub
Target Version: 4.14
Processing Host: NAHSTW7087

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Cpnd Variable		Local Compound Variable

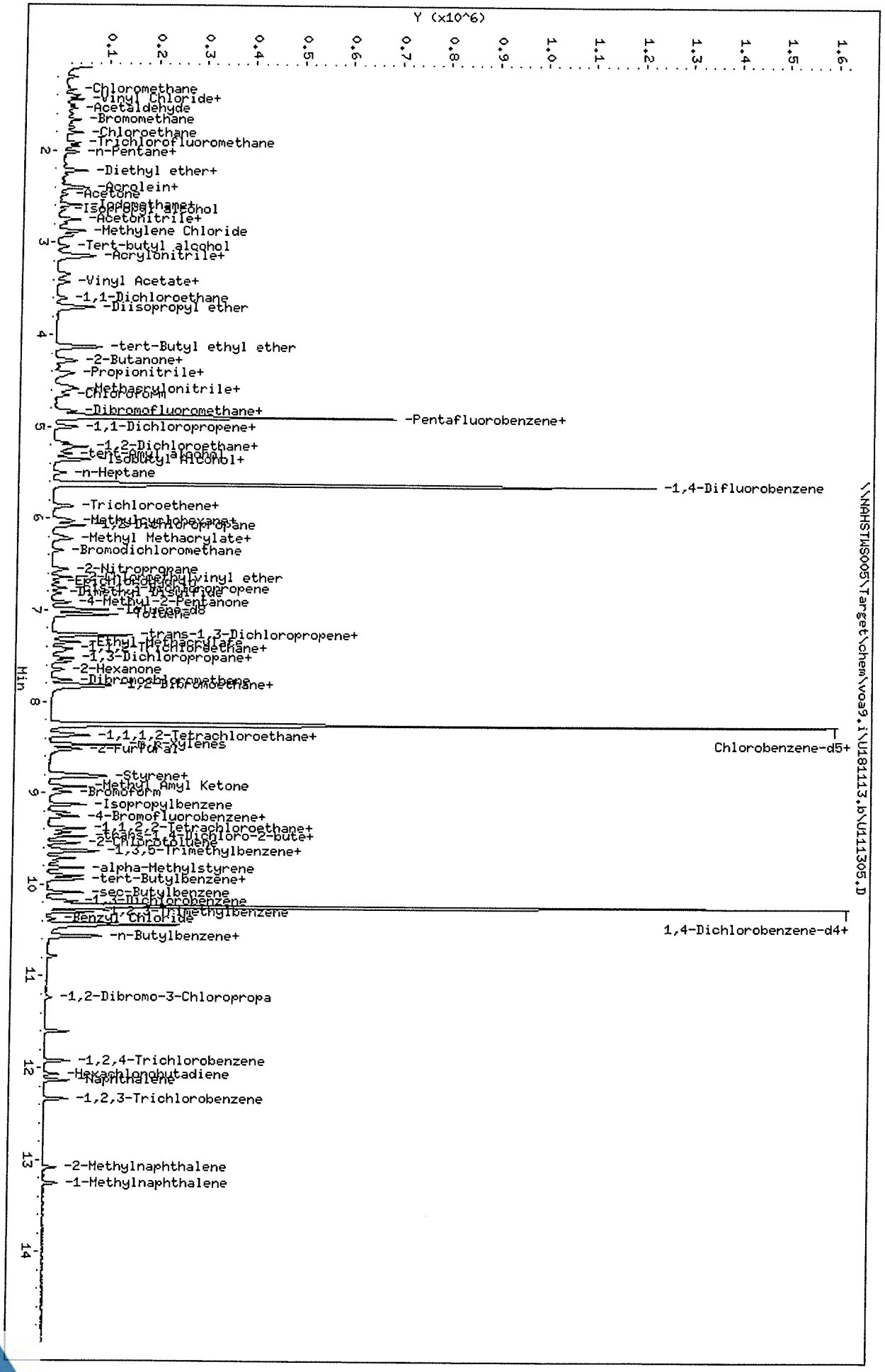
Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	ON-COL (ug/l)
* 1 Pentafluorobenzene	168	4.894	4.894	(1.000)	414744	50.0000	
* 36 1,4-Difluorobenzene	114	5.625	5.625	(1.000)	809284	50.0000	
* 47 Chlorobenzene-d5	117	8.249	8.249	(1.000)	755385	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	10.236	10.236	(1.000)	352080	50.0000	
$ 30 Dibromofluoromethane	113	4.830	4.830	(0.987)	12925	2.00000	1.52(a)
$ 35 1,2-Dichloroethane-d4	65	5.175	5.175	(1.057)	18531	2.00000	1.28(a)
$ 48 Toluene-d8	98	6.990	6.990	(0.847)	51591	2.00000	1.05(a)
$ 69 4-Bromofluorobenzene	95	9.257	9.257	(1.122)	18827	2.00000	1.50(a)
60 1,1,1,2-Tetrachloroethane	131	8.350	8.350	(1.012)	8223	2.00000	1.72(a)
31 1,1,1-Trichloroethane	97	4.827	4.827	(0.986)	14071	2.00000	1.93(a)
68 1,1,2,2-Tetrachloroethane	83	9.392	9.392	(0.918)	16127	2.00000	1.93(a)
138 Freon TF	101	2.401	2.401	(0.491)	8834	2.00000	2.12(a)
53 1,1,2-Trichloroethane	83	7.421	7.421	(0.900)	9196	2.00000	1.91(a)
22 1,1-Dichloroethane	63	3.604	3.604	(0.737)	18719	2.00000	1.96(a)
11 1,1-Dichloroethene	96	2.397	2.397	(0.490)	9368	2.00000	2.00(a)
32 1,1-Dichloropropene	75	5.003	5.003	(0.889)	14736	2.00000	1.97(a)
93 1,2,3-Trichlorobenzene	180	12.335	12.335	(1.205)	12553	2.00000	1.88(a)
71 1,2,3-Trichloropropane	75	9.426	9.426	(0.921)	15506	2.00000	1.78(a)
90 1,2,4-Trichlorobenzene	180	11.927	11.927	(1.165)	12849	2.00000	1.85(a)
79 1,2,4-Trimethylbenzene	105	9.943	9.943	(0.971)	36765	2.00000	1.88(a)
89 1,2-Dibromo-3-Chloropropane	155	11.233	11.233	(1.097)	1762	2.00000	2.38(a)
57 1,2-Dibromoethane	107	7.852	7.852	(0.952)	10196	2.00000	1.83(a)

Data File: \\NAHSTWS005\Target\chem\voa9.i\U181113.b\U111305.D Page 2
Report Date: 24-Jan-2019 18:55

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
88 1,2-Dichlorobenzene	146	10.573	10.573	(1.033)	21603	2.00000	1.92(a)
33 1,2-Dichloroethane	62	5.250	5.250	(0.933)	17243	2.00000	2.03(a)
42 1,2-Dichloropropane	63	6.082	6.082	(1.081)	10957	2.00000	1.90(a)
75 1,3,5-Trimethylbenzene	105	9.625	9.625	(0.940)	35537	2.00000	1.87(a)
83 1,3-Dichlorobenzene	146	10.180	10.180	(0.995)	21971	2.00000	1.98(a)
54 1,3-Dichloropropane	76	7.563	7.563	(0.917)	19816	2.00000	1.92(a)
84 1,4-Dichlorobenzene	146	10.255	10.255	(1.002)	22453	2.00000	2.02(a)
26 2,2-Dichloropropane	77	4.275	4.275	(0.874)	10687	2.00000	1.81(a)
24 2-Butanone	43	4.343	4.343	(0.887)	10886	4.00000	3.73(a)
76 2-Chlorotoluene	91	9.546	9.546	(0.933)	33012	2.00000	1.91(a)
52 2-Hexanone	43	7.649	7.649	(0.927)	15967	4.00000	3.63(a)
77 4-Chlorotoluene	91	9.640	9.640	(0.942)	38540	2.00000	1.93(a)
82 p-Isopropyltoluene	119	10.210	10.210	(0.997)	36591	2.00000	1.89(a)
45 4-Methyl-2-Pentanone	43	6.915	6.915	(0.838)	23062	4.00000	3.65(a)
10 Acetone	43	2.480	2.480	(0.507)	12023	4.00000	2.16(a)
37 Benzene	78	5.216	5.216	(0.927)	43114	2.00000	1.92(a)
74 Bromobenzene	156	9.381	9.381	(0.917)	10831	2.00000	1.87(a)
29 Bromochloromethane	128	4.553	4.553	(0.930)	5091	2.00000	2.08(a)
39 Bromodichloromethane	83	6.348	6.348	(1.129)	12072	2.00000	1.79(a)
66 Bromoform	173	8.984	8.984	(1.089)	4530	2.00000	2.48(Ta)
6 Bromomethane	94	1.670	1.670	(0.341)	7606	2.00000	4.02(a)
19 Carbon Disulfide	76	2.589	2.589	(0.529)	55277	4.00000	3.82(a)
34 Carbon Tetrachloride	117	4.995	4.995	(0.888)	10688	2.00000	1.83(a)
59 Chlorobenzene	112	8.275	8.275	(1.003)	29617	2.00000	1.89(a)
7 Chloroethane	64	1.749	1.749	(0.357)	9074	2.00000	2.09(aM)
28 Chloroform	83	4.658	4.658	(0.952)	18550	2.00000	1.94(a)
3 Chloromethane	50	1.336	1.336	(0.273)	12000	2.00000	2.38(a)
27 cis-1,2-Dichloroethene	96	4.283	4.283	(0.875)	11719	2.00000	1.99(a)
46 cis-1,3-Dichloropropene	75	6.757	6.757	(1.201)	13722	2.00000	1.62(a)
55 Dibromochloromethane	129	7.758	7.758	(0.940)	7733	2.00000	1.61(a)
44 Dibromomethane	93	6.191	6.191	(1.101)	7013	2.00000	1.94(aM)
2 Dichlorodifluoromethane	85	1.202	1.202	(0.246)	12615	2.00000	3.01(a)
61 Ethylbenzene	106	8.373	8.373	(1.015)	14817	2.00000	1.87(a)
91 Hexachlorobutadiene	225	12.065	12.065	(1.179)	4667	2.00000	2.48(a)
67 Isopropylbenzene	105	9.126	9.126	(1.106)	44094	2.00000	1.92(a)
62 m,p-Xylenes	106	8.474	8.474	(1.027)	36359	4.00000	3.74(a)
17 Methylene Chloride	84	2.870	2.870	(0.586)	13586	2.00000	1.90(a)
87 n-Butylbenzene	91	10.558	10.558	(1.031)	36189	2.00000	2.36(a)
73 n-Propylbenzene	91	9.475	9.475	(0.926)	53805	2.00000	1.93(a)
92 Naphthalene	128	12.133	12.133	(1.185)	35700	2.00000	1.71(a)
63 o-Xylene	106	8.811	8.811	(1.068)	18379	2.00000	1.89(aH)
81 sec-Butylbenzene	105	10.086	10.086	(0.985)	43610	2.00000	1.88(a)
64 Styrene	104	8.826	8.826	(1.070)	30570	2.00000	1.86(a)
78 tert-Butylbenzene	119	9.902	9.902	(0.967)	31095	2.00000	1.92(a)
56 Tetrachloroethene	164	7.526	7.526	(0.912)	7936	2.00000	2.00(a)
50 Toluene	91	7.046	7.046	(0.854)	47615	2.00000	1.98(a)
20 trans-1,2-Dichloroethene	96	3.143	3.143	(0.642)	10067	2.00000	1.96(a)
51 trans-1,3-Dichloropropene	75	7.263	7.263	(1.291)	10881	2.00000	2.73(a)
38 Trichloroethene	130	5.861	5.861	(1.042)	10685	2.00000	1.93(a)
8 Trichlorofluoromethane	101	1.951	1.951	(0.399)	17301	2.00000	2.08(a)
5 Vinyl Chloride	62	1.415	1.415	(0.289)	13465	2.00000	2.47(a)

QC Flag Legend

T - Target compound detected outside RT window.
a - Target compound detected but, quantitated amount
Below Limit Of Quantitation(BLOQ).
M - Compound response manually integrated.
H - Operator selected an alternate compound hit.



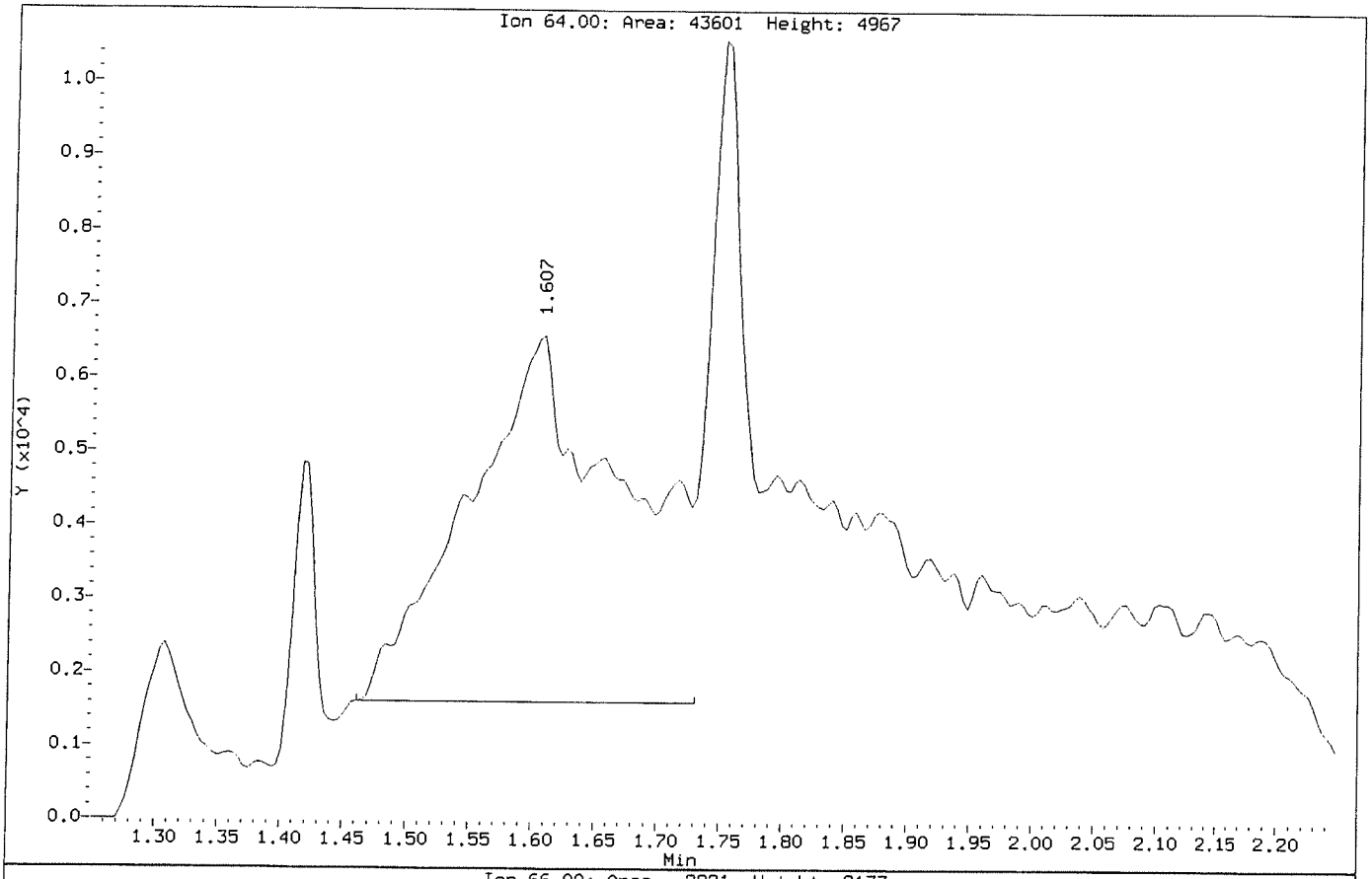
Data File: \\NAHSTWS005\Target\chem\voa9,i\U181113,b\U111305,D
Date : 13-NOV-2018 13:01
Client ID: VSTD002
Sample Info: VSTD002;VSTD002;1;4;
Purge Volume: 5.0
Column phase: DB624

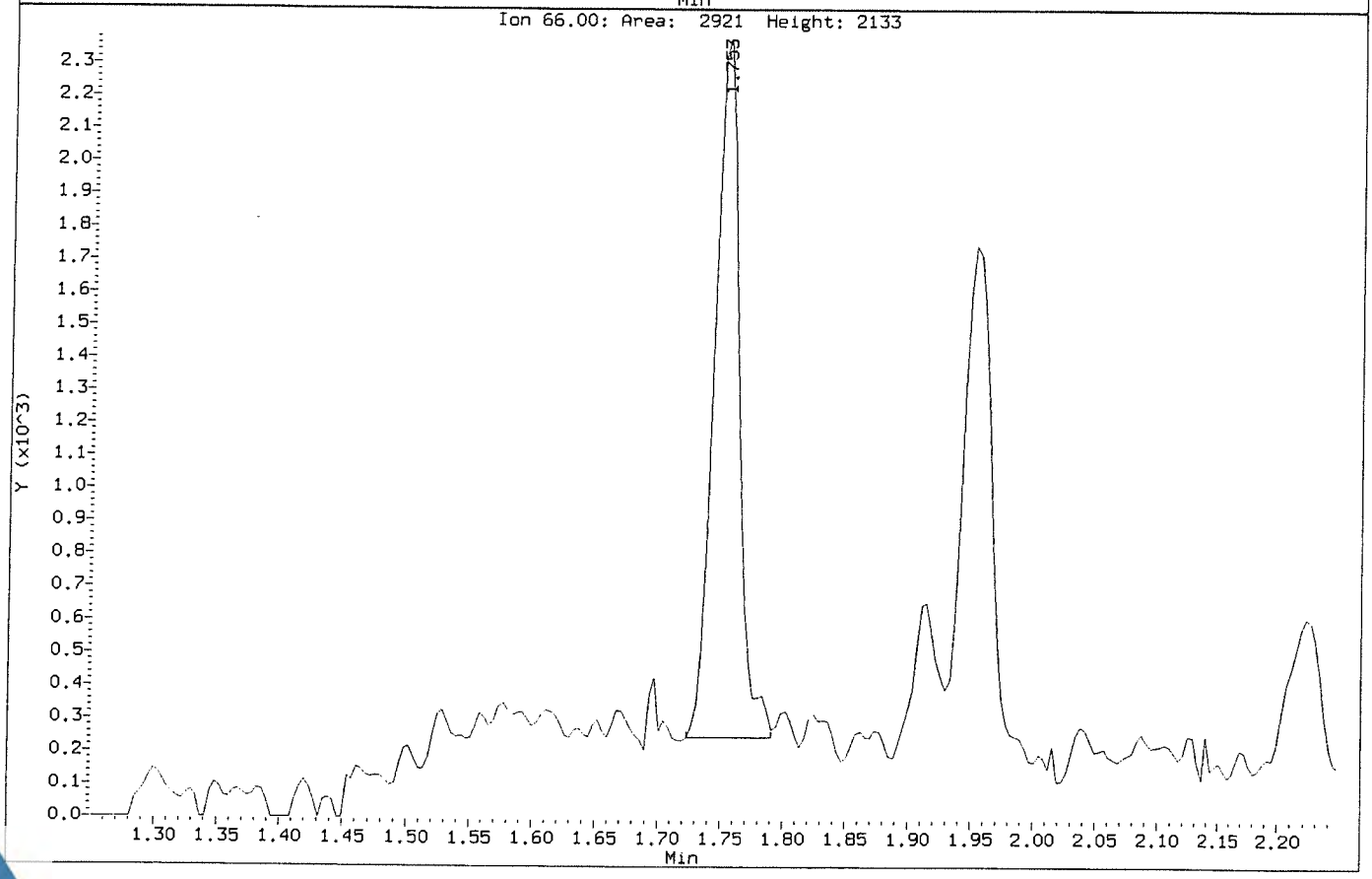
\\NAHSTWS005\Target\chem\voa9,i\U181113,b\U111305,D

Instrument: VOA9,i
Operator: PC
Column diameter: 0.18

Data File: \\NAHSTWS005\Target\chem\voa9.i\U181113.b\Before\U111305.D
Injection Date: 13-NOV-2018 13:01
Instrument: VOA9.i
Client Sample ID: VSTD002

