# ALS Paragon

## GC/MS Volatiles

### Case Narrative

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## Colorado Oil & Gas Conservation Commission

### Complaint 200206998

Work Order Number: 0903234

1. This report consists of 1 water sample. The sample was received cool and intact by ALS Paragon on 03/31/09. The aqueous sample was free of headspace prior to analysis.

2. The sample was prepared according to SW-846, 3rd Edition procedures. Specifically, the water sample was prepared by purging 10 mL using purge and trap procedures based on Method 5030C.

3. The sample was analyzed using GC/MS with an RTX-624, RTX-VMS, or equivalent capillary column according to SOP 525 Revision 12 based on SW-846 Method 8260B. All positive results were quantitated against the initial calibration standards using the internal standard technique. The identification of positive results was achieved by a comparison of the retention time and mass spectrum of the sample versus the daily calibration standard.

4. All initial calibration criteria for SPCC's and CCC's were met. If average response factors were used in the initial calibration, %RSD was ≤15%. If linear or higher order regression calibrations were used in the initial calibration, the coefficient of determination ($r^2$) ≥0.99.

5. All initial calibrations are verified by comparing a second source standard calibration verification (ICV) against the calibration curve. All target compounds in the second source verification had a %D of less than 25%.

6. All criteria for SPCC's and CCC's were met in daily (continuing) calibration verifications (CCV).

7. Methylene chloride, acetone and 2-butanone are common laboratory contaminants. In order to minimize the levels of these compounds detected in the gc/ms analysis, ALS Paragon has designated its volatile laboratory as a restricted access area. In addition, the laboratory has been equipped with a dedicated, air intake and exhaust system that operates under positive pressure in order to minimize cross contamination of these compounds. Due to fluctuations in ambient laboratory conditions, reported sample values for common laboratory contaminants may be due to lab contamination even if the compound in question is not detected in the associated method blank.

   All method blank criteria were met.

8. All laboratory control sample and laboratory control sample duplicate recoveries and RPDs were within the acceptance criteria.

9. Since a sample from this order number was not the selected quality control (QC) sample, matrix specific QC results are not included in this report.

10. The sample was analyzed within the established holding time.

11. All surrogate recoveries were within acceptance criteria.

12. All internal standard recoveries were within acceptance criteria.

13. Manual integrations are performed when needed to provide consistent and defensible data following the guidelines in SOP 939 Revision 3.

The data contained in the following report have been reviewed and approved by the personnel listed below. In addition, ALS Paragon certifies that the analyses reported herein are true, complete and correct within the limits of the methods employed.

SLJ

Sharon L. Jobes
Organics Primary Data Reviewer

4-9-09
Date

Shara D. White

Organics Final Data Reviewer

4.9.09
Date

*ALS Paragon*
*Data Qualifier Flags*
*Chromatography and Mass Spectrometry*

| | |
|---|---|
| **U or ND:** | **This flag indicates that the compound was analyzed for but not detected.** |
| **J:** | **This flag indicates an estimated value. This flag is used as follows : (1) when estimating a concentration for tentatively identified compounds (TICs) where a 1:1 response is assumed; (2) when the mass spectral and retention time data indicate the presence of a compound that meets the volatile and semivolatile GC/MS identification criteria, and the result is less than the reporting limit (RL) but greater than the method detection limit (MDL); (3) when the retention time data indicate the presence of a compound that meets the GC identification criteria, and the result is less than the RL but greater than the MDL; and (4) the reported value is estimated.** |
| **B:** | **This flag is used when the analyte is detected in the associated method blank as well as in the sample. It indicates probable blank contamination and warns the data user. This flag shall be used for a tentatively identified compound (TIC) as well as for a positively identified target compound.** |
| **E:** | **This flag identifies compounds whose concentration exceeds the upper level of the calibration range.** |
| **A:** | **This flag indicates that a tentatively identified compound is a suspected aldol-condensation product.** |
| **X:** | **This flag indicates that the analyte was diluted below an accurate quantitation level.** |
| ***:** | **This flag indicates that a spike recovery is equal to or outside the control criteria used.** |
| **+:** | **This flag indicates that the relative percent difference (RPD) equals or exceeds the control criteria.** |

# ALS Paragon

## Sample Number(s) Cross-Reference Table

**Paragon OrderNum:** 0903234
**Client Name:** Colorado Oil & Gas Conservation Commission
**Client Project Name:** Complaint 20026998
**Client Project Number:**
**Client PO Number:** OE PHA 09000000004

| Client Sample Number | Lab Sample Number | COC Number | Matrix | Date Collected | Time Collected |
|---|---|---|---|---|---|
| Meadows 090330 | 0903234-1 | | WATER | 30-Mar-09 | 10:15 |



*Paragon Analytics*
LIMS Version: 6.254A

**Date Printed:** Tuesday, April 07, 2009

**Paragon Analytics**
A Division of DataChem Laboratories, Inc.

225 Commerce Drive Fort Collins, CO 80524
800-443-1511 or (970) 490-1511 (970) 490-1522 Fax

Accession Number (LAB ID) 0903234

**Chain-of-Custody** Date _____ Page 1 of 1

**Originator:** Retain pink copy!

**Project Name/No.:** _____ **Sampler(s):** C. Whitmore Turnaround (circle one) **Standard** or **Rush (Due** _____ **)** Dispose: **Date** 30 or **Return to Client**

**Report To:** Margaret Ash
**Phone:** 303-894-2100 x 110
**Fax:** 303-894-2109
**E-mail:** Margaret.ash@state.co.us
**Company:** Colorado Oil + Gas Conservation Comm.
**Address:** 1120 Lincoln St, Ste 801
Denver, CO 80203

Circle method (right); provide additional information as needed (comments).

| Sample ID | Date | Time * | Lab ID | Matrix | Preservative (indicate type... HCl, etc.) | No. of Containers | SW8260B -25 Vol + TICs (VOCs) | SW8021B BTEX (only) | SW8270C -(Vol + TICs) (SVOCs) | SW8081A OC Pesticides | SW8082 PCBs | SW8151A Herbicides | SW8330 Explosives TOC, | SW8260B 8270C 8081A 8151A TCLP Organics | SW1311 TCLP Metals | SW6010B 7470 SW1311 Hg | SW6010B 7470 7471 E200.7 Total Metals by ICP Hg | SW6010B 7470 E200.7 Dissolved Metals by ICP Hg | SW6020A E200.8 Total Metals by ICP/MS | SW6020A E200.8 Dissolved Metals by ICP/MS | SW7196A Alkaline Digest? Y / N Hexavalent Chromium Alkalinity, Total, Hardness, CO3 | SW9056 E300.0 Inorganic Anions (specify in comments) | Solids: Total E160.3 DS E160.1, TSS E160.2 | SW9040B SW9045C pH | SW8015B GRO DRO (circle one or both) TPH (Gasoline Range) | SW9310 E900.0 Gross Alpha / Beta | Pu / U / Am / Th / Cm / __ Actinides by Paragon SOP | E906.0 Tritium | SW9315 E903.0 Total Alpha-Emitting Radium | E903.1 Radium 226 | SW9320 E904.0 Radium 228 | D5811-00 Strontium 90 (Total RadioSr) | E901.1 Gamma Isotopes | SM7510Rn Radon 222 | SAR, CNC, | Anion/Cation Balance |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MEADOWS COM 350 | 3/30/09 | 1015 | 1 | W | None | 6 | X | X | X | | | | | | | | | X | | X | X | X | X | X | X | | | | | | | X | X | |
| | | ↓ | ↓ | | HCl | 3 | X | X | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | ↓ | ↓ | | $H_2SO_4$ | 1 | | | | | | | X | | | | | | | | | | | | | | | | | | | | | |
| DANIELS COM 35E | | 1130 | | W | None | 6 | X | X | X | | | | | | | | | X | | X | X | X | X | X | X | | | | | | | X | X | |
| | | | | | HCl | 3 | X | X | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | ↓ | ↓ | | $H_2SO_4$ | 1 | | | | | | | X | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

* **Time Zone:** EST CST (MST) PST **Matrix Key:** O = oil, S = soil, NS = non-soil solid, W = water, L = liquid, E = extract, F = filter

**Comments:** Filter + Preserve Metals upon receipt
Anions - Br, Cl, F, $NO_2$, $NO_3$, $SO_4$
200.7 - Ba, Be, B, Ca, Cr, Cu, Fe, Li, Mg, Mn, Ni, K, Na, Zn, Sr
200.8 - Sb, As, Cd, Pb, Mo, Se, Ag, Tl, U
Complaints: Meadows 2002669[illegible]
Daniels: 2002669[illegible]

Form 202r6.xls (6/16/06)

| Relinquished By: (1) | Relinquished By: (2) |
|---|---|
| Signature: [signature] | Signature _____ |
| Printed Name C. Whitmore | Printed Name _____ |
| Date 3/30/09 Time 13:00 | Date _____ Time _____ |
| Company Ward Petroleum | Company _____ |

| Received By: (1) | Received By: (2) |
|---|---|
| Signature [signature] | Signature _____ |
| Printed Name Lara J Orban | Printed Name _____ |
| Date 3/31/09 Time 1005 | Date _____ Time _____ |
| Company ALS Paragon | Company _____ |

CONDITION OF SAMPLE UPON RECEIPT FORM **Paragon Analytics**

Client: COGCC Workorder No: 0903234

Project Manager: AW Initials: LJO Date: 3/31/09

| | | | | |
|---|---|---|---|---|
| 1. | Does this project require any **special handling** in addition to standard Paragon procedures? | | YES | (NO) |
| 2. | Are custody **seals** on **shipping containers** intact? | NONE | (YES) | NO |
| 3. | Are Custody seals on **sample containers** intact? | (NONE) | YES | NO |
| 4. | Is there a **COC (Chain-of-Custody) present** or other representative documents? | | (YES) | NO |
| 5. | Are the **COC and bottle labels complete and legible**? | | (YES) | NO |
| 6. | Is the **COC in agreement** with samples received? (IDs, dates, times, no. of samples, no. of containers, matrix, requested analyses, etc.) | | (YES) | NO |
| 7. | Were **airbills / shipping documents** present and/or removable? | DROP OFF | (YES) | NO |
| 8. | Are all aqueous **samples requiring preservation preserved correctly?** (excluding volatiles) | N/A | (YES) | (NO) ★ |
| 9. | Are all aqueous **non-preserved samples pH 4-9**? | N/A | (YES) | NO |
| 10. | Is there **sufficient sample** for the requested analyses? | | (YES) | NO |
| 11. | Were all samples placed in the **proper containers** for the requested analyses? | | (YES) | NO |
| 12. | Are all samples within **holding times** for the requested analyses? | | (YES) | NO |
| 13. | Were all sample containers received **intact**? (not broken or leaking, etc.) | | (YES) | NO |
| 14. | Are all samples requiring **no** headspace (**VOC, GRO, RSK/MEE, Rx CN/S, radon**) headspace free? **Size of bubble**: ____ < green pea ____ > green pea | N/A | (YES) | NO |
| 15. | Do perchlorate LCMS-MS samples **have** headspace? (at least 1/3 of container required) | (N/A) | YES | NO |
| 16. | Were samples checked for and free from the presence of **residual chlorine?** (Applicable when PM has indicated samples are from a chlorinated water source; note if field preservation with sodium thiosulfate was not observed.) | (N/A) | YES | NO |
| 17. | Were the samples **shipped on ice**? | | (YES) | NO |
| 18. | Were cooler temperatures measured at 0.1-6.0°C? **IR gun used*:** (#2) #4 | RAD ONLY | (YES) | NO |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Cooler #: | 1 | | | | | | | | |
| Temperature (°C): | 4.2 | | | | | | | | |
| No. of custody seals on cooler: | 1 | | | | | | | | |
| DOT Survey/ Acceptance Information — External µR/hr reading: | 12 | | | | | | | | |
| Background µR/hr reading: | 11 | | | | | | | | |

Were external µR/hr readings ≤ two times background and within DOT acceptance criteria? (YES) / NO / NA (If no, see Form 008.)

