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ANALYSIS: VOA METHOD NO.: 8260

ARDL Report(s) #: 006612 MATRIX: SEA CUCUMBER


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| | By: | Date: |
|---|---|---|
| Package Preparation | JAA | 03/12/14 |
| Analytical Review | US | 3/20/14 |
| Final Review | BVD | 4/02/14 |
| QA Review | DSS | 4/2/14 |

Rev. 1.1

# Organic Package Review Checklist

Rev. 1.1

# ORGANIC PACKAGE REVIEW CHECKLIST

**METHOD:** 8260

| | Initial | Date |
|---|---|---|
| **Case Narrative and/or Nonconformance Reports** | | |
| Case Narrative / Analyst Comment Sheets | US | 3/20/14 |
| Nonconformance / Noncompliance Reports (if applicable) | | |
| **Sample Receipt Information** | | |
| Copies of Original Chain-of-Custody Forms | US | 3/20/14 |
| Cooler Receipt Form and Airbills | | |
| Phone Messages (If applicable) | | |
| **Field Sample Results** | US | 3/20/14 |
| **QC Summary Forms** | | |
| Surrogate Summary, if applicable | US | 3/20/14 |
| Spike Blank and/or MS Summary | | |
| Blank Results & Blank Summary, if applicable | | |
| ISTD Area Summary, if applicable | | |
| **Sample Preparation Information (if applicable)** | | |
| Total Solids Determination (If applicable) | NA | |
| Extraction Log (If applicable) | | |
| Extraction Notebook Pages (If applicable) | | |
| Spiking Solutions Notebook Pages | | |
| MS/MSD's | | |
| Surrogate/ISTDs | | |
| Spiking Solutions Certificates Of Analyses | | |
| MS/MSD's | | |
| Surrogates/ISTDs | | |
| Certificates of Analysis (Vendor) | | |
| **Standard Preparation Information** | | |
| Instrument Logs/Analysis Notebook Pages | US | 3/20/14 |
| Certificates of Analysis (Vendor) | | |
| **Analytical Run Number 1** | | |
| Calibration Information | US | 3/20/14 |
| Tune Data | | |
| Initial Calibration | | |
| Continuing Calibration | | |
| Instrument Logs/Analysis Notebook Pages | | |
| Blank/Sample/Field QC Data | | |
| **Analytical Run Number 2 (if required)** | | |
| Calibration Information | NA | |
| Tune Data | | |
| Initial Calibration | | |
| Continuing Calibration | | |
| Instrument Logs/Analysis Notebook Pages | | |
| Blank/Sample/Field QC Data | | |

Rev. 1.1

## ORGANIC PACKAGE REVIEW CHECKLIST (Continued)

**METHOD:** 8260

| | Initial | Date |
|---|---|---|
| **Analytical Run Number 3 (if required)** | | |
| Calibration Information | Na | |
| Tune Data | | |
| Initial Calibration | | |
| Continuing Calibration | | |
| Instrument Logs/Analysis Notebook Pages | | |
| Blank/Sample/Field QC Data | | |
| **Analytical Run Number 4 (if required)** | | |
| Calibration Information | Na | |
| Tune Data | | |
| Initial Calibration | | |
| Continuing Calibration | | |
| Instrument Logs/Analysis Notebook Pages | | |
| Blank/Sample/Field QC Data | | |
| **Analytical Run Number 5 (if required)** | | |
| Calibration Information | Na | |
| Tune Data | | |
| Initial Calibration | | |
| Continuing Calibration | | |
| Instrument Logs/Analysis Notebook Pages | | |
| Blank/Sample/Field QC Data | | |
| **Analytical Run Number 6 (if required)** | | |
| Calibration Information | Na | |
| Tune Data | | |
| Initial Calibration | | |
| Continuing Calibration | | |
| Instrument Logs/Analysis Notebook Pages | | |
| Blank/Sample/Field QC Data | | |
| **Example Calculation** | | |
| Example Calculation Sheet | LS | 3/20/14 |
| **Miscellaneous Additional Data (if applicable)** | LS | 3/20/14 |

NA = Not Applicable

I have checked this package for completeness and verify the following:

1. Pencils, whiteout, whiteout tape, and dark highlighters were not used. ✓
2. All notebook pages are signed. ✓
3. All corrections contain the original data "struck through" with initials and date. ✓
4. All comments found throughout the data are defined as required. ✓
5. All pages are legible. ✓
6. Manual integrations, if applicable, are printed out and include an explanation with signature of the analyst and date. Na

**Package Completeness Checked By/Date:** LS 3/20/14

Rev. 1.1

# Case Narrative and/or Nonconformance Reports

Rev. 1.1

# ORGANIC ANALYSIS CASE NARRATIVE

**Corps of Engineers – ERDC, Vicksburg** **Date: 4/02/14**

**ARDL Report No.: 6612** **Lab Name: ARDL, Inc.**

**Project Name: MAKAU MILITARY RESERVATION OAHU (SEA CUCUMBER)**

**Samples Received at ARDL: 02/20/2014**

| Lab ID No. | Sample ID No. | Date Collected | Date Analyzed | Analysis Requested |
|---|---|---|---|---|
| 006612-01 | MAK102C | 01/13/2014 | 02/26/2014 | PURGEABLE ORGANICS |
| 006612-02 | MAK103C | 01/13/2014 | 02/26/2014 | PURGEABLE ORGANICS |
| 006612-03 | MAK104C | 01/13/2014 | 02/26/2014 | PURGEABLE ORGANICS |
| 006612-04 | MAK105C | 01/13/2014 | 02/26/2014 | PURGEABLE ORGANICS |
| 006612-05 | MAK106C | 01/13/2014 | 02/26/2014 | PURGEABLE ORGANICS |
| 006612-06 | MAK107C | 01/13/2014 | 02/26/2014 | PURGEABLE ORGANICS |
| 006612-07 | MAK108C | 01/13/2014 | 02/26/2014 | PURGEABLE ORGANICS |
| 006612-08 | MAK110C | 01/14/2014 | 02/26/2014 | PURGEABLE ORGANICS |

PURGEABLE ORGANICS – METHOD 8260B

Eight (8) tissue (sea cucumber) samples were received by ARDL, Inc. on February 20, 2014, for 8260B analysis. Due to specific project requirements and the unusual nature of the samples, some changes to standard protocol were made. The requested analyte list was limited to ethylbenzene, m & p-xylene, o-xylene, toluene, styrene and 1,2,4-trimethylbenzene. Only the two internal standards used to quantitate these analytes and their associated surrogate compounds (toluene-d8 and 4-bromofluorobenzene) were evaluated in all calibrations and sample analyses. A nominal sample weight of 2 grams was chosen to avoid problems related to the sample matrix while achieving a reporting limit of 12.5 ug/Kg. Due to the tendency of these samples to foam during the purge step, a commercial anti-foam agent (RESTEK Cat. No. 31822) was added to all samples, blanks and LCS analyses. Initial analyses also indicated a co-eluting interferent at o-xylene with a significant amount of M/Z 91, the standard quant ion for o-xylene. Therefore, initial and daily calibrations and all analyses used the secondary characteristic ion (M/Z 106) for o-xylene quantitation.

INITIAL CALIBRATION

The initial calibration was performed using eight calibration points. All calibration criteria were met.

CONTINUING CALIBRATION

The daily calibration standards passed criteria.

SURROGATES

All surrogate recoveries met a default range of 50 – 150%.

INTERNAL STANDARD

Internal standard responses were acceptable for all analyses.

LCS

The associated LCS analysis met the recovery criteria.

MATRIX SPIKE/MATRIX SPIKE DUPLICATE

An MS/MSD analysis was performed on sample MAK110C and met the recovery criteria.

# ORGANIC ANALYSIS CASE NARRATIVE

**Corps of Engineers – ERDC, Vicksburg** **Date: 4/02/14**

**ARDL Report No.: 6612** **Lab Name: ARDL, Inc.**

**Project Name: MAKAU MILITARY RESERVATION OAHU (SEA CUCUMBER)**

**Samples Received at ARDL: 02/20/2014**

METHOD BLANKS

No target analytes were detected in the method blanks above the reporting limit.

ORGANIC DATA REPORTING QUALIFIERS

The following organic data reporting qualifiers are used as required.

ND- Indicates compound was analyzed for but not detected. The sample quantitation limit must be corrected for dilution and for percent moisture.

J - Indicates an estimated value. This flag is used when estimating a concentration of a compound that meets identification criteria but the result is less than the quantitation or reporting limit but greater than the method detection limit.

P - This flag is used for any two column confirmation methodology when there is greater than 40% difference for detected concentrations between the two columns. The primary column value is reported on the Form 1 and flagged with a "P".

B - This flag is used when the analyte is found above the reporting limit in the blank as well as the sample. It indicates possible/probable blank contamination and warns the data user to take appropriate action.

Release of the data contained in this package has been authorized by the Technical Services Manager or his designee as verified by the following signature.

Dean S. Dickerson
Technical Services Manager

# Sample Receipt Information

Rev. 1.1

aiegerial in 6613
dlc
2-20-14

# ARDL, Inc

P.O. Box 1566, 400 Aviation Drive, Mount Vernon, Illinois 62864
Phone (618) 244-3235, Fax (618) 244-1149

## CHAIN OF CUSTODY RECORD

Project
ARDL / Makau Military Reservation Oahu, Hawaii Project

SAMPLERS (Signature)

| SAMPLE NUMBER | DATE | TIME | Comp | Grab | # of Containers | Purgeable Organics 8260B | Explosives 8330 | OCPs 8081 | SVCOs 8270C | | | | | | | | | ARDL, Inc Remarks or Sample Location | PRESERVATION ICED | PRESERVATION Specify Chemicals added and final pH if known |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MAK101O | 1/13/2014 | 10:02 | | X | 1 | X | x | x | x | | | | | | | | | Octopus | x | |
| MAK102O | 1/13/2014 | 10:30 | | X | 1 | X | x | x | x | | | | | | | | | Octopus | x | |
| MAK103O | 1/13/2014 | 11:02 | | X | 1 | X | x | x | x | | | | | | | | | Octopus | x | |
| MAK104O | 1/13/2014 | 11:30 | | X | 1 | X | x | x | x | | | | | | | | | Octopus | x | |
| MAK105O | 1/13/2014 | 11:58 | | X | 1 | X | x | x | x | | | | | | | | | Octopus | x | |
| MAK106O | 1/13/2014 | 12:20 | | X | 1 | X | x | x | x | | | | | | | | | Octopus | x | |
| MAK107O | 1/13/2014 | 13:05 | | X | 1 | X | x | x | x | | | | | | | | | Octopus | x | |
| MAK108O | 1/13/2014 | 14:20 | | X | 1 | X | x | x | x | | | | | | | | | Octopus | x | |
| MAK102C | 1/13/2014 | 10:02 | | X | 1 | X | x | x | x | | | | | | | | | Sea Cucumber | x | |
| MAK103C | 1/13/2014 | 10:22 | | X | 1 | X | x | x | x | | | | | | | | | Sea Cucumber | x | |
| MAK104C | 1/13/2014 | 11:00 | | X | 1 | X | x | x | x | | | | | | | | | Sea Cucumber | x | |
| MAK105C | 1/13/2014 | 11:30 | | X | 1 | X | x | x | x | | | | | | | | | Sea Cucumber | x | |
| MAK106C | 1/13/2014 | 12:05 | | X | 1 | X | x | x | x | | | | | | | | | Sea Cucumber | x | |
| MAK107C | 1/13/2014 | 12:40 | | X | 1 | X | x | x | x | | | | | | | | | Sea Cucumber | x | |
| MAK108C | 1/13/2014 | 13:50 | | X | 1 | X | x | x | x | | | | | | | | | Sea Cucumber | x | |
| MAK110C | 1/14/2014 | 9:55 | | X | 1 | X | x | x | x | | | | | | | | | Sea Cucumber | x | |
| MAK101L | 1/13/2014 | 9:10 | | X | 1 | X | x | x | x | | | | | | | | | Limu (seaweed) | x | |
| MAK102L | 1/13/2014 | 10:02 | | X | 1 | X | x | x | x | | | | | | | | | Limu (seaweed) | x | |
| MAK105L | 1/13/2014 | 15:20 | | X | 1 | X | x | x | x | | | | | | | | | Limu (seaweed) | x | |
| MAK106L | 1/14/2014 | 8:45 | | X | 1 | X | x | x | x | | | | | | | | | Limu (seaweed) | x | |
| MAK108,109,110,113L | 1/14/2014 | | X | | 1 | X | x | x | x | | | | | | | | | Limu (seaweed) | x | |
| MAK111L | 1/14/2014 | 12:05 | | X | 1 | X | x | x | x | | | | | | | | | Limu (seaweed) | x | |
| MAK112L | 1/14/2014 | 12:50 | | X | 1 | X | x | x | x | | | | | | | | | Limu (seaweed) | x | |
| MAK115L | 1/14/2014 | 14:00 | | X | 1 | X | x | x | x | | | | | | | | | Limu (seaweed) | x | |

| Relinquished by: (Signature) | Date | Time | Relinquished by: (Signature) |
|---|---|---|---|
| PAG | 2/19/14 | 1600 | |
| Relinquished by: (Signature) | Date | Time | Relinquished by: (Signature) |
| | | | |
| Received for Laboratory by: (Signature) | Date | Time | Shipping Ticket No. |
| L Cochrum | 2/20/14 | 0920 | |

REMARKS / SPECIAL INSTRUCTIONS:

Please send level 4 hardcopy report and excel edd to: Dean Dickerson, c/o ARDL, Inc. 400 Aviation Drive, Mount Vernon, IL 62864. Email questons to ddickerson@ardlinc.com.

Aliquot in 6613
dlc
2-20-14

# COOLER RECEIPT REPORT
# ARDL, INC.

ARDL #: 6611, 6612, 6613

Cooler # HH001
Number of Coolers in Shipment: 1

Project: MAKAU Military Reservation Oahu Hawaii Project

Date Received: 2-20-14

A. **PRELIMINARY EXAMINATION PHASE:** Date cooler was opened: 2-20-14 (Signature) DL Cachrum

1. Did cooler come with a shipping slip (airbill, etc.)? ..... (YES) NO
   If YES, enter carrier name and airbill number here: Fedex 9325 1888 0829
2. Were custody seals on outside of cooler? ..... YES (NO) N/A
   How many and where? _____, Seal Date: _____, Seal Name: _____
3. Were custody seals unbroken and intact at the date and time of arrival? ..... YES NO (N/A)
4. Did you screen samples for radioactivity using a Geiger Counter? ..... (YES) NO
5. Were custody papers sealed in a plastic bag ~~and taped inside to the lid?~~ dlc 2/20/14 ..... (YES) NO
6. Were custody papers filled out properly (ink, signed, etc.)? ..... (YES) NO N/A
7. Were custody papers signed in appropriate place by ARDL personnel? ..... (YES) NO N/A
8. Was project identifiable from custody papers? If YES, enter project name at the top of this form ..... (YES) NO N/A
9. Was a separate container provided for measuring temperature? YES____ NO ✓ Cooler Temp. -6.5 C

B. **LOG-IN PHASE:** Date samples were logged-in: 2-20-14 (Signature) DL Cachrum

10. Describe type of packing in cooler: blue ice / bubble bags
11. Were all bottles sealed in separate plastic bags? in bags / not sealed ..... YES NO N/A
12. Did all bottles arrive unbroken and were labels in good condition? ..... YES (NO)
13. Were bottle labels complete? ..... (YES) NO
14. Did all bottle labels agree with custody papers? ..... (YES) NO
15. Were correct containers used for the tests indicated? ..... (YES) NO
16. Was pH correct on preserved water samples? ..... YES NO (N/A)
17. Was a sufficient amount of sample sent for tests indicated? ..... (YES) NO
18. Were bubbles absent in VOA samples? If NO, list by sample #: _____ YES NO (N/A)
19. Was the ARDL project coordinator notified of any deficiencies? ..... YES NO (N/A)

| Comments and/or Corrective Action: |
|---|
| 13) MAK 115L Cracked lid / seal intact |
| |
| |
| |
| |
| (By: Signature) dlc Date: 2-20-14 |

| Sample Transfer | |
|---|---|
| Fraction: All | Fraction: |
| Area #: Freezer | Area #: |
| By: dlc | By: |
| On: 2-20-14 | On: |

M:\ADMIN\FORMS\COOLER RECEIPT REPORT.doc Rev. 05/07/07

original in 6613
dlc
2-20-14

ORIGIN ID:GRBA (920) 469-2436
SHIPPING
PACE ANALYTICAL
1241 BELLEVUE

GREEN BAY, WI 54302
UNITED STATES US

SHIP DATE: 19FEB14
ACTWGT: 64.0 LB
CAD: 255289/CAFE2704

DRY ICE: 4.5 KGS
BILL THIRD PARTY

TO DEAN DICKERSON
ARDL
400 AVIATION DRIVE
P.O BOX 1566
MOUNT VERNON IL 62864
(618) 244-3235
DEPT: 1301-9501

518C1/562F/6F03

FedEx Express

J13111305230126

THU -- 20 FEB AA
STANDARD OVERNIGHT

TRK# 0201 9325 1888 0829

ICE

NA MVNA

62864
IL-US STL

Part # 156148-434 RIT2 03/12

# Field Sample Results

Rev. 1.1

ARDL, INC.
400 Aviation Drive; P.O. Box 1566
Mt. Vernon, Illinois 62864

Lab Report No: 006612 Report Date: 03/20/2014

Project Name: MAKAU MILITARY RES O Analysis: VOLATILES, GC/MS (8260)
Project No.: Analytical Method: 8260B
NELAC Certified - IL100308 Prep Method: 5030A

| | | | |
|---|---|---|---|
| Field ID: | MAK102C | ARDL Lab No.: | 006612-01 |
| Desc/Location: | MAKAU MILITARY RES OAHU | Lab Filename: | A0226406 |
| Sample Date: | 01/13/2014 | Received Date: | 02/20/2014 |
| Sample Time: | 1002 | Prep. Date: | 02/26/2014 |
| Matrix: | TISSUE | Analysis Date: | 02/26/2014 |
| Amount Used: | 2 g | Instrument ID: | AG1 |
| Final Volume: | 5 mL | QC Batch: | 0227JFST |
| % Moisture: | No Moisture Present | Level: | LOW |

| Parameter | Method Limit | Reporting Limit | Result | Data Flag | Units | Dilution Factor |
|---|---|---|---|---|---|---|
| Toluene | 2.50 | 12.5 | ND | | UG/KG | 1 |
| Ethyl Benzene | 2.50 | 12.5 | ND | | UG/KG | 1 |
| m & p-Xylene | 5.0 | 25.0 | ND | | UG/KG | 1 |
| Styrene | 2.50 | 12.5 | ND | | UG/KG | 1 |
| o-Xylene | 2.50 | 12.5 | ND | | UG/KG | 1 |
| 1,2,4-Trimethylbenzene | 2.50 | 12.5 | ND | | UG/KG | 1 |

| SURROGATE RECOVERIES: | Limits | Results |
|---|---|---|
| Toluene-d8 | 50-150 | 96% |
| 4-Bromofluorobenzene | 50-150 | 104% |

Surrogate recoveries marked with '*' indicates they are outside standard limits.

Sample 006612-01, VOLATILES, GC/MS (8260) Page 1 of 1

ARDL, INC.
400 Aviation Drive; P.O. Box 1566
Mt. Vernon, Illinois 62864

Lab Report No: 006612 Report Date: 03/20/2014

Project Name: MAKAU MILITARY RES O Analysis: VOLATILES, GC/MS (8260)
Project No.: Analytical Method: 8260B
NELAC Certified - IL100308 Prep Method: 5030A

| | | | |
|---|---|---|---|
| Field ID: | MAK103C | ARDL Lab No.: | 006612-02 |
| Desc/Location: | MAKAU MILITARY RES OAHU | Lab Filename: | A0226407 |
| Sample Date: | 01/13/2014 | Received Date: | 02/20/2014 |
| Sample Time: | 1022 | Prep. Date: | 02/26/2014 |
| Matrix: | TISSUE | Analysis Date: | 02/26/2014 |
| Amount Used: | 2 g | Instrument ID: | AG1 |
| Final Volume: | 5 mL | QC Batch: | 0227JFST |
| % Moisture: | No Moisture Present | Level: | LOW |

| Parameter | Method Limit | Reporting Limit | Result | Data Flag | Units | Dilution Factor |
|---|---|---|---|---|---|---|
| Toluene | 2.50 | 12.5 | ND | | UG/KG | 1 |
| Ethyl Benzene | 2.50 | 12.5 | ND | | UG/KG | 1 |
| m & p-Xylene | 5.0 | 25.0 | ND | | UG/KG | 1 |
| Styrene | 2.50 | 12.5 | ND | | UG/KG | 1 |
| o-Xylene | 2.50 | 12.5 | ND | | UG/KG | 1 |
| 1,2,4-Trimethylbenzene | 2.50 | 12.5 | ND | | UG/KG | 1 |

| SURROGATE RECOVERIES: | Limits | Results |
|---|---|---|
| Toluene-d8 | 50-150 | 92% |
| 4-Bromofluorobenzene | 50-150 | 104% |

Surrogate recoveries marked with '*' indicates they are outside standard limits.

Sample 006612-02, VOLATILES, GC/MS (8260) Page 1 of 1

ARDL, INC.
400 Aviation Drive; P.O. Box 1566
Mt. Vernon, Illinois 62864

Lab Report No: 006612 Report Date: 03/20/2014

Project Name: MAKAU MILITARY RES O Analysis: VOLATILES, GC/MS (8260)
Project No.: Analytical Method: 8260B
NELAC Certified - IL100308 Prep Method: 5030A

| | | | |
|---|---|---|---|
| Field ID: | MAK104C | ARDL Lab No.: | 006612-03 |
| Desc/Location: | MAKAU MILITARY RES OAHU | Lab Filename: | A0226408 |
| Sample Date: | 01/13/2014 | Received Date: | 02/20/2014 |
| Sample Time: | 1100 | Prep. Date: | 02/26/2014 |
| Matrix: | TISSUE | Analysis Date: | 02/26/2014 |
| Amount Used: | 2 g | Instrument ID: | AG1 |
| Final Volume: | 5 mL | QC Batch: | 0227JFST |
| % Moisture: | No Moisture Present | Level: | LOW |

| Parameter | Method Limit | Reporting Limit | Result | Data Flag | Units | Dilution Factor |
|---|---|---|---|---|---|---|
| Toluene | 2.50 | 12.5 | ND | | UG/KG | 1 |
| Ethyl Benzene | 2.50 | 12.5 | ND | | UG/KG | 1 |
| m & p-Xylene | 5.0 | 25.0 | ND | | UG/KG | 1 |
| Styrene | 2.50 | 12.5 | ND | | UG/KG | 1 |
| o-Xylene | 2.50 | 12.5 | ND | | UG/KG | 1 |
| 1,2,4-Trimethylbenzene | 2.50 | 12.5 | ND | | UG/KG | 1 |

| SURROGATE RECOVERIES: | Limits | Results |
|---|---|---|
| Toluene-d8 | 50-150 | 91% |
| 4-Bromofluorobenzene | 50-150 | 95% |

Surrogate recoveries marked with '*' indicates they are outside standard limits.

Sample 006612-03, VOLATILES, GC/MS (8260) Page 1 of 1

# ARDL, INC.
## 400 Aviation Drive; P.O. Box 1566
## Mt. Vernon, Illinois 62864

Lab Report No: 006612 Report Date: 03/20/2014

Project Name: MAKAU MILITARY RES O Analysis: VOLATILES, GC/MS (8260)
Project No.: Analytical Method: 8260B
NELAC Certified - IL100308 Prep Method: 5030A

| | | | |
|---|---|---|---|
| Field ID: | MAK105C | ARDL Lab No.: | 006612-04 |
| Desc/Location: | MAKAU MILITARY RES OAHU | Lab Filename: | A0226409 |
| Sample Date: | 01/13/2014 | Received Date: | 02/20/2014 |
| Sample Time: | 1130 | Prep. Date: | 02/26/2014 |
| Matrix: | TISSUE | Analysis Date: | 02/26/2014 |
| Amount Used: | 2 g | Instrument ID: | AG1 |
| Final Volume: | 5 mL | QC Batch: | 0227JFST |
| % Moisture: | No Moisture Present | Level: | LOW |

| Parameter | Method Limit | Reporting Limit | Result | Data Flag | Units | Dilution Factor |
|---|---|---|---|---|---|---|
| Toluene | 2.50 | 12.5 | ND | | UG/KG | 1 |
| Ethyl Benzene | 2.50 | 12.5 | ND | | UG/KG | 1 |
| m & p-Xylene | 5.0 | 25.0 | ND | | UG/KG | 1 |
| Styrene | 2.50 | 12.5 | ND | | UG/KG | 1 |
| o-Xylene | 2.50 | 12.5 | ND | | UG/KG | 1 |
| 1,2,4-Trimethylbenzene | 2.50 | 12.5 | ND | | UG/KG | 1 |

| SURROGATE RECOVERIES: | Limits | Results |
|---|---|---|
| Toluene-d8 | 50-150 | 84% |
| 4-Bromofluorobenzene | 50-150 | 97% |

Surrogate recoveries marked with '*' indicates they are outside standard limits.

Sample 006612-04, VOLATILES, GC/MS (8260) Page 1 of 1

**ARDL, INC.**
**400 Aviation Drive; P.O. Box 1566**
**Mt. Vernon, Illinois 62864**

Lab Report No: 006612 Report Date: 03/20/2014

Project Name: MAKAU MILITARY RES O Analysis: VOLATILES, GC/MS (8260)
Project No.: Analytical Method: 8260B
NELAC Certified - IL100308 Prep Method: 5030A

| | | | |
|---|---|---|---|
| Field ID: | MAK106C | ARDL Lab No.: | 006612-05 |
| Desc/Location: | MAKAU MILITARY RES OAHU | Lab Filename: | A0226410 |
| Sample Date: | 01/13/2014 | Received Date: | 02/20/2014 |
| Sample Time: | 1205 | Prep. Date: | 02/26/2014 |
| Matrix: | TISSUE | Analysis Date: | 02/26/2014 |
| Amount Used: | 2 g | Instrument ID: | AG1 |
| Final Volume: | 5 mL | QC Batch: | 0227JFST |
| % Moisture: | No Moisture Present | Level: | LOW |

| Parameter | Method Limit | Reporting Limit | Result | Data Flag | Units | Dilution Factor |
|---|---|---|---|---|---|---|
| Toluene | 2.50 | 12.5 | ND | | UG/KG | 1 |
| Ethyl Benzene | 2.50 | 12.5 | ND | | UG/KG | 1 |
| m & p-Xylene | 5.0 | 25.0 | ND | | UG/KG | 1 |
| Styrene | 2.50 | 12.5 | ND | | UG/KG | 1 |
| o-Xylene | 2.50 | 12.5 | ND | | UG/KG | 1 |
| 1,2,4-Trimethylbenzene | 2.50 | 12.5 | ND | | UG/KG | 1 |

| SURROGATE RECOVERIES: | Limits | Results |
|---|---|---|
| Toluene-d8 | 50-150 | 87% |
| 4-Bromofluorobenzene | 50-150 | 97% |

Surrogate recoveries marked with '*' indicates they are outside standard limits.

Sample 006612-05, VOLATILES, GC/MS (8260) Page 1 of 1

# ARDL, INC.
## 400 Aviation Drive; P.O. Box 1566
## Mt. Vernon, Illinois 62864

Lab Report No: 006612 Report Date: 03/20/2014

Project Name: MAKAU MILITARY RES O Analysis: VOLATILES, GC/MS (8260)
Project No.: Analytical Method: 8260B
NELAC Certified - IL100308 Prep Method: 5030A

| | | | |
|---|---|---|---|
| Field ID: | MAK107C | ARDL Lab No.: | 006612-06 |
| Desc/Location: | MAKAU MILITARY RES OAHU | Lab Filename: | A0226411 |
| Sample Date: | 01/13/2014 | Received Date: | 02/20/2014 |
| Sample Time: | 1240 | Prep. Date: | 02/26/2014 |
| Matrix: | TISSUE | Analysis Date: | 02/26/2014 |
| Amount Used: | 2 g | Instrument ID: | AG1 |
| Final Volume: | 5 mL | QC Batch: | 0227JFST |
| % Moisture: | No Moisture Present | Level: | LOW |

| Parameter | Method Limit | Reporting Limit | Result | Data Flag | Units | Dilution Factor |
|---|---|---|---|---|---|---|
| Toluene | 2.50 | 12.5 | ND | | UG/KG | 1 |
| Ethyl Benzene | 2.50 | 12.5 | ND | | UG/KG | 1 |
| m & p-Xylene | 5.0 | 25.0 | ND | | UG/KG | 1 |
| Styrene | 2.50 | 12.5 | ND | | UG/KG | 1 |
| o-Xylene | 2.50 | 12.5 | ND | | UG/KG | 1 |
| 1,2,4-Trimethylbenzene | 2.50 | 12.5 | ND | | UG/KG | 1 |

| SURROGATE RECOVERIES: | Limits | Results |
|---|---|---|
| Toluene-d8 | 50-150 | 89% |
| 4-Bromofluorobenzene | 50-150 | 88% |

Surrogate recoveries marked with '*' indicates they are outside standard limits.

Sample 006612-06, VOLATILES, GC/MS (8260) Page 1 of 1

ARDL, INC.
400 Aviation Drive; P.O. Box 1566
Mt. Vernon, Illinois 62864

Lab Report No: 006612 Report Date: 03/20/2014

Project Name: MAKAU MILITARY RES O Analysis: VOLATILES, GC/MS (8260)
Project No.: Analytical Method: 8260B
NELAC Certified - IL100308 Prep Method: 5030A

| | | | |
|---|---|---|---|
| Field ID: | MAK108C | ARDL Lab No.: | 006612-07 |
| Desc/Location: | MAKAU MILITARY RES OAHU | Lab Filename: | A0226412 |
| Sample Date: | 01/13/2014 | Received Date: | 02/20/2014 |
| Sample Time: | 1350 | Prep. Date: | 02/26/2014 |
| Matrix: | TISSUE | Analysis Date: | 02/26/2014 |
| Amount Used: | 2 g | Instrument ID: | AG1 |
| Final Volume: | 5 mL | QC Batch: | 0227JFST |
| % Moisture: | No Moisture Present | Level: | LOW |

| Parameter | Method Limit | Reporting Limit | Result | Data Flag | Units | Dilution Factor |
|---|---|---|---|---|---|---|
| Toluene | 2.50 | 12.5 | ND | | UG/KG | 1 |
| Ethyl Benzene | 2.50 | 12.5 | ND | | UG/KG | 1 |
| m & p-Xylene | 5.0 | 25.0 | ND | | UG/KG | 1 |
| Styrene | 2.50 | 12.5 | ND | | UG/KG | 1 |
| o-Xylene | 2.50 | 12.5 | ND | | UG/KG | 1 |
| 1,2,4-Trimethylbenzene | 2.50 | 12.5 | ND | | UG/KG | 1 |

| SURROGATE RECOVERIES: | Limits | Results |
|---|---|---|
| Toluene-d8 | 50-150 | 91% |
| 4-Bromofluorobenzene | 50-150 | 104% |

Surrogate recoveries marked with '*' indicates they are outside standard limits.

Sample 006612-07, VOLATILES, GC/MS (8260) Page 1 of 1

# ARDL, INC.
## 400 Aviation Drive; P.O. Box 1566
## Mt. Vernon, Illinois 62864

Lab Report No: 006612 Report Date: 03/20/2014

Project Name: MAKAU MILITARY RES O Analysis: VOLATILES, GC/MS (8260)
Project No.: Analytical Method: 8260B
NELAC Certified - IL100308 Prep Method: 5030A

| | | | |
|---|---|---|---|
| Field ID: | MAK110C | ARDL Lab No.: | 006612-08 |
| Desc/Location: | MAKAU MILITARY RES OAHU | Lab Filename: | A0226413 |
| Sample Date: | 01/14/2014 | Received Date: | 02/20/2014 |
| Sample Time: | 0955 | Prep. Date: | 02/26/2014 |
| Matrix: | TISSUE | Analysis Date: | 02/26/2014 |
| Amount Used: | 2 g | Instrument ID: | AG1 |
| Final Volume: | 5 mL | QC Batch: | 0227JFST |
| % Moisture: | No Moisture Present | Level: | LOW |

| Parameter | Method Limit | Reporting Limit | Result | Data Flag | Units | Dilution Factor |
|---|---|---|---|---|---|---|
| Toluene | 2.50 | 12.5 | ND | | UG/KG | 1 |
| Ethyl Benzene | 2.50 | 12.5 | ND | | UG/KG | 1 |
| m & p-Xylene | 5.0 | 25.0 | ND | | UG/KG | 1 |
| Styrene | 2.50 | 12.5 | ND | | UG/KG | 1 |
| o-Xylene | 2.50 | 12.5 | ND | | UG/KG | 1 |
| 1,2,4-Trimethylbenzene | 2.50 | 12.5 | ND | | UG/KG | 1 |

| SURROGATE RECOVERIES: | Limits | Results |
|---|---|---|
| Toluene-d8 | 50-150 | 89% |
| 4-Bromofluorobenzene | 50-150 | 95% |

Surrogate recoveries marked with '*' indicates they are outside standard limits.

Sample 006612-08, VOLATILES, GC/MS (8260) Page 1 of 1

# QC Summary Forms

**Surrogate Summary, if applicable**

**Spike Blank and/or MS Summary**

**Blank Results & Blank Summary, if applicable**

**ISTD Area Summary, if applicable**

Rev. 1.1

2B
SEA CUCUMBER VOLATILE SURROGATE RECOVERY

Lab Name: ARDL, INC. Contract: ---

Lab Code: --- Case No.: 006612 SAS No.: --- SDG No.: ---

| | EPA SAMPLE NO. | S1 (TOL) # | S2 (BFB) # | S3 ( ) # | S4 ( ) # | | | TOT OUT |
|---|---|---|---|---|---|---|---|---|
| 01 | SPBK 02/26/14 | 98 | 96 | | | | | 0 |
| 02 | BK 02/26/14 | 102 | 112 | | | | | 0 |
| 03 | MAK102C | 96 | 104 | | | | | 0 |
| 04 | MAK103C | 92 | 104 | | | | | 0 |
| 05 | MAK104C | 91 | 95 | | | | | 0 |
| 06 | MAK105C | 84 | 97 | | | | | 0 |
| 07 | MAK106C | 87 | 97 | | | | | 0 |
| 08 | MAK107C | 89 | 88 | | | | | 0 |
| 09 | MAK108C | 91 | 104 | | | | | 0 |
| 10 | MAK110C | 89 | 95 | | | | | 0 |
| 11 | MAK110CMSD | 99 | 102 | | | | | 0 |
| 12 | MAK110CMS | 103 | 104 | | | | | 0 |
| 13 | | | | | | | | |
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| 29 | | | | | | | | |
| 30 | | | | | | | | |

| | | QC LIMITS | MATRIX LIMITS |
|---|---|---|---|
| S1 | Toluene-d8 | ( 50 - 150 ) | ( 50 - 150 ) |
| S2 | 4-Bromofluorobenzene | ( 50 - 150 ) | ( 50 - 150 ) |
| S3 | | ( - ) | ( - ) |
| S4 | | ( - ) | ( - ) |

# column to be used to flag recovery values
* Values outside of contract required QC limits
D Surrogates diluted out

# BLANK SPIKE/SPIKE DUPLICATE REPORT

ARDL, INC. 400 Aviation Drive; P.O. Box 1566 Mt. Vernon, IL 62864

Lab Report No: 006612 Report Date: 03/20/2014

Project Name: MAKAU MILITARY RES O Analysis: VOLATILES, GC/MS (8260) Analytical Method: 8260B
Project No.: Prep Method: 5030A

Matrix: QC Material QC Batch: 0227JFST Prep. Date: 02/26/2014
Amount Used: 2 g Level: LOW Analysis Date: 02/26/2014

| Parameter | Spike Result | Spike Level | Spike % Rec | Duplicate Result | Duplicate Level | Duplicate % Rec | Recovery Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|
| Toluene | 94.2 | 100 | 94 | -- | -- | -- | 85-118 | -- | -- |
| Ethyl Benzene | 95.5 | 100 | 96 | -- | -- | -- | 86-119 | -- | -- |
| m & p-Xylene | 195 | 200 | 98 | -- | -- | -- | 81-121 | -- | -- |
| Styrene | 94.2 | 100 | 94 | -- | -- | -- | 84-119 | -- | -- |
| o-Xylene | 92.8 | 100 | 93 | -- | -- | -- | 81-121 | -- | -- |
| 1,2,4-Trimethylbenzene | 104 | 100 | 104 | -- | -- | -- | 83-119 | -- | -- |

| SURROGATE RECOVERIES: | Spike %R | Duplicate %R | %R Limits |
|---|---|---|---|
| Toluene-d8 | 98 | -- | 50-150 |
| 4-Bromofluorobenzene | 96 | -- | 50-150 |

'*' indicates a recovery outside of standard limits.
Spike Blanks for 006612-08, VOLATILES, GC/MS (8260)

# MATRIX SPIKE/SPIKE DUPLICATE REPORT

**ARDL, INC. 400 Aviation Drive; P.O. Box 1566 Mt. Vernon, IL 62864**

Lab Report No: 006612 Report Date: 03/20/2014

Project Name: MAKAU MILITARY RES O Analysis: VOLATILES, GC/MS (8260) Analytical Method: 8260B
Project No.: Prep Method: 5030A

| | | | | | |
|---|---|---|---|---|---|
| Field ID: | MAK110C | Prep. Date: | 02/26/2014 | ARDL Lab No.: | 006612-08 |
| Desc/Location: | MAKAU MILITARY RES OAHU | Amount Used: | 2 g | Lab Filename: | |
| Sample Date: | 01/14/2014 | % Moisture: | No Moisture Present | Received Date: | 02/20/2014 |
| Sample Time: | 0955 | QC Batch: | 0227JFST | Analysis Date: | 02/26/2014 |
| Matrix: | TISSUE | Level: | LOW | | |

| Parameter | Sample Result | MS Result | MS Level | MS % Rec | MSD Result | MSD Level | MSD % Rec | % Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| Toluene | ND | 102 | 100 | 101.9 | 87.4 | 100 | 87.4 | 81-126 | 15.3 | 25 |
| Ethyl Benzene | ND | 102 | 100 | 102 | 86.3 | 100 | 86.3 | 82-130 | 16.7 | 25 |
| m & p-Xylene | ND | 207 | 200 | 103.5 | 177 | 200 | 88.3 | 84-129 | 15.9 | 25 |
| Styrene | ND | 102 | 100 | 101.9 | 83.6 | 100 | 83.6 | 79-127 | 19.7 | 25 |
| o-Xylene | ND | 101 | 100 | 101.1 | 84.2 | 100 | 84.2 | 81-128 | 18.3 | 25 |
| 1,2,4-Trimethylbenzene | ND | 107 | 100 | 107.3 | 91.3 | 100 | 91.3 | 80-124 | 16 | 25 |

| SURROGATE RECOVERIES: | MS %R | MSD %R | %R Limits |
|---|---|---|---|
| Toluene-d8 | 103 | 99 | 50-150 |
| 4-Bromofluorobenzene | 104 | 102 | 50-150 |

'nc' indicates sample >4X spike level.
'*' indicates a recovery outside of standard limits.
Matrix Spikes for 006612-08, VOLATILES, GC/MS (8260)

4B

VOLATILE METHOD BLANK SUMMARY

EPA SAMPLE NO.

BK 02/26/14

Lab Name: ARDL, INC. Contract: ---

Lab Code: --- Case No.: 006612 SAS No.: --- SDG No.: ---

Lab File ID: A0226405 Lab Sample ID: 006612-08B1

Date Analyzed: 02/26/14 Time Analyzed: 10:40

GC Column: RTX-VMS ID: 0.25 (mm) Heated Purge: (Y/N) Y

Instrument ID: AG1

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS, AND MSD:

| | EPA SAMPLE NO. | LAB SAMPLE ID | LAB FILE ID | TIME ANALYZED |
|---|---|---|---|---|
| 01 | MAK102C | 006612-01 | A0226406 | 11:18 |
| 02 | MAK103C | 006612-02 | A0226407 | 11:50 |
| 03 | MAK104C | 006612-03 | A0226408 | 12:20 |
| 04 | MAK105C | 006612-04 | A0226409 | 12:50 |
| 05 | MAK106C | 006612-05 | A0226410 | 13:20 |
| 06 | MAK107C | 006612-06 | A0226411 | 13:49 |
| 07 | MAK108C | 006612-07 | A0226412 | 14:19 |
| 08 | MAK110C | 006612-08 | A0226413 | 14:47 |
| 09 | MAK110CMSD | 006612-08MD | A0226415 | 15:44 |
| 10 | MAK110CMS | 006612-08MS | A0226416 | 16:12 |
| 11 | | | | |
| 12 | | | | |
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COMMENTS:

# METHOD BLANK REPORT
## ARDL, Inc. 400 Aviation Drive; P.O. Box 1566
## Mt. Vernon, Illinois 62864

Lab Report No: 006612 Report Date: 03/20/2014

Project Name: MAKAU MILITARY RES O Analysis: VOLATILES, GC/MS (8260)
Project No.: Analytical Method: 8260B
NELAC Certified - IL100308 Prep Method: 5030A

| | | | |
|---|---|---|---|
| Field ID: | NA | ARDL Lab No.: | 006612-08B1 |
| Desc/Location: | NA | Lab Filename: | A0226405 |
| Sample Date: | NA | Received Date: | NA |
| Sample Time: | NA | Prep. Date: | 02/26/2014 |
| Matrix: | QC Material | Analysis Date: | 02/26/2014 |
| Amount Used: | 2 g | Instrument ID: | AG1 |
| Final Volume: | 5 mL | QC Batch: | 0227JFST |
| % Moisture: | NA | Level: | LOW |

| Parameter | Method Limit | Reporting Limit | Result | Data Flag | Units |
|---|---|---|---|---|---|
| Toluene | 2.50 | 12.5 | ND | | UG/KG |
| Ethyl Benzene | 2.50 | 12.5 | ND | | UG/KG |
| m & p-Xylene | 5.00 | 25.0 | ND | | UG/KG |
| Styrene | 2.50 | 12.5 | ND | | UG/KG |
| o-Xylene | 2.50 | 12.5 | ND | | UG/KG |
| 1,2,4-Trimethylbenzene | 2.50 | 12.5 | ND | | UG/KG |

| SURROGATE RECOVERIES: | Limits | Results |
|---|---|---|
| Toluene-d8 | 50-150 | 102% |
| 4-Bromofluorobenzene | 50-150 | 112% |

Surrogate recoveries marked with '*' indicates they are outside standard limits.

