



02/14/12

Technical Report for

XTO Energy

FRU 297-28C

1108-08A

Accutest Job Number: D31747

Sampling Date: 02/08/12

Report to:

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Total number of pages in report: 154



Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference and/or state specific certification programs as applicable.


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Laboratory Director

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Certifications: CO, ID, NE, NM, ND (R-027) (PW) UT (NELAP CO00049)

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Test results relate only to samples analyzed.

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Sample Summary

XTO Energy

Job No: D31747

FRU 297-28C

Project No: 1108-08A

| Sample Number | Collected | | Received | Matrix | | Client Sample ID |
|------------------|-----------|----------|----------|--------|------|----------------------|
| | Date | Time By | | Code | Type | |
| D31747-1 | 02/08/12 | 11:40 CB | 02/09/12 | SO | Soil | FRESH WATER SUBLINER |
| D31747-1A | 02/08/12 | 11:40 CB | 02/09/12 | SO | Soil | FRESH WATER SUBLINER |

Soil samples reported on a dry weight basis unless otherwise indicated on result page.

CASE NARRATIVE / CONFORMANCE SUMMARY

Client: XTO Energy

Job No D31747

Site: FRU 297-28C

Report Date 2/14/2012 5:09:21 PM

On 02/09/2012, 1 sample(s), 0 Trip Blank(s), and 0 Field Blank(s) were received at Accutest Mountain States (AMS) at a temperature of 4 °C. The sample was intact and properly preserved, unless noted below. An AMS Job Number of D31747 was assigned to the project. The lab sample ID, client sample ID, and date of sample collection are detailed in the report's Results Summary.

Specified quality control criteria were achieved for this job except as noted below. For more information, please refer to the analytical results and QC summary pages.

Volatiles by GCMS By Method SW846 8260B

| | |
|------------------|--------------------------|
| Matrix SO | Batch ID: V5V1158 |
|------------------|--------------------------|

- The sample was analyzed within the recommended method holding time.
- Sample(s) D31747-1MS, D31747-1MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- V5V1158-BS: Carbon disulfide low, RR HSL samples.

Extractables by GCMS By Method SW846 8270C BY SIM

| | |
|------------------|-------------------------|
| Matrix SO | Batch ID: OP5338 |
|------------------|-------------------------|

- All samples were extracted and analyzed within the recommended method holding time.
- Sample(s) D31747-1MS, D31747-1MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- The matrix spike duplicate (MSD) recovery(s) of Naphthalene are outside control limits. Probable cause due to matrix interference.
- The matrix spike (MS) recovery(s) of Naphthalene are outside control limits. Outside control limits due to high level in sample relative to spike amount.

Volatiles by GC By Method SW846 8015B

| | |
|------------------|-------------------------|
| Matrix SO | Batch ID: GGB836 |
|------------------|-------------------------|

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D31663-1MS, D31663-1MSD were used as the QC samples indicated.

Extractables by GC By Method SW846-8015B

| | |
|------------------|-------------------------|
| Matrix SO | Batch ID: OP5339 |
|------------------|-------------------------|

- The sample was extracted and analyzed within the recommended method holding time.
- Sample(s) D31747-1MS, D31747-1MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.

Metals By Method SW846 6010C

Matrix AQ

Batch ID: MP6835

- The sample was digested and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D31748-1AMS, D31748-1AMSD were used as the QC samples for the metals analysis.

Matrix SO

Batch ID: MP6825

- The sample was digested and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D31737-4MS, D31737-4MSD, D31737-4SDL were used as the QC samples for the metals analysis.
- The matrix spike (MS) recovery(s) of Lead, Zinc are outside control limits. Spike recovery indicates possible matrix interference and/or sample nonhomogeneity.
- The matrix spike duplicate (MSD) recovery(s) of Zinc, Lead are outside control limits. High RPD due to possible sample matrix or nonhomogeneity.
- The RPD(s) for the MS and MSD recoveries of Lead are outside control limits for sample MP6825-S2. High RPD due to possible sample matrix or nonhomogeneity.
- The serial dilution RPD(s) for Cadmium, Selenium, Silver, Zinc are outside control limits for sample MP6825-SD1. Percent difference acceptable due to low initial sample concentration (< 50 times IDL).
- MP6825-SD1 for Zinc: Serial dilution indicates possible matrix interference.

Metals By Method SW846 6020A

Matrix SO

Batch ID: MP6826

- The sample was digested and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D31737-4MS, D31737-4MSD, D31737-4SDL were used as the QC samples for the metals analysis.
- The matrix spike duplicate (MSD) recovery(s) of Arsenic are outside control limits. Probable cause due to matrix interference.
- The serial dilution RPD(s) for Arsenic are outside control limits for sample MP6826-SD1. Probable cause due to sample homogeneity.
- MP6826-SD1 for Arsenic: Serial dilution indicates possible matrix interference.

Metals By Method SW846 7471B

Matrix SO

Batch ID: MP6836

- The sample was digested and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D31747-1MS, D31747-1MSD were used as the QC samples for the metals analysis.

Wet Chemistry By Method ASTM D1498-76M

Matrix SO

Batch ID: GN13639

- The data for ASTM D1498-76M meets quality control requirements.

Wet Chemistry By Method SM19 2540B M

Matrix SO

Batch ID: GN13623

- The data for SM19 2540B M meets quality control requirements.

Wet Chemistry By Method SW846 3060/7196A M

Matrix SO

Batch ID: R11726

- The data for SW846 3060/7196A M meets quality control requirements.
- D31747-1 for Chromium, Trivalent: Calculated as: (Chromium) - (Chromium, Hexavalent)

Wet Chemistry By Method SW846 3060A/7196A

Matrix SO

Batch ID: M:GP14149

- The data for SW846 3060A/7196A meets quality control requirements.
- D31747-1 for Chromium, Hexavalent: Analysis performed at Accutest Laboratories, Marlborough, MA.

Wet Chemistry By Method USDA HANDBOOK 60

Matrix SO

Batch ID: MP6835

- D31747-1A for Sodium Adsorption Ratio: Calculated as: $(\text{Na meq/L}) / \sqrt{[(\text{Ca meq/L}) + (\text{Mg meq/L})/2]}$

AMS certifies that data reported for samples received, listed on the associated custody chain or analytical task order, were produced to specifications meeting AMS's Quality System precision, accuracy and completeness objectives except as noted.

Estimated non-standard method measurement uncertainty data is available on request, based on quality control bias and implicit for standard methods. Acceptable uncertainty requires tested parameter quality control data to meet method criteria.

AMS is not responsible for data quality assumptions if partial reports are used and recommends that this report be used in its entirety. This report is authorized by AMS indicated via signature on the report cover.

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: Accutest Mountain States

Job No D31747

Site: XTOKRWR: FRU 297-28C

Report Date 2/14/2012 9:06:27 AM

1 Sample(s) was collected on 02/08/2012 and was received at Accutest on 02/09/2012 properly preserved, at 1.8 Deg. C and intact. These Samples received an Accutest job number of D31747. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented in the Results Summary Section of this report.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

Wet Chemistry By Method SW846 3060A/7196A

Matrix: SO

Batch ID: GP14149

- All samples were distilled within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D31747-1DUP, D31747-1MS were used as the QC samples for Chromium, Hexavalent.

The Accutest Laboratories of New England certifies that all analysis were performed within method specification. It is further recommended that this report to be used in its entirety. The Accutest Laboratories of NE, Laboratory Director or assignee as verified by the signature on the cover page has authorized the release of this report(D31747).

Sample Results

Report of Analysis

Accutest Laboratories

Report of Analysis

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| | | | |
|-------------------|----------------------|-----------------|----------|
| Client Sample ID: | FRESH WATER SUBLINER | Date Sampled: | 02/08/12 |
| Lab Sample ID: | D31747-1 | Date Received: | 02/09/12 |
| Matrix: | SO - Soil | Percent Solids: | 88.9 |
| Method: | SW846 8260B | | |
| Project: | FRU 297-28C | | |

| Run # | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|--------|-----------|----|----------|----|-----------|------------|------------------|
| Run #1 | 5V19361.D | 1 | 02/10/12 | KV | n/a | n/a | V5V1158 |
| Run #2 | | | | | | | |

| Run # | Initial Weight | Final Volume | Methanol Aliquot |
|--------|----------------|--------------|------------------|
| Run #1 | 5.01 g | 5.0 ml | 100 ul |
| Run #2 | | | |

Purgeable Aromatics

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|-----------|----------------|--------|-------|-------|-------|---|
| 71-43-2 | Benzene | ND | 0.062 | 0.027 | mg/kg | |
| 108-88-3 | Toluene | ND | 0.12 | 0.062 | mg/kg | |
| 100-41-4 | Ethylbenzene | ND | 0.12 | 0.031 | mg/kg | |
| 1330-20-7 | Xylene (total) | ND | 0.25 | 0.12 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|------------|-----------------------|--------|--------|---------|
| 2037-26-5 | Toluene-D8 | 75% | | 61-130% |
| 460-00-4 | 4-Bromofluorobenzene | 90% | | 53-131% |
| 17060-07-0 | 1,2-Dichloroethane-D4 | 84% | | 62-130% |

ND = Not detected MDL - Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

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| | | | |
|-------------------|-------------------------------|-----------------|----------|
| Client Sample ID: | FRESH WATER SUBLINER | Date Sampled: | 02/08/12 |
| Lab Sample ID: | D31747-1 | Date Received: | 02/09/12 |
| Matrix: | SO - Soil | Percent Solids: | 88.9 |
| Method: | SW846 8270C BY SIM SW846 3546 | | |
| Project: | FRU 297-28C | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|--------|-----------|----|----------|----|-----------|------------|------------------|
| Run #1 | 3G07928.D | 1 | 02/13/12 | JR | 02/10/12 | OP5338 | E3G313 |
| Run #2 | 3G07940.D | 4 | 02/14/12 | JR | 02/10/12 | OP5338 | E3G314 |

| | Initial Weight | Final Volume |
|--------|----------------|--------------|
| Run #1 | 30.1 g | 1.0 ml |
| Run #2 | 30.0 g | 1.0 ml |

COGCC Table 910-1 PAH List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|----------|------------------------|-----------------|--------|--------|-------|---|
| 83-32-9 | Acenaphthene | ND | 0.0075 | 0.0060 | mg/kg | |
| 120-12-7 | Anthracene | ND | 0.0075 | 0.0067 | mg/kg | |
| 56-55-3 | Benzo(a)anthracene | ND ^a | 0.075 | 0.039 | mg/kg | |
| 50-32-8 | Benzo(a)pyrene | ND | 0.019 | 0.013 | mg/kg | |
| 205-99-2 | Benzo(b)fluoranthene | ND | 0.019 | 0.014 | mg/kg | |
| 207-08-9 | Benzo(k)fluoranthene | ND | 0.019 | 0.0082 | mg/kg | |
| 218-01-9 | Chrysene | ND ^a | 0.075 | 0.033 | mg/kg | |
| 53-70-3 | Dibenzo(a,h)anthracene | ND | 0.019 | 0.014 | mg/kg | |
| 206-44-0 | Fluoranthene | ND | 0.0075 | 0.0075 | mg/kg | |
| 86-73-7 | Fluorene | ND | 0.0075 | 0.0064 | mg/kg | |
| 193-39-5 | Indeno(1,2,3-cd)pyrene | ND | 0.022 | 0.021 | mg/kg | |
| 91-20-3 | Naphthalene | 0.905 | 0.0075 | 0.0071 | mg/kg | |
| 129-00-0 | Pyrene | ND ^a | 0.030 | 0.028 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|-----------|----------------------|--------|--------|---------|
| 4165-60-0 | Nitrobenzene-d5 | 67% | 62% | 10-145% |
| 321-60-8 | 2-Fluorobiphenyl | 65% | 72% | 10-130% |
| 1718-51-0 | Terphenyl-d14 | 78% | 81% | 22-130% |

(a) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

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| | | | |
|-------------------|----------------------|-----------------|----------|
| Client Sample ID: | FRESH WATER SUBLINER | Date Sampled: | 02/08/12 |
| Lab Sample ID: | D31747-1 | Date Received: | 02/09/12 |
| Matrix: | SO - Soil | Percent Solids: | 88.9 |
| Method: | SW846 8015B | | |
| Project: | FRU 297-28C | | |

| Run # | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|--------|-----------|----|----------|----|-----------|------------|------------------|
| Run #1 | GB14792.D | 1 | 02/09/12 | SK | n/a | n/a | GGB836 |
| Run #2 | | | | | | | |

| Run # | Initial Weight | Final Volume | Methanol Aliquot |
|--------|----------------|--------------|------------------|
| Run #1 | 5.0 g | 5.0 ml | 100 ul |
| Run #2 | | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|----------|------------------------|--------|--------|---------|-------|---|
| | TPH-GRO (C6-C10) | ND | 12 | 6.2 | mg/kg | |
| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits | | |
| 120-82-1 | 1,2,4-Trichlorobenzene | 109% | | 60-140% | | |

ND = Not detected MDL - Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

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| | | | | | | | |
|-------------------|------------------------|--|--|--|--|-----------------|----------|
| Client Sample ID: | FRESH WATER SUBLINER | | | | | Date Sampled: | 02/08/12 |
| Lab Sample ID: | D31747-1 | | | | | Date Received: | 02/09/12 |
| Matrix: | SO - Soil | | | | | Percent Solids: | 88.9 |
| Method: | SW846-8015B SW846 3546 | | | | | | |
| Project: | FRU 297-28C | | | | | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|--------|------------|----|----------|----|-----------|------------|------------------|
| Run #1 | FH001207.D | 1 | 02/12/12 | TR | 02/10/12 | OP5339 | GFH52 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|--------|----------------|--------------|
| Run #1 | 30.0 g | 2.0 ml |
| Run #2 | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---------|----------------------|--------|--------|---------|-------|---|
| | TPH-DRO (C10-C28) | 548 | 15 | 9.7 | mg/kg | |
| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits | | |
| 84-15-1 | o-Terphenyl | 79% | | 43-136% | | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: FRESH WATER SUBLINER

Lab Sample ID: D31747-1

Matrix: SO - Soil

Project: FRU 297-28C

Date Sampled: 02/08/12

Date Received: 02/09/12

Percent Solids: 88.9

Metals Analysis

| Analyte | Result | RL | Units | DF | Prep | Analized By | Method | Prep Method |
|----------|--------|------|-------|----|----------|-------------|--------------------------|--------------------------|
| Arsenic | 2.4 | 0.43 | mg/kg | 5 | 02/10/12 | 02/14/12 GJ | SW846 6020A ³ | SW846 3050B ⁵ |
| Barium | 1560 | 1.1 | mg/kg | 1 | 02/10/12 | 02/10/12 JB | SW846 6010C ¹ | SW846 3050B ⁴ |
| Cadmium | < 1.1 | 1.1 | mg/kg | 1 | 02/10/12 | 02/10/12 JB | SW846 6010C ¹ | SW846 3050B ⁴ |
| Chromium | 30.3 | 1.1 | mg/kg | 1 | 02/10/12 | 02/10/12 JB | SW846 6010C ¹ | SW846 3050B ⁴ |
| Copper | 6.1 | 1.1 | mg/kg | 1 | 02/10/12 | 02/10/12 JB | SW846 6010C ¹ | SW846 3050B ⁴ |
| Lead | 9.6 | 5.4 | mg/kg | 1 | 02/10/12 | 02/10/12 JB | SW846 6010C ¹ | SW846 3050B ⁴ |
| Mercury | < 0.11 | 0.11 | mg/kg | 1 | 02/13/12 | 02/13/12 MC | SW846 7471B ² | SW846 7471B ⁶ |
| Nickel | 10 | 3.2 | mg/kg | 1 | 02/10/12 | 02/10/12 JB | SW846 6010C ¹ | SW846 3050B ⁴ |
| Selenium | < 5.4 | 5.4 | mg/kg | 1 | 02/10/12 | 02/10/12 JB | SW846 6010C ¹ | SW846 3050B ⁴ |
| Silver | < 3.2 | 3.2 | mg/kg | 1 | 02/10/12 | 02/10/12 JB | SW846 6010C ¹ | SW846 3050B ⁴ |
| Zinc | 38.2 | 3.2 | mg/kg | 1 | 02/10/12 | 02/10/12 JB | SW846 6010C ¹ | SW846 3050B ⁴ |

(1) Instrument QC Batch: MA2177

(2) Instrument QC Batch: MA2179

(3) Instrument QC Batch: MA2181

(4) Prep QC Batch: MP6825

(5) Prep QC Batch: MP6826

(6) Prep QC Batch: MP6836

RL = Reporting Limit

Report of Analysis

Client Sample ID: FRESH WATER SUBLINER

Lab Sample ID: D31747-1

Matrix: SO - Soil

Project: FRU 297-28C

Date Sampled: 02/08/12

Date Received: 02/09/12

Percent Solids: 88.9

General Chemistry

| Analyte | Result | RL | Units | DF | Analyzed | By | Method |
|-----------------------------------|--------|------|----------|----|----------------|-----|---------------------|
| Chromium, Hexavalent ^a | 0.64 | 0.45 | mg/kg | 1 | 02/10/12 15:28 | AMA | SW846 3060A/7196A |
| Chromium, Trivalent ^b | 29.7 | 1.6 | mg/kg | 1 | 02/10/12 21:26 | JB | SW846 3060/7196A M |
| Redox Potential Vs H2 | 257 | | mv | 1 | 02/10/12 | JD | ASTM D1498-76M |
| Solids, Percent | 88.9 | | % | 1 | 02/10/12 | SWT | SM19 2540B M |
| Specific Conductivity | 3570 | 1.0 | umhos/cm | 1 | 02/14/12 | CJ | DEPT.OF AG, BOOK N9 |
| pH | 11.83 | | su | 1 | 02/09/12 14:40 | CT | SW846 9045C |

(a) Analysis performed at Accutest Laboratories, Marlborough, MA.

(b) Calculated as: (Chromium) - (Chromium, Hexavalent)

RL = Reporting Limit

Report of Analysis

Client Sample ID: FRESH WATER SUBLINER

Lab Sample ID: D31747-1A

Matrix: SO - Soil

Project: FRU 297-28C

Date Sampled: 02/08/12

Date Received: 02/09/12

Percent Solids: 88.9

SAR Metals Analysis

| Analyte | Result | RL | Units | DF | Prep | Analyzed By | Method | Prep Method |
|-----------|--------|-----|-------|----|----------|-------------|--------------------------|------------------------|
| Calcium | 8.35 | 2.0 | mg/l | 1 | 02/10/12 | 02/10/12 JB | SW846 6010C ¹ | EPA 200.7 ² |
| Magnesium | < 1.0 | 1.0 | mg/l | 1 | 02/10/12 | 02/10/12 JB | SW846 6010C ¹ | EPA 200.7 ² |
| Sodium | 580 | 2.0 | mg/l | 1 | 02/10/12 | 02/10/12 JB | SW846 6010C ¹ | EPA 200.7 ² |

(1) Instrument QC Batch: MA2177

(2) Prep QC Batch: MP6835

RL = Reporting Limit

Report of Analysis

| | | | |
|-------------------|----------------------|-----------------|----------|
| Client Sample ID: | FRESH WATER SUBLINER | Date Sampled: | 02/08/12 |
| Lab Sample ID: | D31747-1A | Date Received: | 02/09/12 |
| Matrix: | SO - Soil | Percent Solids: | 88.9 |
| Project: | FRU 297-28C | | |

General Chemistry

| Analyte | Result | RL | Units | DF | Analyzed | By | Method |
|--------------------------------------|--------|----|-------|----|----------------|----|------------------|
| Sodium Adsorption Ratio ^a | 54.9 | | ratio | 1 | 02/10/12 17:47 | JB | USDA HANDBOOK 60 |

(a) Calculated as: (Na meq/L) / sqrt [(Ca meq/L)+ (Mg meq/L)/2]

RL = Reporting Limit

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody

Accutest Laboratories Sample Receipt Summary

Accutest Job Number: D31747

Client: FRU 297-28C

Immediate Client Services Action Required: No

Date / Time Received: 2/9/2012 1:30:00 PM

No. Coolers: 1

Client Service Action Required at Login: No

Project: FRU 297-28C

Airbill #'s: CO

| Cooler Security | Y | or | N | | Y | or | N |
|---------------------------|-------------------------------------|-----------|--------------------------|-----------------------|-------------------------------------|-----------|--------------------------|
| 1. Custody Seals Present: | <input checked="" type="checkbox"/> | | <input type="checkbox"/> | 3. COC Present: | <input checked="" type="checkbox"/> | | <input type="checkbox"/> |
| 2. Custody Seals Intact: | <input checked="" type="checkbox"/> | | <input type="checkbox"/> | 4. Smpl Dates/Time OK | <input checked="" type="checkbox"/> | | <input type="checkbox"/> |

| Cooler Temperature | Y | or | N |
|------------------------------|-------------------------------------|-----------|--------------------------|
| 1. Temp criteria achieved: | <input checked="" type="checkbox"/> | | <input type="checkbox"/> |
| 2. Cooler temp verification: | | | Infrared gun |
| 3. Cooler media: | | | Ice (bag) |

| Quality Control Preservation | Y | or | N | N/A |
|-------------------------------------|-------------------------------------|-----------|--------------------------|-------------------------------------|
| 1. Trip Blank present / cooler: | <input type="checkbox"/> | | <input type="checkbox"/> | |
| 2. Trip Blank listed on COC: | <input type="checkbox"/> | | <input type="checkbox"/> | |
| 3. Samples preserved properly: | <input checked="" type="checkbox"/> | | <input type="checkbox"/> | |
| 4. VOCs headspace free: | <input type="checkbox"/> | | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

| Sample Integrity - Documentation | Y | or | N |
|---|-------------------------------------|-----------|--------------------------|
| 1. Sample labels present on bottles: | <input checked="" type="checkbox"/> | | <input type="checkbox"/> |
| 2. Container labeling complete: | <input checked="" type="checkbox"/> | | <input type="checkbox"/> |
| 3. Sample container label / COC agree: | <input checked="" type="checkbox"/> | | <input type="checkbox"/> |

| Sample Integrity - Condition | Y | or | N |
|-------------------------------------|-------------------------------------|-----------|--------------------------|
| 1. Sample recvd within HT: | <input checked="" type="checkbox"/> | | <input type="checkbox"/> |
| 2. All containers accounted for: | <input checked="" type="checkbox"/> | | <input type="checkbox"/> |
| 3. Condition of sample: | | | Intact |

| Sample Integrity - Instructions | Y | or | N | N/A |
|---|-------------------------------------|-----------|-------------------------------------|-------------------------------------|
| 1. Analysis requested is clear: | <input checked="" type="checkbox"/> | | <input type="checkbox"/> | |
| 2. Bottles received for unspecified tests | <input type="checkbox"/> | | <input checked="" type="checkbox"/> | |
| 3. Sufficient volume rec'd for analysis: | <input checked="" type="checkbox"/> | | <input type="checkbox"/> | |
| 4. Compositing instructions clear: | <input type="checkbox"/> | | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 5. Filtering instructions clear: | <input type="checkbox"/> | | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

Comments

GC/MS Volatiles

5

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Page 1 of 1

Job Number: D31747
Account: XTOKRWR XTO Energy
Project: FRU 297-28C

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|------------|-----------|----|----------|----|-----------|------------|------------------|
| V5V1158-MB | 5V19358.D | 1 | 02/10/12 | KV | n/a | n/a | V5V1158 |

The QC reported here applies to the following samples:

Method: SW846 8260B

D31747-1

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|-----------|----------------|--------|-----|-----|-------|---|
| 71-43-2 | Benzene | ND | 50 | 22 | ug/kg | |
| 100-41-4 | Ethylbenzene | ND | 100 | 25 | ug/kg | |
| 108-88-3 | Toluene | ND | 100 | 50 | ug/kg | |
| 1330-20-7 | Xylene (total) | ND | 200 | 100 | ug/kg | |

| CAS No. | Surrogate Recoveries | Limits |
|------------|-----------------------|-------------|
| 2037-26-5 | Toluene-D8 | 68% 61-130% |
| 460-00-4 | 4-Bromofluorobenzene | 75% 53-131% |
| 17060-07-0 | 1,2-Dichloroethane-D4 | 75% 62-130% |

Blank Spike Summary

Page 1 of 1

Job Number: D31747
Account: XTOKRWR XTO Energy
Project: FRU 297-28C

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|-------------------------|-----------|----|----------|----|-----------|------------|------------------|
| V5V1158-BS ^a | 5V19359.D | 1 | 02/10/12 | KV | n/a | n/a | V5V1158 |

The QC reported here applies to the following samples:

Method: SW846 8260B

D31747-1

| CAS No. | Compound | Spike ug/kg | BSP ug/kg | BSP % | Limits |
|-----------|----------------|----------------|--------------|----------|--------|
| 71-43-2 | Benzene | 50 | 48.4 | 97 | 70-130 |
| 100-41-4 | Ethylbenzene | 50 | 49.3 | 99 | 70-130 |
| 108-88-3 | Toluene | 50 | 46.3 | 93 | 70-130 |
| 1330-20-7 | Xylene (total) | 150 | 155 | 103 | 70-130 |

| CAS No. | Surrogate Recoveries | BSP | Limits |
|------------|-----------------------|-----|---------|
| 2037-26-5 | Toluene-D8 | 78% | 61-130% |
| 460-00-4 | 4-Bromofluorobenzene | 95% | 53-131% |
| 17060-07-0 | 1,2-Dichloroethane-D4 | 84% | 62-130% |

(a) Carbon disulfide low, RR HSL samples.

Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

Job Number: D31747
Account: XTOKRWR XTO Energy
Project: FRU 297-28C

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|-------------|-----------|----|----------|----|-----------|------------|------------------|
| D31747-1MS | 5V19362.D | 1 | 02/10/12 | KV | n/a | n/a | V5V1158 |
| D31747-1MSD | 5V19363.D | 1 | 02/10/12 | KV | n/a | n/a | V5V1158 |
| D31747-1 | 5V19361.D | 1 | 02/10/12 | KV | n/a | n/a | V5V1158 |

The QC reported here applies to the following samples:

Method: SW846 8260B

D31747-1

| CAS No. | Compound | D31747-1 ug/kg | Q | Spike ug/kg | MS ug/kg | MS % | MSD ug/kg | MSD % | RPD | Limits Rec/RPD |
|-----------|----------------|-------------------|---|----------------|-------------|---------|--------------|----------|-----|-------------------|
| 71-43-2 | Benzene | ND | | 3120 | 3440 | 110 | 3220 | 103 | 7 | 70-134/30 |
| 100-41-4 | Ethylbenzene | ND | | 3120 | 3440 | 110 | 3170 | 102 | 8 | 70-137/30 |
| 108-88-3 | Toluene | ND | | 3120 | 3150 | 101 | 2950 | 95 | 7 | 70-130/30 |
| 1330-20-7 | Xylene (total) | ND | | 9350 | 11100 | 119 | 10200 | 109 | 8 | 61-131/30 |

| CAS No. | Surrogate Recoveries | MS | MSD | D31747-1 | Limits |
|------------|-----------------------|------|------|----------|---------|
| 2037-26-5 | Toluene-D8 | 80% | 77% | 75% | 61-130% |
| 460-00-4 | 4-Bromofluorobenzene | 109% | 104% | 90% | 53-131% |
| 17060-07-0 | 1,2-Dichloroethane-D4 | 90% | 86% | 84% | 62-130% |

GC/MS Volatiles

Raw Data



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\V5021012.S\
Data File : 5V19361.D
Acq On : 10 Feb 2012 7:59 am
Operator : KOROUSHV
Sample : D31747-1
Misc : MS3379,V5V1158,5.014,,100,5,1
ALS Vial : 6 Sample Multiplier: 1

Quant Time: Feb 10 08:56:40 2012
Quant Method : C:\msdchem\1\METHODS\V5AP1131TVH1131.M
Quant Title : 8260
QLast Update : Sat Jan 21 11:35:36 2012
Response via : Initial Calibration

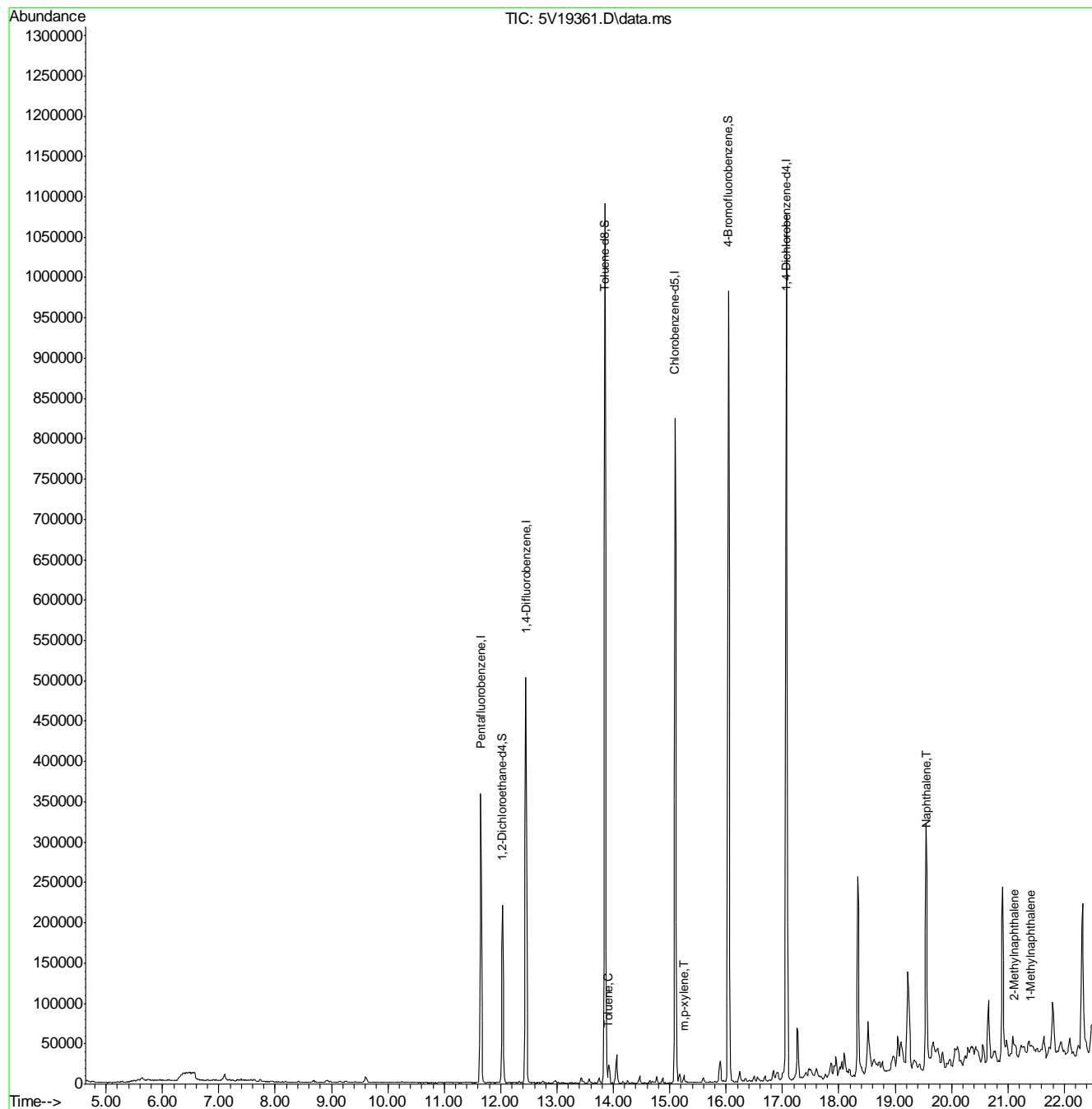
| Internal Standards | R.T. | QIon | Response | Conc | Units | Dev(Min) |
|-----------------------------|--------|-------|----------|----------|-------|-----------|
| 2) Pentafluorobenzene | 11.647 | 168 | 262276 | 50.00 | ug/l | 0.00 |
| 35) 1,4-Difluorobenzene | 12.446 | 114 | 420565 | 50.00 | ug/l | 0.00 |
| 53) Chlorobenzene-d5 | 15.095 | 117 | 515762 | 50.00 | ug/l | 0.00 |
| 74) 1,4-Dichlorobenzene-d4 | 17.070 | 152 | 349783 | 50.00 | ug/l | 0.00 |
| System Monitoring Compounds | | | | | | |
| 33) 1,2-Dichloroethane-d4 | 12.035 | 102 | 35852 | 41.99 | ug/l | 0.00 |
| Spiked Amount | 50.000 | Range | 70 - 130 | Recovery | = | 83.98% |
| 61) Toluene-d8 | 13.850 | 98 | 712713 | 37.42 | ug/l | 0.00 |
| Spiked Amount | 50.000 | Range | 70 - 130 | Recovery | = | 74.84% |
| 69) 4-Bromofluorobenzene | 16.042 | 95 | 351400 | 44.82 | ug/l | 0.00 |
| Spiked Amount | 50.000 | Range | 70 - 130 | Recovery | = | 89.64% |
| Target Compounds | | | | | | |
| 62) Toluene | 13.908 | 92 | 2998 | 0.22 | ug/l | Qvalue 94 |
| 72) m,p-xylene | 15.255 | 106 | 3547 | 0.37 | ug/l | 94 |
| 91) Naphthalene | 19.559 | 128 | 6242 | 0.33 | ug/l | 100 |
| 94) 2-Methylnaphthalene | 21.112 | 142 | 6133 | 1.10 | ug/l | # 62 |
| 95) 1-Methylnaphthalene | 21.408 | 142 | 5388 | 0.90 | ug/l | # 37 |

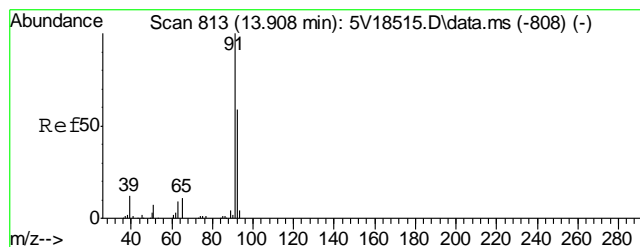
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\V5021012.S\
Data File : 5V19361.D
Acq On : 10 Feb 2012 7:59 am
Operator : KOROUSHV
Sample : D31747-1
Misc : MS3379,V5V1158,5.014,,100,5,1
ALS Vial : 6 Sample Multiplier: 1

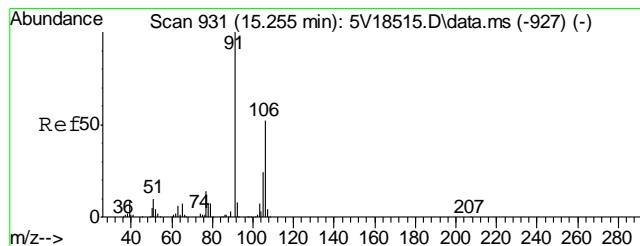
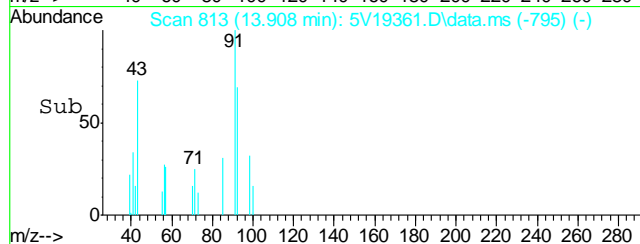
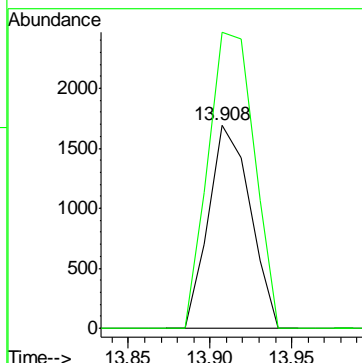
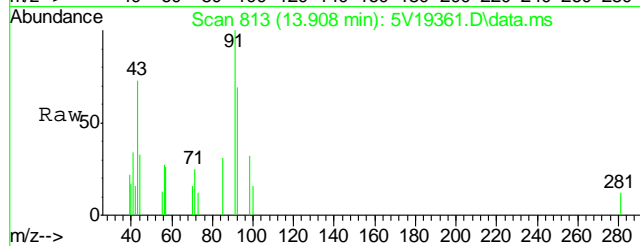
Quant Time: Feb 10 08:56:40 2012
Quant Method : C:\msdchem\1\METHODS\V5AP1131TVH1131.M
Quant Title : 8260
QLast Update : Sat Jan 21 11:35:36 2012
Response via : Initial Calibration





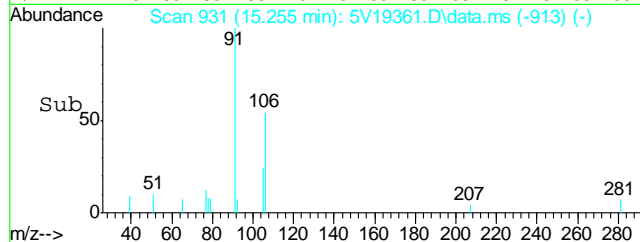
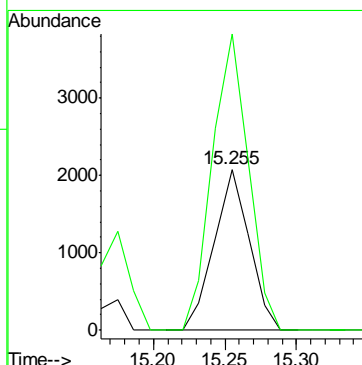
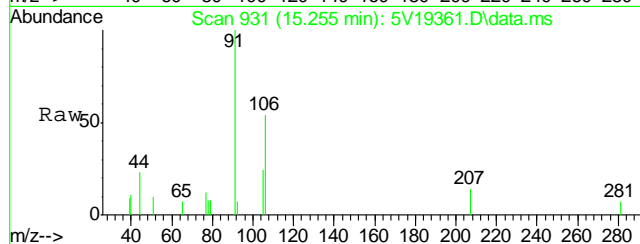
#62
Toluene
Concen: 0.22 ug/l
RT: 13.908 min Scan# 813
Delta R.T. 0.000 min
Lab File: 5V19361.D
Acq: 10 Feb 2012 7:59 am

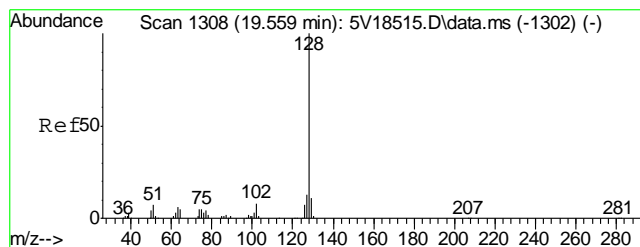
| Tgt Ion | Ratio | Lower | Upper |
|---------|-------|-------|-------|
| 92 | 100 | | |
| 91 | 161.8 | 149.8 | 189.8 |



#72
m,p-xylene
Concen: 0.37 ug/l
RT: 15.255 min Scan# 931
Delta R.T. 0.000 min
Lab File: 5V19361.D
Acq: 10 Feb 2012 7:59 am

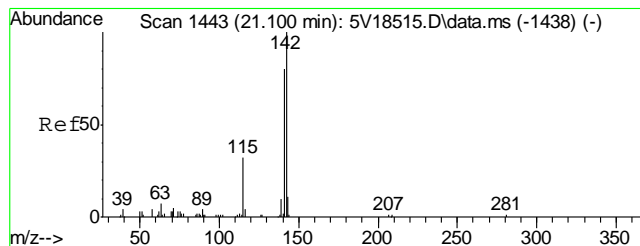
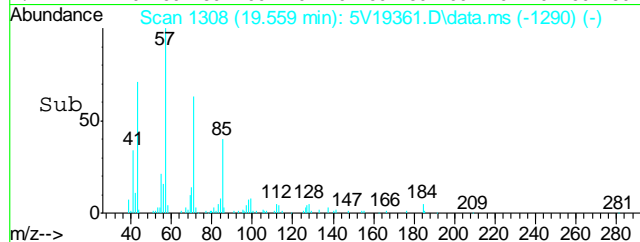
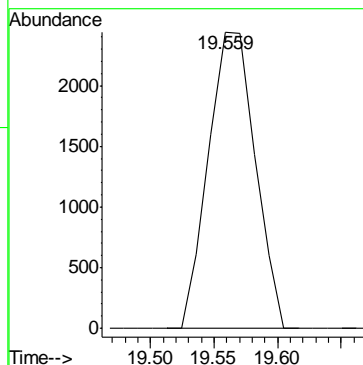
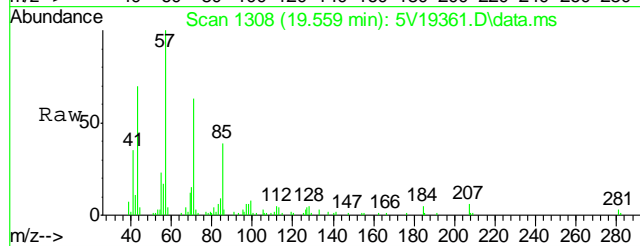
| Tgt Ion | Ratio | Lower | Upper |
|---------|-------|-------|-------|
| 106 | 100 | | |
| 91 | 188.7 | 177.1 | 217.1 |





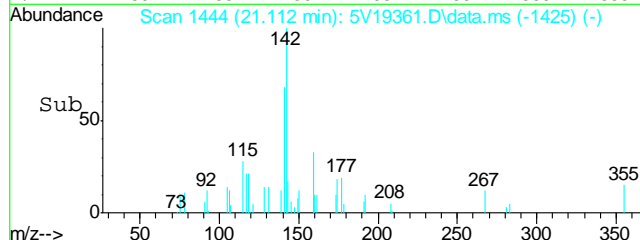
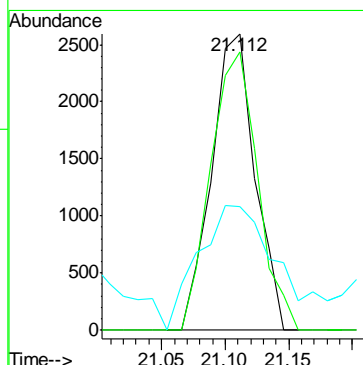
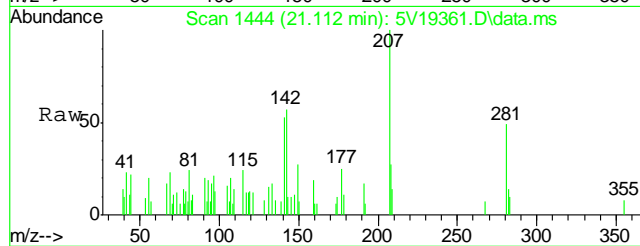
#91
Naphthalene
Concen: 0.33 ug/l
RT: 19.559 min Scan# 1308
Delta R.T. 0.001 min
Lab File: 5V19361.D
Acq: 10 Feb 2012 7:59 am

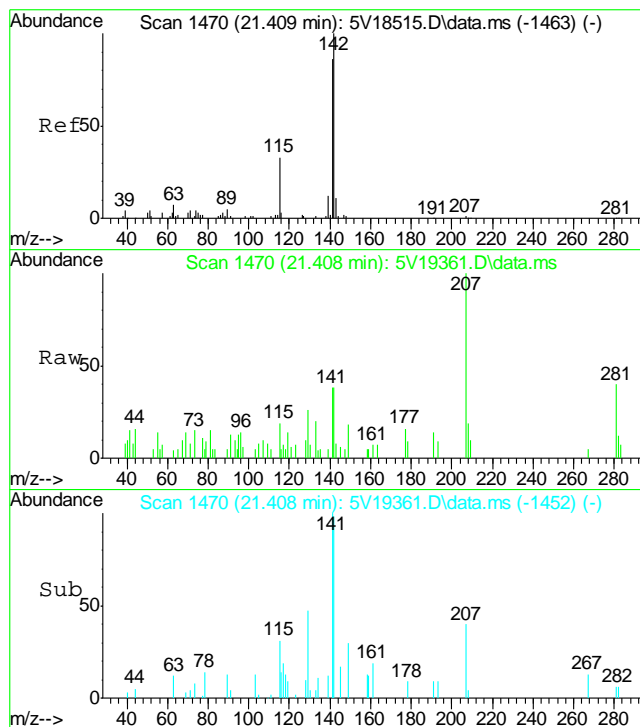
Tgt Ion:128 Resp: 6242



#94
2-Methylnaphthalene
Concen: 1.10 ug/l
RT: 21.112 min Scan# 1444
Delta R.T. 0.012 min
Lab File: 5V19361.D
Acq: 10 Feb 2012 7:59 am

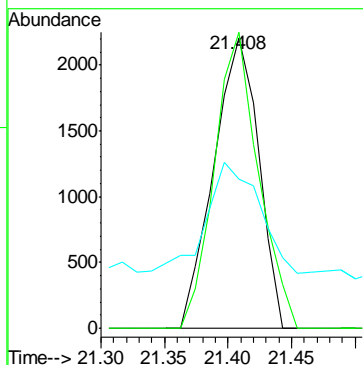
Tgt Ion:142 Resp: 6133
Ion Ratio Lower Upper
142 100
141 101.6 66.2 99.4#
115 78.2 25.9 38.9#





#95
 1-Methylnaphthalene
 Concen: 0.90 ug/l
 RT: 21.408 min Scan# 1470
 Delta R.T. 0.000 min
 Lab File: 5V19361.D
 Acq: 10 Feb 2012 7:59 am

| | | | |
|-----------|-------|-------|-------|
| Tgt Ion: | 142 | Resp: | 5388 |
| Ion Ratio | Lower | Upper | |
| 142 | 100 | | |
| 141 | 100.1 | 68.9 | 103.3 |
| 115 | 140.0 | 27.3 | 40.9# |



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\V5021012.S\
Data File : 5V19358.D
Acq On : 10 Feb 2012 6:09 am
Operator : KOROUSHV
Sample : MB
Misc : MS3379,V5V1158,,,,,1
ALS Vial : 3 Sample Multiplier: 1

Quant Time: Feb 10 08:30:37 2012
Quant Method : C:\msdchem\1\METHODS\V5AP1131TVH1131.M
Quant Title : 8260
QLast Update : Sat Jan 21 11:35:36 2012
Response via : Initial Calibration

| Internal Standards | R.T. | QIon | Response | Conc | Units | Dev(Min) |
|----------------------------|--------|------|----------|-------|-------|----------|
| 2) Pentafluorobenzene | 11.647 | 168 | 378349 | 50.00 | ug/l | 0.00 |
| 35) 1,4-Difluorobenzene | 12.446 | 114 | 612112 | 50.00 | ug/l | 0.00 |
| 53) Chlorobenzene-d5 | 15.095 | 117 | 716215 | 50.00 | ug/l | 0.00 |
| 74) 1,4-Dichlorobenzene-d4 | 17.070 | 152 | 436105 | 50.00 | ug/l | 0.00 |

System Monitoring Compounds

| | | | | | | |
|---------------------------|--------|-------|----------|----------|------|---------|
| 33) 1,2-Dichloroethane-d4 | 12.035 | 102 | 45915 | 37.28 | ug/l | 0.00 |
| Spiked Amount | 50.000 | Range | 70 - 130 | Recovery | = | 74.56% |
| 61) Toluene-d8 | 13.850 | 98 | 905436 | 34.23 | ug/l | 0.00 |
| Spiked Amount | 50.000 | Range | 70 - 130 | Recovery | = | 68.46%# |
| 69) 4-Bromofluorobenzene | 16.042 | 95 | 405847 | 37.28 | ug/l | 0.00 |
| Spiked Amount | 50.000 | Range | 70 - 130 | Recovery | = | 74.56% |

Target Compounds

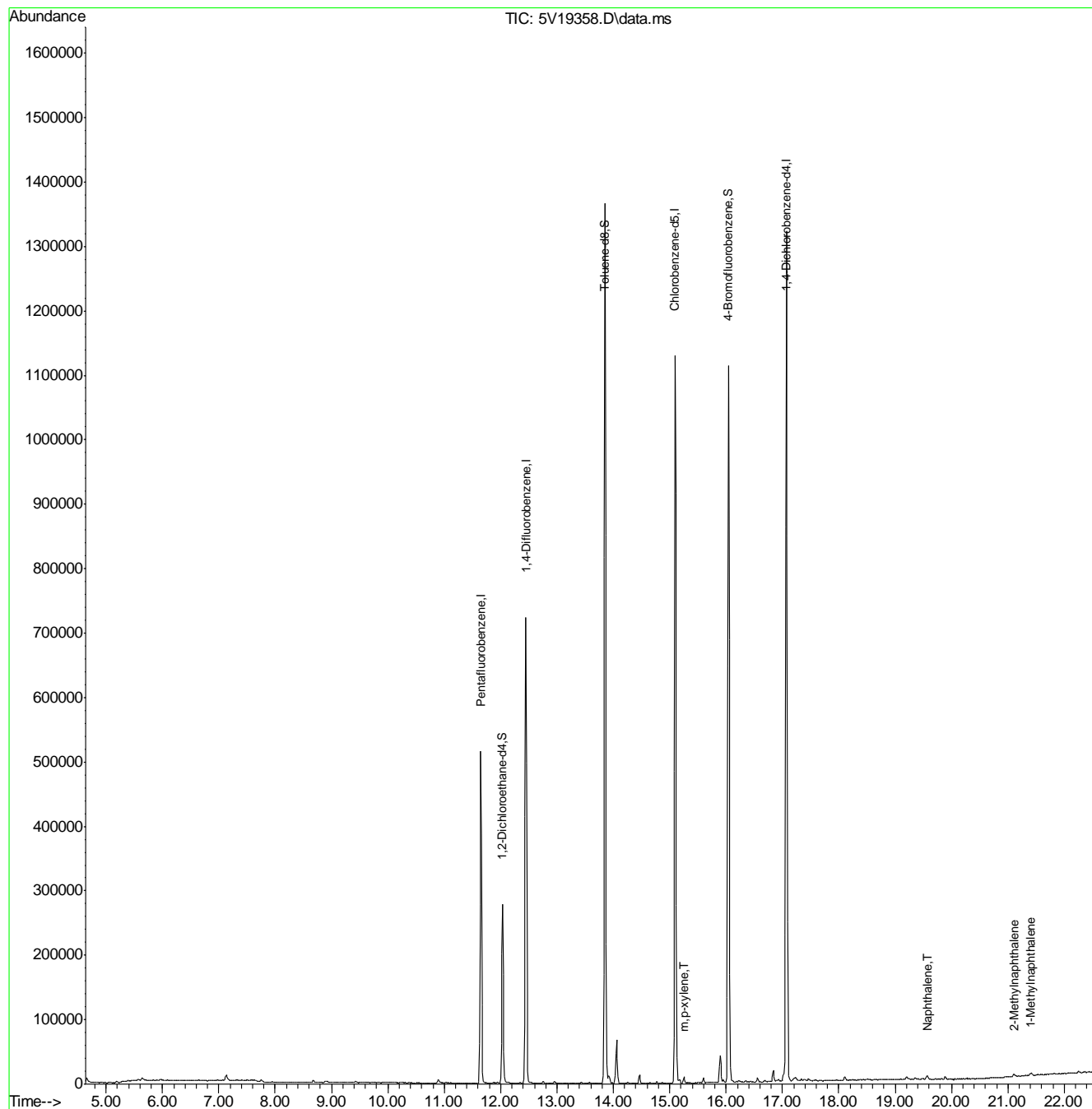
| | | | | | | Qvalue |
|-------------------------|--------|-----|------|------|------|--------|
| 72) m,p-xylene | 15.255 | 106 | 3622 | 0.27 | ug/l | 99 |
| 91) Naphthalene | 19.570 | 128 | 8277 | 0.35 | ug/l | 100 |
| 94) 2-Methylnaphthalene | 21.112 | 142 | 3414 | 0.49 | ug/l | 91 |
| 95) 1-Methylnaphthalene | 21.408 | 142 | 4370 | 0.59 | ug/l | 97 |