**Additional Information:** PROVIDE DETAILS BELOW FOR A NO RESPONSE TO ANY QUESTION ABOVE, EXCEPT #1 AND #16.

★ The 500ml poly For metals analysis was received unpreserved. COC requests the bottle be filtered and preserved upon receipt.

If applicable, was the client contacted? YES / NO (NA) Contact: _____ Date/Time: _____

**Project Manager Signature / Date:** 3/31/09

*IR Gun #2: Oakton, SN 29922500201-0066 *IR Gun #4: Oakton, SN 2372220101-0002

# GC/MS Volatiles

## Method SW8260_25B

## Method Blank

**Lab Name:** ALS Paragon

**Work Order Number:** 0903234

**Client Name:** Colorado Oil & Gas Conservation Commission

**ClientProject ID:** Complaint 20026998

**Lab ID:** VL090402-3MB

**Sample Matrix:** WATER
**% Moisture:** N/A
**Date Collected:** N/A
**Date Extracted:** 02-Apr-09
**Date Analyzed:** 02-Apr-09
**Prep Method:** SW5030 Rev C

**Prep Batch:** VL090402-3
**QCBatchID:** VL090402-3-1
**Run ID:** VL090402-3A
**Cleanup:** NONE
**Basis:** N/A
**File Name:** C14178

**Sample Aliquot:** 10 ml
**Final Volume:** 10 ml
**Result Units:** UG/L
**Clean DF:** 1

| CASNO | Target Analyte | DF | Result | Reporting Limit | Result Qualifier | EPA Qualifier |
|---|---|---|---|---|---|---|
| 75-71-8 | DICHLORODIFLUOROMETHANE | 1 | 1 | 1 | U | |
| 74-87-3 | CHLOROMETHANE | 1 | 1 | 1 | U | |
| 75-01-4 | VINYL CHLORIDE | 1 | 1 | 1 | U | |
| 74-83-9 | BROMOMETHANE | 1 | 1 | 1 | U | |
| 75-00-3 | CHLOROETHANE | 1 | 1 | 1 | U | |
| 75-69-4 | TRICHLOROFLUOROMETHANE | 1 | 1 | 1 | U | |
| 75-35-4 | 1,1-DICHLOROETHENE | 1 | 1 | 1 | U | |
| 76-13-1 | 1,1,2-TRICHLORO-1,2,2-TRIFLUOROET | 1 | 1 | 1 | U | |
| 67-64-1 | ACETONE | 1 | 10 | 10 | U | |
| 74-88-4 | IODOMETHANE | 1 | 1 | 1 | U | |
| 75-15-0 | CARBON DISULFIDE | 1 | 1 | 1 | U | |
| 75-09-2 | METHYLENE CHLORIDE | 1 | 1 | 1 | U | |
| 156-60-5 | TRANS-1,2-DICHLOROETHENE | 1 | 1 | 1 | U | |
| 1634-04-4 | METHYL TERTIARY BUTYL ETHER | 1 | 1 | 1 | U | |
| 75-34-3 | 1,1-DICHLOROETHANE | 1 | 1 | 1 | U | |
| 108-05-4 | VINYL ACETATE | 1 | 2 | 2 | U | |
| 156-59-2 | CIS-1,2-DICHLOROETHENE | 1 | 1 | 1 | U | |
| 78-93-3 | 2-BUTANONE | 1 | 10 | 10 | U | |
| 74-97-5 | BROMOCHLOROMETHANE | 1 | 1 | 1 | U | |
| 67-66-3 | CHLOROFORM | 1 | 1 | 1 | U | |
| 71-55-6 | 1,1,1-TRICHLOROETHANE | 1 | 1 | 1 | U | |
| 594-20-7 | 2,2-DICHLOROPROPANE | 1 | 1 | 1 | U | |
| 56-23-5 | CARBON TETRACHLORIDE | 1 | 1 | 1 | U | |
| 563-58-6 | 1,1-DICHLOROPROPENE | 1 | 1 | 1 | U | |
| 107-06-2 | 1,2-DICHLOROETHANE | 1 | 1 | 1 | U | |
| 71-43-2 | BENZENE | 1 | 1 | 1 | U | |
| 79-01-6 | TRICHLOROETHENE | 1 | 1 | 1 | U | |

**Data Package ID:** *VL0903234-1*

# GC/MS Volatiles

## Method SW8260_25B

## Method Blank

**Lab Name:** ALS Paragon
**Work Order Number:** 0903234
**Client Name:** Colorado Oil & Gas Conservation Commission
**ClientProject ID:** Complaint 20026998

**Lab ID:** VL090402-3MB

**Sample Matrix:** WATER
**% Moisture:** N/A
**Date Collected:** N/A
**Date Extracted:** 02-Apr-09
**Date Analyzed:** 02-Apr-09
**Prep Method:** SW5030 Rev C

**Prep Batch:** VL090402-3
**QCBatchID:** VL090402-3-1
**Run ID:** VL090402-3A
**Cleanup:** NONE
**Basis:** N/A
**File Name:** C14178

**Sample Aliquot:** 10 ml
**Final Volume:** 10 ml
**Result Units:** UG/L
**Clean DF:** 1

| | | | | | | |
|---|---|---|---|---|---|---|
| 78-87-5 | 1,2-DICHLOROPROPANE | 1 | 1 | 1 | U | |
| 74-95-3 | DIBROMOMETHANE | 1 | 1 | 1 | U | |
| 75-27-4 | BROMODICHLOROMETHANE | 1 | 1 | 1 | U | |
| 10061-01-5 | CIS-1,3-DICHLOROPROPENE | 1 | 1 | 1 | U | |
| 108-10-1 | 4-METHYL-2-PENTANONE | 1 | 10 | 10 | U | |
| 108-88-3 | TOLUENE | 1 | 1 | 1 | U | |
| 10061-02-6 | TRANS-1,3-DICHLOROPROPENE | 1 | 1 | 1 | U | |
| 79-00-5 | 1,1,2-TRICHLOROETHANE | 1 | 1 | 1 | U | |
| 591-78-6 | 2-HEXANONE | 1 | 10 | 10 | U | |
| 127-18-4 | TETRACHLOROETHENE | 1 | 1 | 1 | U | |
| 142-28-9 | 1,3-DICHLOROPROPANE | 1 | 1 | 1 | U | |
| 124-48-1 | DIBROMOCHLOROMETHANE | 1 | 1 | 1 | U | |
| 106-93-4 | 1,2-DIBROMOETHANE | 1 | 1 | 1 | U | |
| 544-10-5 | 1-CHLOROHEXANE | 1 | 1 | 1 | U | |
| 108-90-7 | CHLOROBENZENE | 1 | 1 | 1 | U | |
| 630-20-6 | 1,1,1,2-TETRACHLOROETHANE | 1 | 1 | 1 | U | |
| 100-41-4 | ETHYLBENZENE | 1 | 1 | 1 | U | |
| 136777-61-2 | M+P-XYLENE | 1 | 1 | 1 | U | |
| 95-47-6 | O-XYLENE | 1 | 1 | 1 | U | |
| 100-42-5 | STYRENE | 1 | 1 | 1 | U | |
| 75-25-2 | BROMOFORM | 1 | 1 | 1 | U | |
| 98-82-8 | ISOPROPYLBENZENE | 1 | 1 | 1 | U | |
| 96-18-4 | 1,2,3-TRICHLOROPROPANE | 1 | 1 | 1 | U | |
| 79-34-5 | 1,1,2,2-TETRACHLOROETHANE | 1 | 1 | 1 | U | |
| 108-86-1 | BROMOBENZENE | 1 | 1 | 1 | U | |
| 103-65-1 | N-PROPYLBENZENE | 1 | 1 | 1 | U | |
| 95-49-8 | 2-CHLOROTOLUENE | 1 | 1 | 1 | U | |
| 108-67-8 | 1,3,5-TRIMETHYLBENZENE | 1 | 1 | 1 | U | |
| 106-43-4 | 4-CHLOROTOLUENE | 1 | 1 | 1 | U | |

**Data Package ID:** *VL0903234-1*

# GC/MS Volatiles

## Method SW8260_25B

## Method Blank

**Lab Name:** ALS Paragon
**Work Order Number:** 0903234
**Client Name:** Colorado Oil & Gas Conservation Commission
**ClientProject ID:** Complaint 20026998

**Lab ID:** VL090402-3MB

**Sample Matrix:** WATER
**% Moisture:** N/A
**Date Collected:** N/A
**Date Extracted:** 02-Apr-09
**Date Analyzed:** 02-Apr-09
**Prep Method:** SW5030 Rev C

**Prep Batch:** VL090402-3
**QCBatchID:** VL090402-3-1
**Run ID:** VL090402-3A
**Cleanup:** NONE
**Basis:** N/A
**File Name:** C14178

**Sample Aliquot:** 10 ml
**Final Volume:** 10 ml
**Result Units:** UG/L
**Clean DF:** 1

| | | | | | | |
|---|---|---|---|---|---|---|
| 98-06-6 | TERT-BUTYLBENZENE | 1 | 1 | 1 | U | |
| 95-63-6 | 1,2,4-TRIMETHYLBENZENE | 1 | 1 | 1 | U | |
| 135-98-8 | SEC-BUTYLBENZENE | 1 | 1 | 1 | U | |
| 541-73-1 | 1,3-DICHLOROBENZENE | 1 | 1 | 1 | U | |
| 99-87-6 | P-ISOPROPYLTOLUENE | 1 | 1 | 1 | U | |
| 106-46-7 | 1,4-DICHLOROBENZENE | 1 | 1 | 1 | U | |
| 104-51-8 | N-BUTYLBENZENE | 1 | 1 | 1 | U | |
| 95-50-1 | 1,2-DICHLOROBENZENE | 1 | 1 | 1 | U | |
| 96-12-8 | 1,2-DIBROMO-3-CHLOROPROPANE | 1 | 2 | 2 | U | |
| 120-82-1 | 1,2,4-TRICHLOROBENZENE | 1 | 1 | 1 | U | |
| 87-68-3 | HEXACHLOROBUTADIENE | 1 | 1 | 1 | U | |
| 91-20-3 | NAPHTHALENE | 1 | 1 | 1 | U | |
| 87-61-6 | 1,2,3-TRICHLOROBENZENE | 1 | 1 | 1 | U | |