Blank for Run 0227JFST, VOLATILES, GC/MS (8260) Page 1 of 1

8A

VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ARDL, Inc. Contract: ---

Lab Code: --- Case No.: 006612 SAS No.: --- SDG No.: ---

Lab File ID (Standard): A0212416 Date Analyzed: 02/12/14

Instrument ID: AG1 Time Analyzed: 18:32

Matrix: (soil/water) Sea Cuc Level: (low/med) Low Column: (pack/cap) CAP

| | | IS1(CBZ) AREA # | RT # | IS2(DCB ) AREA # | RT # | IS3( ) AREA # | RT # |
|---|---|---|---|---|---|---|---|
| | 12 HOUR STANDARD | 279384 | 8.76 | 268227 | 10.14 | | |
| | UPPER LIMIT | 558768 | 9.26 | 536454 | 10.64 | | |
| | LOWER LIMIT | 139692 | 8.26 | 134114 | 9.64 | | |
| | EPA SAMPLE NO. | | | | | | |
| 1 | SPBK 02/26/14 | 271841 | 8.77 | 293913 | 10.14 | | |
| 2 | BK 02/26/14 | 253105 | 8.77 | 276879 | 10.14 | | |
| 3 | MAK102C | 238949 | 8.77 | 265200 | 10.14 | | |
| 4 | MAK103C | 234934 | 8.77 | 255501 | 10.14 | | |
| 5 | MAK104C | 227281 | 8.77 | 271342 | 10.14 | | |
| 6 | MAK105C | 238747 | 8.77 | 261412 | 10.14 | | |
| 7 | MAK106C | 232103 | 8.77 | 260228 | 10.14 | | |
| 8 | MAK107C | 231942 | 8.76 | 292364 | 10.14 | | |
| 9 | MAK108C | 225333 | 8.76 | 242765 | 10.14 | | |
| 10 | MAK110C | 218672 | 8.76 | 260561 | 10.14 | | |
| 11 | MAK110CMSD | 248920 | 8.76 | 266762 | 10.14 | | |
| 12 | MAK110CMS | 260523 | 8.76 | 282781 | 10.14 | | |
| 13 | | | | | | | |
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| 22 | | | | | | | |

IS1 (CBZ) = Chlorobenzene-d5
IS2 (DCB) = 1,4-Dichlorobenzene-d4
IS3 ( ) =

UPPER LIMIT = +100%
of internal standard area
LOWER LIMIT = - 50%
of internal standard area

# Column used to flag internal standard area values with an asterisk
* Values outside of QC limits

# Sample Preparation Information

## (Not Applicable for VOA Purge and Trap Method)

Rev. 1.1

# Standards Preparation Information

Rev. 1.1

X1004 Gases - Ultra

DWM-544-1
Lot: CJ-2970
Exp: 08/31/2015
ULTRA 1 mL
VOC Gas Mixture
6 analyte(s) at 2000 µg/mL in methanol R4318
250 Smith St, No Kingstown, RI 02852 USA
For Laboratory Use Only
US 1/29/14

100 uL

3900 uL MeOH (R4474)
4000 uL 50 ug/mL US 1/29/14 Exp. 7/05/14

X1005 Acetone (only) STD

90 µL of ResTek Acetone (5000 ppm) 30245 Lot A088080 exp 07/2015
1710 µL of MeOH R4474

1,800 µL of 250 µg/mL
GM 1/30/14 exp. 2/6/14

X1006 Ketones (Absolute)

150 µL Abs Ketones (2,000 ppm) Cat 82402, Lot 070313 Xp 07/2016
1050 µL MeOH

1,200 µL of 250 µg/mL GM 1/30/14

X1007 BFB

50 uL STS-110N-1 lot CH-3248 2000 ug/mL (R4540) exp. 11/30/15
3950 uL MeOH (R4479)
4000 uL 25 ug/mL US 2/04/14 Exp. 8/04/14

US 2/04/14

Continued on Page

Read and Understood By

US 2/04/14 DPC 2/5/14
Signed Date Signed Date

X1021 524.2 IC MIX

43 ml 8260 Mix (W) DWM-589N-1 lot CK-2561 2000 ug/ml (R4501) exp. 9/30/16
86 ml Hexachloroethane (Abs) 70199 lot 052212 1000 ug/ml (R4497) exp. 5/22/17
17.2 ml DBCP (W) EPA-1021 lot CH-1351 5000 ug/ml (R4376) exp. 5/31/15
43 ml $CS_2$ (Acc) APP-9-035-20X lot 212071234 2.0 mg/ml (R4438) exp. 7/18/22
3810 ml MeOH (R4479)
4000 ml DBCP = 43 ug/ml
Other = 21.5 ug/ml LS 2/07/14 Exp. 2/14/14

X1022 Ketones - (Abs) 215 ug/ml

215 ml 82402 lot 070313 2000 ug/ml (R4512) exp. 7/03/16
1785 ml MeOH (R4479)
2000 ml 215 ug/ml LS 2/07/14 Exp. 2/14/14

X1023 ISTD - mix

STM-520-1
Lot: CH-3660
Exp: 12/31/2014
ULTRA 1 mL
Internal Standard Mixture
R4399 3 analyte(s) at 2500 µg/mL in methanol
250 Smith St, No Kingstown, RI 02852 USA
For Laboratory Use Only
LS 2/12/14

80 ml

3920 ml MeOH (R4479)
4000 ml 50 ug/ml LS 2/12/14 Exp. 2/19/14

X1024 Sur - mix

STM-530-1
Lot: CJ-1280
Exp: 05/31/2015
ULTRA 1 mL
Method 8260 Surrogate Standard Mixture
R4392 analyte(s) at 2500 µg/mL in methanol
250 Smith St, No Kingstown, RI 02852 USA
For Laboratory Use Only
LS 2/12/14

80 ml

3920 ml MeOH (R4479)
4000 ml 50 ug/ml LS 2/12/14 Exp. 2/19/14

Continued on Page

Read and Understood By

| Signed | Date | Signed | Date |
|---|---|---|---|
| LS | 2/12/14 | TRC | 2/13/14 |

X1025 IC MIX

| 8260 Mix (U) | MTBE (U) | RMA (CS) | Ketones (RES) | CS2 (ABS) | | MEOH | Final Vol. |
|---|---|---|---|---|---|---|---|
| DWM-589N<br>Lot CK-2561<br>2000 ug/mL<br>R4502<br>Exp.09/30/16 | STS-440-1<br>Lot CG-4444<br>2000 ug/mL<br>R4230<br>Exp. 01/31/15 | SP-1022-345DSZ<br>Lot 2246900<br>Varied Conc.<br>R4649<br>Exp. 12/31/14 | 30006<br>Lot A090981<br>5000 ug/mL<br>R4531<br>Exp. 12/2015 | 70060<br>Lot 121813<br>1000 ug/mL<br>R4661<br>Exp. 12/18/16 | | R4479 | (uL) |
| 200 | 200 | 400 | 160 | 400 | | 2640 | 4000 |

Ketones = 200 ug/mL
Acrylo/m&p-Xylenes = 200ug/mL
All other = 100ug/ml

Prep: 02/12/14
Exp: 02/19/14

US 2/12/14

X1026 Gases - Abs

100 ml 30058 lot 010713 2000 ug/mL (R4445) exp. 01/02/16
3900 ml MeOH (R4479)
4000 ml 50 ug/mL US 2/12/14 Exp. 2/19/14

X1027 ICV MIX

| 8260 Mix (ABS) | MTBE (S) | RMA (ACC) | Ketones (ABS) | CS2 (ACC) | MEOH | Final Vol. |
|---|---|---|---|---|---|---|
| 32001<br>Lot 022613<br>2000 ug/mL<br>R4449<br>Exp.02/26/16 | CRM48483<br>Lot LB94566<br>2000 ug/mL<br>R4517<br>Exp. 07/2015 | S-2932-R1<br>Lot 212081711<br>Varied Conc.<br>R4413<br>Exp. 9/04/14 | 82402<br>Lot 070313<br>2000 ug/mL<br>R4511<br>Exp. 07/03/16 | APP-9-035-20X<br>Lot 212071234<br>2.0 mg/mL<br>R4438<br>Exp. 07/18/22 | R4479 | (uL) |
| 25 | 25 | 250 | 50 | 25 | 1625 | 2000 |

Ketones/Acrylo/
m&p-Xylenes/DBCP = 50 ug/mL
OTHER = 25 ug/mL

Prep: 02/13/14
EXP: 02/20/14

US 2/13/14

X1028 Gases - Ultra

100 ml DWM-544 lot CJ-44469 2000 ug/mL (R4367) exp. 1/31/16
3900 ml MeOH (R4479)
4000 ml 50 ug/mL US 2/13/14 Exp. 2/20/14

Continued on Page

Read and Understood By

| Signed | Date | Signed | Date |
|---|---|---|---|
| US | 2/13/14 | RC | 2/17/14 |

# Certificate of Analysis

Rec'd 12/05/13

ULTRA SCIENTIFIC
Analytical Solutions

TRIPLE ISO CERTIFICATION ULTRA ISO 17025 • ISO GUIDE 34 • ISO 9001

## 4-Bromofluorobenzene Solution

**Product Number:** STS-110N **Page:** 1 of 1

**Lot Number:** CH-3248 **Lot Issue Date:** 07-Oct-2011 **Expiration Date:** 30-Nov-2015

This Certified Reference Material (RM) was manufactured and verified in accordance with ULTRA's ISO 9001 registered quality system, and the analyte concentrations were verified by our ISO 17025 accredited laboratory. The true value and uncertainty value at the 95% confidence level for each analyte, determined gravimetrically, is listed below.

| Analyte | CAS# | Analyte Lot | True Value |
|---|---|---|---|
| 4-bromofluorobenzene | 000460-00-4 | RM03365 | 2005 ± 10 µg/mL |

**Matrix:** methanol (methyl alcohol)

**Storage:** Store at < 4° C

ULTRA uses balances calibrated with weights traceable to NIST in compliance with ANSI/NCSL Z-540-1 and ISO 9001, and calibrated Class A glassware in the manufacturing of these standards.

A2LA ACCREDITED
ISO 17025:2005 Accredited A2LA Cert. No. 0851-01

ISO 9001:2008 Registered TUV USA, Inc. Cert. No. 09-1009

250 Smith Street, North Kingstown, RI 02852 USA
401-294-9400 Fax: 295-2330
wwww.ultrasci.com

William J. Leary
Quality Assurance Manager

# Certificate of Analysis

Rec'd 1/11/13

ULTRA SCIENTIFIC
Analytical Solutions

## Internal Standard Mixture

**Product Number:** STM-520 **Page:** 1 of 1

**Lot Number:** CH-3660 **Lot Issue Date:** 15-Nov-2011 **Expiration Date:** 31-Dec-2014

This Certified Reference Material (RM) was manufactured and verified in accordance with ULTRA's ISO 9001 registered quality system, and the analyte concentrations were verified by our ISO 17025 accredited laboratory. The true value and uncertainty value at the 95% confidence level for each analyte, determined gravimetrically, is listed below.

| Analyte | CAS# | Analyte Lot | True Value |
|---|---|---|---|
| chlorobenzene-d5 | 003114-55-4 | RM01430-01 | 2503 ± 13 µg/mL |
| 1,4-dichlorobenzene-d4 | 003855-82-1 | RM01700-06 | 2500 ± 13 µg/mL |
| fluorobenzene | 000462-06-6 | RM03366-01 | 2513 ± 13 µg/mL |

**Matrix:** methanol (methyl alcohol)

**Storage:** Store at < 4° C

ULTRA uses balances calibrated with weights traceable to NIST in compliance with ANSI/NCSL Z-540-1 and ISO 9001, and calibrated Class A glassware in the manufacturing of these standards.

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William J. Leary
Quality Assurance Manager

Rec'd 9/18/12

# Certificate of Analysis

ULTRA SCIENTIFIC
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## Method 8260 Surrogate Standard Mixture

**Product Number:** STM-530 **Page:** 1 of 1

**Lot Number:** CJ-1280 **Lot Issue Date:** 17-Apr-2012 **Expiration Date:** 31-May-2015

This certified Reference Material (RM) was manufactured and verified in accordance with ULTRA's ISO 9001 registered quality system, and the analyte concentrations were verified by our ISO 17025 accredited laboratory. The true value and uncertainty value at the 95% confidence level for each analyte, determined gravimetrically, is listed below.

| Analyte | CAS# | Analyte Lot | True Value |
|---|---|---|---|
| 4-bromofluorobenzene | 000460-00-4 | RM03908- | 2512 ± 13 µg/mL |
| dibromofluoromethane | 001868-53-7 | RM04871-01 | 2512 ± 13 µg/mL |
| 1,2-dichloroethane-d4 | 017060-07-0 | RM04304- | 2512 ± 13 µg/mL |
| toluene-d8 | 002037-26-5 | RM04138- | 2512 ± 13 µg/mL |

**Matrix:** methanol (methyl alcohol)

**Storage:** Store at < 4° C

ULTRA uses balances calibrated with weights traceable to NIST in compliance with ANSI/NCSL Z-540-1 and ISO 9001, and calibrated Class A glassware in the manufacturing of these standards.

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# Certificate of Analysis

Rec'd 8/30/13

## VOC Mixture

**Product Number:** DWM-589N **Page:** 1 of 3

**Lot Number:** CK-2561 **Lot Issue Date:** 06-Aug-2013 **Expiration Date:** 30-Sep-2016

This certified Reference Material (RM) was manufactured and verified in accordance with ULTRA's ISO 9001 registered quality system, and the analyte concentrations were verified by our ISO 17025 accredited laboratory. The true value and uncertainty value at the 95% confidence level for each analyte, determined gravimetrically, is listed below.

| Analyte | CAS# | Analyte Lot | True Value |
|---|---|---|---|
| bromochloromethane | 000074-97-5 | RM00009 | 2004 ± 10 µg/mL |
| bromodichloromethane | 000075-27-4 | RM06861 | 2008 ± 10 µg/mL |
| bromoform | 000075-25-2 | RM00350 | 2007 ± 10 µg/mL |
| carbon tetrachloride | 000056-23-5 | RM00012 | 2009 ± 10 µg/mL |
| chloroform | 000067-66-3 | RM06503 | 2009 ± 10 µg/mL |
| dibromochloromethane | 000124-48-1 | RM04264 | 2009 ± 10 µg/mL |
| dibromomethane | 000074-95-3 | RM02090 | 2010 ± 10 µg/mL |
| methylene chloride | 000075-09-2 | RM06447 | 1998 ± 10 µg/mL |
| 1,2-dibromoethane | 000106-93-4 | RM00018 | 2008 ± 10 µg/mL |
| 1,1-dichloroethane | 000075-34-3 | RM00019 | 2006 ± 10 µg/mL |
| 1,2-dichloroethane | 000107-06-2 | RM04655 | 2005 ± 10 µg/mL |
| 1,1-dichloroethene | 000075-35-4 | RM01356 | 2008 ± 10 µg/mL |
| cis-1,2-dichloroethene | 000156-59-2 | RM05327 | 2005 ± 10 µg/mL |
| trans-1,2-dichloroethene | 000156-60-5 | RM00490 | 2010 ± 10 µg/mL |
| 1,1,1,2-tetrachloroethane | 000630-20-6 | RM00024 | 2009 ± 10 µg/mL |
| 1,1,2,2-tetrachloroethane | 000079-34-5 | RM02540 | 2009 ± 10 µg/mL |
| tetrachloroethene | 000127-18-4 | RM00026 | 2008 ± 10 µg/mL |
| 1,1,1-trichloroethane | 000071-55-6 | RM00027 | 2009 ± 10 µg/mL |
| 1,1,2-trichloroethane | 000079-00-5 | RM02575 | 2010 ± 10 µg/mL |
| trichloroethene | 000079-01-6 | RM06644 | 2007 ± 10 µg/mL |

ULTRA uses balances calibrated with weights traceable to NIST in compliance with ANSI/NCSL Z-540-1 and ISO 9001, and calibrated Class A glassware in the manufacturing of these standards.

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William J. Leary
Quality Assurance Manager

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Analytical Solutions

# Certificate of Analysis

## VOC Mixture

**Product Number:** DWM-589N **Page:** 2 of 3

**Lot Number:** CK-2561 **Lot Issue Date:** 06-Aug-2013 **Expiration Date:** 30-Sep-2016

| Analyte | CAS# | Analyte Lot | True Value |
|---|---|---|---|
| 1,2-dibromo-3-chloropropane | 000096-12-8 | RM03703 | 2006 ± 10 µg/mL |
| 1,2-dichloropropane | 000078-87-5 | RM02091 | 2005 ± 10 µg/mL |
| 1,3-dichloropropane | 000142-28-9 | RM02080 | 2006 ± 10 µg/mL |
| 2,2-dichloropropane | 000594-20-7 | RM04312 | 2005 ± 10 µg/mL |
| 1,1-dichloropropene | 000563-58-6 | RM01234 | 2003 ± 10 µg/mL |
| cis-1,3-dichloropropene | 010061-01-5 | RM01442 | 2003 ± 10 µg/mL |
| trans-1,3-dichloropropene | 010061-02-6 | RM01443 | 2005 ± 10 µg/mL |
| hexachlorobutadiene | 000087-68-3 | RM00438 | 2006 ± 10 µg/mL |
| 1,2,3-trichloropropane | 000096-18-4 | RM02562 | 2008 ± 10 µg/mL |
| benzene | 000071-43-2 | RM03830 | 2005 ± 10 µg/mL |
| n-butylbenzene | 000104-51-8 | RM03651 | 2000 ± 10 µg/mL |
| sec-butylbenzene | 000135-98-8 | RM01800 | 2003 ± 10 µg/mL |
| tert-butylbenzene | 000098-06-6 | RM00043 | 2009 ± 10 µg/mL |
| ethylbenzene | 000100-41-4 | RM00783 | 2004 ± 10 µg/mL |
| isopropylbenzene | 000098-82-8 | RM00835 | 2009 ± 10 µg/mL |
| 4-isopropyltoluene | 000099-87-6 | RM00046 | 2001 ± 10 µg/mL |
| naphthalene | 000091-20-3 | RM02406 | 2005 ± 10 µg/mL |
| n-propylbenzene | 000103-65-1 | RM02468 | 2008 ± 10 µg/mL |
| styrene | 000100-42-5 | RM04479 | 2002 ± 10 µg/mL |
| toluene | 000108-88-3 | RM02555 | 2009 ± 10 µg/mL |
| 1,2,4-trimethylbenzene | 000095-63-6 | RM00050 | 2004 ± 10 µg/mL |
| 1,3,5-trimethylbenzene | 000108-67-8 | RM02565 | 2010 ± 10 µg/mL |
| o-xylene | 000095-47-6 | RM00052 | 2002 ± 10 µg/mL |
| m-xylene | 000108-38-3 | RM00053 | 2002 ± 10 µg/mL |

ULTRA uses balances calibrated with weights traceable to NIST in compliance with ANSI/NCSL Z-540-1 and ISO 9001, and calibrated Class A glassware in the manufacturing of these standards.

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Quality Assurance Manager

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# Certificate of Analysis

## VOC Mixture

**Product Number:** DWM-589N **Page:** 3 of 3

**Lot Number:** CK-2561 **Lot Issue Date:** 06-Aug-2013 **Expiration Date:** 30-Sep-2016

| Analyte | CAS# | Analyte Lot | True Value |
|---|---|---|---|
| p-xylene | 000106-42-3 | RM02647 | 2006 ± 10 µg/mL |
| bromobenzene | 000108-86-1 | RM00056 | 2008 ± 10 µg/mL |
| chlorobenzene | 000108-90-7 | RM01874 | 2008 ± 10 µg/mL |
| 2-chlorotoluene | 000095-49-8 | RM03906 | 2010 ± 10 µg/mL |
| 4-chlorotoluene | 000106-43-4 | RM01866 | 2009 ± 10 µg/mL |
| 1,2-dichlorobenzene | 000095-50-1 | NT00355 | 2004 ± 10 µg/mL |
| 1,3-dichlorobenzene | 000541-73-1 | NT00356 | 2003 ± 10 µg/mL |
| 1,4-dichlorobenzene | 000106-46-7 | RM04303 | 2008 ± 10 µg/mL |
| 1,2,3-trichlorobenzene | 000087-61-6 | RM02563 | 2009 ± 10 µg/mL |
| 1,2,4-trichlorobenzene | 000120-82-1 | RM00063 | 2008 ± 10 µg/mL |

**Matrix:** methanol (methyl alcohol)

**Storage:** Store at < 4° C

ULTRA uses balances calibrated with weights traceable to NIST in compliance with ANSI/NCSL Z-540-1 and ISO 9001, and calibrated Class A glassware in the manufacturing of these standards.

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Quality Assurance Manager

Rec'd 9/18/12

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# Certificate of Analysis

## Methyl tert-Butyl Ether Solution

**Product Number:** STS-440 **Page:** 1 of 1

**Lot Number:** CG-4444 **Lot Issue Date:** 03-Jan-2011 **Expiration Date:** 31-Jan-2015

This Certified Reference Material (RM) was manufactured and verified in accordance with ULTRA's ISO 9001 registered quality system, and the analyte concentrations were verified by our ISO 17025 accredited laboratory. The true value and uncertainty value at the 95% confidence level for each analyte, determined gravimetrically, is listed below.

| Analyte | CAS# | Analyte Lot | True Value |
|---|---|---|---|
| tert-butylmethyl ether | 001634-04-4 | 46160 | 2007 ± 10 µg/mL |

**Matrix:** methanol (methyl alcohol)

**Storage:** Store at < 4° C

ULTRA uses balances calibrated with weights traceable to NIST in compliance with ANSI/NCSL Z-540-1 and ISO 9001, and calibrated Class A glassware in the manufacturing of these standards.

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William J. Leary
Quality Assurance Manager

Rec'd 12/16/13

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# CERTIFICATE OF ANALYSIS

## Mixture of 3 analytes

| | |
|---|---|
| CONCENTRATION | Varied concentration in Methanol |
| CATALOG NUMBER | SP-1022345DSZ-1ML |
| LOT NUMBER | 2246900 |
| DATE CERTIFIED | 12/10/13 |
| EXPIRATION DATE | 12/31/14 |
| STORAGE | Room Temperature |
| HANDLING | See MSDS |
| INTENDED USE | For Laboratory Use Only |

| ID | Analyte | CAS | Weight Analyte (mg) | Lot | Purity | Certified Concentration (ug/mL) |
|---|---|---|---|---|---|---|
| N-11686 | Dicyclopentadiene | 77-73-6 | 25.600 | 00011137 | 99.00 | 1013.8 |
| N-15088 | Bicyclo[2,2,1]hepta-2,5-diene | 121-46-0 | 25.400 | 396800 | 99.50 | 1010.9 |
| N-11034 | Acrylonitrile | 107-13-1 | 51.100 | 00008601 | 99.50 | 2033.8 |

| Analytical Test | Value |
|---|---|
| CONCENTRATION (GC/FID) | VERIFIED |

Instructions for Use:
Shake mixture prior to use. If particles are present, sonicate for homogeneity. If sample is diluted to lower concentrations, Class A volumetric glassware must be used.
Minimum Sample Size- 0.2 uL for Direct Injection.
Chem Service Inc. guarantees the expanded uncertainty of the above analytes to be +/- 2.0% of the certified concentrations based on gravimetric preparation. The test results published in this report were obtained using equipment capable of producing results that are traceable to NIST and through NIST to the International System of Units (SI). The reported expanded uncertainty of measurement is stated as the combined standard uncertainty of measurement multiplied by the coverage factor k (k=2) such that the coverage probability corresponds to approximately 95%. For certified reference materials, homogeneity and thermal stability testing are available upon request.

Certified By:

Mary Beth O'Donnell

Mary Beth O'Donnell
CSM/TC

COA Form
Revision 1 (01/2013)

ISO 9001
Certificate Number:31610

ISO/IEC 17025
Accreditation Number:63520

Reference Material Producer
ISO GUIDE 34
Accreditation Number:63520

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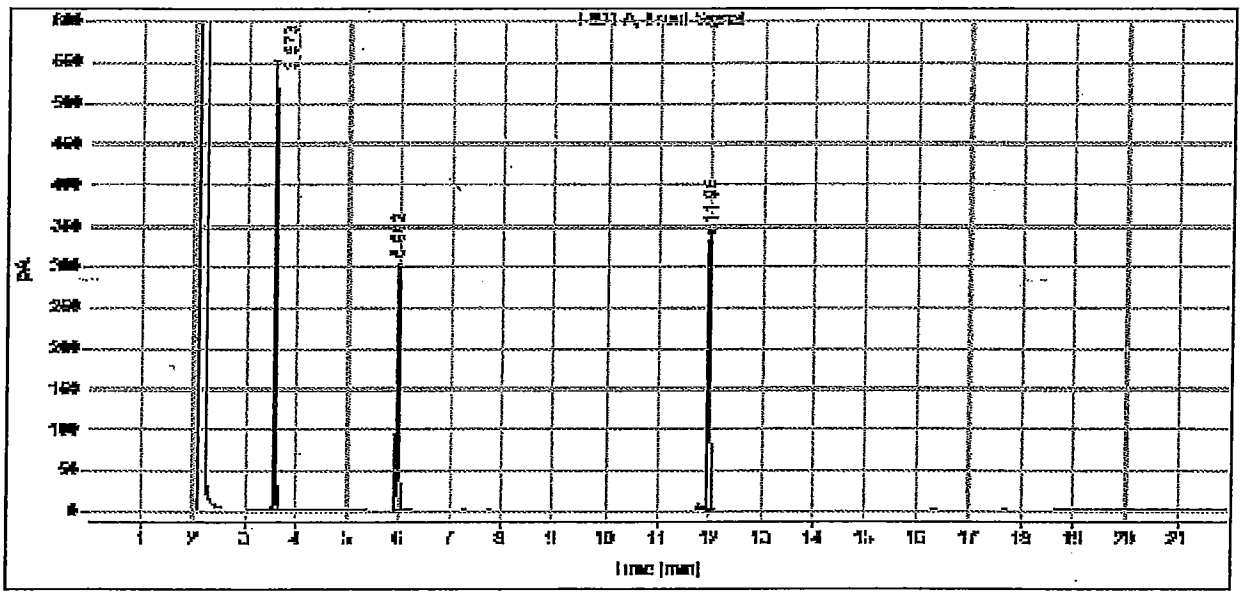
# CERTIFICATE OF ANALYSIS

## Gas Chromatography / Flame Ionization Detector (GC/FID)

| | | | |
|---|---|---|---|
| Data file: | C:\CHEM32\1\DATA\1213\SIG100\643.D | | |
| Sample name: | SP-102245052 | | |
| Instrument: | GC 1 | Sample type: | Sample |
| Injection date: | 12/10/2013 9:02:35 AM | Location: | Vial 1 |
| Acq. method: | MIX1.M | Injection volume: | 1.0uL |
| Column name: | DB-624 (30m x 0.53mm x 3.0um) | | |




Signal: FID1 A, Front Signal

| RT [min] | Type | Width [min] | Area | Height | Area% |
|---|---|---|---|---|---|
| 3.573 | BB | 0.0389 | 1294.2858 | 543.3721 | 37.2976 |
| 5.982 | BB | 0.0547 | 1025.1239 | 293.9188 | 29.5412 |
| 11.990 | BB | 0.0531 | 1150.7445 | 334.8539 | 33.1612 |
| | | Sum | 3470.1542 | | |

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# Certificate of Analysis

**FOR LABORATORY USE ONLY-READ MSDS PRIOR TO USE.**

*This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.*

**Catalog No. :** 30006 **Lot No.:** A090981

**Description :** VOA Calibration Mix #1

Calibration Std #1 ketones 5000µg/mL, P&T Methanol/Water(90:10), 1mL/ampul

**Container Size :** 2 mL **Pkg Amt:** > 1 mL

**Expiration Date :** December 2015 **Storage:** 0°C or colder

## CERTIFIED VALUES

| Elution Order | Compound | Grav. Conc. (weight/volume) | Expanded Uncertainty (95% C.L.; K=2) | | |
|---|---|---|---|---|---|
| 1 | Acetone | 5,000.0 µg/mL | +/- 29.0704 | µg/mL | Gravimetric |
| | CAS # 67-64-1 | | +/- 399.3449 | µg/mL | Unstressed |
| | Purity 99% | | +/- 399.5405 | µg/mL | Stressed |
| 2 | 2-Butanone (MEK) | 5,000.0 µg/mL | +/- 29.0704 | µg/mL | Gravimetric |
| | CAS # 78-93-3 | | +/- 399.3449 | µg/mL | Unstressed |
| | Purity 99% | | +/- 399.5405 | µg/mL | Stressed |
| 3 | 4-Methyl-2-pentanone (MIBK) | 5,000.0 µg/mL | +/- 29.0704 | µg/mL | Gravimetric |
| | CAS # 108-10-1 | | +/- 399.3449 | µg/mL | Unstressed |
| | Purity 99% | | +/- 399.5405 | µg/mL | Stressed |
| 4 | 2-Hexanone | 5,000.0 µg/mL | +/- 29.0704 | µg/mL | Gravimetric |
| | CAS # 591-78-6 | | +/- 399.3449 | µg/mL | Unstressed |
| | Purity ----% | | +/- 399.5405 | µg/mL | Stressed |

**Solvent:** P&T Methanol/Water (90:10)
CAS # 67-56-1/7732-18-5
Purity 99%

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***Certified Reference Material CRM***

Rec'd 2/19/14

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Scopes: http://AbsoluteStandards.com

CERTIFIED WEIGHT REPORT

| | | | Lot # | |
|---|---|---|---|---|
| **Part Number:** | 70060 | **Solvent(s):** | DG596 | Methanol |
| Lot Number: | 121813 | | | |
| Description: | Carbon disulphide | | | |
| Expiration Date: | 121816 | | | |
| Recommended Storage: | Refrigerate (4 °C) | | | |
| Nominal Concentration (µg/mL): | 1000 | | | |

| | | |
|---|---|---|
| Formulated By: Paul Barron | 121813 | DATE |
| Reviewed By: Pedro L. Rentas | 121813 | DATE |

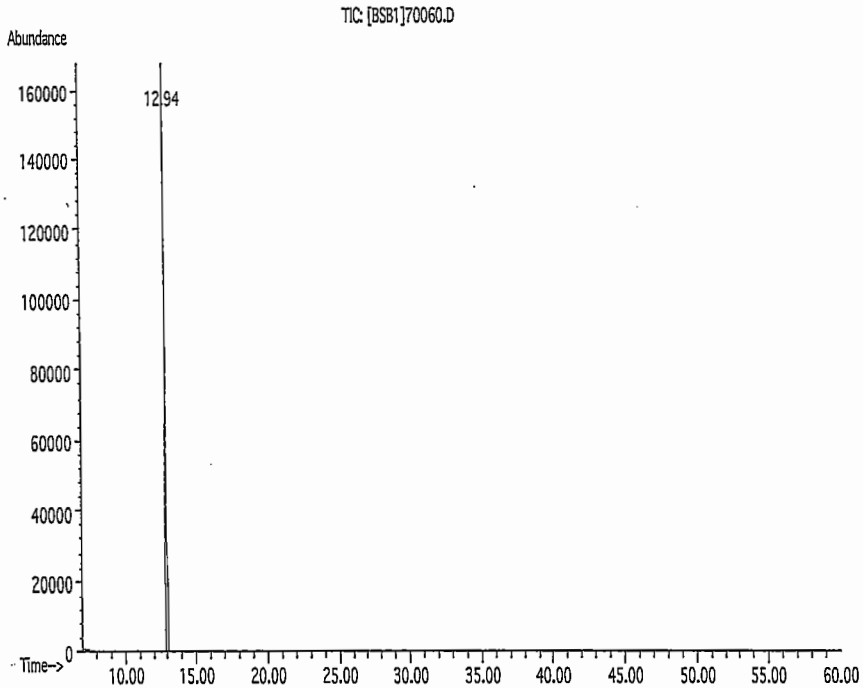
5E-05 Balance Uncertainty

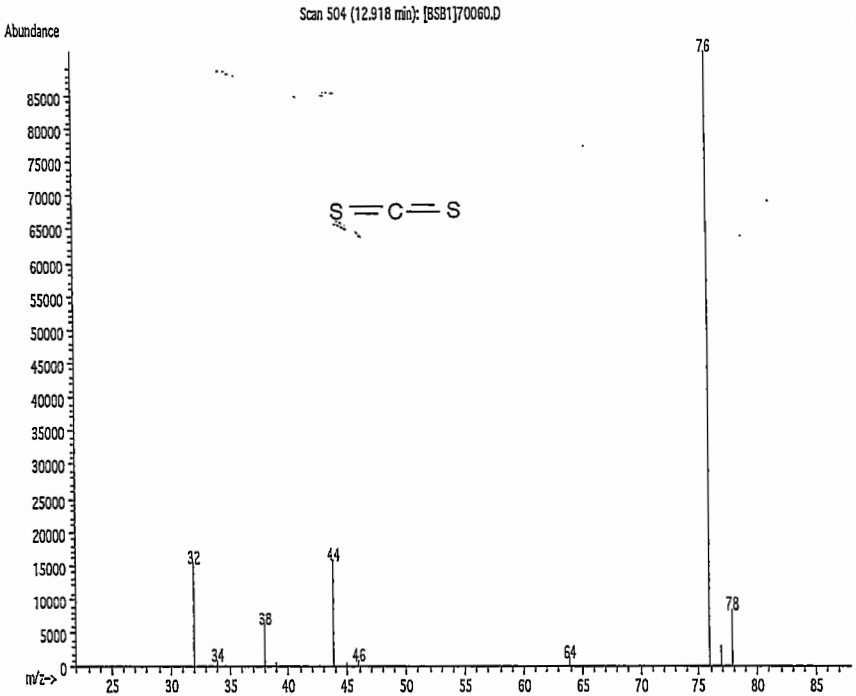
Weight(s) shown below were combined and diluted to: 200.0 0.015 Flask Uncertainty

**MSDS Information**
(Solvent Safety Info. On Attached pg.)

| Compound | RM# | Lot Number | Nominal Conc (µg/mL) | Purity (%) | Uncertainty Purity | Target Weight(g) | Actual Weight(g) | Actual Conc (µg/mL) | Expanded Uncertainty | CAS# | OSHA PEL (TWA) | LD50 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. Carbon disulphide | 60 | PO 12273PO | 1000 | 99 | 0.2 | 0.20203 | 0.20225 | 1001.1 | 0.0041 | 00075-15-0 | 4 ppm (12mg/m3) (skin) | orl-rat 1200mg/kg |

**Method GC6MSD-1:** Column: (Vocol 60m X 0.25mm ID X 1.5µm film thickness). Temp. 1 = 35°C (10min.), Temp. 2 = 200°C (8.75 min.), Rate = 4°C/min., Injector Temp.= 200°C, Detector Temp. = 220°C. Analysis performed by Candice Warren.



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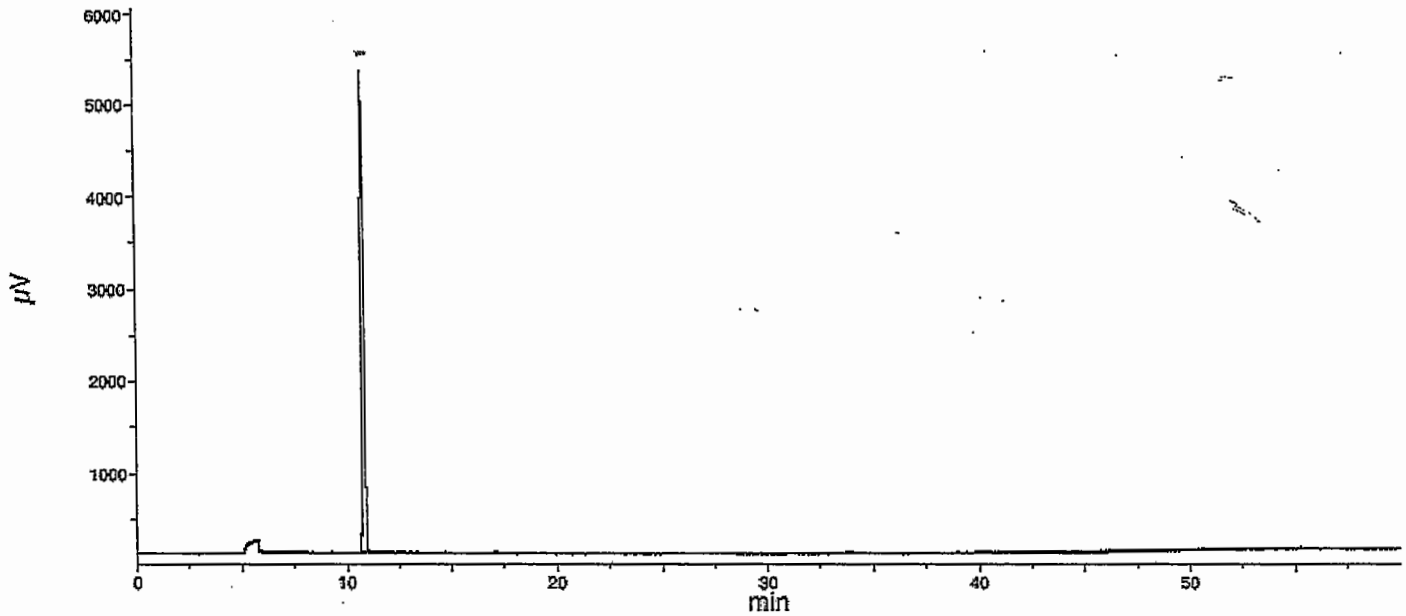
**Run 34, "P70060 L121813 [1000µg/mL in MeOH]"**

Run Length: 59.99 min, 35997 points at 10 points/second.
Created: Sat, Dec 28, 2013 at 1:37:07 AM.
Sampled: Sequence "122613-GC1", Method "GC1-M7".
Analyzed using Method "GC1-M7".

| Analyte | PID RT - (min.) |
|---|---|
| Carbon disulphide | 10.81 |

**Comments**
GC1-M7 Analysis by Candice Warren
Column ID SPB-Vocol 105 meter X 0.53mm X 3.0µm film thickness
Flow rates: Total flow = 150mL/min., Helium (carrier) = 10mL/min.,
Helium (make-up) = 40mL/min., Hydogen (make-up) = 100mL/min.,
Oven Profile: Temp. 1 = 35°C (Time 1 = 10 min.), Temp 2 = 200°C (Time 2 = 8.75 min.),
Rate = 4°C/min., Total run time = 60 min. Injector temp. = 200°C, PID Temp. = 200°C.
ELCD Signal = Edaq Channel 1 PID Signal = Edaq Channel 2
Standard injection = 0.5µL, Range=4 Purge Valve = 8 min



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***Certified Re ence Material CRM****

Recd 1/14/13

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CERTIFIED WEIGHT REPORT

| | | | | |
|---|---|---|---|---|
| **Part Number:** | 30058 | **Solvent(s):** | Lot # DE997 | Methanol |
| Lot Number: | 010213 | | | |
| Description: | EPA Method 502/524 - Volatile Gases Mix #1 | | | |
| | 6 components | | | |
| Expiration Date: | 010216 | | | |
| Recommended Storage: | Freezer (0 °C) | | | |
| Nominal Concentration (µg/mL): | 2000 | | | |

Weight(s) shown below were combined and diluted to: 499.9 0.058 Flask Uncertainty 5E-05 Balance Uncertainty

| | | |
|---|---|---|
| Formulated By: | Vincent K. Criscio, Jr. | 010213 DATE |
| Reviewed By: | Pedro L. Rentas | 010213 DATE |

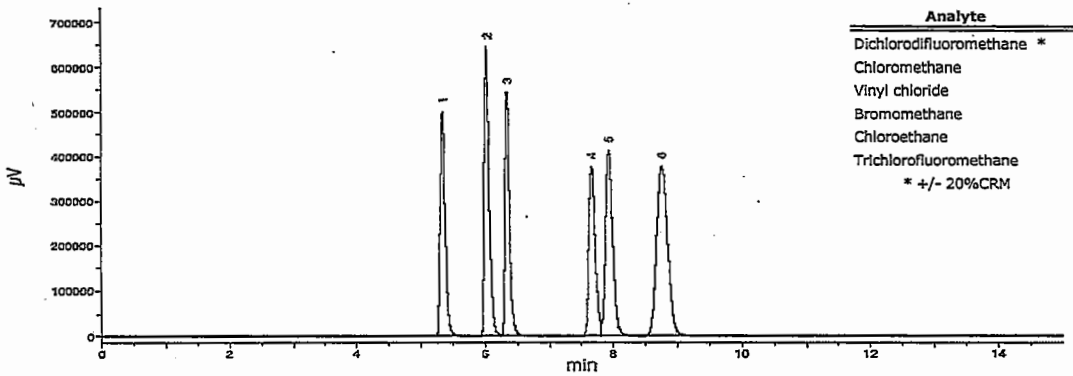
**MSDS Information**
(Solvent Safety Info. On Attached pg.)

| Compound | RM# | Lot Number | Nominal Conc (µg/mL) | Purity (%) | Uncertainty Purity | Target Weight (g) | Actual Weight (g) | Actual Conc(µg/mL) | Expanded Uncertainty | CAS# | OSHA PEL (TWA) | LD50 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. Bromomethane | 50 | 01611JX | 2000 | 99.5 | 0.2 | 1.00475 | 1.0069 | 2004.3 | 0.00403 | 00074-83-9 | 5 ppm (20mg/m3/8H) (skin) | orl-rat 214mg/kg |
| 2. Chloroethane | 72 | 00727KX | 2000 | 99 | 0.2 | 1.00982 | 1.0100 | 2000.4 | 0.00405 | 00075-00-3 | 1000 ppm (2600mg/m3/8H) | N/A |
| 3. Chloromethane | 79 | 06908MS | 2000 | 99.5 | 0.2 | 1.00475 | 1.0117 | 2013.8 | 0.00403 | 00074-87-3 | 100 ppm | orl-rat 1800mg/kg |
| 4. Dichlorodifluoromethane | 134 | 92-0487 | 2000 | 99 | 0.2 | 1.00982 | 1.0204 | 2020.9 | 0.00405 | 00075-71-8 | 1000 ppm (4950mg/m3/8H) | N/A |
| 5. Trichlorofluoromethane | 294 | 01823MW | 2000 | 99 | 0.2 | 1.00982 | 1.0150 | 2010.3 | 0.00405 | 00075-69-4 | 1000 ppm (5600mg/m3/8H) | ipr-mus 1743mg/kg |
| 6. Vinyl chloride | 305 | 1281633 21306138 | 2000 | 99.5 | 0.2 | 1.00475 | 1.0113 | 2013.0 | 0.00403 | 00075-01-4 | N/A | N/A |

**Run 9, "P30058 L010213 [2000µg/mL in MeOH]"**

Run Length: 15.00 min, 8999 points at 10 points/second.
Created: Wed, Jan 2, 2013 at 5:05:03 PM.
Sampled: Sequence "123112-GC1", Method "GC1-M9".
Analyzed using Method "GC1-M9".

**Comments**
GC1-M9 Analysis by Candice Warren
Column ID SPB-Vocol 105 meter X 0.53mm X 3.0µm film thickness
Flow rates: Total flow = 150mL/min., Helium (carrier) = 10mL/min.,
Helium (make-up) = 40mL/min., Hydogen (make-up) = 100mL/min.,
Oven Profile: Temp. 1 = 35°C (Time 1 = 9 min.), Temp 2 = 200°C (Time 2 = 1 min.),
Rate = 33°C/min., Total run time = 15 min. Injector temp. = 200°C, FID Temp. = 200°C.
ELCD Signal = Edaq Channel 2 PID Signal = Edaq Channel 2
Standard injection = 0.5µL, Range=4 Purge Valve = 0 min




| Analyte | ELCD RT (min.) |
|---|---|
| Dichlorodifluoromethane * | 5.34 |
| Chloromethane | 6.03 |
| Vinyl chloride | 6.34 |
| Bromomethane | 7.67 |
| Chloroethane | 7.93 |
| Trichlorofluoromethane | 8.76 |

* +/- 20%CRM

**Absolute Standards, Inc.**
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***Certified Reference Material CRM***

Rec'd 3/19/13

ISO 9001 QS Registered
ISO 17025-34-35-43 Accredited
Scopes: http://AbsoluteStandards.com

CERTIFIED WEIGHT REPORT

| | | Lot # | Solvent(s): |
|---|---|---|---|
| Part Number: | 32001 | DE997Q2 | Methanol |
| Lot Number: | 022613 | | |
| Description: | EPA Method 502.2/524.2 Volatile Organic Compounds | | |
| | 54 components | | |
| Expiration Date: | 022616 | | |
| Recommended Storage: | Freezer (0 °C) | | |
| Nominal Concentration (µg/mL): | 2000 | | |

| | | |
|---|---|---|
| Formulated By: | Justin Dippold | 022613 DATE |
| Reviewed By: | Pedro L. Rentas | 022613 DATE |