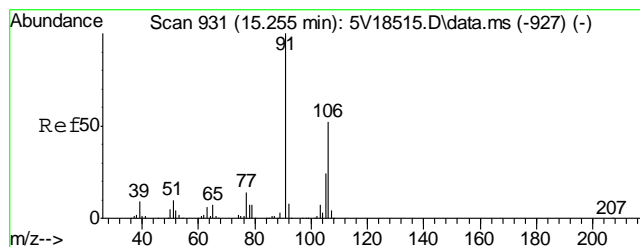
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\V5021012.S\
Data File : 5V19358.D
Acq On : 10 Feb 2012 6:09 am
Operator : KOROUSHV
Sample : MB
Misc : MS3379,V5V1158,,,,,1
ALS Vial : 3 Sample Multiplier: 1

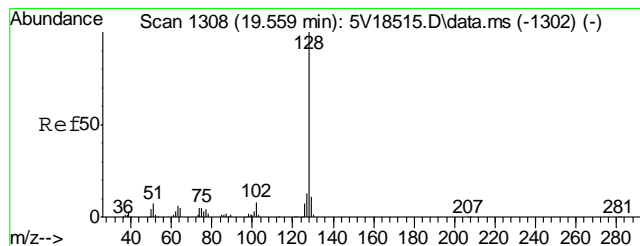
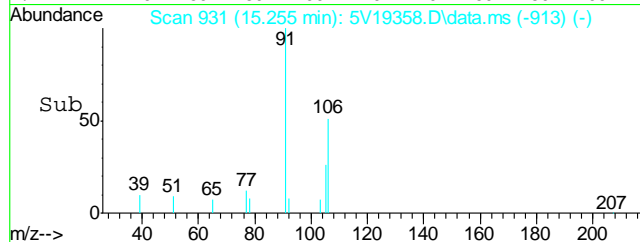
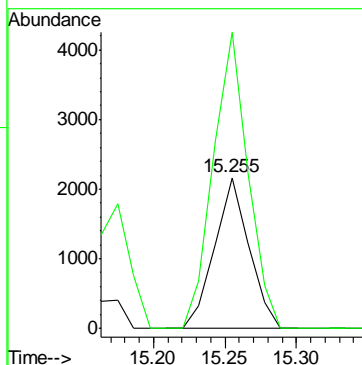
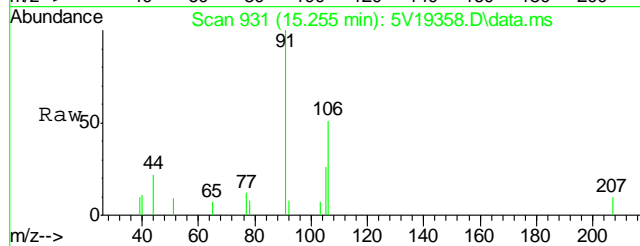
Quant Time: Feb 10 08:30:37 2012
Quant Method : C:\msdchem\1\METHODS\V5AP1131TVH1131.M
Quant Title : 8260
QLast Update : Sat Jan 21 11:35:36 2012
Response via : Initial Calibration





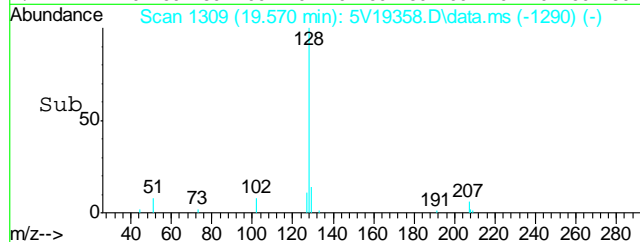
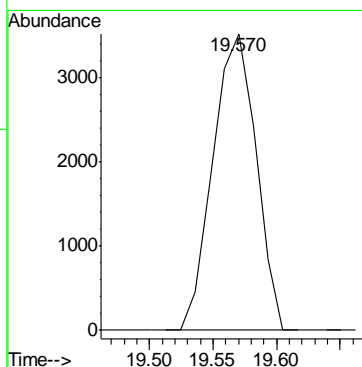
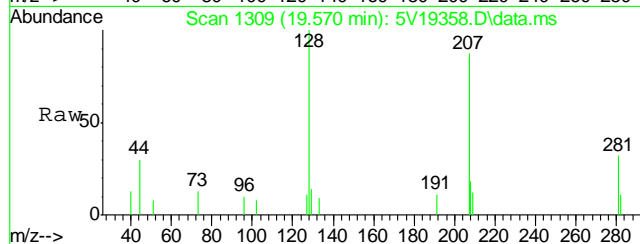
#72
m,p-xylene
Concen: 0.27 ug/l
RT: 15.255 min Scan# 931
Delta R.T. 0.000 min
Lab File: 5V19358.D
Acq: 10 Feb 2012 6:09 am

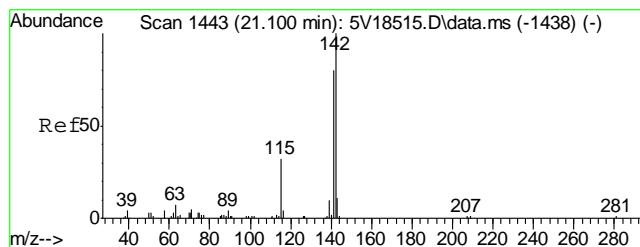
Tgt Ion:106 Resp: 3622
Ion Ratio Lower Upper
106 100
91 198.2 177.1 217.1



#91
Naphthalene
Concen: 0.35 ug/l
RT: 19.570 min Scan# 1309
Delta R.T. 0.012 min
Lab File: 5V19358.D
Acq: 10 Feb 2012 6:09 am

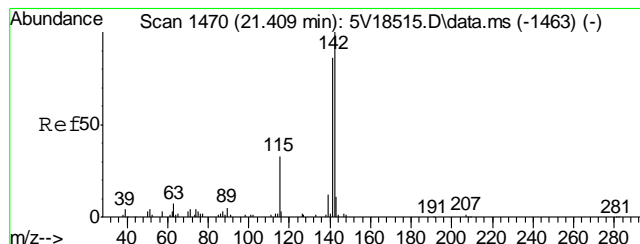
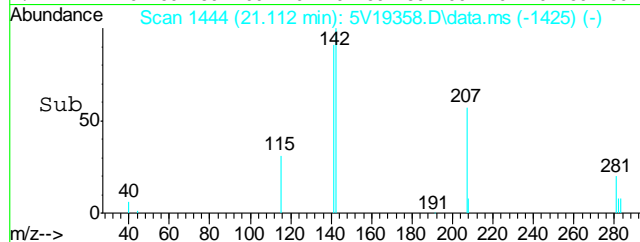
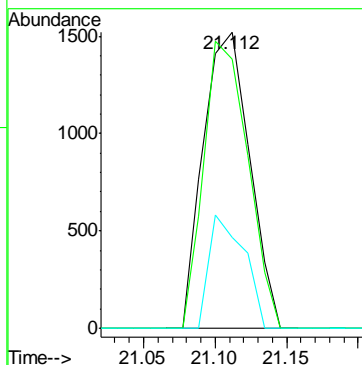
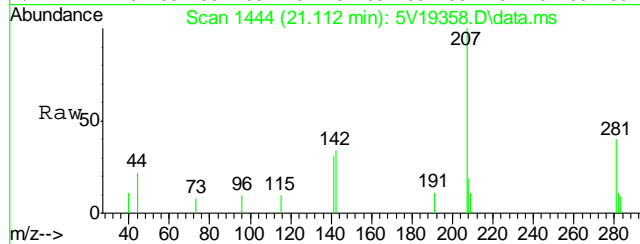
Tgt Ion:128 Resp: 8277





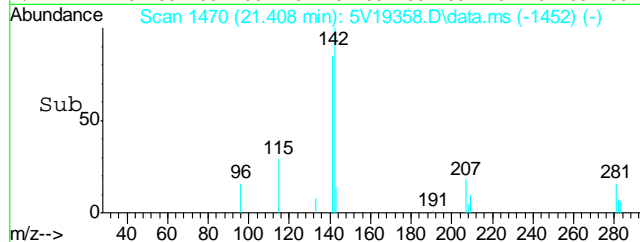
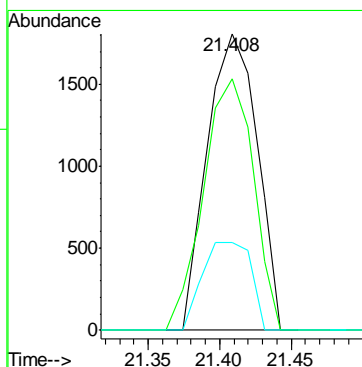
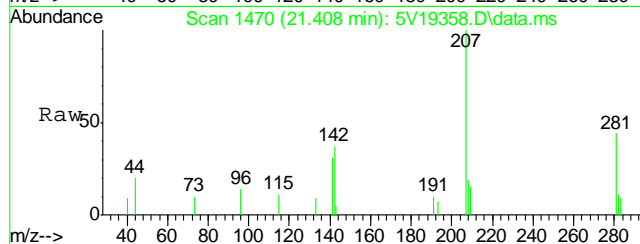
#94
2-Methylnaphthalene
Concen: 0.49 ug/l
RT: 21.112 min Scan# 1444
Delta R.T. 0.012 min
Lab File: 5V19358.D
Acq: 10 Feb 2012 6:09 am

| | | | |
|-----------|-------|-------|------|
| Tgt Ion: | 142 | Resp: | 3414 |
| Ion Ratio | Lower | Upper | |
| 142 | 100 | | |
| 141 | 92.4 | 66.2 | 99.4 |
| 115 | 28.9 | 25.9 | 38.9 |



#95
1-Methylnaphthalene
Concen: 0.59 ug/l
RT: 21.408 min Scan# 1470
Delta R.T. 0.000 min
Lab File: 5V19358.D
Acq: 10 Feb 2012 6:09 am

| | | | |
|-----------|-------|-------|-------|
| Tgt Ion: | 142 | Resp: | 4370 |
| Ion Ratio | Lower | Upper | |
| 142 | 100 | | |
| 141 | 85.2 | 68.9 | 103.3 |
| 115 | 28.6 | 27.3 | 40.9 |



GC/MS Semi-volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Page 1 of 1

Job Number: D31747
Account: XTOKRWR XTO Energy
Project: FRU 297-28C

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|-----------|-----------|----|----------|----|-----------|------------|------------------|
| OP5338-MB | 3G07926.D | 1 | 02/13/12 | JR | 02/10/12 | OP5338 | E3G313 |

The QC reported here applies to the following samples:

Method: SW846 8270C BY SIM

D31747-1

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|----------|------------------------|--------|-----|-----|-------|---|
| 83-32-9 | Acenaphthene | ND | 6.7 | 5.3 | ug/kg | |
| 120-12-7 | Anthracene | ND | 6.7 | 6.0 | ug/kg | |
| 56-55-3 | Benzo(a)anthracene | ND | 17 | 8.7 | ug/kg | |
| 50-32-8 | Benzo(a)pyrene | ND | 17 | 12 | ug/kg | |
| 205-99-2 | Benzo(b)fluoranthene | ND | 17 | 12 | ug/kg | |
| 207-08-9 | Benzo(k)fluoranthene | ND | 17 | 7.3 | ug/kg | |
| 218-01-9 | Chrysene | ND | 17 | 7.3 | ug/kg | |
| 53-70-3 | Dibenzo(a,h)anthracene | ND | 17 | 12 | ug/kg | |
| 206-44-0 | Fluoranthene | ND | 6.7 | 6.7 | ug/kg | |
| 86-73-7 | Fluorene | ND | 6.7 | 5.7 | ug/kg | |
| 193-39-5 | Indeno(1,2,3-cd)pyrene | ND | 20 | 18 | ug/kg | |
| 91-20-3 | Naphthalene | ND | 6.7 | 6.3 | ug/kg | |
| 129-00-0 | Pyrene | ND | 6.7 | 6.3 | ug/kg | |

| CAS No. | Surrogate Recoveries | Limits |
|-----------|----------------------|-------------|
| 4165-60-0 | Nitrobenzene-d5 | 89% 10-145% |
| 321-60-8 | 2-Fluorobiphenyl | 79% 10-130% |
| 1718-51-0 | Terphenyl-d14 | 99% 22-130% |

Blank Spike Summary

Page 1 of 1

Job Number: D31747
Account: XTOKRWR XTO Energy
Project: FRU 297-28C

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|-----------|-----------|----|----------|----|-----------|------------|------------------|
| OP5338-BS | 3G07927.D | 1 | 02/13/12 | JR | 02/10/12 | OP5338 | E3G313 |

The QC reported here applies to the following samples:

Method: SW846 8270C BY SIM

D31747-1

| CAS No. | Compound | Spike ug/kg | BSP ug/kg | BSP % | Limits |
|----------|------------------------|----------------|--------------|----------|--------|
| 83-32-9 | Acenaphthene | 83.3 | 71.1 | 85 | 34-130 |
| 120-12-7 | Anthracene | 83.3 | 77.4 | 93 | 35-130 |
| 56-55-3 | Benzo(a)anthracene | 83.3 | 75.1 | 90 | 36-130 |
| 50-32-8 | Benzo(a)pyrene | 83.3 | 71.1 | 85 | 36-130 |
| 205-99-2 | Benzo(b)fluoranthene | 83.3 | 72.2 | 87 | 35-130 |
| 207-08-9 | Benzo(k)fluoranthene | 83.3 | 74.2 | 89 | 37-130 |
| 218-01-9 | Chrysene | 83.3 | 75.1 | 90 | 40-130 |
| 53-70-3 | Dibenzo(a,h)anthracene | 83.3 | 78.3 | 94 | 32-130 |
| 206-44-0 | Fluoranthene | 83.3 | 77.6 | 93 | 38-130 |
| 86-73-7 | Fluorene | 83.3 | 78.7 | 94 | 35-130 |
| 193-39-5 | Indeno(1,2,3-cd)pyrene | 83.3 | 76.9 | 92 | 28-130 |
| 91-20-3 | Naphthalene | 83.3 | 75.2 | 90 | 35-130 |
| 129-00-0 | Pyrene | 83.3 | 75.5 | 91 | 37-130 |

| CAS No. | Surrogate Recoveries | BSP | Limits |
|-----------|----------------------|-----|---------|
| 4165-60-0 | Nitrobenzene-d5 | 92% | 10-145% |
| 321-60-8 | 2-Fluorobiphenyl | 81% | 10-130% |
| 1718-51-0 | Terphenyl-d14 | 93% | 22-130% |

Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

Job Number: D31747
Account: XTOKRWR XTO Energy
Project: FRU 297-28C

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|------------|-----------|----|----------|----|-----------|------------|------------------|
| OP5338-MS | 3G07929.D | 1 | 02/13/12 | JR | 02/10/12 | OP5338 | E3G313 |
| OP5338-MSD | 3G07930.D | 1 | 02/13/12 | JR | 02/10/12 | OP5338 | E3G313 |
| D31747-1 | 3G07928.D | 1 | 02/13/12 | JR | 02/10/12 | OP5338 | E3G313 |
| D31747-1 | 3G07940.D | 4 | 02/14/12 | JR | 02/10/12 | OP5338 | E3G314 |

The QC reported here applies to the following samples:

Method: SW846 8270C BY SIM

D31747-1

| CAS No. | Compound | D31747-1 ug/kg | Q | Spike ug/kg | MS ug/kg | MS % | MSD ug/kg | MSD % | RPD | Limits Rec/RPD |
|----------|------------------------|-------------------|---|----------------|-------------|---------|--------------|----------|-----|-------------------|
| 83-32-9 | Acenaphthene | ND | | 93.6 | 66.2 | 71 | 74.3 | 79 | 12 | 10-155/30 |
| 120-12-7 | Anthracene | ND | | 93.6 | 63.1 | 67 | 73.6 | 79 | 15 | 10-155/30 |
| 50-32-8 | Benzo(a)pyrene | ND | | 93.6 | 55.5 | 59 | 63.0 | 67 | 13 | 10-164/30 |
| 205-99-2 | Benzo(b)fluoranthene | ND | | 93.6 | 50.1 | 54 | 56.8 | 61 | 13 | 10-165/30 |
| 207-08-9 | Benzo(k)fluoranthene | ND | | 93.6 | 52.7 | 56 | 59.2 | 63 | 12 | 10-178/30 |
| 53-70-3 | Dibenzo(a,h)anthracene | ND | | 93.6 | 73.9 | 79 | 85.5 | 91 | 15 | 10-144/30 |
| 206-44-0 | Fluoranthene | ND | | 93.6 | 59.9 | 64 | 70.0 | 75 | 16 | 10-207/30 |
| 86-73-7 | Fluorene | ND | | 93.6 | 68.8 | 74 | 76.4 | 82 | 10 | 10-163/30 |
| 193-39-5 | Indeno(1,2,3-cd)pyrene | ND | | 93.6 | 80.8 | 86 | 95.2 | 102 | 16 | 10-180/30 |
| 91-20-3 | Naphthalene | 905 | | 93.6 | 59.8 | -903* a | 62.6 | -900* a | 5 | 10-198/30 |

| CAS No. | Surrogate Recoveries | MS | MSD | D31747-1 | D31747-1 | Limits |
|-----------|----------------------|-----|-----|----------|----------|---------|
| 4165-60-0 | Nitrobenzene-d5 | 62% | 65% | 67% | 62% | 10-145% |
| 321-60-8 | 2-Fluorobiphenyl | 60% | 69% | 65% | 72% | 10-130% |
| 1718-51-0 | Terphenyl-d14 | 82% | 91% | 78% | 81% | 22-130% |

(a) Outside control limits due to high level in sample relative to spike amount.

Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

Job Number: D31747
Account: XTOKRWR XTO Energy
Project: FRU 297-28C

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|------------|-----------|----|----------|----|-----------|------------|------------------|
| OP5338-MS | 3G07941.D | 4 | 02/14/12 | JR | 02/10/12 | OP5338 | E3G314 |
| OP5338-MSD | 3G07942.D | 4 | 02/14/12 | JR | 02/10/12 | OP5338 | E3G314 |
| D31747-1 | 3G07940.D | 4 | 02/14/12 | JR | 02/10/12 | OP5338 | E3G314 |

The QC reported here applies to the following samples:

Method: SW846 8270C BY SIM

D31747-1

| CAS No. | Compound | D31747-1 ug/kg | Q | Spike ug/kg | MS ug/kg | MS % | MSD ug/kg | MSD % | RPD | Limits Rec/RPD |
|----------|--------------------|-------------------|---|----------------|-------------|---------|--------------|----------|-----|-------------------|
| 56-55-3 | Benzo(a)anthracene | ND | | 93.6 | 61.5 | 66 | 73.5 | 78 | 18 | 10-175/30 |
| 218-01-9 | Chrysene | ND | | 93.6 | 59.4 | 63 | 70.6 | 75 | 17 | 10-147/30 |
| 129-00-0 | Pyrene | ND | | 93.6 | 61.3 | 66 | 71.6 | 76 | 16 | 10-189/30 |

| CAS No. | Surrogate Recoveries | MS | MSD | D31747-1 | Limits |
|-----------|----------------------|-----|-----|----------|---------|
| 4165-60-0 | Nitrobenzene-d5 | 63% | 65% | 62% | 10-145% |
| 321-60-8 | 2-Fluorobiphenyl | 65% | 68% | 72% | 10-130% |
| 1718-51-0 | Terphenyl-d14 | 77% | 88% | 81% | 22-130% |

GC/MS Semi-volatiles

Raw Data



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\021312\
 Data File : 3g07928.D
 Acq On : 13 Feb 2012 3:02 pm
 Operator : JAMESR
 Sample : D31747-1
 Misc : OP5338,E3G313,30.05,,,1,1
 ALS Vial : 6 Sample Multiplier: 1

Quant Time: Feb 14 10:18:05 2012
 Quant Method : C:\msdchem\1\METHODS\SIMPE3G305.M
 Quant Title : PAHSIM BASE
 QLast Update : Tue Feb 07 13:46:29 2012
 Response via : Initial Calibration

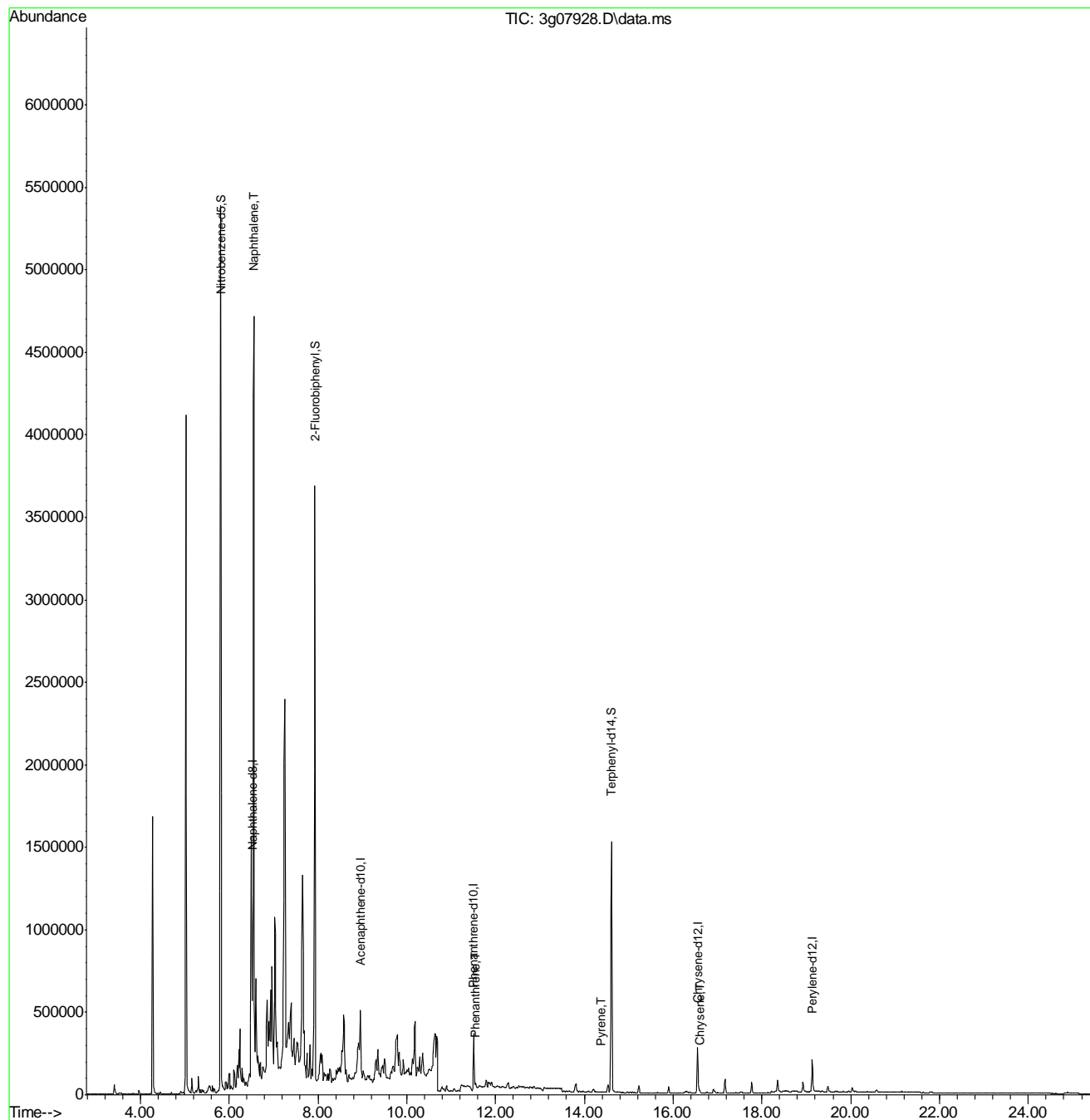
| Compound | R.T. | QIon | Response | Conc | Units | Dev(Min) |
|-----------------------------|--------|-------|----------|----------|--------|----------|
| Internal Standards | | | | | | |
| 1) Naphthalene-d8 | 6.532 | 136 | 647698 | 4.00 | ug/mL | 0.00 |
| 6) Acenaphthene-d10 | 8.957 | 164 | 258606 | 4.00 | ug/mL | 0.01 |
| 14) Phenanthrene-d10 | 11.509 | 188 | 347557 | 4.00 | ug/mL | 0.00 |
| 18) Chrysene-d12 | 16.554 | 240 | 215885 | 4.00 | ug/mL | 0.00 |
| 23) Perylene-d12 | 19.132 | 264 | 245031 | 4.00 | ug/mL | 0.00 |
| System Monitoring Compounds | | | | | | |
| 2) Nitrobenzene-d5 | 5.809 | 82 | 2946360 | 33.30 | ug/mL | -0.01 |
| Spiked Amount | 50.000 | Range | 25 - 135 | Recovery | = | 66.60% |
| 7) 2-Fluorobiphenyl | 7.929 | 172 | 3273157 | 32.32 | ug/mL | 0.00 |
| Spiked Amount | 50.000 | Range | 25 - 135 | Recovery | = | 64.64% |
| 20) Terphenyl-d14 | 14.611 | 244 | 1749865 | 39.10 | ug/mL | 0.00 |
| Spiked Amount | 50.000 | Range | 25 - 135 | Recovery | = | 78.20% |
| Target Compounds | | | | | | |
| 3) N-Nitrosodimethylamine | 0.000 | | 0 | N.D. | d | |
| 4) N-Nitrosodi-propylamine | 0.000 | | 0 | N.D. | d | |
| 5) Naphthalene | 6.557 | 128 | 5048251 | 24.18 | ug/mL | 95 |
| 8) 2-Methylnaphthalene | 0.000 | | 0 | N.D. | d | |
| 9) 1-Methylnaphthalene | 0.000 | | 0 | N.D. | d | |
| 10) Acenaphthylene | 0.000 | | 0 | N.D. | d | |
| 11) Acenaphthene | 0.000 | | 0 | N.D. | d | |
| 12) Fluorene | 0.000 | | 0 | N.D. | d | |
| 13) Diphenylamine | 0.000 | | 0 | N.D. | d | |
| 15) Phenanthrene | 11.548 | 178 | 30908 | 0.25 | ug/mL# | 68 |
| 16) Anthracene | 0.000 | | 0 | N.D. | d | |
| 17) Fluoranthene | 0.000 | | 0 | N.D. | d | |
| 19) Pyrene | 14.382 | 202 | 2785 | 0.03 | ug/mL | 81 |
| 21) Benzo(a)anthracene | 0.000 | | 0 | N.D. | d | |
| 22) Chrysene | 16.593 | 228 | 8005 | 0.11 | ug/mL | 90 |
| 24) Benzo(b)fluoranthene | 0.000 | | 0 | N.D. | d | |
| 25) Benzo(k)fluoranthene | 0.000 | | 0 | N.D. | d | |
| 26) Benzo(a)pyrene | 0.000 | | 0 | N.D. | d | |
| 27) Indeno(1,2,3-cd)pyrene | 0.000 | | 0 | N.D. | d | |
| 28) Dibenz(a,h)anthracene | 0.000 | | 0 | N.D. | d | |
| 29) Benzo(g,h,i)perylene | 0.000 | | 0 | N.D. | d | |