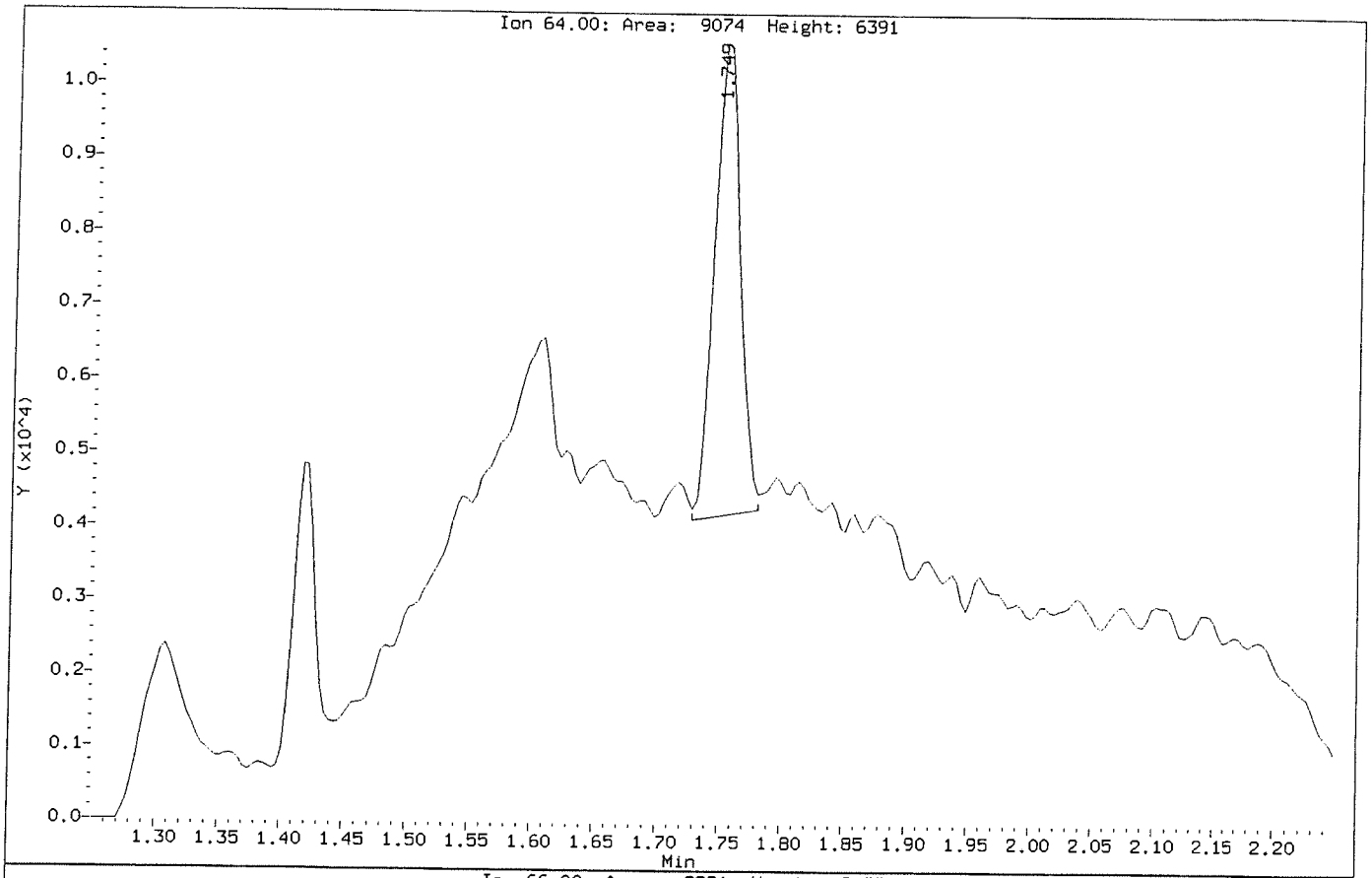
Compound: Chloroethane
CAS Number: 75-00-3

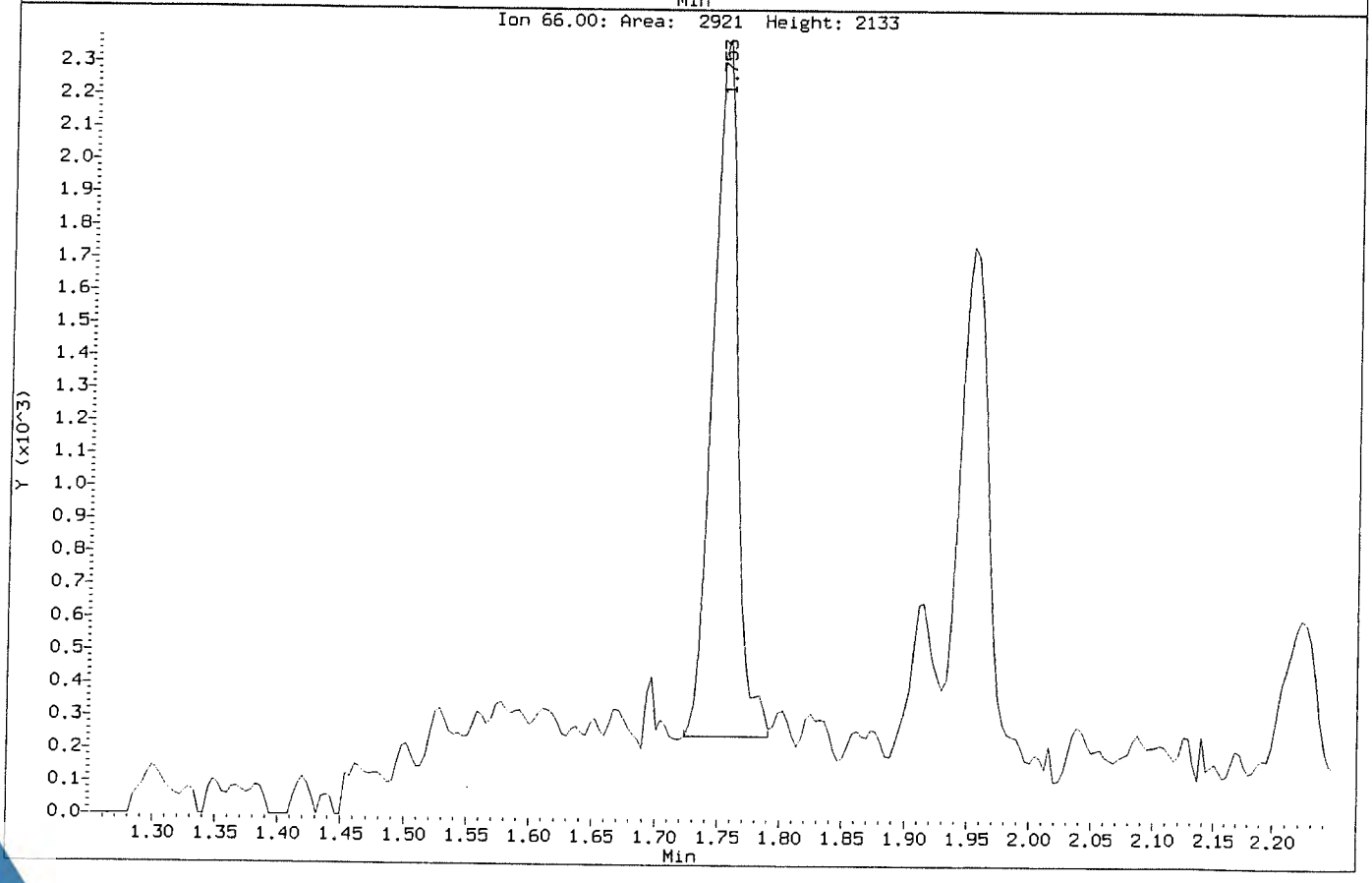




Data File: \\NAHSTWS005\Target\chem\voa9.i\U181113.b\U111305.D
Injection Date: 13-NOV-2018 13:01
Instrument: VOA9.i
Client Sample ID: VSTD002

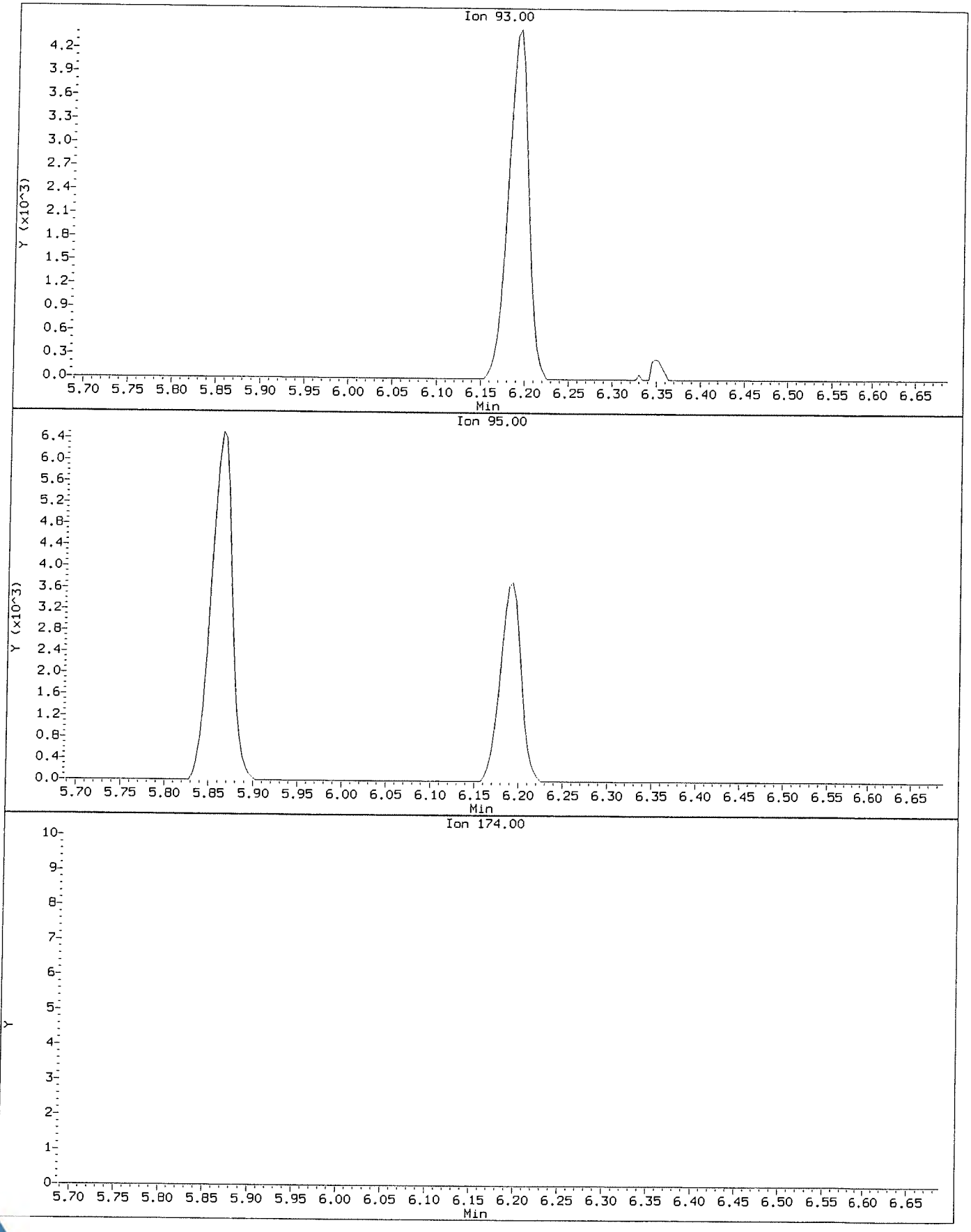
Compound: Chloroethane
CAS Number: 75-00-3





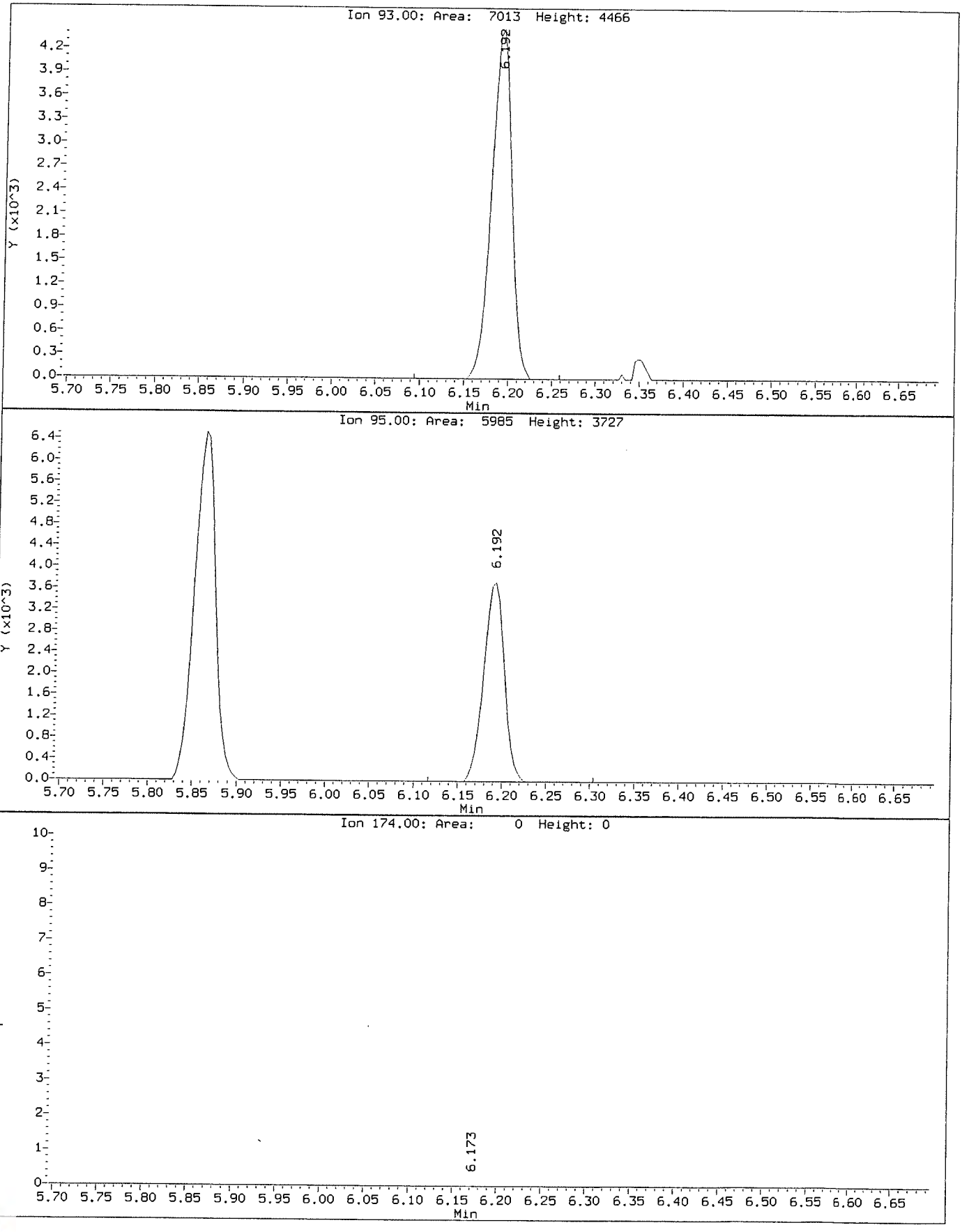
Data File: \\NAHSTWS005\Target\chem\voa9.i\U181113.b\Before\U111305.D
Injection Date: 13-NOV-2018 13:01
Instrument: VOA9.i
Client Sample ID: VSTD002

Compound: Dibromomethane
CAS Number: 74-95-3



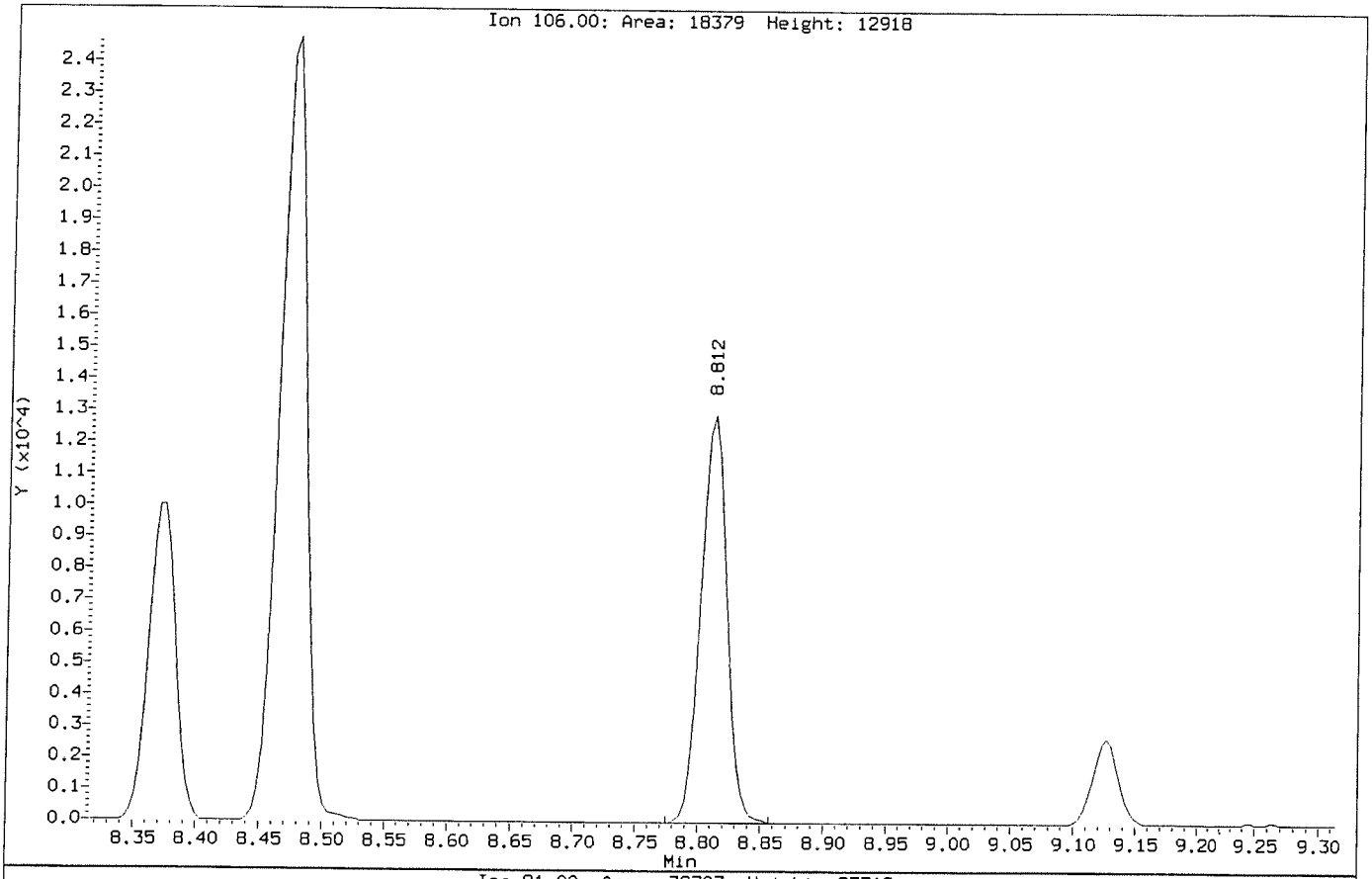
Data File: \\NAHSTWS005\Target\chem\voa9.i\U181113.b\U111305.D
Injection Date: 13-NOV-2018 13:01
Instrument: VOA9.i
Client Sample ID: VSTD002

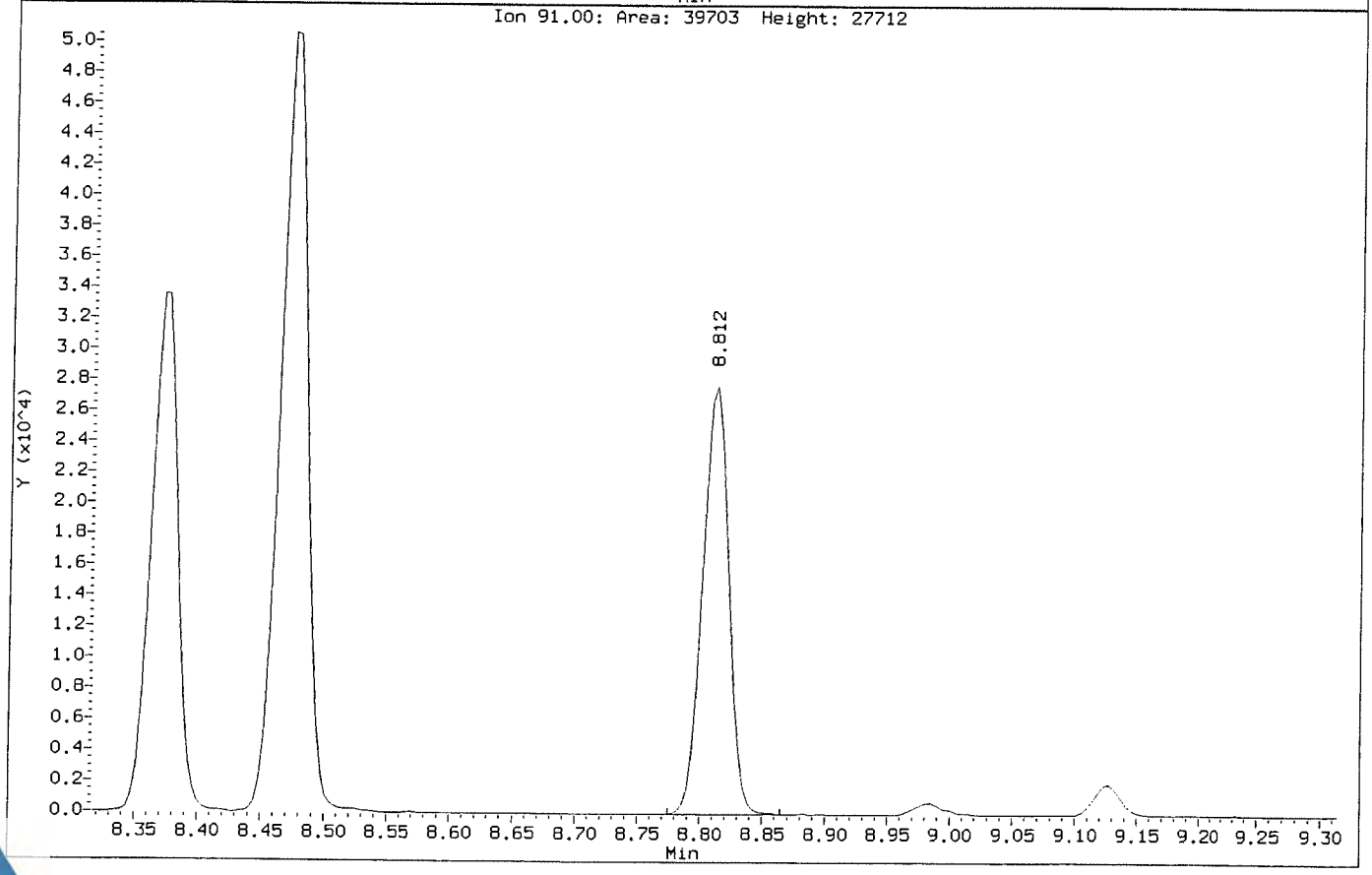
Compound: Dibromomethane
CAS Number: 74-95-3