## Surrogate Recovery

| CASNO | Surrogate Analyte | Result | Flag | Spike Amount | Percent Recovery | Control Limits |
|---|---|---|---|---|---|---|
| 460-00-4 | 4-BROMOFLUOROBENZENE | 26 | | 25 | 104 | 78 - 129 |
| 1868-53-7 | DIBROMOFLUOROMETHANE | 25.7 | | 25 | 103 | 80 - 124 |
| 2037-26-5 | TOLUENE-D8 | 24.8 | | 25 | 99 | 81 - 119 |

**Data Package ID:** *VL0903234-1*

# GC/MS Volatiles

## Method SW8260_25

## Tentatively Identified Compounds

**Lab Name:** ALS Paragon
**Work Order Number:** 0903234
**Client Name:** Colorado Oil & Gas Conservation Commission
**ClientProject ID:** Complaint 20026998

**Field ID:**
**Lab ID:** VL090402-3MB

**Sample Matrix:** WATER
**%Moisture:** N/A
**Date Collected:** N/A
**Date Extracted:** 02-Apr-09
**Date Analyzed:** 02-Apr-09

**Prep Batch:** VL090402-3
**QCBatchID:** VL090402-3-1
**Run ID:** VL090402-3A
**Cleanup:** NONE
**Basis:** As Received

**Sample Aliquot:** 10 ml
**Final Volume:** 10 ml
**Clean DF:** 1
**File Name:** C14178

| CASNO | Retention Time | Target Analyte | Dilution Factor | Result | Units | Qualifier |
|---|---|---|---|---|---|---|
| 128-37-0 | 14.15 | BUTYLATED HYDROXYTOLUENE | 1 | 1.2 | UG/L | J |

**Data Package ID:** *VL0903234-1*

# GC/MS Volatiles

## Method SW8260_25B

## Sample Results

**Lab Name:** ALS Paragon
**Work Order Number:** 0903234
**Client Name:** Colorado Oil & Gas Conservation Commission
**ClientProject ID:** Complaint 20026998

**Field ID:** Meadows 090330
**Lab ID:** 0903234-1

**Sample Matrix:** WATER
**% Moisture:** N/A
**Date Collected:** 30-Mar-09
**Date Extracted:** 02-Apr-09
**Date Analyzed:** 02-Apr-09
**Prep Method:** SW5030 Rev C

**Prep Batch:** VL090402-3
**QCBatchID:** VL090402-3-1
**Run ID:** VL090402-3A
**Cleanup:** NONE
**Basis:** As Received
**File Name:** C14190

**Sample Aliquot:** 10 ml
**Final Volume:** 10 ml
**Result Units:** UG/L
**Clean DF:** 1

| CASNO | Target Analyte | Dilution Factor | Result | Reporting Limit | Result Qualifier | EPA Qualifier |
|---|---|---|---|---|---|---|
| 75-71-8 | DICHLORODIFLUOROMETHANE | 1 | 1 | 1 | U | |
| 74-87-3 | CHLOROMETHANE | 1 | 1 | 1 | U | |
| 75-01-4 | VINYL CHLORIDE | 1 | 1 | 1 | U | |
| 74-83-9 | BROMOMETHANE | 1 | 1 | 1 | U | |
| 75-00-3 | CHLOROETHANE | 1 | 1 | 1 | U | |
| 75-69-4 | TRICHLOROFLUOROMETHANE | 1 | 1 | 1 | U | |
| 75-35-4 | 1,1-DICHLOROETHENE | 1 | 1 | 1 | U | |
| 76-13-1 | 1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE | 1 | 1 | 1 | U | |
| 67-64-1 | ACETONE | 1 | 10 | 10 | U | |
| 74-88-4 | IODOMETHANE | 1 | 0.17 | 1 | J | |
| 75-15-0 | CARBON DISULFIDE | 1 | 1 | 1 | U | |
| 75-09-2 | METHYLENE CHLORIDE | 1 | 1 | 1 | U | |
| 156-60-5 | TRANS-1,2-DICHLOROETHENE | 1 | 1 | 1 | U | |
| 1634-04-4 | METHYL TERTIARY BUTYL ETHER | 1 | 1 | 1 | U | |
| 75-34-3 | 1,1-DICHLOROETHANE | 1 | 1 | 1 | U | |
| 108-05-4 | VINYL ACETATE | 1 | 2 | 2 | U | |
| 156-59-2 | CIS-1,2-DICHLOROETHENE | 1 | 1 | 1 | U | |
| 78-93-3 | 2-BUTANONE | 1 | 10 | 10 | U | |
| 74-97-5 | BROMOCHLOROMETHANE | 1 | 1 | 1 | U | |
| 67-66-3 | CHLOROFORM | 1 | 1 | 1 | U | |
| 71-55-6 | 1,1,1-TRICHLOROETHANE | 1 | 1 | 1 | U | |
| 594-20-7 | 2,2-DICHLOROPROPANE | 1 | 1 | 1 | U | |
| 56-23-5 | CARBON TETRACHLORIDE | 1 | 1 | 1 | U | |
| 563-58-6 | 1,1-DICHLOROPROPENE | 1 | 1 | 1 | U | |
| 107-06-2 | 1,2-DICHLOROETHANE | 1 | 1 | 1 | U | |
| 71-43-2 | BENZENE | 1 | 1 | 1 | U | |
| 79-01-6 | TRICHLOROETHENE | 1 | 1 | 1 | U | |

**Data Package ID:** *VL0903234-1*

# GC/MS Volatiles

## Method SW8260_25B

## Sample Results

**Lab Name:** ALS Paragon
**Work Order Number:** 0903234
**Client Name:** Colorado Oil & Gas Conservation Commission
**ClientProject ID:** Complaint 20026998

**Field ID:** Meadows 090330
**Lab ID:** 0903234-1

**Sample Matrix:** WATER
**% Moisture:** N/A
**Date Collected:** 30-Mar-09
**Date Extracted:** 02-Apr-09
**Date Analyzed:** 02-Apr-09
**Prep Method:** SW5030 Rev C

**Prep Batch:** VL090402-3
**QCBatchID:** VL090402-3-1
**Run ID:** VL090402-3A
**Cleanup:** NONE
**Basis:** As Received
**File Name:** C14190

**Sample Aliquot:** 10 ml
**Final Volume:** 10 ml
**Result Units:** UG/L
**Clean DF:** 1

| | | | | | | |
|---|---|---|---|---|---|---|
| 78-87-5 | 1,2-DICHLOROPROPANE | 1 | 1 | 1 | U | |
| 74-95-3 | DIBROMOMETHANE | 1 | 1 | 1 | U | |
| 75-27-4 | BROMODICHLOROMETHANE | 1 | 1 | 1 | U | |
| 10061-01-5 | CIS-1,3-DICHLOROPROPENE | 1 | 1 | 1 | U | |
| 108-10-1 | 4-METHYL-2-PENTANONE | 1 | 10 | 10 | U | |
| 108-88-3 | TOLUENE | 1 | 1 | 1 | U | |
| 10061-02-6 | TRANS-1,3-DICHLOROPROPENE | 1 | 1 | 1 | U | |
| 79-00-5 | 1,1,2-TRICHLOROETHANE | 1 | 1 | 1 | U | |
| 591-78-6 | 2-HEXANONE | 1 | 10 | 10 | U | |
| 127-18-4 | TETRACHLOROETHENE | 1 | 1 | 1 | U | |
| 142-28-9 | 1,3-DICHLOROPROPANE | 1 | 1 | 1 | U | |
| 124-48-1 | DIBROMOCHLOROMETHANE | 1 | 1 | 1 | U | |
| 106-93-4 | 1,2-DIBROMOETHANE | 1 | 1 | 1 | U | |
| 544-10-5 | 1-CHLOROHEXANE | 1 | 1 | 1 | U | |
| 108-90-7 | CHLOROBENZENE | 1 | 1 | 1 | U | |
| 630-20-6 | 1,1,1,2-TETRACHLOROETHANE | 1 | 1 | 1 | U | |
| 100-41-4 | ETHYLBENZENE | 1 | 1 | 1 | U | |
| 136777-61-2 | M+P-XYLENE | 1 | 1 | 1 | U | |
| 95-47-6 | O-XYLENE | 1 | 1 | 1 | U | |
| 100-42-5 | STYRENE | 1 | 1 | 1 | U | |
| 75-25-2 | BROMOFORM | 1 | 1 | 1 | U | |
| 98-82-8 | ISOPROPYLBENZENE | 1 | 1 | 1 | U | |
| 96-18-4 | 1,2,3-TRICHLOROPROPANE | 1 | 1 | 1 | U | |
| 79-34-5 | 1,1,2,2-TETRACHLOROETHANE | 1 | 1 | 1 | U | |
| 108-86-1 | BROMOBENZENE | 1 | 1 | 1 | U | |
| 103-65-1 | N-PROPYLBENZENE | 1 | 1 | 1 | U | |
| 95-49-8 | 2-CHLOROTOLUENE | 1 | 1 | 1 | U | |
| 108-67-8 | 1,3,5-TRIMETHYLBENZENE | 1 | 1 | 1 | U | |
| 106-43-4 | 4-CHLOROTOLUENE | 1 | 1 | 1 | U | |

**Data Package ID:** *VL0903234-1*

# GC/MS Volatiles

## Method SW8260_25B

## Sample Results

**Lab Name:** ALS Paragon
**Work Order Number:** 0903234
**Client Name:** Colorado Oil & Gas Conservation Commission
**ClientProject ID:** Complaint 20026998

**Field ID:** Meadows 090330
**Lab ID:** 0903234-1

**Sample Matrix:** WATER
**% Moisture:** N/A
**Date Collected:** 30-Mar-09
**Date Extracted:** 02-Apr-09
**Date Analyzed:** 02-Apr-09
**Prep Method:** SW5030 Rev C

**Prep Batch:** VL090402-3
**QCBatchID:** VL090402-3-1
**Run ID:** VL090402-3A
**Cleanup:** NONE
**Basis:** As Received
**File Name:** C14190