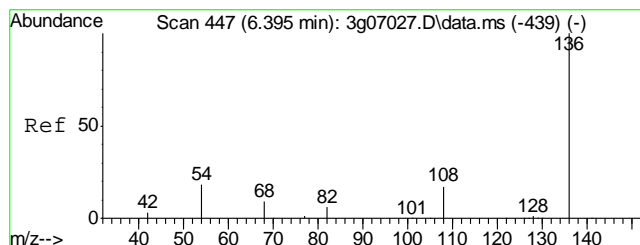
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\021312\
Data File : 3g07928.D
Acq On : 13 Feb 2012 3:02 pm
Operator : JAMESR
Sample : D31747-1
Misc : OP5338,E3G313,30.05,,,1,1
ALS Vial : 6 Sample Multiplier: 1

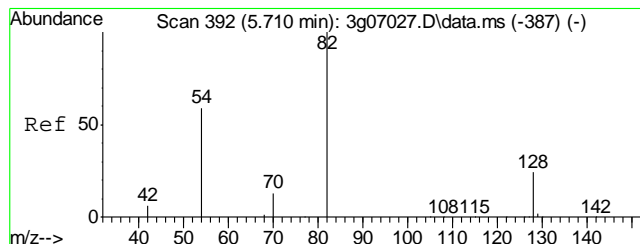
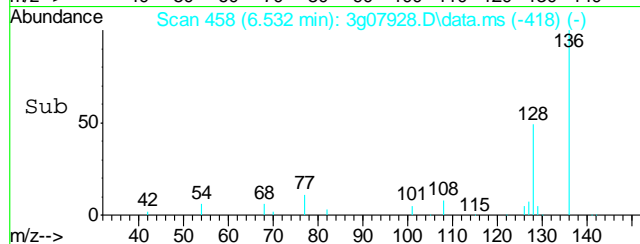
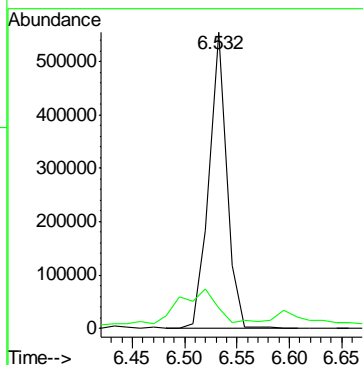
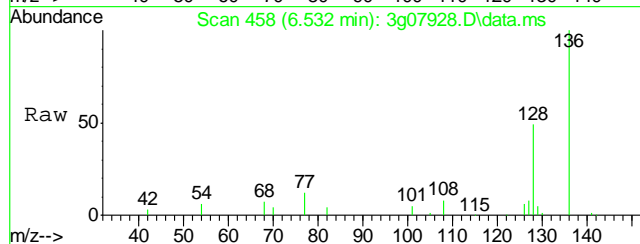
Quant Time: Feb 14 10:18:05 2012
Quant Method : C:\msdchem\1\METHODS\SIMPE3G305.M
Quant Title : PAHSIM BASE
QLast Update : Tue Feb 07 13:46:29 2012
Response via : Initial Calibration





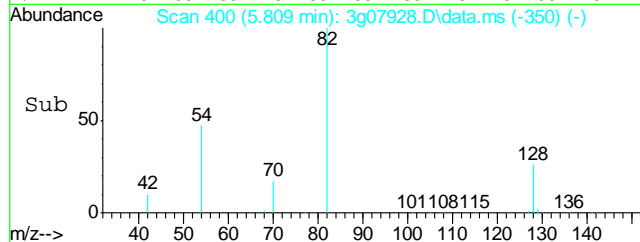
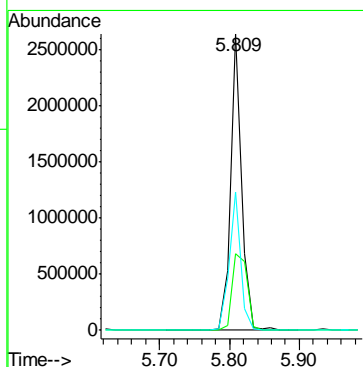
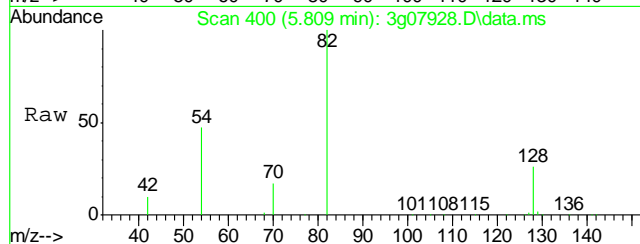
#1
Naphthalene-d8
Concen: 4.00 ug/mL
RT: 6.532 min Scan# 458
Delta R.T. -0.000 min
Lab File: 3g07928.D
Acq: 13 Feb 12 3:02 pm

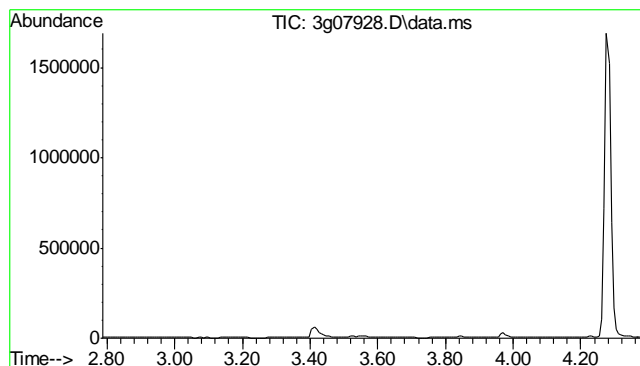
Tgt Ion: 136 Resp: 647698
Ion Ratio Lower Upper
136 100
68 30.8 0.0 31.7



#2
Nitrobenzene-d5
Concen: 33.30 ug/mL
RT: 5.809 min Scan# 400
Delta R.T. -0.013 min
Lab File: 3g07928.D
Acq: 13 Feb 12 3:02 pm

Tgt Ion: 82 Resp: 2946360
Ion Ratio Lower Upper
82 100
128 34.9 17.9 57.9
54 48.7 25.6 65.6

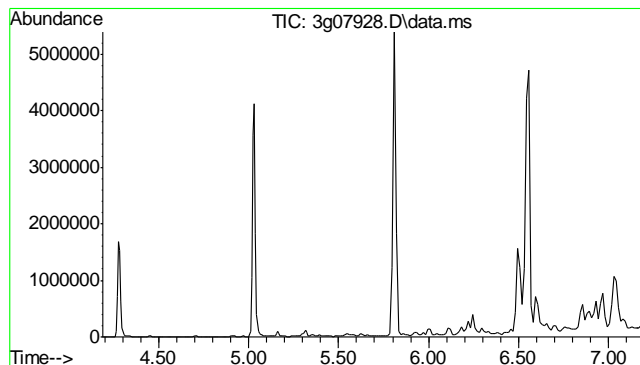
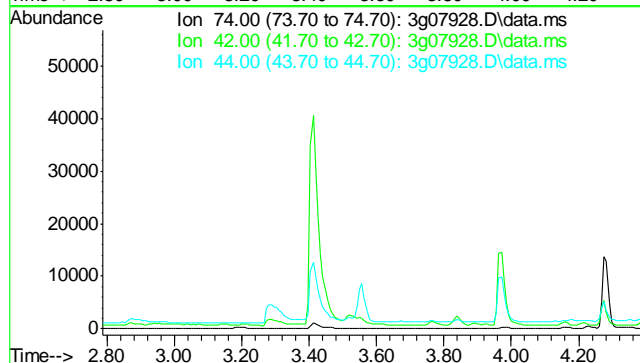




#3
N-Nitrosodimethylamine
Concen: N.D. ug/mL
Expected RT: 2.88 min

Lab File: 3g07928.D
Acq: 13 Feb 12 3:02 pm

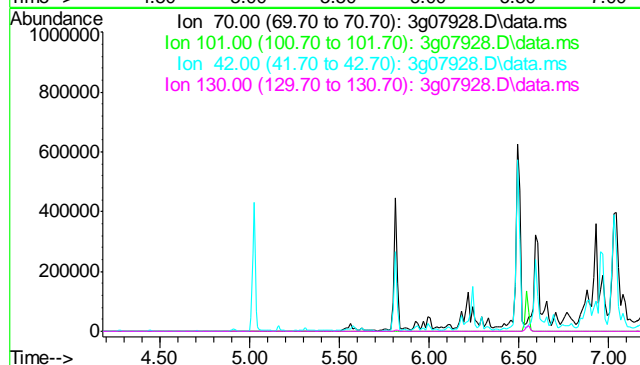
| Tgt Ion | Exp Ratio |
|---------|-----------|
| 74 | 100 |
| 42 | 56.1 |
| 44 | 4.0 |

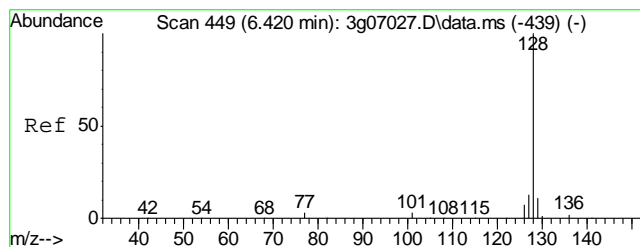


#4
N-Nitrosodi-propylamine
Concen: N.D. ug/mL
Expected RT: 5.68 min

Lab File: 3g07928.D
Acq: 13 Feb 12 3:02 pm

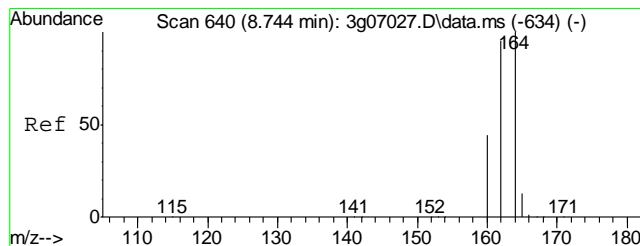
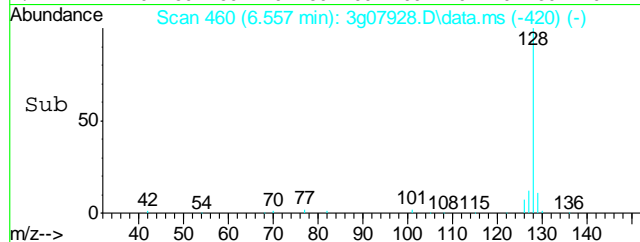
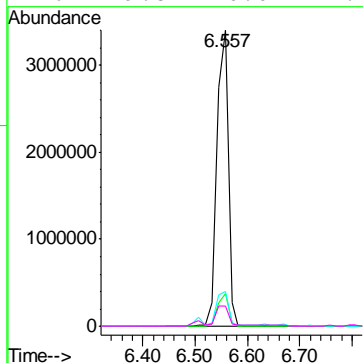
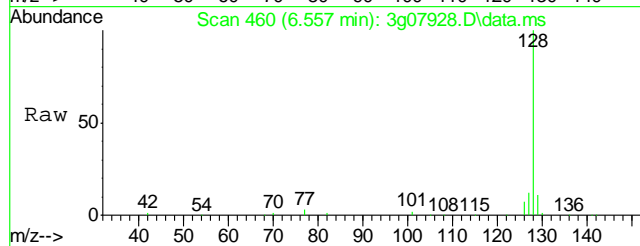
| Tgt Ion | Exp Ratio |
|---------|-----------|
| 70 | 100 |
| 101 | 11.0 |
| 42 | 48.6 |
| 130 | 21.4 |





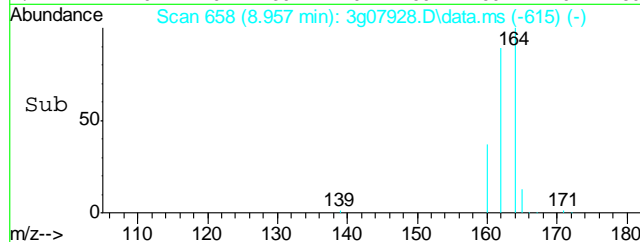
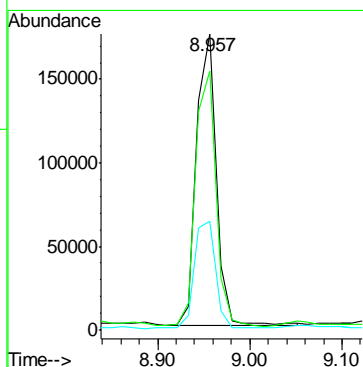
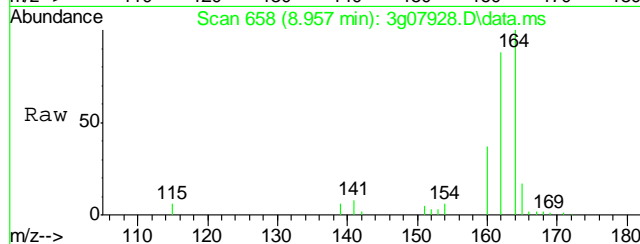
#5
Naphthalene
Concen: 24.18 ug/mL
RT: 6.557 min Scan# 460
Delta R.T. -0.000 min
Lab File: 3g07928.D
Acq: 13 Feb 12 3:02 pm

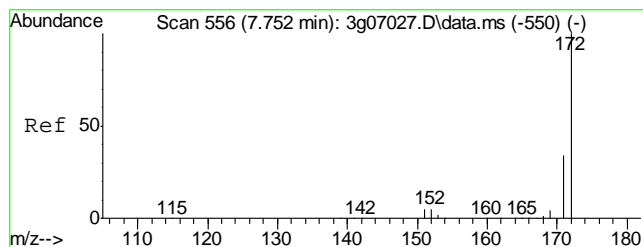
| Tgt Ion | Ratio | Lower | Upper |
|---------|-------|-------|-------|
| 128 | 100 | | |
| 129 | 10.7 | 0.0 | 30.7 |
| 127 | 15.1 | 0.0 | 32.0 |
| 126 | 9.8 | 0.0 | 27.4 |



#6
Acenaphthene-d10
Concen: 4.00 ug/mL
RT: 8.957 min Scan# 658
Delta R.T. 0.012 min
Lab File: 3g07928.D
Acq: 13 Feb 12 3:02 pm

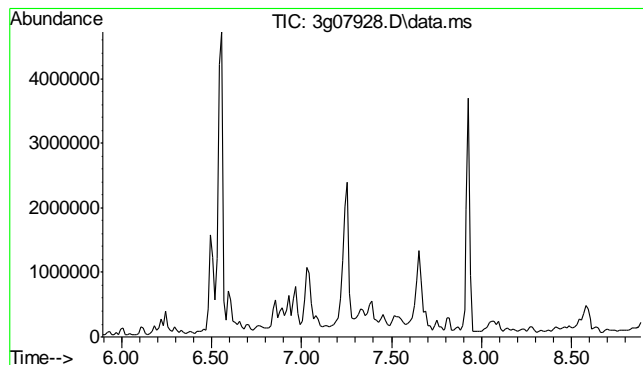
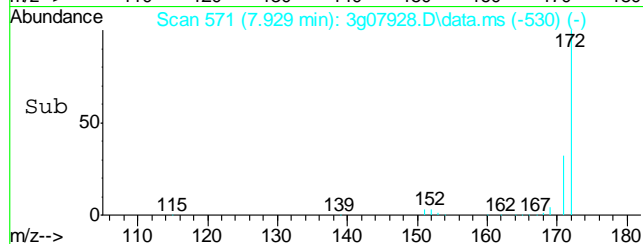
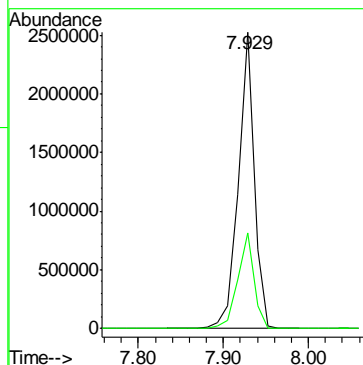
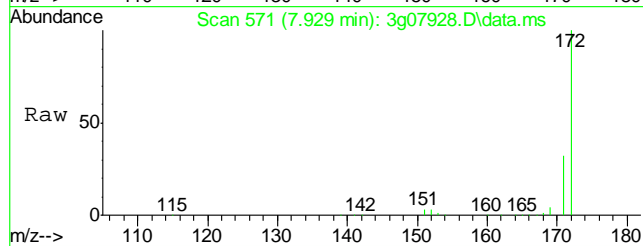
| Tgt Ion | Ratio | Lower | Upper |
|---------|-------|-------|-------|
| 164 | 100 | | |
| 162 | 90.1 | 74.0 | 114.0 |
| 160 | 39.6 | 23.2 | 63.2 |





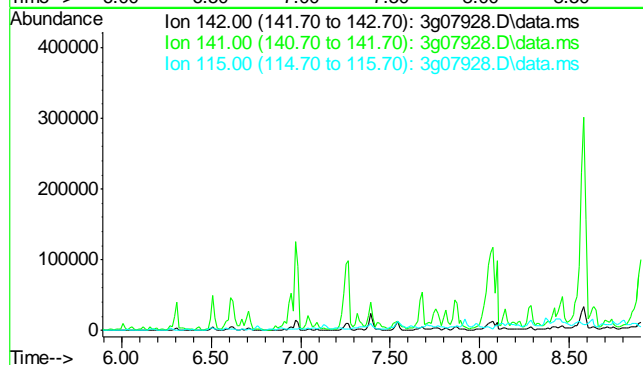
#7
 2-Fluorobiphenyl
 Concen: 32.32 ug/mL
 RT: 7.929 min Scan# 571
 Delta R.T. -0.000 min
 Lab File: 3g07928.D
 Acq: 13 Feb 12 3:02 pm

| Tgt Ion | Resp | Ion Ratio | Lower | Upper |
|---------|---------|-----------|-------|-------|
| 172 | 3273157 | 100 | | |
| 171 | | 32.8 | 12.9 | 52.9 |

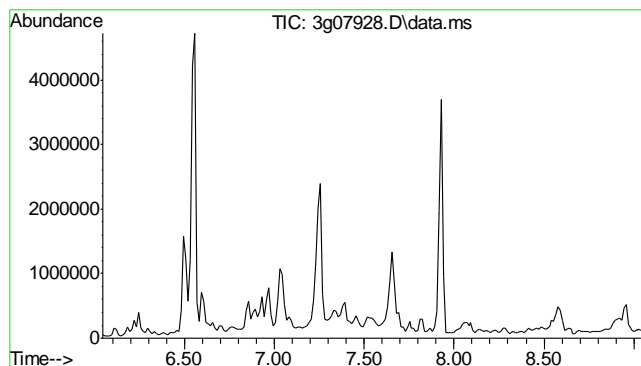


#8
 2-Methylnaphthalene
 Concen: N.D. ug/mL
 Expected RT: 7.39 min
 Lab File: 3g07928.D
 Acq: 13 Feb 12 3:02 pm

| Tgt Ion | Sig | Exp Ratio |
|---------|-----|-----------|
| 142 | 100 | |
| 141 | | 82.6 |
| 115 | | 33.5 |



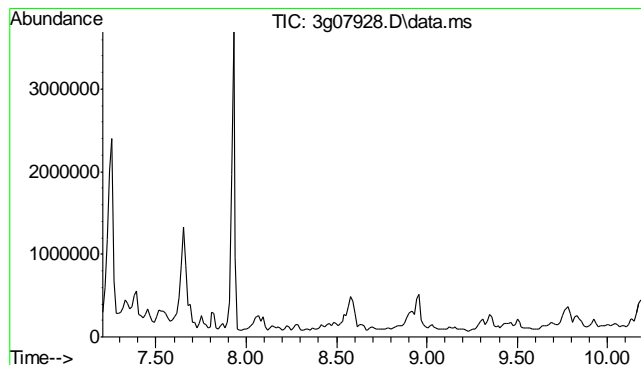
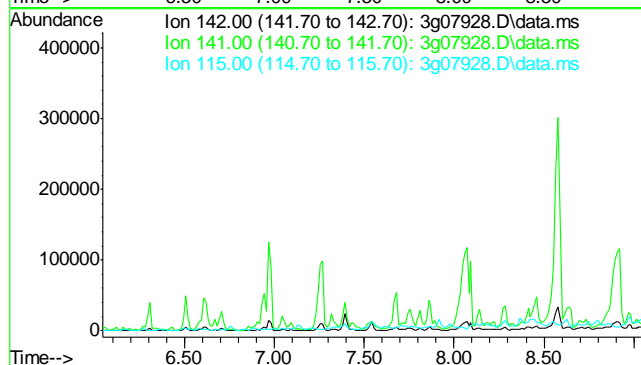
8.1.1
 8



#9
1-Methylnaphthalene
Concen: N.D. ug/mL
Expected RT: 7.54 min

Lab File: 3g07928.D
Acq: 13 Feb 12 3:02 pm

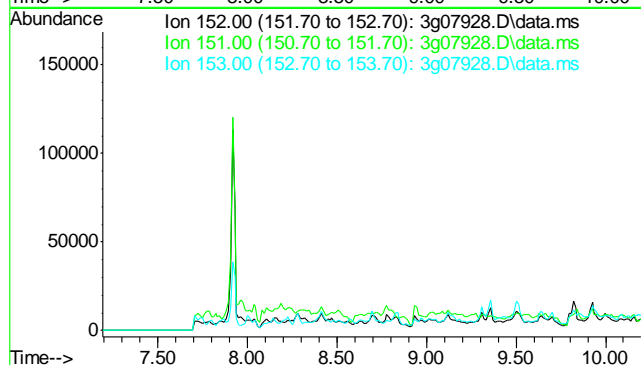
| | |
|----------|-----------|
| Tgt Ion: | 142 |
| Sig | Exp Ratio |
| 142 | 100 |
| 141 | 86.1 |
| 115 | 36.0 |