Data File: \\NAHSTWS005\Target\chem\voa9.i\U181113.b\Before\U111305.D
Injection Date: 13-NOV-2018 13:01
Instrument: VOA9.i
Client Sample ID: VSTD002

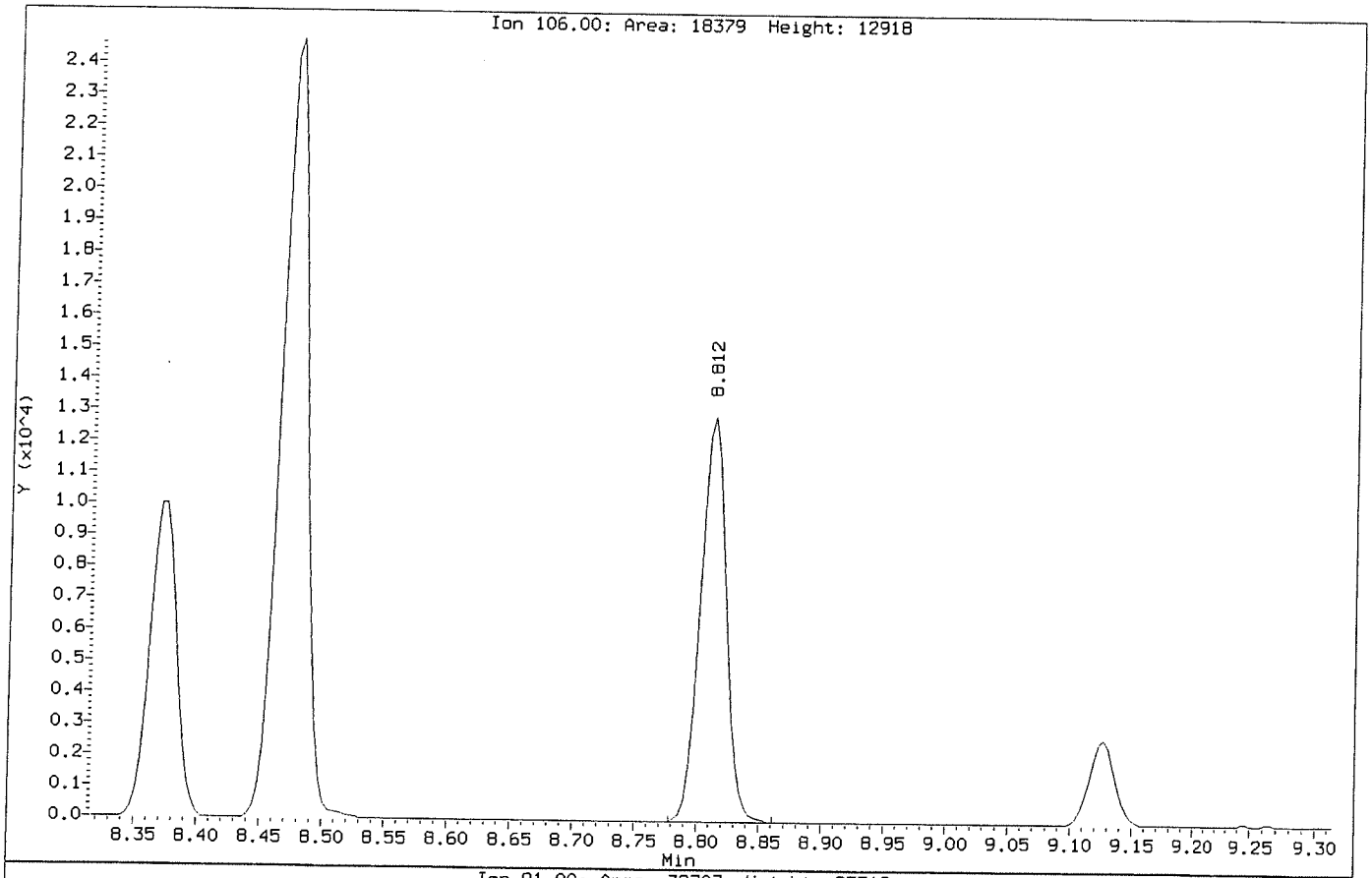
Compound: o-Xylene
CAS Number: 95-47-6

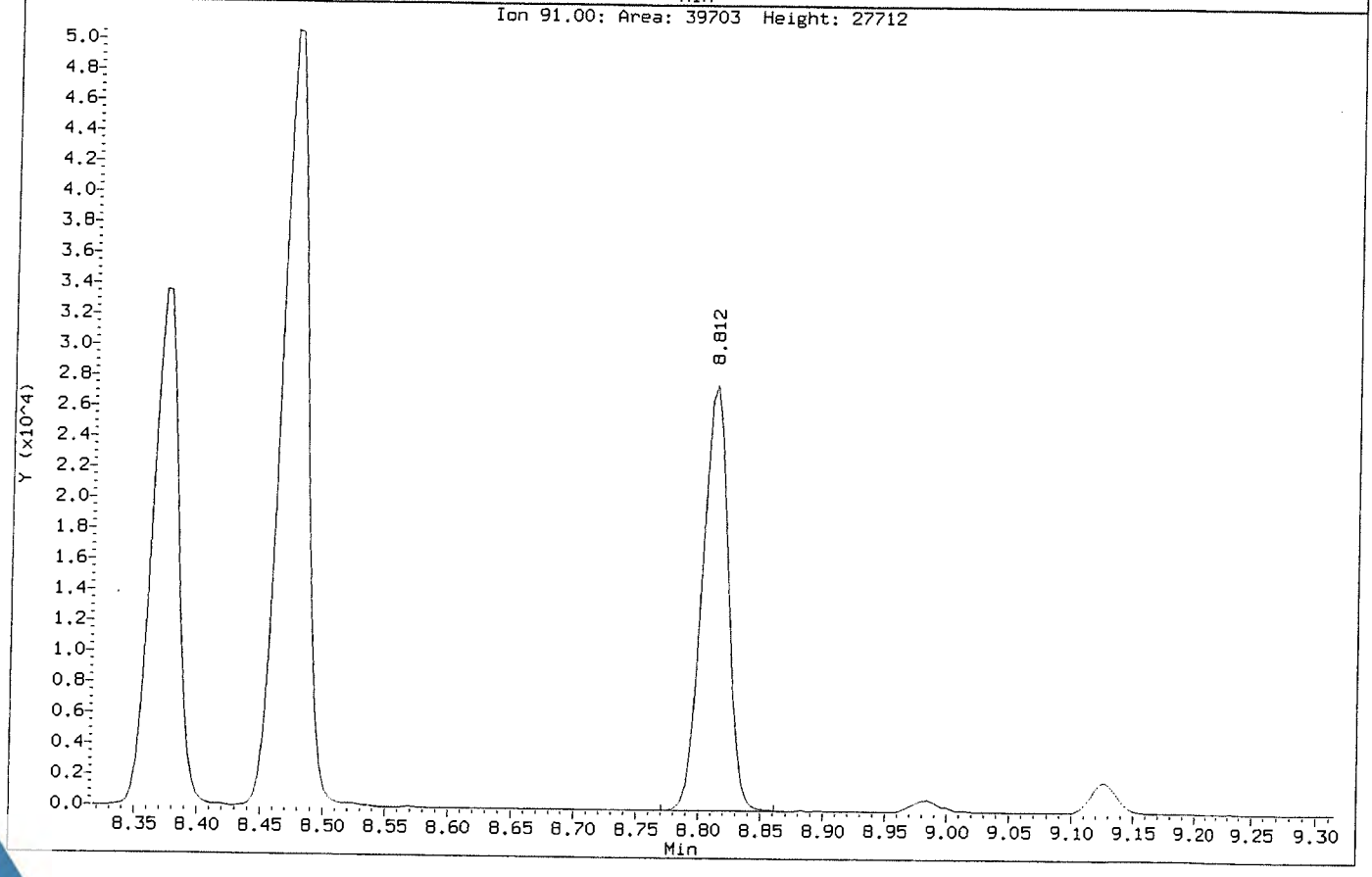




Data File: \\NAHSTWS005\Target\chem\voa9.i\U181113.b\U111305.D
Injection Date: 13-NOV-2018 13:01
Instrument: VOA9.i
Client Sample ID: VSTD002

Compound: o-Xylene
CAS Number: 95-47-6





Data File: \\NAHSTWS005\Target\chem\voa9.i\U181113.b\U111306.D Page 1
Report Date: 24-Jan-2019 18:55

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa9.i\U181113.b\U111306.D
Lab Smp Id: VSTD005 Client Smp ID: VSTD005
Inj Date : 13-NOV-2018 13:25
Operator : PC Inst ID: VOA9.i
Smp Info : VSTD005;VSTD005;1;5;
Misc Info : 180315V9;WATER;0;1;
Comment :
Method : \\NAHSTWS005\Target\chem\voa9.i\U181113.b\8260C.m
Meth Date : 24-Jan-2019 18:55 VOA9.i Quant Type: ISTD
Cal Date : 13-NOV-2018 13:01 Cal File: U111305.D
Als bottle: 7 Calibration Sample, Level: 5
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: LHAAP.sub
Target Version: 4.14
Processing Host: NAHSTW7087

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Cpnd Variable		Local Compound Variable

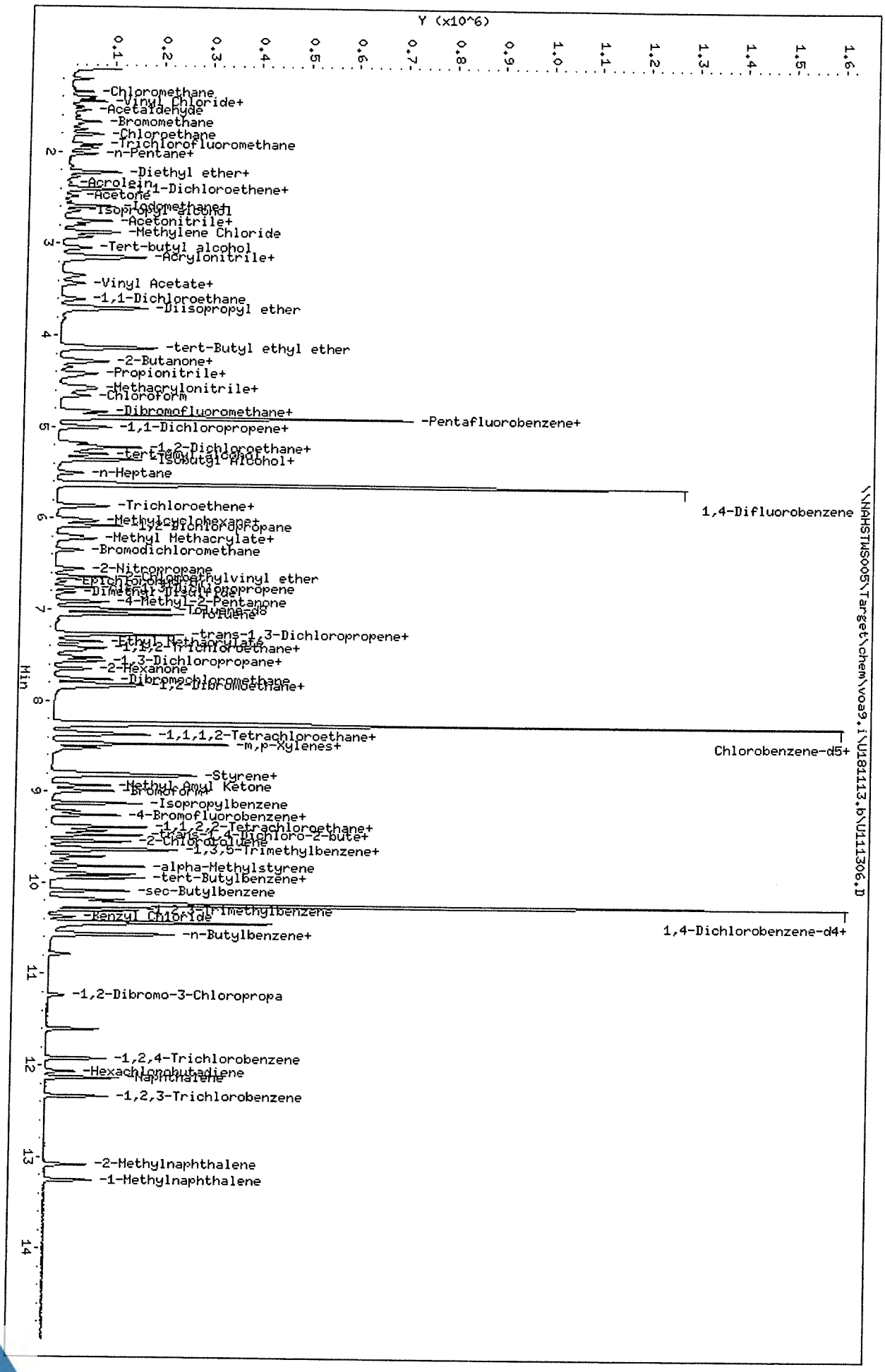
Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
* 1 Pentafluorobenzene	168	4.894	4.894	(1.000)	422530	50.0000	
* 36 1,4-Difluorobenzene	114	5.625	5.625	(1.000)	813180	50.0000	
* 47 Chlorobenzene-d5	117	8.249	8.249	(1.000)	744948	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	10.236	10.236	(1.000)	348698	50.0000	
$ 30 Dibromofluoromethane	113	4.830	4.830	(0.987)	27004	5.00000	4.44(a)
$ 35 1,2-Dichloroethane-d4	65	5.175	5.175	(1.057)	38984	5.00000	4.54(a)
$ 48 Toluene-d8	98	6.990	6.990	(0.847)	112942	5.00000	4.42(a)
$ 69 4-Bromofluorobenzene	95	9.257	9.257	(1.122)	41214	5.00000	4.64(a)
60 1,1,1,2-Tetrachloroethane	131	8.350	8.350	(1.012)	21915	5.00000	4.66(a)
31 1,1,1-Trichloroethane	97	4.827	4.827	(0.986)	31327	5.00000	4.22(a)
68 1,1,2,2-Tetrachloroethane	83	9.392	9.392	(0.918)	42360	5.00000	5.12
138 Freon TF	101	2.405	2.405	(0.491)	17279	5.00000	4.08(a)
53 1,1,2-Trichloroethane	83	7.421	7.421	(0.900)	23401	5.00000	4.94(a)
22 1,1-Dichloroethane	63	3.604	3.604	(0.737)	45506	5.00000	4.69(a)
11 1,1-Dichloroethene	96	2.401	2.401	(0.491)	20013	5.00000	4.19(a)
32 1,1-Dichloropropene	75	5.006	5.006	(0.890)	33087	5.00000	4.40(a)
93 1,2,3-Trichlorobenzene	180	12.335	12.335	(1.205)	31782	5.00000	4.82(a)
71 1,2,3-Trichloropropane	75	9.426	9.426	(0.921)	42556	5.00000	4.93(a)
90 1,2,4-Trichlorobenzene	180	11.927	11.927	(1.165)	31441	5.00000	4.58(a)
79 1,2,4-Trimethylbenzene	105	9.943	9.943	(0.971)	93787	5.00000	4.84(a)
89 1,2-Dibromo-3-Chloropropane	155	11.233	11.233	(1.097)	5351	5.00000	5.17
57 1,2-Dibromoethane	107	7.852	7.852	(0.952)	27191	5.00000	4.95(a)

Data File: \\NAHSTWS005\Target\chem\voa9.i\U181113.b\U111306.D Page 2
Report Date: 24-Jan-2019 18:55

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
88 1,2-Dichlorobenzene	146	10.573	10.573	(1.033)	55248	5.00000	4.96(a)
33 1,2-Dichloroethane	62	5.254	5.254	(0.934)	41764	5.00000	4.90(a)
42 1,2-Dichloropropane	63	6.082	6.082	(1.081)	27675	5.00000	4.78(a)
75 1,3,5-Trimethylbenzene	105	9.625	9.625	(0.940)	88227	5.00000	4.70(a)
83 1,3-Dichlorobenzene	146	10.180	10.180	(0.995)	52374	5.00000	4.77(a)
54 1,3-Dichloropropane	76	7.563	7.563	(0.917)	51002	5.00000	5.01
84 1,4-Dichlorobenzene	146	10.255	10.255	(1.002)	55298	5.00000	5.11
26 2,2-Dichloropropane	77	4.275	4.275	(0.874)	25227	5.00000	4.20(a)
24 2-Butanone	43	4.343	4.343	(0.887)	30016	10.0000	10.10
76 2-Chlorotoluene	91	9.546	9.546	(0.933)	82685	5.00000	4.84(a)
52 2-Hexanone	43	7.653	7.653	(0.928)	44101	10.0000	10.18
77 4-Chlorotoluene	91	9.640	9.640	(0.942)	97151	5.00000	4.93(a)
82 p-Isopropyltoluene	119	10.210	10.210	(0.997)	85956	5.00000	4.50(a)
45 4-Methyl-2-Pentanone	43	6.915	6.915	(0.838)	62316	10.0000	10.02
10 Acetone	43	2.484	2.484	(0.508)	24249	10.0000	8.62
37 Benzene	78	5.220	5.220	(0.928)	105397	5.00000	4.68(a)
74 Bromobenzene	156	9.381	9.381	(0.917)	27842	5.00000	4.86(a)
29 Bromochloromethane	128	4.557	4.557	(0.931)	12948	5.00000	5.19
39 Bromodichloromethane	83	6.349	6.349	(1.129)	30775	5.00000	4.55(a)
66 Bromoform	173	8.984	8.984	(1.089)	13391	5.00000	5.07(T)
6 Bromomethane	94	1.674	1.674	(0.342)	17760	5.00000	6.77
19 Carbon Disulfide	76	2.592	2.592	(0.530)	124164	10.0000	8.43
34 Carbon Tetrachloride	117	4.995	4.995	(0.888)	23569	5.00000	4.01(a)
59 Chlorobenzene	112	8.275	8.275	(1.003)	72938	5.00000	4.74(a)
7 Chloroethane	64	1.756	1.756	(0.359)	19233	5.00000	4.36(aMH)
28 Chloroform	83	4.658	4.658	(0.952)	45918	5.00000	4.72(a)
3 Chloromethane	50	1.340	1.340	(0.274)	26431	5.00000	4.89(a)
27 cis-1,2-Dichloroethene	96	4.290	4.290	(0.877)	27696	5.00000	4.62(a)
46 cis-1,3-Dichloropropene	75	6.761	6.761	(1.202)	37232	5.00000	4.37(a)
55 Dibromochloromethane	129	7.758	7.758	(0.940)	21374	5.00000	4.53(a)
44 Dibromomethane	93	6.191	6.191	(1.101)	17227	5.00000	4.74(aM)
2 Dichlorodifluoromethane	85	1.205	1.205	(0.246)	24157	5.00000	4.79(a)
61 Ethylbenzene	106	8.373	8.373	(1.015)	35416	5.00000	4.55(a)
91 Hexachlorobutadiene	225	12.065	12.065	(1.179)	8782	5.00000	4.49(a)
67 Isopropylbenzene	105	9.126	9.126	(1.106)	106616	5.00000	4.70(a)
62 m,p-Xylenes	106	8.474	8.474	(1.027)	89708	10.0000	9.36
17 Methylene Chloride	84	2.873	2.873	(0.587)	29126	5.00000	4.77(a)
87 n-Butylbenzene	91	10.558	10.558	(1.031)	79206	5.00000	4.76(a)
73 n-Propylbenzene	91	9.475	9.475	(0.926)	128990	5.00000	4.68(a)
92 Naphthalene	128	12.133	12.133	(1.185)	100680	5.00000	4.87(a)
63 o-Xylene	106	8.811	8.811	(1.068)	46119	5.00000	4.81(aH)
81 sec-Butylbenzene	105	10.086	10.086	(0.985)	99437	5.00000	4.34(a)
64 Styrene	104	8.826	8.826	(1.070)	78010	5.00000	4.81(a)
78 tert-Butylbenzene	119	9.902	9.902	(0.967)	73015	5.00000	4.57(a)
56 Tetrachloroethene	164	7.526	7.526	(0.912)	17447	5.00000	4.47(a)
50 Toluene	91	7.050	7.050	(0.855)	113936	5.00000	4.81(a)
20 trans-1,2-Dichloroethene	96	3.143	3.143	(0.642)	23739	5.00000	4.54(a)
51 trans-1,3-Dichloropropene	75	7.259	7.259	(1.291)	30108	5.00000	4.94(a)
38 Trichloroethene	130	5.861	5.861	(1.042)	24849	5.00000	4.48(a)
8 Trichlorofluoromethane	101	1.955	1.955	(0.400)	34539	5.00000	4.08(a)
5 Vinyl Chloride	62	1.419	1.419	(0.290)	29718	5.00000	4.77(a)