5E-05 Balance Uncertainty

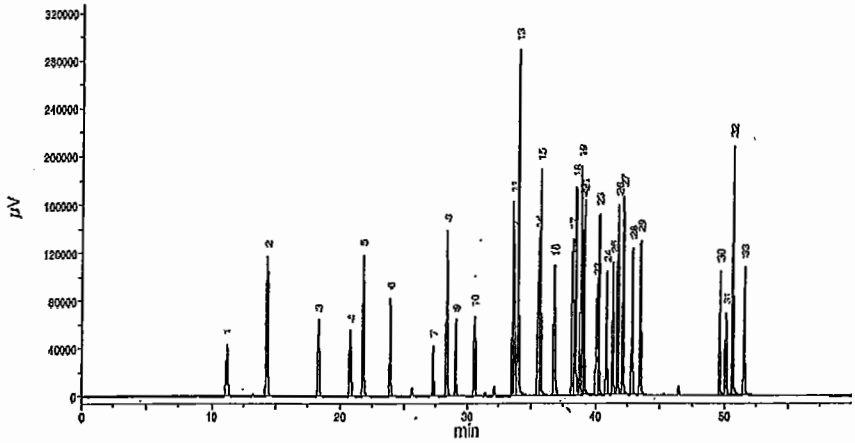
Volume(s) shown below were combined and diluted to: 200.0 0.015 Flask Uncertainty

| Compound | Part Number | Lot Number | Dil. Factor | Initial Vol. (mL) | Uncertainty Pipette | Initial Conc.(ug/mL) | Final Conc.(ug/mL) | Expanded Uncertainty | CAS# | MSDS Information (Solvent Safety Info. On Attached pg.) OSHA PEL (TWA) | LD50 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. Bromodichloromethane | 30171 | 122112 | 0.10 | 20.00 | 0.011 | 20016.1 | 2001.5 | 0.00408 | 00075-27-4 | N/A | orl-rat 916mg/kg |
| 2. Dibromochloromethane | 30171 | 122112 | 0.10 | 20.00 | 0.011 | 20011.7 | 2001.1 | 0.00408 | 00124-48-1 | N/A | orl-rat 848mg/kg |
| 3. cis-1,2-Dichloroethene | 30171 | 122112 | 0.10 | 20.00 | 0.011 | 20018.4 | 2001.7 | 0.00404 | 00156-59-2 | N/A | N/A |
| 4. trans-1,2-Dichloroethene | 30171 | 122112 | 0.10 | 20.00 | 0.011 | 20001.9 | 2000.1 | 0.00408 | 00156-60-5 | N/A | orl-rat 1235mg/kg |
| 5. Methylene chloride | 30171 | 122112 | 0.10 | 20.00 | 0.011 | 20004.5 | 2000.4 | 0.00401 | 00075-09-2 | 500 ppm | orl-rat 2136mg/kg |
| 6. 1,1-Dichloroethene | 32251 | 122112 | 0.10 | 20.00 | 0.011 | 20002.4 | 2000.1 | 0.00404 | 00075-35-4 | 1 ppm (4mg/m3/8H) | orl-rat 200mg/kg |
| 7. Bromochloromethane | 30160 | 102011 | 0.10 | 20.00 | 0.011 | 20007.7 | 2000.7 | 0.00404 | 00074-97-5 | 200 ppm (1050mg/m3/8H) | orl-rat 5000mg/kg |
| 8. Bromoform | 30160 | 102011 | 0.10 | 20.00 | 0.011 | 20007.6 | 2000.7 | 0.00404 | 00075-25-2 | 0.5 ppm (5mg/m3) (skin) | orl-rat 1147mg/kg |
| 9. Carbon tetrachloride | 30160 | 102011 | 0.10 | 20.00 | 0.011 | 20008.4 | 2000.8 | 0.00402 | 00056-23-5 | 2 ppm (12.6mg/m3/8H) | orl-rat 2350mg/kg |
| 10. Chloroform | 30160 | 102011 | 0.10 | 20.00 | 0.011 | 20006.5 | 2000.6 | 0.00400 | 00067-66-3 | 50 ppm (240mg/m3) (CL) | orl-rat 908mg/kg |
| 11. Dibromomethane | 30160 | 102011 | 0.10 | 20.00 | 0.011 | 20007.7 | 2000.7 | 0.00404 | 00074-95-3 | N/A | orl-rat 108mg/kg |
| 12. 1,1-Dichloroethane | 30160 | 102011 | 0.10 | 20.00 | 0.011 | 20005.3 | 2000.4 | 0.00404 | 00075-34-3 | 100 ppm | orl-rat 725mg/kg |
| 13. 2,2-Dichloropropane | 30160 | 102011 | 0.10 | 20.00 | 0.011 | 20011.0 | 2001.0 | 0.00408 | 00594-20-7 | N/A | N/A |
| 14. Tetrachloroethene | 30160 | 102011 | 0.10 | 20.00 | 0.011 | 20017.2 | 2001.6 | 0.00404 | 00127-18-4 | 5 ppm (170mg/m3/8H)(fina | orl-rat 2629mg/kg |
| 15. 1,1,1-Trichloroethane | 30160 | 102011 | 0.10 | 20.00 | 0.011 | 20014.4 | 2001.3 | 0.00404 | 00071-55-6 | 350 ppm (1900mg/m3/8H) | orl-rat 10300mg/kg |
| 16. 1,2-Dibromo-3-chloropropane | 30161 | 072312 | 0.10 | 20.00 | 0.011 | 20020.9 | 2002.0 | 0.00404 | 00096-12-8 | 0.001 ppm | orl-rat 170mg/kg |
| 17. 1,2-Dibromoethane | 30161 | 072312 | 0.10 | 20.00 | 0.011 | 20023.4 | 2002.2 | 0.00404 | 00106-93-4 | 20 ppm (8H) | orl-rat 108mg/kg |
| 18. 1,2-Dichloroethane | 30161 | 072312 | 0.10 | 20.00 | 0.011 | 20004.5 | 2000.4 | 0.00401 | 00107-06-2 | 50 ppm (8H) | orl-rat 670mg/kg |
| 19. 1,2-Dichloropropane | 30161 | 072312 | 0.10 | 20.00 | 0.011 | 20022.9 | 2002.2 | 0.00404 | 00078-87-5 | 75 ppm (350mg/m3/8H) | orl-rat 1947mg/kg |
| 20. 1,3-Dichloropropane | 30161 | 072312 | 0.10 | 20.00 | 0.011 | 20007.0 | 2000.6 | 0.00404 | 00142-28-9 | N/A | unr-mus 3600mg/kg |
| 21. 2-Dichloropropene | 30161 | 072312 | 0.10 | 20.00 | 0.011 | 20022.3 | 2002.1 | 0.00404 | 00563-58-6 | N/A | N/A |
| 22. cis-1,3-Dichloropropene | 30161 | 072312 | 0.10 | 20.00 | 0.011 | 20014.4 | 2001.3 | 0.00404 | 10061-01-5 | N/A | N/A |
| 23. trans-1,3-Dichloropropene | 30161 | 072312 | 0.10 | 20.00 | 0.011 | 20012.2 | 2001.1 | 0.00404 | 10061-02-6 | N/A | N/A |
| 24. Hexachloro-1,3-butadiene | 30161 | 072312 | 0.10 | 20.00 | 0.011 | 20007.3 | 2000.6 | 0.00408 | 00087-68-3 | 0.02 ppm (0.24mg/m3/8H) | orl-rat 90mg/kg |
| 25. 1,1,1,2-Tetrachloroethane | 30161 | 072312 | 0.10 | 20.00 | 0.011 | 20007.5 | 2000.7 | 0.00404 | 00630-20-6 | N/A | orl-rat 670mg/kg |
| 26. 1,1,2,2-Tetrachloroethane | 30161 | 072312 | 0.10 | 20.00 | 0.011 | 20008.0 | 2000.7 | 0.00404 | 00079-34-5 | 5 ppm (35mg/m3/9H)(skin) | orl-rat 800mg/kg |
| 27. 1,1,2-Trichloroethane | 30161 | 072312 | 0.10 | 20.00 | 0.011 | 20008.2 | 2000.7 | 0.00408 | 00079-00-5 | 10 ppm (45mg/m3/8H)(skin | orl-rat 836mg/kg |
| 28. Trichloroethene | 30161 | 072312 | 0.10 | 20.00 | 0.011 | 20012.5 | 2001.2 | 0.00402 | 00079-01-6 | 50 ppm (270mg/m3/8H) | orl-mus 2402mg/kg |
| 29. 1,2,3-Trichloropropane | 30161 | 072312 | 0.10 | 20.00 | 0.011 | 20009.5 | 2000.9 | 0.00404 | 00096-18-4 | 10 ppm (60mg/m3/8H) | orl-rat 320mg/kg |
| 30. Benzene | 30162 | 102711 | 0.10 | 20.00 | 0.011 | 20014.6 | 2001.4 | 0.00415 | 00071-43-2 | 1 ppm | orl-rat 4894mg/kg |
| 31. Bromobenzene | 30162 | 102711 | 0.10 | 20.00 | 0.011 | 20033.7 | 2003.3 | 0.00418 | 00108-86-1 | N/A | orl-rat 2699mg/kg |
| 32. n-Butyl benzene | 30162 | 102711 | 0.10 | 20.00 | 0.011 | 20007.5 | 2000.7 | 0.00418 | 00104-51-8 | N/A | N/A |
| 33. Ethyl benzene | 30162 | 102711 | 0.10 | 20.00 | 0.011 | 20004.9 | 2000.4 | 0.00415 | 00100-41-4 | 100 ppm (435mg/m3/8H) | orl-rat >2000mg/kg |
| 34. p-Isopropyl toluene | 30162 | 102711 | 0.10 | 20.00 | 0.011 | 20026.0 | 2002.5 | 0.00418 | 00099-87-6 | N/A | orl-rat 4750mg/kg |
| 35. Naphthalene | 30162 | 102711 | 0.10 | 20.00 | 0.011 | 20011.8 | 2001.1 | 0.00418 | 00091-20-3 | 10 ppm (50mg/m3/8H) | orl-rat 490mg/kg |
| 36. Styrene | 30162 | 102711 | 0.10 | 20.00 | 0.011 | 20011.3 | 2001.0 | 0.00418 | 00100-42-5 | 100 ppm | orl-rat 5000mg/kg |
| 37. Toluene | 30162 | 102711 | 0.10 | 20.00 | 0.011 | 20007.1 | 2000.6 | 0.00418 | 00108-88-3 | 200 ppm | orl-rat 5000mg/kg |
| 38. 1,2,3-Trichlorobenzene | 30162 | 102711 | 0.10 | 20.00 | 0.011 | 20028.3 | 2002.7 | 0.00418 | 00087-61-6 | N/A | ipr-mus 1390mg/kg |
| 39. 1,2,4-Trichlorobenzene | 30162 | 102711 | 0.10 | 20.00 | 0.011 | 20016.6 | 2001.6 | 0.00418 | 00120-82-1 | 5 ppm (CL) (40mg/m3) | orl-rat 756mg/kg |
| 40. 1,2,4-Trimethylbenzene | 30162 | 102711 | 0.10 | 20.00 | 0.011 | 20014.7 | 2001.4 | 0.00422 | 00095-63-6 | N/A | orl-rat 5g/kg |
| 41. 1,3,5-Trimethylbenzene | 30162 | 102711 | 0.10 | 20.00 | 0.011 | 20011.3 | 2001.0 | 0.00422 | 00108-67-8 | N/A | N/A |
| 42. m-Xylene | 30162 | 102711 | 0.10 | 20.00 | 0.011 | 20013.4 | 2001.3 | 0.00418 | 00108-38-3 | 100 ppm (435mg/m3/8H) | orl-rat 5g/kg |
| 43. tert-Butyl benzene | 30163 | 102011 | 0.10 | 20.00 | 0.011 | 20002.3 | 2000.1 | 0.00404 | 00098-06-6 | N/A | N/A |
| 44. sec-Butyl benzene | 30163 | 102011 | 0.10 | 20.00 | 0.011 | 20001.8 | 2000.1 | 0.00404 | 00135-98-8 | N/A | orl-rat 2240mg/kg |
| 45. Chlorobenzene | 30163 | 102011 | 0.10 | 20.00 | 0.011 | 20006.7 | 2000.6 | 0.00404 | 00108-90-7 | 75 ppm (350mg/m3/8H) | orl-rat 2290mg/kg |
| 46. 2-Chlorotoluene | 30163 | 102011 | 0.10 | 20.00 | 0.011 | 20006.4 | 2000.5 | 0.00404 | 00095-49-8 | 50 ppm (250mg/m3/8H) | unr-rat 5700mg/kg |
| 47. 4-Chlorotoluene | 30163 | 102011 | 0.10 | 20.00 | 0.011 | 20003.7 | 2000.3 | 0.00404 | 00106-43-4 | N/A | orl-rat 2100mg/kg |
| 48. 1,2-Dichlorobenzene | 30163 | 102011 | 0.10 | 20.00 | 0.011 | 20003.1 | 2000.2 | 0.00404 | 00095-50-1 | 50 ppm (300mg/m3) (CL) | orl-rat 500mg/kg |
| 49. 1,3-Dichlorobenzene | 30163 | 102011 | 0.10 | 20.00 | 0.011 | 20003.8 | 2000.3 | 0.00408 | 00541-73-1 | N/A | ipr-mus 1062mg/kg |
| 50. 1,4-Dichlorobenzene | 30163 | 102011 | 0.10 | 20.00 | 0.011 | 20029.8 | 2002.9 | 0.00404 | 00106-46-7 | 75 ppm (450mg/m3/8H) | orl-rat 500mg/kg |
| 51. Isopropylbenzene | 30163 | 102011 | 0.10 | 20.00 | 0.011 | 20006.1 | 2000.5 | 0.00408 | 00098-82-8 | 50 ppm (245mg/m3/8H) | orl-rat 1400mg/kg |
| 52. n-Propylbenzene | 30163 | 102011 | 0.10 | 20.00 | 0.011 | 20013.7 | 2001.3 | 0.00408 | 00103-65-1 | N/A | orl-rat 6040mg/kg |
| 53. o-Xylene | 30163 | 102011 | 0.10 | 20.00 | 0.011 | 20008.2 | 2000.7 | 0.00408 | 00095-47-6 | 100 ppm (435mg/m3/8H) | ipr-mus 1364mg/kg |
| 54. p-Xylene | 30163 | 102011 | 0.10 | 20.00 | 0.011 | 20007.6 | 2000.7 | 0.00404 | 00106-42-3 | 100 ppm (435mg/m3/8H) | orl-rat 5g/kg |

**Run 37, "P32001 L022613 [2000µg/mL in MeOH]-PID"**

Run Length: 59.99 min, 35997 points at 10 points/second.
Created: Tue, Feb 26, 2013 at 6:36:10 PM.
Sampled: Sequence "022313-GC1", Method "GC1-M7".
Analyzed using Method "GC1-M7".

**Comments**
GC1-M7 Analysis by Candice Warren
Column ID SPB-Vocol 105 meter X 0.53mm X 3.0µm film thickness
Flow rates: Total flow = 150mL/min., Helium (carrier) = 10mL/min.,
Helium (make-up) = 40mL/min., Hydogen (make-up) = 100mL/min.,
Oven Profile: Temp. 1 = 35°C (Time 1 = 10 min.), Temp 2 = 200°C (Time 2 = 8.75 min.),
Rate = 4°C/min., Total run time = 60 min. Injector temp. = 200°C, PID Temp. = 200°C.
ELCD Signal = Edaq Channel 1 PID Signal = Edaq Channel 2
Standard Injection = 0.5µL, Range=4 Purge Valve = 8 min

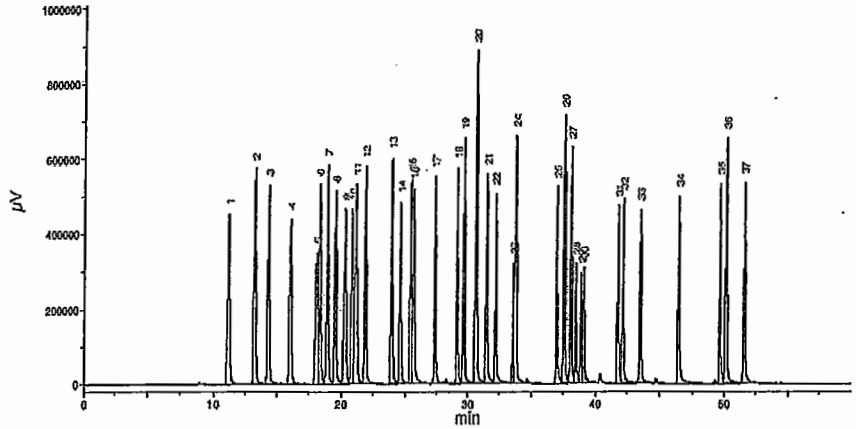



| Analyte | PID RT (min.) | ELCD RT (min.) |
|---|---|---|
| 1,1-Dichloroethene | 11.23 | 11.25 |
| Methylene chloride | NA | 13.28 |
| trans-1,2-Dichloroethene | 14.32 | 14.34 |
| 1,1-Dichloroethane | NA | 16.06 |
| 2,2-Dichloropropane | NA | 18.11 |
| cis-1,2-Dichloroethene | 18.33 | 18.35 |
| Chloroform | NA | 18.92 |
| Bromochloromethane | NA | 19.55 |
| 1,1,1-Trichloroethane | NA | 20.29 |
| 1,1-Dichloropropene | 20.81 | 20.84 |
| Carbon tetrachloride | NA | 21.16 |
| 1,2-Dichloroethane | NA | 21.88 |
| Benzene | 21.81 | NA |
| Trichloroethene | 23.92 | 23.94 |
| 1,2-Dichloropropane | NA | 24.62 |
| Bromodichloromethane | NA | 25.48 |
| Dibromomethane | NA | 25.68 |
| cis-1,3-Dichloropropene | 27.34 | 27.36 |
| Toluene | 28.38 | NA |
| trans-1,3-Dichloropropene | 29.11 | 29.14 |
| 1,1,2-Trichloroethane | NA | 29.67 |
| 1,3-Dichloropropane | NA | 30.59 |
| Tetrachloroethene | 30.59 | 30.59 |
| Dibromochloromethane | NA | 31.47 |
| 1,2-Dibromoethane | NA | 32.15 |
| Chlorobenzene | 33.55 | 33.57 |
| 1,1,1,2-Tetrachloroethane | NA | 33.73 |
| Ethylbenzene | 33.70 | NA |
| m-Xylene | 33.96 | NA |
| p-Xylene | 33.96 | NA |
| o-Xylene | 35.51 | NA |
| Styrene | 35.68 | NA |
| Isopropylbenzene * | 36.78 | NA |
| Bromoform | NA | 36.98 |
| 1,1,2,2-Tetrachloroethane | NA | 37.54 |
| 1,2,3-Trichloropropane | NA | 38.06 |
| n-Propylbenzene | 38.22 | NA |
| Bromobenzene | 38.42 | 38.45 |
| 1,3,5-Trimethylbenzene | 38.78 | NA |
| 2-Chlorotoluene | 38.87 | 38.90 |
| 4-Chlorotoluene | 39.05 | 39.07 |
| tert-Butylbenzene | 40.06 | NA |
| 1,2,4-Trimethylbenzene | 40.20 | NA |
| sec-Butylbenzene | 40.82 | NA |
| p-Isopropyltoluene | 41.33 | NA |
| 1,3-Dichlorobenzene | 41.71 | 41.73 |
| 1,4-Dichlorobenzene | 42.11 | 42.13 |
| n-Butylbenzene | 42.83 | NA |
| 1,2-Dichlorobenzene | 43.47 | 43.49 |
| 1,2-Dibromo-3-chloropropane | NA | 46.44 |
| 1,2,4-Trichlorobenzene | 49.58 | 49.60 |
| Hexachlorobutadiene | 50.06 | 50.09 |
| Naphthalene | 50.58 | NA |
| 1,2,3-Trichlorobenzene | 51.49 | 51.52 |

**Run 37, "P32001 L022613 [2000µg/mL in MeOH]-ELCD"**

Run Length: 59.99 min, 35997 points at 10 points/second.
Created: Tue, Feb 26, 2013 at 6:36:10 PM.
Sampled: Sequence "022313-GC1", Method "GC1-M7".
Analyzed using Method "GC1-M7".

**Comments**
GC1-M7 Analysis by Candice Warren
Column ID SPB-Vocol 105 meter X 0.53mm X 3.0µm film thickness
Flow rates: Total flow = 150mL/min., Helium (carrier) = 10mL/min.,
Helium (make-up) = 40mL/min., Hydogen (make-up) = 100mL/min.,
Oven Profile: Temp. 1 = 35°C (Time 1 = 10 min.), Temp 2 = 200°C (Time 2 = 8.75 min.),
Rate = 4°C/min., Total run time = 60 min. Injector temp. = 200°C, PID Temp. = 200°C.
ELCD Signal = Edaq Channel 1 PID Signal = Edaq Channel 2
Standard Injection = 0.5µL, Range=4 Purge Valve = 8 min



Recd 9/28/13

**TraceCERT®**
Traceable Certified Reference Materials

SUPELCO Analytical
595 North Harrison Road · Bellefonte, PA
16823-0048 USA · Phone(814)359-3441

# *Certificate of Analysis*

Description: Methyl tert-butyl ether, 1x1ml, 2000µg/ml in methanol

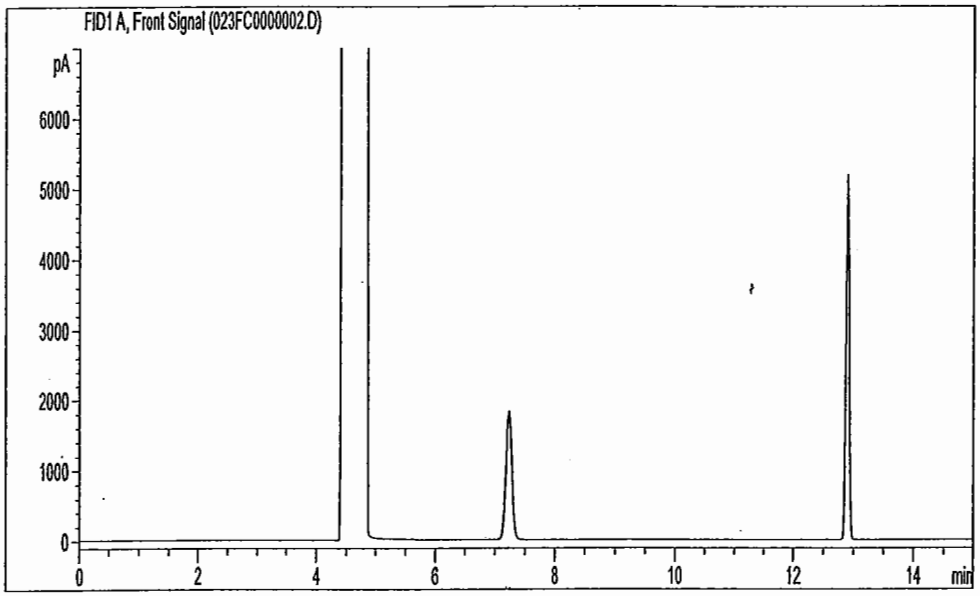
Catalog Number: CRM48483

Lot Number: LB94566

Expiration Date: July 2015

Storage: Room Temperature

Analytical Method Parameters:
Column: VOCOL 105m x 0.53mm x 3.0µm df
50°C for 4 min to 160°C at 10°C/min
Detector: FID, 310°C
Injection Volume: 1.0uL




| Elution | Analyte | Lot Number | CAS Number | Chromatographic Purity % (1) | Certified Gravimetric Conc. µg/ml (2) | Expanded Uncertainty µg/ml (3) | Analytical Conc. µg/ml (2) |
|---|---|---|---|---|---|---|---|
| 1. | Methyl tert-Butyl ether | LB94137 | 1634-04-4 | 99.9 | 1999 | 5.89 | 2061 |
| | Internal Standard | N/A | N/A | N/A | N/A | N/A | N/A |

ACLASS ACCREDITED TESTING Cert# AT-1607

ACLASS ACCREDITED REFERENCE MATERIAL PRODUCER Cert# AR-1606

Produced in double accredited laboratory fulfulling
ISO/IEC 17025 and
ISO Guide 34



SIGMA-ALDRICH®

Notes:

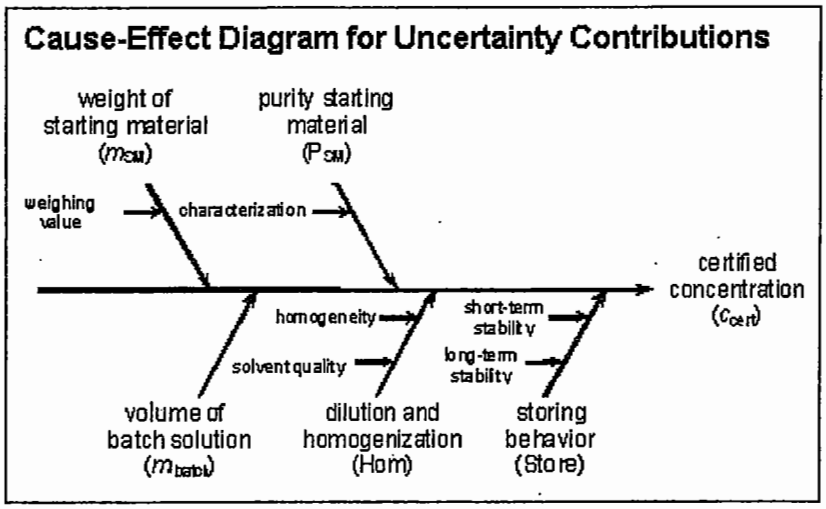
• 1. All starting materials are Certified Reference Materials.

• 2. NIST traceable weights are used to verify balance calibration with the preparation of each lot. Concentration of analyte in solution is ug/ml. Weights are corrected for analytes less than 98% pure.

• 3. Certified value is the gravimetric concentration weighted at room temperature. Uncertainty of the gravimetric concentration in this document are expressed as Expanded Uncertainty (Ucrm) corresponding to the 95% confidence interval. Ucrm is derived from the combined standard uncertainty multiplied by the coverage factor k = 2. The components of combined standard uncertainty include the uncertainties due to characterization, production, homogeneity, long-term stability and short-term stability. The components due to stability are generally considered to be negligible unless otherwise indicated by stability studies.

• Homogeneity was assessed in accordance with ISO Guide 35. Completed units were sampled using a random stratified sampling protocol. The results of chemical analysis were then compared by Single Factor Analysis of Variance (ANOVA). The uncertainty due to homogeneity was derived from the ANOVA. Heterogeneity was not detected under the conditions of the ANOVA.

• Product intended for laboratory use only. Supelco warrants that its products conform to the information contained in this publication. Purchaser must determine the suitability of the product for its particular use. Please see the latest catalog or order invoice and packing slip for additional terms and conditions of sale.




Test Date: August 02, 2012
Form: CRM48483

Duane Funk

Duane Funk
QC Manager

ACLASS ACCREDITED TESTING Cert# AT-1607

ACLASS ACCREDITED REFERENCE MATERIAL PRODUCER Cert# AR-1606

Produced in double accredited laboratory fulfilling
ISO/IEC 17025 and
ISO Guide 34



SIGMA-ALDRICH®

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New Haven, CT 06513
USA

AccuStandard® Inc.

Tel (203)786-5290
Fax (203)786-5287
www.AccuStandard.com

Rec'd 2/20/14

# CERTIFICATE OF ANALYSIS

**CATALOG NO:** S-2932-R1
**DESCRIPTION:** RMA Compounds
**LOT:** 212081711
**SOLVENT:** Methanol

**EXPIRATION:** Sep 4,2014
**DATE CERTIFIED:** Sep 4, 2012
**SAMPLE SIZE:** 1.5 mL
**STORAGE CONDITION:** Refrig (0-5° C)
**HAZARDS:** HIGHLY FLAMMABLE

Refer to the MSDS for additional safety information

[X] Included on ISO/IEC 17025 Scope of Accreditation
[X] Included on ISO Guide 34 Scope of Accreditation

| Component | Cas Number | Purity % (GC/FID) | Prepared Concentration[1] (µg/mL) | Certified Analyte Concentration[2] (µg/mL) |
|---|---|---|---|---|
| Acrylonitrile | 107-13-1 | 99.8 | 400.4 | 399.6 |
| Bicyclo[2,2,1]hepta-2,5-diene | 121-46-0 | 99.1 | 201.2 | 199.4 |
| 1,2-Dibromo-3-chloropropane | 96-12-8 | 100 | 200.7 | 200.7 |
| Dicyclopentadiene | 77-73-6 | 98.9 | 201.6 | 199.4 |

4 Components

1. All weights are traceable through NIST, Test No. 822-275872-11
2. Certified Analyte Concentration = Purity x Prepared Concentration. The Uncertainty associated with the gravimetric values reported on this certificate is ±0.24%. The CRM Uncertainty calculated for this product is ±5%. These values are the expanded uncertainty and represent an estimated standard deviation equal to the positive square root of the total variation of the uncertainty of components. A normal distribution is assumed and a coverage factor of K=2 is chosen using approximately a 95% confidence level.
3. A product with a suffix (-1A, -2B, etc. or -01, -02, etc.) on its lot# has had its expiration date extended and is identical to the same lot# without the suffix.

For use in routine laboratory analysis.

Certified by: R. Cooper
Russ Cooper, QC Manager

AccuStandard is accredited to ISO Guide 34, ISO/IEC 17025 and certified to ISO 9001

OR-ORG/INO-001
Rev. 7/11

**Absolute Sta ards, Inc.**
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www.absolutestandards.com

***Certified R rence Material CRM***

Rec'd 8/30/13

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ISO 17025-34 -43 Accredited
Scopes: http://AbsoluteStandards.com

CERTIFIED WEIGHT REPORT

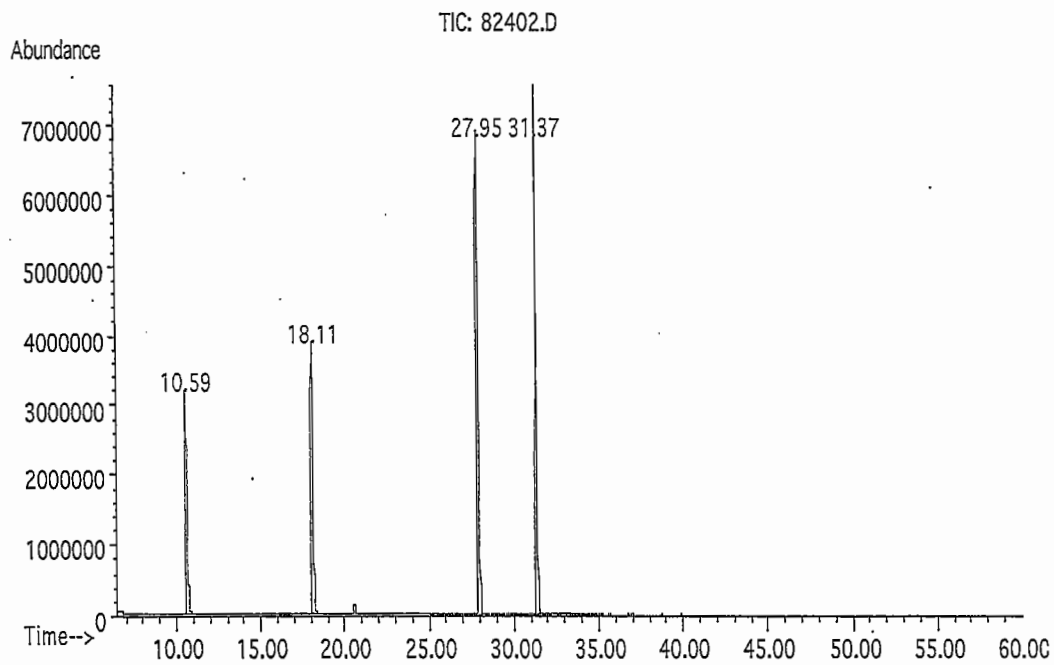
| | | Lot # | Solvent(s): | |
|---|---|---|---|---|
| **Part Number:** | 82402 | DH247 | Methanol | (90%) |
| **Lot Number:** | 070313 | 053113 | Water | (10%) |
| **Description:** | EPA Method 8240A - Mix #2 | | | |
| | Ketones 4 components | | | |
| **Expiration Date:** | 070316 | | | |
| **Recommended Storage:** | Refrigerate (4 °C) | | | |
| **Nominal Concentration (µg/mL):** | 2000 | | | |

| | | | |
|---|---|---|---|
| Formulated By: | Paul Barron | 070313 | DATE |
| Reviewed By: | Pedro L. Rentas | 070313 | DATE |

5E-05 Balance Uncertainty

Volume(s) shown below were combined and diluted to: 200.0 0.015 Flask Uncertainty

| Compound | Part Number | Lot Number | Dil. Factor | Initial Vol. (mL) | Uncertainty Pipette | Initial Conc.(ug/mL) | Final Conc.(ug/mL) | Expanded Uncertainty | MSDS Information (Solvent Safety Info. On Attached pg.) CAS# | OSHA PEL (TWA) | LD50 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. Acetone | 82492 | 100412 | 0.10 | 20.00 | 0.011 | 20009.9 | 2000.9 | 0.00402 | 00067-64-1 | 750 ppm | orl-rat 9750mg/kg |
| 2. 2-Butanone (Methyl ethyl ketone) | 82492 | 100412 | 0.10 | 20.00 | 0.011 | 20011.9 | 2001.1 | 0.00400 | 00078-93-3 | 200 ppm (590mg/m3/8H) | orl-rat 2737mg/kg |
| 3. 2-Hexanone | 82492 | 100412 | 0.10 | 20.00 | 0.011 | 20010.0 | 2000.9 | 0.00408 | 00591-78-6 | 100 ppm (410mg/m3/8H) | orl-rat 2590mg/kg |
| 4. 4-Methyl-2-pentanone | 82492 | 100412 | 0.10 | 20.00 | 0.011 | 20001.5 | 2000.1 | 0.00402 | 00108-10-1 | 100 ppm (410mg/m3/8H) | orl-rat 2080mg/kg |




Method: GC6MSD-1. Detector: Mass Selective Detector. Column: Vocol (60m X 0.25mm ID X 1.5µm film thickness). Oven Profile: Temp. 1 = 35°C (Time 1 = 10min.), Temp. 2=200°C ( Time 2 = 8.75 min.), Rate = 4°C/min., Injector Temp. = 200°C, Detector Temp. = 220°C. Analyst: Candice Warren.

| Name | MSD RT (min.) |
|---|---|
| Acetone | 10.61 |
| 2-Butanone | 18.17 |
| 4-Methyl-2-pentanone (MEK) | 27.94 |
| 2-Hexanone | 31.41 |

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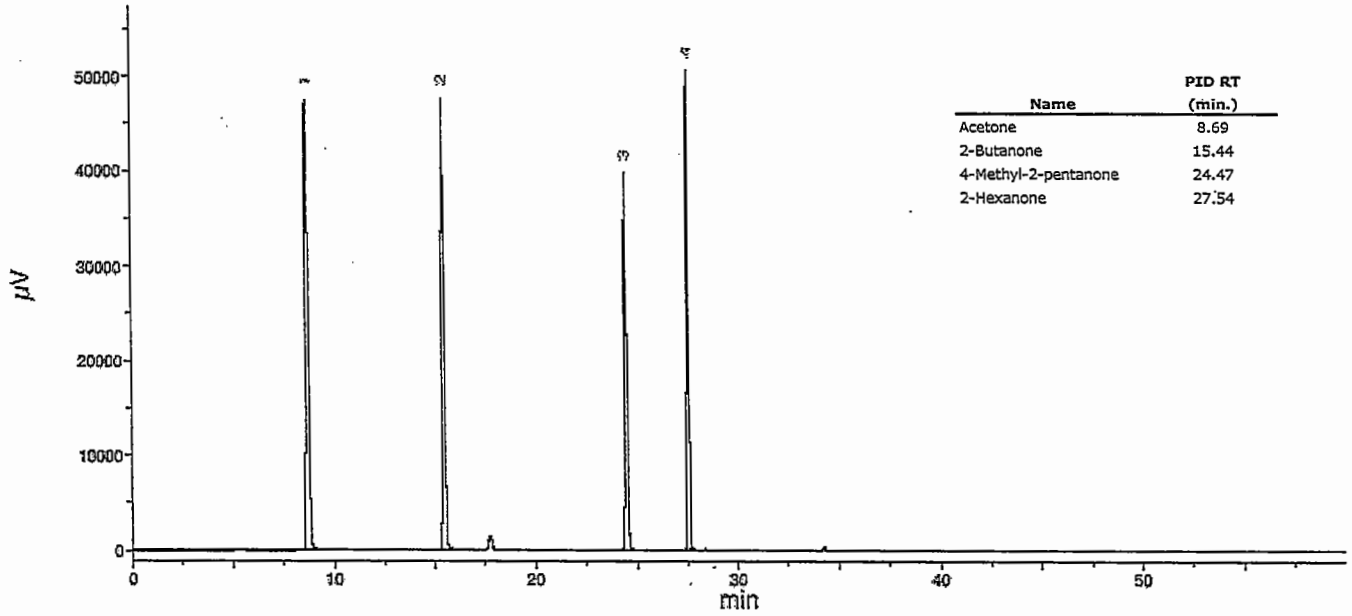
Run 12, "P82402 L070313 [2000µg/ml in M:W(9:1)]"

Run Length: 59.99 min, 35997 points at 10 points/second.
Created: Mon, Jul 8, 2013 at 10:21:12 PM.
Sampled: Sequence "070813-GC1", Method "GC1-M7".
Analyzed using default settings.

**Comments**
GC1-M7 Analysis by Candice Warren
Column ID SPB-Vocol 105 meter X 0.53mm X 3.0µm film thickness
Flow rates: Total flow = 150mL/min., Helium (carrier) = 10mL/min.,
Helium (make-up) = 40mL/min., Hydogen (make-up) = 100mL/min.,
Oven Profile: Temp. 1 = 35°C (Time 1 = 10 min.), Temp 2 = 200°C (Time 2 = 8.75 min.),
Rate = 4°C/min., Total run time = 60 min. Injector temp. = 200°C, PID Temp. = 200°C.
ELCD Signal = Edaq Channel 1 PID Signal = Edaq Channel 2
Standard injection = 0.5µL, Range=4 Purge Valve = 8 min




| Name | PID RT (min.) |
|---|---|
| Acetone | 8.69 |
| 2-Butanone | 15.44 |
| 4-Methyl-2-pentanone | 24.47 |
| 2-Hexanone | 27.54 |

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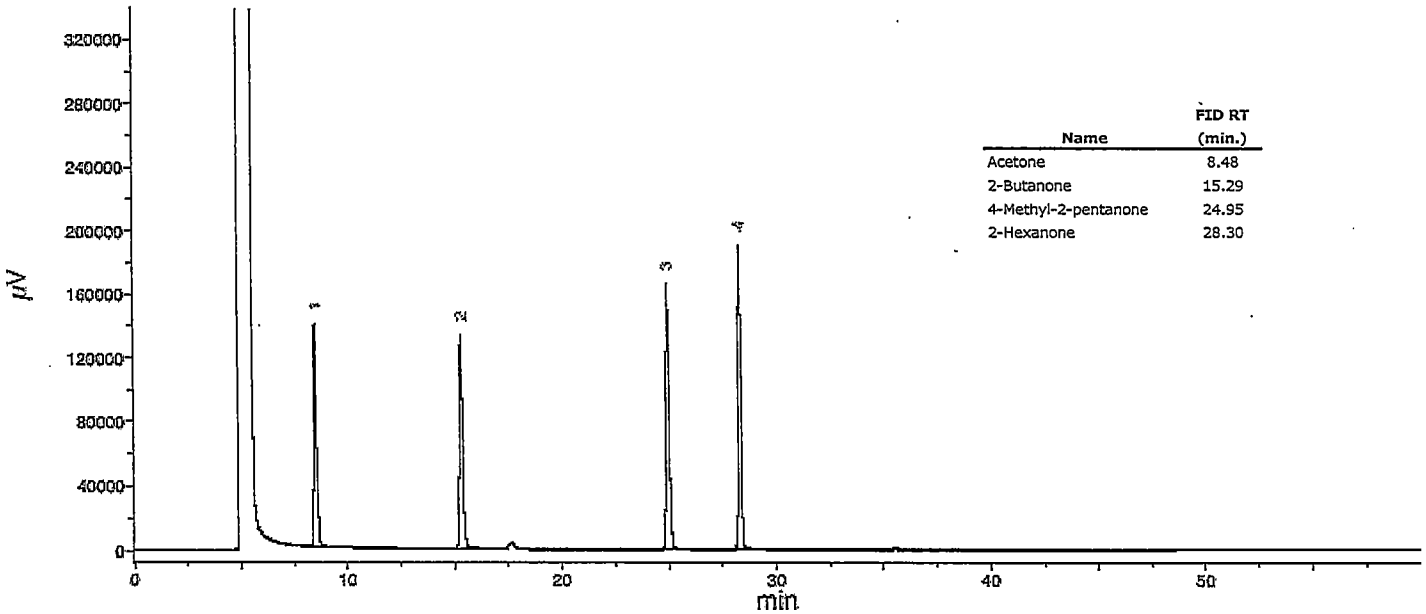
**Run 10, "P82402 L070313 [2000µg/mL in M:W(9:1)]"**

Run Length: 59.99 min, 35995 points at 10 points/second.
Created: Mon, Jul 8, 2013 at 6:38:54 PM.
Sampled: Sequence "070813-GC5M1", Method "GC5-M1".
Analyzed using default settings.

**Comments**
GC5-M1 Analysis by Candice Warren
Column ID SPB-Vocol 105 meter X 0.53mm X 3.0µm film thickness
Flow rates: Total flow=290mL/min., Helium (carrier)=10mL/min.,
Helium(make-up)=10mL/min., Hydogen(make-up)=40mL/min., Air(make-up)=230mL/min.
Oven Profile: Temp. 1=35°C (Time 1=10 min.), Temp 2=200°C (Time 2=8.75 min.),
Rate = 4°C/min., Total run time=60 min. Injector temp.=200°C, FID Temp.=200°C.
FID Signal = Edaq Channel 1
Standard injection = 0.5µL, Range=3




| Name | FID RT (min.) |
|---|---|
| Acetone | 8.48 |
| 2-Butanone | 15.29 |
| 4-Methyl-2-pentanone | 24.95 |
| 2-Hexanone | 28.30 |

125 Market Street
New Haven, CT 06513
USA

AccuStandard® Inc.

Rec'd 9/05/12

Tel (203)786-5290
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# CERTIFICATE OF ANALYSIS

**Catalog No:** APP-9-035-20X
**Description:** Carbon disulfide
**Lot:** 212071234
**Solvent:** Methanol

**Date Certified:** Jul 18, 2012
**Expiration:** Jul 18, 2022
**Sample Size:** 1 mL
**Storage Condition:** Refrig (0-5° C)
**Hazards:** HIGHLY FLAMMABLE

[X] Included on ISO/IEC 17025 Scope of Accreditation
[X] Included on ISO Guide 34 Scope of Accreditation

| Component | CAS # | Purity % MFG | Prepared Concentration[1] (µg/mL) | Certified Analyte Concentration[2] (µg/mL) |
|---|---|---|---|---|
| Carbon disulfide | 75-15-0 | 99.9 | 2005 | 2003 |

AccuStandard follows U.S. conventions in reporting numerical values on both certificates and labels:

A comma (,) is used to separate units of one-thousand or greater.
A period (.) is used as a decimal place marker.

1. All weights are traceable through NIST, Test No.822-275872-11
2. Certified Analyte Concentration = Purity x Prepared Concentration. The Uncertainty associated with the gravimetric values reported on this certificate is ±0.24%. The CRM Uncertainty calculated for this product is ±5%. These values are the expanded uncertainty and represent an estimated standard deviation equal to the positive square root of the total variation of the uncertainty of components. A normal distribution is assumed and a coverage factor of K=2 is chosen using approximately a 95% confidence level.
3. A product with a suffix (-1A, -2B, etc. or -01, -02, etc.) on its lot# has had its expiration date extended and is identical to the same lot# without the suffix.

For use in routine laboratory analysis.

See reverse side for additional information
Refer to the MSDS for additional safety information

Certified by: R. Cooper
Russ Cooper, QC Manager

AccuStandard is accredited to ISO Guide 34, ISO/IEC 17025 and certified to ISO 9001

OR-ORG/INO-001
Rev. 7/11

ULTRA SCIENTIFIC
Analytical Solutions

# Certificate of Analysis

Rec'd 1/11/13

## VOC Gas Mixture

**Product Number:** DWM-544 **Page:** 1 of 1

**Lot Number:** CJ-4469 **Lot Issue Date:** 18-Dec-2012 **Expiration Date:** 31-Jan-2016

This certified Reference Material (RM) was manufactured and verified in accordance with ULTRA's ISO 9001 registered quality system, and the analyte concentrations were verified by our ISO 17025 accredited laboratory. The true value and uncertainty value at the 95% confidence level for each analyte, determined gravimetrically, is listed below.

| Analyte | CAS# | Analyte Lot | True Value |
|---|---|---|---|
| bromomethane | 000074-83-9 | RM00064 | 2001 ± 10 µg/mL |
| chloroethane | 000075-00-3 | RM00065 | 2006 ± 10 µg/mL |
| chloromethane | 000074-87-3 | RM05290 | 2009 ± 10 µg/mL |
| dichlorodifluoromethane | 000075-71-8 | RM05289 | 2008 ± 10 µg/mL |
| trichlorofluoromethane | 000075-69-4 | RM00017 | 2005 ± 10 µg/mL |
| vinyl chloride | 000075-01-4 | RM05288 | 2008 ± 10 µg/mL |

**Matrix:** methanol (methyl alcohol)

**Storage:** Store at < 4° C

ULTRA uses balances calibrated with weights traceable to NIST in compliance with ANSI/NCSL Z-540-1 and ISO 9001, and calibrated Class A glassware in the manufacturing of these standards.