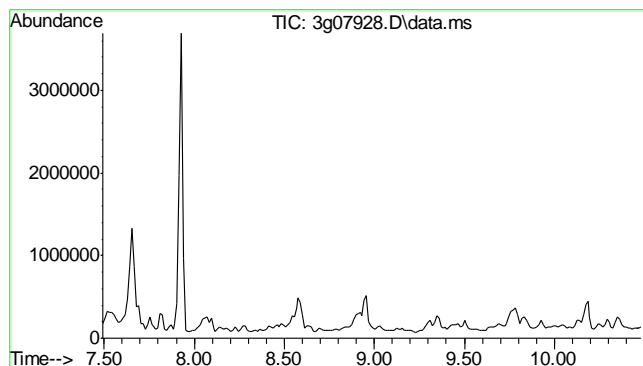


#10
Acenaphthylene
Concen: N.D. ug/mL
Expected RT: 8.70 min

Lab File: 3g07928.D
Acq: 13 Feb 12 3:02 pm

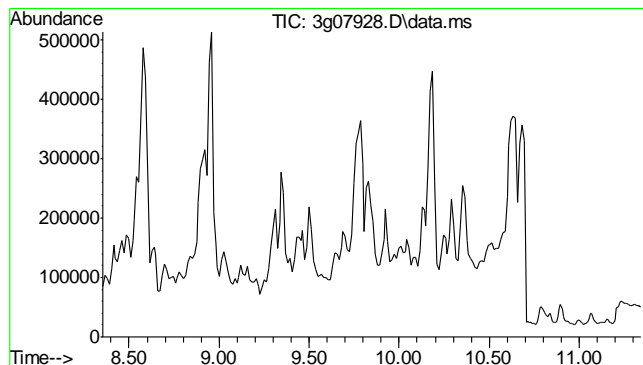
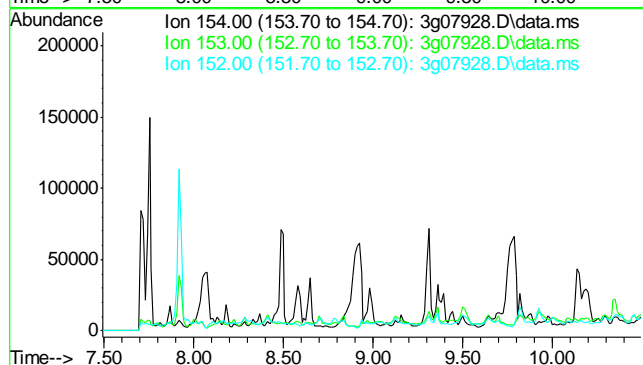
| | |
|----------|-----------|
| Tgt Ion: | 152 |
| Sig | Exp Ratio |
| 152 | 100 |
| 151 | 18.7 |
| 153 | 12.9 |





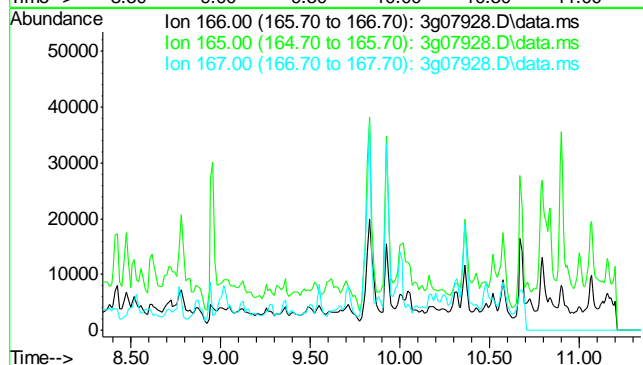
#11
 Acenaphthene
 Concen: N.D. ug/mL
 Expected RT: 8.99 min
 Lab File: 3g07928.D
 Acq: 13 Feb 12 3:02 pm

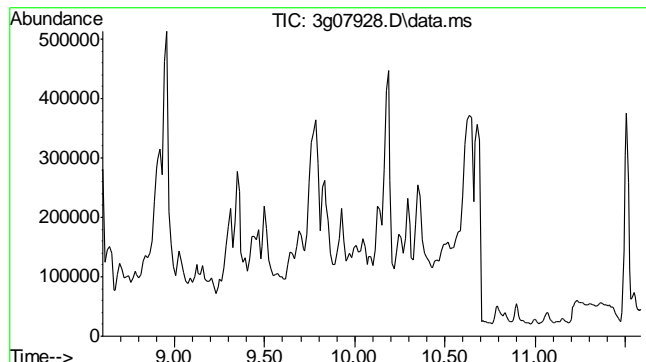
| Tgt Ion | Exp Ratio |
|---------|-----------|
| 154 | 100 |
| 153 | 103.9 |
| 152 | 49.2 |



#12
 Fluorene
 Concen: N.D. ug/mL
 Expected RT: 9.84 min
 Lab File: 3g07928.D
 Acq: 13 Feb 12 3:02 pm

| Tgt Ion | Exp Ratio |
|---------|-----------|
| 166 | 100 |
| 165 | 90.9 |
| 167 | 13.1 |

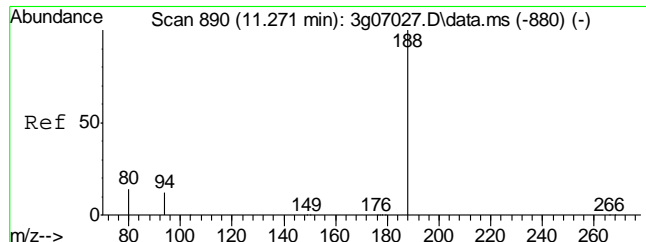
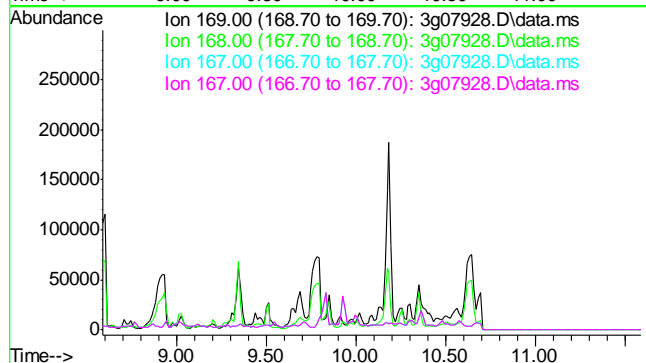




#13
Diphenylamine
Concen: N.D. ug/mL
Expected RT: 10.09 min

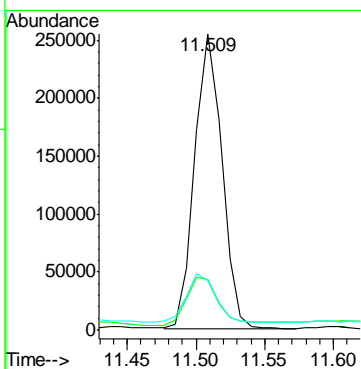
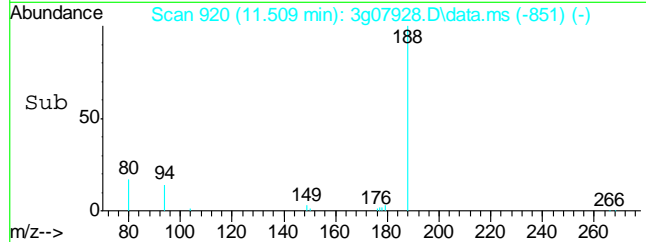
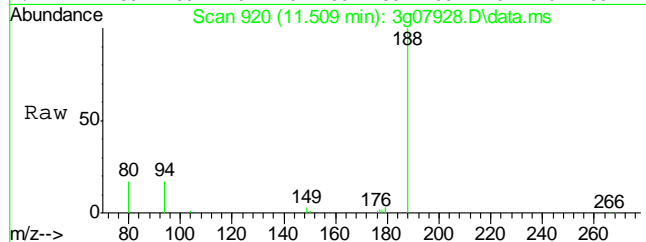
Lab File: 3g07928.D
Acq: 13 Feb 12 3:02 pm

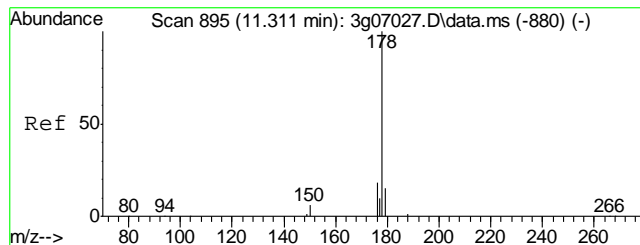
Tgt Ion: 169
Sig Exp Ratio
169 100
168 61.2
167 33.1
167 33.1



#14
Phenanthrene-d10
Concen: 4.00 ug/mL
RT: 11.509 min Scan# 920
Delta R.T. 0.008 min
Lab File: 3g07928.D
Acq: 13 Feb 12 3:02 pm

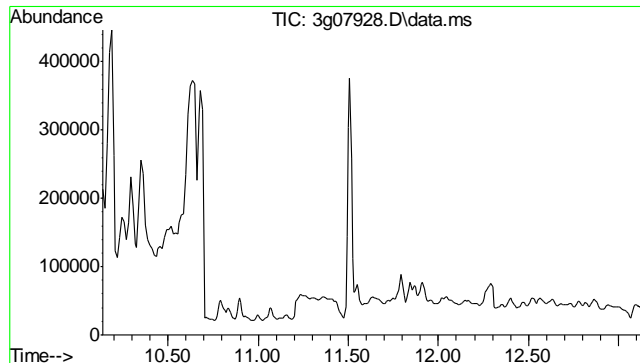
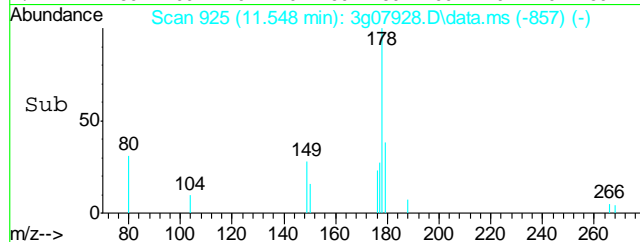
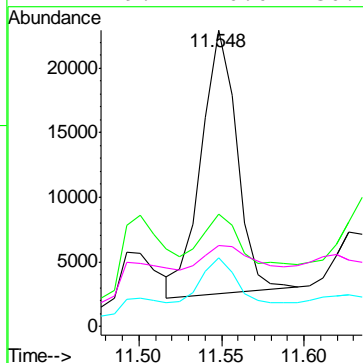
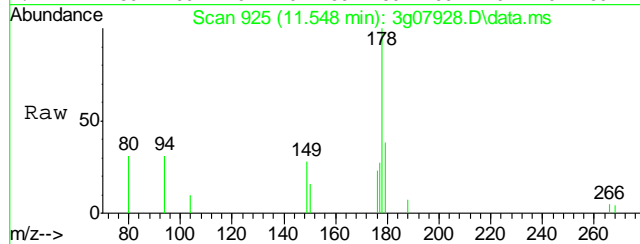
Tgt Ion: 188 Resp: 347557
Ion Ratio Lower Upper
188 100
94 20.0 0.0 39.4
80 17.3 0.2 40.2





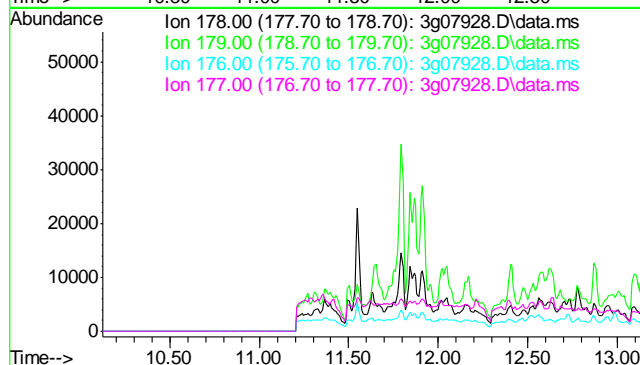
#15
Phenanthrene
Concen: 0.25 ug/mL
RT: 11.548 min Scan# 925
Delta R.T. 0.008 min
Lab File: 3g07928.D
Acq: 13 Feb 12 3:02 pm

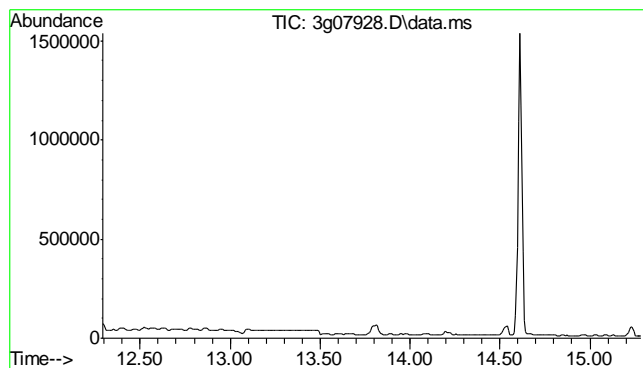
| | | | |
|-----------|-------|-------|-------|
| Tgt Ion: | 178 | Resp: | 30908 |
| Ion Ratio | Lower | Upper | |
| 178 | 100 | | |
| 179 | 41.0 | 0.0 | 35.1# |
| 176 | 22.9 | 0.0 | 38.4 |
| 177 | 19.7 | 0.0 | 30.1 |



#16
Anthracene
Concen: N.D. ug/mL
Expected RT: 11.63 min
Lab File: 3g07928.D
Acq: 13 Feb 12 3:02 pm

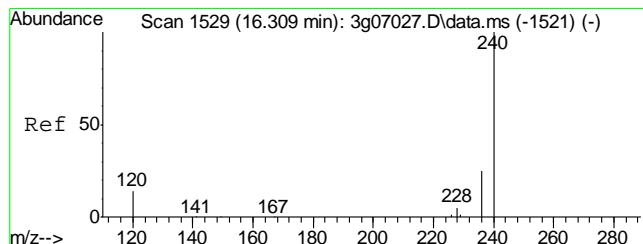
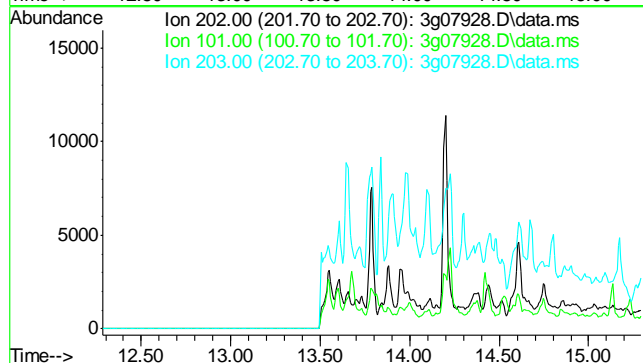
| | |
|----------|-----------|
| Tgt Ion: | 178 |
| Sig | Exp Ratio |
| 178 | 100 |
| 179 | 15.0 |
| 176 | 17.6 |
| 177 | 8.6 |





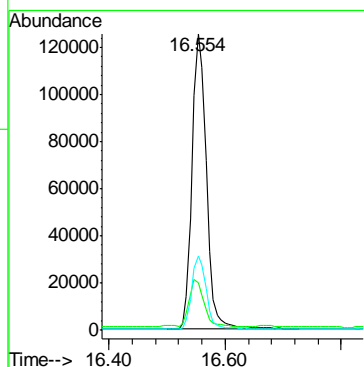
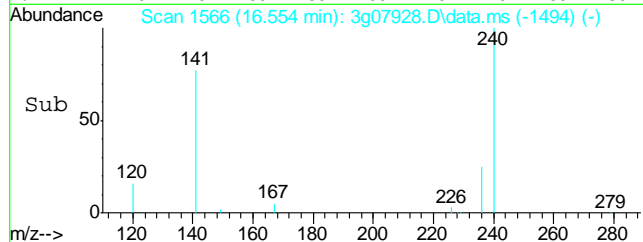
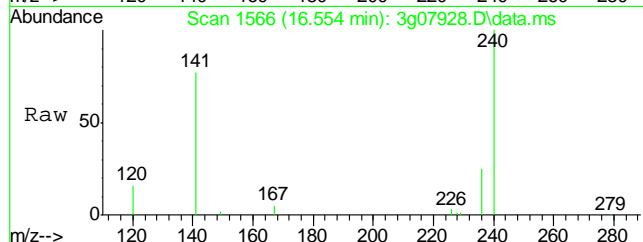
#17
 Fluoranthene
 Concen: N.D. ug/mL
 Expected RT: 13.79 min
 Lab File: 3g07928.D
 Acq: 13 Feb 12 3:02 pm

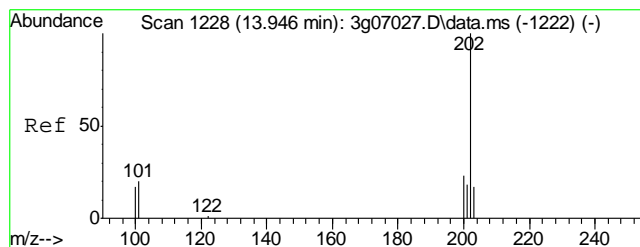
Tgt Ion: 202
 Sig Exp Ratio
 202 100
 101 19.8
 203 17.2



#18
 Chrysene-d12
 Concen: 4.00 ug/mL
 RT: 16.554 min Scan# 1566
 Delta R.T. -0.000 min
 Lab File: 3g07928.D
 Acq: 13 Feb 12 3:02 pm

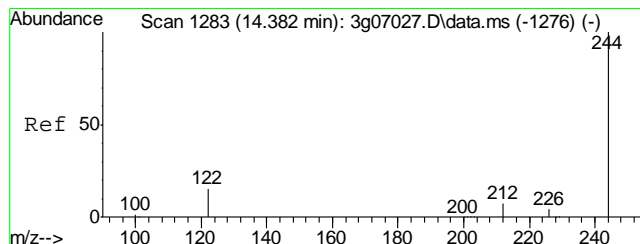
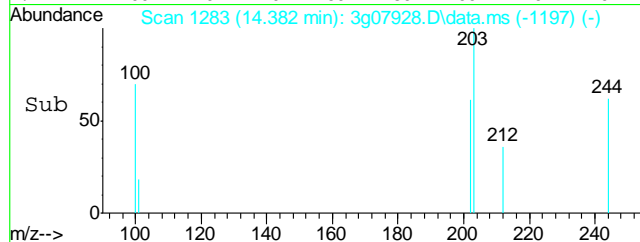
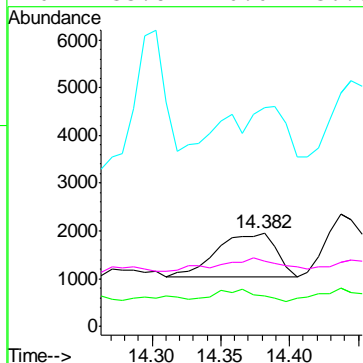
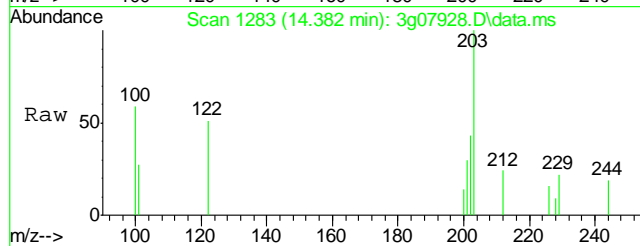
Tgt Ion: 240 Resp: 215885
 Ion Ratio Lower Upper
 240 100
 120 16.3 10.4 50.4
 236 24.3 5.8 45.8





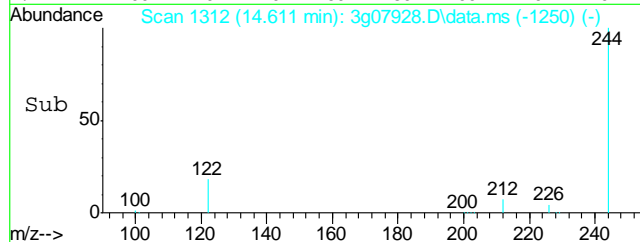
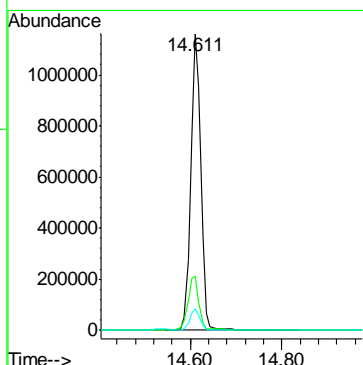
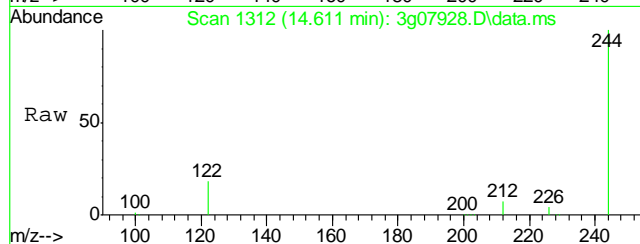
#19
Pyrene
Concen: 0.03 ug/mL
RT: 14.382 min Scan# 1283
Delta R.T. 0.182 min
Lab File: 3g07928.D
Acq: 13 Feb 12 3:02 pm

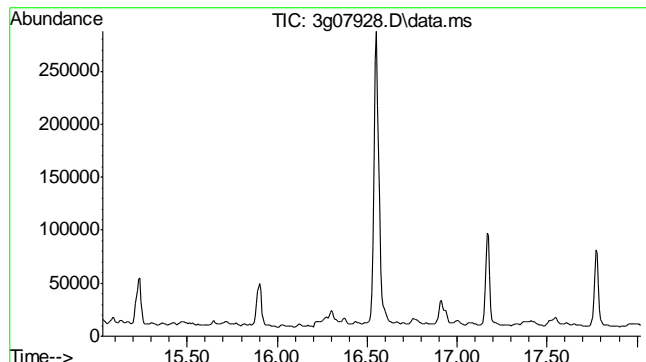
| | |
|--------------|---------------|
| Tgt Ion: 202 | Resp: 2785 |
| Ion Ratio | Lower Upper |
| 202 | 100 |
| 200 | 19.3 0.1 40.1 |
| 203 | 25.5 0.0 37.8 |
| 201 | 33.8 0.0 36.5 |



#20
Terphenyl-d14
Concen: 39.10 ug/mL
RT: 14.611 min Scan# 1312
Delta R.T. -0.008 min
Lab File: 3g07928.D
Acq: 13 Feb 12 3:02 pm

| | |
|--------------|---------------|
| Tgt Ion: 244 | Resp: 1749865 |
| Ion Ratio | Lower Upper |
| 244 | 100 |
| 122 | 19.8 9.9 49.9 |
| 212 | 7.2 0.0 27.9 |

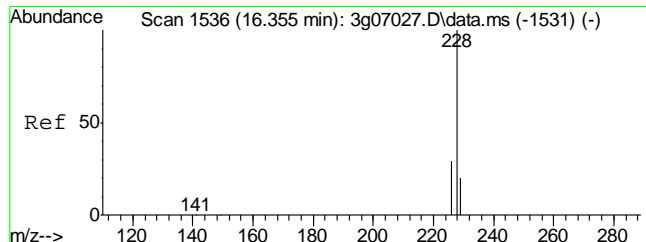
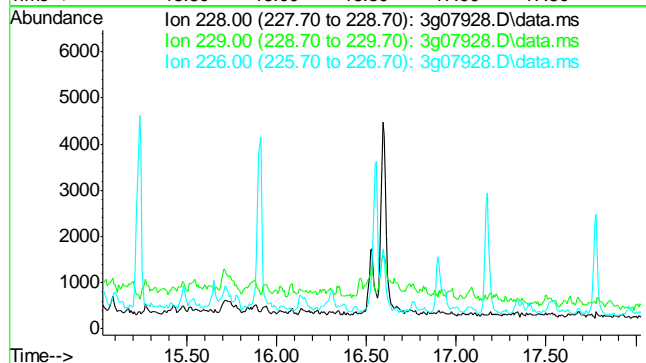




#21
Benzo(a)anthracene
Concen: N.D. ug/mL
Expected RT: 16.53 min

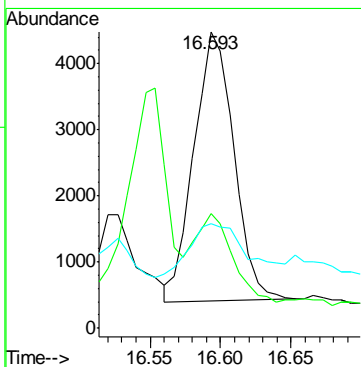
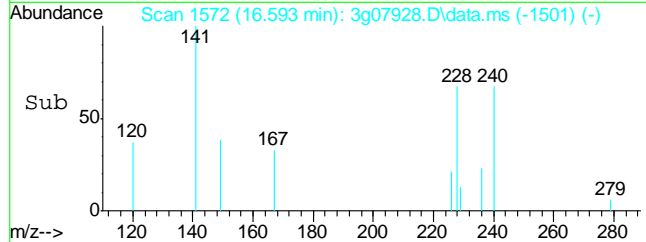
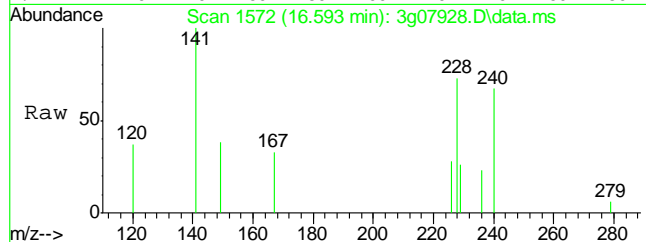
Lab File: 3g07928.D
Acq: 13 Feb 12 3:02 pm

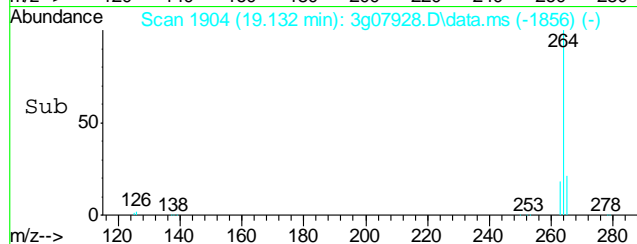
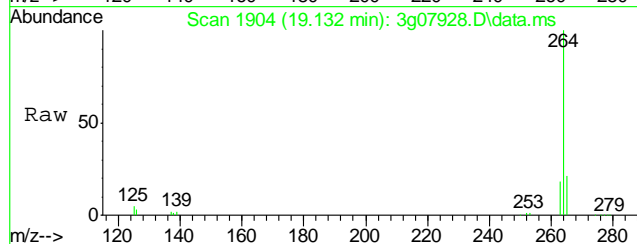
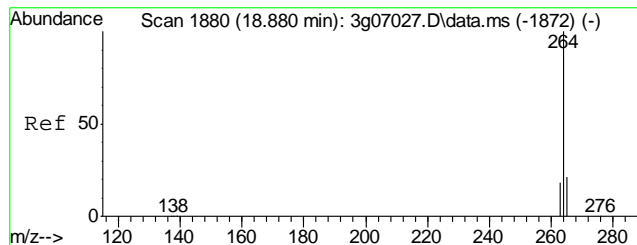
Tgt Ion: 228
Sig Exp Ratio
228 100
229 19.6
226 26.2