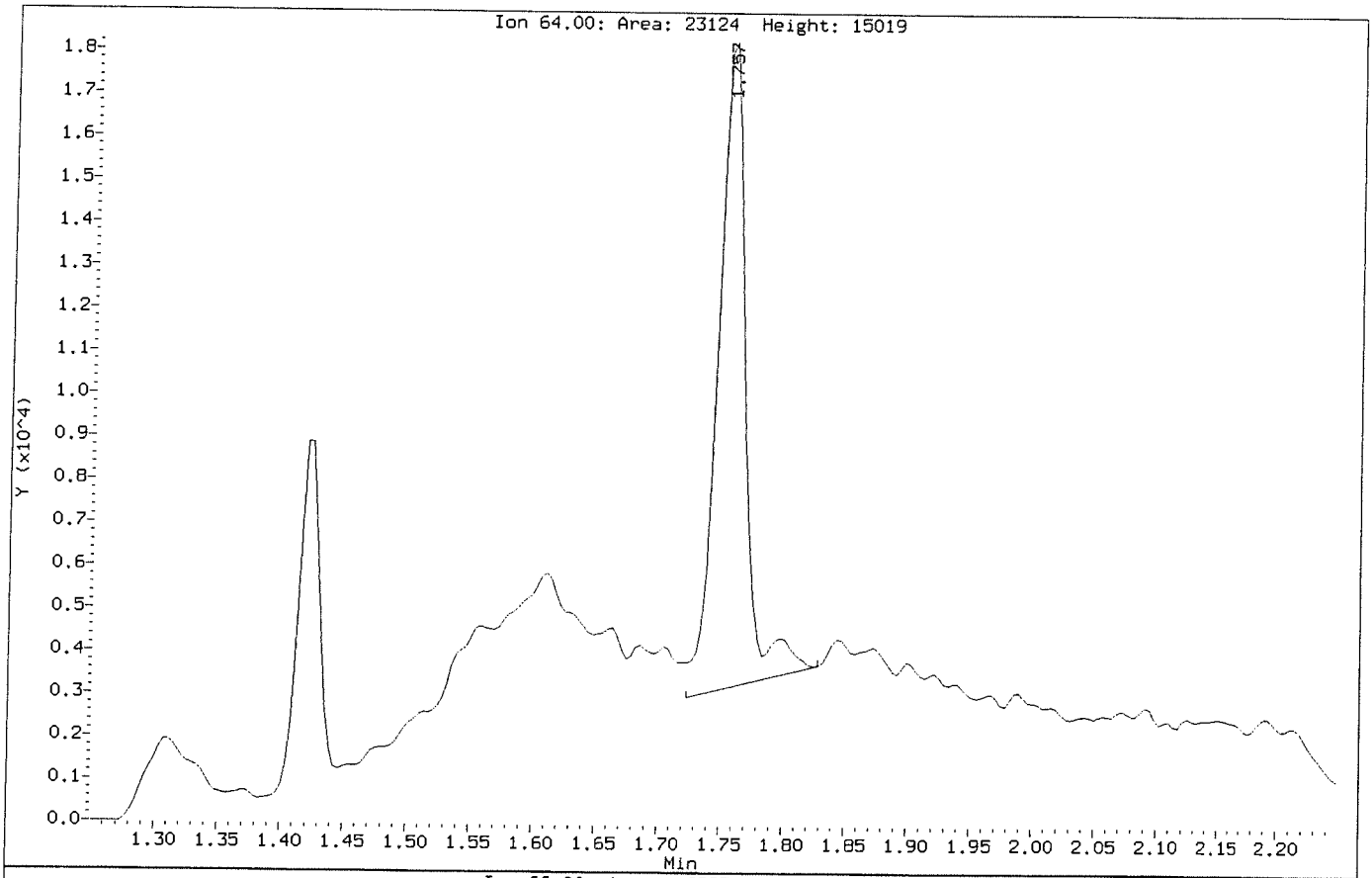
QC Flag Legend

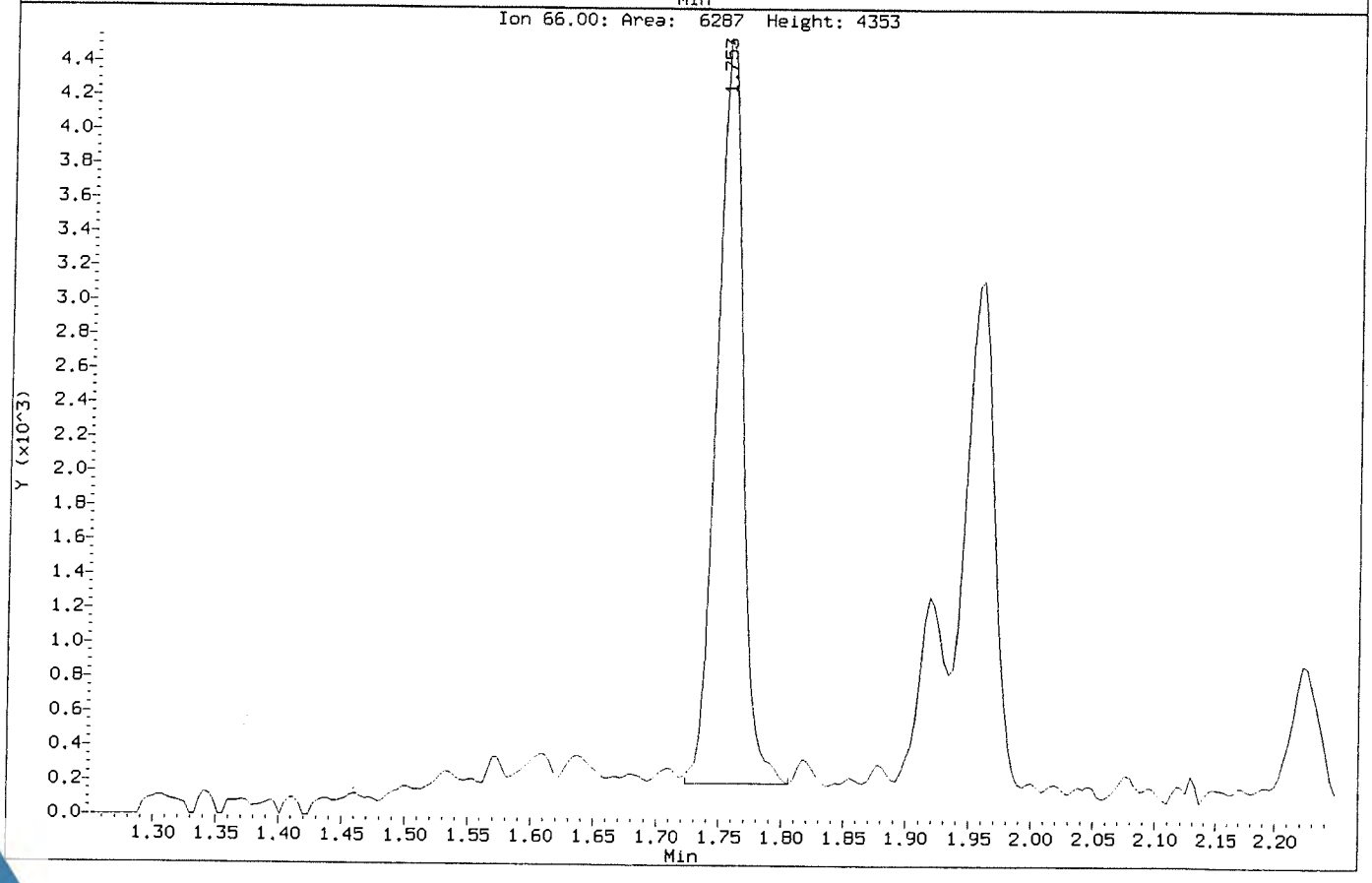
T - Target compound detected outside RT window.
a - Target compound detected but, quantitated amount
Below Limit Of Quantitation(BLOQ).
M - Compound response manually integrated.
H - Operator selected an alternate compound hit.


Y (x10^6)
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1.0
1.1
1.2
1.3
1.4
1.5
1.6
Min
2
3
4
5
6
7
8
9
10
11
12
13
14
-Chloromethane
-Vinyl Chloride+
-Acetaldehyde
-Bromomethane
-Chloroethane
-Trichlorofluoromethane
-n-Pentane+
-Diethyl ether+
-Acrolein
-1,1-Dichloroethene+
-Acetone
-Iodomethane+
-Isopropyl alcohol
-Acetonitrile+
-Methylene Chloride
-Tert-butyl alcohol
-Acrylonitrile+
-Vinyl Acetate+
-1,1-Dichloroethane
-Diisopropyl ether
-tert-Butyl ethyl ether
-2-Butanone+
-Propionitrile+
-Methacrylonitrile+
-Chloroform
-Dibromofluoromethane+
-Pentafluorobenzene+
-1,1-Dichloropropene+
-1,2-Dichloroethane+
-tert-Amyl alcohol
-Isobutyl Alcohol+
-n-Heptane
1,4-Difluorobenzene
-Trichloroethene+
-Methylcyclohexane+
-1,2-Dichloropropane
-Methyl Methacrylate+
-Bromodichloromethane
-2-Nitropropane
-2-Chloroethylvinyl ether
-Epichlorohydrin
-Dimethyldisulfide
-4-Methyl-2-Pentanone
-Toluene
-trans-1,3-Dichloropropene+
-Ethyl Methacrylate
-1,1,2-Trichloroethane+
-1,3-Dichloropropane+
-2-Hexanone
-Dibromochloromethane
-1,2-Dibromoethane+
-1,1,1,2-Tetrachloroethane+
-m,p-Xylenes+
Chlorobenzene-d5+
-Styrene+
-Methyl Amyl Ketone
-Bromoform+
-Isopropylbenzene
-4-Bromofluorobenzene+
-1,1,2,2-Tetrachloroethane+
-trans-1,4-Dichloro-2-bute+
-2-Chlorotoluene
-1,3,5-Trimethylbenzene+
-alpha-Methylstyrene
-tert-Butylbenzene+
-sec-Butylbenzene
-1,2,4-Trimethylbenzene
-Benzyl Chloride
-n-Butylbenzene+
1,4-Dichlorobenzene-d4+
-1,2-Dibromo-3-Chloropropa
-1,2,4-Trichlorobenzene
-Hexachlorobutadiene
-Naphthalene
-1,2,3-Trichlorobenzene
-2-Methylnaphthalene
-1-Methylnaphthalene
\\NAHSTWS005\Target\chem\voa9.i\U181113.b\U111306.D
Data File: \\NAHSTWS005\Target\chem\voa9.i\U181113.b\U111306.D
Date : 13-NOV-2018 13:25
Client ID: VSTD005
Sample Info: VSTD005;VSTD005;1;5;
Purge Volume: 5.0
Column phase: DB624
Instrument: VOA9.i
Operator: PC
Column diameter: 0.18

Data File: \\NAHSTWS005\Target\chem\voa9.i\U181113.b\Before\U111306.D
Injection Date: 13-NOV-2018 13:25
Instrument: VOA9.i
Client Sample ID: VSTD005

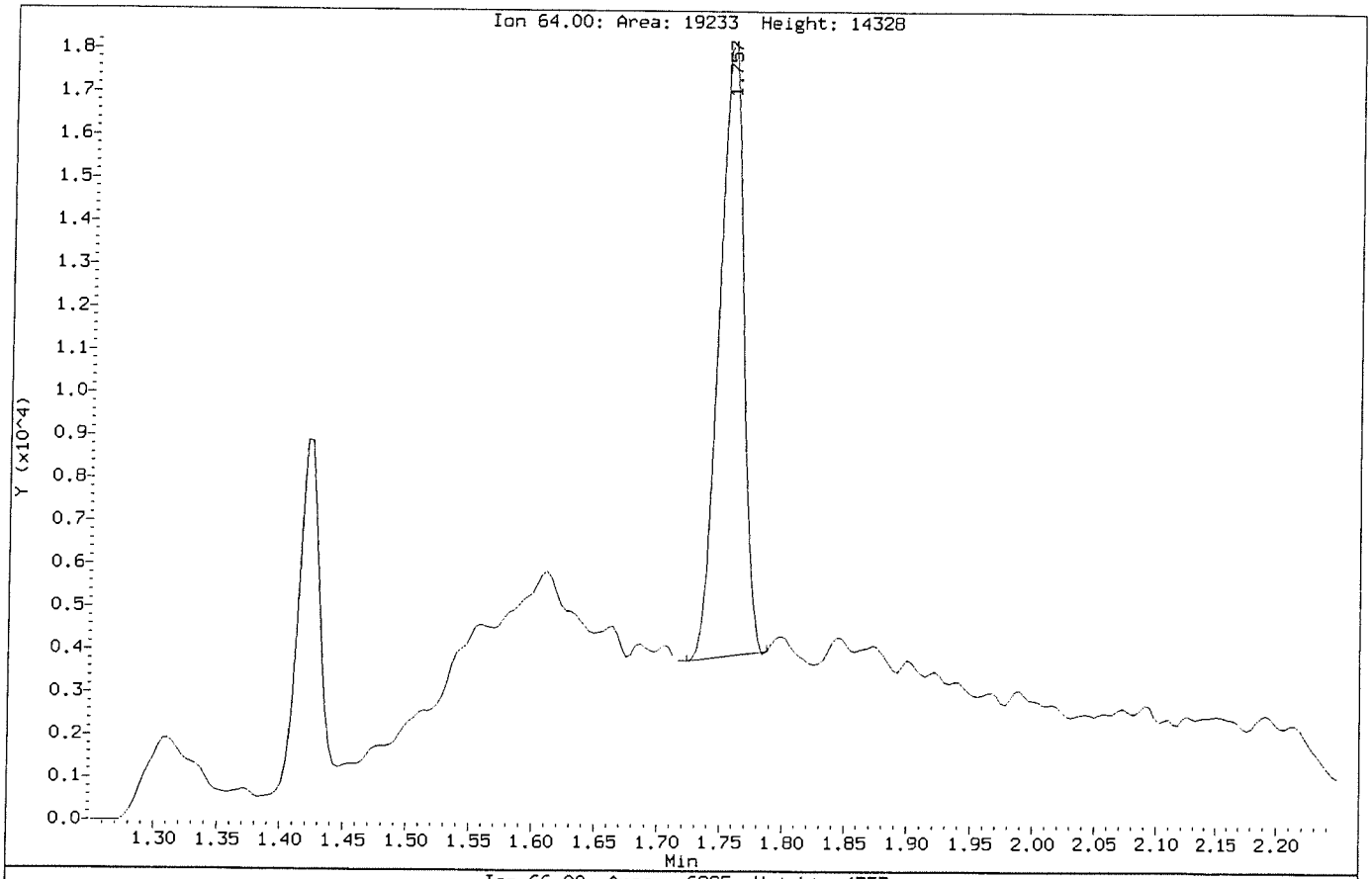
Compound: Chloroethane
CAS Number: 75-00-3

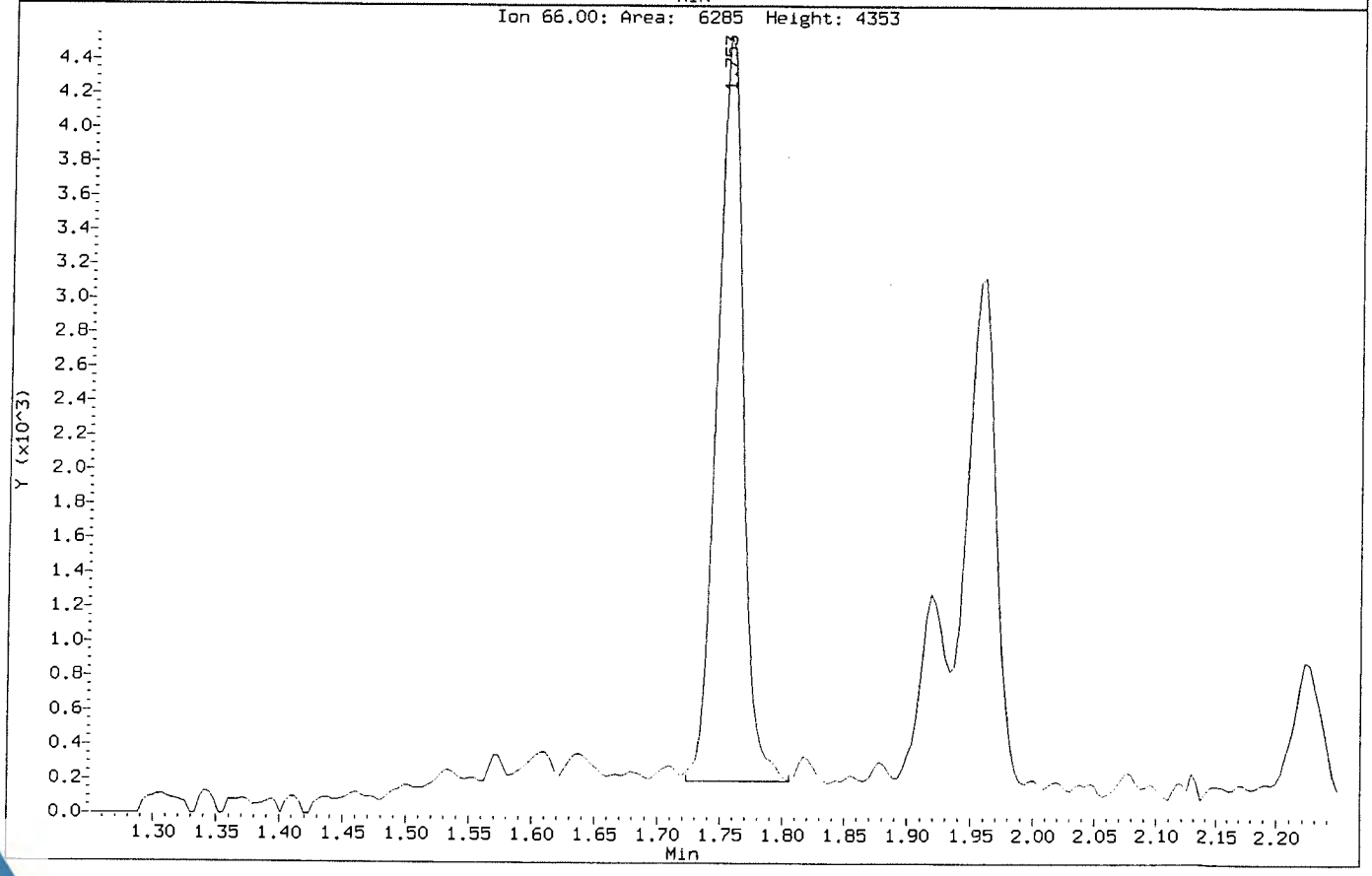




Data File: \\NAHSTWS005\Target\chem\voa9.i\U181113.b\U111306.D
Injection Date: 13-NOV-2018 13:25
Instrument: VOA9.i
Client Sample ID: VSTD005

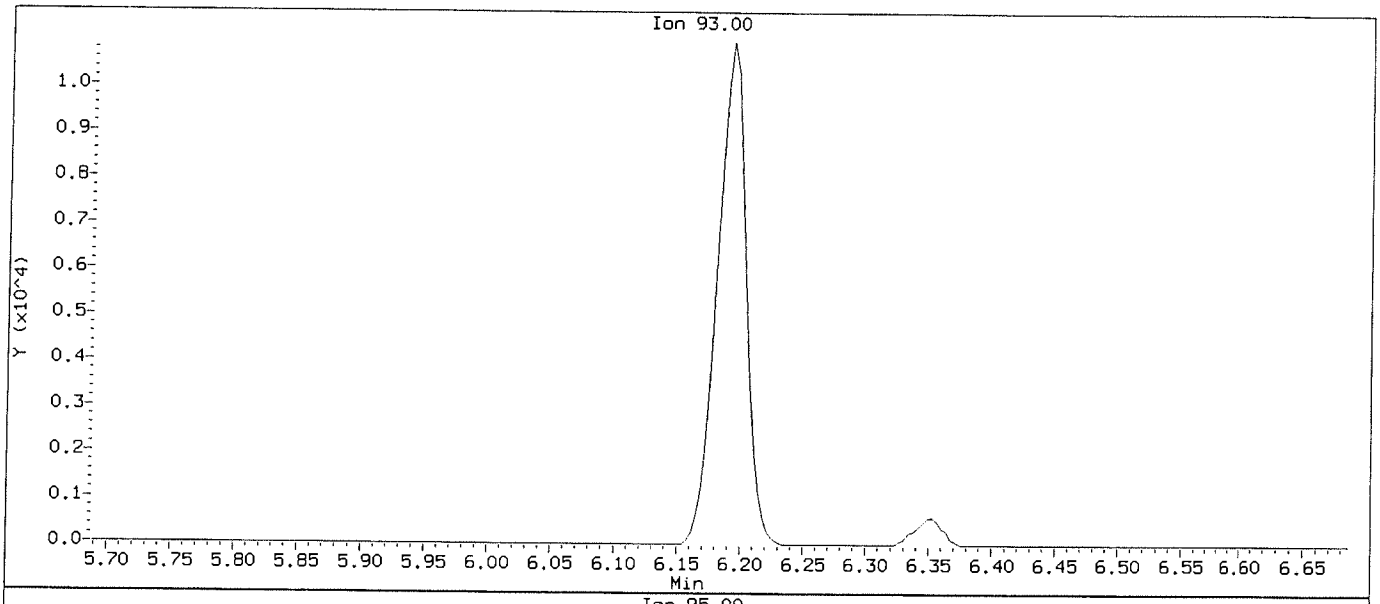
Compound: Chloroethane
CAS Number: 75-00-3