A2LA ACCREDITED
ISO 17025:2005 Accredited A2LA Cert. No. 0851-01
ISO 9001:2008 Registered TUV USA, Inc. Cert. No. 09-1009

250 Smith Street, North Kingstown, RI 02852 USA
401-294-9400 Fax: 295-2330
wwww.ultrasci.com

William J. Leary
Quality Assurance Manager

Rec'd 6/13/13

Methanol
ULTRA RESI-ANALYZED
For Purge and Trap Analysis

J.T.Baker | Part of AVANTOR™ PERFORMANCE MATERIALS

Material No.: 9077-02
Batch No.: 0000038701
Manufactured Date: 2013/02/20
Retest Date: 2018/02/19

# Certificate of Analysis

| Test | Specification | Result |
|---|---|---|
| Assay ($CH_3OH$) (by GC, corrected for water) | >= 99.9 % | 100.0 |
| Residue after Evaporation | <= 1.0000 ppm | < 0.1000 |
| Titrable Acid (µeq/g) | <= 0.3 | <0.1 |
| Titrable Base (µeq/g) | <= 0.1 | <0.01 |
| Water (by KF, coulometric) | <= 0.08 % | <0.01 |
| Photoionization Detection (PID) Below CRQL | Passes Test | PT |
| Electroconductivity Detection (ELCD) Below CRQL | Passes Test | PT |

For Laboratory, Research or Manufacturing Use
Performance Tested for Use in EPA Methods
500 Series for Drinking Water
600 Series for Wastewater
846 for Solid Waste

Country of Origin: US
Packaging Site: Phillipsburg Mfg Ctr & DC

ISO
Phillipsburg, NJ 9001:2008, 14001:2004
Paris, KY 9001:2008
Mexico City, Mexico 9001:2008
Deventer, The Netherlands 9001:2008, 14001:2004, 13485:2003
Gliwice, Poland 9001:2008, 17025:2005
Selangor, Malaysia 9001:2008
Dehradun, India 9001:2008, 14001:2004, 13485:2003
Mumbai, India 9001:2008, 17025:2005
Panoli, India 9001:2008

Richard M Siberski
Global Director of Quality Assurance

For questions on this Certificate of Analysis please contact Technical Services at 855.282.6867 or +1.610.573.2600
Avantor ™ Performance Materials Inc.
3477 Corporate Parkway, Suite #200, Center Valley, PA 18034. U.S.A. Phone: 610.573.2600 . Fax: 610.573.2610

X1034 ISTD - only

80 ml STM-520-1 lot CH-3660 2500 ug/ml (R4399) exp. 12/31/14
3920 ml MeOH (R4493)
4000 ml 50 ug/ml LS 2/21/14 Exp: 2/28/14

X1035 Surrogate - only

80 ml STM-530-1 lot CJ-1280 2500 ug/ml (R4392) exp. 5/31/15
3920 ml MeOH (R4493)
4000 ml 50 ug/ml LS 2/21/14 Exp. 2/28/14

X1036 ICV Mix

| 8260 Mix (ABS) | MTBE (S) | RMA (ACC) | Ketones (ABS) | CS2 (ACC) | MEOH | Final Vol. |
|---|---|---|---|---|---|---|
| 32001<br>Lot 100113<br>2000 ug/mL<br>R4733<br>Exp.10/01/16 | CRM48483<br>Lot LB94566<br>2000 ug/mL<br>R4517<br>Exp. 07/2015 | S-2932-R1<br>Lot 212081711<br>Varied Conc.<br>R4413<br>Exp. 9/04/14 | 82402<br>Lot 070313<br>2000 ug/mL<br>R4511<br>Exp. 07/03/16 | APP-9-035-20X<br>Lot 212071234<br>2.0 mg/mL<br>R4438<br>Exp. 07/18/22 | R4493 | (uL) |
| 25 | 25 | 250 | 50 | 25 | 1625 | 2000 |

Ketones/Acrylo/
m&p-Xylenes/DBCP = 50 ug/mL
OTHER = 25 ug/mL

Prep: 02/21/14

EXP: 02/28/14

LS 2/21/14

X1037 Gases - Ultra

100 ml DWM-544 lot CJ-4469 2000 ug/ml (R4367) exp. 1/31/14
3900 ml MeOH (R4493)
4000 ml 50 ug/ml LS 2/21/14 Exp. 2/28/14

Continued on Page

Read and Understood By

| Signed | Date | Signed | Date |
|---|---|---|---|
| LS | 2/21/14 | TRC | 2/27/14 |

X1038 IC MIX

| 8260 Mix (U) | MTBE (U) | RMA (CS) | Ketones (RES) | CS2 (ABS) | | MEOH | Final Vol. |
|---|---|---|---|---|---|---|---|
| DWM-589N Lot CK-2561 2000 ug/mL R4502 Exp.09/30/16 | STS-440-1 Lot CG-4444 2000 ug/mL R4230 Exp. 01/31/15 | SP-1022-345DSZ Lot 2246900 Varied Conc. R4649 Exp. 12/31/14 | 30006 Lot A090981 5000 ug/mL R4531 Exp. 12/2015 | 70060 Lot 121813 1000 ug/mL R4661 Exp. 12/18/16 | | R4493 | (uL) |
| 200 | 200 | 400 | 160 | 400 | | 2640 | 4000 |

Ketones = 200 ug/mL
Acrylo/m&p-Xylenes = 200ug/mL
All other = 100ug/ml

Prep: 02/24/14
Exp: 03/~~07~~03/14 US 2/26/14

US 2/24/14

X1039 Gases - Abs

100uL 30058 lot 010213 2000ug/mL (R4445) exp. 01/02/16
3900uL MeOH (R4479)
4000uL 50ug/mL US 2/24/14 Exp. 3/~~07~~03/14 US 2/24/14

X1040 Anti-Foam Agent (Purge Water)

300mg 31822 lot A096340 Neat (R4535) exp. 7/2018 Restock
DI Water
1500 mL US 2/25/14 Exp. 2/25/15

X1041 MIX for Archon - UMS5

40uL 8260 MIX(U) DWM-589N-1 lot CK-2561 2000ug/mL (R4502) exp. 9/30/16
16uL DBCP(U) EPA-1021 lot CH-1351 5000ug/mL (R4376) exp. 5/31/15
40uL CS2(Acc) ARP-9-035-20X lot 2207 1234 2.0mg/mL (R4438) exp. 7/18/22
80uL RMA(CS) SP-1022345DSZ lot 2246900 Varied Conc. (R4649) exp. 12/31/14
1824uL MeOH (R4493)
2000uL Acrylo/DBCP = 80ug/mL
Other = 40ug/mL US 2/25/14 Exp. 3/11/14

Continued on Page

Read and Understood By

| Signed | Date | Signed | Date |
|---|---|---|---|
| US | 2/25/14 | TRC | 2/27/14 |

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Rec'd 1/28/14

TIFIED WEIGHT REPORT

| | | Lot # | Solvent(s): |
|---|---|---|---|
| Part Number: | 32001 | DG596Q1 | Methanol |
| Lot Number: | 100113 | | |
| Description: | EPA Method 502.2/524.2 Volatile Organic Compounds | | |
| | 54 components | | |
| Expiration Date: | 100116 | | |
| Recommended Storage: | Freezer (0 °C) | | |
| Nominal Concentration (µg/mL): | 2000 | | |

| | | |
|---|---|---|
| Formulated By: | Vincent K. Crisclo, Jr. | 100113 DATE |
| Reviewed By: | Pedro L. Rentas | 100113 DATE |

5E-05 Balance Uncertainty

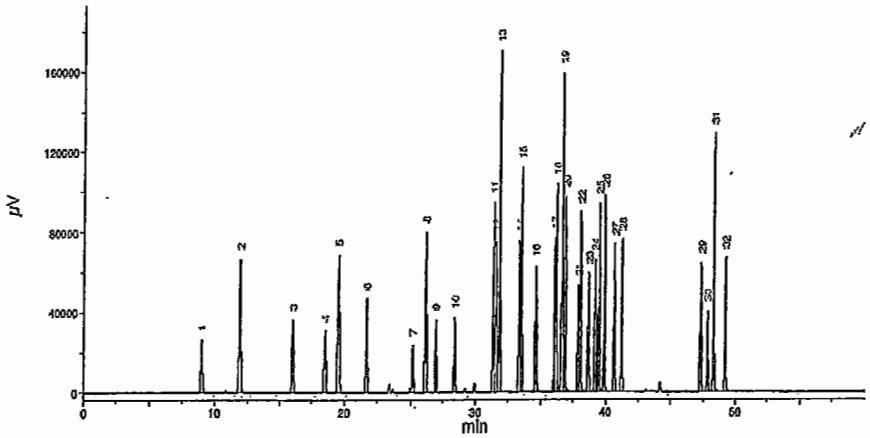
Volume(s) shown below were combined and diluted to: 200.0 0.015 Flask Uncertainty

| Compound | Part Number | Lot Number | Dil. Factor | Initial Vol. (mL) | Uncertainty Pipette | Initial Conc.(ug/mL) | Final Conc.(ug/mL) | Expanded Uncertainty | CAS# | MSDS Information (Solvent Safety Info. On Attached pg.) OSHA PEL (TWA) | LD50 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. Bromodichloromethane | 30171 | 122112 | 0.10 | 20.00 | 0.011 | 20016.1 | 2001.5 | 0.00408 | 00075-27-4 | N/A | orl-rat 916mg/kg |
| 2. Dibromochloromethane | 30171 | 122112 | 0.10 | 20.00 | 0.011 | 20011.7 | 2001.1 | 0.00408 | 00124-48-1 | N/A | orl-rat 848mg/kg |
| 3. cis-1,2-Dichloroethene | 30171 | 122112 | 0.10 | 20.00 | 0.011 | 20018.4 | 2001.7 | 0.00404 | 00156-59-2 | N/A | N/A |
| 4. trans-1,2-Dichloroethene | 30171 | 122112 | 0.10 | 20.00 | 0.011 | 20001.9 | 2000.1 | 0.00408 | 00156-60-5 | N/A | orl-rat 1235mg/kg |
| 5. Methylene chloride | 30171 | 122112 | 0.10 | 20.00 | 0.011 | 20004.5 | 2000.4 | 0.00401 | 00075-09-2 | 500 ppm | orl-rat 2136mg/kg |
| 6. 1,1-Dichloroethene | 32251 | 100113 | 0.10 | 20.00 | 0.011 | 20009.8 | 2000.9 | 0.00404 | 00075-35-4 | 1 ppm (4mg/m3/8H) | orl-rat 200mg/kg |
| 7. Bromochloromethane | 30160 | 052313 | 0.10 | 20.00 | 0.011 | 20007.3 | 2000.6 | 0.00404 | 00074-97-5 | 200 ppm (1050mg/m3/8H) | orl-rat 5000mg/kg |
| 8. Bromoform | 30160 | 052313 | 0.10 | 20.00 | 0.011 | 20005.9 | 2000.5 | 0.00404 | 00075-25-2 | 0.5 ppm (5mg/m3) (skin) | orl-rat 1147mg/kg |
| 9. Carbon tetrachloride | 30160 | 052313 | 0.10 | 20.00 | 0.011 | 20005.6 | 2000.5 | 0.00402 | 00056-23-5 | 2 ppm (12.6mg/m3/8H) | orl-rat 2350mg/kg |
| 10. Chloroform | 30160 | 052313 | 0.10 | 20.00 | 0.011 | 20007.3 | 2000.6 | 0.00400 | 00067-66-3 | 50 ppm (240mg/m3) (CL) | orl-rat 908mg/kg |
| 11. Dibromomethane | 30160 | 052313 | 0.10 | 20.00 | 0.011 | 20006.1 | 2000.5 | 0.00404 | 00074-95-3 | N/A | orl-rat 108mg/kg |
| 12. 1,1-Dichloroethane | 30160 | 052313 | 0.10 | 20.00 | 0.011 | 20007.3 | 2000.6 | 0.00404 | 00075-34-3 | 100 ppm | orl-rat 725mg/kg |
| 13. 2,2-Dichloropropane | 30160 | 052313 | 0.10 | 20.00 | 0.011 | 20005.9 | 2000.5 | 0.00408 | 00594-20-7 | N/A | N/A |
| 14. Tetrachloroethene | 30160 | 052313 | 0.10 | 20.00 | 0.011 | 20008.0 | 2000.7 | 0.00404 | 00127-18-4 | 5 ppm (170mg/m3/8H)(fina | orl-rat 2629mg/kg |
| 15. 1,1,1-Trichloroethane | 30160 | 052313 | 0.10 | 20.00 | 0.011 | 20007.3 | 2000.6 | 0.00404 | 00071-55-6 | 350 ppm (1900mg/m3/8H) | orl-rat 10300mg/kg |
| 16. 1,2-Dibromo-3-chloropropane | 30161 | 072312 | 0.10 | 20.00 | 0.011 | 20020.9 | 2002.0 | 0.00404 | 00096-12-8 | 0.001 ppm | orl-rat 170mg/kg |
| 17. 1,2-Dibromoethane | 30161 | 072312 | 0.10 | 20.00 | 0.011 | 20023.4 | 2002.2 | 0.00404 | 00106-93-4 | 20 ppm (8H) | orl-rat 108mg/kg |
| 18. 1,2-Dichloroethane | 30161 | 072312 | 0.10 | 20.00 | 0.011 | 20004.5 | 2000.4 | 0.00401 | 00107-06-2 | 50 ppm (8H) | orl-rat 670mg/kg |
| 19. 1,2-Dichloropropane | 30161 | 072312 | 0.10 | 20.00 | 0.011 | 20022.9 | 2002.2 | 0.00404 | 00078-87-5 | 75 ppm (350mg/m3/8H) | orl-rat 1947mg/kg |
| 1,3-Dichloropropane | 30161 | 072312 | 0.10 | 20.00 | 0.011 | 20007.0 | 2000.6 | 0.00404 | 00142-28-9 | N/A | unr-mus 3600mg/kg |
| ,1-Dichloropropene | 30161 | 072312 | 0.10 | 20.00 | 0.011 | 20022.3 | 2002.1 | 0.00404 | 00563-58-6 | N/A | N/A |
| 22. cis-1,3-Dichloropropene | 30161 | 072312 | 0.10 | 20.00 | 0.011 | 20014.4 | 2001.3 | 0.00404 | 10061-01-5 | N/A | N/A |
| 23. trans-1,3-Dichloropropene | 30161 | 072312 | 0.10 | 20.00 | 0.011 | 20012.2 | 2001.1 | 0.00404 | 10061-02-6 | N/A | N/A |
| 24. Hexachloro-1,3-butadiene | 30161 | 072312 | 0.10 | 20.00 | 0.011 | 20007.3 | 2000.6 | 0.00408 | 00087-68-3 | 0.02 ppm (0.24mg/m3/8H) | orl-rat 90mg/kg |
| 25. 1,1,1,2-Tetrachloroethane | 30161 | 072312 | 0.10 | 20.00 | 0.011 | 20007.5 | 2000.7 | 0.00404 | 00630-20-6 | N/A | orl-rat 670mg/kg |
| 26. 1,1,2,2-Tetrachloroethane | 30161 | 072312 | 0.10 | 20.00 | 0.011 | 20008.0 | 2000.7 | 0.00404 | 00079-34-5 | 5 ppm (35mg/m3/8H)(skin) | orl-rat 800mg/kg |
| 27. 1,1,2-Trichloroethane | 30161 | 072312 | 0.10 | 20.00 | 0.011 | 20008.2 | 2000.7 | 0.00408 | 00079-00-5 | 10 ppm (45mg/m3/8H)(skin | orl-rat 836mg/kg |
| 28. Trichloroethene | 30161 | 072312 | 0.10 | 20.00 | 0.011 | 20012.5 | 2001.2 | 0.00402 | 00079-01-6 | 50 ppm (270mg/m3/8H) | orl-mus 2402mg/kg |
| 29. 1,2,3-Trichloropropane | 30161 | 072312 | 0.10 | 20.00 | 0.011 | 20009.5 | 2000.9 | 0.00404 | 00096-18-4 | 10 ppm (60mg/m3/8H) | orl-rat 320mg/kg |
| 30. Benzene | 30162 | 071613 | 0.10 | 20.00 | 0.011 | 20006.4 | 2000.6 | 0.00401 | 00071-43-2 | 1 ppm | orl-rat 4894mg/kg |
| 31. Bromobenzene | 30162 | 071613 | 0.10 | 20.00 | 0.011 | 20008.2 | 2000.7 | 0.00404 | 00108-86-1 | N/A | orl-rat 2699mg/kg |
| 32. n-Butyl benzene | 30162 | 071613 | 0.10 | 20.00 | 0.011 | 20014.4 | 2001.3 | 0.00404 | 00104-51-8 | N/A | N/A |
| 33. Ethyl benzene | 30162 | 071613 | 0.10 | 20.00 | 0.011 | 20010.0 | 2000.9 | 0.00401 | 00100-41-4 | 100 ppm (435mg/m3/8H) | orl-rat >2000mg/kg |
| 34. p-Isopropyl toluene | 30162 | 071613 | 0.10 | 20.00 | 0.011 | 20012.0 | 2001.1 | 0.00404 | 00099-87-6 | N/A | orl-rat 4750mg/kg |
| 35. Naphthalene | 30162 | 071613 | 0.10 | 20.00 | 0.011 | 20018.7 | 2001.8 | 0.00404 | 00091-20-3 | 10 ppm (50mg/m3/8H) | orl-rat 490mg/kg |
| 36. Styrene | 30162 | 071613 | 0.10 | 20.00 | 0.011 | 20019.9 | 2001.9 | 0.00404 | 00100-42-5 | 100 ppm | orl-rat 5000mg/kg |
| 37. Toluene | 30162 | 071613 | 0.10 | 20.00 | 0.011 | 20011.6 | 2001.1 | 0.00404 | 00108-88-3 | 200 ppm | orl-rat 5000mg/kg |
| 38. 1,2,3-Trichlorobenzene | 30162 | 071613 | 0.10 | 20.00 | 0.011 | 20020.0 | 2001.9 | 0.00404 | 00087-61-6 | N/A | ipr-mus 1390mg/kg |
| 39. 1,2,4-Trichlorobenzene | 30162 | 071613 | 0.10 | 20.00 | 0.011 | 20013.4 | 2001.2 | 0.00404 | 00120-82-1 | 5 ppm (CL) (40mg/m3) | orl-rat 756mg/kg |
| 40. 1,2,4-Trimethylbenzene | 30162 | 071613 | 0.10 | 20.00 | 0.011 | 20012.6 | 2001.2 | 0.00408 | 00095-63-6 | N/A | orl-rat 5g/kg |
| 41. 1,3,5-Trimethylbenzene | 30162 | 071613 | 0.10 | 20.00 | 0.011 | 20007.4 | 2000.7 | 0.00408 | 00108-67-8 | N/A | N/A |
| 42. m-Xylene | 30162 | 071613 | 0.10 | 20.00 | 0.011 | 20010.8 | 2001.0 | 0.00404 | 00108-38-3 | 100 ppm (435mg/m3/8H) | orl-rat 5g/kg |
| 43. tert-Butyl benzene | 30163 | 071913 | 0.10 | 20.00 | 0.011 | 20010.9 | 2001.0 | 0.00404 | 00098-06-6 | N/A | N/A |
| 44. sec-Butyl benzene | 30163 | 071913 | 0.10 | 20.00 | 0.011 | 20014.4 | 2001.3 | 0.00404 | 00135-98-8 | N/A | orl-rat 2240mg/kg |
| 45. Chlorobenzene | 30163 | 071913 | 0.10 | 20.00 | 0.011 | 20011.0 | 2001.0 | 0.00404 | 00108-90-7 | 75 ppm (350mg/m3/8H) | orl-rat 2290mg/kg |
| 46. 2-Chlorotoluene | 30163 | 071913 | 0.10 | 20.00 | 0.011 | 20014.5 | 2001.4 | 0.00404 | 00095-49-8 | 50 ppm (250mg/m3/8H) | unr-rat 5700mg/kg |
| 47. 4-Chlorotoluene | 30163 | 071913 | 0.10 | 20.00 | 0.011 | 20009.4 | 2000.8 | 0.00408 | 00106-43-4 | N/A | orl-rat 2100mg/kg |
| 48. 1,2-Dichlorobenzene | 30163 | 071913 | 0.10 | 20.00 | 0.011 | 20006.1 | 2000.5 | 0.00404 | 00095-50-1 | 50 ppm (300mg/m3) (CL) | orl-rat 500mg/kg |
| 49. 1,3-Dichlorobenzene | 30163 | 071913 | 0.10 | 20.00 | 0.011 | 20006.6 | 2000.6 | 0.00408 | 00541-73-1 | N/A | ipr-mus 1062mg/kg |
| 50. 1,4-Dichlorobenzene | 30163 | 071913 | 0.10 | 20.00 | 0.011 | 20017.2 | 2001.6 | 0.00404 | 00106-46-7 | 75 ppm (450mg/m3/8H) | orl-rat 500mg/kg |
| 51. Isopropylbenzene | 30163 | 071913 | 0.10 | 20.00 | 0.011 | 20011.4 | 2001.0 | 0.00408 | 00098-82-8 | 50 ppm (245mg/m3/8H) | orl-rat 1400mg/kg |
| 52. n-Propylbenzene | 30163 | 071913 | 0.10 | 20.00 | 0.011 | 20010.0 | 2000.9 | 0.00408 | 00103-65-1 | N/A | orl-rat 6040mg/kg |
| 53. o-Xylene | 30163 | 071913 | 0.10 | 20.00 | 0.011 | 20005.6 | 2000.5 | 0.00404 | 00095-47-6 | 100 ppm (435mg/m3/8H) | ipr-mus 1364mg/kg |
| n-Xylene | 30163 | 071913 | 0.10 | 20.00 | 0.011 | 20013.8 | 2001.3 | 0.00404 | 00106-42-3 | 100 ppm (435mg/m3/8H) | orl-rat 5g/kg |

**Run 10, "P32001 L100113 [2000µg/mL in MeOH]-PID"**

Run Length: 59.99 min, 35996 points at 10 points/second.
Created: Tue, Oct 1, 2013 at 8:42:31 PM.
Sampled: Sequence "100113-GC1", Method "GC1-M7".
Analyzed using Method "GC1-M7".

**Comments**
GC1-M7 Analysis by Candice Warren
Column ID SPB-Vocol 105 meter X 0.53mm X 3.0µm film thickness
Flow rates: Total flow = 150mL/min., Helium (carrier) = 10mL/min.,
Helium (make-up) = 40mL/min., Hydogen (make-up) = 100mL/min.,
Oven Profile: Temp. 1 = 35°C (Time 1 = 10 min.), Temp 2 = 200°C (Time 2 = 8.75 min.),
Rate = 4°C/min., Total run time = 60 min. Injector temp. = 200°C, PID Temp. = 200°C.
ELCD Signal = Edaq Channel 1 PID Signal = Edaq Channel 2
Standard injection = 0.5µL, Range=4 Purge Valve = 8 min

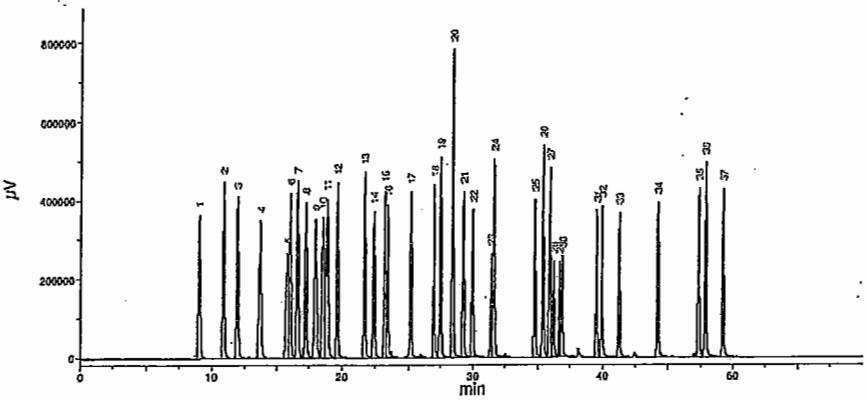



| Analyte | PID RT (min.) | ELCD RT (min.) |
|---|---|---|
| 1,1-Dichloroethene | 8.90 | 8.92 |
| Methylene chloride | NA | 10.67 |
| trans-1,2-Dichloroethene | 11.91 | 11.93 |
| 1,1-Dichloroethane | NA | 13.68 |
| 2,2-Dichloropropane | NA | 15.76 |
| cis-1,2-Dichloroethene | 15.98 | 16.00 |
| Chloroform | NA | 16.58 |
| Bromochloromethane | NA | 17.20 |
| 1,1,1-Trichloroethane | NA | 17.95 |
| 1,1-Dichloropropene | 18.50 | 18.52 |
| Carbon tetrachloride | NA | 18.82 |
| 1,2-Dichloroethane | NA | 19.59 |
| Benzene | 19.50 | NA |
| Trichloroethene | 21.65 | 21.68 |
| 1,2-Dichloropropane | NA | 22.37 |
| Bromodichloromethane | NA | 23.22 |
| Dibromomethane | NA | 23.41 |
| cis-1,3-Dichloropropene | 25.14 | 25.17 |
| Toluene | 26.16 | NA |
| trans-1,3-Dichloropropene | 26.95 | 26.97 |
| 1,1,2-Trichloroethane | NA | 27.48 |
| 1,3-Dichloropropane | NA | 28.39 |
| Tetrachloroethene | 28.36 | 28.39 |
| Dibromochloromethane | NA | 29.24 |
| 1,2-Dibromoethane | NA | 29.92 |
| Chlorobenzene | 31.34 | 31.35 |
| 1,1,1,2-Tetrachloroethane | NA | 31.54 |
| Ethylbenzene | 31.52 | NA |
| m-Xylene | 31.79 | NA |
| p-Xylene | 31.79 | NA |
| o-Xylene | 33.32 | NA |
| Styrene | 33.50 | NA |
| Isopropylbenzene | 34.61 | NA |
| Bromoform | NA | 34.73 |
| 1,1,2,2-Tetrachloroethane | NA | 35.37 |
| 1,2,3-Trichloropropane | NA | 35.89 |
| n-Propylbenzene | 36.05 | NA |
| Bromobenzene | 36.19 | 36.21 |
| 1,3,5-Trimethylbenzene | 36.64 | NA |
| 2-Chlorotoluene | 36.64 | 36.69 |
| 4-Chlorotoluene | 36.85 | 36.87 |
| tert-Butylbenzene | 37.88 | NA |
| 1,2,4-Trimethylbenzene | 38.02 | NA |
| sec-Butylbenzene | 38.64 | NA |
| p-Isopropyltoluene | 39.17 | NA |
| 1,3-Dichlorobenzene | 39.48 | 39.50 |
| 1,4-Dichlorobenzene | 39.88 | 39.91 |
| n-Butylbenzene | 40.65 | NA |
| 1,2-Dichlorobenzene | 41.21 | 41.23 |
| 1,2-Dibromo-3-chloropropane | NA | 44.18 |
| 1,2,4-Trichlorobenzene | 47.30 | 47.32 |
| Hexachlorobutadiene | 47.80 | 47.82 |
| Naphthalene | 48.27 | NA |
| 1,2,3-Trichlorobenzene | 49.17 | 49.19 |

**Run 10, "P32001 L100113 [2000µg/mL in MeOH]-ELCD"**

Run Length: 59.99 min, 35996 points at 10 points/second.
Created: Tue, Oct 1, 2013 at 8:42:31 PM.
Sampled: Sequence "100113-GC1", Method "GC1-M7".
Analyzed using Method "GC1-M7".

**Comments**
GC1-M7 Analysis by Candice Warren
Column ID SPB-Vocol 105 meter X 0.53mm X 3.0µm film thickness
Flow rates: Total flow = 150mL/min., Helium (carrier) = 10mL/min.,
Helium (make-up) = 40mL/min., Hydogen (make-up) = 100mL/min.,
Oven Profile: Temp. 1 = 35°C (Time 1 = 10 min.), Temp 2 = 200°C (Time 2 = 8.75 min.),
Rate = 4°C/min., Total run time = 60 min. Injector temp. = 200°C, PID Temp. = 200°C.
ELCD Signal = Edaq Channel 1 PID Signal = Edaq Channel 2
Standard Injection = 0.5µL, Range=4 Purge Valve = 8 min



X1038 IC MIX

| 8260 Mix (U) | MTBE (U) | RMA (CS) | Ketones (RES) | CS2 (ABS) | | MEOH | Final Vol. (uL) |
|---|---|---|---|---|---|---|---|
| DWM-589N<br>Lot CK-2561<br>2000 ug/mL<br>R4502<br>Exp.09/30/16 | STS-440-1<br>Lot CG-4444<br>2000 ug/mL<br>R4230<br>Exp. 01/31/15 | SP-1022-345DSZ<br>Lot 2246900<br>Varied Conc.<br>R4649<br>Exp. 12/31/14 | 30006<br>Lot A090981<br>5000 ug/mL<br>R4531<br>Exp. 12/2015 | 70060<br>Lot 121813<br>1000 ug/mL<br>R4661<br>Exp. 12/18/16 | | R4493 | |
| 200 | 200 | 400 | 160 | 400 | | 2640 | 4000 |

Ketones = 200 ug/mL
Acrylo/m&p-Xylenes = 200ug/mL
All other = 100ug/ml

Prep: 02/24/14
Exp: 03/~~07~~03/14 US 2/26/14

US 2/24/14

X1039 Gases - Abs

100uL 30058 lot 010213 2000ug/mL (R4445) exp. 01/02/16
3900uL MeOH (R4479)
4000uL 50ug/mL US 2/24/14 Exp. 3/~~07~~03/14 US 2/24/14

X1040 Anti-Foam Agent (Purge Water)

300mg 31822 lot A096340 Neat (R4535) exp. 7/2018 Restck
DI Water
1500 mL US 2/25/14 Exp. 2/25/15

X1041 MIX for Archon - UMS5

40uL 8260 MIX(U) DWM-589N-1 lot CK-2561 2000ug/mL(R4502) exp. 9/30/16
16uL DBCP(U) EPA-1021 lot CH-1351 5000ug/mL (R4376) exp. 5/31/15
40uL CS2(Acc) ARP-9-035-20X lot 2120711234 2.0mg/mL (R4438) exp. 7/18/22
80uL RMA(CS) SP-1022345DSZ lot 2246900 Varied Conc. (R4649) exp. 12/31/14
1824uL MeOH (R4493)
2000uL Acrylo/DBCP = 80ug/mL
Other = 40 ug/mL US 2/25/14 Exp. 3/11/14

Continued on Page

Read and Understood By

| Signed | Date | Signed | Date |
|---|---|---|---|
| US | 2/25/14 | TRC | 2/27/14 |

Sea C

# Analytical Run Number 1

## Calibration Information

Tune Data (If applicable)

Initial Calibration (If different than Initial Calibration in Run 1)
- Calibration Factor Summary
- Chromatogram
- Quant Report (If applicable)

Continuing Calibration
- Calibration Response Check
- Chromatogram
- Quant Report (If applicable)

## Instrument Logs/Analysis Notebook Pages

## Blank / Field Sample / QC Data

Sample Results
Chromatogram
Quant Report (If applicable)
Confirmation Analysis Quant Report / Chromatogram (If applicable)
Tentatively Identified Compounds (If required)

Rev. 1.1

# Calibration Information

Tune Data (If applicable)

Initial Calibration (If different than Initial Calibration in Run 1)
- Calibration Factor Summary
- Chromatogram
- Quant Report (If applicable)

Continuing Calibration
- Calibration Response Check
- Chromatogram
- Quant Report (If applicable)

Rev. 1.1

5A

VOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - BROMOFLUOROBENZENE (BFB)

Lab Name: ARDL, Inc. Contract: ---

Lab Code: --- Case No.: 006611 SAS No.: --- SDG No.: ---

Lab File ID: A0212408 BFB Injection Date: 02/12/14

Instrument ID: AG1 BFB Injection Time: 14:43

| m/e | ION ABUNDANCE CRITERIA | % RELATIVE ABUNDANCE | |
|---|---|---|---|
| 50 | 8.0 - 40.0% of mass 95 | 17.1 | |
| 75 | 30.0 - 66.0% of mass 95 | 46.9 | |
| 95 | Base Peak, 100% relative abundance | 100. | |
| 96 | 5.0 - 9.0% of mass 95 | 7.4 | |
| 173 | Less than 2.0% of mass 174 | 0.0 | (1) |
| 174 | Greater than 50.0% of mass 95 | 73.7 | |
| 175 | 4.0 - 9.0% of mass 174 | 8.0 | (1) |
| 176 | Greater than 93.0%, but less that 101.0% of mass 174 | 100.8 | (1) |
| 177 | 5.0 - 9.0% of mass 176 | 6.1 | (2) |

(1)-Value is % mass 174 2-Value is % mass 176

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

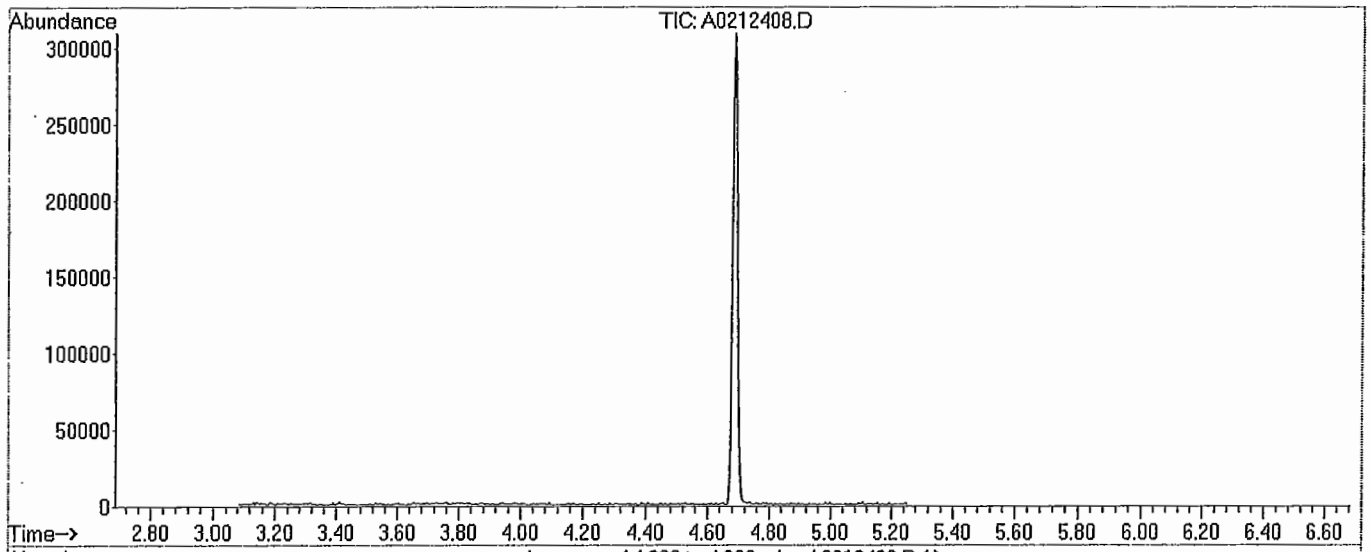
| | EPA SAMPLE NO. | LAB SAMPLE ID | LAB FILE ID | DATE ANALYZED | TIME ANALYZED |
|---|---|---|---|---|---|
| 1 | BLK STD | 000 STD | A0212411 | 02/12/14 | 16:06 |
| 2 | VOA STD | 12.5 STD | A0212412 | 02/12/14 | 16:36 |
| 3 | VOA STD | 025 STD | A0212413 | 02/12/14 | 17:04 |
| 4 | VOA STD | 050 STD | A0212414 | 02/12/14 | 17:33 |
| 5 | VOA STD | 075 STD | A0212415 | 02/12/14 | 18:03 |
| 6 | VOA STD | 100 STD | A0212416 | 02/12/14 | 18:32 |
| 7 | VOA STD | 125 STD | A0212417 | 02/12/14 | 19:02 |
| 8 | VOA STD | 150 STD | A0212418 | 02/12/14 | 19:32 |
| 9 | VOA STD | 200 STD | A0212419 | 02/12/14 | 20:03 |
| 10 | | | | | |
| 11 | | | | | |
| 12 | | | | | |
| 13 | | | | | |
| 14 | | | | | |
| 15 | | | | | |
| 16 | | | | | |
| 17 | | | | | |
| 18 | | | | | |
| 19 | | | | | |
| 20 | | | | | |
| 21 | | | | | |
| 22 | | | | | |

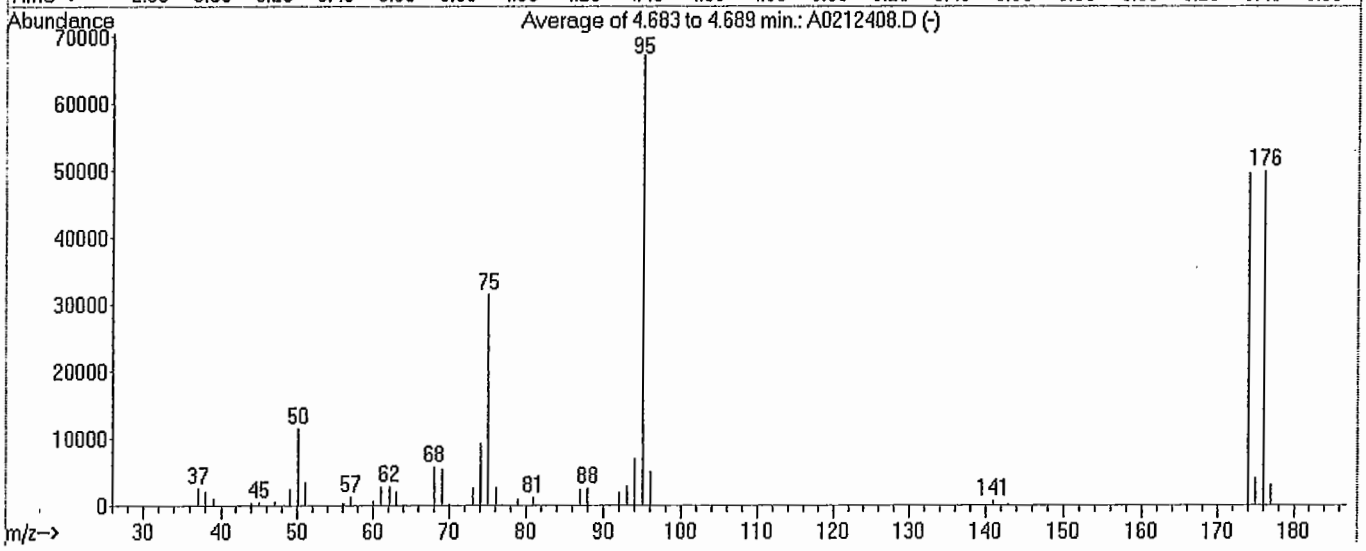
page 1 of 1 FORM V VOA 3/90

Data Path : C:\MSDCHEM\1\DATA\021214\
Data File : A0212408.D
Acq On : 12 Feb 2014 2:43 pm
Operator :
Sample : 50 NG BFB
Misc : 8260
ALS Vial : 1 Sample Multiplier: 1

Integration File: rteint.p

Method : C:\MSDCHEM\1\METHODS\BFBSOIL.M
Title :
Last Update :




AutoFind: Scans 499, 500, 501; Background Corrected with Scan 490

| Target Mass | Rel. to Mass | Lower Limit% | Upper Limit% | Rel. Abn% | Raw Abn | Result Pass/Fail |
|---|---|---|---|---|---|---|
| 50 | 95 | 8 | 40 | 17.1 | 11491 | PASS |
| 75 | 95 | 30 | 66 | 46.9 | 31506 | PASS |
| 95 | 95 | 100 | 100 | 100.0 | 67170 | PASS |
| 96 | 95 | 5 | 9 | 7.4 | 4947 | PASS |
| 173 | 174 | 0.00 | 2 | 0.0 | 0 | PASS |
| 174 | 95 | 50 | 120 | 73.7 | 49517 | PASS |
| 175 | 174 | 4 | 9 | 8.0 | 3969 | PASS |
| 176 | 174 | 93 | 101 | 100.8 | 49920 | PASS |
| 177 | 176 | 5 | 9 | 6.1 | 3069 | PASS |

Average of 4.683 to 4.689 min.: A0212408.D
50 NG BFB
Modified:subtracted

| m/z | abund. | m/z | abund. | m/z | abund. | m/z | abund. |
|---|---|---|---|---|---|---|---|
| 36.00 | 186 | 51.05 | 3475 | 70.00 | 222 | 93.00 | 2860 |
| 36.20 | 188 | 56.00 | 376 | 73.05 | 2609 | 94.00 | 6957 |
| 37.10 | 2609 | 56.20 | 351 | 74.05 | 9265 | 95.00 | 67170 |
| 38.05 | 2082 | 57.05 | 1345 | 75.05 | 31506 | 96.05 | 4947 |
| 39.05 | 990 | 60.05 | 672 | 76.10 | 2689 | 140.95 | 731 |
| 44.00 | 396 | 61.05 | 2763 | 76.90 | 190 | 142.80 | 254 |
| 45.00 | 481 | 62.10 | 2839 | 78.95 | 978 | 143.00 | 220 |
| 47.10 | 562 | 63.05 | 2070 | 80.95 | 1238 | 173.95 | 49517 |
| 48.20 | 173 | 64.00 | 167 | 87.00 | 2406 | 174.95 | 3969 |
| 49.00 | 2452 | 68.00 | 5774 | 87.95 | 2558 | 176.00 | 49920 |
| 50.10 | 11491 | 69.05 | 5444 | 92.00 | 1935 | 176.95 | 3069 |

# Response Factor Report AG1

Method Path : C:\MSDCHEM\1\METHODS\
Method File : SOIL_44HI.M
Title : 8260 VOLATILES
Last Update : Thu Mar 20 08:47:48 2014
Response Via : Initial Calibration

Calibration Files
12.5=A0212412.D 25 =A0212413.D 50 =A0212414.D
75 =A0212415.D 100 =A0212416.D 125 =A0212417.D

| | | Compound | 12.5 | 25 | 50 | 75 | 100 | 125 | Avg | %RSD |
|---|---|---|---|---|---|---|---|---|---|---|
| 1) | I | Chlorobenzene-d5 | ----------ISTD---------- | | | | | | | |
| 2) | S | Toluene-d8 | 1.834 | 1.970 | 2.327 | 2.462 | 2.350 | 2.487 | 2.266 | 10.36 |
| 3) | MCT | Toluene | 2.260 | 3.369 | 3.117 | 3.069 | 2.947 | 3.329 | 3.029 | 11.43 |
| 4) | CT | Ethylbenzene | 3.093 | 4.137 | 3.732 | 3.610 | 3.473 | 3.945 | 3.654 | 8.75 |
| 5) | T | m & p-Xylene | 2.375 | 3.436 | 3.028 | 2.949 | 2.832 | 3.202 | 2.960 | 10.45 |
| 6) | T | Styrene | 1.482 | 2.472 | 2.280 | 2.236 | 2.201 | 2.469 | 2.217 | 14.32 |
| 7) | T | o-Xylene | 0.875 | 1.378 | 1.288 | 1.276 | 1.262 | 1.446 | 1.277 | 13.80 |
| 8) | I | 1,4-Dichlorobenzene-d | ----------ISTD---------- | | | | | | | |
| 9) | S | 4-Bromofluorobenz | 0.832 | 0.829 | 0.948 | 0.993 | 0.977 | 1.024 | 0.951 | 8.29 |
| 10) | T | 1,2,4-Trimethylbe | 2.402 | 3.578 | 3.438 | 3.346 | 3.340 | 3.719 | 3.351 | 12.10 |

(#) = Out of Range ### Number of calibration levels exceeded format ###

Quantitation Report (Not Reviewed)

Data Path : C:\MSDCHEM\1\DATA\021214\
Data File : A0212411.D
Acq On : 12 Feb 2014 4:06 pm
Operator :
Sample : VSTD000
Misc : 8260
ALS Vial : 3 Sample Multiplier: 1

Quant Time: Mar 20 08:23:36 2014
Quant Method : C:\MSDCHEM\1\METHODS\SOIL_44HI.M
Quant Title : 8260 VOLATILES
QLast Update : Thu Mar 20 08:23:31 2014
Response via : Initial Calibration

| Internal Standards | R.T. | QIon | Response | Conc | Units | Dev(Min) |
|---|---|---|---|---|---|---|
| 1) Chlorobenzene-d5 | 8.77 | 82 | 299125 | 125.00 | ug/Kg | 0.00 |
| 8) 1,4-Dichlorobenzene-d4 | 10.14 | 152 | 274646 | 125.00 | ug/Kg | 0.21 |

System Monitoring Compounds

| | | | | | | |
|---|---|---|---|---|---|---|
| 2) Toluene-d8 | 0.00 | 98 | 0 | 0.00 | ug/Kg | |
| Spiked Amount 100.000 | | | Recovery | = | 0.00% | |
| 9) 4-Bromofluorobenzene | 0.00 | 95 | 0 | 0.00 | ug/Kg | |
| Spiked Amount 100.000 | | | Recovery | = | 0.00% | |

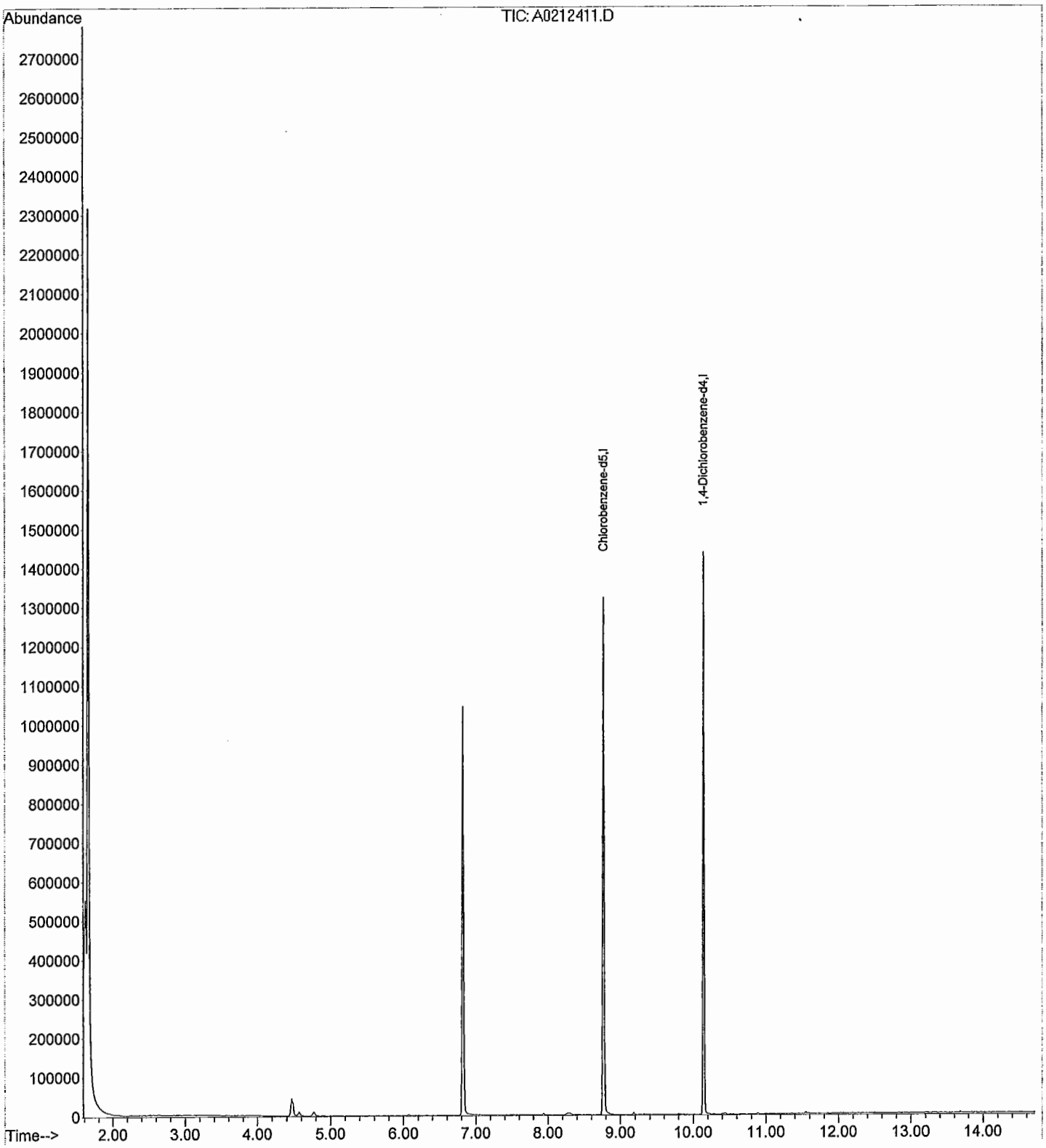
| Target Compounds | Qvalue |
|---|---|

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

Quantitation Report (Not Reviewed)

Data Path : C:\MSDCHEM\1\DATA\021214\
Data File : A0212411.D
Acq On : 12 Feb 2014 4:06 pm
Operator :
Sample : VSTD000
Misc : 8260
ALS Vial : 3 Sample Multiplier: 1

Quant Time: Mar 20 08:23:36 2014
Quant Method : C:\MSDCHEM\1\METHODS\SOIL_44HI.M
Quant Title : 8260 VOLATILES
QLast Update : Thu Mar 20 08:23:31 2014
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data Path : C:\MSDCHEM\1\DATA\021214\
Data File : A0212412.D
Acq On : 12 Feb 2014 4:36 pm
Operator :
Sample : VSTD12.5
Misc : 8260
ALS Vial : 4 Sample Multiplier: 1

Quant Time: Mar 20 08:29:38 2014
Quant Method : C:\MSDCHEM\1\METHODS\SOIL_44HI.M
Quant Title : 8260 VOLATILES
QLast Update : Thu Mar 20 08:29:00 2014
Response via : Initial Calibration

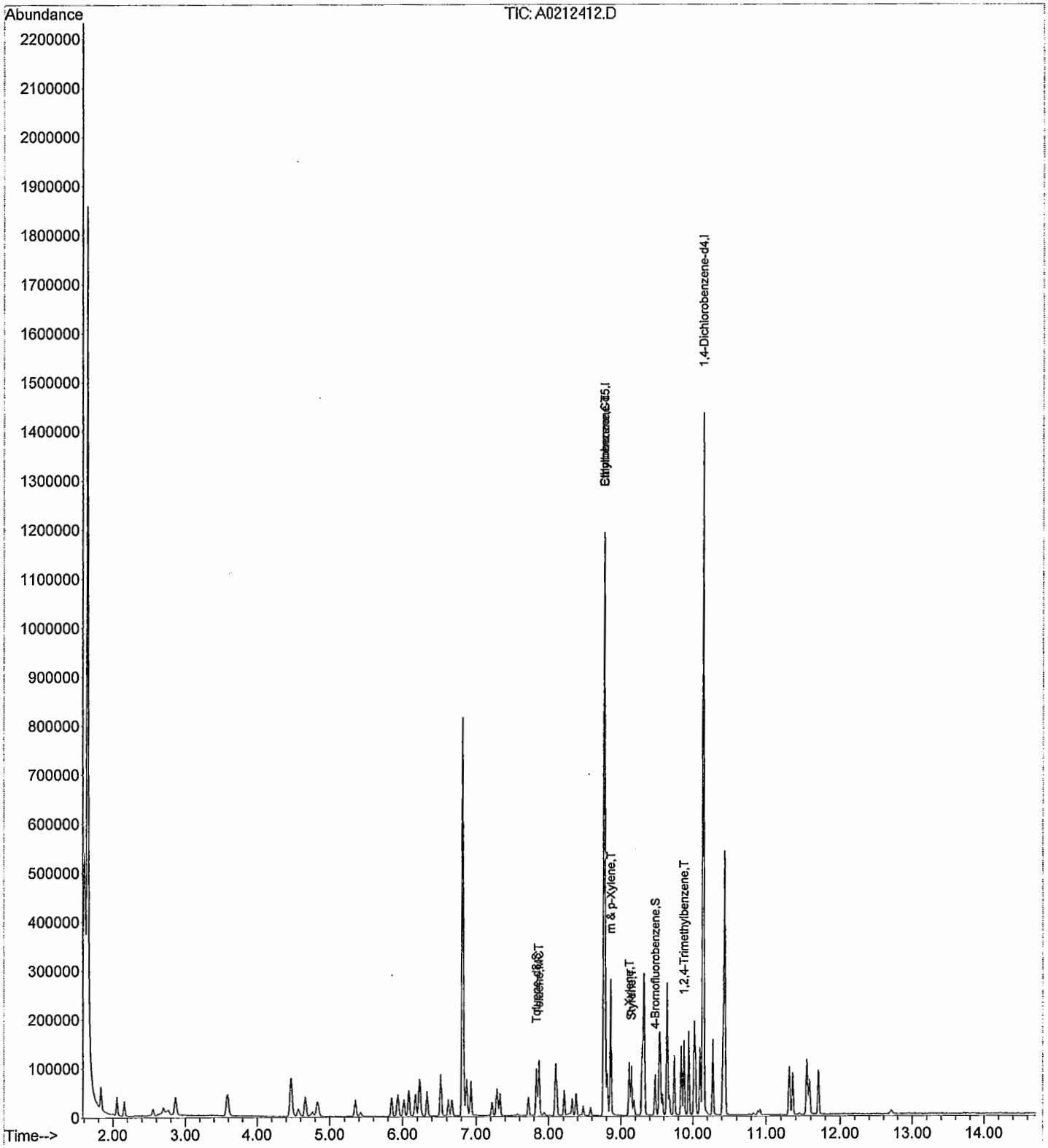
| Internal Standards | R.T. | QIon | Response | Conc Units | Dev(Min) |
|---|---|---|---|---|---|
| 1) Chlorobenzene-d5 | 8.77 | 82 | 250789 | 125.00 ug/Kg | 0.00 |
| 8) 1,4-Dichlorobenzene-d4 | 10.14 | 152 | 265115 | 125.00 ug/Kg | 0.00 |
| System Monitoring Compounds | | | | | |
| 2) Toluene-d8 | 7.83 | 98 | 45998 | 10.17 ug/Kg | 0.00 |
| Spiked Amount 100.000 | | | Recovery | = 10.17% | |
| 9) 4-Bromofluorobenzene | 9.48 | 95 | 22046 | 11.39 ug/Kg | 0.00 |
| Spiked Amount 100.000 | | | Recovery | = 11.39% | |
| Target Compounds | | | | | Qvalue |
| 3) Toluene | 7.87 | 91 | 56679 | 9.61 ug/Kg | 99 |
| 4) Ethylbenzene | 8.78 | 91 | 77557 | 11.14 ug/Kg | 94 |
| 5) m & p-Xylene | 8.86 | 91 | 119133 | 21.09 ug/Kg | 93 |
| 6) Styrene | 9.15 | 104 | 37160 | 8.82 ug/Kg | 95 |
| 7) o-Xylene | 9.12 | 106 | 21948 | 8.29 ug/Kg | 87 |
| 10) 1,2,4-Trimethylbenzene | 9.88 | 105 | 63676 | 9.43 ug/Kg | 91 |