**Sample Aliquot:** 10 ml
**Final Volume:** 10 ml
**Result Units:** UG/L
**Clean DF:** 1

| | | | | | | |
|---|---|---|---|---|---|---|
| 98-06-6 | TERT-BUTYLBENZENE | 1 | 1 | 1 | U | |
| 95-63-6 | 1,2,4-TRIMETHYLBENZENE | 1 | 1 | 1 | U | |
| 135-98-8 | SEC-BUTYLBENZENE | 1 | 1 | 1 | U | |
| 541-73-1 | 1,3-DICHLOROBENZENE | 1 | 1 | 1 | U | |
| 99-87-6 | P-ISOPROPYLTOLUENE | 1 | 1 | 1 | U | |
| 106-46-7 | 1,4-DICHLOROBENZENE | 1 | 1 | 1 | U | |
| 104-51-8 | N-BUTYLBENZENE | 1 | 1 | 1 | U | |
| 95-50-1 | 1,2-DICHLOROBENZENE | 1 | 1 | 1 | U | |
| 96-12-8 | 1,2-DIBROMO-3-CHLOROPROPANE | 1 | 2 | 2 | U | |
| 120-82-1 | 1,2,4-TRICHLOROBENZENE | 1 | 1 | 1 | U | |
| 87-68-3 | HEXACHLOROBUTADIENE | 1 | 1 | 1 | U | |
| 91-20-3 | NAPHTHALENE | 1 | 1 | 1 | U | |
| 87-61-6 | 1,2,3-TRICHLOROBENZENE | 1 | 1 | 1 | U | |

## Surrogate Recovery

| CASNO | Surrogate Analyte | Result | Flag | Spike Amount | Percent Recovery | Control Limits |
|---|---|---|---|---|---|---|
| 460-00-4 | 4-BROMOFLUOROBENZENE | 25.1 | | 25 | 101 | 78 - 129 |
| 1868-53-7 | DIBROMOFLUOROMETHANE | 26.5 | | 25 | 106 | 80 - 124 |
| 2037-26-5 | TOLUENE-D8 | 24.2 | | 25 | 97 | 81 - 119 |

**Data Package ID:** *VL0903234-1*

# GC/MS Volatiles

## Method SW8260_25

## Tentatively Identified Compounds

**Lab Name:** ALS Paragon
**Work Order Number:** 0903234
**Client Name:** Colorado Oil & Gas Conservation Commission
**ClientProject ID:** Complaint 20026998

**Field ID:** Meadows 090330
**Lab ID:** 0903234-1

**Sample Matrix:** WATER
**%Moisture:** N/A
**Date Collected:** 30-Mar-09
**Date Extracted:** 02-Apr-09
**Date Analyzed:** 02-Apr-09

**Prep Batch:** VL090402-3
**QCBatchID:** VL090402-3-1
**Run ID:** VL090402-3A
**Cleanup:** NONE
**Basis:** As Received

**Sample Aliquot:** 10 ml
**Final Volume:** 10 ml
**Clean DF:** 1
**File Name:** C14190

| CASNO | Retention Time | Target Analyte | Dilution Factor | Result | Units | Qualifier |
|---|---|---|---|---|---|---|
| 75-65-0 | 6.38 | tert-Butanol | 1 | 51 | UG/L | J |

**Data Package ID:** *VL0903234-1*

# GC/MS Volatiles

## Method SW8260_25B

## Laboratory Control Sample and Laboratory Control Sample Duplicate

**Lab Name:** ALS Paragon
**Work Order Number:** 0903234
**Client Name:** Colorado Oil & Gas Conservation Commission
**ClientProject ID:** Complaint 20026998

**Lab ID:** VL090402-3LCS

**Sample Matrix:** WATER
**% Moisture:** N/A
**Date Collected:** N/A
**Date Extracted:** 04/02/2009
**Date Analyzed:** 04/02/2009
**Prep Method:** SW5030C

**Prep Batch:** VL090402-3
**QCBatchID:** VL090402-3-1
**Run ID:** VL090402-3A
**Cleanup:** NONE
**Basis:** N/A
**File Name:** C14174

**Sample Aliquot:** 10 ml
**Final Volume:** 10 ml
**Result Units:** UG/L
**Clean DF:** 1

| CASNO | Target Analyte | Spike Added | LCS Result | Reporting Limit | Result Qualifier | LCS % Rec. | Control Limits |
|---|---|---|---|---|---|---|---|
| 75-71-8 | DICHLORODIFLUOROMETHANE | 10 | 9.25 | 1 | | 93 | 38 - 131% |
| 74-87-3 | CHLOROMETHANE | 10 | 9.81 | 1 | | 98 | 62 - 141% |
| 75-01-4 | VINYL CHLORIDE | 10 | 10.1 | 1 | | 101 | 77 - 124% |
| 74-83-9 | BROMOMETHANE | 10 | 8.84 | 1 | | 88 | 76 - 133% |
| 75-00-3 | CHLOROETHANE | 10 | 10 | 1 | | 100 | 81 - 130% |
| 75-69-4 | TRICHLOROFLUOROMETHANE | 10 | 10.5 | 1 | | 105 | 84 - 146% |
| 75-35-4 | 1,1-DICHLOROETHENE | 10 | 10.7 | 1 | | 107 | 75 - 126% |
| 76-13-1 | 1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHA | 10 | 11.5 | 1 | | 115 | 71 - 144% |
| 67-64-1 | ACETONE | 40 | 35.6 | 10 | | 89 | 50 - 150% |
| 74-88-4 | IODOMETHANE | 10 | 9.5 | 1 | | 95 | 76 - 116% |
| 75-15-0 | CARBON DISULFIDE | 10 | 10.6 | 1 | | 106 | 68 - 129% |
| 75-09-2 | METHYLENE CHLORIDE | 10 | 9.72 | 1 | | 97 | 22 - 146% |
| 156-60-5 | TRANS-1,2-DICHLOROETHENE | 10 | 11 | 1 | | 110 | 76 - 135% |
| 1634-04-4 | METHYL TERTIARY BUTYL ETHER | 20 | 17.7 | 1 | | 89 | 75 - 125% |
| 75-34-3 | 1,1-DICHLOROETHANE | 10 | 10.7 | 1 | | 107 | 77 - 131% |
| 108-05-4 | VINYL ACETATE | 10 | 11.7 | 2 | | 117 | 56 - 151% |
| 156-59-2 | CIS-1,2-DICHLOROETHENE | 10 | 10.6 | 1 | | 106 | 81 - 121% |
| 78-93-3 | 2-BUTANONE | 40 | 35.4 | 10 | | 88 | 50 - 150% |
| 74-97-5 | BROMOCHLOROMETHANE | 10 | 10 | 1 | | 100 | 85 - 126% |
| 67-66-3 | CHLOROFORM | 10 | 10.5 | 1 | | 105 | 84 - 125% |
| 71-55-6 | 1,1,1-TRICHLOROETHANE | 10 | 10.7 | 1 | | 107 | 82 - 129% |
| 594-20-7 | 2,2-DICHLOROPROPANE | 10 | 12.2 | 1 | | 122 | 79 - 130% |
| 56-23-5 | CARBON TETRACHLORIDE | 10 | 10.9 | 1 | | 109 | 83 - 135% |
| 563-58-6 | 1,1-DICHLOROPROPENE | 10 | 11 | 1 | | 110 | 85 - 127% |
| 107-06-2 | 1,2-DICHLOROETHANE | 10 | 9.74 | 1 | | 97 | 84 - 126% |
| 71-43-2 | BENZENE | 10 | 10.6 | 1 | | 106 | 82 - 122% |

**Data Package ID:** *VL0903234-1*

# GC/MS Volatiles

## Method SW8260_25B

## Laboratory Control Sample and Laboratory Control Sample Duplicate

**Lab Name:** ALS Paragon
**Work Order Number:** 0903234
**Client Name:** Colorado Oil & Gas Conservation Commission
**ClientProject ID:** Complaint 20026998

**Lab ID:** VL090402-3LCS

**Sample Matrix:** WATER
**% Moisture:** N/A
**Date Collected:** N/A
**Date Extracted:** 04/02/2009
**Date Analyzed:** 04/02/2009
**Prep Method:** SW5030C

**Prep Batch:** VL090402-3
**QCBatchID:** VL090402-3-1
**Run ID:** VL090402-3A
**Cleanup:** NONE
**Basis:** N/A
**File Name:** C14174

**Sample Aliquot:** 10 ml
**Final Volume:** 10 ml
**Result Units:** UG/L
**Clean DF:** 1

| CASNO | Target Analyte | Spike Added | LCS Result | Reporting Limit | Result Qualifier | LCS % Rec. | Control Limits |
|---|---|---|---|---|---|---|---|
| 79-01-6 | TRICHLOROETHENE | 10 | 10.3 | 1 | | 103 | 82 - 121% |
| 78-87-5 | 1,2-DICHLOROPROPANE | 10 | 10.4 | 1 | | 104 | 81 - 121% |
| 74-95-3 | DIBROMOMETHANE | 10 | 9.73 | 1 | | 97 | 81 - 125% |
| 75-27-4 | BROMODICHLOROMETHANE | 10 | 10.6 | 1 | | 106 | 82 - 120% |
| 10061-01-5 | CIS-1,3-DICHLOROPROPENE | 10 | 10.5 | 1 | | 105 | 79 - 120% |
| 108-10-1 | 4-METHYL-2-PENTANONE | 40 | 35.4 | 10 | | 88 | 50 - 150% |
| 108-88-3 | TOLUENE | 10 | 10.5 | 1 | | 105 | 83 - 121% |
| 10061-02-6 | TRANS-1,3-DICHLOROPROPENE | 10 | 10 | 1 | | 100 | 78 - 113% |
| 79-00-5 | 1,1,2-TRICHLOROETHANE | 10 | 9.54 | 1 | | 95 | 82 - 122% |
| 591-78-6 | 2-HEXANONE | 40 | 34.8 | 10 | | 87 | 50 - 150% |
| 127-18-4 | TETRACHLOROETHENE | 10 | 10.7 | 1 | | 107 | 79 - 136% |
| 142-28-9 | 1,3-DICHLOROPROPANE | 10 | 9.44 | 1 | | 94 | 80 - 126% |
| 124-48-1 | DIBROMOCHLOROMETHANE | 10 | 9.71 | 1 | | 97 | 80 - 123% |
| 106-93-4 | 1,2-DIBROMOETHANE | 10 | 9.23 | 1 | | 92 | 85 - 124% |
| 544-10-5 | 1-CHLOROHEXANE | 10 | 11 | 1 | | 110 | 77 - 135% |
| 108-90-7 | CHLOROBENZENE | 10 | 10.4 | 1 | | 104 | 82 - 121% |
| 630-20-6 | 1,1,1,2-TETRACHLOROETHANE | 10 | 10.3 | 1 | | 103 | 85 - 128% |
| 100-41-4 | ETHYLBENZENE | 10 | 10.7 | 1 | | 107 | 83 - 126% |
| 136777-61- | M+P-XYLENE | 20 | 21.4 | 1 | | 107 | 82 - 129% |
| 95-47-6 | O-XYLENE | 10 | 10.9 | 1 | | 109 | 87 - 132% |
| 100-42-5 | STYRENE | 10 | 10.5 | 1 | | 105 | 82 - 123% |
| 75-25-2 | BROMOFORM | 10 | 9.32 | 1 | | 93 | 79 - 118% |
| 98-82-8 | ISOPROPYLBENZENE | 10 | 10.8 | 1 | | 108 | 75 - 132% |
| 96-18-4 | 1,2,3-TRICHLOROPROPANE | 10 | 9.88 | 1 | | 99 | 77 - 128% |
| 79-34-5 | 1,1,2,2-TETRACHLOROETHANE | 10 | 10.4 | 1 | | 104 | 74 - 130% |
| 108-86-1 | BROMOBENZENE | 10 | 10.6 | 1 | | 106 | 78 - 124% |
| 103-65-1 | N-PROPYLBENZENE | 10 | 11.4 | 1 | | 114 | 75 - 134% |