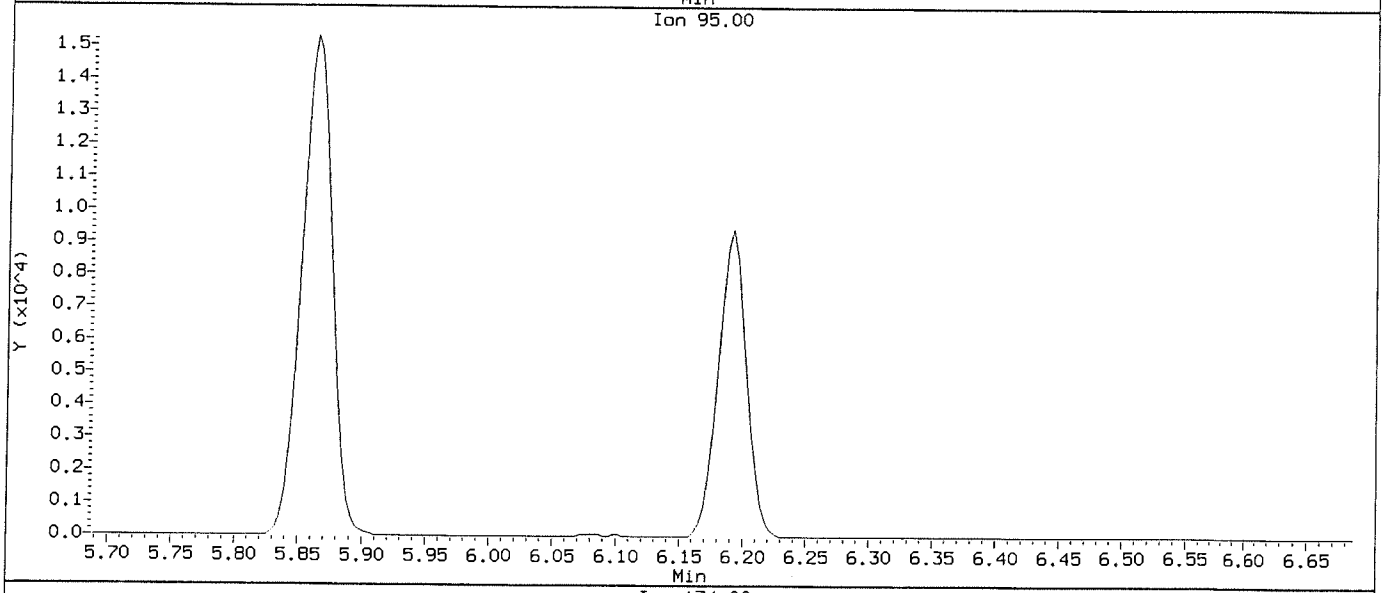


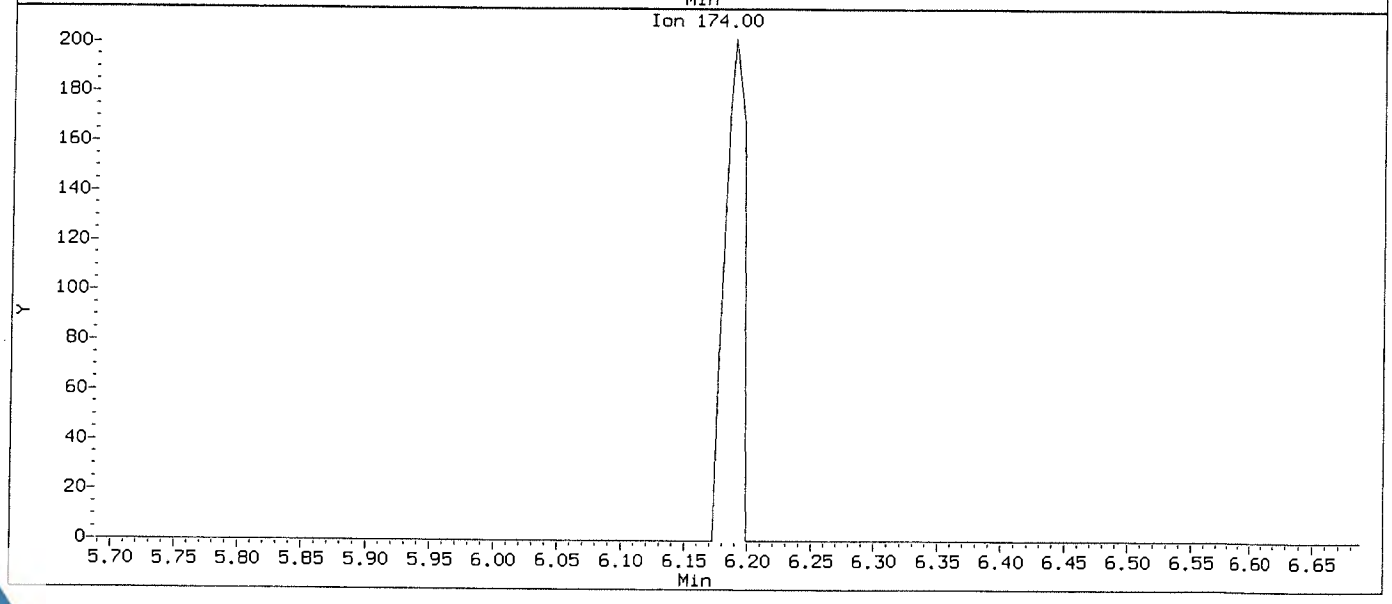


Data File: \\NAHSTWS005\Target\chem\voa9.i\U181113.b\Before\U111306.D
Injection Date: 13-NOV-2018 13:25
Instrument: VOA9.i
Client Sample ID: VSTD005

Compound: Dibromomethane
CAS Number: 74-95-3

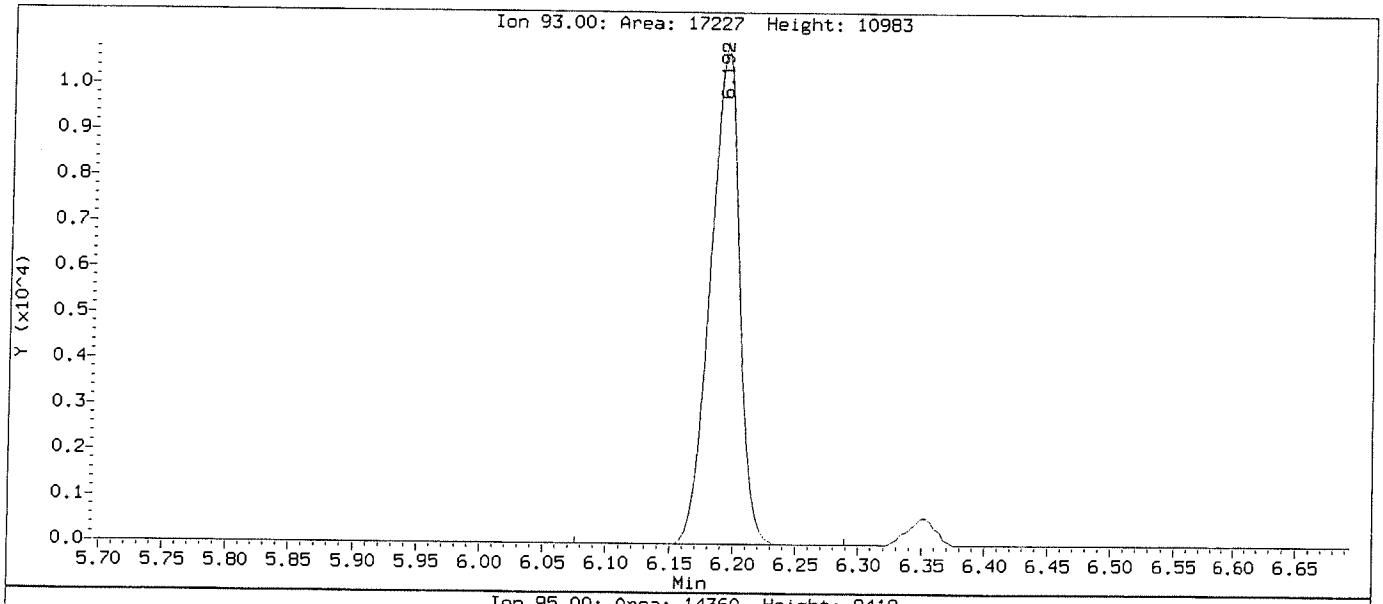


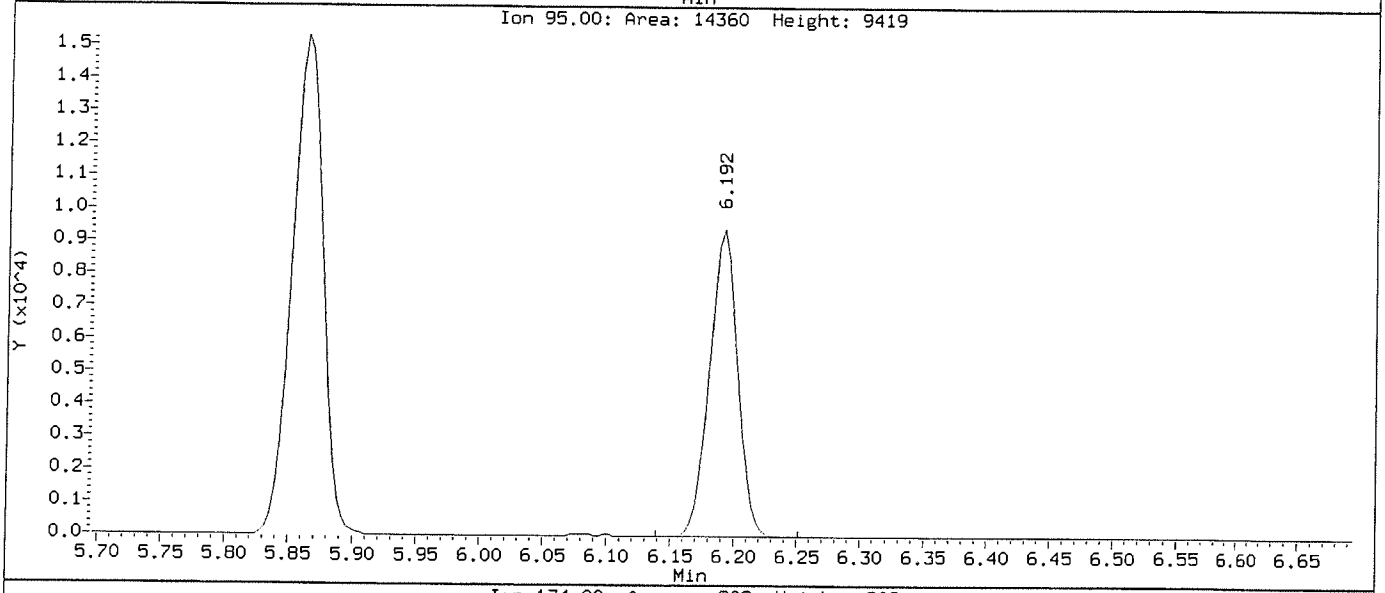


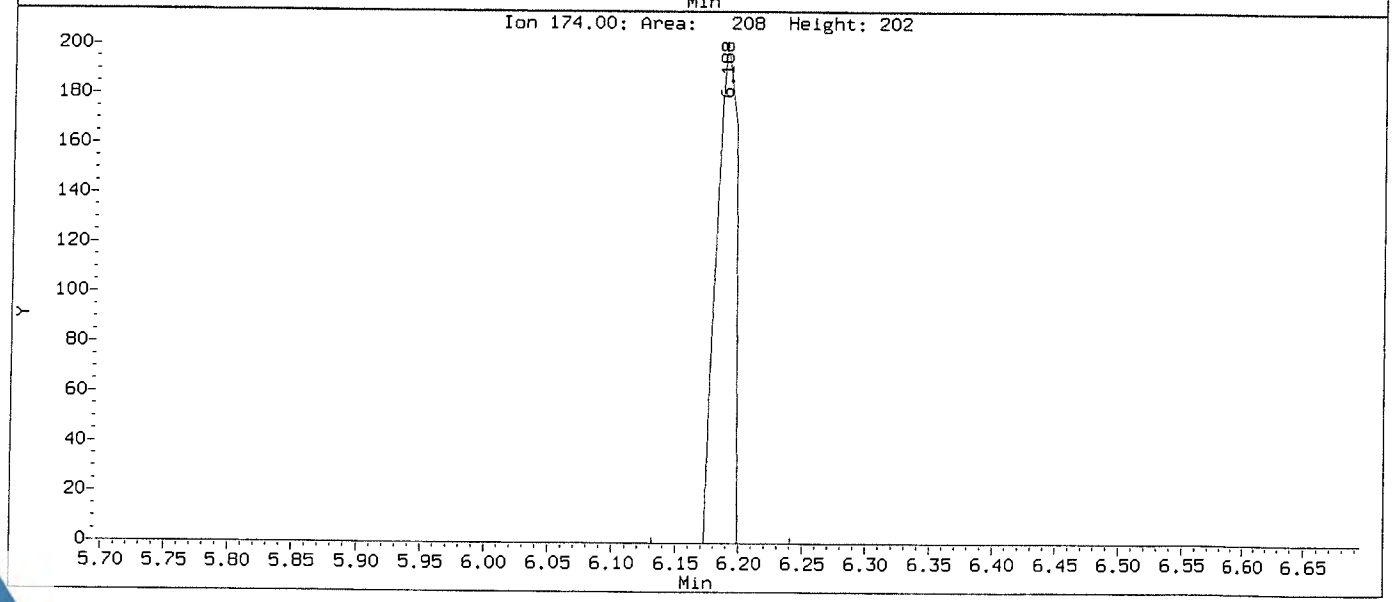


Data File: \\NAHSTWS005\Target\chem\voa9.i\U181113.b\U111306.D
Injection Date: 13-NOV-2018 13:25
Instrument: VOA9.i
Client Sample ID: VSTD005

Compound: Dibromomethane
CAS Number: 74-95-3

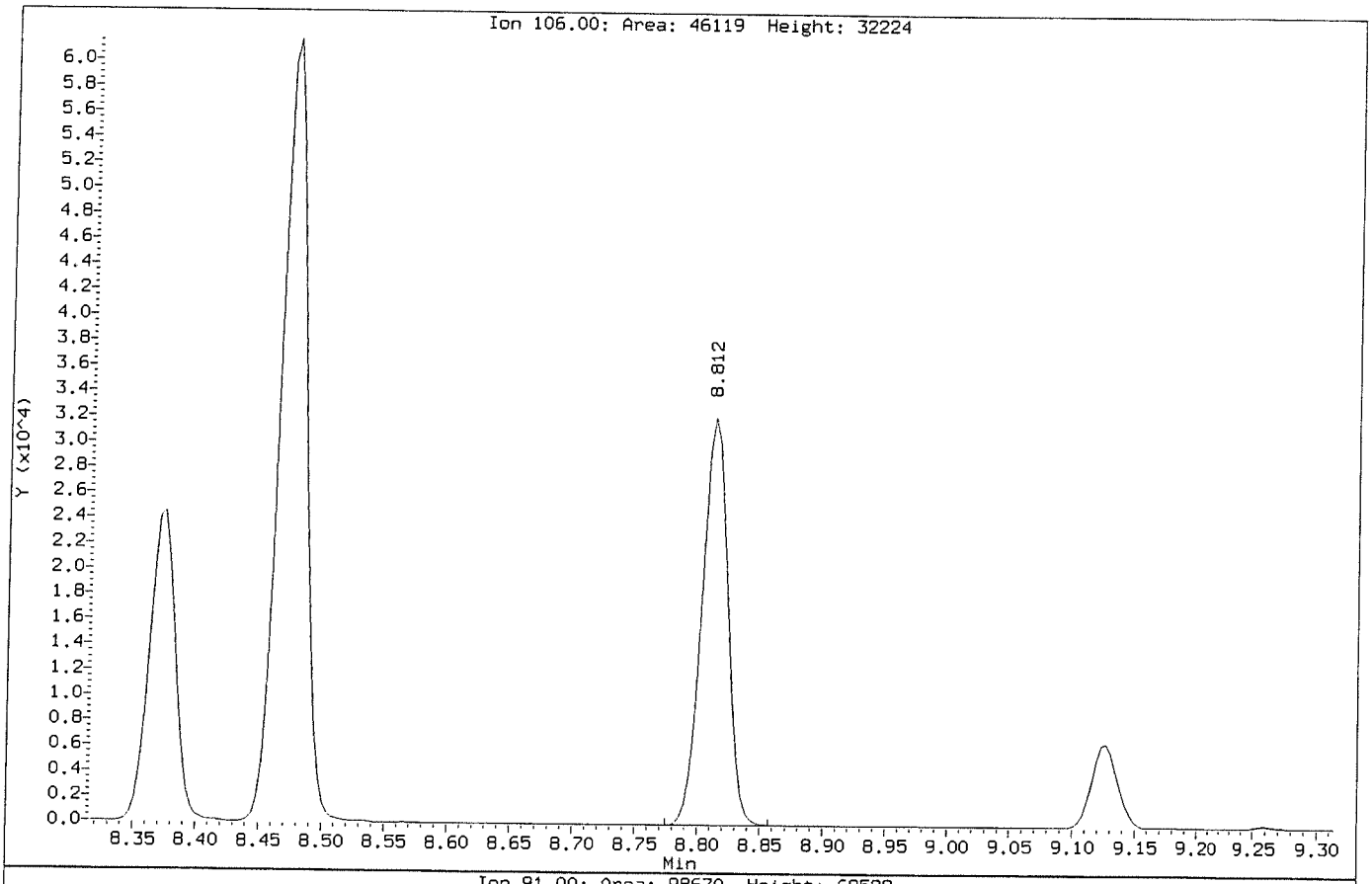


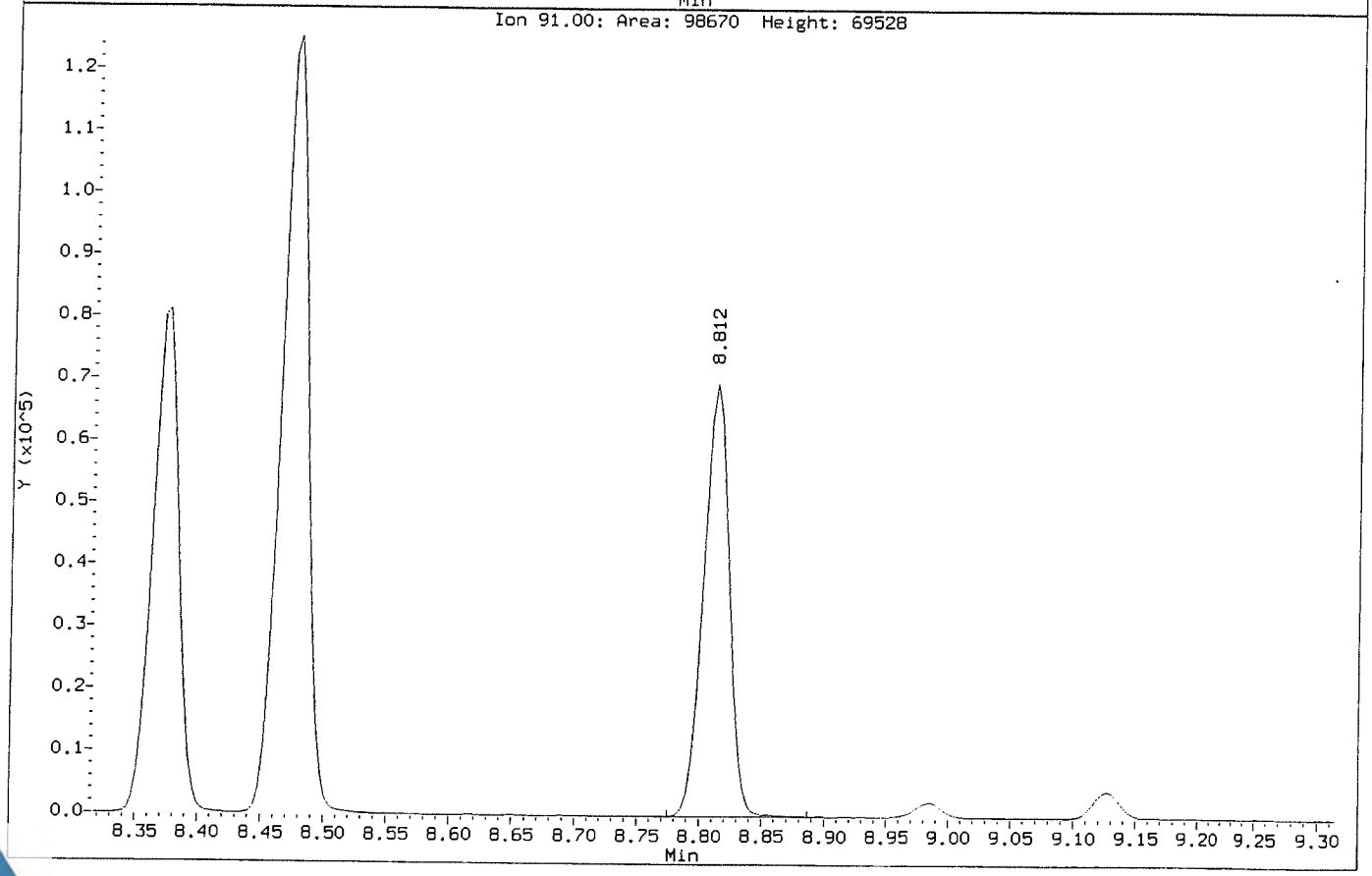




Data File: \\NAHSTWS005\Target\chem\voa9.i\U181113.b\Before\U111306.D
Injection Date: 13-NOV-2018 13:25
Instrument: VOA9.i
Client Sample ID: VSTD005