#22
Chrysene
Concen: 0.11 ug/mL
RT: 16.593 min Scan# 1572
Delta R.T. -0.013 min
Lab File: 3g07928.D
Acq: 13 Feb 12 3:02 pm

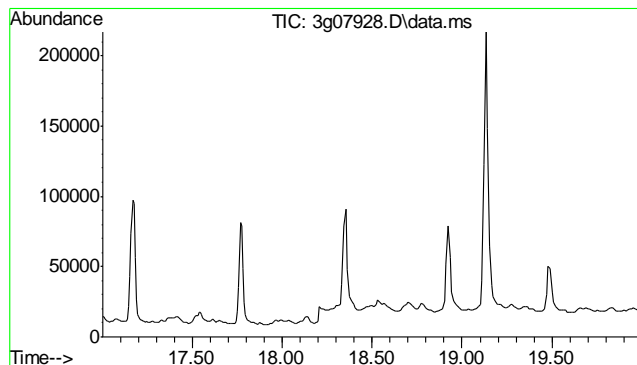
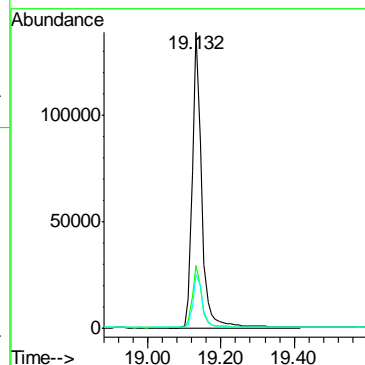
Tgt Ion: 228 Resp: 8005
Ion Ratio Lower Upper
228 100
226 30.2 8.7 48.7
229 28.6 0.0 39.3





#23
Perylene-d12
Concen: 4.00 ug/mL
RT: 19.132 min Scan# 1904
Delta R.T. -0.000 min
Lab File: 3g07928.D
Acq: 13 Feb 12 3:02 pm

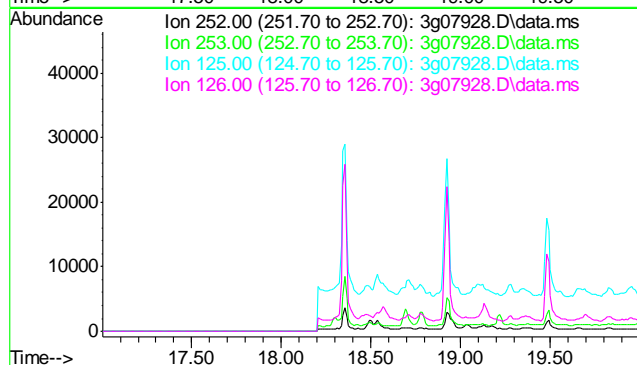
| | | | |
|-----------|-------|-------|--------|
| Tgt Ion: | 264 | Resp: | 245031 |
| Ion Ratio | Lower | Upper | |
| 264 | 100 | | |
| 265 | 21.4 | 1.1 | 41.1 |
| 263 | 19.2 | 0.0 | 39.2 |

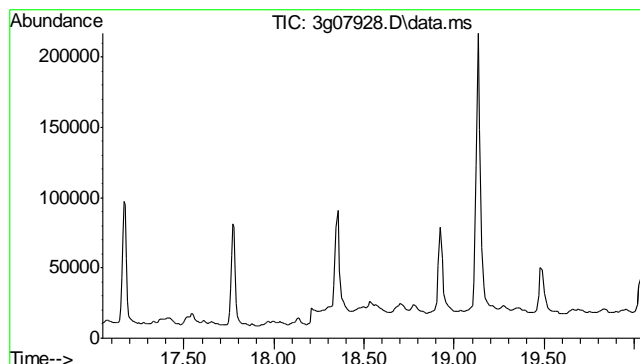


#24
Benzo(b)fluoranthene
Concen: N.D. ug/mL
Expected RT: 18.50 min

Lab File: 3g07928.D
Acq: 13 Feb 12 3:02 pm

| | |
|----------|-----------|
| Tgt Ion: | 252 |
| Sig | Exp Ratio |
| 252 | 100 |
| 253 | 21.4 |
| 125 | 18.7 |
| 126 | 26.3 |

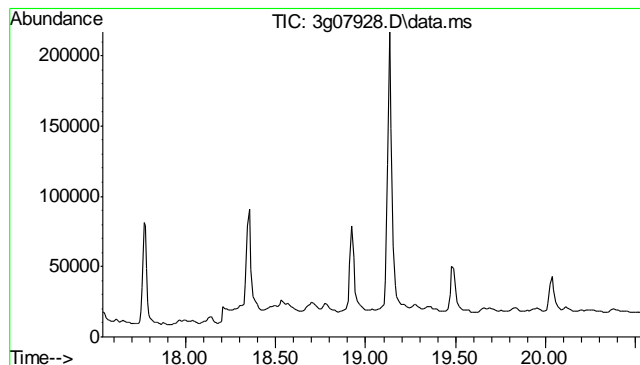
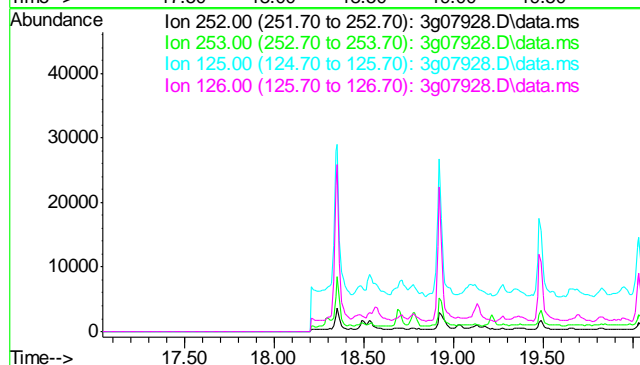




#25
Benzo(k)fluoranthene
Concen: N.D. ug/mL
Expected RT: 18.54 min

Lab File: 3g07928.D
Acq: 13 Feb 12 3:02 pm

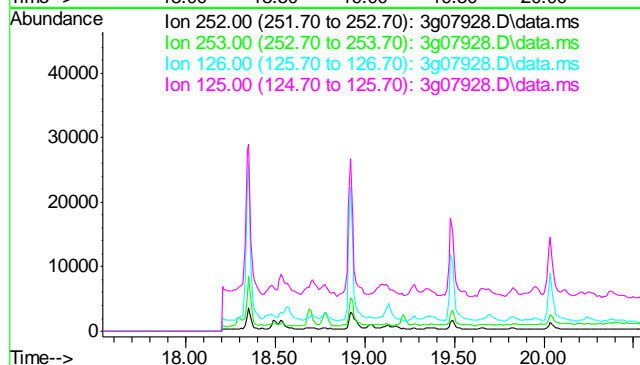
| Tgt Ion | Sig | Exp Ratio |
|---------|------|-----------|
| 252 | 100 | |
| 253 | 21.6 | |
| 125 | 22.6 | |
| 126 | 35.2 | |

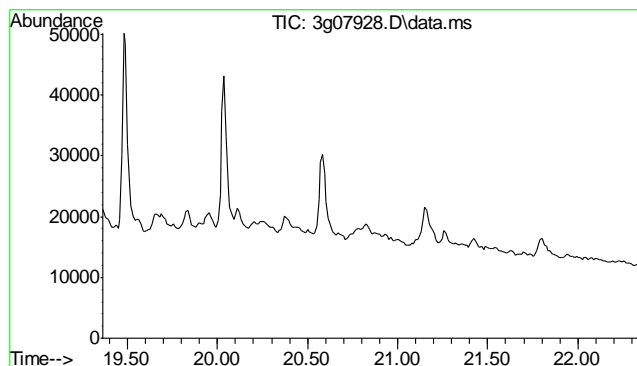


#26
Benzo(a)pyrene
Concen: N.D. ug/mL
Expected RT: 19.04 min

Lab File: 3g07928.D
Acq: 13 Feb 12 3:02 pm

| Tgt Ion | Sig | Exp Ratio |
|---------|------|-----------|
| 252 | 100 | |
| 253 | 20.5 | |
| 126 | 30.6 | |
| 125 | 23.4 | |

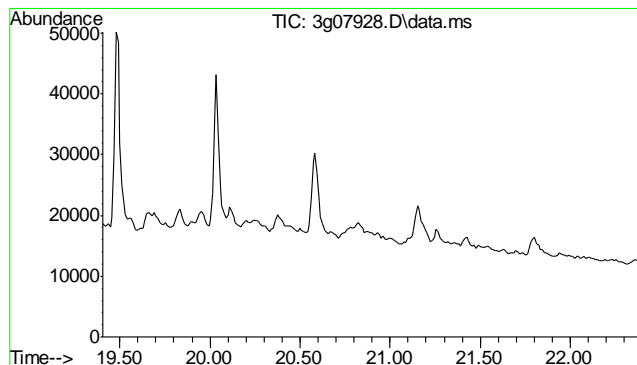
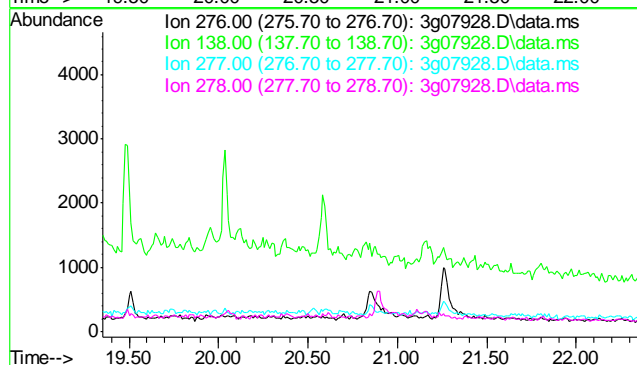




#27
 Indeno(1,2,3-cd)pyrene
 Concen: N.D. ug/mL
 Expected RT: 20.86 min

Lab File: 3g07928.D
 Acq: 13 Feb 12 3:02 pm

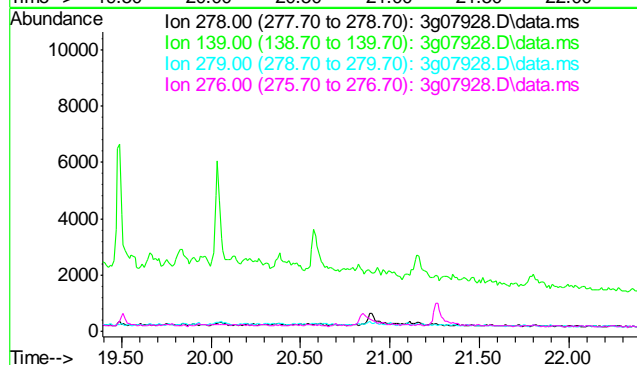
| Tgt Ion | Exp Ratio |
|---------|-----------|
| 276 | 100 |
| 138 | 20.3 |
| 277 | 25.0 |
| 278 | 79.9 |

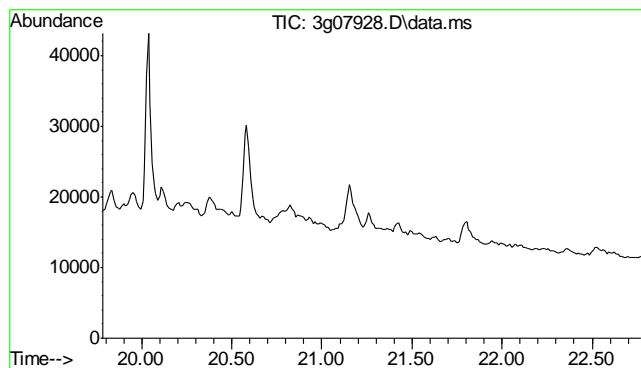


#28
 Dibenzo(a,h)anthracene
 Concen: N.D. ug/mL
 Expected RT: 20.90 min

Lab File: 3g07928.D
 Acq: 13 Feb 12 3:02 pm

| Tgt Ion | Exp Ratio |
|---------|-----------|
| 278 | 100 |
| 139 | 26.9 |
| 279 | 23.2 |
| 276 | 125.2 |

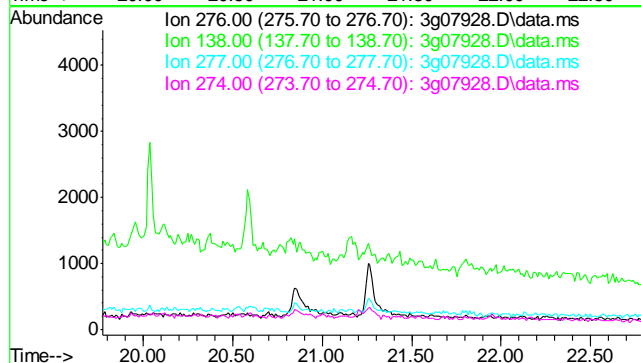




#29
 Benzo(g,h,i)perylene
 Concen: N.D. ug/mL
 Expected RT: 21.28 min

Lab File: 3g07928.D
 Acq: 13 Feb 12 3:02 pm

| Tgt Ion | Exp Ratio |
|---------|-----------|
| 276 | 100 |
| 138 | 32.8 |
| 277 | 23.5 |
| 274 | 20.8 |



8.1.1

8

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\021412\
 Data File : 3g07940.D
 Acq On : 14 Feb 2012 9:25 am
 Operator : JAMESR
 Sample : D31747-1, 4
 Misc : OP5338,E3G314,30.01,,,1,4
 ALS Vial : 4 Sample Multiplier: 1

Quant Time: Feb 14 11:54:45 2012
 Quant Method : C:\msdchem\1\METHODS\SIMPE3G305.M
 Quant Title : PAHSIM BASE
 QLast Update : Tue Feb 07 13:46:29 2012
 Response via : Initial Calibration

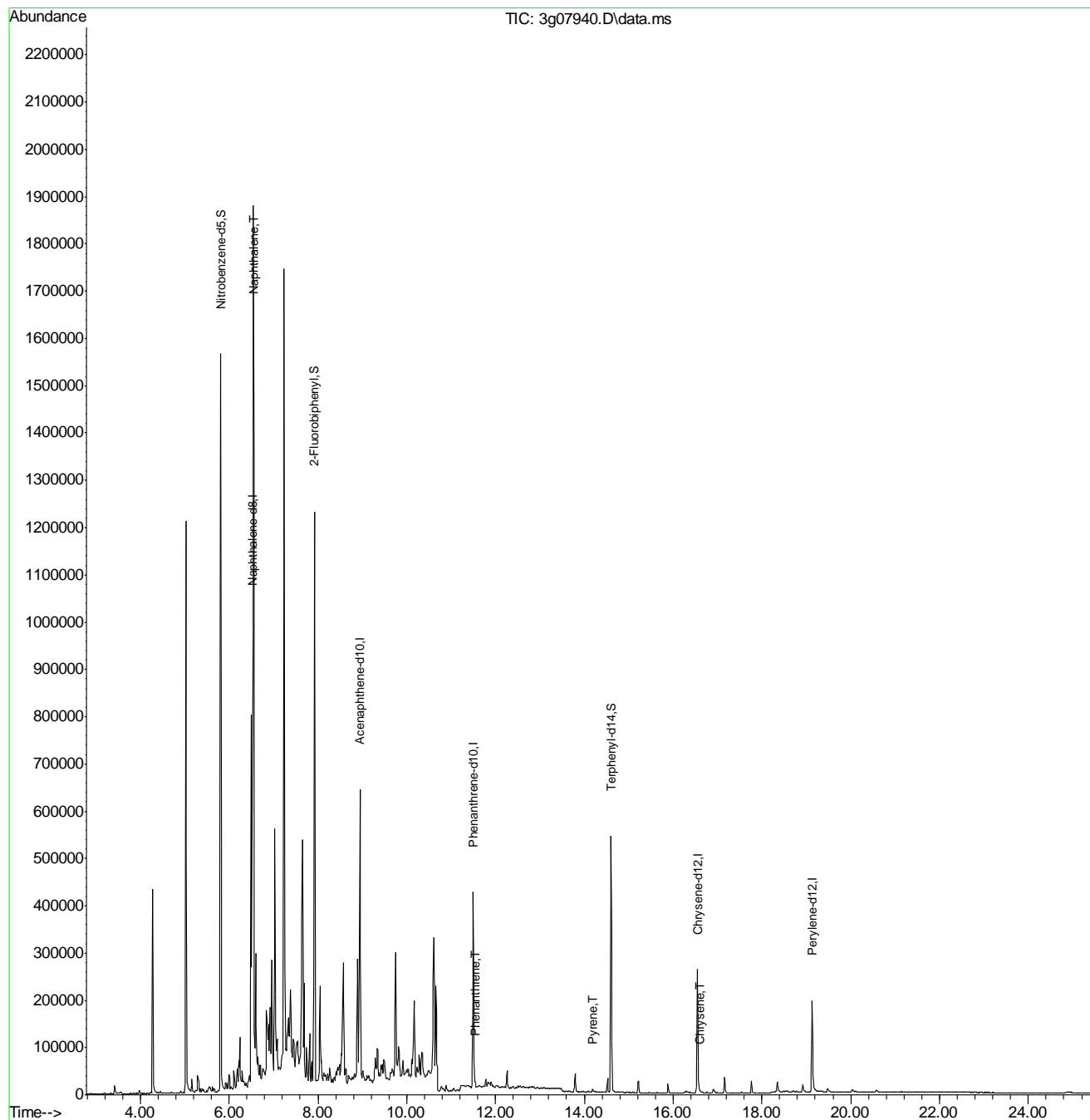
| Compound | R.T. | QIon | Response | Conc | Units | Dev(Min) |
|-----------------------------|--------|----------------|----------|-------|---------|----------|
| Internal Standards | | | | | | |
| 1) Naphthalene-d8 | 6.532 | 136 | 799328 | 4.00 | ug/mL | 0.00 |
| 6) Acenaphthene-d10 | 8.945 | 164 | 337108 | 4.00 | ug/mL | 0.00 |
| 14) Phenanthrene-d10 | 11.501 | 188 | 447043 | 4.00 | ug/mL | 0.00 |
| 18) Chrysene-d12 | 16.554 | 240 | 275265 | 4.00 | ug/mL | 0.00 |
| 23) Perylene-d12 | 19.132 | 264 | 261958 | 4.00 | ug/mL | 0.00 |
| System Monitoring Compounds | | | | | | |
| 2) Nitrobenzene-d5 | 5.809 | 82 | 851163 | 7.80 | ug/mL | -0.01 |
| Spiked Amount | 50.000 | Range 25 - 135 | Recovery | = | 15.60%# | |
| 7) 2-Fluorobiphenyl | 7.917 | 172 | 1192217 | 9.03 | ug/mL | -0.01 |
| Spiked Amount | 50.000 | Range 25 - 135 | Recovery | = | 18.06%# | |
| 20) Terphenyl-d14 | 14.603 | 244 | 581177 | 10.19 | ug/mL | -0.02 |
| Spiked Amount | 50.000 | Range 25 - 135 | Recovery | = | 20.38%# | |
| Target Compounds | | | | | | |
| | | | | | Qvalue | |
| 3) N-Nitrosodimethylamine | 0.000 | | 0 | N.D. | d | |
| 4) N-Nitrosodi-propylamine | 0.000 | | 0 | N.D. | d | |
| 5) Naphthalene | 6.545 | 128 | 1775590 | 6.89 | ug/mL | 99 |
| 8) 2-Methylnaphthalene | 0.000 | | 0 | N.D. | d | |
| 9) 1-Methylnaphthalene | 0.000 | | 0 | N.D. | d | |
| 10) Acenaphthylene | 0.000 | | 0 | N.D. | d | |
| 11) Acenaphthene | 0.000 | | 0 | N.D. | d | |
| 12) Fluorene | 0.000 | | 0 | N.D. | d | |
| 13) Diphenylamine | 0.000 | | 0 | N.D. | d | |
| 15) Phenanthrene | 11.540 | 178 | 11132 | 0.07 | ug/mL | 89 |
| 16) Anthracene | 0.000 | | 0 | N.D. | d | |
| 17) Fluoranthene | 0.000 | | 0 | N.D. | d | |
| 19) Pyrene | 14.192 | 202 | 5530 | 0.04 | ug/mL# | 41 |
| 21) Benzo(a)anthracene | 0.000 | | 0 | N.D. | d | |
| 22) Chrysene | 16.593 | 228 | 2499 | 0.03 | ug/mL | 82 |
| 24) Benzo(b)fluoranthene | 0.000 | | 0 | N.D. | d | |
| 25) Benzo(k)fluoranthene | 0.000 | | 0 | N.D. | d | |
| 26) Benzo(a)pyrene | 0.000 | | 0 | N.D. | d | |
| 27) Indeno(1,2,3-cd)pyrene | 0.000 | | 0 | N.D. | d | |
| 28) Dibenz(a,h)anthracene | 0.000 | | 0 | N.D. | d | |
| 29) Benzo(g,h,i)perylene | 0.000 | | 0 | N.D. | d | |

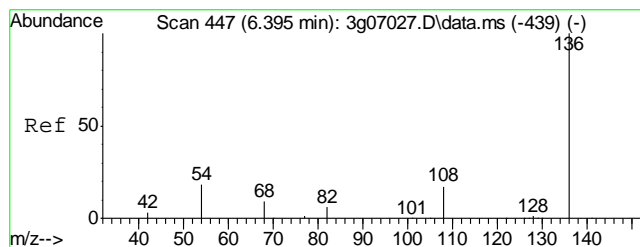
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\021412\
Data File : 3g07940.D
Acq On : 14 Feb 2012 9:25 am
Operator : JAMESR
Sample : D31747-1, 4
Misc : OP5338,E3G314,30.01,,,1,4
ALS Vial : 4 Sample Multiplier: 1

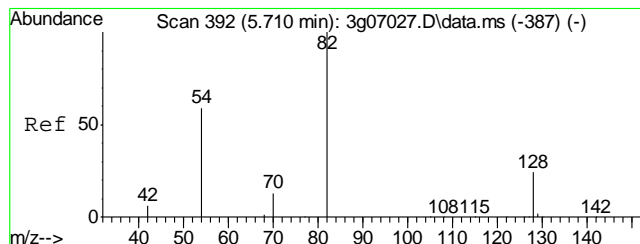
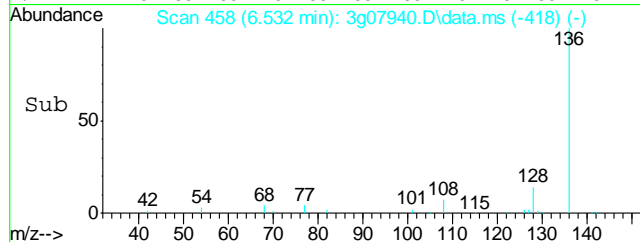
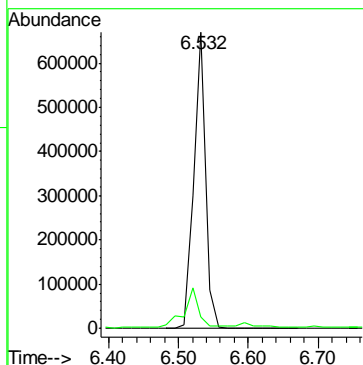
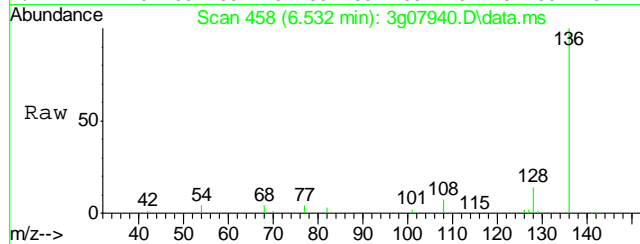
Quant Time: Feb 14 11:54:45 2012
Quant Method : C:\msdchem\1\METHODS\SIMPE3G305.M
Quant Title : PAHSIM BASE
QLast Update : Tue Feb 07 13:46:29 2012
Response via : Initial Calibration





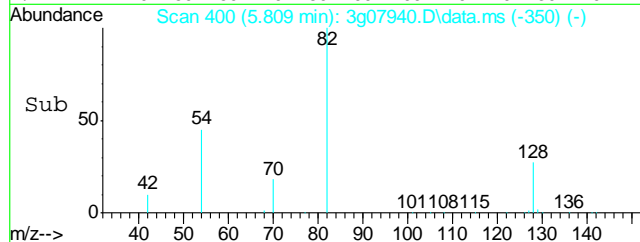
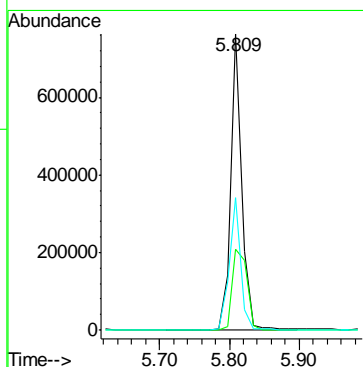
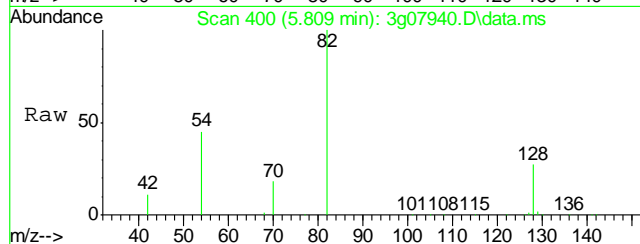
#1
Naphthalene-d8
Concen: 4.00 ug/mL
RT: 6.532 min Scan# 458
Delta R.T. 0.000 min
Lab File: 3g07940.D
Acq: 14 Feb 12 9:25 am