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

Quantitation Report (Not Reviewed)

Data Path : C:\MSDCHEM\1\DATA\021214\
Data File : A0212412.D
Acq On : 12 Feb 2014 4:36 pm
Operator :
Sample : VSTD12.5
Misc : 8260
ALS Vial : 4 Sample Multiplier: 1

Quant Time: Mar 20 08:29:38 2014
Quant Method : C:\MSDCHEM\1\METHODS\SOIL_44HI.M
Quant Title : 8260 VOLATILES
QLast Update : Thu Mar 20 08:29:00 2014
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data Path : C:\MSDCHEM\1\DATA\021214\
Data File : A0212413.D
Acq On : 12 Feb 2014 5:04 pm
Operator :
Sample : VSTD025
Misc : 8260
ALS Vial : 5 Sample Multiplier: 1

Quant Time: Mar 20 08:30:25 2014
Quant Method : C:\MSDCHEM\1\METHODS\SOIL_44HI.M
Quant Title : 8260 VOLATILES
QLast Update : Thu Mar 20 08:29:00 2014
Response via : Initial Calibration

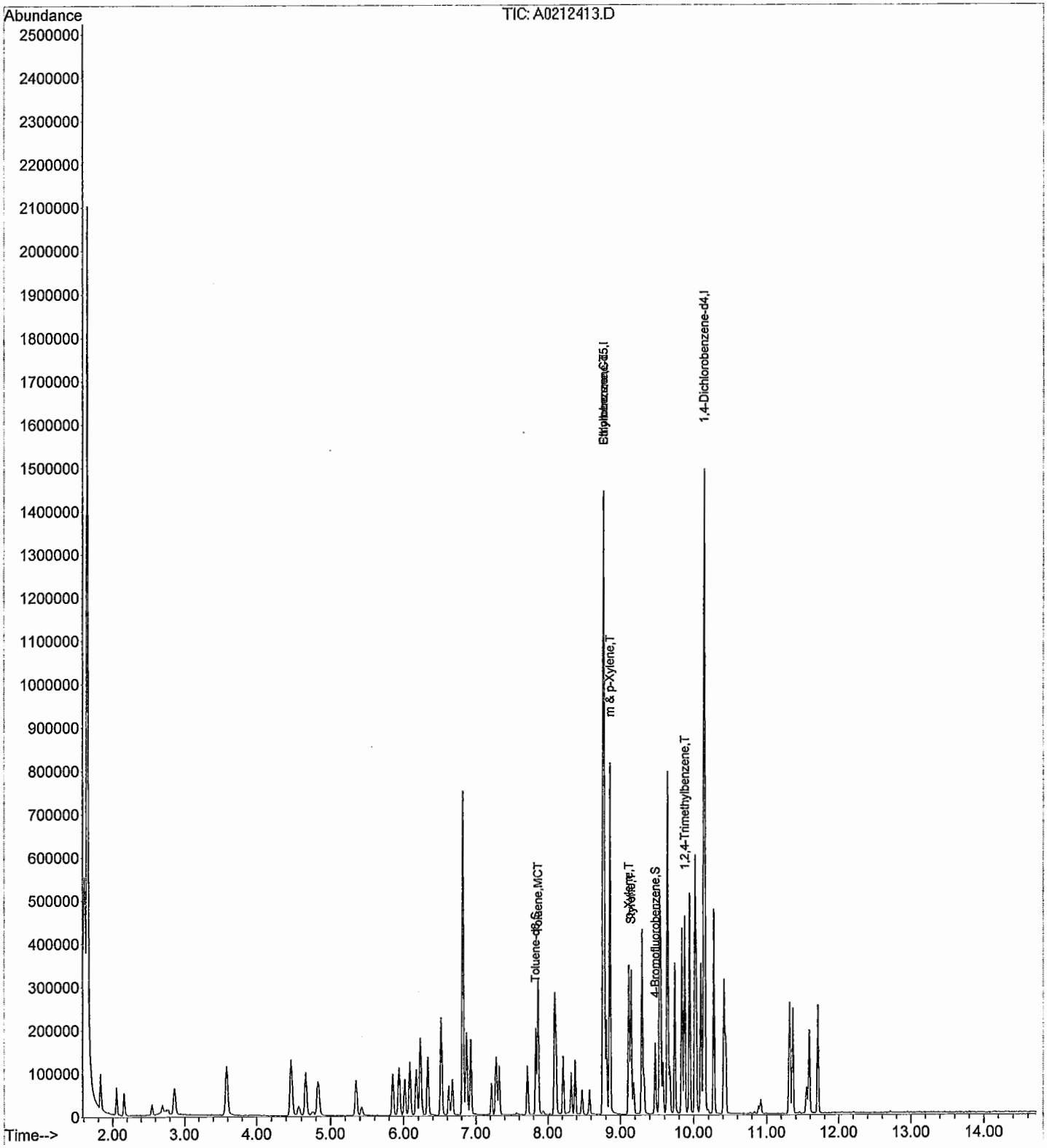
| Internal Standards | R.T. | QIon | Response | Conc | Units | Dev(Min) |
|---|---|---|---|---|---|---|
| 1) Chlorobenzene-d5 | 8.77 | 82 | 249286 | 125.00 | ug/Kg | 0.00 |
| 8) 1,4-Dichlorobenzene-d4 | 10.14 | 152 | 266176 | 125.00 | ug/Kg | 0.00 |
| System Monitoring Compounds | | | | | | |
| 2) Toluene-d8 | 7.83 | 98 | 98242 | 21.85 | ug/Kg | 0.00 |
| Spiked Amount 100.000 | | | Recovery | = | 21.85% | |
| 9) 4-Bromofluorobenzene | 9.48 | 95 | 44133 | 22.72 | ug/Kg | 0.00 |
| Spiked Amount 100.000 | | | Recovery | = | 22.72% | |
| Target Compounds | | | | | | Qvalue |
| 3) Toluene | 7.86 | 91 | 167991 | 28.66 | ug/Kg | 99 |
| 4) Ethylbenzene | 8.78 | 91 | 206260 | 29.81 | ug/Kg | 98 |
| 5) m & p-Xylene | 8.86 | 91 | 342665 | 61.02 | ug/Kg | 94 |
| 6) Styrene | 9.15 | 104 | 123233 | 29.43 | ug/Kg | 94 |
| 7) o-Xylene | 9.12 | 106 | 68699 | 26.10 | ug/Kg | 89 |
| 10) 1,2,4-Trimethylbenzene | 9.88 | 105 | 190500 | 28.10 | ug/Kg | 95 |

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

Quantitation Report (Not Reviewed)

Data Path : C:\MSDCHEM\1\DATA\021214\
Data File : A0212413.D
Acq On : 12 Feb 2014 5:04 pm
Operator :
Sample : VSTD025
Misc : 8260
ALS Vial : 5 Sample Multiplier: 1

Quant Time: Mar 20 08:30:25 2014
Quant Method : C:\MSDCHEM\1\METHODS\SOIL_44HI.M
Quant Title : 8260 VOLATILES
QLast Update : Thu Mar 20 08:29:00 2014
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data Path : C:\MSDCHEM\1\DATA\021214\
Data File : A0212414.D
Acq On : 12 Feb 2014 5:33 pm
Operator :
Sample : VSTD050
Misc : 8260
ALS Vial : 6 Sample Multiplier: 1

Quant Time: Mar 20 08:31:01 2014
Quant Method : C:\MSDCHEM\1\METHODS\SOIL_44HI.M
Quant Title : 8260 VOLATILES
QLast Update : Thu Mar 20 08:29:00 2014
Response via : Initial Calibration

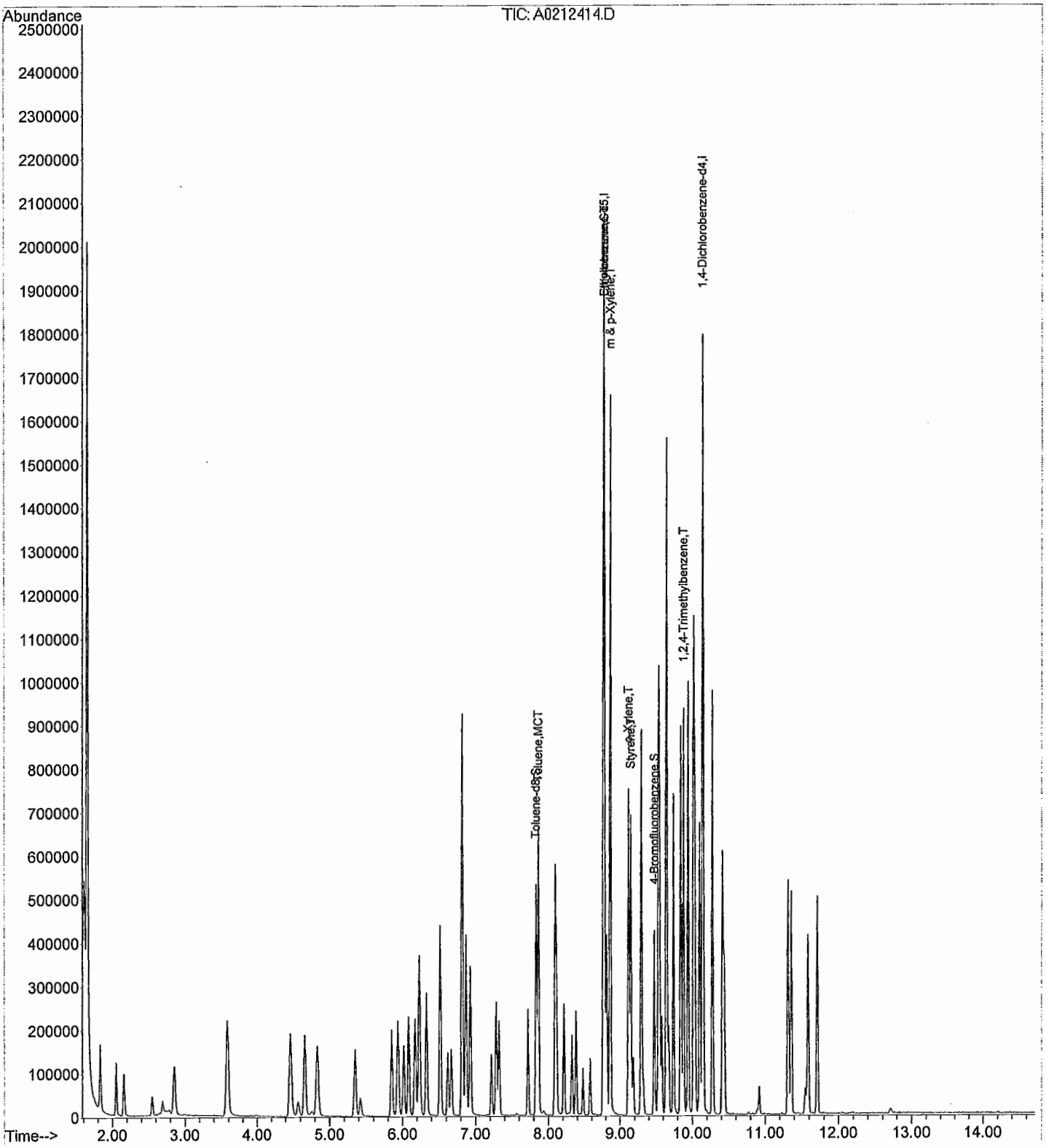
| Internal Standards | R.T. | QIon | Response | Conc | Units | Dev(Min) |
|---|---|---|---|---|---|---|
| 1) Chlorobenzene-d5 | 8.77 | 82 | 282745 | 125.00 | ug/Kg | 0.00 |
| 8) 1,4-Dichlorobenzene-d4 | 10.14 | 152 | 284885 | 125.00 | ug/Kg | 0.00 |
| System Monitoring Compounds | | | | | | |
| 2) Toluene-d8 | 7.83 | 98 | 263178 | 51.60 | ug/Kg | 0.00 |
| Spiked Amount 100.000 | | | Recovery | = | 51.60% | |
| 9) 4-Bromofluorobenzene | 9.48 | 95 | 108054 | 51.97 | ug/Kg | 0.00 |
| Spiked Amount 100.000 | | | Recovery | = | 51.97% | |
| Target Compounds | | | | | | Qvalue |
| 3) Toluene | 7.86 | 91 | 352532 | 53.03 | ug/Kg | 100 |
| 4) Ethylbenzene | 8.78 | 91 | 422118 | 53.79 | ug/Kg | 97 |
| 5) m & p-Xylene | 8.86 | 91 | 685030 | 107.55 | ug/Kg | 93 |
| 6) Styrene | 9.15 | 104 | 257893 | 54.30 | ug/Kg | 94 |
| 7) o-Xylene | 9.11 | 106 | 145708 | 48.82 | ug/Kg | 89 |
| 10) 1,2,4-Trimethylbenzene | 9.88 | 105 | 391726 | 53.98 | ug/Kg | 92 |

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

Quantitation Report (Not Reviewed)

Data Path : C:\MSDCHEM\1\DATA\021214\
Data File : A0212414.D
Acq On : 12 Feb 2014 5:33 pm
Operator :
Sample : VSTD050
Misc : 8260
ALS Vial : 6 Sample Multiplier: 1

Quant Time: Mar 20 08:31:01 2014
Quant Method : C:\MSDCHEM\1\METHODS\SOIL_44HI.M
Quant Title : 8260 VOLATILES
QLast Update : Thu Mar 20 08:29:00 2014
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data Path : C:\MSDCHEM\1\DATA\021214\
Data File : A0212415.D
Acq On : 12 Feb 2014 6:03 pm
Operator :
Sample : VSTD075
Misc : 8260
ALS Vial : 7 Sample Multiplier: 1

Quant Time: Mar 20 08:31:44 2014
Quant Method : C:\MSDCHEM\1\METHODS\SOIL_44HI.M
Quant Title : 8260 VOLATILES
QLast Update : Thu Mar 20 08:29:00 2014
Response via : Initial Calibration

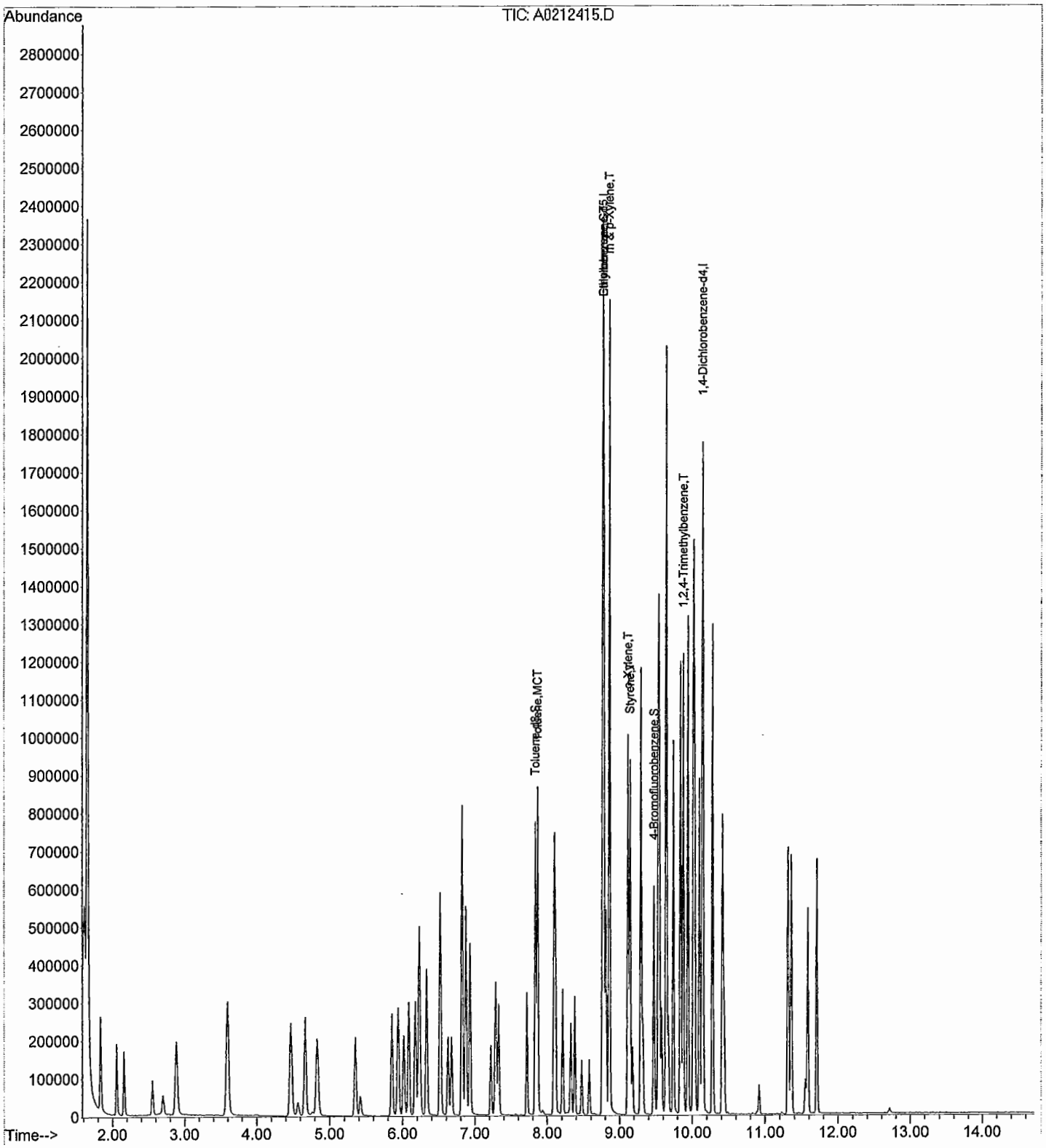
| Internal Standards | R.T. | QIon | Response | Conc Units | Dev(Min) |
|---|---|---|---|---|---|
| 1) Chlorobenzene-d5 | 8.76 | 82 | 257326 | 125.00 ug/Kg | 0.00 |
| 8) 1,4-Dichlorobenzene-d4 | 10.14 | 152 | 257061 | 125.00 ug/Kg | 0.00 |
| **System Monitoring Compounds** | | | | | |
| 2) Toluene-d8 | 7.83 | 98 | 380092 | 81.89 ug/Kg | 0.00 |
| Spiked Amount 100.000 | | | Recovery = | 81.89% | |
| 9) 4-Bromofluorobenzene | 9.48 | 95 | 153123 | 81.62 ug/Kg | 0.00 |
| Spiked Amount 100.000 | | | Recovery = | 81.62% | |
| **Target Compounds** | | | | | Qvalue |
| 3) Toluene | 7.86 | 91 | 473913 | 78.33 ug/Kg | 100 |
| 4) Ethylbenzene | 8.78 | 91 | 557331 | 78.04 ug/Kg | 96 |
| 5) m & p-Xylene | 8.86 | 91 | 910493 | 157.06 ug/Kg | 93 |
| 6) Styrene | 9.15 | 104 | 345231 | 79.87 ug/Kg | 93 |
| 7) o-Xylene | 9.11 | 106 | 196996 | 72.52 ug/Kg | 84 |
| 10) 1,2,4-Trimethylbenzene | 9.88 | 105 | 516084 | 78.81 ug/Kg | 92 |

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

Quantitation Report (Not Reviewed)

Data Path : C:\MSDCHEM\1\DATA\021214\
Data File : A0212415.D
Acq On : 12 Feb 2014 6:03 pm
Operator :
Sample : VSTD075
Misc : 8260
ALS Vial : 7 Sample Multiplier: 1

Quant Time: Mar 20 08:31:44 2014
Quant Method : C:\MSDCHEM\1\METHODS\SOIL_44HI.M
Quant Title : 8260 VOLATILES
QLast Update : Thu Mar 20 08:29:00 2014
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data Path : C:\MSDCHEM\1\DATA\021214\
Data File : A0212416.D
Acq On : 12 Feb 2014 6:32 pm
Operator :
Sample : VSTD100
Misc : 8260
ALS Vial : 8 Sample Multiplier: 1

Quant Time: Mar 20 08:32:11 2014
Quant Method : C:\MSDCHEM\1\METHODS\SOIL_44HI.M
Quant Title : 8260 VOLATILES
QLast Update : Thu Mar 20 08:29:00 2014
Response via : Initial Calibration

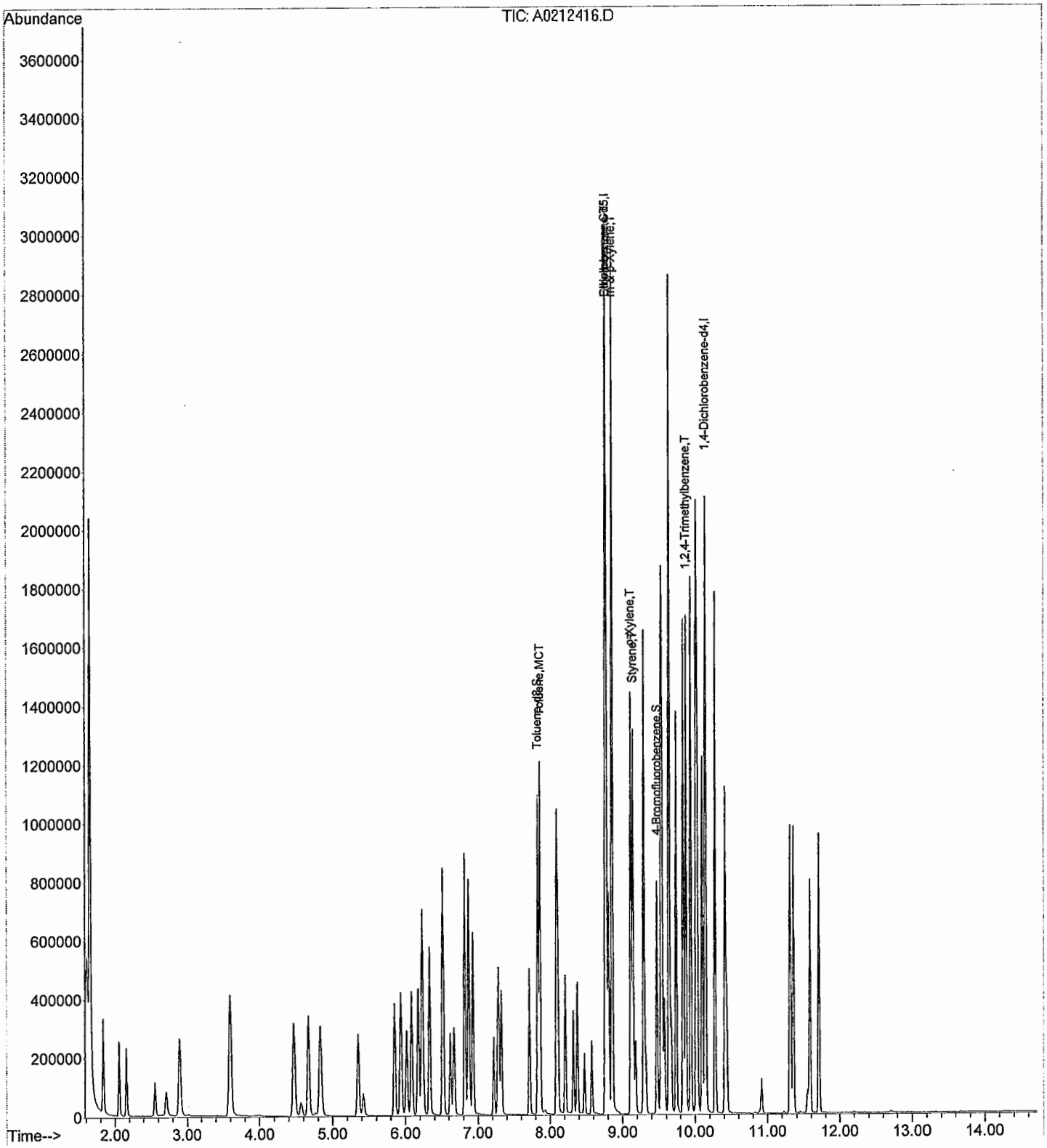
| Internal Standards | R.T. | QIon | Response | Conc | Units | Dev(Min) |
|---|---|---|---|---|---|---|
| 1) Chlorobenzene-d5 | 8.76 | 82 | 279384 | 125.00 | ug/Kg | 0.00 |
| 8) 1,4-Dichlorobenzene-d4 | 10.14 | 152 | 268227 | 125.00 | ug/Kg | 0.00 |
| System Monitoring Compounds | | | | | | |
| 2) Toluene-d8 | 7.83 | 98 | 525140 | 104.21 | ug/Kg | 0.00 |
| Spiked Amount 100.000 | | | Recovery | = | 104.21% | |
| 9) 4-Bromofluorobenzene | 9.47 | 95 | 209623 | 107.08 | ug/Kg | 0.00 |
| Spiked Amount 100.000 | | | Recovery | = | 107.08% | |
| Target Compounds | | | | | | Qvalue |
| 3) Toluene | 7.86 | 91 | 658595 | 100.26 | ug/Kg | 100 |
| 4) Ethylbenzene | 8.78 | 91 | 776236 | 100.11 | ug/Kg | 97 |
| 5) m & p-Xylene | 8.86 | 91 | 1266059 | 201.15 | ug/Kg | 93 |
| 6) Styrene | 9.15 | 104 | 491861 | 104.80 | ug/Kg | 91 |
| 7) o-Xylene | 9.11 | 106 | 282160 | 95.67 | ug/Kg | 84 |
| 10) 1,2,4-Trimethylbenzene | 9.88 | 105 | 716744 | 104.90 | ug/Kg | 91 |

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

Quantitation Report (Not Reviewed)

Data Path : C:\MSDCHEM\1\DATA\021214\
Data File : A0212416.D
Acq On : 12 Feb 2014 6:32 pm
Operator :
Sample : VSTD100
Misc : 8260
ALS Vial : 8 Sample Multiplier: 1

Quant Time: Mar 20 08:32:11 2014
Quant Method : C:\MSDCHEM\1\METHODS\SOIL_44HI.M
Quant Title : 8260 VOLATILES
QLast Update : Thu Mar 20 08:29:00 2014
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data Path : C:\MSDCHEM\1\DATA\021214\
Data File : A0212417.D
Acq On : 12 Feb 2014 7:02 pm
Operator :
Sample : VSTD125
Misc : 8260
ALS Vial : 9 Sample Multiplier: 1

Quant Time: Mar 20 08:39:39 2014
Quant Method : C:\MSDCHEM\1\METHODS\SOIL_44HI.M
Quant Title : 8260 VOLATILES
QLast Update : Thu Mar 20 08:29:00 2014
Response via : Initial Calibration

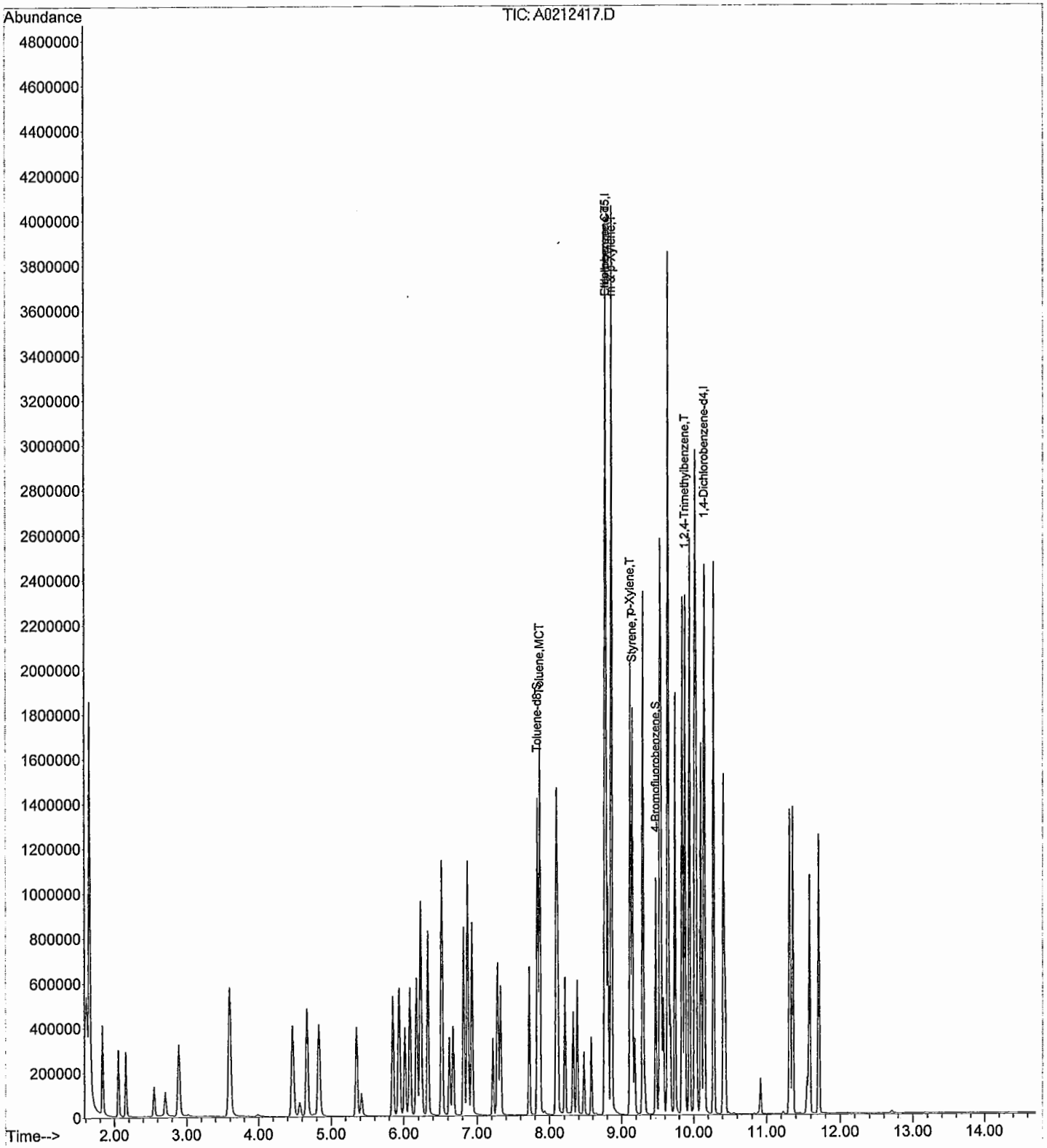
| Internal Standards | R.T. | QIon | Response | Conc | Units | Dev(Min) |
|---|---|---|---|---|---|---|
| 1) Chlorobenzene-d5 | 8.76 | 82 | 274744 | 125.00 | ug/Kg | 0.00 |
| 8) 1,4-Dichlorobenzene-d4 | 10.14 | 152 | 270361 | 125.00 | ug/Kg | 0.00 |
| **System Monitoring Compounds** | | | | | | |
| 2) Toluene-d8 | 7.83 | 98 | 683333 | 137.89 | ug/Kg | 0.00 |
| Spiked Amount 100.000 | | | Recovery | = | 137.89% | |
| 9) 4-Bromofluorobenzene | 9.47 | 95 | 276947 | 140.35 | ug/Kg | 0.00 |
| Spiked Amount 100.000 | | | Recovery | = | 140.35% | |
| **Target Compounds** | | | | | | Qvalue |
| 3) Toluene | 7.86 | 91 | 914534 | 141.58 | ug/Kg | 100 |
| 4) Ethylbenzene | 8.78 | 91 | 1083877 | 142.15 | ug/Kg | 97 |
| 5) m & p-Xylene | 8.86 | 91 | 1759378 | 284.25 | ug/Kg | 93 |
| 6) Styrene | 9.14 | 104 | 678335 | 146.98 | ug/Kg | 93 |
| 7) o-Xylene | 9.11 | 106 | 397346 | 137.00 | ug/Kg | 85 |
| 10) 1,2,4-Trimethylbenzene | 9.87 | 105 | 1005436 | 145.99 | ug/Kg | 92 |

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

Quantitation Report (Not Reviewed)

Data Path : C:\MSDCHEM\1\DATA\021214\
Data File : A0212417.D
Acq On : 12 Feb 2014 7:02 pm
Operator :
Sample : VSTD125
Misc : 8260
ALS Vial : 9 Sample Multiplier: 1

Quant Time: Mar 20 08:39:39 2014
Quant Method : C:\MSDCHEM\1\METHODS\SOIL_44HI.M
Quant Title : 8260 VOLATILES
QLast Update : Thu Mar 20 08:29:00 2014
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data Path : C:\MSDCHEM\1\DATA\021214\
Data File : A0212418.D
Acq On : 12 Feb 2014 7:32 pm
Operator :
Sample : VSTD150
Misc : 8260
ALS Vial : 10 Sample Multiplier: 1

Quant Time: Mar 20 08:40:01 2014
Quant Method : C:\MSDCHEM\1\METHODS\SOIL_44HI.M
Quant Title : 8260 VOLATILES
QLast Update : Thu Mar 20 08:29:00 2014
Response via : Initial Calibration

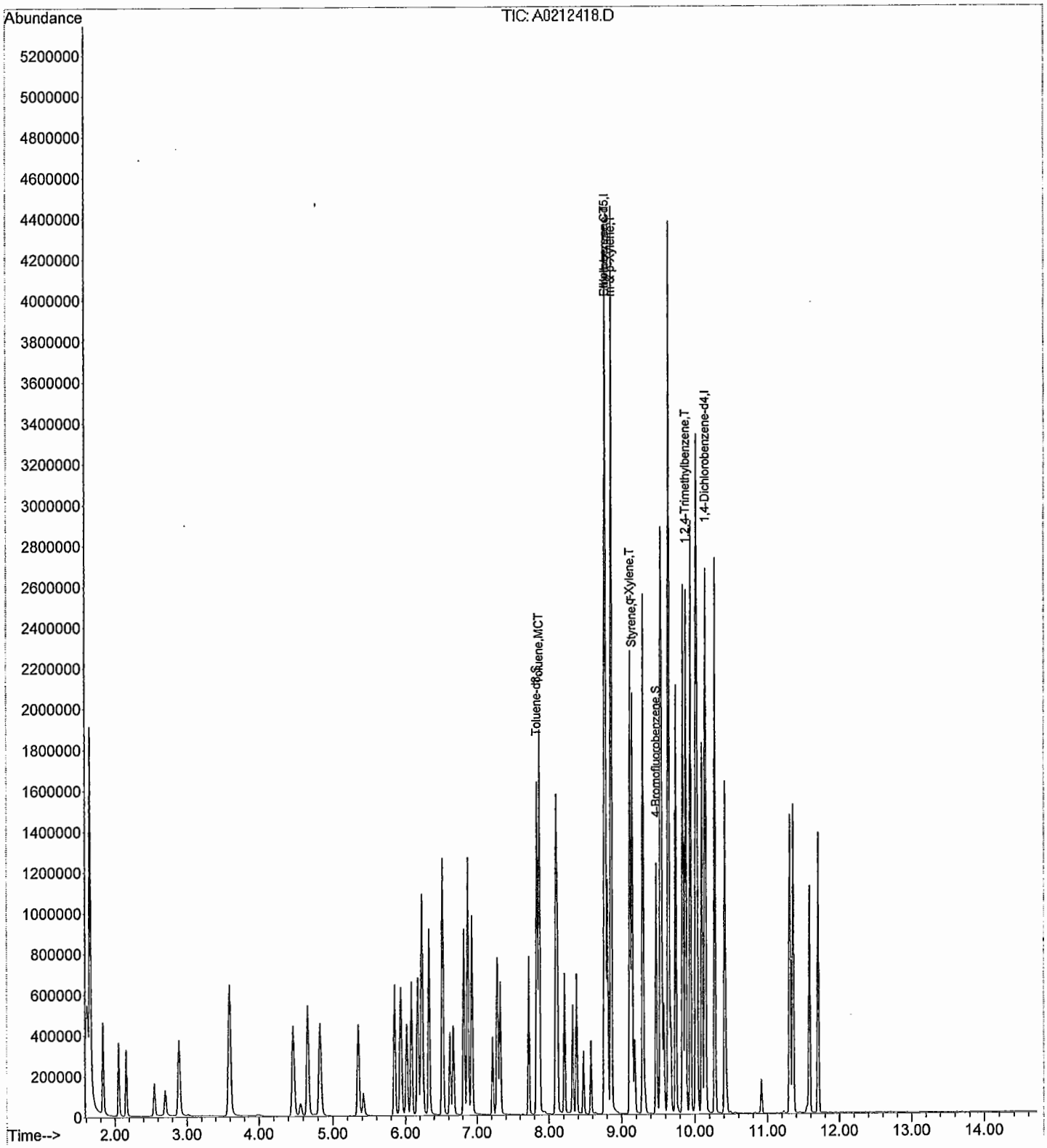
| Internal Standards | R.T. | QIon | Response | Conc | Units | Dev(Min) |
|---|---|---|---|---|---|---|
| 1) Chlorobenzene-d5 | 8.76 | 82 | 287555 | 125.00 | ug/Kg | 0.00 |
| 8) 1,4-Dichlorobenzene-d4 | 10.14 | 152 | 272237 | 125.00 | ug/Kg | 0.00 |
| System Monitoring Compounds | | | | | | |
| 2) Toluene-d8 | 7.83 | 98 | 802593 | 154.74 | ug/Kg | 0.00 |
| Spiked Amount 100.000 | | | Recovery | = | 154.74% | |
| 9) 4-Bromofluorobenzene | 9.47 | 95 | 320452 | 161.28 | ug/Kg | 0.00 |
| Spiked Amount 100.000 | | | Recovery | = | 161.28% | |
| Target Compounds | | | | | | Qvalue |
| 3) Toluene | 7.86 | 91 | 1022611 | 151.25 | ug/Kg | 100 |
| 4) Ethylbenzene | 8.78 | 91 | 1201084 | 150.50 | ug/Kg | 97 |
| 5) m & p-Xylene | 8.86 | 91 | 1953492 | 301.56 | ug/Kg | 92 |
| 6) Styrene | 9.14 | 104 | 760052 | 157.35 | ug/Kg | 91 |
| 7) o-Xylene | 9.11 | 106 | 443350 | 146.05 | ug/Kg | 83 |
| 10) 1,2,4-Trimethylbenzene | 9.87 | 105 | 1112770 | 160.46 | ug/Kg | 91 |

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

Quantitation Report (Not Reviewed)

Data Path : C:\MSDCHEM\1\DATA\021214\
Data File : A0212418.D
Acq On : 12 Feb 2014 7:32 pm
Operator :
Sample : VSTD150
Misc : 8260
ALS Vial : 10 Sample Multiplier: 1

Quant Time: Mar 20 08:40:01 2014
Quant Method : C:\MSDCHEM\1\METHODS\SOIL_44HI.M
Quant Title : 8260 VOLATILES
QLast Update : Thu Mar 20 08:29:00 2014
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data Path : C:\MSDCHEM\1\DATA\021214\
Data File : A0212419.D
Acq On : 12 Feb 2014 8:03 pm
Operator :
Sample : VSTD200
Misc : 8260
ALS Vial : 11 Sample Multiplier: 1

Quant Time: Mar 20 08:40:34 2014
Quant Method : C:\MSDCHEM\1\METHODS\SOIL_44HI.M
Quant Title : 8260 VOLATILES
QLast Update : Thu Mar 20 08:29:00 2014
Response via : Initial Calibration

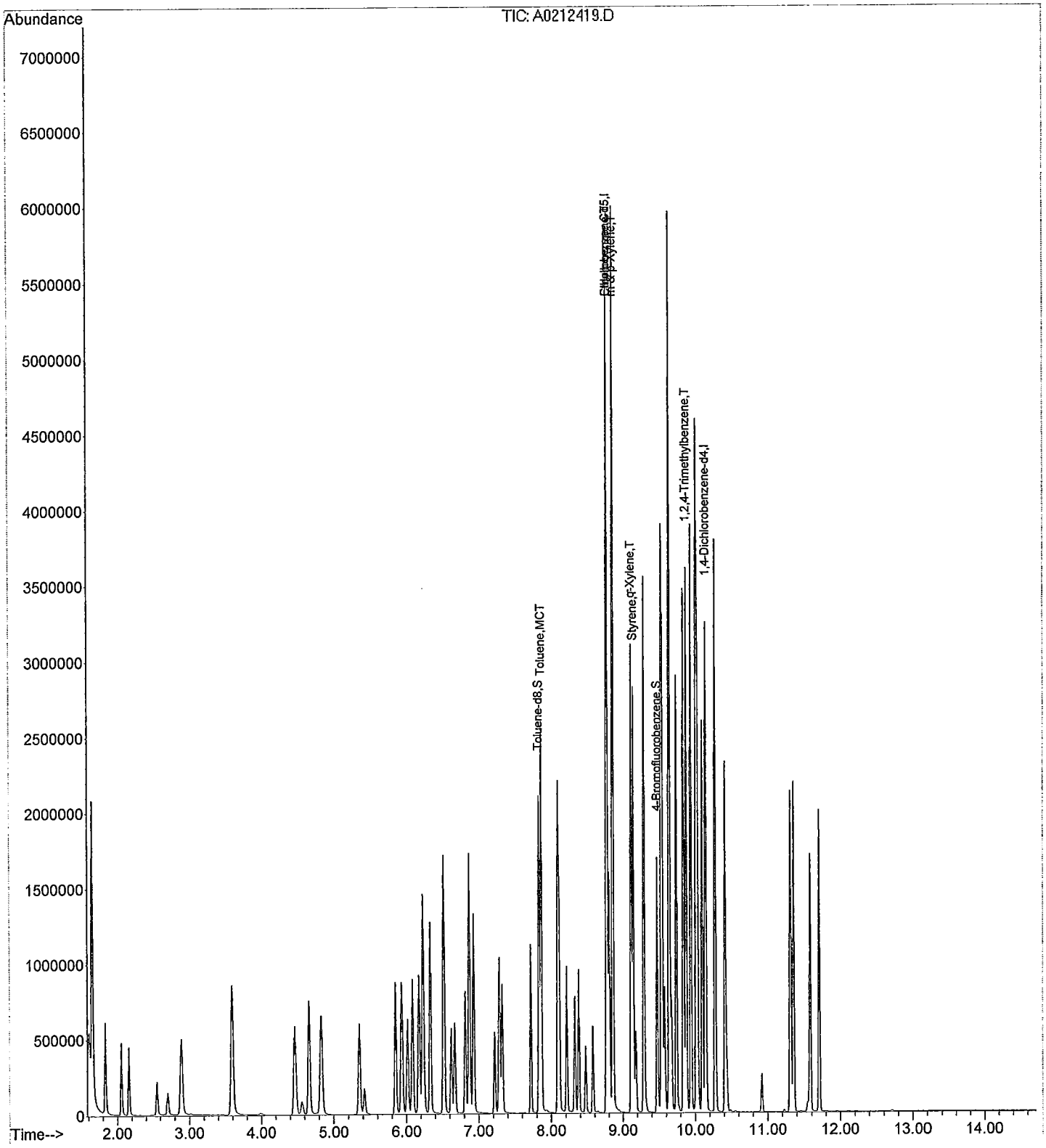
| Internal Standards | R.T. | QIon | Response | Conc | Units | Dev(Min) |
|---|---|---|---|---|---|---|
| 1) Chlorobenzene-d5 | 8.76 | 82 | 277381 | 125.00 | ug/Kg | 0.00 |
| 8) 1,4-Dichlorobenzene-d4 | 10.14 | 152 | 270685 | 125.00 | ug/Kg | 0.00 |
| System Monitoring Compounds | | | | | | |
| 2) Toluene-d8 | 7.83 | 98 | 1051307 | 210.12 | ug/Kg | 0.00 |
| Spiked Amount 100.000 | | | Recovery | = | 210.12% | |
| 9) 4-Bromofluorobenzene | 9.47 | 95 | 444587 | 225.04 | ug/Kg | 0.00 |
| Spiked Amount 100.000 | | | Recovery | = | 225.04% | |
| Target Compounds | | | | | | Qvalue |
| 3) Toluene | 7.86 | 91 | 1409514 | 216.13 | ug/Kg | 100 |
| 4) Ethylbenzene | 8.77 | 91 | 1668416 | 216.73 | ug/Kg | 96 |
| 5) m & p-Xylene | 8.86 | 91 | 2686892 | 429.98 | ug/Kg | 93 |
| 6) Styrene | 9.14 | 104 | 1063677 | 228.28 | ug/Kg | 91 |
| 7) o-Xylene | 9.11 | 106 | 624070 | 213.12 | ug/Kg | 85 |
| 10) 1,2,4-Trimethylbenzene | 9.87 | 105 | 1550793 | 224.90 | ug/Kg | 92 |

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

Quantitation Report (Not Reviewed)

Data Path : C:\MSDCHEM\1\DATA\021214\
Data File : A0212419.D
Acq On : 12 Feb 2014 8:03 pm
Operator :
Sample : VSTD200
Misc : 8260
ALS Vial : 11 Sample Multiplier: 1

Quant Time: Mar 20 08:40:34 2014
Quant Method : C:\MSDCHEM\1\METHODS\SOIL_44HI.M
Quant Title : 8260 VOLATILES
QLast Update : Thu Mar 20 08:29:00 2014
Response via : Initial Calibration