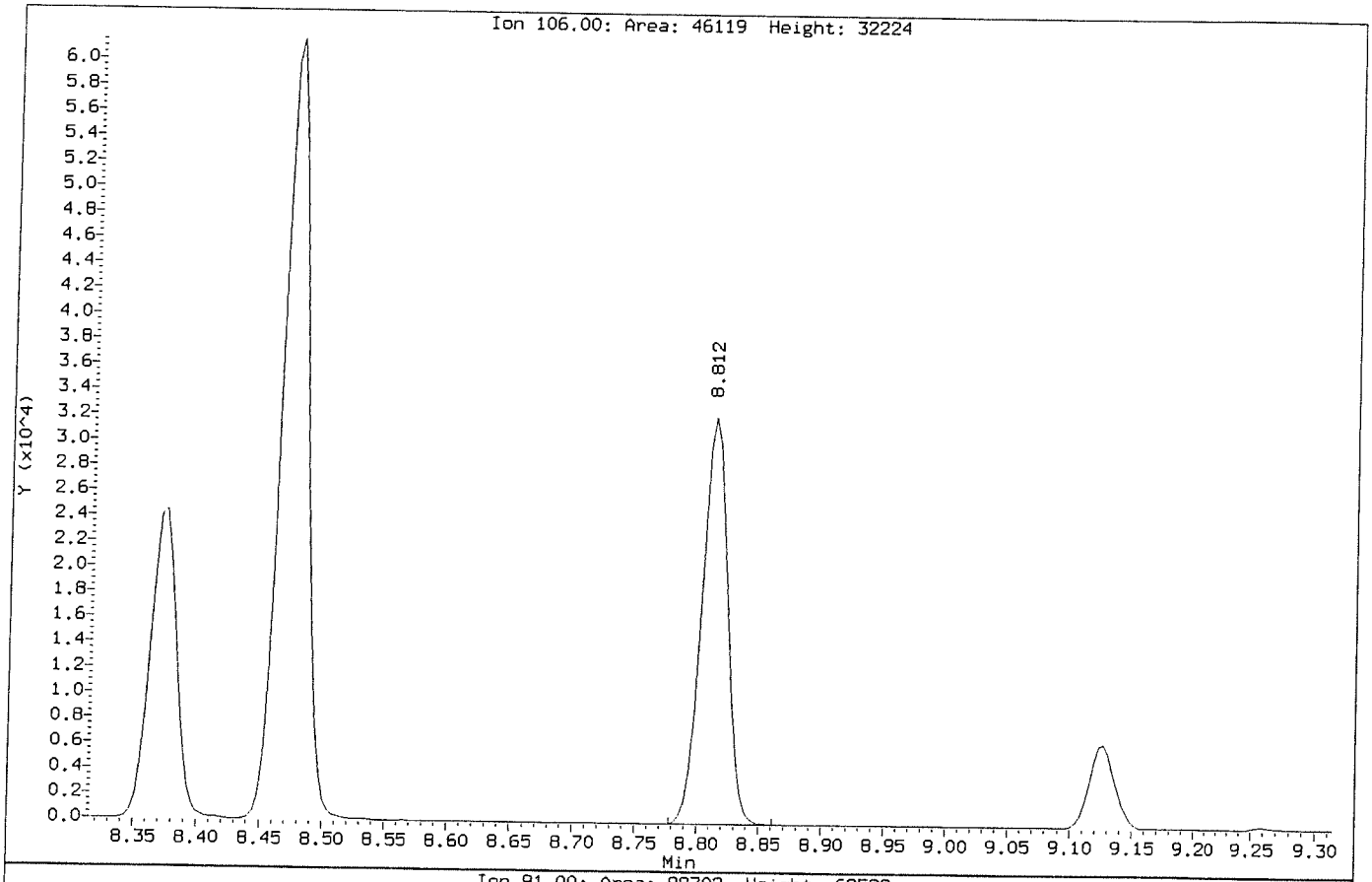
Compound: o-Xylene
CAS Number: 95-47-6

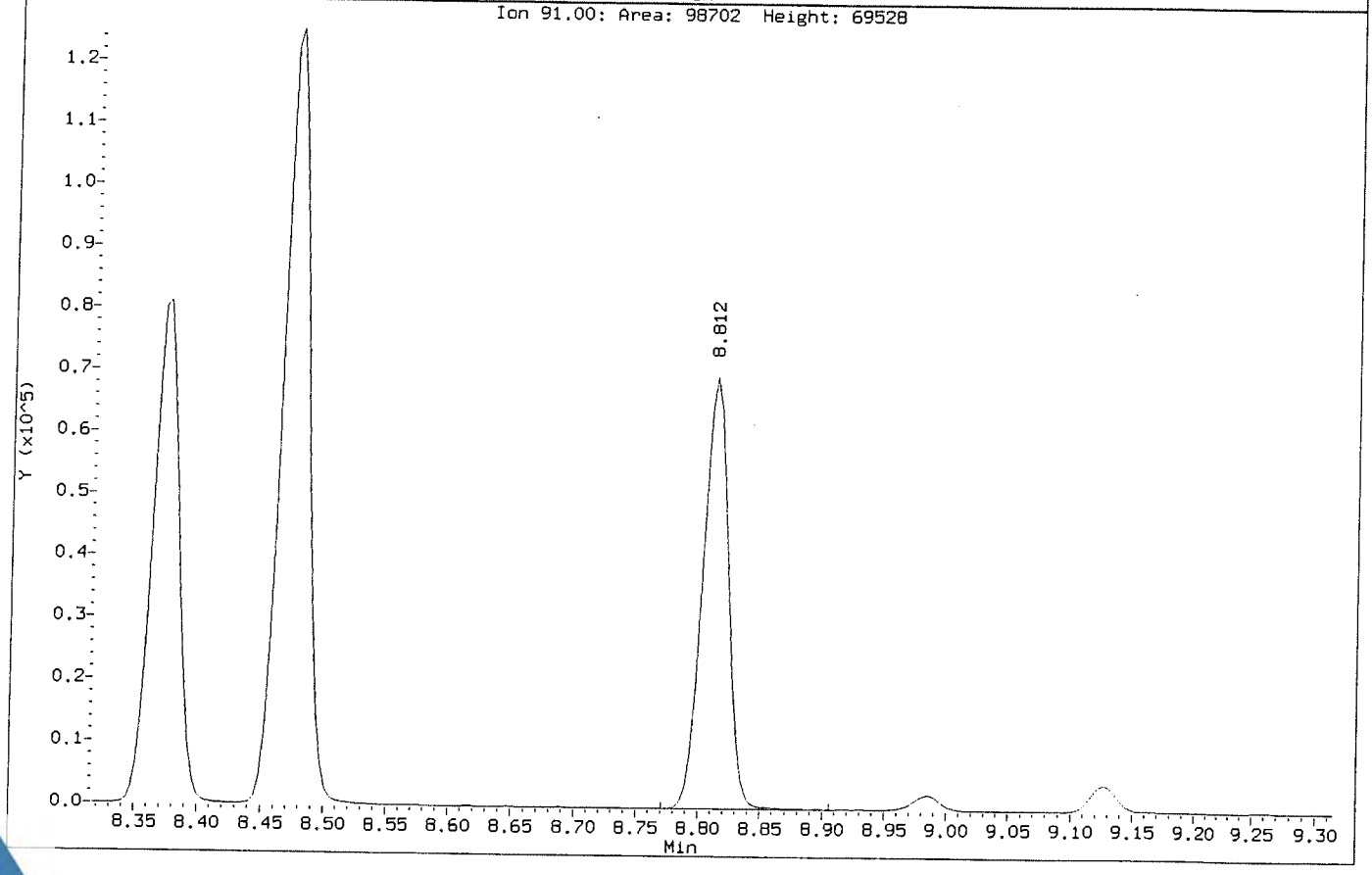




Data File: \\NAHSTWS005\Target\chem\voa9.i\U181113.b\U111306.D
Injection Date: 13-NOV-2018 13:25
Instrument: VOA9.i
Client Sample ID: VSTD005

Compound: o-Xylene
CAS Number: 95-47-6





Data File: \\NAHSTWS005\Target\chem\voa9.i\U181113.b\U111307.D Page 1
Report Date: 24-Jan-2019 18:55

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa9.i\U181113.b\U111307.D
Lab Smp Id: VSTD020 Client Smp ID: VSTD020
Inj Date : 13-NOV-2018 13:50
Operator : PC Inst ID: VOA9.i
Smp Info : VSTD020;VSTD020;1;6;
Misc Info : 180315V9;WATER;0;1;
Comment :
Method : \\NAHSTWS005\Target\chem\voa9.i\U181113.b\8260C.m
Meth Date : 24-Jan-2019 18:55 VOA9.i Quant Type: ISTD
Cal Date : 13-NOV-2018 13:25 Cal File: U111306.D
Als bottle: 8 Calibration Sample, Level: 6
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: LHAAP.sub
Target Version: 4.14
Processing Host: NAHSTW7087

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Cpnd Variable		Local Compound Variable

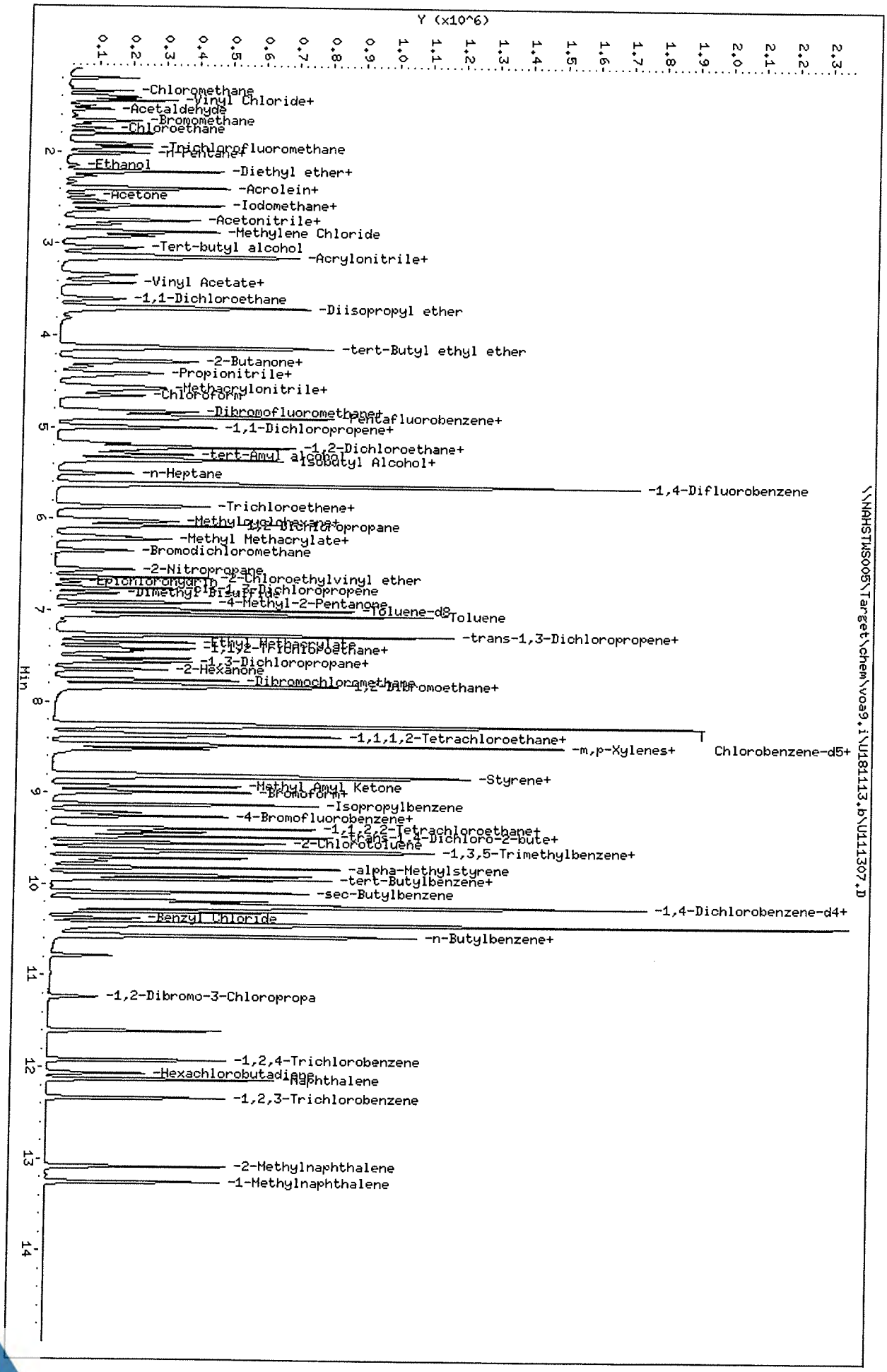
Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
* 1 Pentafluorobenzene	168	4.894	4.894	(1.000)	441430	50.0000	
* 36 1,4-Difluorobenzene	114	5.625	5.625	(1.000)	825527	50.0000	
* 47 Chlorobenzene-d5	117	8.249	8.249	(1.000)	767763	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	10.236	10.236	(1.000)	370767	50.0000	
$ 30 Dibromofluoromethane	113	4.826	4.826	(0.986)	102630	20.0000	19.47
$ 35 1,2-Dichloroethane-d4	65	5.175	5.175	(1.057)	138453	20.0000	19.70
$ 48 Toluene-d8	98	6.989	6.989	(0.847)	412445	20.0000	20.02
$ 69 4-Bromofluorobenzene	95	9.257	9.257	(1.122)	154498	20.0000	19.71
60 1,1,1,2-Tetrachloroethane	131	8.350	8.350	(1.012)	94836	20.0000	19.58
31 1,1,1-Trichloroethane	97	4.826	4.826	(0.986)	144369	20.0000	18.61
68 1,1,2,2-Tetrachloroethane	83	9.392	9.392	(0.918)	170546	20.0000	19.41
138 Freon TF	101	2.397	2.397	(0.490)	81210	20.0000	18.36
53 1,1,2-Trichloroethane	83	7.420	7.420	(0.900)	94236	20.0000	19.30
22 1,1-Dichloroethane	63	3.601	3.601	(0.736)	188042	20.0000	18.58
11 1,1-Dichloroethene	96	2.397	2.397	(0.490)	92859	20.0000	18.63
32 1,1-Dichloropropene	75	5.003	5.003	(0.889)	142695	20.0000	18.71
93 1,2,3-Trichlorobenzene	180	12.335	12.335	(1.205)	136668	20.0000	19.52
71 1,2,3-Trichloropropane	75	9.426	9.426	(0.921)	178640	20.0000	19.49
90 1,2,4-Trichlorobenzene	180	11.926	11.926	(1.165)	137085	20.0000	18.80
79 1,2,4-Trimethylbenzene	105	9.943	9.943	(0.971)	410829	20.0000	19.94
89 1,2-Dibromo-3-Chloropropane	155	11.233	11.233	(1.097)	24969	20.0000	19.13
57 1,2-Dibromoethane	107	7.852	7.852	(0.952)	112223	20.0000	19.85

Data File: \\NAHSTWS005\Target\chem\voa9.i\U181113.b\U111307.D Page 2
Report Date: 24-Jan-2019 18:55

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
88 1,2-Dichlorobenzene	146	10.573	10.573	(1.033)	222900	20.0000	18.82
33 1,2-Dichloroethane	62	5.250	5.250	(0.933)	165626	20.0000	19.17
42 1,2-Dichloropropane	63	6.082	6.082	(1.081)	114197	20.0000	19.42
75 1,3,5-Trimethylbenzene	105	9.625	9.625	(0.940)	396843	20.0000	19.92
83 1,3-Dichlorobenzene	146	10.179	10.179	(0.995)	220218	20.0000	18.86
54 1,3-Dichloropropane	76	7.563	7.563	(0.917)	202833	20.0000	19.35
84 1,4-Dichlorobenzene	146	10.254	10.254	(1.002)	228900	20.0000	20.02
26 2,2-Dichloropropane	77	4.272	4.272	(0.873)	113941	20.0000	18.18
24 2-Butanone	43	4.335	4.335	(0.886)	118404	40.0000	38.15
76 2-Chlorotoluene	91	9.546	9.546	(0.933)	350860	20.0000	19.32
52 2-Hexanone	43	7.649	7.649	(0.927)	181765	40.0000	40.72
77 4-Chlorotoluene	91	9.640	9.640	(0.942)	410588	20.0000	19.59
82 p-Isopropyltoluene	119	10.209	10.209	(0.997)	404381	20.0000	19.91
45 4-Methyl-2-Pentanone	43	6.914	6.914	(0.838)	257102	40.0000	40.14
10 Acetone	43	2.476	2.476	(0.506)	87797	40.0000	40.81
37 Benzene	78	5.216	5.216	(0.927)	436595	20.0000	19.13
74 Bromobenzene	156	9.381	9.381	(0.917)	115775	20.0000	19.03
29 Bromochloromethane	128	4.553	4.553	(0.930)	53724	20.0000	20.64
39 Bromodichloromethane	83	6.348	6.348	(1.129)	132026	20.0000	19.24
66 Bromoform	173	8.984	8.984	(1.089)	60993	20.0000	18.33(T)
6 Bromomethane	94	1.666	1.666	(0.341)	65394	20.0000	19.07
19 Carbon Disulfide	76	2.585	2.585	(0.528)	579343	40.0000	37.64
34 Carbon Tetrachloride	117	4.995	4.995	(0.888)	113726	20.0000	19.09
59 Chlorobenzene	112	8.275	8.275	(1.003)	302097	20.0000	19.06
7 Chloroethane	64	1.749	1.749	(0.357)	85496	20.0000	18.56(M)
28 Chloroform	83	4.654	4.654	(0.951)	190532	20.0000	18.74
3 Chloromethane	50	1.336	1.336	(0.273)	114171	20.0000	19.51
27 cis-1,2-Dichloroethene	96	4.283	4.283	(0.875)	119044	20.0000	19.03
46 cis-1,3-Dichloropropene	75	6.757	6.757	(1.201)	172818	20.0000	20.00
55 Dibromochloromethane	129	7.758	7.758	(0.940)	96570	20.0000	19.87
44 Dibromomethane	93	6.191	6.191	(1.101)	71419	20.0000	19.38
2 Dichlorodifluoromethane	85	1.201	1.201	(0.246)	119108	20.0000	18.89
61 Ethylbenzene	106	8.369	8.369	(1.015)	154131	20.0000	19.23
91 Hexachlorobutadiene	225	12.065	12.065	(1.179)	45235	20.0000	20.48
67 Isopropylbenzene	105	9.126	9.126	(1.106)	456275	20.0000	19.55
62 m,p-Xylenes	106	8.474	8.474	(1.027)	389423	40.0000	39.44
17 Methylene Chloride	84	2.866	2.866	(0.586)	113894	20.0000	19.80
87 n-Butylbenzene	91	10.558	10.558	(1.031)	381141	20.0000	20.10
73 n-Propylbenzene	91	9.475	9.475	(0.926)	574080	20.0000	19.62
92 Naphthalene	128	12.133	12.133	(1.185)	458615	20.0000	20.88
63 o-Xylene	106	8.811	8.811	(1.068)	197393	20.0000	19.97(H)
81 sec-Butylbenzene	105	10.086	10.086	(0.985)	477299	20.0000	19.59
64 Styrene	104	8.826	8.826	(1.070)	337037	20.0000	20.20
78 tert-Butylbenzene	119	9.902	9.902	(0.967)	334318	20.0000	19.69
56 Tetrachloroethene	164	7.525	7.525	(0.912)	75404	20.0000	18.74
50 Toluene	91	7.046	7.046	(0.854)	470397	20.0000	19.29
20 trans-1,2-Dichloroethene	96	3.139	3.139	(0.642)	101477	20.0000	18.58
51 trans-1,3-Dichloropropene	75	7.259	7.259	(1.291)	147063	20.0000	18.17
38 Trichloroethene	130	5.861	5.861	(1.042)	107204	20.0000	19.05
8 Trichlorofluoromethane	101	1.951	1.951	(0.399)	161290	20.0000	18.27
5 Vinyl Chloride	62	1.415	1.415	(0.289)	136290	20.0000	19.25