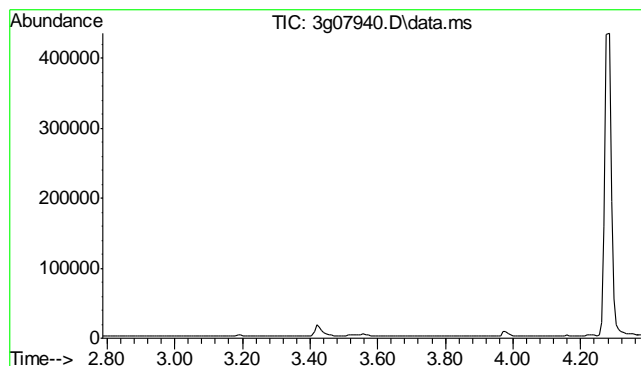
Tgt Ion: 136 Resp: 799328
Ion Ratio Lower Upper
136 100
68 17.6 0.0 31.7



#2
Nitrobenzene-d5
Concen: 7.80 ug/mL
RT: 5.809 min Scan# 400
Delta R.T. -0.012 min
Lab File: 3g07940.D
Acq: 14 Feb 12 9:25 am

Tgt Ion: 82 Resp: 851163
Ion Ratio Lower Upper
82 100
128 36.3 17.9 57.9
54 46.4 25.6 65.6

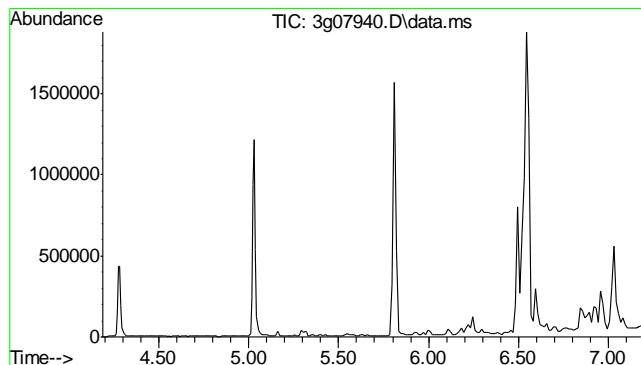
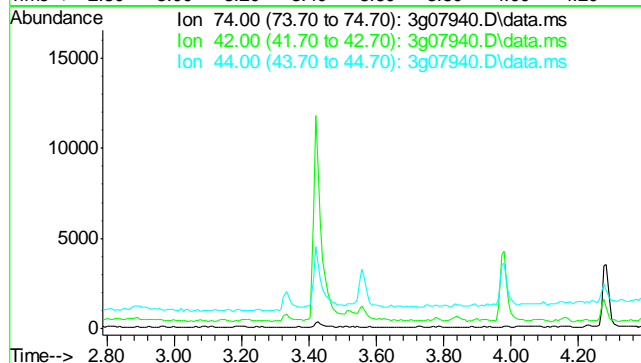




#3
N-Nitrosodimethylamine
Concen: N.D. ug/mL
Expected RT: 2.88 min

Lab File: 3g07940.D
Acq: 14 Feb 12 9:25 am

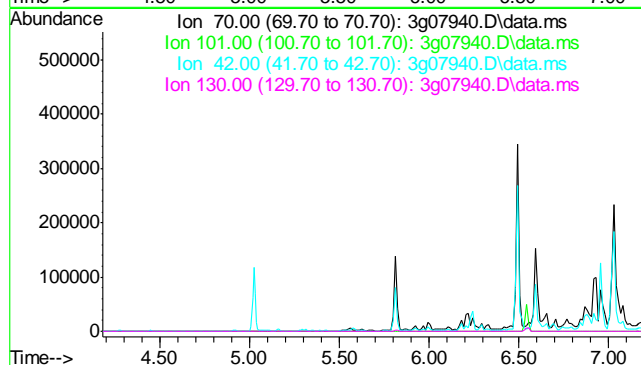
| | |
|----------|-----------|
| Tgt Ion: | 74 |
| Sig | Exp Ratio |
| 74 | 100 |
| 42 | 56.1 |
| 44 | 4.0 |

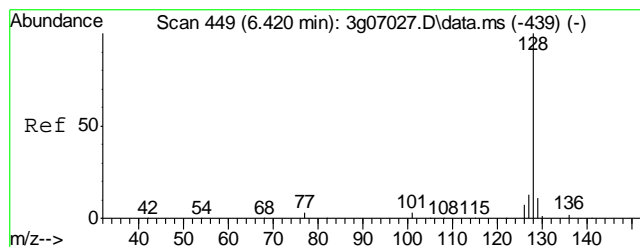


#4
N-Nitrosodi-propylamine
Concen: N.D. ug/mL
Expected RT: 5.68 min

Lab File: 3g07940.D
Acq: 14 Feb 12 9:25 am

| | |
|----------|-----------|
| Tgt Ion: | 70 |
| Sig | Exp Ratio |
| 70 | 100 |
| 101 | 11.0 |
| 42 | 48.6 |
| 130 | 21.4 |





#5

Naphthalene

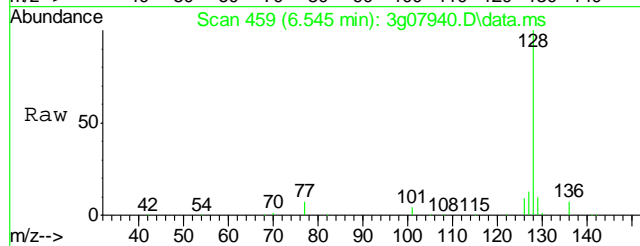
Concen: 6.89 ug/mL

RT: 6.545 min Scan# 459

Delta R.T. -0.012 min

Lab File: 3g07940.D

Acq: 14 Feb 12 9:25 am



Tgt Ion:128 Resp: 1775590

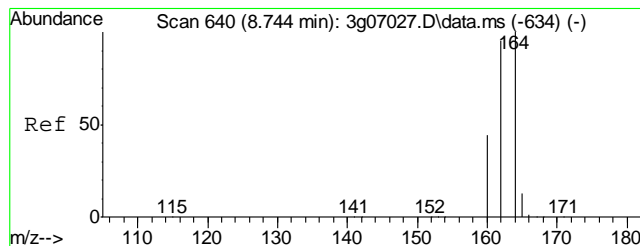
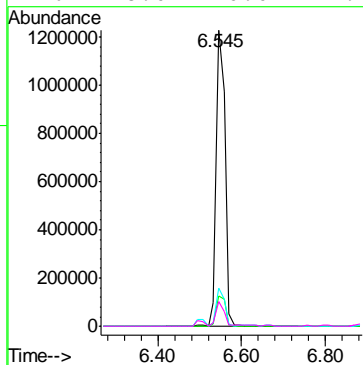
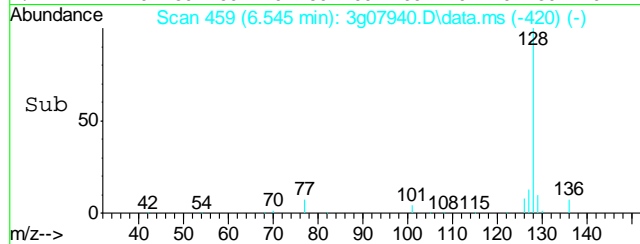
Ion Ratio Lower Upper

128 100

129 10.8 0.0 30.7

127 12.4 0.0 32.0

126 8.0 0.0 27.4



#6

Acenaphthene-d10

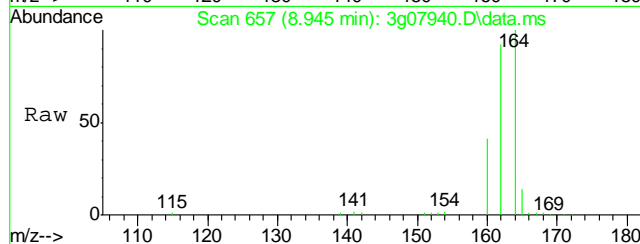
Concen: 4.00 ug/mL

RT: 8.945 min Scan# 657

Delta R.T. 0.000 min

Lab File: 3g07940.D

Acq: 14 Feb 12 9:25 am



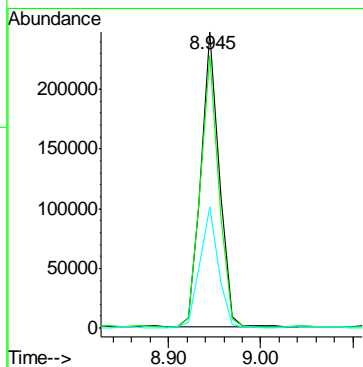
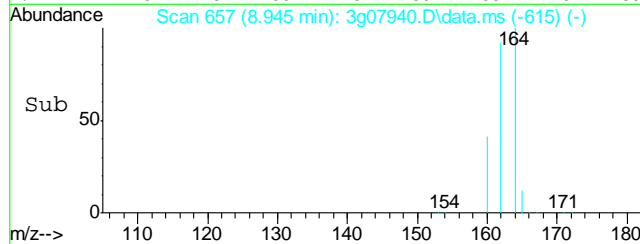
Tgt Ion:164 Resp: 337108

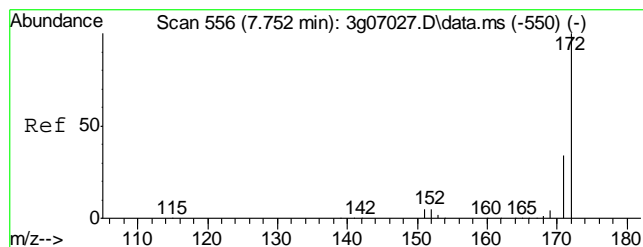
Ion Ratio Lower Upper

164 100

162 91.7 74.0 114.0

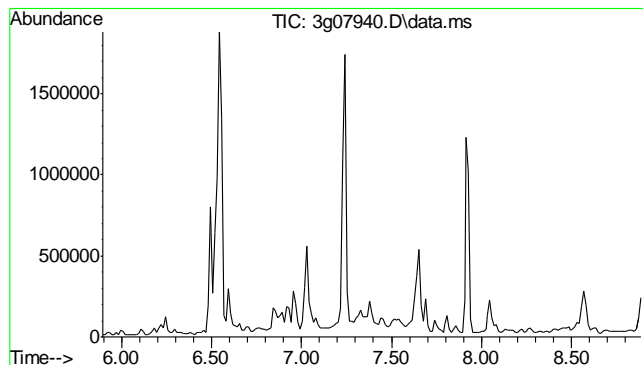
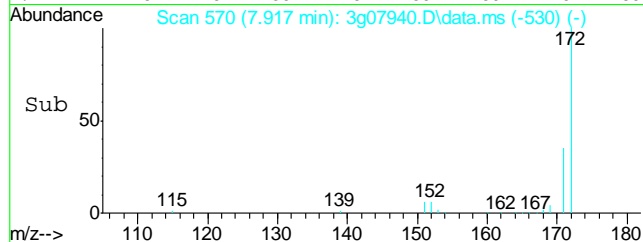
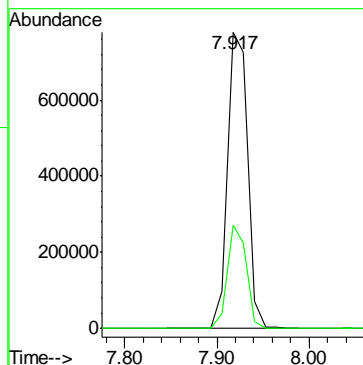
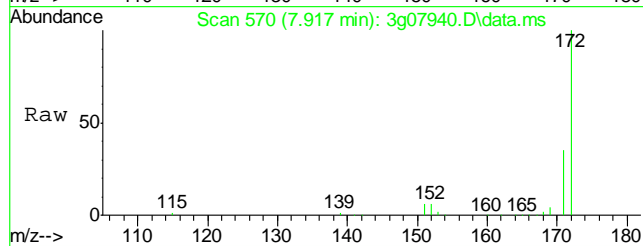
160 40.8 23.2 63.2





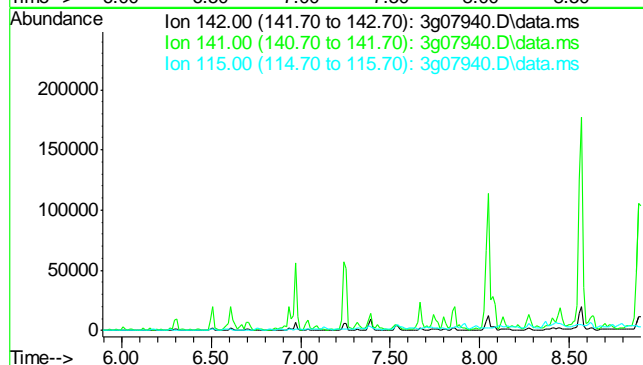
#7
2-Fluorobiphenyl
Concen: 9.03 ug/mL
RT: 7.917 min Scan# 570
Delta R.T. -0.012 min
Lab File: 3g07940.D
Acq: 14 Feb 12 9:25 am

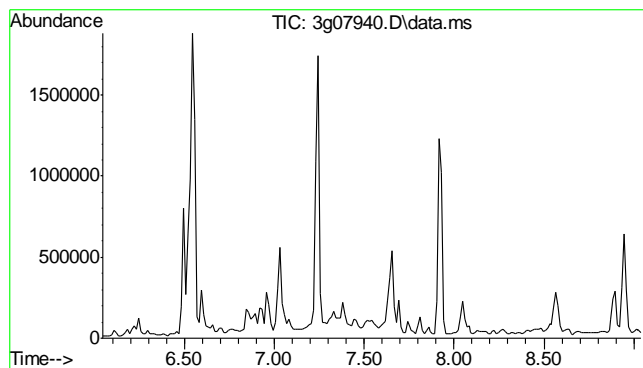
Tgt Ion: 172 Resp: 1192217
Ion Ratio Lower Upper
172 100
171 33.1 12.9 52.9



#8
2-Methylnaphthalene
Concen: N.D. ug/mL
Expected RT: 7.39 min
Lab File: 3g07940.D
Acq: 14 Feb 12 9:25 am

Tgt Ion: 142
Sig Exp Ratio
142 100
141 82.6
115 33.5

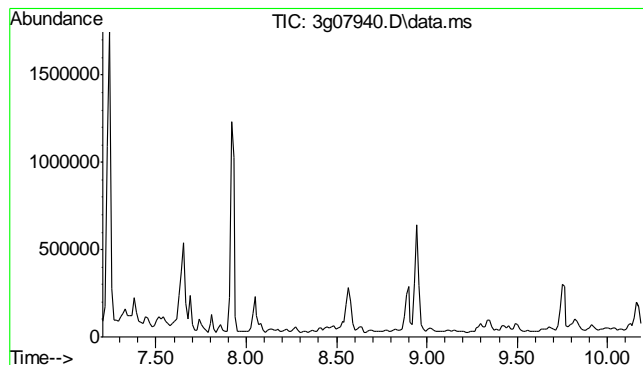
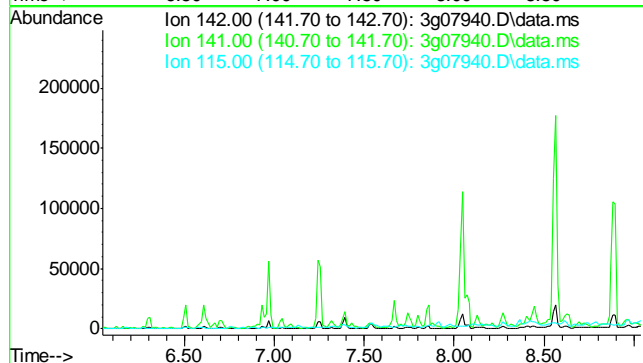




#9
1-Methylnaphthalene
Concen: N.D. ug/mL
Expected RT: 7.54 min

Lab File: 3g07940.D
Acq: 14 Feb 12 9:25 am

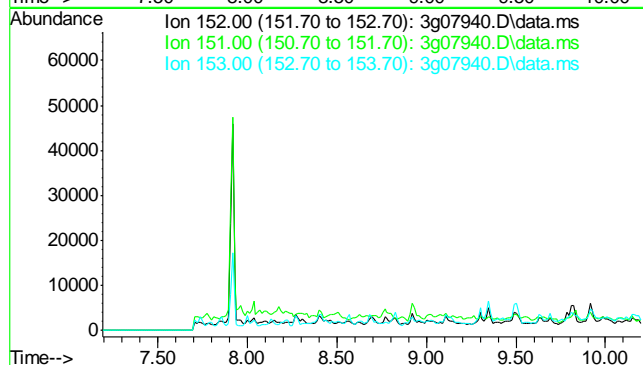
| Tgt Ion | Exp Ratio |
|---------|-----------|
| 142 | 100 |
| 141 | 86.1 |
| 115 | 36.0 |

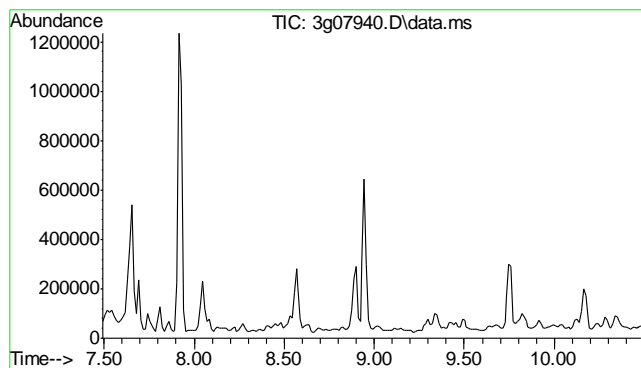


#10
Acenaphthylene
Concen: N.D. ug/mL
Expected RT: 8.70 min

Lab File: 3g07940.D
Acq: 14 Feb 12 9:25 am

| Tgt Ion | Exp Ratio |
|---------|-----------|
| 152 | 100 |
| 151 | 18.7 |
| 153 | 12.9 |

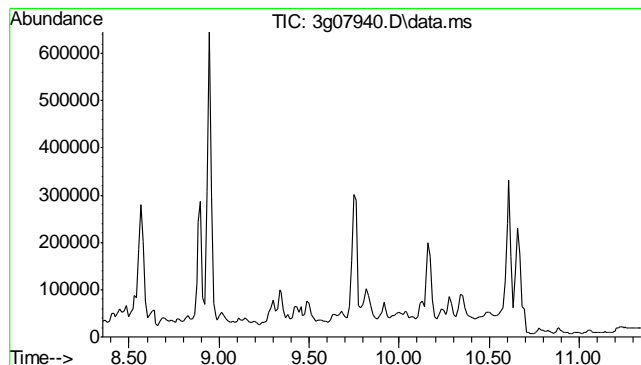
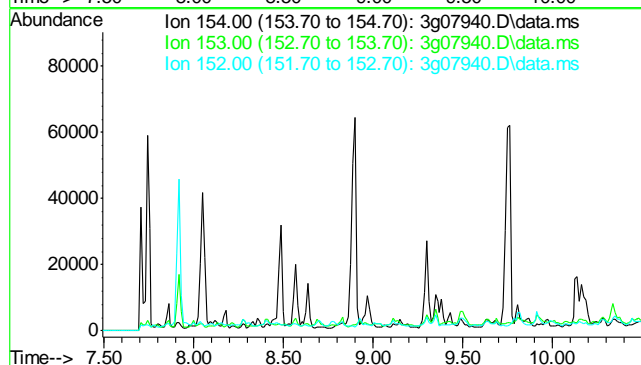




#11
Acenaphthene
Concen: N.D. ug/mL
Expected RT: 8.99 min

Lab File: 3g07940.D
Acq: 14 Feb 12 9:25 am

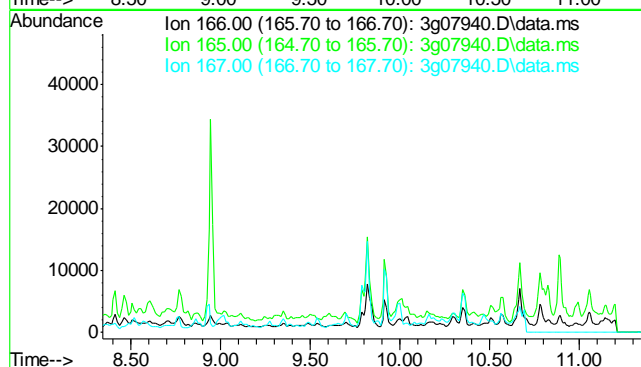
Tgt Ion: 154
Sig Exp Ratio
154 100
153 103.9
152 49.2

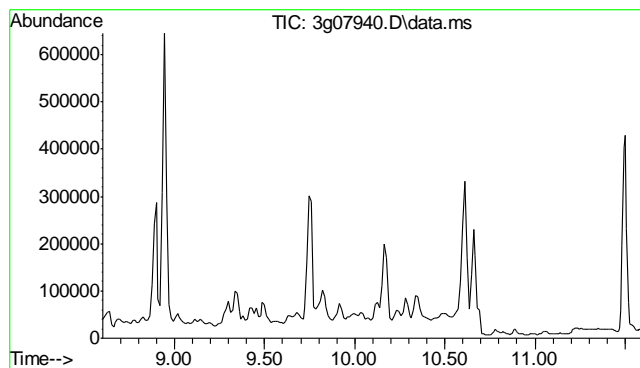


#12
Fluorene
Concen: N.D. ug/mL
Expected RT: 9.84 min

Lab File: 3g07940.D
Acq: 14 Feb 12 9:25 am

Tgt Ion: 166
Sig Exp Ratio
166 100
165 90.9
167 13.1

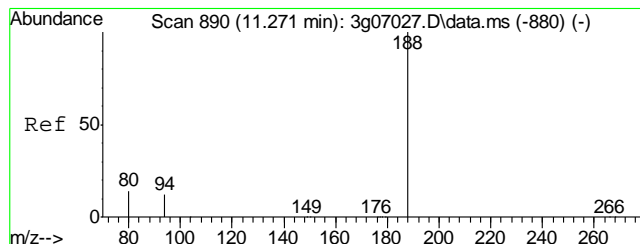
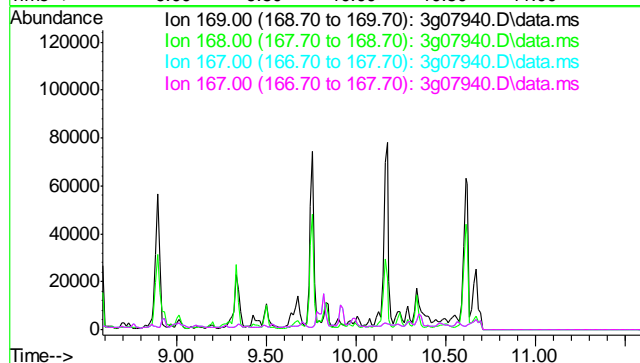




#13
Diphenylamine
Concen: N.D. ug/mL
Expected RT: 10.09 min

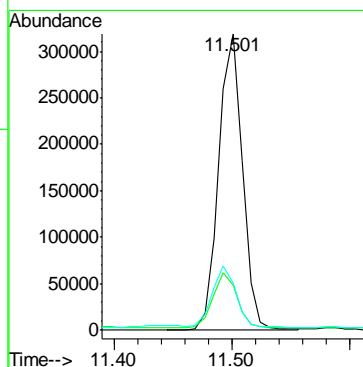
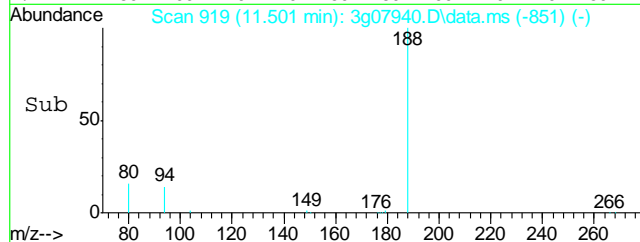
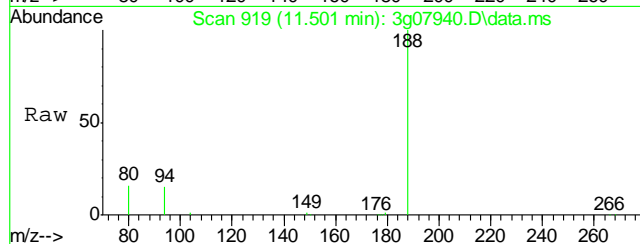
Lab File: 3g07940.D
Acq: 14 Feb 12 9:25 am

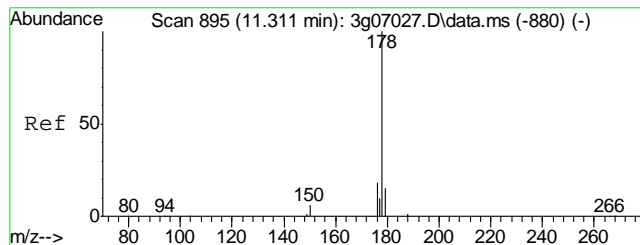
Tgt Ion: 169
Sig Exp Ratio
169 100
168 61.2
167 33.1
167 33.1