5A

# VOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - BROMOFLUOROBENZENE (BFB)

Lab Name: ARDL, Inc. Contract: ---

Lab Code: --- Case No.: 006611 SAS No.: --- SDG No.: ---

Lab File ID: A0213402 BFB Injection Date: 02/13/14

Instrument ID: AG1 BFB Injection Time: 10:53

| m/e | ION ABUNDANCE CRITERIA | % RELATIVE ABUNDANCE | |
|---|---|---|---|
| 50 | 8.0 - 40.0% of mass 95 | 17.2 | |
| 75 | 30.0 - 66.0% of mass 95 | 48.9 | |
| 95 | Base Peak, 100% relative abundance | 100. | |
| 96 | 5.0 - 9.0% of mass 95 | 6.7 | |
| 173 | Less than 2.0% of mass 174 | 0.0 | (1) |
| 174 | Greater than 50.0% of mass 95 | 73.2 | |
| 175 | 4.0 - 9.0% of mass 174 | 7.1 | (1) |
| 176 | Greater than 93.0%, but less that 101.0% of mass 174 | 93.7 | (1) |
| 177 | 5.0 - 9.0% of mass 176 | 6.3 | (2) |

(1)-Value is % mass 174 2-Value is % mass 176

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

| | EPA SAMPLE NO. | LAB SAMPLE ID | LAB FILE ID | DATE ANALYZED | TIME ANALYZED |
|---|---|---|---|---|---|
| 1 | ICV | 100 STD | A0213404 | 02/13/14 | 12:46 |
| 2 | | | | | |
| 3 | | | | | |
| 4 | | | | | |
| 5 | | | | | |
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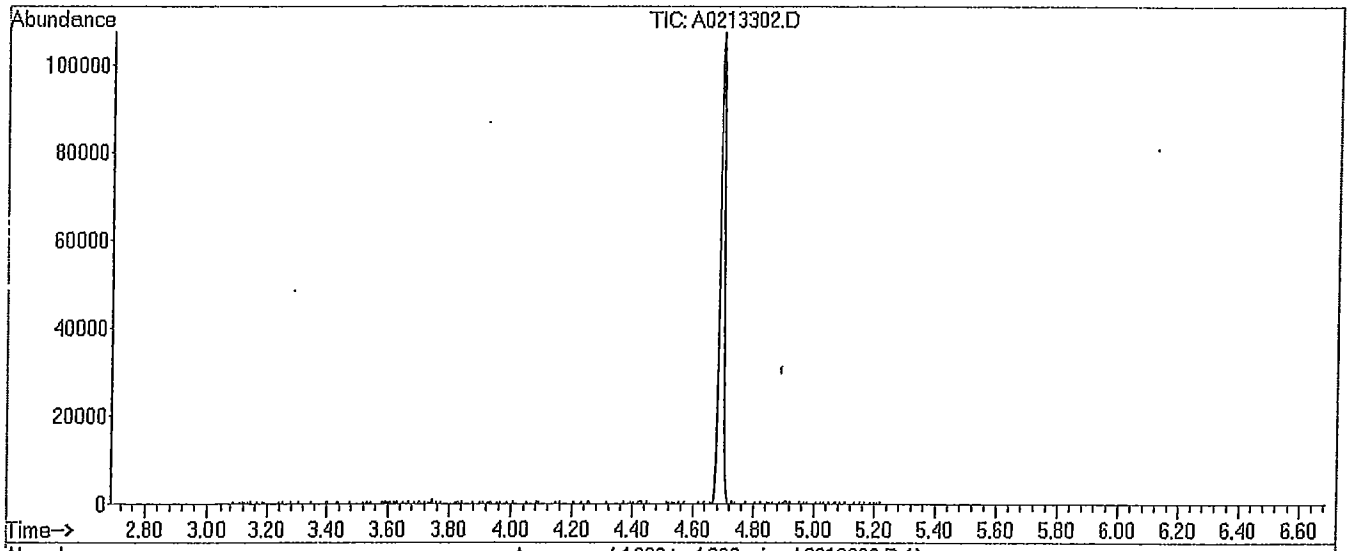
| 18 | | | | | |
| 19 | | | | | |
| 20 | | | | | |
| 21 | | | | | |
| 22 | | | | | |

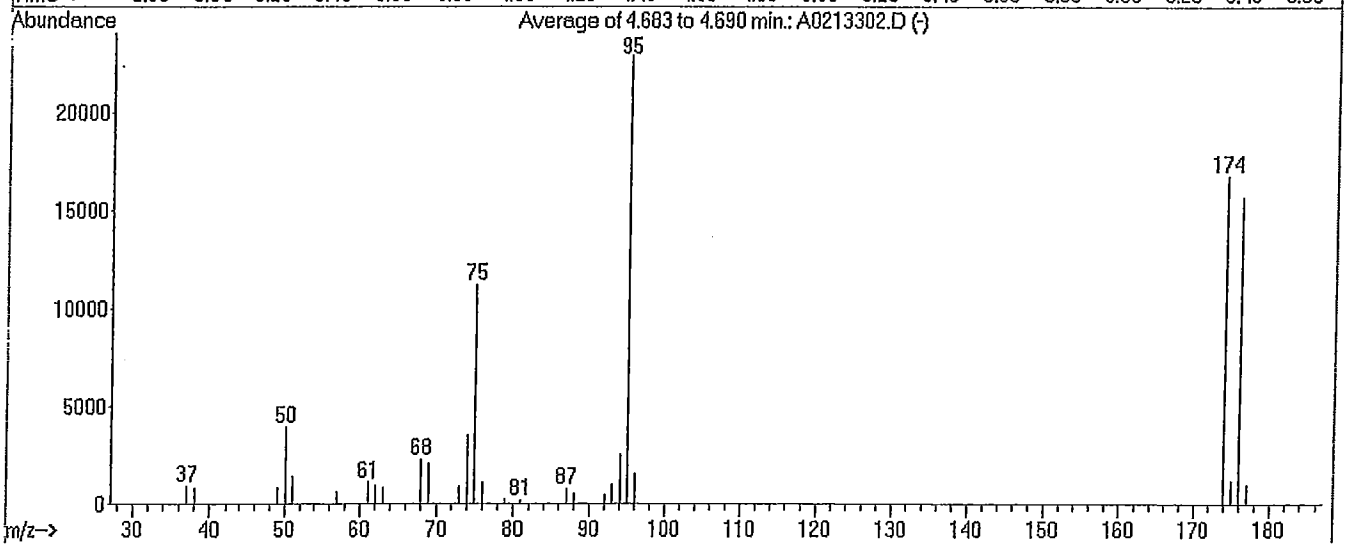
4 US 2/26/14

Data Path : C:\MSDCHEM\1\DATA\021314\
Data File : A0213302.D
Acq On : 13 Feb 2014 10:53 am
Operator :
Sample : 50 NG BFB
Misc : 8260
ALS Vial : 1 Sample Multiplier: 1

Integration File: rteint.p

Method : C:\MSDCHEM\1\METHODS\BFB.M
Title :
Last Update :




AutoFind: Scans 499, 500, 501; Background Corrected with Scan 492

| Target Mass | Rel. to Mass | Lower Limit% | Upper Limit% | Rel. Abn% | Raw Abn | Result Pass/Fail |
|---|---|---|---|---|---|---|
| 50 | 95 | 8 | 40 | 17.2 | 3951 | PASS |
| 75 | 95 | 30 | 66 | 48.9 | 11210 | PASS |
| 95 | 95 | 100 | 100 | 100.0 | 22906 | PASS |
| 96 | 95 | 5 | 9 | 6.7 | 1524 | PASS |
| 173 | 174 | 0.00 | 2 | 0.0 | 0 | PASS |
| 174 | 95 | 50 | 120 | 73.2 | 16756 | PASS |
| 175 | 174 | 4 | 9 | 7.1 | 1196 | PASS |
| 176 | 174 | 93 | 101 | 93.7 | 15700 | PASS |
| 177 | 176 | 5 | 9 | 6.3 | 995 | PASS |

rage of 4.683 to 4.690 min.: A0213302.D
NG BFB
dified:subtracted

| m/z | abund. | m/z | abund. | m/z | abund. | m/z | abund. |
|---|---|---|---|---|---|---|---|
| 37.05 | 914 | 73.00 | 896 | 95.00 | 22906 | | |
| 38.10 | 804 | 74.05 | 3520 | 96.05 | 1524 | | |
| 49.05 | 852 | 75.00 | 11210 | 173.95 | 16756 | | |
| 50.05 | 3951 | 76.00 | 1102 | 174.95 | 1196 | | |
| 51.05 | 1400 | 78.90 | 221 | 175.95 | 15700 | | |
| 57.05 | 599 | 80.90 | 181 | 176.95 | 995 | | |
| 61.05 | 1100 | 86.95 | 769 | | | | |
| 62.05 | 961 | 88.00 | 518 | | | | |
| 63.05 | 829 | 92.05 | 458 | | | | |
| 68.00 | 2268 | 93.00 | 989 | | | | |
| 69.00 | 2069 | 94.05 | 2562 | | | | |

# Continuing Calibration Report AG1

Method Path : C:\MSDCHEM\1\METHODS\
Method File : SOIL_44HI.M
Title : 8260 VOLATILES
Last Update : Thu Mar 20 09:21:05 2014
Response Via : Initial Calibration

CC Data File: A0213~~3~~4.D
LS 3/20/14

Min. RRF : 0.000 Min. Rel. Area : 50%
Max. RRF Dev : 20% Max. Rel. Area : 150%

| | | Compound | AvgRF | CCRF | %Dev | Area% |
|---|---|---|---|---|---|---|
| 1 | I | Chlorobenzene-d5 | 1.000 | 1.000 | 0.0 | 97 |
| 2 | S | Toluene-d8 | 2.266 | 2.428 | -7.2 | 100 |
| 3 | MCT | Toluene | 3.029 | 3.142 | -3.7 | 103 |
| 4 | CT | Ethylbenzene | 3.654 | 3.676 | -0.6 | 102 |
| 5 | T | m & p-Xylene | 2.960 | 3.083 | -4.2 | 105 |
| 6 | T | Styrene | 2.217 | 2.314 | -4.3 | 102 |
| 7 | T | o-Xylene | 1.277 | 1.396 | -9.3 | 107 |
| 8 | I | 1,4-Dichlorobenzene-d4 | 1.000 | 1.000 | 0.0 | 101 |
| 9 | S | 4-Bromofluorobenzene | 0.951 | 1.002 | -5.4 | 103 |
| 10 | T | 1,2,4-Trimethylbenzene | 3.351 | 3.744 | -11.7 | 113 |

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

Quantitation Report (Not Reviewed)

Data Path : C:\MSDCHEM\1\DATA\021314\
Data File : A0213804.D
Acq On : 13 Feb 2014 12:46 pm
Operator :
Sample : VSTD100/ICV
Misc : 8260
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Mar 20 09:20:58 2014
Quant Method : C:\MSDCHEM\1\METHODS\SOIL_44HI.M
Quant Title : 8260 VOLATILES
QLast Update : Thu Mar 20 09:11:30 2014
Response via : Initial Calibration

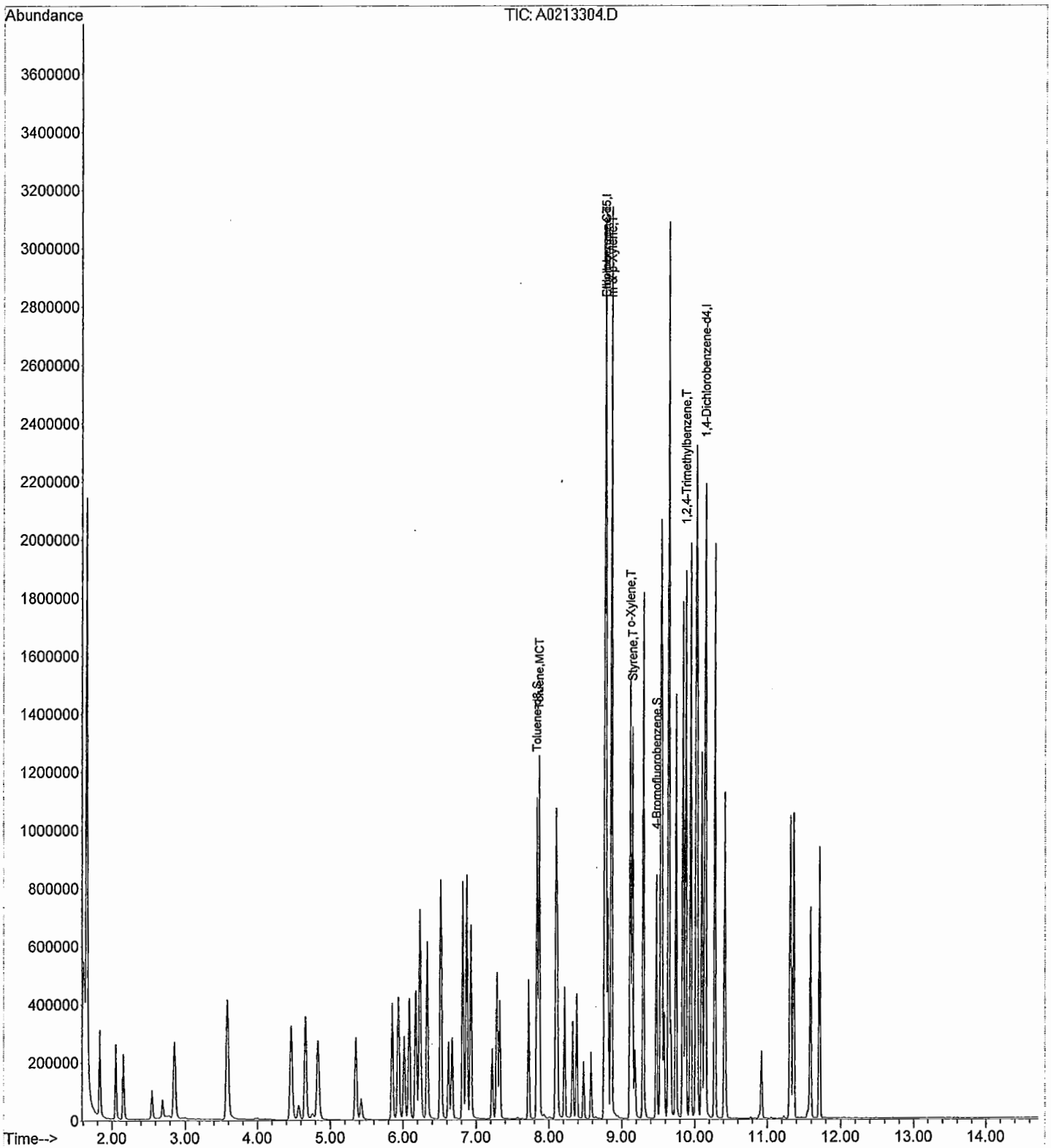
| Internal Standards | R.T. | QIon | Response | Conc Units | Dev(Min) |
|---|---|---|---|---|---|
| 1) Chlorobenzene-d5 | 8.77 | 82 | 270393 | 125.00 ug/Kg | 0.00 |
| 8) 1,4-Dichlorobenzene-d4 | 10.14 | 152 | 270377 | 125.00 ug/Kg | 0.00 |
| **System Monitoring Compounds** | | | | | |
| 2) Toluene-d8 | 7.83 | 98 | 525248 | 107.18 ug/Kg | 0.00 |
| Spiked Amount 100.000 | | | Recovery | = 107.18% | |
| 9) 4-Bromofluorobenzene | 9.48 | 95 | 216816 | 105.37 ug/Kg | 0.00 |
| Spiked Amount 100.000 | | | Recovery | = 105.37% | |
| **Target Compounds** | | | | | Qvalue |
| 3) Toluene | 7.86 | 91 | 679686 | 103.74 ug/Kg | 99 |
| 4) Ethylbenzene | 8.78 | 91 | 795240 | 100.62 ug/Kg | 97 |
| 5) m & p-Xylene | 8.86 | 91 | 1333941 | 208.33 ug/Kg | 94 |
| 6) Styrene | 9.15 | 104 | 500492 | 104.35 ug/Kg | 91 |
| 7) o-Xylene | 9.12 | 106 | 301959 | 109.30 ug/Kg | 85 |
| 10) 1,2,4-Trimethylbenzene | 9.88 | 105 | 809782 | 111.71 ug/Kg | 92 |

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

Quantitation Report (Not Reviewed)

Data Path : C:\MSDCHEM\1\DATA\021314\
Data File : A0213304.D
Acq On : 13 Feb 2014 12:46 pm
Operator :
Sample : VSTD100/ICV
Misc : 8260
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Mar 20 09:20:58 2014
Quant Method : C:\MSDCHEM\1\METHODS\SOIL_44HI.M
Quant Title : 8260 VOLATILES
QLast Update : Thu Mar 20 09:11:30 2014
Response via : Initial Calibration



5A

VOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - BROMOFLUOROBENZENE (BFB)

Lab Name: ARDL, Inc. Contract: ---

Lab Code: --- Case No.: 006612 SAS No.: --- SDG No.: ---

Lab File ID: A0226402 BFB Injection Date: 02/26/14

Instrument ID: AG1 BFB Injection Time: 08:50

| m/e | ION ABUNDANCE CRITERIA | % RELATIVE ABUNDANCE | |
|---|---|---|---|
| 50 | 8.0 - 40.0% of mass 95 | 17.8 | |
| 75 | 30.0 - 66.0% of mass 95 | 49.2 | |
| 95 | Base Peak, 100% relative abundance | 100. | |
| 96 | 5.0 - 9.0% of mass 95 | 7.3 | |
| 173 | Less than 2.0% of mass 174 | 0.0 | (1) |
| 174 | Greater than 50.0% of mass 95 | 76.7 | |
| 175 | 4.0 - 9.0% of mass 174 | 7.1 | (1) |
| 176 | Greater than 93.0%, but less that 101.0% of mass 174 | 95.6 | (1) |
| 177 | 5.0 - 9.0% of mass 176 | 7.2 | (2) |

(1)-Value is % mass 174 2-Value is % mass 176

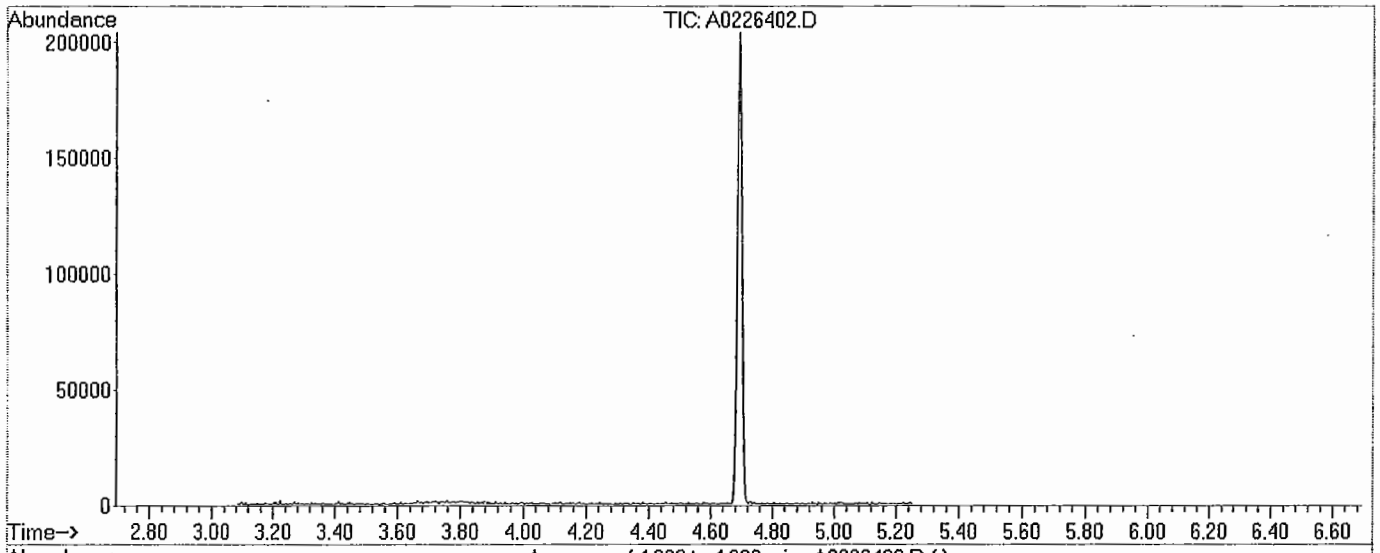
THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

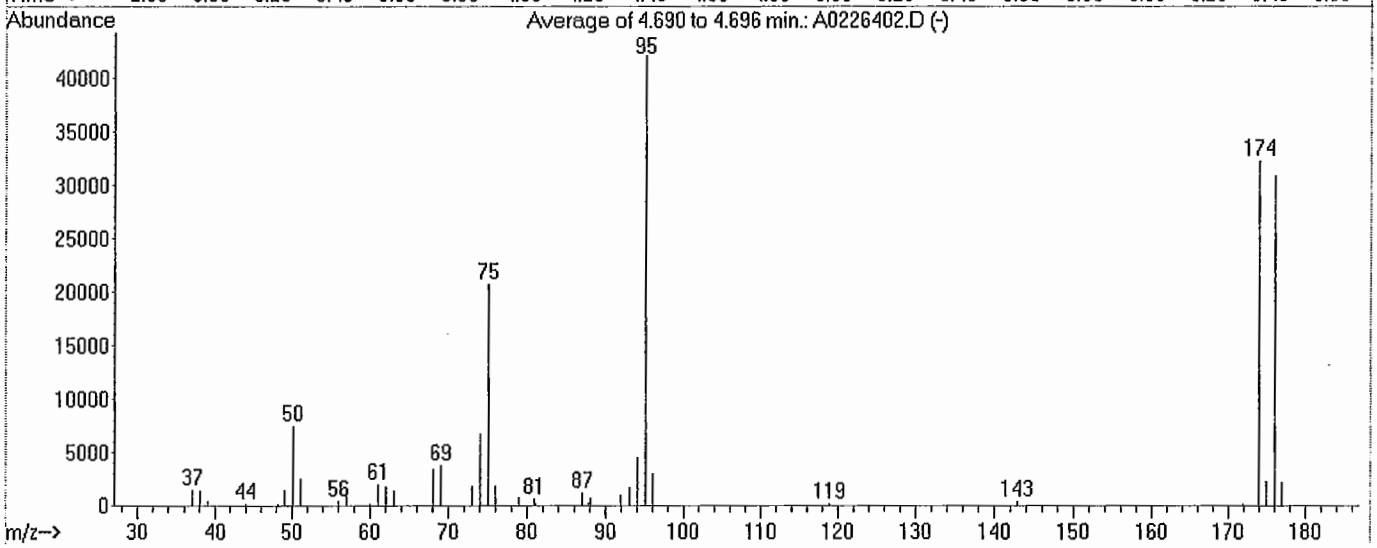
| | EPA SAMPLE NO. | LAB SAMPLE ID | LAB FILE ID | DATE ANALYZED | TIME ANALYZED |
|---|---|---|---|---|---|
| 1 | VOA STD | 100 STD | A0226403 | 02/26/14 | 09:18 |
| 2 | SPBK 02/26/14 | 006612-08K1 | A0226404 | 02/26/14 | 09:59 |
| 3 | BK 02/26/14 | 006612-08B1 | A0226405 | 02/26/14 | 10:40 |
| 4 | MAK102C | 006612-01 | A0226406 | 02/26/14 | 11:18 |
| 5 | MAK103C | 006612-02 | A0226407 | 02/26/14 | 11:50 |
| 6 | MAK104C | 006612-03 | A0226408 | 02/26/14 | 12:20 |
| 7 | MAK105C | 006612-04 | A0226409 | 02/26/14 | 12:50 |
| 8 | MAK106C | 006612-05 | A0226410 | 02/26/14 | 13:20 |
| 9 | MAK107C | 006612-06 | A0226411 | 02/26/14 | 13:49 |
| 10 | MAK108C | 006612-07 | A0226412 | 02/26/14 | 14:19 |
| 11 | MAK110C | 006612-08 | A0226413 | 02/26/14 | 14:47 |
| 12 | MAK110CMSD | 006612-08MD | A0226415 | 02/26/14 | 15:44 |
| 13 | MAK110CMS | 006612-08MS | A0226416 | 02/26/14 | 16:12 |
| 14 | | | | | |
| 15 | | | | | |
| 16 | | | | | |
| 17 | | | | | |
| 18 | | | | | |
| 19 | | | | | |
| 20 | | | | | |
| 21 | | | | | |
| 22 | | | | | |

Data Path : C:\MSDCHEM\1\DATA\022614\
Data File : A0226402.D
Acq On : 26 Feb 2014 8:50 am
Operator :
Sample : 50 NG BFB
Misc : 8260 SOIL
ALS Vial : 1 Sample Multiplier: 1

Integration File: rteint.p

Method : C:\MSDCHEM\1\METHODS\BFBSOIL.M
Title :
Last Update :




AutoFind: Scans 501, 502, 503; Background Corrected with Scan 493

| Target Mass | Rel. to Mass | Lower Limit% | Upper Limit% | Rel. Abn% | Raw Abn | Result Pass/Fail |
|---|---|---|---|---|---|---|
| 50 | 95 | 8 | 40 | 17.8 | 7503 | PASS |
| 75 | 95 | 30 | 66 | 49.2 | 20733 | PASS |
| 95 | 95 | 100 | 100 | 100.0 | 42128 | PASS |
| 96 | 95 | 5 | 9 | 7.3 | 3057 | PASS |
| 173 | 174 | 0.00 | 2 | 0.0 | 0 | PASS |
| 174 | 95 | 50 | 120 | 76.7 | 32301 | PASS |
| 175 | 174 | 4 | 9 | 7.1 | 2278 | PASS |
| 176 | 174 | 93 | 101 | 95.6 | 30882 | PASS |
| 177 | 176 | 5 | 9 | 7.2 | 2212 | PASS |

Average of 4.690 to 4.696 min.: A0226402.D
50 NG BFB
Modified:subtracted

| m/z | abund. | m/z | abund. | m/z | abund. | m/z | abund. |
|---|---|---|---|---|---|---|---|
| 37.05 | 1496 | 60.00 | 184 | 80.90 | 646 | 142.85 | 416 |
| 38.05 | 1453 | 61.05 | 2013 | 81.10 | 228 | 171.90 | 195 |
| 39.05 | 447 | 62.05 | 1800 | 87.00 | 1216 | 173.95 | 32301 |
| 40.00 | 96 | 63.05 | 1415 | 87.80 | 311 | 174.90 | 2278 |
| 44.00 | 190 | 68.05 | 3472 | 88.05 | 737 | 176.00 | 30882 |
| 48.20 | 170 | 69.05 | 3796 | 91.95 | 1029 | 176.90 | 2212 |
| 49.05 | 1502 | 73.00 | 1817 | 93.05 | 1730 | | |
| 50.10 | 7503 | 74.05 | 6746 | 94.05 | 4541 | | |
| 51.10 | 2528 | 75.05 | 20733 | 95.05 | 42128 | | |
| 56.00 | 447 | 76.00 | 1903 | 96.00 | 3057 | | |
| 57.05 | 1134 | 78.95 | 805 | 118.90 | 192 | | |

# Continuing Calibration Report AG1

Method Path : C:\MSDCHEM\1\METHODS\
Method File : SOIL_44HI.M
Title : 8260 VOLATILES
Last Update : Thu Mar 20 10:04:19 2014
Response Via : Initial Calibration

CC Data File: A0226403.D

Min. RRF : 0.000 Min. Rel. Area : 50%
Max. RRF Dev : 20% Max. Rel. Area : 150%

| | | Compound | AvgRF | CCRF | %Dev | Area% |
|---|---|---|---|---|---|---|
| 1 | I | Chlorobenzene-d5 | 1.000 | 1.000 | 0.0 | 86 |
| 2 | S | Toluene-d8 | 2.266 | 2.231 | 1.5 | 81 |
| 3 | MCT | Toluene | 3.029 | 3.045 | -0.5 | 89 |
| 4 | CT | Ethylbenzene | 3.654 | 3.771 | -3.2 | 93 |
| 5 | T | m & p-Xylene | 2.960 | 3.115 | -5.3 | 94 |
| 6 | T | Styrene | 2.217 | 2.235 | -0.8 | 87 |
| 7 | T | o-Xylene | 1.277 | 1.296 | -1.5 | 88 |
| 8 | I | 1,4-Dichlorobenzene-d4 | 1.000 | 1.000 | 0.0 | 87 |
| 9 | S | 4-Bromofluorobenzene | 0.951 | 0.891 | 6.3 | 79 |
| 10 | T | 1,2,4-Trimethylbenzene | 3.351 | 3.623 | -8.1 | 94 |

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

Quantitation Report (Not Reviewed)

Data Path : C:\MSDCHEM\1\DATA\022614\
Data File : A0226403.D
Acq On : 26 Feb 2014 9:18 am
Operator :
Sample : VSTD100
Misc : 8260 SOIL
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Mar 20 10:04:16 2014
Quant Method : C:\MSDCHEM\1\METHODS\SOIL_44HI.M'
Quant Title : 8260 VOLATILES
QLast Update : Thu Mar 20 10:02:10 2014
Response via : Initial Calibration

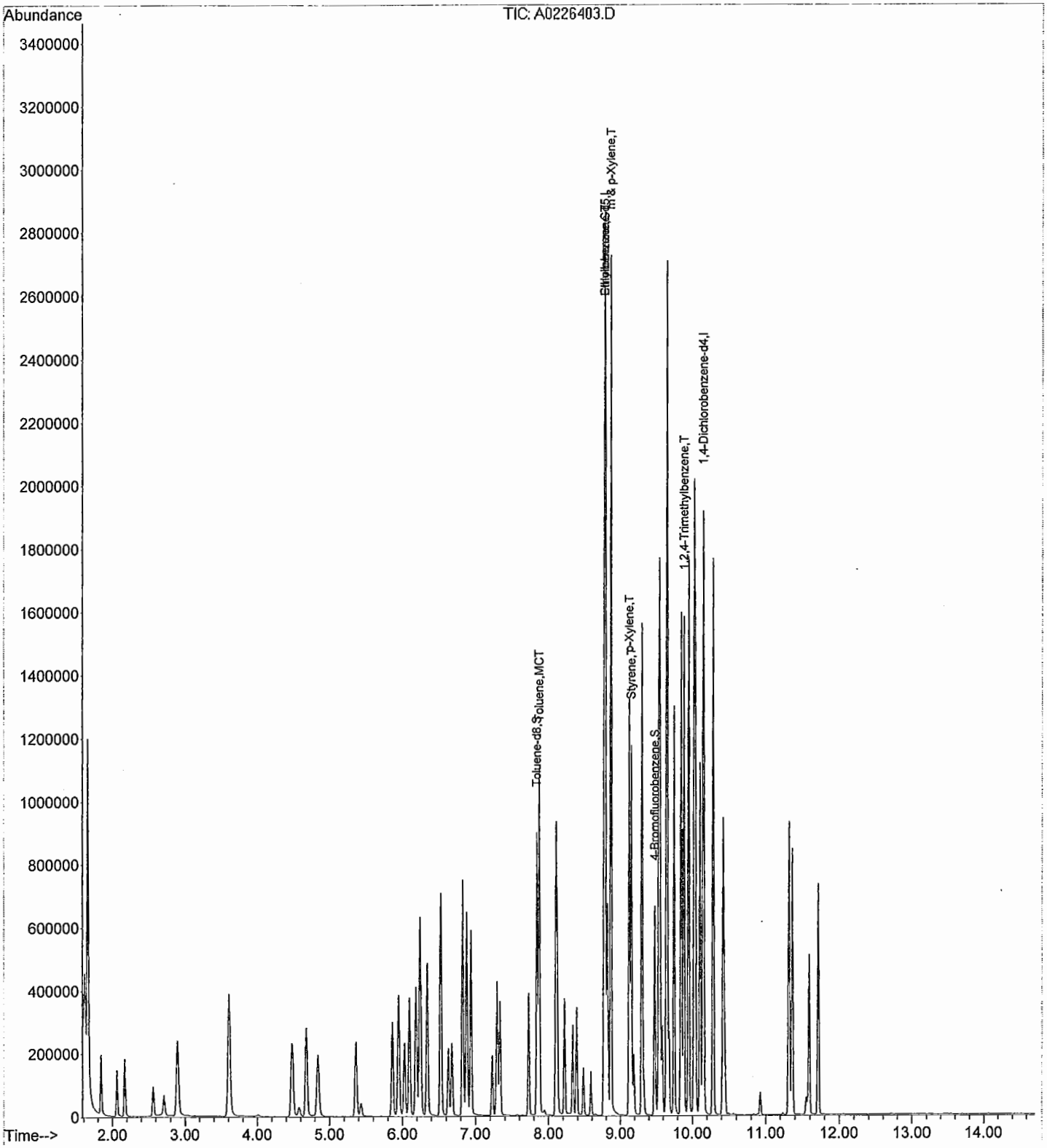
| Internal Standards | R.T. | QIon | Response | Conc | Units | Dev(Min) |
|---|---|---|---|---|---|---|
| 1) Chlorobenzene-d5 | 8.77 | 82 | 239434 | 125.00 | ug/Kg | 0.00 |
| 8) 1,4-Dichlorobenzene-d4 | 10.15 | 152 | 232751 | 125.00 | ug/Kg | 0.00 |
| System Monitoring Compounds | | | | | | |
| 2) Toluene-d8 | 7.84 | 98 | 427300 | 98.46 | ug/Kg | 0.00 |
| Spiked Amount 100.000 | | | Recovery = 98.46% | | | |
| 9) 4-Bromofluorobenzene | 9.48 | 95 | 165890 | 93.65 | ug/Kg | 0.00 |
| Spiked Amount 100.000 | | | Recovery = 93.65% | | | |
| Target Compounds | | | | | | Qvalue |
| 3) Toluene | 7.87 | 91 | 583336 | 100.55 | ug/Kg | 99 |
| 4) Ethylbenzene | 8.78 | 91 | 722345 | 103.21 | ug/Kg | 96 |
| 5) m & p-Xylene | 8.87 | 91 | 1193530 | 210.50 | ug/Kg | 91 |
| 6) Styrene | 9.15 | 104 | 428024 | 100.78 | ug/Kg | 89 |
| 7) o-Xylene | 9.12 | 106 | 248288 | 101.50 | ug/Kg | 82 |
| 10) 1,2,4-Trimethylbenzene | 9.88 | 105 | 674566 | 108.10 | ug/Kg | 90 |

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

Quantitation Report (Not Reviewed)

Data Path : C:\MSDCHEM\1\DATA\022614\
Data File : A0226403.D
Acq On : 26 Feb 2014 9:18 am
Operator :
Sample : VSTD100
Misc : 8260 SOIL
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Mar 20 10:04:16 2014
Quant Method : C:\MSDCHEM\1\METHODS\SOIL_44HI.M
Quant Title : 8260 VOLATILES
QLast Update : Thu Mar 20 10:02:10 2014
Response via : Initial Calibration



# Instrument Logs/
# Analysis Notebook Pages

Rev. 1.1

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PROJECT 2/12/14 AGI SOIL

Notebook No. 3317
Continued from Page

Run Method = SOIL_24.M
Tune = BFBSOIL.U EM = 1887
Telemar = NB 3167 pg. 34
Quant method = SOIL_42B

| | | | | | | |
|---|---|---|---|---|---|---|
| 8 | 1 | A0212408.d | 0. | 50 NG BFB (Jul-X1007) Pass | 8260 | |
| 9 | 1 | A0212409.d | 0. | VSTD000 | 8260 | |
| 10 | 2 | A0212410.d | 0. | VSTD000 | 8260 | Conc for SOIL_44HT |
| 11 | 3 | A0212411.d | 0. | VSTD000 - Pass. | 8260 | |
| 12 | 4 | A0212412.d | 0. | VSTD005 | 8260 | - VSTD12.5 |
| 13 | 5 | A0212413.d | 0. | VSTD010 | 8260 | - VSTD025 |
| 14 | 6 | A0212414.d | 0. | VSTD020 | 8260 | - VSTD050 |
| 15 | 7 | A0212415.d | 0. | VSTD030 | 8260 | - VSTD075 |
| 16 | 8 | A0212416.d | 0. | VSTD040 SOIL_43 | 8260 | - VSTD100 |
| 17 | 9 | A0212417.d | 0. | VSTD050 | 8260 | - VSTD125 |
| 18 | 10 | A0212418.d | 0. | VSTD060 | 8260 | - VSTD150 |
| 19 | 11 | A0212419.d | 0. | VSTD080 | 8260 | - VSTD200 |
| 20 | 12 | A0212420.d | 0. | FLUSH | 8260 | |
| 21 | 13 | A0212421.d | 0. | VSTD005 Not Needed | 8260 | |
| 22 | 14 | A0212422.d | 0. | VSTD030 ⊥ | 8260 | |

US 2/26/14

| | ISTD X1023 | Surr X1024 | IC Mix X1025 | Gases (Abs) X1026 |
|---|---|---|---|---|
| VSTD005 | 5µl | 0.5µl | 0.25µl | 0.5µl |
| 10 | | 1 | 0.5 | 1 |
| 20 | | 2 | 1 | 2 |
| 30 | | 3 | 1.5 | 3 |
| 40 | | 4 | 2 | 4 |
| 50 | | 5 | 2.5 | 5 |
| 60 | | 6 | 3 | 6 |
| 80 | ⊥ | 8 | 4 | 8 |

Not calibrated for: Chloroethane, Acetone, Methylene Chloride

Changed quant ion for O-xylene (91 to 106) for Limu tissue analysis only. Standards were adjusted for 2g analysis of tissue samples and saved as SOIL_44HT

Continued on Page

Read and Understood By

| Signed | Date | Signed | Date |
|---|---|---|---|
| US | 2/13/14 | ERC | 2/26/14 |

Notebook No. 3317 55

Continued from Page _____

PROJECT 2/13/14 AG1 SOIL

Run Method = SOIL_24.m
Tune = BFBSOIL.u EM = 1882
Quant Method = SOIL_43

5ul - ISTD = X1023
4ul - Sur - X1024

## Injection Log

Directory: C:\MSDCHEM\1\DATA\021314

| Line | Vial | FileName | Multiplier | SampleName | Misc Info |
|---|---|---|---|---|---|
| 1 | 1 | A0213301.d | 0. | FLUSH | 8260 |
| 2 | 1 | A0213302.d | 0. | 50 NG BFB (2ul-X1007) - Pass 10:53am | 8260 |
| 3 | 1 | A0213303.d | 0. | VSTD040/ICV C#5 ↓ | 8260 |
| 4 | 1 | A0213304.d | 0. | VSTD040/ICV - Pass | 8260 |
| 5 | 1 | A0213305.d | 0. | VSTD000 | 8260 |
| 6 | 1 | A0213306.d | 0. | VSTD000 | 8260 |
| 7 | 1 | A0213407.d | 0. | VSTD000 | 8260 |
| 8 | 2 | A0213408.d | 0. | LOD 1 | 8260 |
| 9 | 3 | A0213409.d | 0. | LOD 1 | 8260 |
| 10 | 4 | A0213410.d | 0. | LOD 2 | 8260 |
| 11 | 5 | A0213411.d | 0. | LOD 2 | 8260 |
| 12 | 6 | A0213412.d | 0. | LOQ 1 > spiked wrong - RE | 8260 |
| 13 | 7 | A0213413.d | 0. | LOQ 1 | 8260 |
| 14 | 8 | A0213414.d | 0. | VSTD040 | 8260 |

LS 2/14/14 — conc for SOIL_43 — VSTD040 — VSTD040

LS 2/26/14

LOD 1 = 5ul-X1023; 0.1ul-X1024; 20ul-X1029; 0.1ul-X1026

LOD 2 = 5ul-X1023; 0.2ul-X1024; 40ul-X1029; 0.2ul-X1026

LOQ 1 = 5ul-X1023; 0.5ul-X1024; 1ul-X1025; 0.5ul-X1026

ICV = 5ul-X1023; 4ul-X1024; 5ul-X1027; 4ul-X1028

LS 2/14/14

Continued on Page

Read and Understood By

| Signed | Date | Signed | Date |
|---|---|---|---|
| LS | 2/14/14 | TRC | 2/26/14 |

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PROJECT 2/26/14 AGI 8260 SOIL

Notebook No. 3317

Continued from Page

Run Method = SOIL_24.M
Tune = BFBSOIL.U EM = 1882
Telemar = NB 3167 pg 34
Quant Method = SOIL_43 44HI LS 3/20/14

5ul - ISTD = X1034
4ul - Sur = X1035
15ml - Anti Foam Agent - X1040 LS 4/10/14

A022640 1.D FLUSH
02.D 50 NG BFB (2ul - X1007) Pass 8:50 am
03.D VSTD040 100 LS 3/20/14 Pass
2ul - X1038; 4ul - X1039
04.D LCS Pass
8ul - X1036; 4ul - X1037
05.D VSTM000 Pass
06.D 006612-01 MAK102C (2.01g) Pass
07.D 006612-02 MAK103C (1.98g) Pass
08.D 006612-03 MAK104C (1.97g) Pass
09.D 006612-04 MAK105C (2.01g) Pass
10.D 006612-05 MAK106C (1.99g) Pass
11.D 006612-06 MAK107C (2.03g) Pass
12.D 006612-07 MAK108C (1.98g) Pass
13.D 006612-08 MAK110C (2.00g) (A) Pass
14.D 006612-08MS MAK110CMS (2.02g) (B) Spikes ↓ - RE
Same as 04.D
15.D 006612-08MD MAK110CMSD (2.01g) (C) Pass
Same as 04.D
16.D 006612-08MS MAK110CMS (2.02g) (B) Pass
Same as 04.D
17.D 006612-08MD MAK110CMSD (1.98g) (C) Pass - DNR
Same as 04.D
18.D VSTD040 100 LS 3/20/14 Pass 5:10 pm
Same as 03.D
19.D VSTM040 100 LS 3/20/14 Not evaluated
Same as 03.D

LS 2/27/14

Continued on Page

Read and Understood By

| Signed | Date | Signed | Date |
|---|---|---|---|
| LS | 2/27/14 | [illegible] | 2/27/14 |

# Blank / Field Sample / QC Data

Sample Results

Chromatogram

Quant Report (If applicable)

Confirmation Analysis Quant Report / Chromatogram (If applicable)

Tentatively Identified Compounds (If required)

Rev. 1.1

**ARDL, INC.**
**400 Aviation Drive; P.O. Box 1566**
**Mt. Vernon, Illinois 62864**

Lab Report No: 006612 Report Date: 03/20/2014

Project Name: MAKAU MILITARY RES O Analysis: VOLATILES, GC/MS (8260)
Project No.: Analytical Method: 8260B
NELAC Certified - IL100308 Prep Method: 5030A

| | | | |
|---|---|---|---|
| Field ID: | NA | ARDL Lab No.: | 006612-08K1 |
| Desc/Location: | NA | Lab Filename: | A0226404 |
| Sample Date: | NA | Received Date: | NA |
| Sample Time: | NA | Prep. Date: | 02/26/2014 |
| Matrix: | QC Material | Analysis Date: | 02/26/2014 |
| Amount Used: | 2 g | Instrument ID: | AG1 |
| Final Volume: | 5 mL | QC Batch: | 0227JFST |
| % Moisture: | NA | Level: | LOW |

| Parameter | Method Limit | Reporting Limit | Result | Data Flag | Units |
|---|---|---|---|---|---|
| Toluene | 2.50 | 12.5 | 94.2 | | UG/KG |
| Ethyl Benzene | 2.50 | 12.5 | 95.5 | | UG/KG |
| m & p-Xylene | 5.00 | 25.0 | 195 | | UG/KG |
| Styrene | 2.50 | 12.5 | 94.2 | | UG/KG |
| o-Xylene | 2.50 | 12.5 | 92.8 | | UG/KG |
| 1,2,4-Trimethylbenzene | 2.50 | 12.5 | 104 | | UG/KG |

| SURROGATE RECOVERIES: | Limits | Results |
|---|---|---|
| Toluene-d8 | 50-150 | 98% |
| 4-Bromofluorobenzene | 50-150 | 96% |

Surrogate recoveries marked with '*' indicates they are outside standard limits.