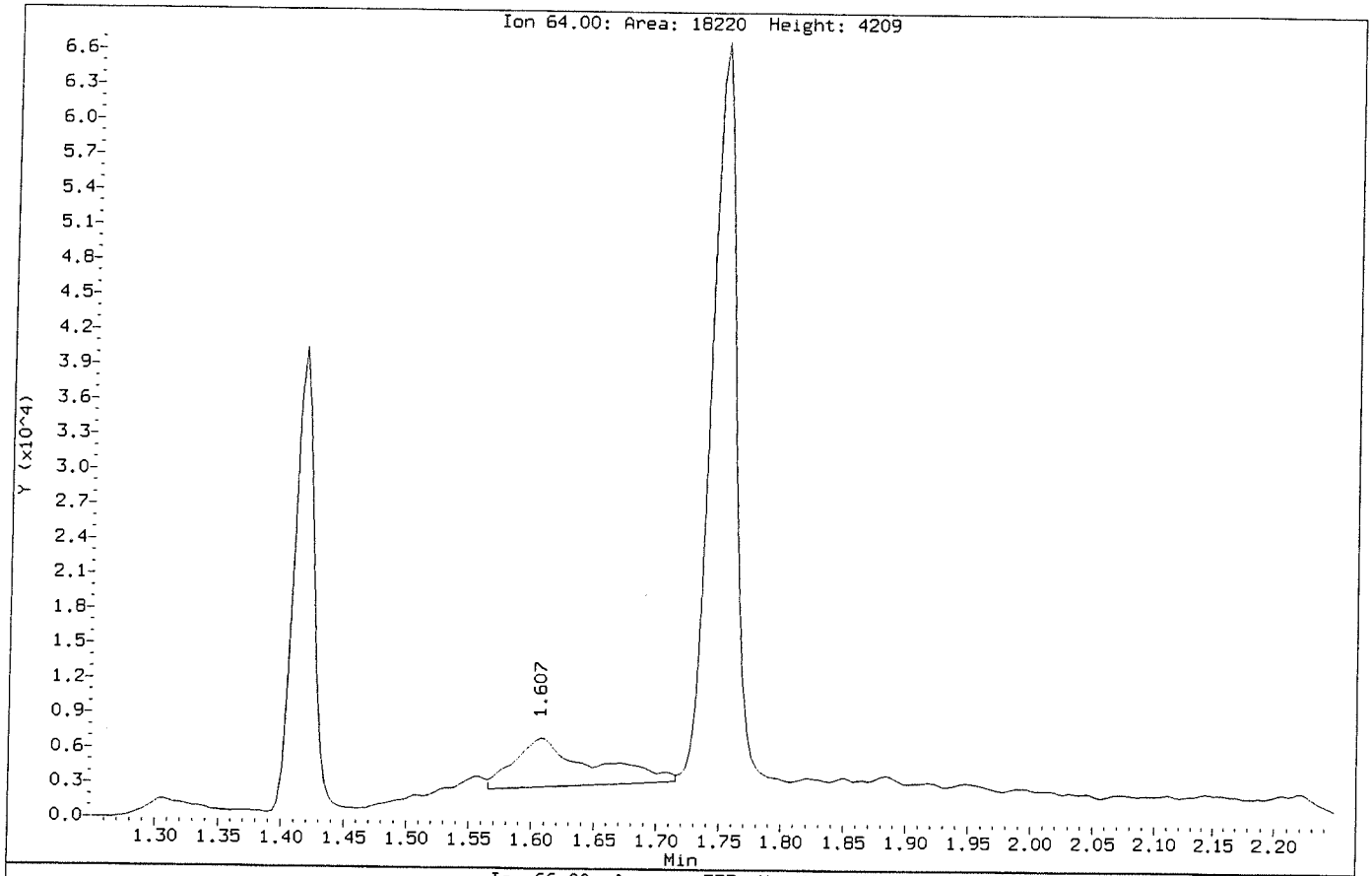
QC Flag Legend

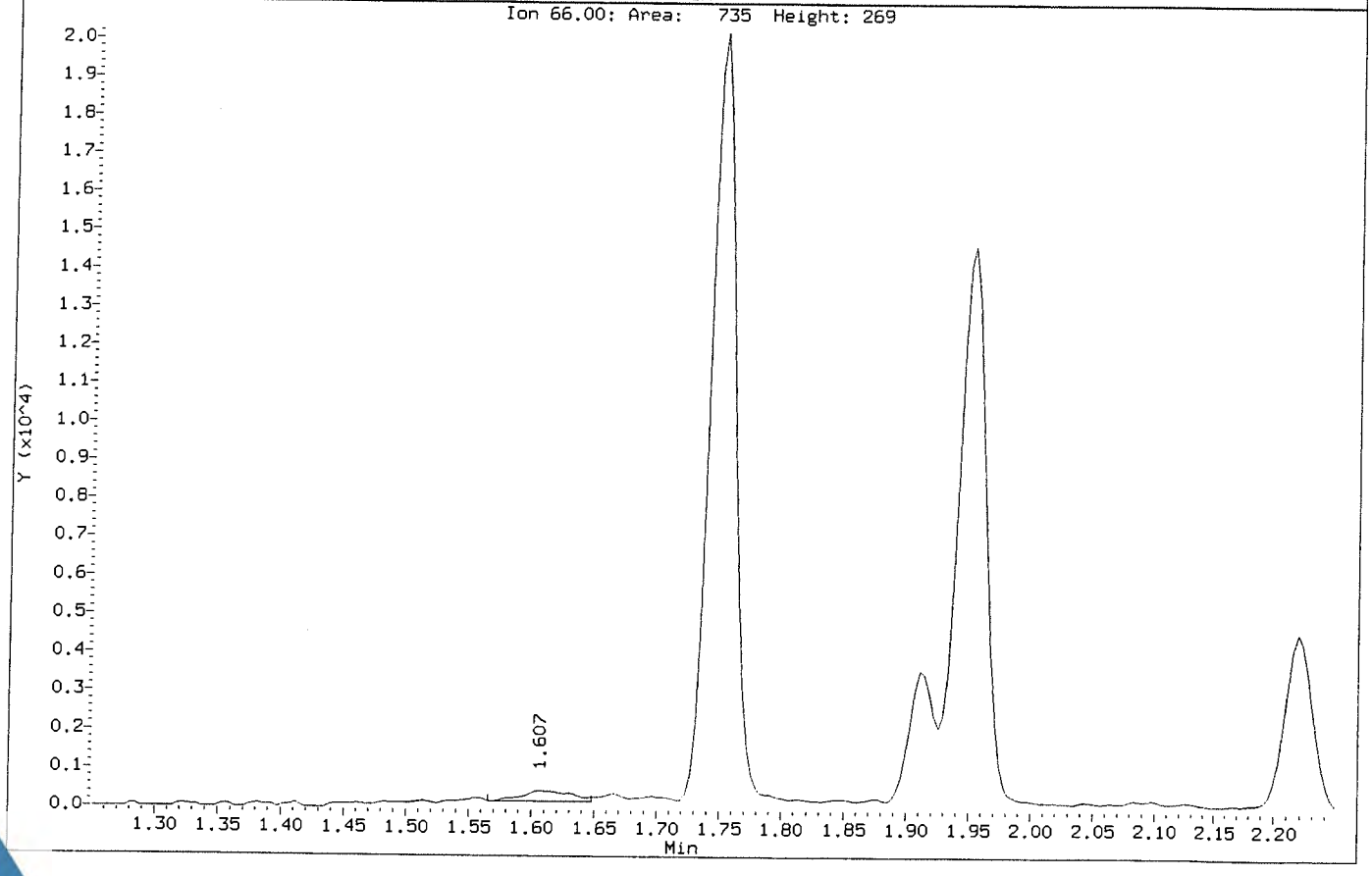
T - Target compound detected outside RT window.
M - Compound response manually integrated.
H - Operator selected an alternate compound hit.


Y (x10^6)
0.1 0.2 0.3 0.4 0.5 0.6 0.7 0.8 0.9 1.0 1.1 1.2 1.3 1.4 1.5 1.6 1.7 1.8 1.9 2.0 2.1 2.2 2.3
Min
1 2 3 4 5 6 7 8 9 10 11 12 13 14
-Chloromethane
-Vinyl Chloride+
-Acetaldehyde
-Bromomethane
-Chloroethane
-Trichlorofluoromethane
-n-Pentane+
-Ethanol
-Diethyl ether+
-Acrolein+
-Acetone
-Iodomethane+
-Acetonitrile+
-Methylene Chloride
-Tert-butyl alcohol
-Acrylonitrile+
-Vinyl Acetate+
-1,1-Dichloroethane
-Diisopropyl ether
-tert-Butyl ethyl ether
-2-Butanone+
-Propionitrile+
-Methacrylonitrile+
-Chloroform
-Dibromofluoromethane+
-Pentafluorobenzene+
-1,1-Dichloropropene+
-1,2-Dichloroethane+
-tert-Amyl alcohol
-Isobutyl Alcohol+
-n-Heptane
-1,4-Difluorobenzene
-Trichloroethene+
-Methylcyclohexane+
-1,2-Dichloropropane
-Methyl Methacrylate+
-Bromodichloromethane
-2-Nitropropane
-Epichlorohydrin
-2-Chloroethylvinyl ether
-cis-1,3-Dichloropropene
-Dimethyl disulfide
-4-Methyl-2-Pentanone
-Toluene-d8
-Toluene
-trans-1,3-Dichloropropene+
-Ethyl Methacrylate
-1,1,2-Trichloroethane+
-1,3-Dichloropropane+
-2-Hexanone
-Dibromochloromethane
-1,2-Dibromoethane+
-1,1,1,2-Tetrachloroethane+
-m,p-Xylenes+
Chlorobenzene-d5+
-Styrene+
-Methyl Amyl Ketone
-Bromoform+
-Isopropylbenzene
-4-Bromofluorobenzene+
-1,1,2,2-Tetrachloroethane+
-trans-1,4-Dichloro-2-bute+
-2-Chlorotoluene
-1,3,5-Trimethylbenzene+
-alpha-Methylstyrene
-tert-Butylbenzene+
-sec-Butylbenzene
-1,4-Dichlorobenzene-d4+
-Benzyl Chloride
-n-Butylbenzene+
-1,2-Dibromo-3-Chloropropa
-1,2,4-Trichlorobenzene
-Hexachlorobutadiene
-Naphthalene
-1,2,3-Trichlorobenzene
-2-Methylnaphthalene
-1-Methylnaphthalene
Data File: \\NAHSTWS005\Target\chem\voa9,i\U181113,b\U111307.D
Date : 13-NOV-2018 13:50
Client ID: VSTD020
Sample Info: VSTD020;VSTD020;1;6;
Purge Volume: 5.0
Column phase: DB624
\\NAHSTWS005\Target\chem\voa9,i\U181113,b\U111307.D
Instrument: VOA9,i
Operator: PC
Column diameter: 0.18
Page 4

Data File: \\NAHSTWS005\Target\chem\voa9.i\U181113.b\Before\U111307.D
Injection Date: 13-NOV-2018 13:50
Instrument: VOA9.i
Client Sample ID: VSTD020

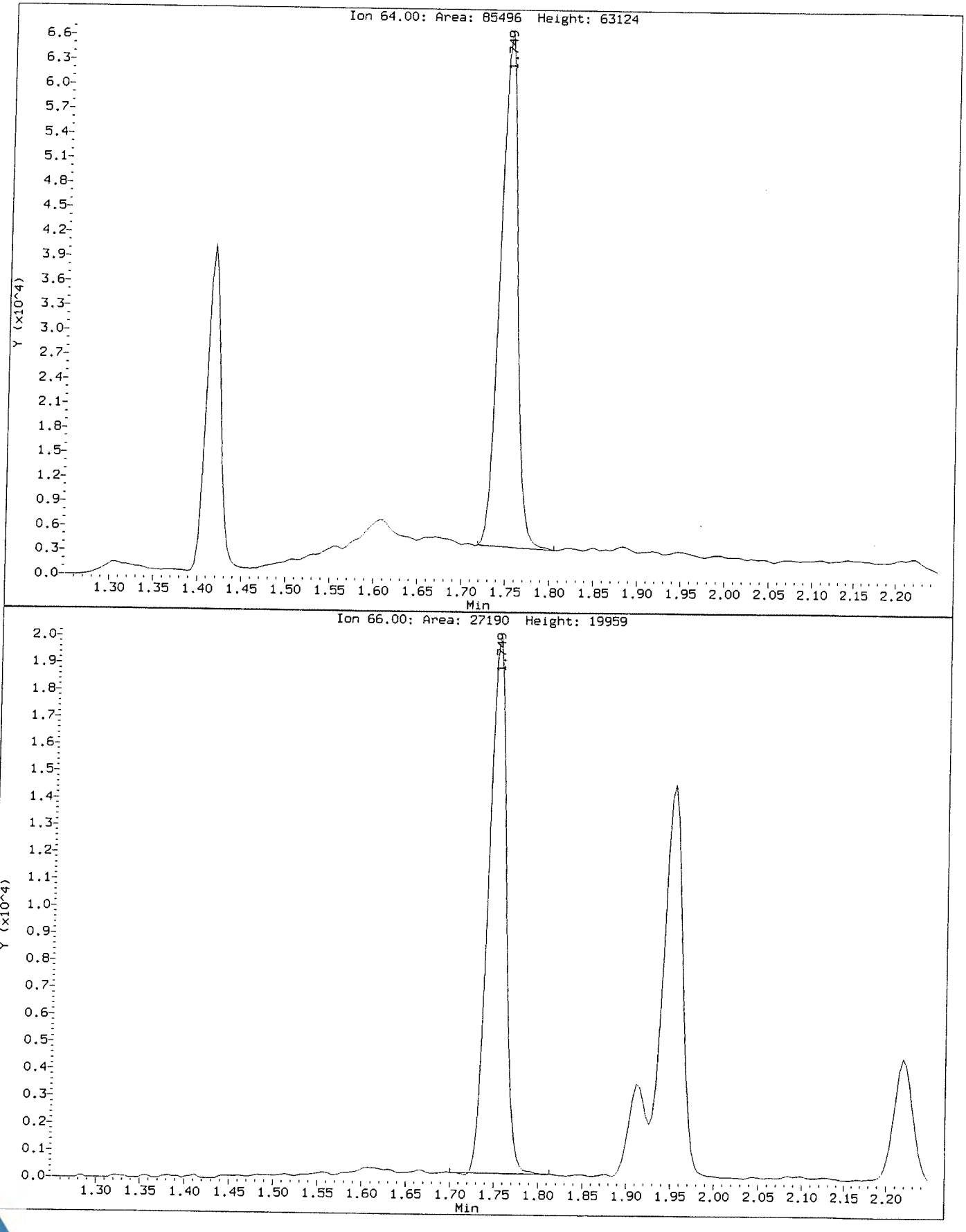
Compound: Chloroethane
CAS Number: 75-00-3





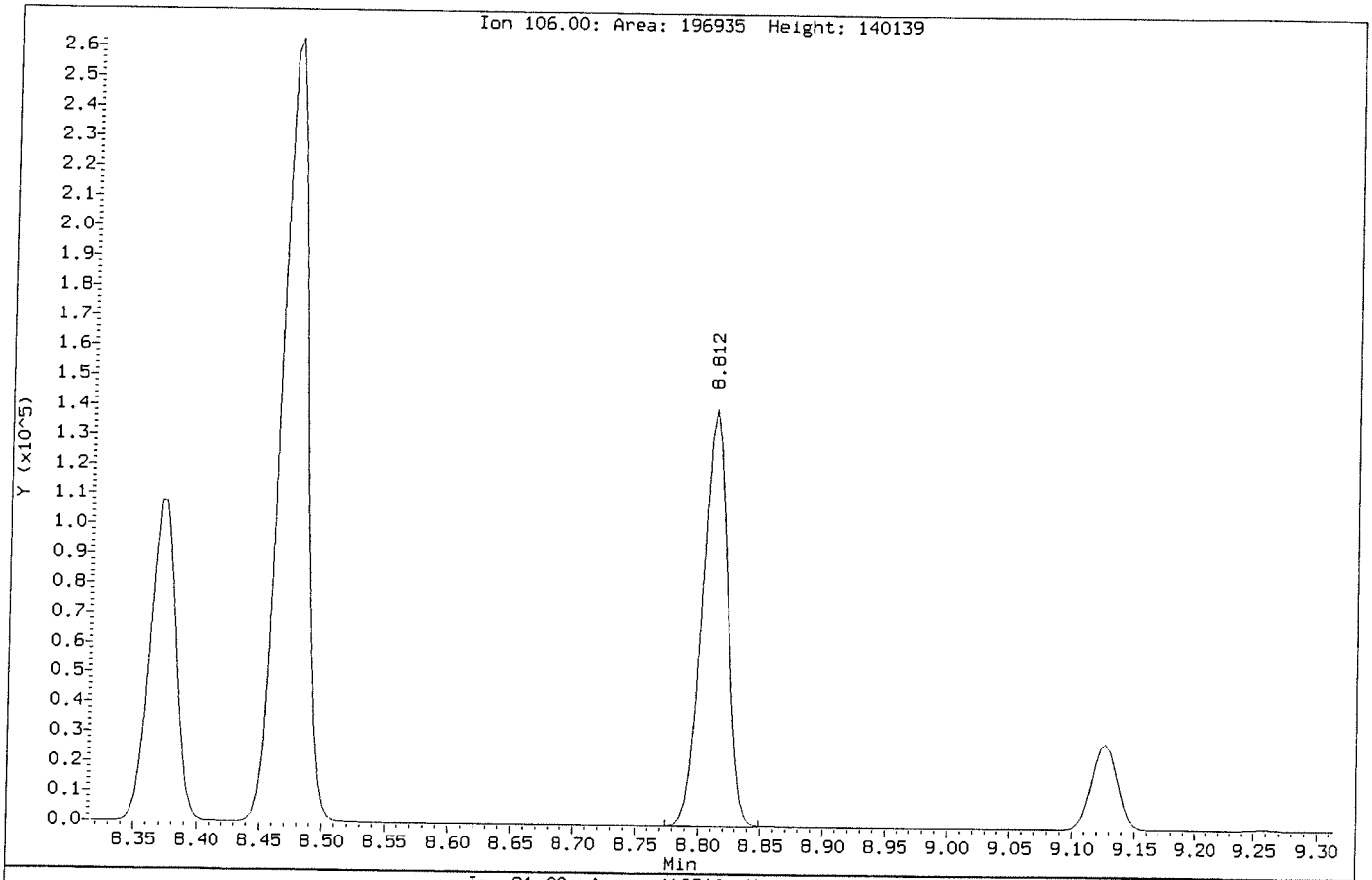
Data File: \\NAHSTWS005\Target\chem\voa9.i\U181113.b\U111307.D
Injection Date: 13-NOV-2018 13:50
Instrument: VOA9.i
Client Sample ID: VSTD020

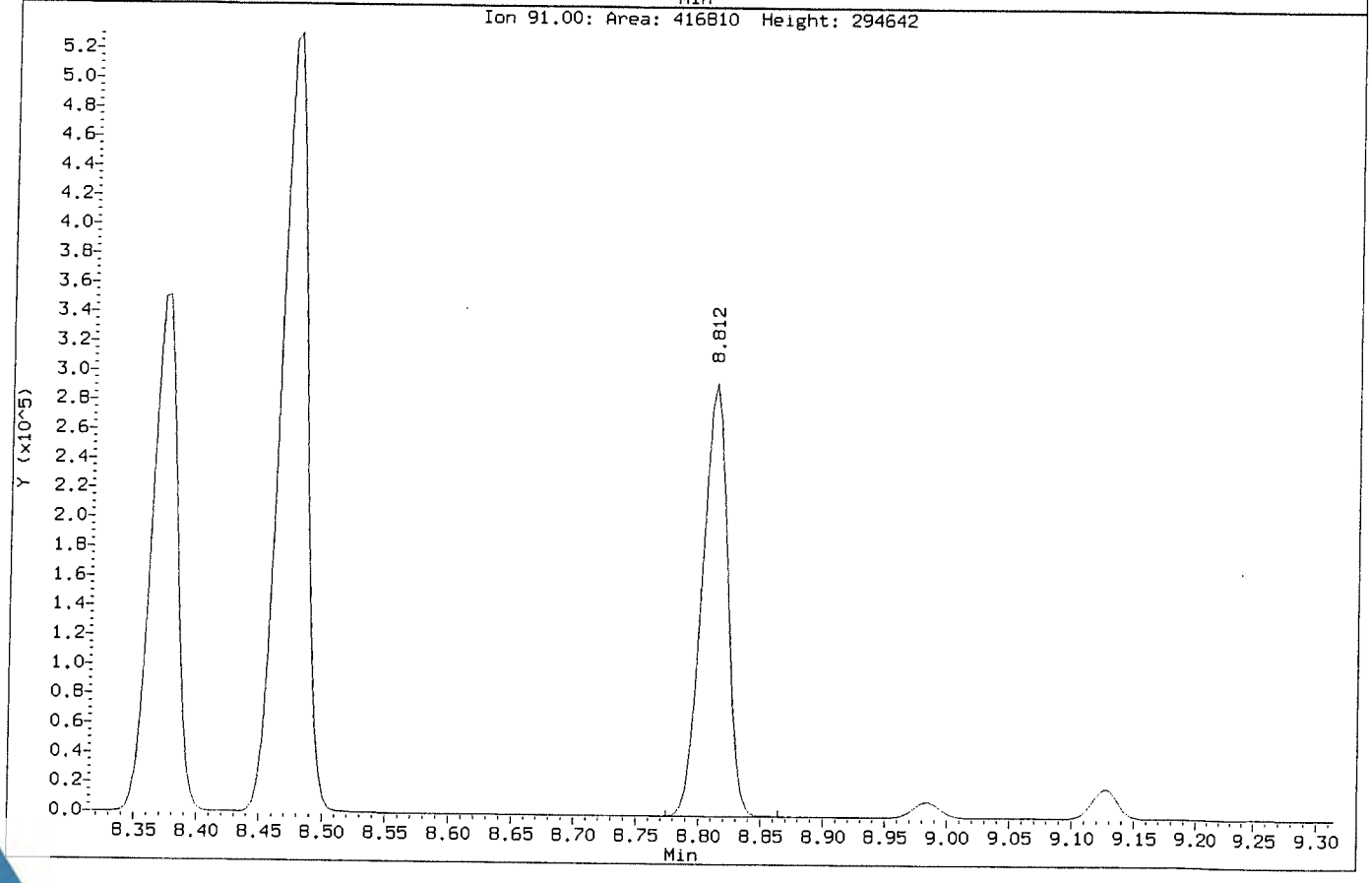
Compound: Chloroethane
CAS Number: 75-00-3