**Data Package ID:** *VL0903234-1*

# GC/MS Volatiles

## Method SW8260_25B

## Laboratory Control Sample and Laboratory Control Sample Duplicate

**Lab Name:** ALS Paragon
**Work Order Number:** 0903234
**Client Name:** Colorado Oil & Gas Conservation Commission
**ClientProject ID:** Complaint 20026998

**Lab ID:** VL090402-3LCS

**Sample Matrix:** WATER
**% Moisture:** N/A
**Date Collected:** N/A
**Date Extracted:** 04/02/2009
**Date Analyzed:** 04/02/2009
**Prep Method:** SW5030C

**Prep Batch:** VL090402-3
**QCBatchID:** VL090402-3-1
**Run ID:** VL090402-3A
**Cleanup:** NONE
**Basis:** N/A
**File Name:** C14174

**Sample Aliquot:** 10 ml
**Final Volume:** 10 ml
**Result Units:** UG/L
**Clean DF:** 1

| CASNO | Target Analyte | Spike Added | LCS Result | Reporting Limit | Result Qualifier | LCS % Rec. | Control Limits |
|---|---|---|---|---|---|---|---|
| 95-49-8 | 2-CHLOROTOLUENE | 10 | 11.4 | 1 | | 114 | 77 - 128% |
| 108-67-8 | 1,3,5-TRIMETHYLBENZENE | 10 | 11.3 | 1 | | 113 | 77 - 131% |
| 106-43-4 | 4-CHLOROTOLUENE | 10 | 11.2 | 1 | | 112 | 79 - 128% |
| 98-06-6 | TERT-BUTYLBENZENE | 10 | 11.4 | 1 | | 114 | 76 - 134% |
| 95-63-6 | 1,2,4-TRIMETHYLBENZENE | 10 | 10.9 | 1 | | 109 | 80 - 138% |
| 135-98-8 | SEC-BUTYLBENZENE | 10 | 11.2 | 1 | | 112 | 73 - 135% |
| 541-73-1 | 1,3-DICHLOROBENZENE | 10 | 10.7 | 1 | | 107 | 79 - 126% |
| 99-87-6 | P-ISOPROPYLTOLUENE | 10 | 11.1 | 1 | | 111 | 72 - 132% |
| 106-46-7 | 1,4-DICHLOROBENZENE | 10 | 10.4 | 1 | | 104 | 81 - 125% |
| 104-51-8 | N-BUTYLBENZENE | 10 | 11.6 | 1 | | 116 | 77 - 141% |
| 95-50-1 | 1,2-DICHLOROBENZENE | 10 | 10.4 | 1 | | 104 | 82 - 128% |
| 96-12-8 | 1,2-DIBROMO-3-CHLOROPROPANE | 10 | 9.35 | 2 | | 94 | 64 - 134% |
| 120-82-1 | 1,2,4-TRICHLOROBENZENE | 10 | 10.2 | 1 | | 102 | 80 - 128% |
| 87-68-3 | HEXACHLOROBUTADIENE | 10 | 11.5 | 1 | | 115 | 70 - 136% |
| 91-20-3 | NAPHTHALENE | 10 | 9.74 | 1 | | 97 | 78 - 125% |
| 87-61-6 | 1,2,3-TRICHLOROBENZENE | 10 | 9.69 | 1 | | 97 | 79 - 131% |

**Data Package ID:** *VL0903234-1*

# GC/MS Volatiles

## Method SW8260_25B

## Laboratory Control Sample and Laboratory Control Sample Duplicate

**Lab Name:** ALS Paragon
**Work Order Number:** 0903234
**Client Name:** Colorado Oil & Gas Conservation Commission
**ClientProject ID:** Complaint 20026998

**Lab ID:** VL090402-3LCSD

**Sample Matrix:** WATER
**% Moisture:** N/A
**Date Collected:** N/A
**Date Extracted:** 04/02/2009
**Date Analyzed:** 04/02/2009
**Prep Method:** SW5030C

**Prep Batch:** VL090402-3
**QCBatchID:** VL090402-3-1
**Run ID:** VL090402-3A
**Cleanup:** NONE
**Basis:** N/A
**File Name:** C14175

**Sample Aliquot:** 10 ml
**Final Volume:** 10 ml
**Result Units:** UG/L
**Clean DF:** 1

| CASNO | Target Analyte | Spike Added | LCSD Result | Reporting Limit | Result Qualifier | LCSD % Rec. | RPD Limit | RPD |
|---|---|---|---|---|---|---|---|---|
| 75-71-8 | DICHLORODIFLUOROMETHANE | 10 | 8.95 | 1 | | 89 | 20 | 3 |
| 74-87-3 | CHLOROMETHANE | 10 | 9.64 | 1 | | 96 | 20 | 2 |
| 75-01-4 | VINYL CHLORIDE | 10 | 9.74 | 1 | | 97 | 20 | 4 |
| 74-83-9 | BROMOMETHANE | 10 | 9.11 | 1 | | 91 | 20 | 3 |
| 75-00-3 | CHLOROETHANE | 10 | 9.49 | 1 | | 95 | 20 | 5 |
| 75-69-4 | TRICHLOROFLUOROMETHANE | 10 | 10.1 | 1 | | 101 | 20 | 3 |
| 75-35-4 | 1,1-DICHLOROETHENE | 10 | 10.2 | 1 | | 102 | 20 | 4 |
| 76-13-1 | 1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHA | 10 | 10.9 | 1 | | 109 | 20 | 5 |
| 67-64-1 | ACETONE | 40 | 34.7 | 10 | | 87 | 30 | 3 |
| 74-88-4 | IODOMETHANE | 10 | 9.19 | 1 | | 92 | 20 | 3 |
| 75-15-0 | CARBON DISULFIDE | 10 | 10.2 | 1 | | 102 | 20 | 4 |
| 75-09-2 | METHYLENE CHLORIDE | 10 | 9.55 | 1 | | 96 | 20 | 2 |
| 156-60-5 | TRANS-1,2-DICHLOROETHENE | 10 | 10.6 | 1 | | 106 | 20 | 3 |
| 1634-04-4 | METHYL TERTIARY BUTYL ETHER | 20 | 18.1 | 1 | | 91 | 20 | 2 |
| 75-34-3 | 1,1-DICHLOROETHANE | 10 | 10.3 | 1 | | 103 | 20 | 4 |
| 108-05-4 | VINYL ACETATE | 10 | 10.6 | 2 | | 106 | 20 | 9 |
| 156-59-2 | CIS-1,2-DICHLOROETHENE | 10 | 10.5 | 1 | | 105 | 20 | 1 |
| 78-93-3 | 2-BUTANONE | 40 | 36.8 | 10 | | 92 | 30 | 4 |
| 74-97-5 | BROMOCHLOROMETHANE | 10 | 10.4 | 1 | | 104 | 20 | 4 |
| 67-66-3 | CHLOROFORM | 10 | 10.4 | 1 | | 104 | 20 | 1 |
| 71-55-6 | 1,1,1-TRICHLOROETHANE | 10 | 10.5 | 1 | | 105 | 20 | 1 |
| 594-20-7 | 2,2-DICHLOROPROPANE | 10 | 11.7 | 1 | | 117 | 20 | 4 |
| 56-23-5 | CARBON TETRACHLORIDE | 10 | 10.4 | 1 | | 104 | 20 | 4 |
| 563-58-6 | 1,1-DICHLOROPROPENE | 10 | 10.5 | 1 | | 105 | 20 | 4 |
| 107-06-2 | 1,2-DICHLOROETHANE | 10 | 9.88 | 1 | | 99 | 20 | 1 |
| 71-43-2 | BENZENE | 10 | 10.2 | 1 | | 102 | 20 | 3 |
| 79-01-6 | TRICHLOROETHENE | 10 | 10.3 | 1 | | 103 | 20 | 0 |

**Data Package ID:** *VL0903234-1*

# GC/MS Volatiles

## Method SW8260_25B

## Laboratory Control Sample and Laboratory Control Sample Duplicate

**Lab Name:** ALS Paragon
**Work Order Number:** 0903234
**Client Name:** Colorado Oil & Gas Conservation Commission
**ClientProject ID:** Complaint 20026998

**Lab ID:** VL090402-3LCSD

**Sample Matrix:** WATER
**% Moisture:** N/A
**Date Collected:** N/A
**Date Extracted:** 04/02/2009
**Date Analyzed:** 04/02/2009
**Prep Method:** SW5030C

**Prep Batch:** VL090402-3
**QCBatchID:** VL090402-3-1
**Run ID:** VL090402-3A
**Cleanup:** NONE
**Basis:** N/A
**File Name:** C14175