Spike Blank for Run 0227JFST, VOLATILES, GC/MS (8260) Page 1 of 1

Quantitation Report (Not Reviewed)

Data Path : C:\MSDCHEM\1\DATA\022614\
Data File : A0226404.D
Acq On : 26 Feb 2014 9:59 am
Operator :
Sample : ~~LCS~~ 006612-08K1
Misc : 8260 SOIL
ALS Vial : 1 Sample Multiplier: 1 JJS 03/20/14

Quant Time: Mar 20 10:04:29 2014
Quant Method : C:\MSDCHEM\1\METHODS\SOIL_44HI.M
Quant Title : 8260 VOLATILES
QLast Update : Thu Mar 20 10:04:19 2014
Response via : Initial Calibration

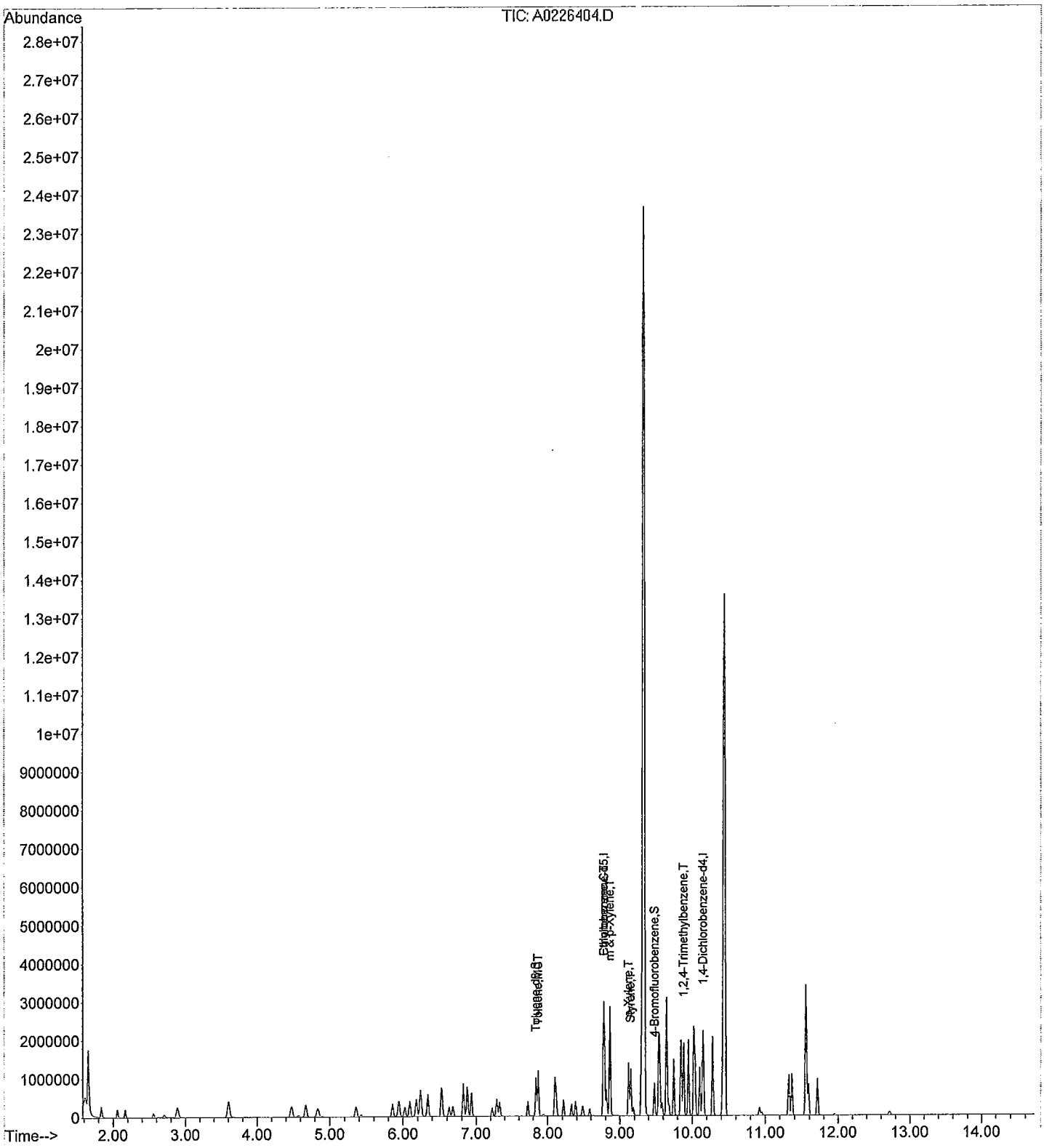
| Internal Standards | R.T. | QIon | Response | Conc | Units | Dev(Min) |
|---|---|---|---|---|---|---|
| 1) Chlorobenzene-d5 | 8.77 | 82 | 271841 | 125.00 | ug/Kg | 0.00 |
| 8) 1,4-Dichlorobenzene-d4 | 10.14 | 152 | 293913 | 125.00 | ug/Kg | 0.00 |
| System Monitoring Compounds | | | | | | |
| 2) Toluene-d8 | 7.84 | 98 | 482988 | 98.03 | ug/Kg | 0.00 |
| Spiked Amount 100.000 | | | Recovery = 98.03% | | | |
| 9) 4-Bromofluorobenzene | 9.48 | 95 | 214668 | 95.97 | ug/Kg | 0.00 |
| Spiked Amount 100.000 | | | Recovery = 95.97% | | | |
| Target Compounds | | | | | | Qvalue |
| 3) Toluene | 7.87 | 91 | 620730 | 94.24 | ug/Kg | 99 |
| 4) Ethylbenzene | 8.78 | 91 | 758912 | 95.51 | ug/Kg | 97 |
| 5) m & p-Xylene | 8.86 | 91 | 1255620 | 195.05 | ug/Kg | 92 |
| 6) Styrene | 9.15 | 104 | 454329 | 94.22 | ug/Kg | 89 |
| 7) o-Xylene | 9.12 | 106 | 257675 | 92.78 | ug/Kg | 80 |
| 10) 1,2,4-Trimethylbenzene | 9.88 | 105 | 819938 | 104.06 | ug/Kg | 92 |

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

Quantitation Report (Not Reviewed)

Data Path : C:\MSDCHEM\1\DATA\022614\
Data File : A0226404.D
Acq On : 26 Feb 2014 9:59 am
Operator :
Sample : ~~LCS~~ 006612-08KI
Misc : 8260 SOIL
ALS Vial : 1 Sample Multiplier: 1 JJS 03/20/14

Quant Time: Mar 20 10:04:29 2014
Quant Method : C:\MSDCHEM\1\METHODS\SOIL_44HI.M
Quant Title : 8260 VOLATILES
QLast Update : Thu Mar 20 10:04:19 2014
Response via : Initial Calibration



# METHOD BLANK REPORT
## ARDL, Inc. 400 Aviation Drive; P.O. Box 1566
## Mt. Vernon, Illinois 62864

Lab Report No: 006612 Report Date: 03/20/2014

Project Name: MAKAU MILITARY RES O Analysis: VOLATILES, GC/MS (8260)
Project No.: Analytical Method: 8260B
NELAC Certified - IL100308 Prep Method: 5030A

| | | | |
|---|---|---|---|
| Field ID: | NA | ARDL Lab No.: | 006612-08B1 |
| Desc/Location: | NA | Lab Filename: | A0226405 |
| Sample Date: | NA | Received Date: | NA |
| Sample Time: | NA | Prep. Date: | 02/26/2014 |
| Matrix: | QC Material | Analysis Date: | 02/26/2014 |
| Amount Used: | 2 g | Instrument ID: | AG1 |
| Final Volume: | 5 mL | QC Batch: | 0227JFST |
| % Moisture: | NA | Level: | LOW |

| Parameter | Method Limit | Reporting Limit | Result | Data Flag | Units |
|---|---|---|---|---|---|
| Toluene | 2.50 | 12.5 | ND | | UG/KG |
| Ethyl Benzene | 2.50 | 12.5 | ND | | UG/KG |
| m & p-Xylene | 5.00 | 25.0 | ND | | UG/KG |
| Styrene | 2.50 | 12.5 | ND | | UG/KG |
| o-Xylene | 2.50 | 12.5 | ND | | UG/KG |
| 1,2,4-Trimethylbenzene | 2.50 | 12.5 | ND | | UG/KG |

| SURROGATE RECOVERIES: | Limits | Results |
|---|---|---|
| Toluene-d8 | 50-150 | 102% |
| 4-Bromofluorobenzene | 50-150 | 112% |

Surrogate recoveries marked with '*' indicates they are outside standard limits.

Blank for Run 0227JFST, VOLATILES, GC/MS (8260) Page 1 of 1

Quantitation Report (QT Reviewed)

Data Path : C:\MSDCHEM\1\DATA\022614\
Data File : A0226405.D
Acq On : 26 Feb 2014 10:40 am
Operator :
Sample : V~~STD000~~ 006612-08B1
Misc : 8260 SOIL
ALS Vial : 1 Sample Multiplier: 1 JG 03/20/14

Quant Time: Mar 20 10:06:56 2014
Quant Method : C:\MSDCHEM\1\METHODS\SOIL_44HI.M
Quant Title : 8260 VOLATILES
QLast Update : Thu Mar 20 10:04:19 2014
Response via : Initial Calibration

| Internal Standards | R.T. | QIon | Response | Conc | Units | Dev(Min) |
|---|---|---|---|---|---|---|
| 1) Chlorobenzene-d5 | 8.77 | 82 | 253105 | 125.00 | ug/Kg | 0.00 |
| 8) 1,4-Dichlorobenzene-d4 | 10.14 | 152 | 276879 | 125.00 | ug/Kg | 0.00 |
| System Monitoring Compounds | | | | | | |
| 2) Toluene-d8 | 7.84 | 98 | 466597 | 101.71 | ug/Kg | 0.00 |
| Spiked Amount 100.000 | | | Recovery | = | 101.71% | |
| 9) 4-Bromofluorobenzene | 9.48 | 95 | 235108 | 111.58 | ug/Kg | 0.00 |
| Spiked Amount 100.000 | | | Recovery | = | 111.58% | |

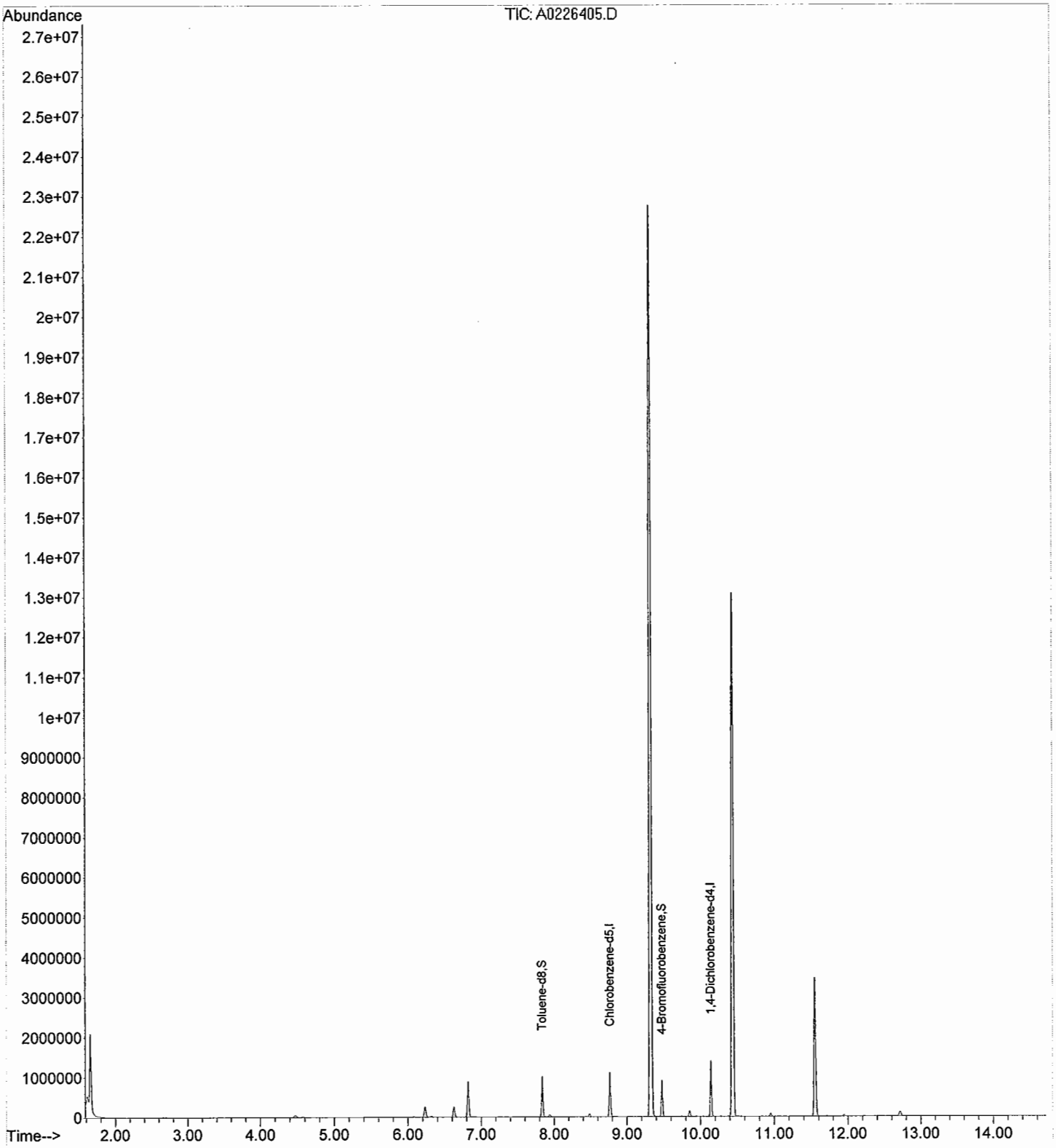
| Target Compounds | Qvalue |
|---|---|

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

Quantitation Report (QT Reviewed)

Data Path : C:\MSDCHEM\1\DATA\022614\
Data File : A0226405.D
Acq On : 26 Feb 2014 10:40 am
Operator :
Sample : V~~STD000~~ 006612-08BI
Misc : 8260 SOIL
ALS Vial : 1 Sample Multiplier: 1 JB 03/20/14

Quant Time: Mar 20 10:06:56 2014
Quant Method : C:\MSDCHEM\1\METHODS\SOIL_44HI.M
Quant Title : 8260 VOLATILES
QLast Update : Thu Mar 20 10:04:19 2014
Response via : Initial Calibration



**ARDL, INC.**
**400 Aviation Drive; P.O. Box 1566**
**Mt. Vernon, Illinois 62864**

Lab Report No: 006612 Report Date: 03/20/2014

Project Name: MAKAU MILITARY RES O Analysis: VOLATILES, GC/MS (8260)
Project No.: Analytical Method: 8260B
NELAC Certified - IL100308 Prep Method: 5030A

| | | | |
|---|---|---|---|
| Field ID: | MAK102C | ARDL Lab No.: | 006612-01 |
| Desc/Location: | MAKAU MILITARY RES OAHU | Lab Filename: | A0226406 |
| Sample Date: | 01/13/2014 | Received Date: | 02/20/2014 |
| Sample Time: | 1002 | Prep. Date: | 02/26/2014 |
| Matrix: | TISSUE | Analysis Date: | 02/26/2014 |
| Amount Used: | 2 g | Instrument ID: | AG1 |
| Final Volume: | 5 mL | QC Batch: | 0227JFST |
| % Moisture: | No Moisture Present | Level: | LOW |

| Parameter | Method Limit | Reporting Limit | Result | Data Flag | Units | Dilution Factor |
|---|---|---|---|---|---|---|
| Toluene | 2.50 | 12.5 | ND | | UG/KG | 1 |
| Ethyl Benzene | 2.50 | 12.5 | ND | | UG/KG | 1 |
| m & p-Xylene | 5.0 | 25.0 | ND | | UG/KG | 1 |
| Styrene | 2.50 | 12.5 | ND | | UG/KG | 1 |
| o-Xylene | 2.50 | 12.5 | ND | | UG/KG | 1 |
| 1,2,4-Trimethylbenzene | 2.50 | 12.5 | ND | | UG/KG | 1 |

| SURROGATE RECOVERIES: | Limits | Results |
|---|---|---|
| Toluene-d8 | 50-150 | 96% |
| 4-Bromofluorobenzene | 50-150 | 104% |

Surrogate recoveries marked with '*' indicates they are outside standard limits.

Sample 006612-01, VOLATILES, GC/MS (8260) Page 1 of 1

Quantitation Report (Not Reviewed)

Data Path : C:\MSDCHEM\1\DATA\022614\
Data File : A0226406.D
Acq On : 26 Feb 2014 11:18 am
Operator :
Sample : 006612-01
Misc : 8260 SOIL MAK102C (2.01g)
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Mar 20 10:07:56 2014
Quant Method : C:\MSDCHEM\1\METHODS\SOIL_44HI.M
Quant Title : 8260 VOLATILES
QLast Update : Thu Mar 20 10:04:19 2014
Response via : Initial Calibration

| Internal Standards | R.T. | QIon | Response | Conc Units | Dev(Min) |
|---|---|---|---|---|---|
| 1) Chlorobenzene-d5 | 8.77 | 82 | 238949 | 125.00 ug/Kg | 0.00 |
| 8) 1,4-Dichlorobenzene-d4 | 10.14 | 152 | 265200 | 125.00 ug/Kg | 0.00 |
| System Monitoring Compounds | | | | | |
| 2) Toluene-d8 | 7.84 | 98 | 416659 | 96.21 ug/Kg | 0.00 |
| Spiked Amount 100.000 | | | Recovery | = 96.21% | |
| 9) 4-Bromofluorobenzene | 9.48 | 95 | 210442 | 104.27 ug/Kg | 0.00 |
| Spiked Amount 100.000 | | | Recovery | = 104.27% | |

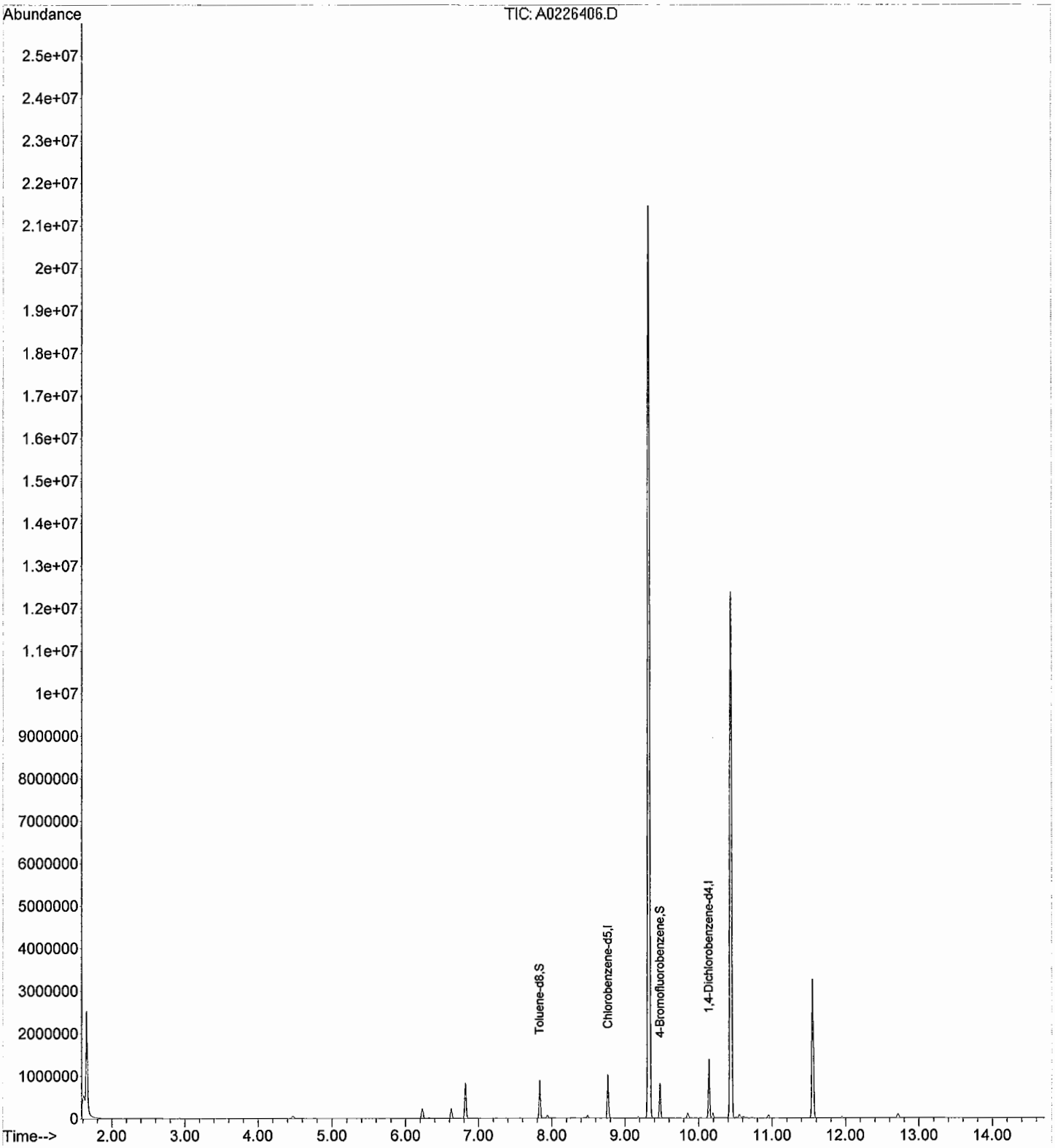
| Target Compounds | Qvalue |
|---|---|

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

Quantitation Report (Not Reviewed)

Data Path : C:\MSDCHEM\1\DATA\022614\
Data File : A0226406.D
Acq On : 26 Feb 2014 11:18 am
Operator :
Sample : 006612-01
Misc : 8260 SOIL MAK102C (2.01g)
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Mar 20 10:07:56 2014
Quant Method : C:\MSDCHEM\1\METHODS\SOIL_44HI.M
Quant Title : 8260 VOLATILES
QLast Update : Thu Mar 20 10:04:19 2014
Response via : Initial Calibration



**ARDL, INC.**
**400 Aviation Drive; P.O. Box 1566**
**Mt. Vernon, Illinois 62864**

Lab Report No: 006612 Report Date: 03/20/2014

Project Name: MAKAU MILITARY RES O Analysis: VOLATILES, GC/MS (8260)
Project No.: Analytical Method: 8260B
NELAC Certified - IL100308 Prep Method: 5030A

| | | | |
|---|---|---|---|
| Field ID: | MAK103C | ARDL Lab No.: | 006612-02 |
| Desc/Location: | MAKAU MILITARY RES OAHU | Lab Filename: | A0226407 |
| Sample Date: | 01/13/2014 | Received Date: | 02/20/2014 |
| Sample Time: | 1022 | Prep. Date: | 02/26/2014 |
| Matrix: | TISSUE | Analysis Date: | 02/26/2014 |
| Amount Used: | 2 g | Instrument ID: | AG1 |
| Final Volume: | 5 mL | QC Batch: | 0227JFST |
| % Moisture: | No Moisture Present | Level: | LOW |

| Parameter | Method Limit | Reporting Limit | Result | Data Flag | Units | Dilution Factor |
|---|---|---|---|---|---|---|
| Toluene | 2.50 | 12.5 | ND | | UG/KG | 1 |
| Ethyl Benzene | 2.50 | 12.5 | ND | | UG/KG | 1 |
| m & p-Xylene | 5.0 | 25.0 | ND | | UG/KG | 1 |
| Styrene | 2.50 | 12.5 | ND | | UG/KG | 1 |
| o-Xylene | 2.50 | 12.5 | ND | | UG/KG | 1 |
| 1,2,4-Trimethylbenzene | 2.50 | 12.5 | ND | | UG/KG | 1 |

| SURROGATE RECOVERIES: | Limits | Results |
|---|---|---|
| Toluene-d8 | 50-150 | 92% |
| 4-Bromofluorobenzene | 50-150 | 104% |

Surrogate recoveries marked with '*' indicates they are outside standard limits.

Sample 006612-02, VOLATILES, GC/MS (8260) Page 1 of 1

Quantitation Report (Not Reviewed)

Data Path : C:\MSDCHEM\1\DATA\022614\
Data File : A0226407.D
Acq On : 26 Feb 2014 11:50 am
Operator :
Sample : 006612-02
Misc : 8260 SOIL MAK103C (1.98g)
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Mar 20 10:05:31 2014
Quant Method : C:\MSDCHEM\1\METHODS\SOIL_44HI.M
Quant Title : 8260 VOLATILES
QLast Update : Thu Mar 20 10:04:19 2014
Response via : Initial Calibration

| Internal Standards | R.T. | QIon | Response | Conc Units | Dev(Min) |
|---|---|---|---|---|---|
| 1) Chlorobenzene-d5 | 8.77 | 82 | 234934 | 125.00 ug/Kg | 0.00 |
| 8) 1,4-Dichlorobenzene-d4 | 10.14 | 152 | 255501 | 125.00 ug/Kg | 0.00 |
| System Monitoring Compounds | | | | | |
| 2) Toluene-d8 | 7.83 | 98 | 390837 | 91.79 ug/Kg | 0.00 |
| Spiked Amount 100.000 | | | Recovery | = 91.79% | |
| 9) 4-Bromofluorobenzene | 9.48 | 95 | 201332 | 103.54 ug/Kg | 0.00 |
| Spiked Amount 100.000 | | | Recovery | = 103.54% | |

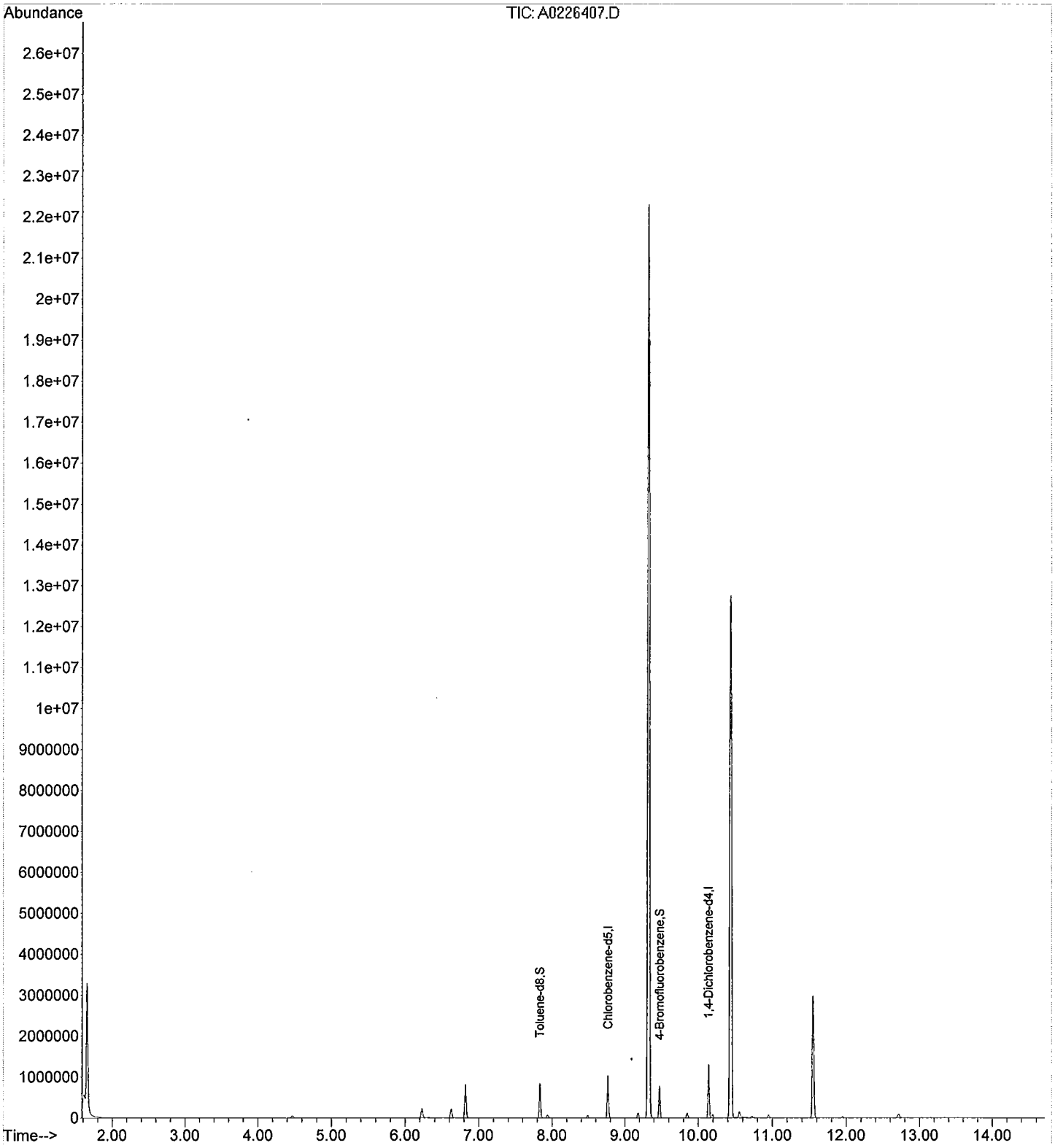
| Target Compounds | Qvalue |
|---|---|

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

Quantitation Report (Not Reviewed)

Data Path : C:\MSDCHEM\1\DATA\022614\
Data File : A0226407.D
Acq On : 26 Feb 2014 11:50 am
Operator :
Sample : 006612-02
Misc : 8260 SOIL MAK103C (1.98g)
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Mar 20 10:05:31 2014
Quant Method : C:\MSDCHEM\1\METHODS\SOIL_44HI.M
Quant Title : 8260 VOLATILES
QLast Update : Thu Mar 20 10:04:19 2014
Response via : Initial Calibration



**ARDL, INC.**
**400 Aviation Drive; P.O. Box 1566**
**Mt. Vernon, Illinois 62864**

Lab Report No: 006612 Report Date: 03/20/2014

Project Name: MAKAU MILITARY RES O Analysis: VOLATILES, GC/MS (8260)
Project No.: Analytical Method: 8260B
NELAC Certified - IL100308 Prep Method: 5030A

| | | | |
|---|---|---|---|
| Field ID: | MAK104C | ARDL Lab No.: | 006612-03 |
| Desc/Location: | MAKAU MILITARY RES OAHU | Lab Filename: | A0226408 |
| Sample Date: | 01/13/2014 | Received Date: | 02/20/2014 |
| Sample Time: | 1100 | Prep. Date: | 02/26/2014 |
| Matrix: | TISSUE | Analysis Date: | 02/26/2014 |
| Amount Used: | 2 g | Instrument ID: | AG1 |
| Final Volume: | 5 mL | QC Batch: | 0227JFST |
| % Moisture: | No Moisture Present | Level: | LOW |

| Parameter | Method Limit | Reporting Limit | Result | Data Flag | Units | Dilution Factor |
|---|---|---|---|---|---|---|
| Toluene | 2.50 | 12.5 | ND | | UG/KG | 1 |
| Ethyl Benzene | 2.50 | 12.5 | ND | | UG/KG | 1 |
| m & p-Xylene | 5.0 | 25.0 | ND | | UG/KG | 1 |
| Styrene | 2.50 | 12.5 | ND | | UG/KG | 1 |
| o-Xylene | 2.50 | 12.5 | ND | | UG/KG | 1 |
| 1,2,4-Trimethylbenzene | 2.50 | 12.5 | ND | | UG/KG | 1 |

| SURROGATE RECOVERIES: | Limits | Results |
|---|---|---|
| Toluene-d8 | 50-150 | 91% |
| 4-Bromofluorobenzene | 50-150 | 95% |

Surrogate recoveries marked with '*' indicates they are outside standard limits.

Sample 006612-03, VOLATILES, GC/MS (8260) Page 1 of 1

Quantitation Report (Not Reviewed)

Data Path : C:\MSDCHEM\1\DATA\022614\
Data File : A0226408.D
Acq On : 26 Feb 2014 12:20 pm
Operator :
Sample : 006612-03
Misc : 8260 SOIL MAK104C (1.97g)
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Mar 20 10:05:37 2014
Quant Method : C:\MSDCHEM\1\METHODS\SOIL_44HI.M
Quant Title : 8260 VOLATILES
QLast Update : Thu Mar 20 10:04:19 2014
Response via : Initial Calibration

| Internal Standards | R.T. | QIon | Response | Conc | Units | Dev(Min) |
|---|---|---|---|---|---|---|
| 1) Chlorobenzene-d5 | 8.77 | 82 | 227281 | 125.00 | ug/Kg | 0.00 |
| 8) 1,4-Dichlorobenzene-d4 | 10.14 | 152 | 271342 | 125.00 | ug/Kg | 0.00 |
| System Monitoring Compounds | | | | | | |
| 2) Toluene-d8 | 7.83 | 98 | 374744 | 90.97 | ug/Kg | 0.00 |
| Spiked Amount 100.000 | | | Recovery = 90.97% | | | |
| 9) 4-Bromofluorobenzene | 9.48 | 95 | 197135 | 95.47 | ug/Kg | 0.00 |
| Spiked Amount 100.000 | | | Recovery = 95.47% | | | |

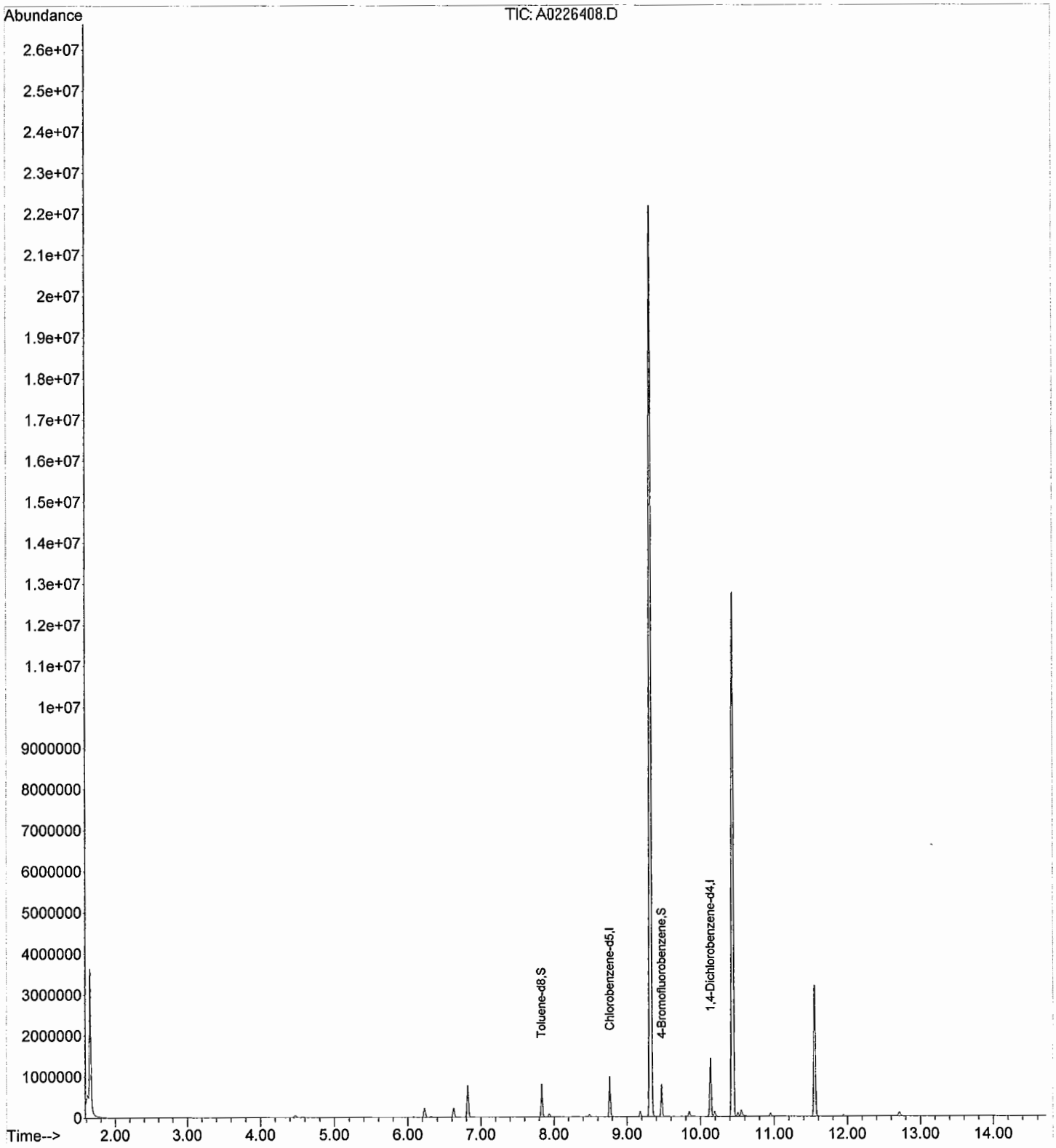
| Target Compounds | Qvalue |
|---|---|

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

Quantitation Report (Not Reviewed)

Data Path : C:\MSDCHEM\1\DATA\022614\
Data File : A0226408.D
Acq On : 26 Feb 2014 12:20 pm
Operator :
Sample : 006612-03
Misc : 8260 SOIL MAK104C (1.97g)
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Mar 20 10:05:37 2014
Quant Method : C:\MSDCHEM\1\METHODS\SOIL_44HI.M
Quant Title : 8260 VOLATILES
QLast Update : Thu Mar 20 10:04:19 2014
Response via : Initial Calibration



**ARDL, INC.**
**400 Aviation Drive; P.O. Box 1566**
**Mt. Vernon, Illinois 62864**

Lab Report No: 006612 Report Date: 03/20/2014

Project Name: MAKAU MILITARY RES O Analysis: VOLATILES, GC/MS (8260)
Project No.: Analytical Method: 8260B
NELAC Certified - IL100308 Prep Method: 5030A

| | | | |
|---|---|---|---|
| Field ID: | MAK105C | ARDL Lab No.: | 006612-04 |
| Desc/Location: | MAKAU MILITARY RES OAHU | Lab Filename: | A0226409 |
| Sample Date: | 01/13/2014 | Received Date: | 02/20/2014 |
| Sample Time: | 1130 | Prep. Date: | 02/26/2014 |
| Matrix: | TISSUE | Analysis Date: | 02/26/2014 |
| Amount Used: | 2 g | Instrument ID: | AG1 |
| Final Volume: | 5 mL | QC Batch: | 0227JFST |
| % Moisture: | No Moisture Present | Level: | LOW |

| Parameter | Method Limit | Reporting Limit | Result | Data Flag | Units | Dilution Factor |
|---|---|---|---|---|---|---|
| Toluene | 2.50 | 12.5 | ND | | UG/KG | 1 |
| Ethyl Benzene | 2.50 | 12.5 | ND | | UG/KG | 1 |
| m & p-Xylene | 5.0 | 25.0 | ND | | UG/KG | 1 |
| Styrene | 2.50 | 12.5 | ND | | UG/KG | 1 |
| o-Xylene | 2.50 | 12.5 | ND | | UG/KG | 1 |
| 1,2,4-Trimethylbenzene | 2.50 | 12.5 | ND | | UG/KG | 1 |

| SURROGATE RECOVERIES: | Limits | Results |
|---|---|---|
| Toluene-d8 | 50-150 | 84% |
| 4-Bromofluorobenzene | 50-150 | 97% |

Surrogate recoveries marked with '*' indicates they are outside standard limits.

Sample 006612-04, VOLATILES, GC/MS (8260) Page 1 of 1

Quantitation Report (Not Reviewed)

Data Path : C:\MSDCHEM\1\DATA\022614\
Data File : A0226409.D
Acq On : 26 Feb 2014 12:50 pm
Operator :
Sample : 006612-04
Misc : 8260 SOIL MAK105C (2.01g)
ALS Vial : 3 Sample Multiplier: 1

Quant Time: Mar 20 10:05:44 2014
Quant Method : C:\MSDCHEM\1\METHODS\SOIL_44HI.M
Quant Title : 8260 VOLATILES
QLast Update : Thu Mar 20 10:04:19 2014
Response via : Initial Calibration

| Internal Standards | R.T. | QIon | Response | Conc Units | Dev(Min) |
|---|---|---|---|---|---|
| 1) Chlorobenzene-d5 | 8.77 | 82 | 238747 | 125.00 ug/Kg | 0.00 |
| 8) 1,4-Dichlorobenzene-d4 | 10.14 | 152 | 261412 | 125.00 ug/Kg | 0.00 |
| System Monitoring Compounds | | | | | |
| 2) Toluene-d8 | 7.83 | 98 | 362252 | 83.71 ug/Kg | 0.00 |
| Spiked Amount 100.000 | | | Recovery | = 83.71% | |
| 9) 4-Bromofluorobenzene | 9.47 | 95 | 192117 | 96.57 ug/Kg | 0.00 |
| Spiked Amount 100.000 | | | Recovery | = 96.57% | |

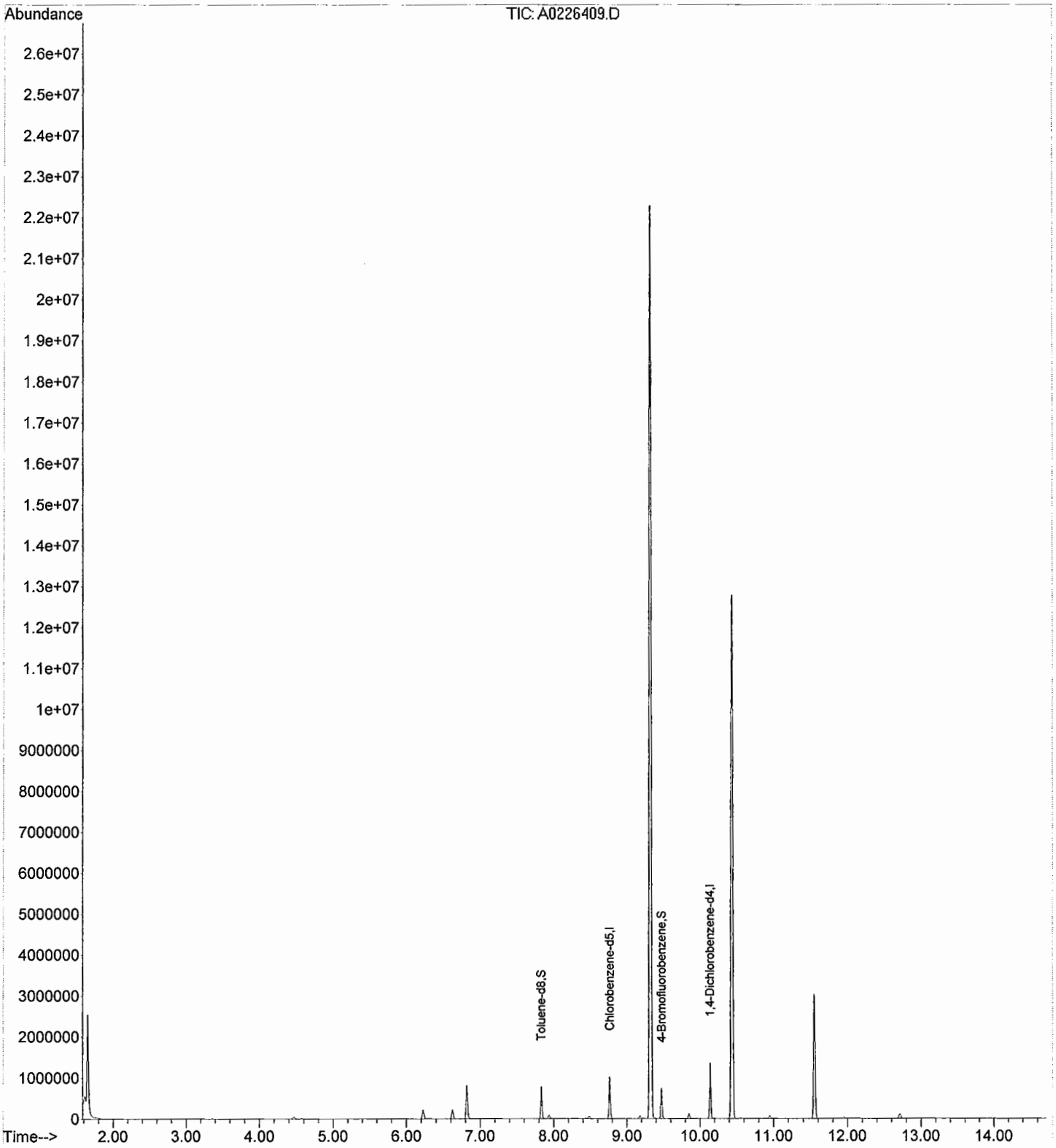
Target Compounds Qvalue

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

Quantitation Report (Not Reviewed)

Data Path : C:\MSDCHEM\1\DATA\022614\
Data File : A0226409.D
Acq On : 26 Feb 2014 12:50 pm
Operator :
Sample : 006612-04
Misc : 8260 SOIL MAK105C (2.01g)
ALS Vial : 3 Sample Multiplier: 1

Quant Time: Mar 20 10:05:44 2014
Quant Method : C:\MSDCHEM\1\METHODS\SOIL_44HI.M
Quant Title : 8260 VOLATILES
QLast Update : Thu Mar 20 10:04:19 2014
Response via : Initial Calibration



**ARDL, INC.**
**400 Aviation Drive; P.O. Box 1566**
**Mt. Vernon, Illinois 62864**

Lab Report No: 006612 Report Date: 03/20/2014

Project Name: MAKAU MILITARY RES O Analysis: VOLATILES, GC/MS (8260)
Project No.: Analytical Method: 8260B
NELAC Certified - IL100308 Prep Method: 5030A

| | | | |
|---|---|---|---|
| Field ID: | MAK106C | ARDL Lab No.: | 006612-05 |
| Desc/Location: | MAKAU MILITARY RES OAHU | Lab Filename: | A0226410 |
| Sample Date: | 01/13/2014 | Received Date: | 02/20/2014 |
| Sample Time: | 1205 | Prep. Date: | 02/26/2014 |
| Matrix: | TISSUE | Analysis Date: | 02/26/2014 |
| Amount Used: | 2 g | Instrument ID: | AG1 |
| Final Volume: | 5 mL | QC Batch: | 0227JFST |
| % Moisture: | No Moisture Present | Level: | LOW |

| Parameter | Method Limit | Reporting Limit | Result | Data Flag | Units | Dilution Factor |
|---|---|---|---|---|---|---|
| Toluene | 2.50 | 12.5 | ND | | UG/KG | 1 |
| Ethyl Benzene | 2.50 | 12.5 | ND | | UG/KG | 1 |
| m & p-Xylene | 5.0 | 25.0 | ND | | UG/KG | 1 |
| Styrene | 2.50 | 12.5 | ND | | UG/KG | 1 |
| o-Xylene | 2.50 | 12.5 | ND | | UG/KG | 1 |
| 1,2,4-Trimethylbenzene | 2.50 | 12.5 | ND | | UG/KG | 1 |

| SURROGATE RECOVERIES: | Limits | Results |
|---|---|---|
| Toluene-d8 | 50-150 | 87% |
| 4-Bromofluorobenzene | 50-150 | 97% |

Surrogate recoveries marked with '*' indicates they are outside standard limits.