Data File: \\NAHSTWS005\Target\chem\voa9.i\U181113.b\Before\U111307.D
Injection Date: 13-NOV-2018 13:50
Instrument: VOA9.i
Client Sample ID: VSTD020

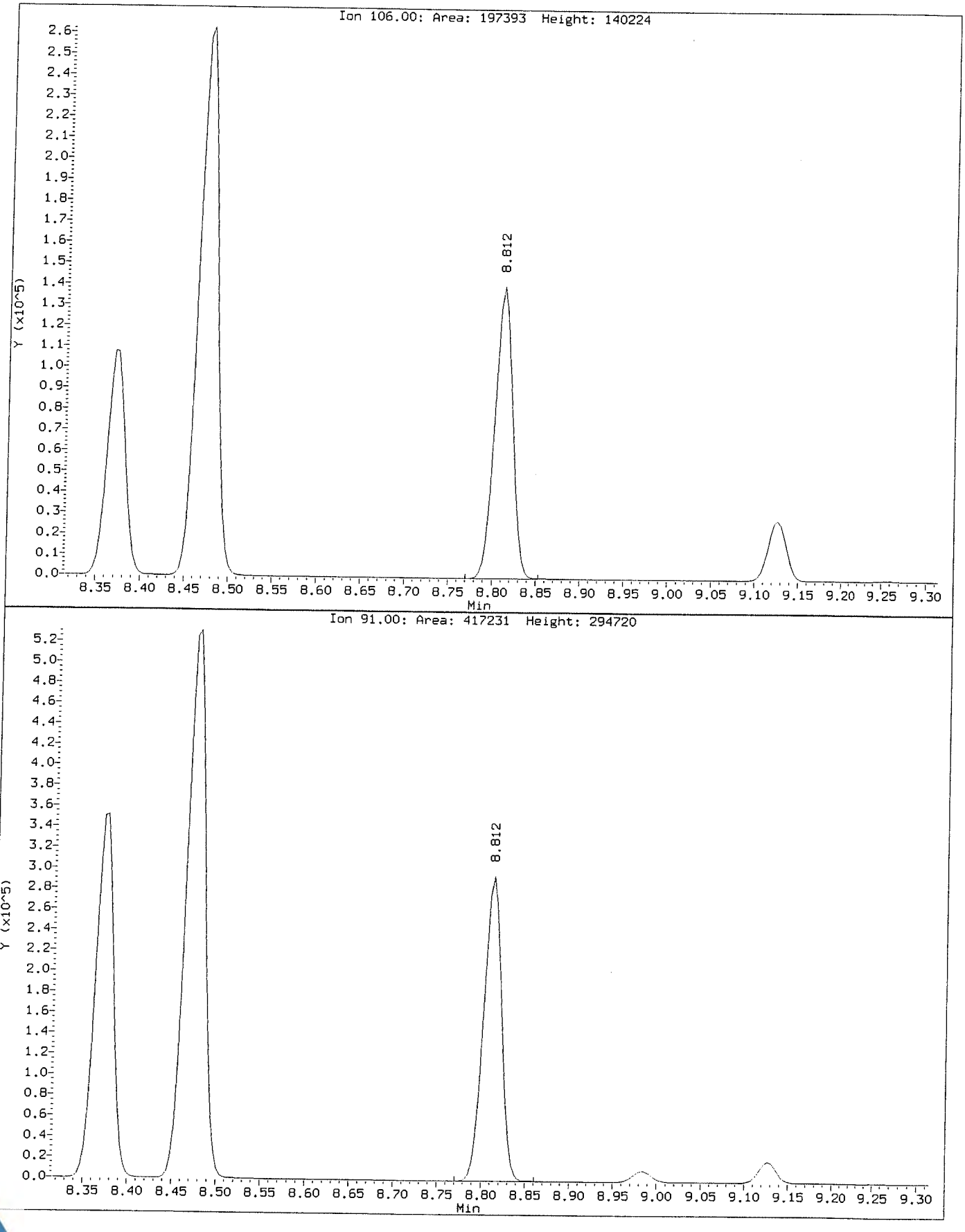
Compound: o-Xylene
CAS Number: 95-47-6





Data File: \\NAHSTWS005\Target\chem\voa9.i\U181113.b\U111307.D
Injection Date: 13-NOV-2018 13:50
Instrument: VOA9.i
Client Sample ID: VSTD020

Compound: o-Xylene
CAS Number: 95-47-6



Data File: \\NAHSTWS005\Target\chem\voa9.i\U181113.b\U111308.D Page 1
Report Date: 24-Jan-2019 18:55

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa9.i\U181113.b\U111308.D
Lab Smp Id: VSTD050 Client Smp ID: VSTD050
Inj Date : 13-NOV-2018 14:15
Operator : PC Inst ID: VOA9.i
Smp Info : VSTD050;VSTD050;1;7;
Misc Info : 180315V9;WATER;0;1;
Comment :
Method : \\NAHSTWS005\Target\chem\voa9.i\U181113.b\8260C.m
Meth Date : 24-Jan-2019 18:55 VOA9.i Quant Type: ISTD
Cal Date : 13-NOV-2018 13:50 Cal File: U111307.D
Als bottle: 9 Calibration Sample, Level: 7
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: LHAAP.sub
Target Version: 4.14
Processing Host: NAHSTW7087

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Cpnd Variable		Local Compound Variable

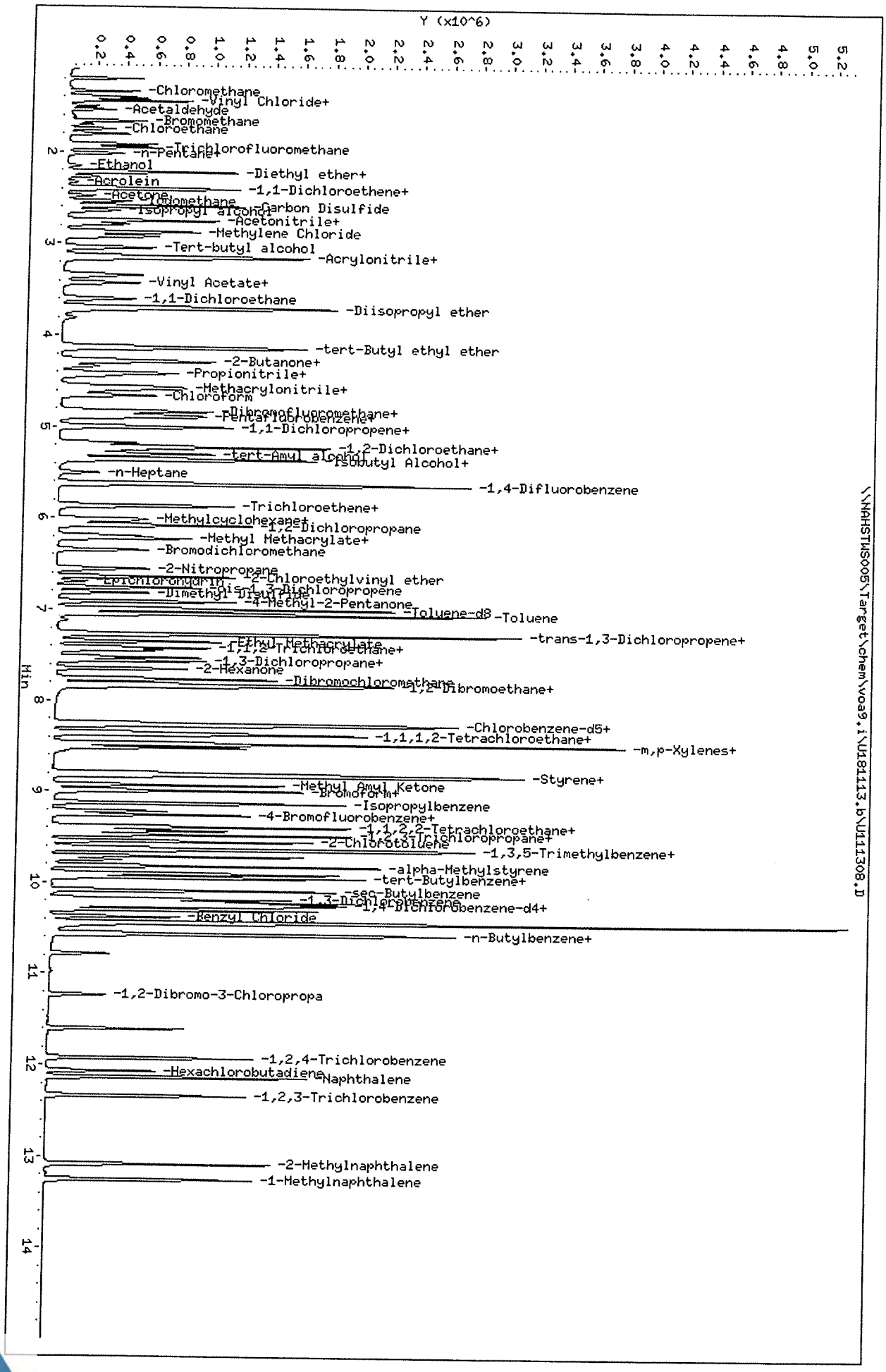
Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
* 1 Pentafluorobenzene	168	4.894	4.894	(1.000)	442076	50.0000	
* 36 1,4-Difluorobenzene	114	5.625	5.625	(1.000)	849587	50.0000	
* 47 Chlorobenzene-d5	117	8.249	8.249	(1.000)	790877	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	10.236	10.236	(1.000)	387587	50.0000	
$ 30 Dibromofluoromethane	113	4.830	4.830	(0.987)	255826	50.0000	50.35
$ 35 1,2-Dichloroethane-d4	65	5.175	5.175	(1.057)	335901	50.0000	50.27
$ 48 Toluene-d8	98	6.989	6.989	(0.847)	1045096	50.0000	51.75
$ 69 4-Bromofluorobenzene	95	9.257	9.257	(1.122)	396604	50.0000	50.72
60 1,1,1,2-Tetrachloroethane	131	8.350	8.350	(1.012)	253286	50.0000	50.77
31 1,1,1-Trichloroethane	97	4.826	4.826	(0.986)	369959	50.0000	47.64
68 1,1,2,2-Tetrachloroethane	83	9.392	9.392	(0.918)	434682	50.0000	47.34
138 Freon TF	101	2.401	2.401	(0.491)	191531	50.0000	43.24
53 1,1,2-Trichloroethane	83	7.420	7.420	(0.900)	234031	50.0000	46.54
22 1,1-Dichloroethane	63	3.604	3.604	(0.737)	476032	50.0000	46.99
11 1,1-Dichloroethene	96	2.397	2.397	(0.490)	224107	50.0000	44.91
32 1,1-Dichloropropene	75	5.003	5.003	(0.889)	351415	50.0000	44.78
93 1,2,3-Trichlorobenzene	180	12.335	12.335	(1.205)	346843	50.0000	47.39
71 1,2,3-Trichloropropane	75	9.430	9.430	(0.921)	480640	50.0000	50.17
90 1,2,4-Trichlorobenzene	180	11.926	11.926	(1.165)	355891	50.0000	46.69
79 1,2,4-Trimethylbenzene	105	9.943	9.943	(0.971)	1025451	50.0000	47.63
89 1,2-Dibromo-3-Chloropropane	155	11.233	11.233	(1.097)	66581	50.0000	47.02
57 1,2-Dibromoethane	107	7.852	7.852	(0.952)	287318	50.0000	49.34

Data File: \\NAHSTWS005\Target\chem\voa9.i\U181113.b\U111308.D Page 2
Report Date: 24-Jan-2019 18:55

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
88 1,2-Dichlorobenzene	146	10.573	10.573	(1.033)	569575	50.0000	46.01
33 1,2-Dichloroethane	62	5.254	5.254	(0.934)	409387	50.0000	46.04
42 1,2-Dichloropropane	63	6.082	6.082	(1.081)	288083	50.0000	47.62
75 1,3,5-Trimethylbenzene	105	9.625	9.625	(0.940)	989153	50.0000	47.49
83 1,3-Dichlorobenzene	146	10.180	10.180	(0.995)	558678	50.0000	45.78
54 1,3-Dichloropropane	76	7.563	7.563	(0.917)	507685	50.0000	47.02
84 1,4-Dichlorobenzene	146	10.258	10.258	(1.002)	576011	50.0000	48.25
26 2,2-Dichloropropane	77	4.275	4.275	(0.874)	295338	50.0000	47.07
24 2-Butanone	43	4.339	4.339	(0.887)	300842	100.000	96.81
76 2-Chlorotoluene	91	9.550	9.550	(0.933)	883069	50.0000	46.52
52 2-Hexanone	43	7.649	7.649	(0.927)	469848	100.000	102.19
77 4-Chlorotoluene	91	9.640	9.640	(0.942)	1023060	50.0000	46.71
82 p-Isopropyltoluene	119	10.210	10.210	(0.997)	1018309	50.0000	47.97
45 4-Methyl-2-Pentanone	43	6.914	6.914	(0.838)	657858	100.000	99.71
10 Acetone	43	2.480	2.480	(0.507)	201617	100.000	99.32
37 Benzene	78	5.216	5.216	(0.927)	1096105	50.0000	46.67
74 Bromobenzene	156	9.385	9.385	(0.917)	293372	50.0000	46.14
29 Bromochloromethane	128	4.553	4.553	(0.930)	136269	50.0000	52.28
39 Bromodichloromethane	83	6.348	6.348	(1.129)	344674	50.0000	48.82
66 Bromoform	173	8.984	8.984	(1.089)	170886	50.0000	47.61(T)
6 Bromomethane	94	1.666	1.666	(0.341)	154362	50.0000	42.38
19 Carbon Disulfide	76	2.588	2.588	(0.529)	1468777	100.000	95.31
34 Carbon Tetrachloride	117	4.995	4.995	(0.888)	286167	50.0000	46.68
59 Chlorobenzene	112	8.275	8.275	(1.003)	750956	50.0000	46.00
7 Chloroethane	64	1.749	1.749	(0.357)	213028	50.0000	46.18(M)
28 Chloroform	83	4.658	4.658	(0.952)	478555	50.0000	47.01
3 Chloromethane	50	1.340	1.340	(0.274)	285521	50.0000	48.38
27 cis-1,2-Dichloroethene	96	4.287	4.287	(0.876)	293496	50.0000	46.85
46 cis-1,3-Dichloropropene	75	6.757	6.757	(1.201)	464679	50.0000	52.27
55 Dibromochloromethane	129	7.758	7.758	(0.940)	263139	50.0000	52.58
44 Dibromomethane	93	6.191	6.191	(1.101)	181664	50.0000	47.92
2 Dichlorodifluoromethane	85	1.205	1.205	(0.246)	293949	50.0000	45.08
61 Ethylbenzene	106	8.373	8.373	(1.015)	388724	50.0000	47.09
91 Hexachlorobutadiene	225	12.065	12.065	(1.179)	110558	50.0000	46.37
67 Isopropylbenzene	105	9.126	9.126	(1.106)	1128288	50.0000	46.94
62 m,p-Xylenes	106	8.474	8.474	(1.027)	962791	100.000	94.66
17 Methylene Chloride	84	2.870	2.870	(0.586)	276248	50.0000	48.96
87 n-Butylbenzene	91	10.558	10.558	(1.031)	954951	50.0000	47.12
73 n-Propylbenzene	91	9.475	9.475	(0.926)	1421540	50.0000	46.47
92 Naphthalene	128	12.133	12.133	(1.185)	1186850	50.0000	51.71
63 o-Xylene	106	8.811	8.811	(1.068)	497517	50.0000	48.87(H)
81 sec-Butylbenzene	105	10.086	10.086	(0.985)	1186653	50.0000	46.59
64 Styrene	104	8.826	8.826	(1.070)	870320	50.0000	50.64
78 tert-Butylbenzene	119	9.902	9.902	(0.967)	827990	50.0000	46.65
56 Tetrachloroethene	164	7.525	7.525	(0.912)	182495	50.0000	44.04
50 Toluene	91	7.049	7.049	(0.855)	1170933	50.0000	46.63
20 trans-1,2-Dichloroethene	96	3.139	3.139	(0.642)	255498	50.0000	46.71
51 trans-1,3-Dichloropropene	75	7.263	7.263	(1.291)	407060	50.0000	46.38
38 Trichloroethene	130	5.861	5.861	(1.042)	263822	50.0000	45.57
8 Trichlorofluoromethane	101	1.951	1.951	(0.399)	392628	50.0000	44.42
5 Vinyl Chloride	62	1.419	1.419	(0.290)	335638	50.0000	46.60

QC Flag Legend

T - Target compound detected outside RT window.
M - Compound response manually integrated.
H - Operator selected an alternate compound hit.


Data File: \\NAHSTWS005\Target\chem\voa9.i\U181113.b\U111308.D
Date : 13-NOV-2018 14:15
Client ID: VSTD050
Sample Info: VSTD050;VSTD050;1;7;
Purge Volume: 5.0
Column phase: DB624
Instrument: VOA9.i
Operator: PC
Column diameter: 0.18
\\NAHSTWS005\Target\chem\voa9.i\U181113.b\U111308.D
Y (x10^6)
Min
-Chloromethane
-Vinyl Chloride+
-Acetaldehyde
-Bromomethane
-Chloroethane
-Trichlorofluoromethane
-n-Pentane+
-Ethanol
-Diethyl ether+
-Acrolein
-1,1-Dichloroethene+
-Acetone
-Iodomethane
-Carbon Disulfide
-Isopropyl alcohol
-Acetonitrile+
-Methylene Chloride
-Tert-butyl alcohol
-Acrylonitrile+
-Vinyl Acetate+
-1,1-Dichloroethane
-Diisopropyl ether
-tert-Butyl ethyl ether
-2-Butanone+
-Propionitrile+
-Methacrylonitrile+
-Chloroform
-Dibromofluoromethane+
-Pentafluorobenzene+
-1,1-Dichloropropene+
-1,2-Dichloroethane+
-tert-Amyl alcohol
Isobutyl Alcohol+
-n-Heptane
-1,4-Difluorobenzene
-Trichloroethene+
-Methylcyclohexane+
-1,2-Dichloropropane
-Methyl Methacrylate+
-Bromodichloromethane
-2-Nitropropane
-2-Chloroethylvinyl ether
-Epichlorohydrin
-cis-1,3-Dichloropropene
-Dimethyl Disulfide
-4-Methyl-2-Pentanone
-Toluene-d8
-Toluene
-trans-1,3-Dichloropropene+
-Ethyl Methacrylate
-1,1,2-Trichloroethane+
-1,3-Dichloropropane+
-2-Hexanone
-Dibromochloromethane
-1,2-Dibromoethane+
-Chlorobenzene-d5+
-1,1,1,2-Tetrachloroethane+
-m,p-Xylenes+
-Styrene+
-Methyl Amyl Ketone
-Bromoform+
-Isopropylbenzene
-4-Bromofluorobenzene+
-1,1,2,2-Tetrachloroethane+
-1,2,3-Trichloropropane+
-2-Chlorotoluene
-1,3,5-Trimethylbenzene+
-alpha-Methylstyrene
-tert-Butylbenzene+
-sec-Butylbenzene
-1,3-Dichlorobenzene
-1,4-Dichlorobenzene-d4+
-Benzyl Chloride
-n-Butylbenzene+
-1,2-Dibromo-3-Chloropropa
-1,2,4-Trichlorobenzene
-Hexachlorobutadiene
-Naphthalene
-1,2,3-Trichlorobenzene
-2-Methylnaphthalene
-1-Methylnaphthalene