**Sample Aliquot:** 10 ml
**Final Volume:** 10 ml
**Result Units:** UG/L
**Clean DF:** 1

| CASNO | Target Analyte | Spike Added | LCSD Result | Reporting Limit | Result Qualifier | LCSD % Rec. | RPD Limit | RPD |
|---|---|---|---|---|---|---|---|---|
| 78-87-5 | 1,2-DICHLOROPROPANE | 10 | 10.3 | 1 | | 103 | 20 | 1 |
| 74-95-3 | DIBROMOMETHANE | 10 | 9.57 | 1 | | 96 | 20 | 2 |
| 75-27-4 | BROMODICHLOROMETHANE | 10 | 10.5 | 1 | | 105 | 20 | 1 |
| 10061-01-5 | CIS-1,3-DICHLOROPROPENE | 10 | 10.6 | 1 | | 106 | 20 | 1 |
| 108-10-1 | 4-METHYL-2-PENTANONE | 40 | 36.5 | 10 | | 91 | 30 | 3 |
| 108-88-3 | TOLUENE | 10 | 10.3 | 1 | | 103 | 20 | 2 |
| 10061-02-6 | TRANS-1,3-DICHLOROPROPENE | 10 | 10.4 | 1 | | 104 | 20 | 4 |
| 79-00-5 | 1,1,2-TRICHLOROETHANE | 10 | 9.95 | 1 | | 99 | 20 | 4 |
| 591-78-6 | 2-HEXANONE | 40 | 36.5 | 10 | | 91 | 30 | 5 |
| 127-18-4 | TETRACHLOROETHENE | 10 | 10.6 | 1 | | 106 | 20 | 1 |
| 142-28-9 | 1,3-DICHLOROPROPANE | 10 | 9.77 | 1 | | 98 | 20 | 3 |
| 124-48-1 | DIBROMOCHLOROMETHANE | 10 | 9.99 | 1 | | 100 | 20 | 3 |
| 106-93-4 | 1,2-DIBROMOETHANE | 10 | 9.7 | 1 | | 97 | 20 | 5 |
| 544-10-5 | 1-CHLOROHEXANE | 10 | 10.8 | 1 | | 108 | 20 | 2 |
| 108-90-7 | CHLOROBENZENE | 10 | 10.4 | 1 | | 104 | 20 | 0 |
| 630-20-6 | 1,1,1,2-TETRACHLOROETHANE | 10 | 10.3 | 1 | | 103 | 20 | 0 |
| 100-41-4 | ETHYLBENZENE | 10 | 10.6 | 1 | | 106 | 20 | 1 |
| 136777-61- | M+P-XYLENE | 20 | 20.8 | 1 | | 104 | 20 | 3 |
| 95-47-6 | O-XYLENE | 10 | 10.8 | 1 | | 108 | 20 | 1 |
| 100-42-5 | STYRENE | 10 | 10.6 | 1 | | 106 | 20 | 1 |
| 75-25-2 | BROMOFORM | 10 | 9.66 | 1 | | 97 | 20 | 4 |
| 98-82-8 | ISOPROPYLBENZENE | 10 | 10.8 | 1 | | 108 | 20 | 0 |
| 96-18-4 | 1,2,3-TRICHLOROPROPANE | 10 | 9.54 | 1 | | 95 | 20 | 4 |
| 79-34-5 | 1,1,2,2-TETRACHLOROETHANE | 10 | 10.5 | 1 | | 105 | 20 | 1 |
| 108-86-1 | BROMOBENZENE | 10 | 10.2 | 1 | | 102 | 20 | 3 |
| 103-65-1 | N-PROPYLBENZENE | 10 | 10.8 | 1 | | 108 | 20 | 5 |
| 95-49-8 | 2-CHLOROTOLUENE | 10 | 10.9 | 1 | | 109 | 20 | 5 |

**Data Package ID:** *VL0903234-1*

# GC/MS Volatiles

## Method SW8260_25B

## Laboratory Control Sample and Laboratory Control Sample Duplicate

**Lab Name:** ALS Paragon
**Work Order Number:** 0903234
**Client Name:** Colorado Oil & Gas Conservation Commission
**ClientProject ID:** Complaint 20026998

**Lab ID:** VL090402-3LCSD

**Sample Matrix:** WATER
**% Moisture:** N/A
**Date Collected:** N/A
**Date Extracted:** 04/02/2009
**Date Analyzed:** 04/02/2009
**Prep Method:** SW5030C

**Prep Batch:** VL090402-3
**QCBatchID:** VL090402-3-1
**Run ID:** VL090402-3A
**Cleanup:** NONE
**Basis:** N/A
**File Name:** C14175

**Sample Aliquot:** 10 ml
**Final Volume:** 10 ml
**Result Units:** UG/L
**Clean DF:** 1

| CASNO | Target Analyte | Spike Added | LCSD Result | Reporting Limit | Result Qualifier | LCSD % Rec. | RPD Limit | RPD |
|---|---|---|---|---|---|---|---|---|
| 108-67-8 | 1,3,5-TRIMETHYLBENZENE | 10 | 10.7 | 1 | | 107 | 20 | 5 |
| 106-43-4 | 4-CHLOROTOLUENE | 10 | 10.4 | 1 | | 104 | 20 | 7 |
| 98-06-6 | TERT-BUTYLBENZENE | 10 | 10.8 | 1 | | 108 | 20 | 5 |
| 95-63-6 | 1,2,4-TRIMETHYLBENZENE | 10 | 10.5 | 1 | | 105 | 20 | 4 |
| 135-98-8 | SEC-BUTYLBENZENE | 10 | 10.6 | 1 | | 106 | 20 | 6 |
| 541-73-1 | 1,3-DICHLOROBENZENE | 10 | 10.3 | 1 | | 103 | 20 | 4 |
| 99-87-6 | P-ISOPROPYLTOLUENE | 10 | 10.7 | 1 | | 107 | 20 | 4 |
| 106-46-7 | 1,4-DICHLOROBENZENE | 10 | 10 | 1 | | 100 | 20 | 4 |
| 104-51-8 | N-BUTYLBENZENE | 10 | 10.9 | 1 | | 109 | 20 | 6 |
| 95-50-1 | 1,2-DICHLOROBENZENE | 10 | 10.4 | 1 | | 104 | 20 | 1 |
| 96-12-8 | 1,2-DIBROMO-3-CHLOROPROPANE | 10 | 9.02 | 2 | | 90 | 20 | 4 |
| 120-82-1 | 1,2,4-TRICHLOROBENZENE | 10 | 10.2 | 1 | | 102 | 20 | 0 |
| 87-68-3 | HEXACHLOROBUTADIENE | 10 | 10.7 | 1 | | 107 | 20 | 7 |
| 91-20-3 | NAPHTHALENE | 10 | 10.2 | 1 | | 102 | 20 | 5 |
| 87-61-6 | 1,2,3-TRICHLOROBENZENE | 10 | 10 | 1 | | 100 | 20 | 3 |

## Surrogate Recovery LCS/LCSD

| CASNO | Target Analyte | Spike Added | LCS % Rec. | LCS Flag | LCSD % Rec. | LCSD Flag | Control Limits |
|---|---|---|---|---|---|---|---|
| 460-00-4 | 4-BROMOFLUOROBENZENE | 25 | 105 | | 101 | | 78 - 129 |
| 1868-53-7 | DIBROMOFLUOROMETHANE | 25 | 100 | | 101 | | 80 - 124 |
| 2037-26-5 | TOLUENE-D8 | 25 | 99 | | 100 | | 81 - 119 |

**Data Package ID:** *VL0903234-1*

Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\040209\C14178.D Vial: 8
Acq On : 2 Apr 2009 10:31 Operator: TWK-sop525r12
Sample : VL090402-3MB Inst : CSS Instr
Misc : 10ml un-heated water Multiplr: 1.00
MS Integration Params: ettics.p
Quant Time: Apr 2 10:49 2009 Quant Results File: 032209W.RES

Quant Method : C:\HPCHEM\1\METHODS\032209W.M (RTE Integrator)
Title : GC/MS Volatiles (S.O.P. 525)
Last Update : Thu Apr 02 10:38:42 2009
Response via : Initial Calibration
DataAcq Meth : 032209W

| Internal Standards | R.T. | QIon | Response | Conc | Units | Dev(Min) |
|---|---|---|---|---|---|---|
| 1) Fluorobenzene | 9.33 | 96 | 1655934 | 25.00 | ppb | 0.00 |
| 53) Chlorobenzene-d5 | 12.47 | 82 | 656638 | 25.00 | ppb | 0.00 |
| 73) 1,4-Dichlorobenzene-d4 | 14.48 | 152 | 465185 | 25.00 | ppb | 0.00 |
| **System Monitoring Compounds** | | | | | | |
| 34) Dibromofluoromethane | 8.52 | 113 | 510005 | 25.69 | ppb | 0.00 |
| Spiked Amount 25.000 | Range 80 - 124 | | Recovery = | 102.76% | | |
| 39) 1,2-dichloroethane-d4 | 8.99 | 65 | 377920 | 24.69 | ppb | 0.00 |
| Spiked Amount 25.000 | Range 62 - 139 | | Recovery = | 98.76% | | |
| 54) Toluene-d8 | 11.02 | 98 | 1696571 | 24.81 | ppb | 0.00 |
| Spiked Amount 25.000 | Range 81 - 119 | | Recovery = | 99.24% | | |
| 74) 4-Bromofluorobenzene | 13.51 | 95 | 630557 | 26.00 | ppb | 0.00 |
| Spiked Amount 25.000 | Range 78 - 129 | | Recovery = | 104.00% | | |

Target Compounds Qvalue

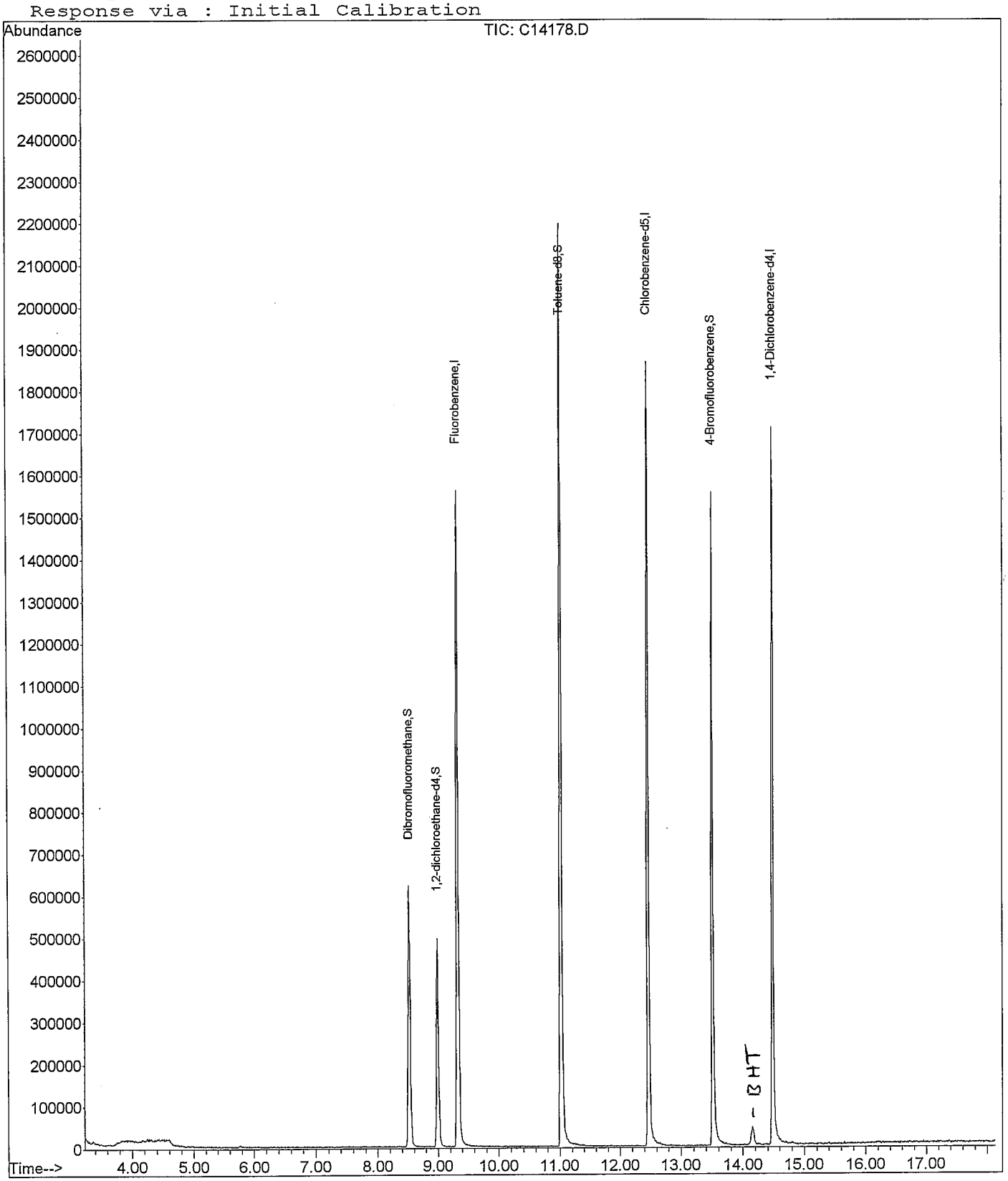
ar 4/3/09

(#) = qualifier out of range (m) = manual integration
C14178.D 032209W.M Thu Apr 02 10:49:54 2009 Page 1