Sample 006612-05, VOLATILES, GC/MS (8260) Page 1 of 1

Quantitation Report (Not Reviewed)

Data Path : C:\MSDCHEM\1\DATA\022614\
Data File : A0226410.D
Acq On : 26 Feb 2014 1:20 pm
Operator :
Sample : 006612-05
Misc : 8260 SOIL MAK106C (1.99g)
ALS Vial : 4 Sample Multiplier: 1

Quant Time: Mar 20 10:05:52 2014
Quant Method : C:\MSDCHEM\1\METHODS\SOIL_44HI.M
Quant Title : 8260 VOLATILES
QLast Update : Thu Mar 20 10:04:19 2014
Response via : Initial Calibration

| Internal Standards | R.T. | QIon | Response | Conc Units | Dev(Min) |
|---|---|---|---|---|---|
| 1) Chlorobenzene-d5 | 8.77 | 82 | 232103 | 125.00 ug/Kg | 0.00 |
| 8) 1,4-Dichlorobenzene-d4 | 10.14 | 152 | 260228 | 125.00 ug/Kg | 0.00 |
| System Monitoring Compounds | | | | | |
| 2) Toluene-d8 | 7.83 | 98 | 366574 | 87.14 ug/Kg | 0.00 |
| Spiked Amount 100.000 | | | Recovery | = 87.14% | |
| 9) 4-Bromofluorobenzene | 9.48 | 95 | 192210 | 97.06 ug/Kg | 0.00 |
| Spiked Amount 100.000 | | | Recovery | = 97.06% | |

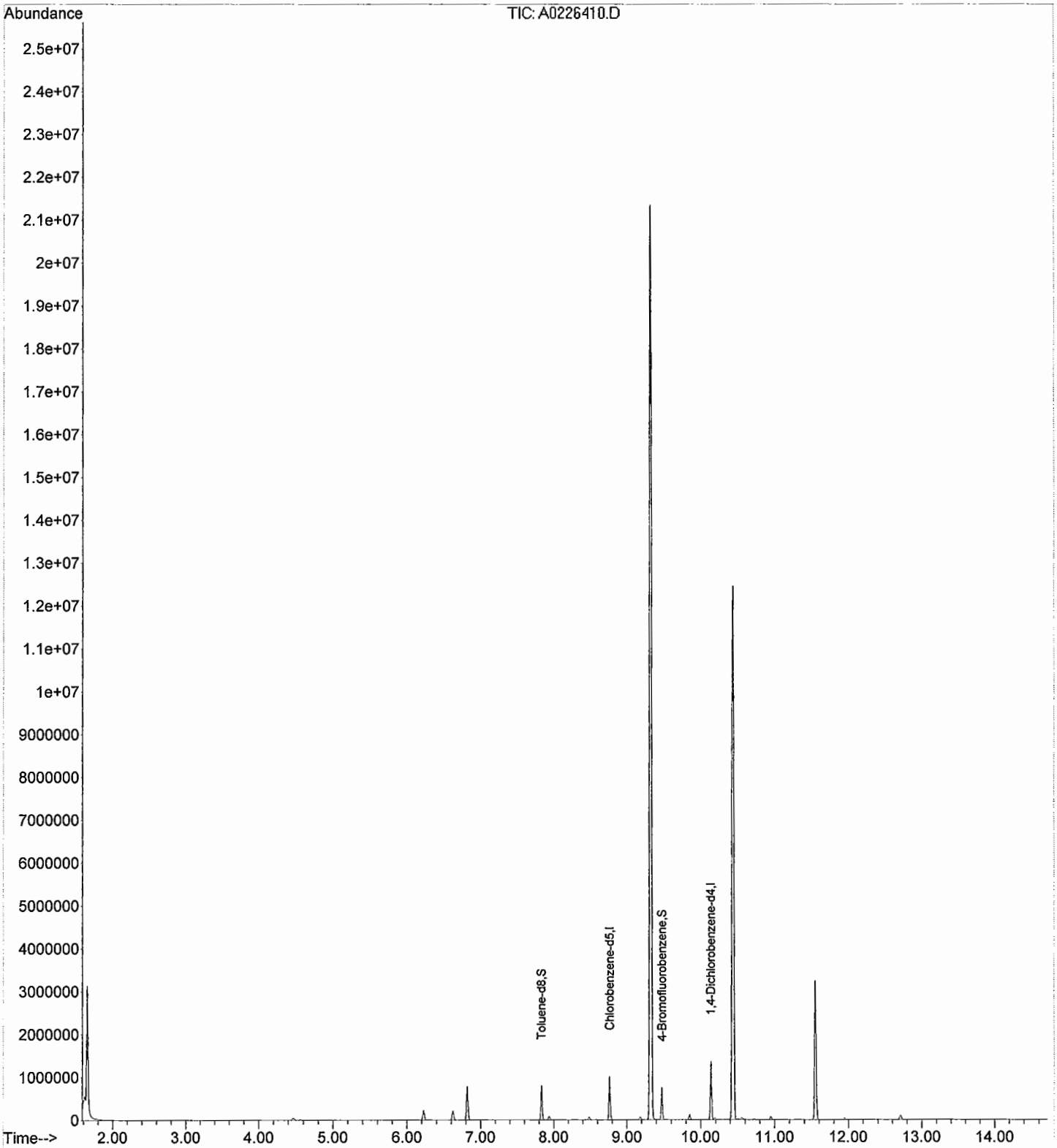
| Target Compounds | Qvalue |
|---|---|

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

Quantitation Report (Not Reviewed)

Data Path : C:\MSDCHEM\1\DATA\022614\
Data File : A0226410.D
Acq On : 26 Feb 2014 1:20 pm
Operator :
Sample : 006612-05
Misc : 8260 SOIL MAK106C (1.99g)
ALS Vial : 4 Sample Multiplier: 1

Quant Time: Mar 20 10:05:52 2014
Quant Method : C:\MSDCHEM\1\METHODS\SOIL_44HI.M
Quant Title : 8260 VOLATILES
QLast Update : Thu Mar 20 10:04:19 2014
Response via : Initial Calibration



**ARDL, INC.**
**400 Aviation Drive; P.O. Box 1566**
**Mt. Vernon, Illinois 62864**

Lab Report No: 006612 Report Date: 03/20/2014

Project Name: MAKAU MILITARY RES O Analysis: VOLATILES, GC/MS (8260)
Project No.: Analytical Method: 8260B
NELAC Certified - IL100308 Prep Method: 5030A

| | | | |
|---|---|---|---|
| Field ID: | MAK107C | ARDL Lab No.: | 006612-06 |
| Desc/Location: | MAKAU MILITARY RES OAHU | Lab Filename: | A0226411 |
| Sample Date: | 01/13/2014 | Received Date: | 02/20/2014 |
| Sample Time: | 1240 | Prep. Date: | 02/26/2014 |
| Matrix: | TISSUE | Analysis Date: | 02/26/2014 |
| Amount Used: | 2 g | Instrument ID: | AG1 |
| Final Volume: | 5 mL | QC Batch: | 0227JFST |
| % Moisture: | No Moisture Present | Level: | LOW |

| Parameter | Method Limit | Reporting Limit | Result | Data Flag | Units | Dilution Factor |
|---|---|---|---|---|---|---|
| Toluene | 2.50 | 12.5 | ND | | UG/KG | 1 |
| Ethyl Benzene | 2.50 | 12.5 | ND | | UG/KG | 1 |
| m & p-Xylene | 5.0 | 25.0 | ND | | UG/KG | 1 |
| Styrene | 2.50 | 12.5 | ND | | UG/KG | 1 |
| o-Xylene | 2.50 | 12.5 | ND | | UG/KG | 1 |
| 1,2,4-Trimethylbenzene | 2.50 | 12.5 | ND | | UG/KG | 1 |

| SURROGATE RECOVERIES: | Limits | Results |
|---|---|---|
| Toluene-d8 | 50-150 | 89% |
| 4-Bromofluorobenzene | 50-150 | 88% |

Surrogate recoveries marked with '*' indicates they are outside standard limits.

Sample 006612-06, VOLATILES, GC/MS (8260) Page 1 of 1

Quantitation Report (Not Reviewed)

Data Path : C:\MSDCHEM\1\DATA\022614\
Data File : A0226411.D
Acq On : 26 Feb 2014 1:49 pm
Operator :
Sample : 006612-06
Misc : 8260 SOIL MAK107C (2.03g)
ALS Vial : 5 Sample Multiplier: 1

Quant Time: Mar 20 10:05:58 2014
Quant Method : C:\MSDCHEM\1\METHODS\SOIL_44HI.M
Quant Title : 8260 VOLATILES
QLast Update : Thu Mar 20 10:04:19 2014
Response via : Initial Calibration

| Internal Standards | R.T. | QIon | Response | Conc | Units | Dev(Min) |
|---|---|---|---|---|---|---|
| 1) Chlorobenzene-d5 | 8.76 | 82 | 231942 | 125.00 | ug/Kg | 0.00 |
| 8) 1,4-Dichlorobenzene-d4 | 10.14 | 152 | 292364 | 125.00 | ug/Kg | 0.00 |
| System Monitoring Compounds | | | | | | |
| 2) Toluene-d8 | 7.83 | 98 | 374960 | 89.19 | ug/Kg | 0.00 |
| Spiked Amount 100.000 | | | Recovery | = | 89.19% | |
| 9) 4-Bromofluorobenzene | 9.47 | 95 | 195316 | 87.78 | ug/Kg | 0.00 |
| Spiked Amount 100.000 | | | Recovery | = | 87.78% | |

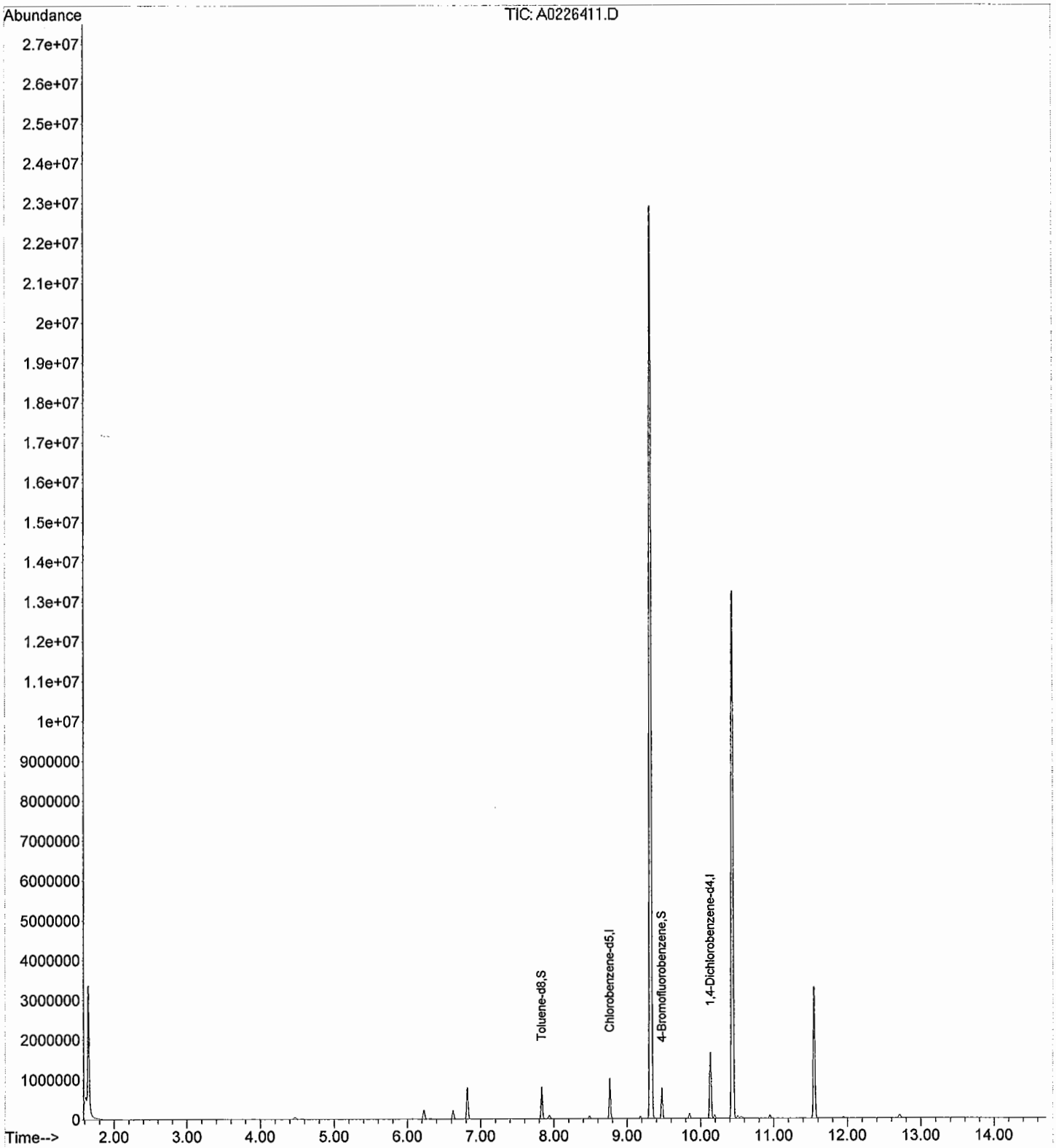
Target Compounds Qvalue

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

Quantitation Report (Not Reviewed)

Data Path : C:\MSDCHEM\1\DATA\022614\
Data File : A0226411.D
Acq On : 26 Feb 2014 1:49 pm
Operator :
Sample : 006612-06
Misc : 8260 SOIL MAK107C (2.03g)
ALS Vial : 5 Sample Multiplier: 1

Quant Time: Mar 20 10:05:58 2014
Quant Method : C:\MSDCHEM\1\METHODS\SOIL_44HI.M
Quant Title : 8260 VOLATILES
QLast Update : Thu Mar 20 10:04:19 2014
Response via : Initial Calibration



**ARDL, INC.**
**400 Aviation Drive; P.O. Box 1566**
**Mt. Vernon, Illinois 62864**

Lab Report No: 006612 Report Date: 03/20/2014

Project Name: MAKAU MILITARY RES O Analysis: VOLATILES, GC/MS (8260)
Project No.: Analytical Method: 8260B
NELAC Certified - IL100308 Prep Method: 5030A

| | | | |
|---|---|---|---|
| Field ID: | MAK108C | ARDL Lab No.: | 006612-07 |
| Desc/Location: | MAKAU MILITARY RES OAHU | Lab Filename: | A0226412 |
| Sample Date: | 01/13/2014 | Received Date: | 02/20/2014 |
| Sample Time: | 1350 | Prep. Date: | 02/26/2014 |
| Matrix: | TISSUE | Analysis Date: | 02/26/2014 |
| Amount Used: | 2 g | Instrument ID: | AG1 |
| Final Volume: | 5 mL | QC Batch: | 0227JFST |
| % Moisture: | No Moisture Present | Level: | LOW |

| Parameter | Method Limit | Reporting Limit | Result | Data Flag | Units | Dilution Factor |
|---|---|---|---|---|---|---|
| Toluene | 2.50 | 12.5 | ND | | UG/KG | 1 |
| Ethyl Benzene | 2.50 | 12.5 | ND | | UG/KG | 1 |
| m & p-Xylene | 5.0 | 25.0 | ND | | UG/KG | 1 |
| Styrene | 2.50 | 12.5 | ND | | UG/KG | 1 |
| o-Xylene | 2.50 | 12.5 | ND | | UG/KG | 1 |
| 1,2,4-Trimethylbenzene | 2.50 | 12.5 | ND | | UG/KG | 1 |

| SURROGATE RECOVERIES: | Limits | Results |
|---|---|---|
| Toluene-d8 | 50-150 | 91% |
| 4-Bromofluorobenzene | 50-150 | 104% |

Surrogate recoveries marked with '*' indicates they are outside standard limits.

Sample 006612-07, VOLATILES, GC/MS (8260) Page 1 of 1

Quantitation Report (Not Reviewed)

Data Path : C:\MSDCHEM\1\DATA\022614\
Data File : A0226412.D
Acq On : 26 Feb 2014 2:19 pm
Operator :
Sample : 006612-07
Misc : 8260 SOIL MAK108C (1.98g)
ALS Vial : 6 Sample Multiplier: 1

Quant Time: Mar 20 10:06:09 2014
Quant Method : C:\MSDCHEM\1\METHODS\SOIL_44HI.M
Quant Title : 8260 VOLATILES
QLast Update : Thu Mar 20 10:04:19 2014
Response via : Initial Calibration

| Internal Standards | R.T. | QIon | Response | Conc | Units | Dev(Min) |
|---|---|---|---|---|---|---|
| 1) Chlorobenzene-d5 | 8.76 | 82 | 225333 | 125.00 | ug/Kg | 0.00 |
| 8) 1,4-Dichlorobenzene-d4 | 10.14 | 152 | 242765 | 125.00 | ug/Kg | 0.00 |
| System Monitoring Compounds | | | | | | |
| 2) Toluene-d8 | 7.83 | 98 | 372717 | 91.26 | ug/Kg | 0.00 |
| Spiked Amount 100.000 | | | Recovery | = | 91.26% | |
| 9) 4-Bromofluorobenzene | 9.47 | 95 | 191985 | 103.92 | ug/Kg | 0.00 |
| Spiked Amount 100.000 | | | Recovery | = | 103.92% | |

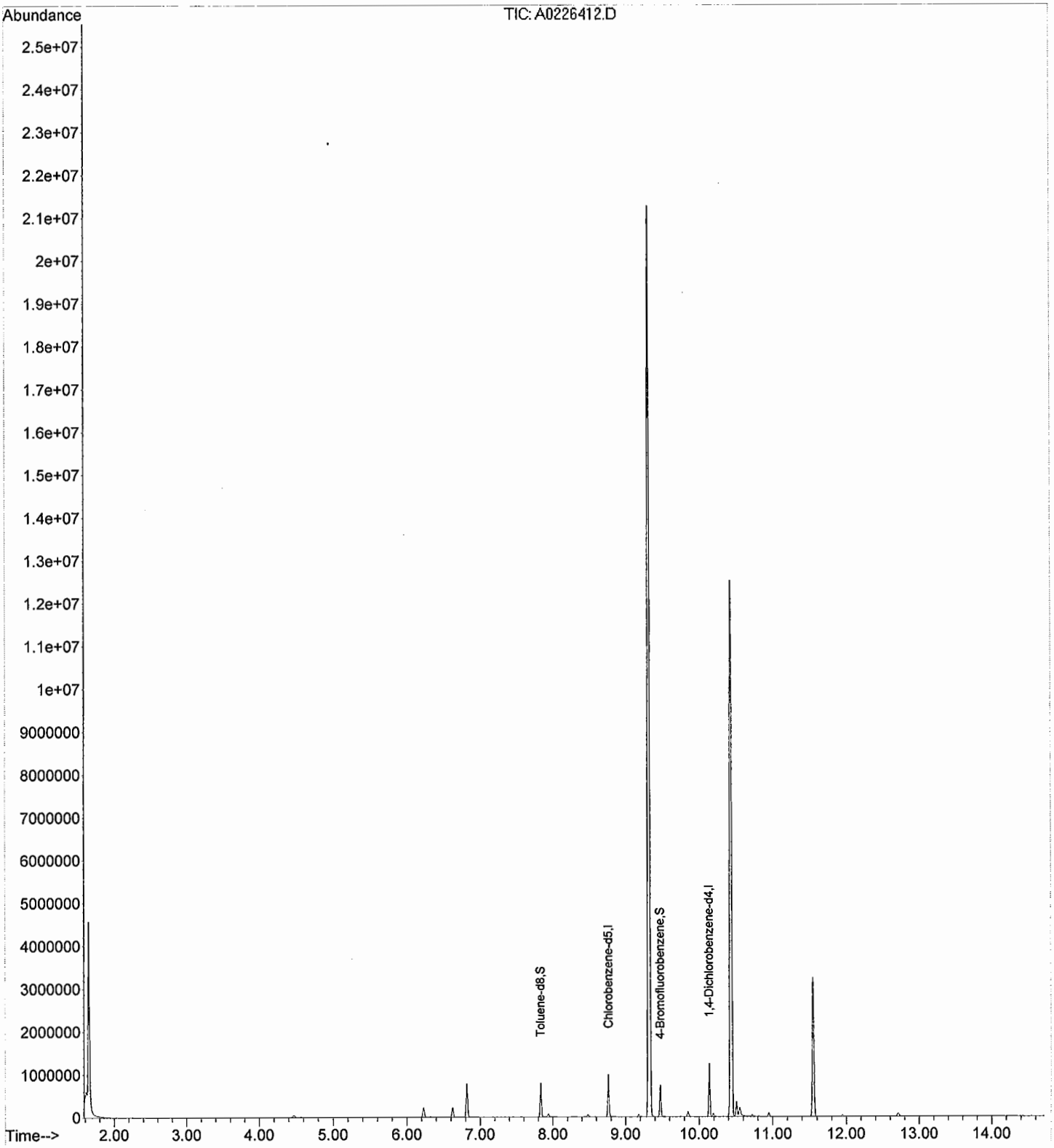
| Target Compounds | Qvalue |
|---|---|

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

Quantitation Report (Not Reviewed)

Data Path : C:\MSDCHEM\1\DATA\022614\
Data File : A0226412.D
Acq On : 26 Feb 2014 2:19 pm
Operator :
Sample : 006612-07
Misc : 8260 SOIL MAK108C (1.98g)
ALS Vial : 6 Sample Multiplier: 1

Quant Time: Mar 20 10:06:09 2014
Quant Method : C:\MSDCHEM\1\METHODS\SOIL_44HI.M
Quant Title : 8260 VOLATILES
QLast Update : Thu Mar 20 10:04:19 2014
Response via : Initial Calibration



**ARDL, INC.**
**400 Aviation Drive; P.O. Box 1566**
**Mt. Vernon, Illinois 62864**

Lab Report No: 006612 Report Date: 03/20/2014

Project Name: MAKAU MILITARY RES O Analysis: VOLATILES, GC/MS (8260)
Project No.: Analytical Method: 8260B
NELAC Certified - IL100308 Prep Method: 5030A

| | | | |
|---|---|---|---|
| Field ID: | MAK110C | ARDL Lab No.: | 006612-08 |
| Desc/Location: | MAKAU MILITARY RES OAHU | Lab Filename: | A0226413 |
| Sample Date: | 01/14/2014 | Received Date: | 02/20/2014 |
| Sample Time: | 0955 | Prep. Date: | 02/26/2014 |
| Matrix: | TISSUE | Analysis Date: | 02/26/2014 |
| Amount Used: | 2 g | Instrument ID: | AG1 |
| Final Volume: | 5 mL | QC Batch: | 0227JFST |
| % Moisture: | No Moisture Present | Level: | LOW |

| Parameter | Method Limit | Reporting Limit | Result | Data Flag | Units | Dilution Factor |
|---|---|---|---|---|---|---|
| Toluene | 2.50 | 12.5 | ND | | UG/KG | 1 |
| Ethyl Benzene | 2.50 | 12.5 | ND | | UG/KG | 1 |
| m & p-Xylene | 5.0 | 25.0 | ND | | UG/KG | 1 |
| Styrene | 2.50 | 12.5 | ND | | UG/KG | 1 |
| o-Xylene | 2.50 | 12.5 | ND | | UG/KG | 1 |
| 1,2,4-Trimethylbenzene | 2.50 | 12.5 | ND | | UG/KG | 1 |

| SURROGATE RECOVERIES: | Limits | Results |
|---|---|---|
| Toluene-d8 | 50-150 | 89% |
| 4-Bromofluorobenzene | 50-150 | 95% |

Surrogate recoveries marked with '*' indicates they are outside standard limits.

Sample 006612-08, VOLATILES, GC/MS (8260) Page 1 of 1

Quantitation Report (Not Reviewed)

Data Path : C:\MSDCHEM\1\DATA\022614\
Data File : A0226413.D
Acq On : 26 Feb 2014 2:47 pm
Operator :
Sample : 006612-08
Misc : 8260 SOIL MAK110C (2.00g)
ALS Vial : 7 Sample Multiplier: 1

Quant Time: Mar 20 10:06:18 2014
Quant Method : C:\MSDCHEM\1\METHODS\SOIL_44HI.M
Quant Title : 8260 VOLATILES
QLast Update : Thu Mar 20 10:04:19 2014
Response via : Initial Calibration

| Internal Standards | R.T. | QIon | Response | Conc Units | Dev(Min) |
|---|---|---|---|---|---|
| 1) Chlorobenzene-d5 | 8.76 | 82 | 218672 | 125.00 ug/Kg | 0.00 |
| 8) 1,4-Dichlorobenzene-d4 | 10.14 | 152 | 260561 | 125.00 ug/Kg | 0.00 |
| System Monitoring Compounds | | | | | |
| 2) Toluene-d8 | 7.83 | 98 | 354646 | 89.48 ug/Kg | 0.00 |
| Spiked Amount 100.000 | | | Recovery | = 89.48% | |
| 9) 4-Bromofluorobenzene | 9.47 | 95 | 187852 | 94.73 ug/Kg | 0.00 |
| Spiked Amount 100.000 | | | Recovery | = 94.73% | |

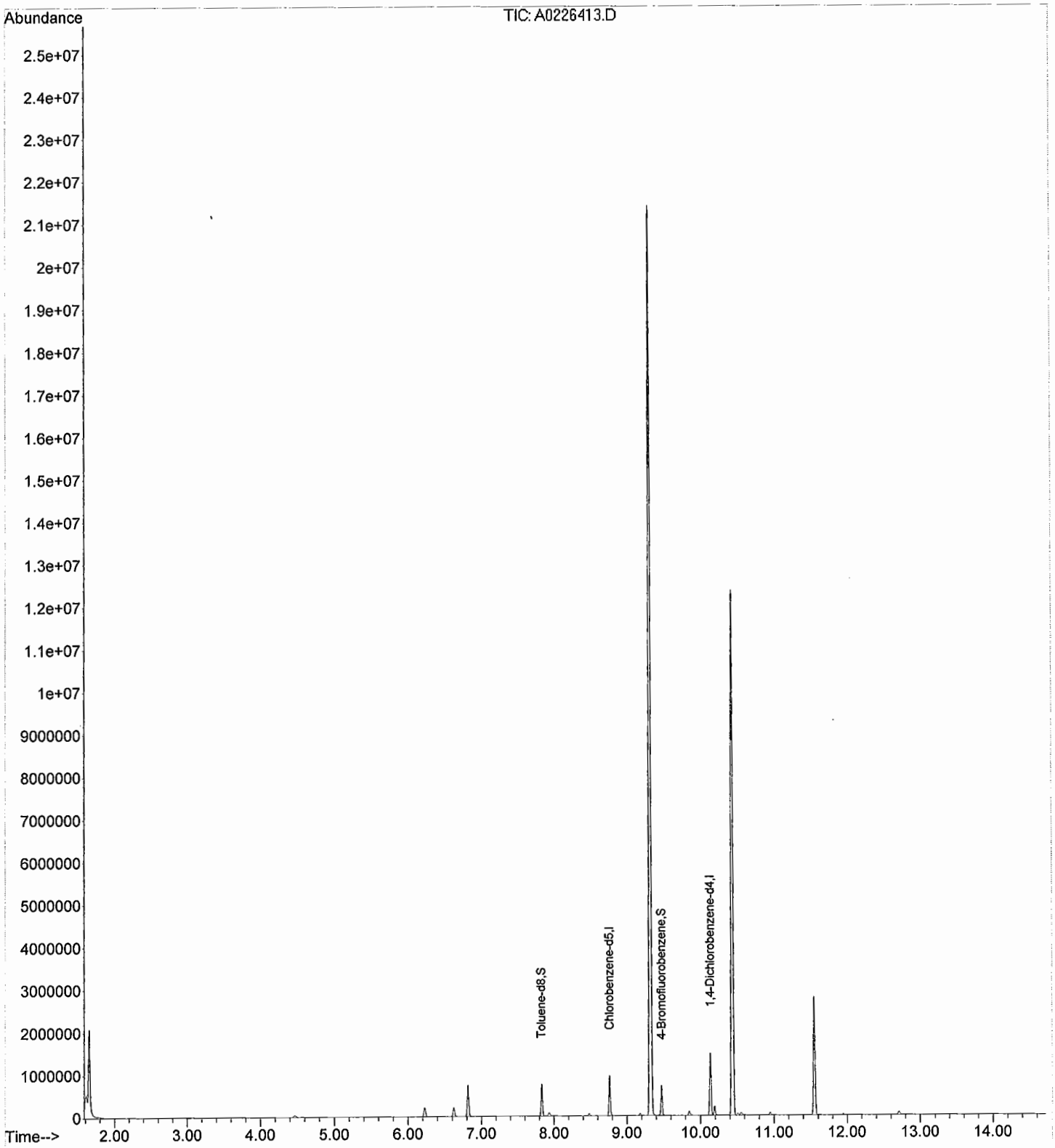
| Target Compounds | Qvalue |
|---|---|

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

Quantitation Report (Not Reviewed)

Data Path : C:\MSDCHEM\1\DATA\022614\
Data File : A0226413.D
Acq On : 26 Feb 2014 2:47 pm
Operator :
Sample : 006612-08
Misc : 8260 SOIL MAK110C (2.00g)
ALS Vial : 7 Sample Multiplier: 1

Quant Time: Mar 20 10:06:18 2014
Quant Method : C:\MSDCHEM\1\METHODS\SOIL_44HI.M
Quant Title : 8260 VOLATILES
QLast Update : Thu Mar 20 10:04:19 2014
Response via : Initial Calibration



**ARDL, INC.**
**400 Aviation Drive; P.O. Box 1566**
**Mt. Vernon, Illinois 62864**

Lab Report No: 006612 Report Date: 03/20/2014

Project Name: MAKAU MILITARY RES O Analysis: VOLATILES, GC/MS (8260)
Project No.: Analytical Method: 8260B
NELAC Certified - IL100308 Prep Method: 5030A

| | | | |
|---|---|---|---|
| Field ID: | MAK110C | ARDL Lab No.: | 006612-08MD |
| Desc/Location: | MAKAU MILITARY RES OAHU | Lab Filename: | A0226415 |
| Sample Date: | 01/14/2014 | Received Date: | 02/20/2014 |
| Sample Time: | 0955 | Prep. Date: | 02/26/2014 |
| Matrix: | TISSUE | Analysis Date: | 02/26/2014 |
| Amount Used: | 2 g | Instrument ID: | AG1 |
| Final Volume: | 5 mL | QC Batch: | 0227JFST |
| % Moisture: | No Moisture Present | Level: | LOW |

| Parameter | Method Limit | Reporting Limit | Result | Data Flag | Units | Dilution Factor |
|---|---|---|---|---|---|---|
| Toluene | 2.50 | 12.5 | 87.4 | | UG/KG | 1 |
| Ethyl Benzene | 2.50 | 12.5 | 86.3 | | UG/KG | 1 |
| m & p-Xylene | 5.0 | 25.0 | 177 | | UG/KG | 1 |
| Styrene | 2.50 | 12.5 | 83.6 | | UG/KG | 1 |
| o-Xylene | 2.50 | 12.5 | 84.2 | | UG/KG | 1 |
| 1,2,4-Trimethylbenzene | 2.50 | 12.5 | 91.3 | | UG/KG | 1 |

| SURROGATE RECOVERIES: | Limits | Results |
|---|---|---|
| Toluene-d8 | 50-150 | 99% |
| 4-Bromofluorobenzene | 50-150 | 102% |

Surrogate recoveries marked with '*' indicates they are outside standard limits.

Matrix Spike Duplicate for 006612-08, VOLATILES, GC/MS (8260) Page 1 of 1

Quantitation Report (Not Reviewed)

Data Path : C:\MSDCHEM\1\DATA\022614\
Data File : A0226415.D
Acq On : 26 Feb 2014 3:44 pm
Operator :
Sample : 006612-08MD
Misc : 8260 SOIL MAK110CMSD (2.01g)
ALS Vial : 9 Sample Multiplier: 1

Quant Time: Mar 20 10:23:11 2014
Quant Method : C:\MSDCHEM\1\METHODS\SOIL_44HI.M
Quant Title : 8260 VOLATILES
QLast Update : Thu Mar 20 10:04:19 2014
Response via : Initial Calibration

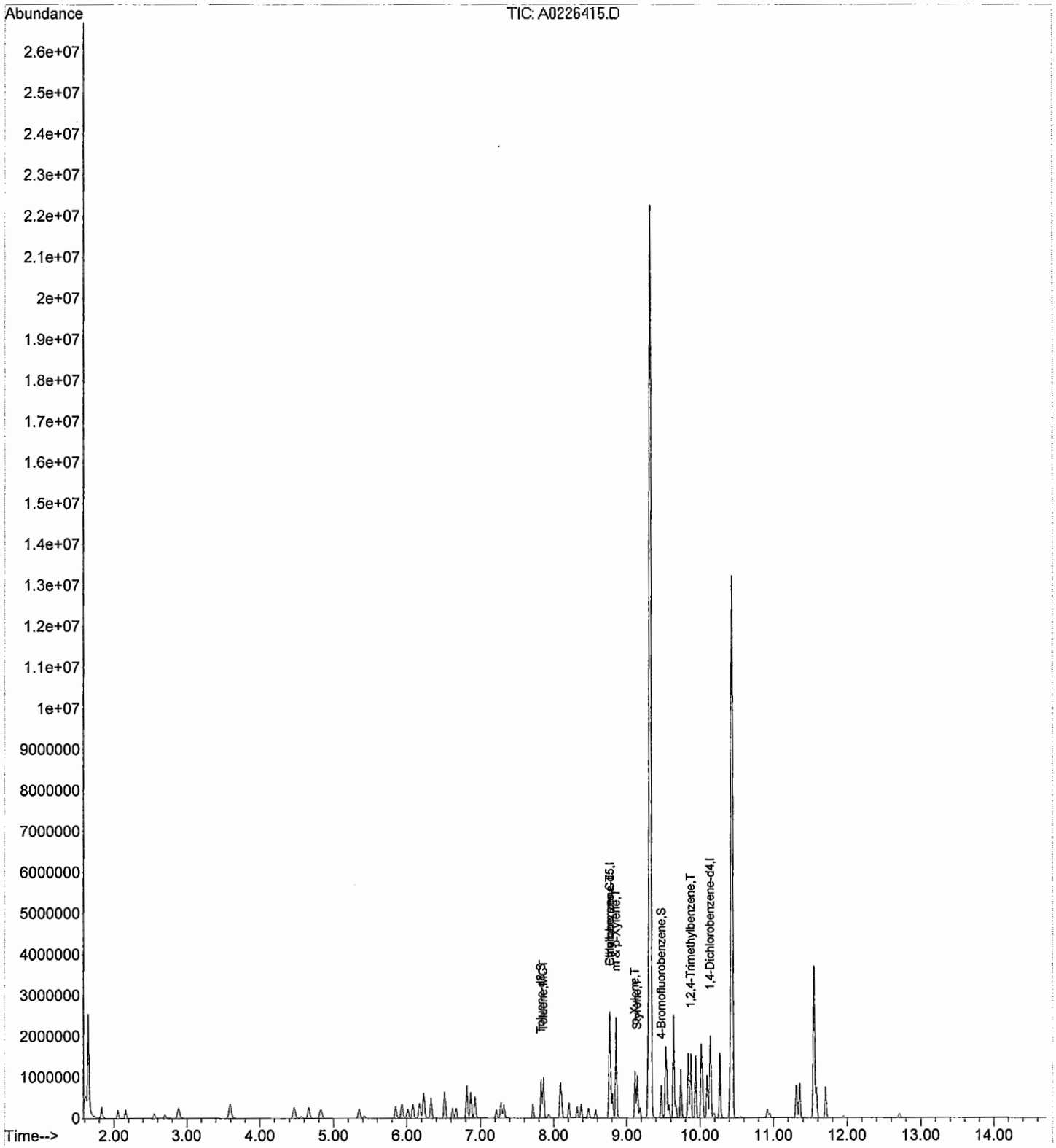
| Internal Standards | R.T. | QIon | Response | Conc | Units | Dev(Min) |
|---|---|---|---|---|---|---|
| 1) Chlorobenzene-d5 | 8.76 | 82 | 248920 | 125.00 | ug/Kg | 0.00 |
| 8) 1,4-Dichlorobenzene-d4 | 10.14 | 152 | 266762 | 125.00 | ug/Kg | 0.00 |
| System Monitoring Compounds | | | | | | |
| 2) Toluene-d8 | 7.83 | 98 | 445026 | 98.64 | ug/Kg | 0.00 |
| Spiked Amount 100.000 | | | Recovery = 98.64% | | | |
| 9) 4-Bromofluorobenzene | 9.47 | 95 | 206819 | 101.87 | ug/Kg | 0.00 |
| Spiked Amount 100.000 | | | Recovery = 101.87% | | | |
| Target Compounds | | | | | | Qvalue |
| 3) Toluene | 7.86 | 91 | 527276 | 87.42 | ug/Kg | 99 |
| 4) Ethylbenzene | 8.78 | 91 | 627991 | 86.31 | ug/Kg | 95 |
| 5) m & p-Xylene | 8.86 | 91 | 1040408 | 176.50 | ug/Kg | 92 |
| 6) Styrene | 9.14 | 104 | 369179 | 83.61 | ug/Kg# | 87 |
| 7) o-Xylene | 9.11 | 106 | 214093 | 84.18 | ug/Kg | 80 |
| 10) 1,2,4-Trimethylbenzene | 9.87 | 105 | 653263 | 91.34 | ug/Kg | 90 |

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

Quantitation Report (Not Reviewed)

Data Path : C:\MSDCHEM\1\DATA\022614\
Data File : A0226415.D
Acq On : 26 Feb 2014 3:44 pm
Operator :
Sample : 006612-08MD
Misc : 8260 SOIL MAK110CMSD (2.01g)
ALS Vial : 9 Sample Multiplier: 1

Quant Time: Mar 20 10:23:11 2014
Quant Method : C:\MSDCHEM\1\METHODS\SOIL_44HI.M
Quant Title : 8260 VOLATILES
QLast Update : Thu Mar 20 10:04:19 2014
Response via : Initial Calibration



**ARDL, INC.**
**400 Aviation Drive; P.O. Box 1566**
**Mt. Vernon, Illinois 62864**

Lab Report No: 006612 Report Date: 03/20/2014

Project Name: MAKAU MILITARY RES O Analysis: VOLATILES, GC/MS (8260)
Project No.: Analytical Method: 8260B
NELAC Certified - IL100308 Prep Method: 5030A

| | | | |
|---|---|---|---|
| Field ID: | MAK110C | ARDL Lab No.: | 006612-08MS |
| Desc/Location: | MAKAU MILITARY RES OAHU | Lab Filename: | A0226416 |
| Sample Date: | 01/14/2014 | Received Date: | 02/20/2014 |
| Sample Time: | 0955 | Prep. Date: | 02/26/2014 |
| Matrix: | TISSUE | Analysis Date: | 02/26/2014 |
| Amount Used: | 2 g | Instrument ID: | AG1 |
| Final Volume: | 5 mL | QC Batch: | 0227JFST |
| % Moisture: | No Moisture Present | Level: | LOW |

| Parameter | Method Limit | Reporting Limit | Result | Data Flag | Units | Dilution Factor |
|---|---|---|---|---|---|---|
| Toluene | 2.50 | 12.5 | 102 | | UG/KG | 1 |
| Ethyl Benzene | 2.50 | 12.5 | 102 | | UG/KG | 1 |
| m & p-Xylene | 5.0 | 25.0 | 207 | | UG/KG | 1 |
| Styrene | 2.50 | 12.5 | 102 | | UG/KG | 1 |
| o-Xylene | 2.50 | 12.5 | 101 | | UG/KG | 1 |
| 1,2,4-Trimethylbenzene | 2.50 | 12.5 | 107 | | UG/KG | 1 |

| SURROGATE RECOVERIES: | Limits | Results |
|---|---|---|
| Toluene-d8 | 50-150 | 103% |
| 4-Bromofluorobenzene | 50-150 | 104% |

Surrogate recoveries marked with '*' indicates they are outside standard limits.

Matrix Spike for 006612-08, VOLATILES, GC/MS (8260) Page 1 of 1

Quantitation Report (Not Reviewed)

Data Path : C:\MSDCHEM\1\DATA\022614\
Data File : A0226416.D
Acq On : 26 Feb 2014 4:12 pm
Operator :
Sample : 006612-08MS
Misc : 8260 SOIL MAK110CMS (2.02g)
ALS Vial : 10 Sample Multiplier: 1

Quant Time: Mar 20 10:23:22 2014
Quant Method : C:\MSDCHEM\1\METHODS\SOIL_44HI.M
Quant Title : 8260 VOLATILES
QLast Update : Thu Mar 20 10:04:19 2014
Response via : Initial Calibration

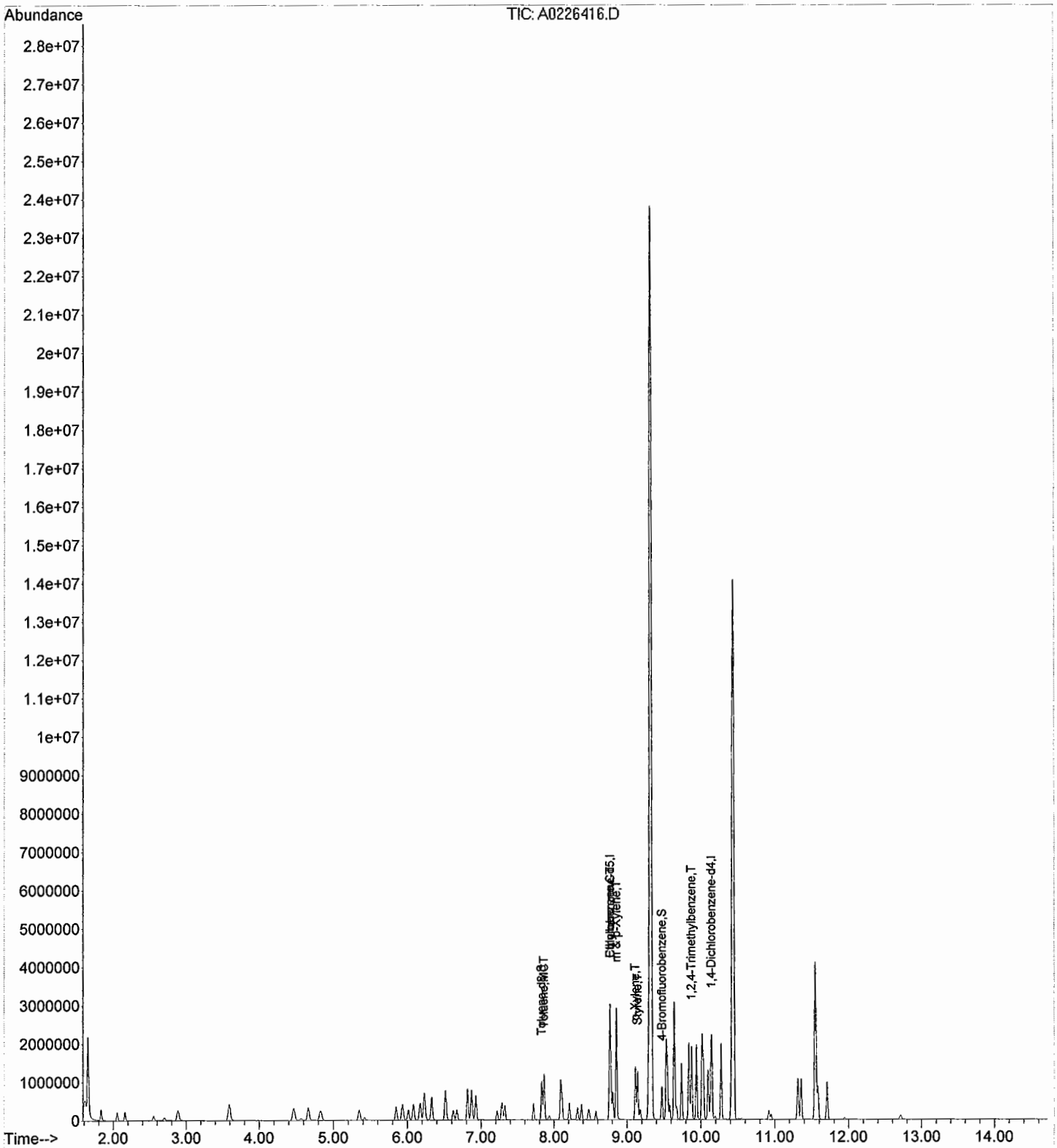
| Internal Standards | R.T. | QIon | Response | Conc | Units | Dev(Min) |
|---|---|---|---|---|---|---|
| 1) Chlorobenzene-d5 | 8.76 | 82 | 260523 | 125.00 | ug/Kg | 0.00 |
| 8) 1,4-Dichlorobenzene-d4 | 10.14 | 152 | 282781 | 125.00 | ug/Kg | 0.00 |
| System Monitoring Compounds | | | | | | |
| 2) Toluene-d8 | 7.83 | 98 | 486506 | 103.03 | ug/Kg | 0.00 |
| Spiked Amount 100.000 | | | Recovery | = | 103.03% | |
| 9) 4-Bromofluorobenzene | 9.47 | 95 | 223782 | 103.99 | ug/Kg | 0.00 |
| Spiked Amount 100.000 | | | Recovery | = | 103.99% | |
| Target Compounds | | | | | | Qvalue |
| 3) Toluene | 7.86 | 91 | 643434 | 101.93 | ug/Kg | 99 |
| 4) Ethylbenzene | 8.77 | 91 | 776963 | 102.03 | ug/Kg | 96 |
| 5) m & p-Xylene | 8.86 | 91 | 1277503 | 207.07 | ug/Kg | 92 |
| 6) Styrene | 9.14 | 104 | 470699 | 101.85 | ug/Kg | 91 |
| 7) o-Xylene | 9.11 | 106 | 269199 | 101.14 | ug/Kg | 83 |
| 10) 1,2,4-Trimethylbenzene | 9.87 | 105 | 813186 | 107.26 | ug/Kg | 91 |

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

Quantitation Report (Not Reviewed)

Data Path : C:\MSDCHEM\1\DATA\022614\
Data File : A0226416.D
Acq On : 26 Feb 2014 4:12 pm
Operator :
Sample : 006612-08MS
Misc : 8260 SOIL MAK110CMS (2.02g)
ALS Vial : 10 Sample Multiplier: 1

Quant Time: Mar 20 10:23:22 2014
Quant Method : C:\MSDCHEM\1\METHODS\SOIL_44HI.M
Quant Title : 8260 VOLATILES
QLast Update : Thu Mar 20 10:04:19 2014
Response via : Initial Calibration



# Example Calculation

Rev. 1.1

# EXAMPLE CALCULATIONS

## Response Factor Calculations

The data system tabulates the area response of the characteristic ions against the concentration for each compound and each internal standard. Response factors (RF) are calculated for each compound relative to the internal standard assignments. The RF is calculated as follows:

$$RF = (A_X C_{is})/A_{is} C_X)$$

where:

$A_X$ = Area of the characteristic ion for the compound being measured.
$A_{is}$ = Area of the characteristic ion for the specific internal standard.
$C_{is}$ = Concentration of the specific internal standard.
$C_X$ = Concentration of the compound being measured.

The RF is calculated for each standard concentration level in the initial calibration curve. The average RF is then calculated off these points:

## Sample Calculations

Sample calculations are made by the instrument software and are performed as follows:

Water

$$\text{Concentration (ug/L)} = \frac{(Ax)\,(Is)}{(Ais)\,(RF)(V_0)}$$

where:

$A_X$ = Area of characteristic ion for compound being measured.
Is = Amount of internal standard injected (ng).
$A_{is}$ = Area of characteristic ion for the internal standard.
RF = Average response factor for compound being measured.
$V_0$ = Volume of water purged (mL).

Soil: (low level)

$$\text{concentration (ug/Kg)} = \frac{(A_X)(Is)}{(A_{is})(RF)(W_g)}$$

where:

$A_X$ = Area of characteristic ion for compound being measured.
Is = Amount of internal standard injected (ng).
$A_{is}$ = Area of characteristic ion for the internal standard.
RF = Average response factor for compound being measured.
$W_g$ = Weight of sample purged (g).

# EXAMPLE CALCULATIONS

## Sample Calculations

Sediment/Soil, Sludge, and Waste: (medium level)

$$\text{Concentration (ug/kg)} = \frac{(A_x)(Is)(V_t)}{(A_{is})(RF)(V_i)(W_g)}$$

where:

$A_x$, Is, $A_{is}$, RF = same as for soil above.
$V_t$ = Volume of total extract (uL) (use 10,000 uL or a factor of this when dilutions are made).
$V_i$ = Volume of extract added (uL) for purging.
$W_g$ = Weight of sample extracted (g).

Instrument software is not set up to account for the medium level extraction procedure. Concentrations appearing on the quantitation report must be multiplied by a factor of 125 to correct for sample weight and extract volumes.

## Sample Calculations

Sample No.: 006619-08MS Compound: 1,2,4-Trimethylbenzen

Matrix: Tissue

$$\text{Concentration (ug/kg)} = \frac{(813186)(250ng)(__)}{(282781)(3.351)(2g)(__)} = 107.26$$

Example Calculations Performed By: LS Date: 3/20/14

# Miscellaneous Additional Data

**(If applicable)**

☒ **None** LS 3/20/14

Rev. 1.1