Quantitation Report

Data File : C:\HPCHEM\1\DATA\040209\C14178.D Vial: 8
Acq On : 2 Apr 2009 10:31 Operator: TWK-sop525r12
Sample : VL090402-3MB Inst : CSS Instr
Misc : 10ml un-heated water Multiplr: 1.00
MS Integration Params: ettics.p
Quant Time: Apr 2 10:49 2009 Quant Results File: 032209W.RES

Method : C:\HPCHEM\1\METHODS\032209W.M (RTE Integrator)
Title : GC/MS Volatiles (S.O.P. 525)
Last Update : Thu Apr 02 10:38:42 2009
Response via : Initial Calibration



Library Search Compound Report

Data File : C:\HPCHEM\1\DATA\040209\C14178.D  Vial: 8
Acq On : 2 Apr 2009 10:31  Operator: TWK-sop525r12
Sample : VL090402-3MB  Inst : CSS Instr
Misc : 10ml un-heated water  Multiplr: 1.00
MS Integration Params: ettics.p

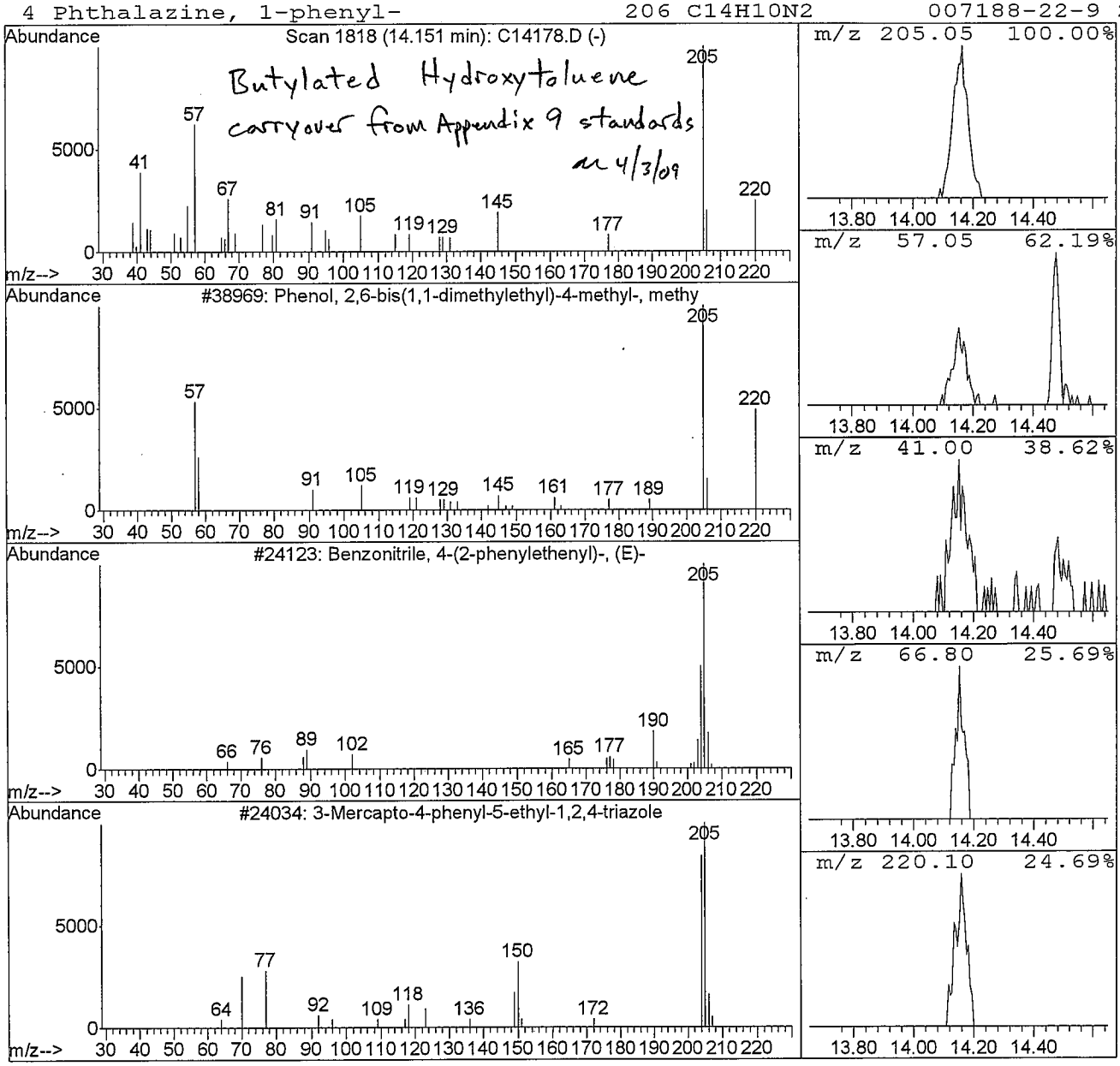
Quant Method : C:\HPCHEM\1\METHODS\032209W.M (RTE Integrator)
Title : GC/MS Volatiles (S.O.P. 525)
Library : C:\DATABASE\NBS75K.L

**********

Peak Number 1 Phenol, 2,6-bis(1,1-dimethylet Concentration Rank 1

| R.T. | EstConc | Area | Relative to ISTD | R.T. |
|---|---|---|---|---|
| 14.15 | 1.21 ppb | 149796 | 1,4-Dichlorobenzene-d4 | 14.48 |

| Hit# of 5 | Tentative ID | MW | MolForm | CAS# | Qual |
|---|---|---|---|---|---|
| 1 | Phenol, 2,6-bis(1,1-dimethylethyl)- | 277 | C17H27NO2 | 001918-11-2 | 37 |
| 2 | Benzonitrile, 4-(2-phenylethenyl)-, | 205 | C15H11N | 013041-79-7 | 37 |
| 3 | 3-Mercapto-4-phenyl-5-ethyl-1,2,4-t | 205 | C10H11N3S | 029448-76-8 | 32 |
| 4 | Phthalazine, 1-phenyl- | 206 | C14H10N2 | 007188-22-9 | 23 |



Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\040209\C14190.D Vial: 20
Acq On : 2 Apr 2009 15:12 Operator: TWK-sop525r12
Sample : 0903234-1 Inst : CSS Instr
Misc : 10ml un-heated water Multiplr: 1.00
MS Integration Params: ettics.p
Quant Time: Apr 2 15:32 2009 Quant Results File: 032209W.RES

Quant Method : C:\HPCHEM\1\METHODS\032209W.M (RTE Integrator)
Title : GC/MS Volatiles (S.O.P. 525)
Last Update : Thu Apr 02 10:38:42 2009
Response via : Initial Calibration
DataAcq Meth : 032209W

| Internal Standards | R.T. | QIon | Response | Conc | Units | Dev(Min) |
|---|---|---|---|---|---|---|
| 1) Fluorobenzene | 9.34 | 96 | 1618093 | 25.00 | ppb | 0.01 |
| 53) Chlorobenzene-d5 | 12.47 | 82 | 648956 | 25.00 | ppb | 0.01 |
| 73) 1,4-Dichlorobenzene-d4 | 14.48 | 152 | 459120 | 25.00 | ppb | 0.00 |
| **System Monitoring Compounds** | | | | | | |
| 34) Dibromofluoromethane | 8.52 | 113 | 514619 | 26.53 | ppb | 0.00 |
| Spiked Amount 25.000 | Range 80 - 124 | | Recovery = 106.12% | | | |
| 39) 1,2-dichloroethane-d4 | 9.00 | 65 | 366053 | 24.47 | ppb | 0.01 |
| Spiked Amount 25.000 | Range 62 - 139 | | Recovery = 97.88% | | | |
| 54) Toluene-d8 | 11.02 | 98 | 1633211 | 24.17 | ppb | 0.00 |
| Spiked Amount 25.000 | Range 81 - 119 | | Recovery = 96.68% | | | |
| 74) 4-Bromofluorobenzene | 13.51 | 95 | 601404 | 25.13 | ppb | 0.00 |
| Spiked Amount 25.000 | Range 78 - 129 | | Recovery = 100.52% | | | |
| **Target Compounds** | | | | | | Qvalue |
| 13) Iodomethane | 5.93 | 142 | 5512 | 0.17 | ppb | # 77 |
| 18) tert-Butanol | 6.38 | 59 | 34389 | 50.69 | ppb | # 87 |

MTC CRL

report as TIC for COGCC

4/3/09

(#) = qualifier out of range (m) = manual integration
C14190.D 032209W.M Thu Apr 02 15:32:27 2009 Page 1

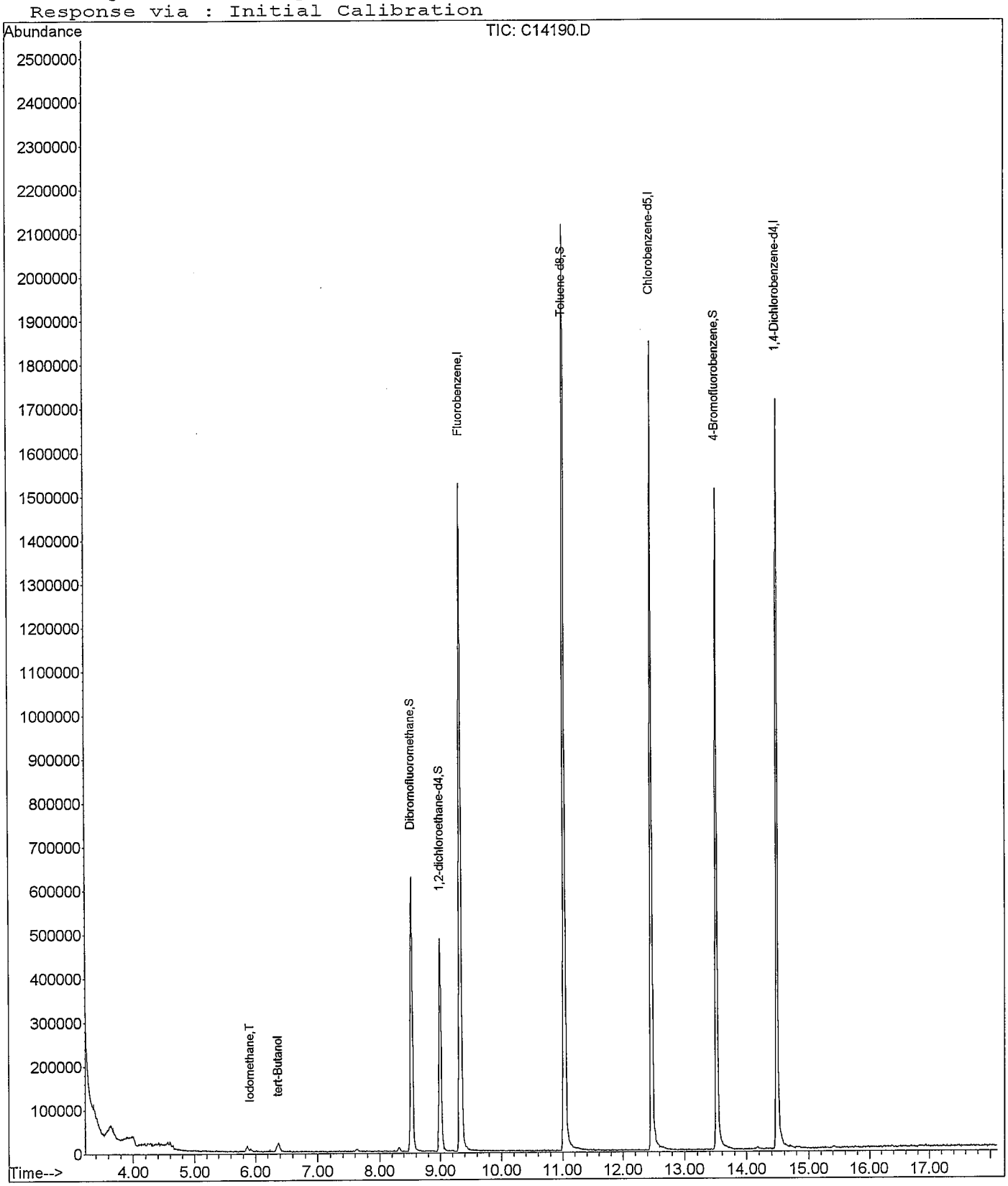
Quantitation Report

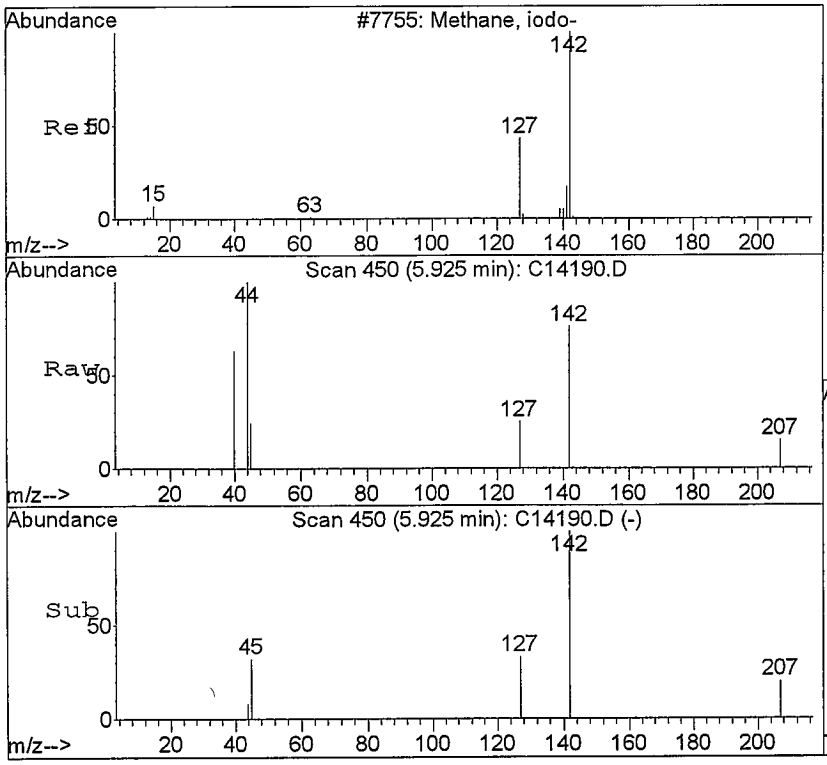
Data File : C:\HPCHEM\1\DATA\040209\C14190.D
Acq On : 2 Apr 2009 15:12
Sample : 0903234-1
Misc : 10ml un-heated water
MS Integration Params: ettics.p
Quant Time: Apr 2 15:32 2009

Vial: 20
Operator: TWK-sop525r12
Inst : CSS Instr
Multiplr: 1.00

Quant Results File: 032209W.RES

Method : C:\HPCHEM\1\METHODS\032209W.M (RTE Integrator)
Title : GC/MS Volatiles (S.O.P. 525)
Last Update : Thu Apr 02 10:38:42 2009
Response via : Initial Calibration

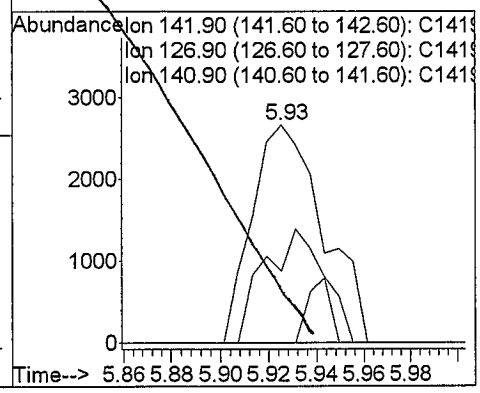


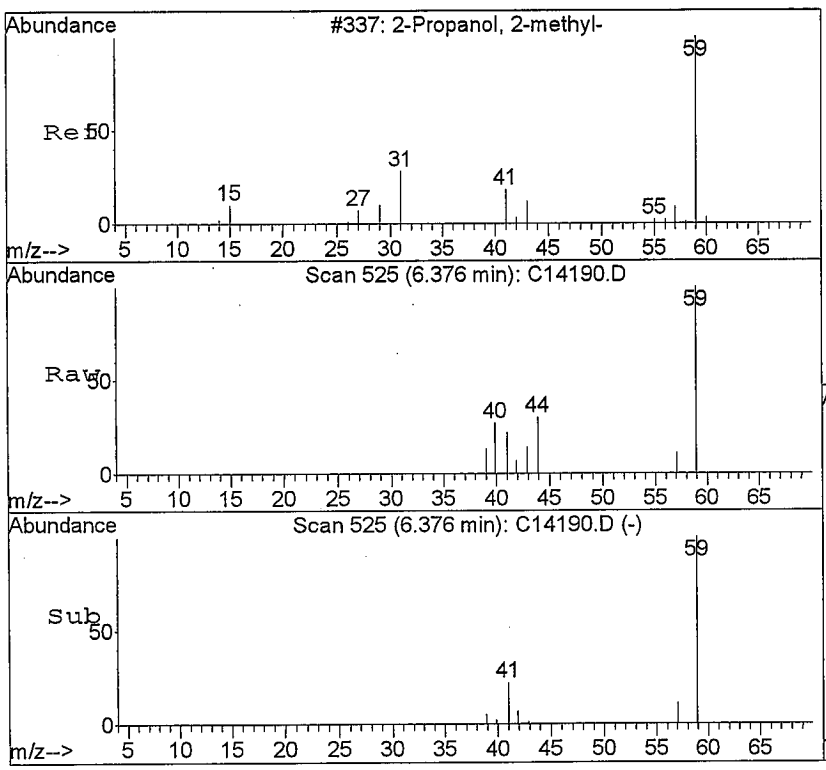



#13
Iodomethane
Concen: 0.17 ppb
RT: 5.93 min Scan# 450
Delta R.T. 0.01 min
Lab File: C14190.D
Acq: 2 Apr 2009 15:12

Tgt Ion:142 Resp: 5512

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 142 | 100 | | |
| 127 | 32.8 | 27.5 | 64.3 |
| 141 | 0.0 | 8.2 | 19.2# |



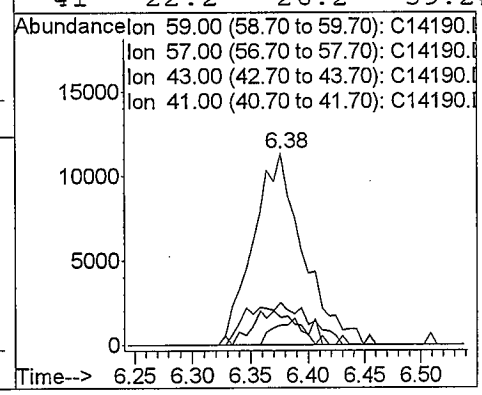




#18
tert-Butanol
Concen: 50.69 ppb
RT: 6.38 min Scan# 525
Delta R.T. 0.02 min
Lab File: C14190.D
Acq: 2 Apr 2009 15:12

NTC

Tgt Ion: 59 Resp: 34389

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 59 | 100 | | |
| 57 | 10.5 | 7.3 | 10.9 |
| 43 | 14.5 | 14.2 | 21.2 |
| 41 | 22.2 | 26.2 | 39.2# |



Tentatively Identified Compound (LSC) summary

Operator ID: TWK-sop525r12 Date Acquired: 2 Apr 2009 15:12
Data File: C:\HPCHEM\1\DATA\040209\C14190.D
Name: 0903234-1
Misc: 10ml un-heated water
Method: C:\HPCHEM\1\METHODS\032209W.M (RTE Integrator)
Title: GC/MS Volatiles (S.O.P. 525)
Library Searched: C:\DATABASE\NBS75K.L

| TIC Top Hit name | RT | EstConc | Units | Area | IntStd | ISRT | ISArea | ISConc |
|---|---|---|---|---|---|---|---|---|

C14190.D 032209W.M Fri Apr 03 10:00:18 2009