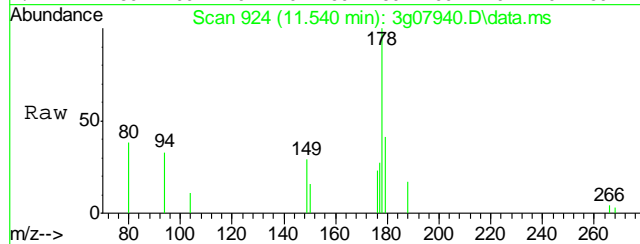
#14
Phenanthrene-d10
Concen: 4.00 ug/mL
RT: 11.501 min Scan# 919
Delta R.T. 0.000 min
Lab File: 3g07940.D
Acq: 14 Feb 12 9:25 am

Tgt Ion: 188 Resp: 447043
Ion Ratio Lower Upper
188 100
94 18.9 0.0 39.4
80 20.7 0.2 40.2

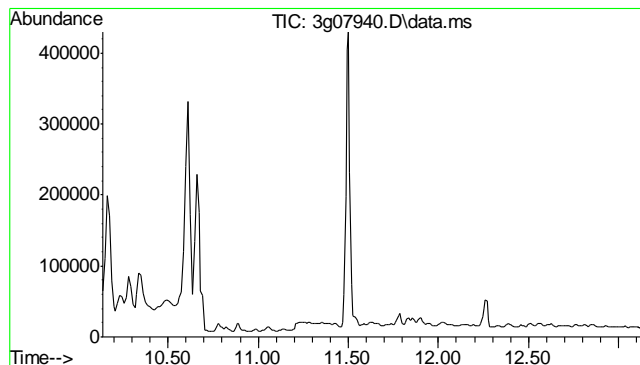
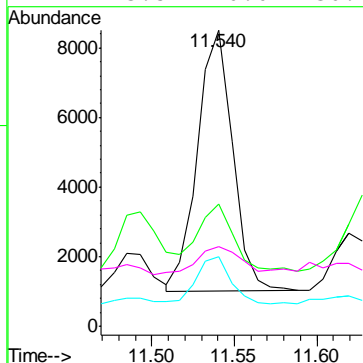
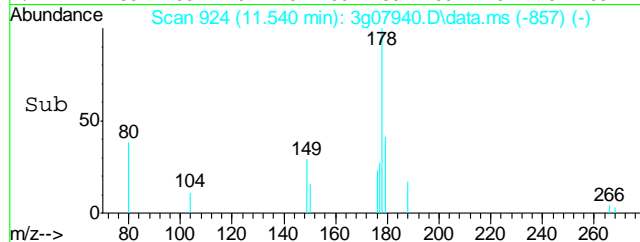




#15
Phenanthrene
Concen: 0.07 ug/mL
RT: 11.540 min Scan# 924
Delta R.T. 0.000 min
Lab File: 3g07940.D
Acq: 14 Feb 12 9:25 am

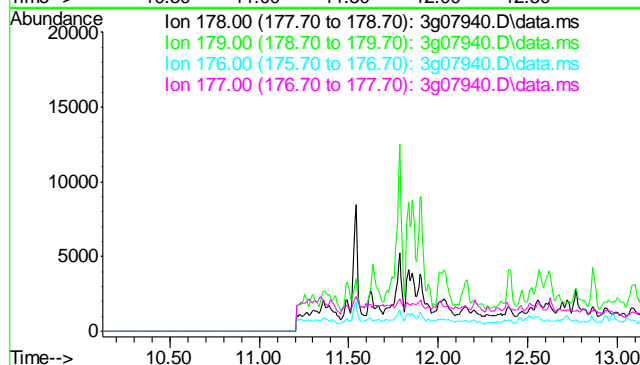


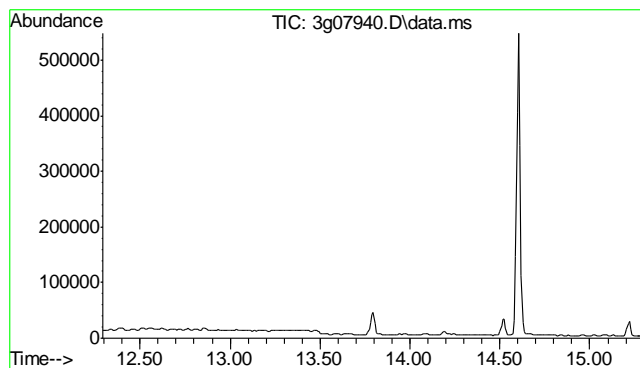
| | | | |
|----------|-------|-------|-------|
| Tgt Ion: | 178 | Resp: | 11132 |
| Ion | Ratio | Lower | Upper |
| 178 | 100 | | |
| 179 | 25.2 | 0.0 | 35.1 |
| 176 | 18.2 | 0.0 | 38.4 |
| 177 | 13.5 | 0.0 | 30.1 |



#16
Anthracene
Concen: N.D. ug/mL
Expected RT: 11.63 min
Lab File: 3g07940.D
Acq: 14 Feb 12 9:25 am

| | |
|----------|-----------|
| Tgt Ion: | 178 |
| Sig | Exp Ratio |
| 178 | 100 |
| 179 | 15.0 |
| 176 | 17.6 |
| 177 | 8.6 |

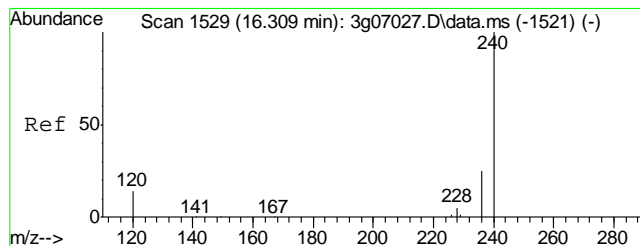
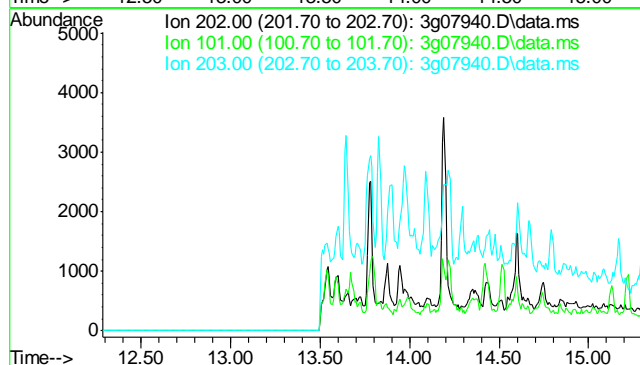




#17
Fluoranthene
Concen: N.D. ug/mL
Expected RT: 13.79 min

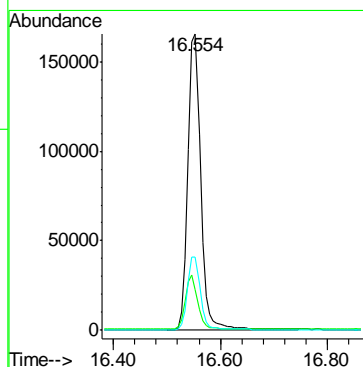
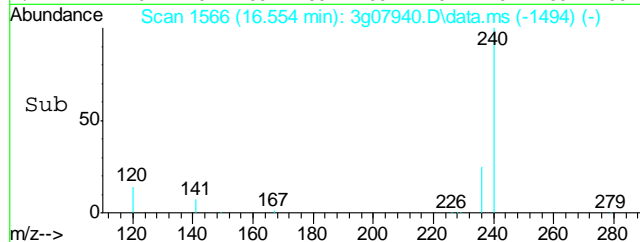
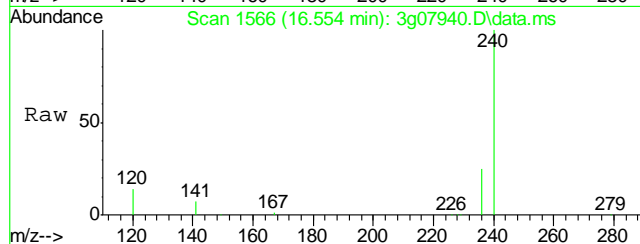
Lab File: 3g07940.D
Acq: 14 Feb 12 9:25 am

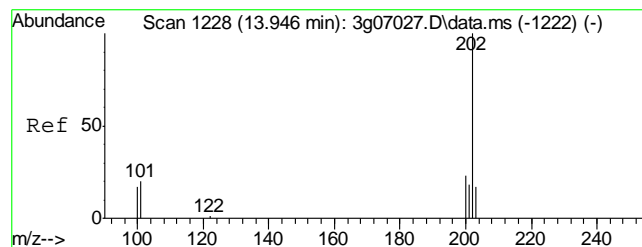
| Tgt Ion | Exp Ratio |
|---------|-----------|
| 202 | 100 |
| 101 | 19.8 |
| 203 | 17.2 |



#18
Chrysene-d12
Concen: 4.00 ug/mL
RT: 16.554 min Scan# 1566
Delta R.T. 0.000 min
Lab File: 3g07940.D
Acq: 14 Feb 12 9:25 am

| Tgt Ion | Ratio | Lower | Upper |
|---------|-------|-------|-------|
| 240 | 100 | | |
| 120 | 17.7 | 10.4 | 50.4 |
| 236 | 24.7 | 5.8 | 45.8 |





#19

Pyrene

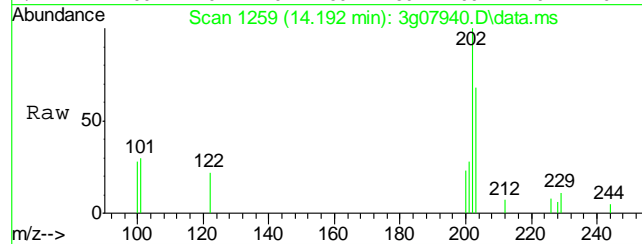
Concen: 0.04 ug/mL

RT: 14.192 min Scan# 1259

Delta R.T. -0.008 min

Lab File: 3g07940.D

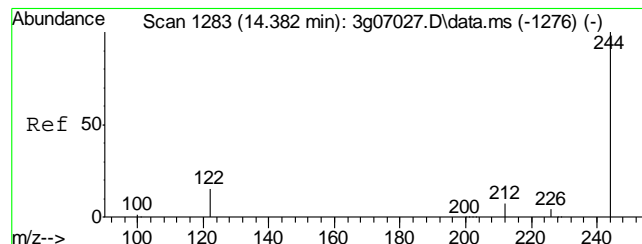
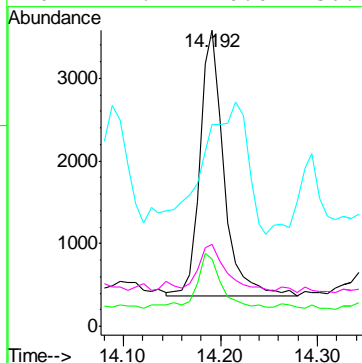
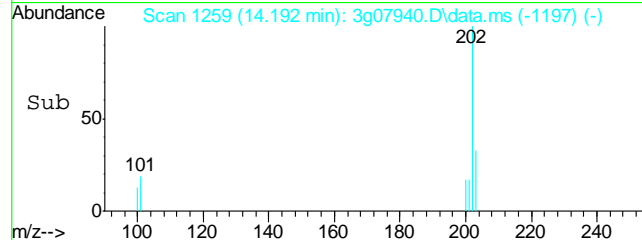
Acq: 14 Feb 12 9:25 am



Tgt Ion: 202 Resp: 5530

Ion Ratio Lower Upper

| | | | |
|-----|------|-----|-------|
| 202 | 100 | | |
| 200 | 21.8 | 0.1 | 40.1 |
| 203 | 91.0 | 0.0 | 37.8# |
| 201 | 21.4 | 0.0 | 36.5 |



#20

Terphenyl-d14

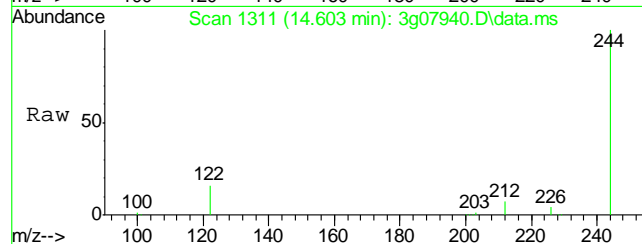
Concen: 10.19 ug/mL

RT: 14.603 min Scan# 1311

Delta R.T. -0.016 min

Lab File: 3g07940.D

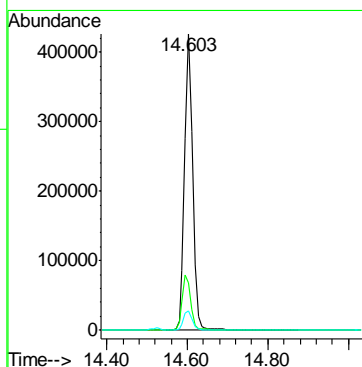
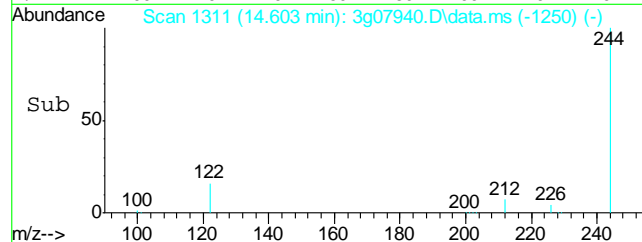
Acq: 14 Feb 12 9:25 am

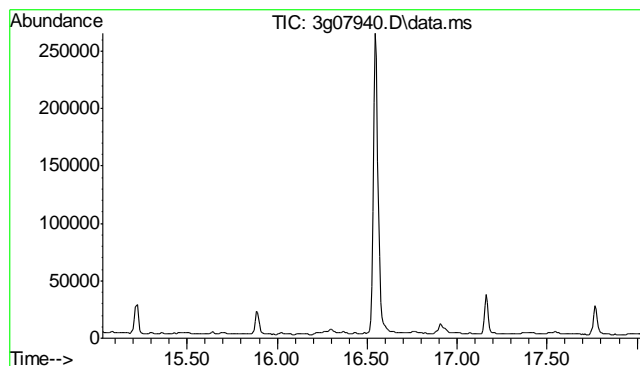


Tgt Ion: 244 Resp: 581177

Ion Ratio Lower Upper

| | | | |
|-----|------|-----|------|
| 244 | 100 | | |
| 122 | 19.4 | 9.9 | 49.9 |
| 212 | 7.0 | 0.0 | 27.9 |

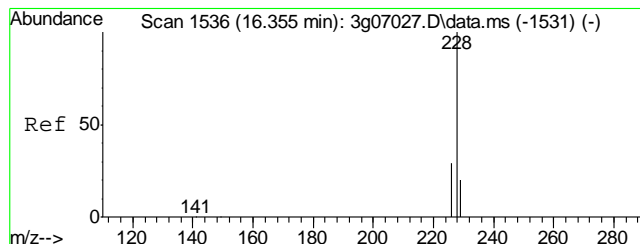
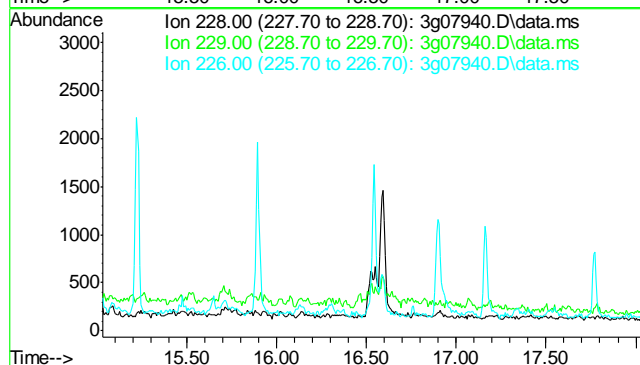




#21
Benzo(a)anthracene
Concen: N.D. ug/mL
Expected RT: 16.53 min

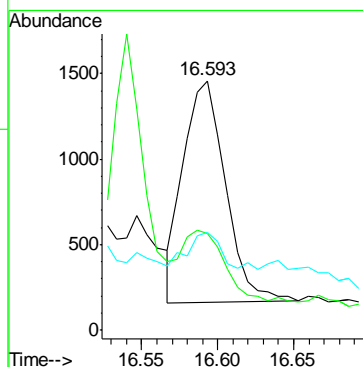
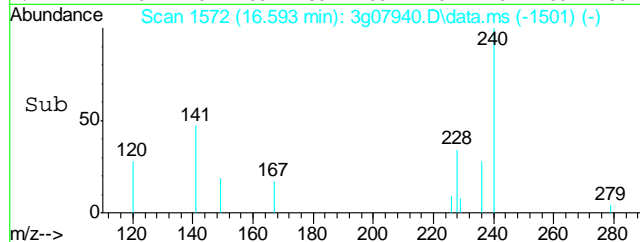
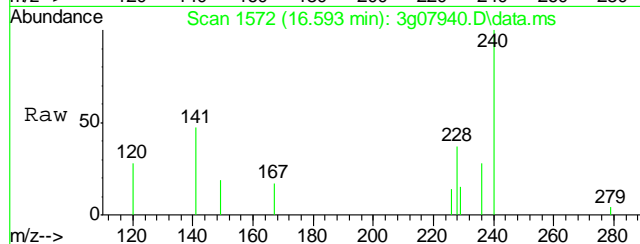
Lab File: 3g07940.D
Acq: 14 Feb 12 9:25 am

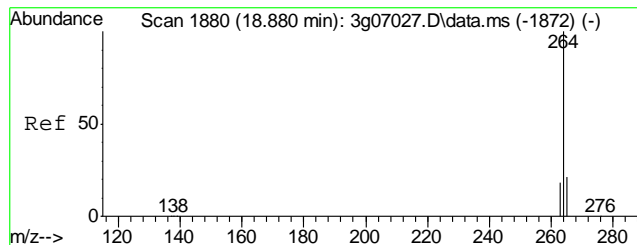
Tgt Ion: 228
Sig Exp Ratio
228 100
229 19.6
226 26.2



#22
Chrysene
Concen: 0.03 ug/mL
RT: 16.593 min Scan# 1572
Delta R.T. -0.013 min
Lab File: 3g07940.D
Acq: 14 Feb 12 9:25 am

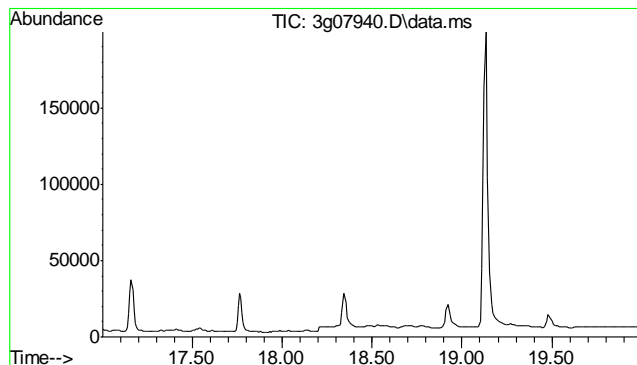
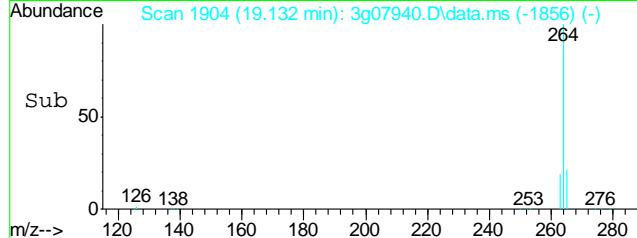
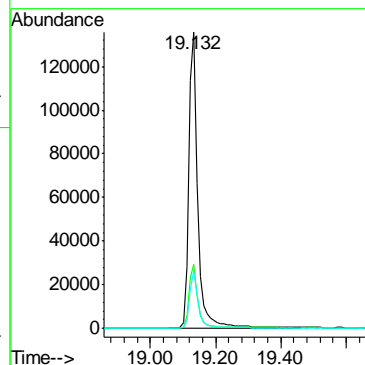
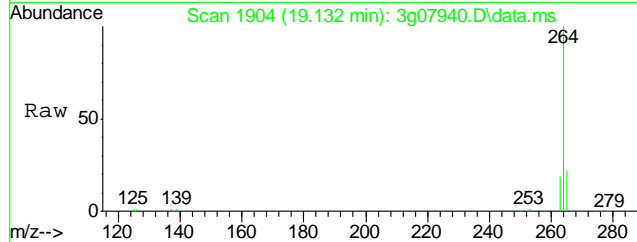
Tgt Ion: 228 Resp: 2499
Ion Ratio Lower Upper
228 100
226 38.8 8.7 48.7
229 12.3 0.0 39.3





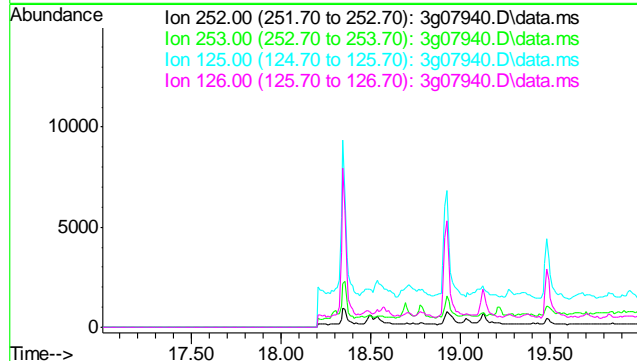
#23
Perylene-d12
Concen: 4.00 ug/mL
RT: 19.132 min Scan# 1904
Delta R.T. 0.000 min
Lab File: 3g07940.D
Acq: 14 Feb 12 9:25 am

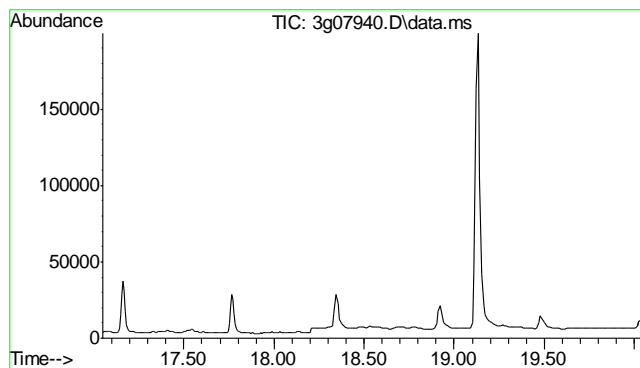
| | | | |
|-----------|-------|-------|--------|
| Tgt Ion: | 264 | Resp: | 261958 |
| Ion Ratio | Lower | Upper | |
| 264 | 100 | | |
| 265 | 20.9 | 1.1 | 41.1 |
| 263 | 19.2 | 0.0 | 39.2 |



#24
Benzo(b)fluoranthene
Concen: N.D. ug/mL
Expected RT: 18.50 min
Lab File: 3g07940.D
Acq: 14 Feb 12 9:25 am

| | |
|----------|-----------|
| Tgt Ion: | 252 |
| Sig | Exp Ratio |
| 252 | 100 |
| 253 | 21.4 |
| 125 | 18.7 |
| 126 | 26.3 |

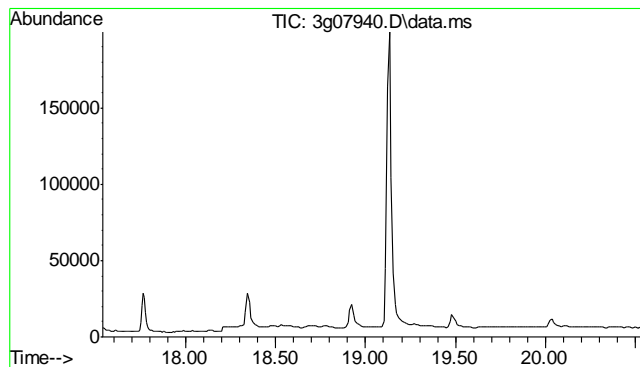
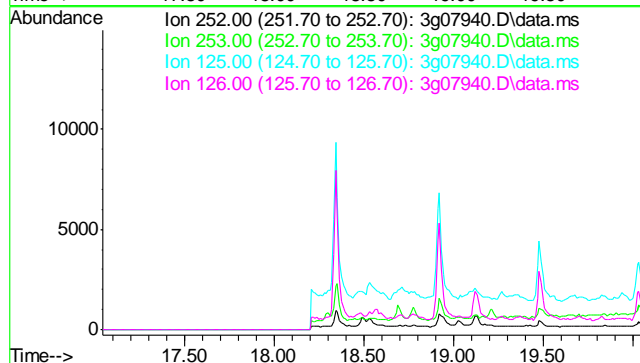




#25
Benzo(k)fluoranthene
Concen: N.D. ug/mL
Expected RT: 18.54 min

Lab File: 3g07940.D
Acq: 14 Feb 12 9:25 am

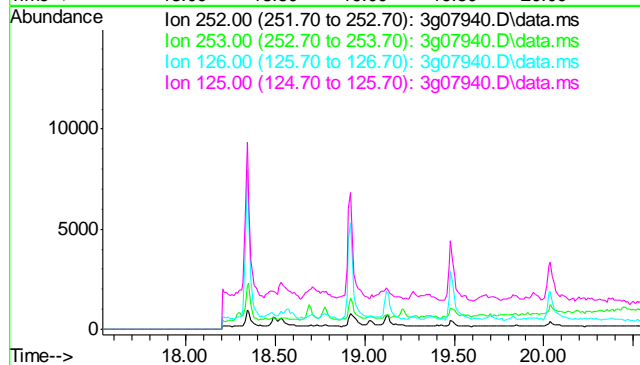
| Tgt Ion: | 252 |
|----------|-----------|
| Sig | Exp Ratio |
| 252 | 100 |
| 253 | 21.6 |
| 125 | 22.6 |
| 126 | 35.2 |

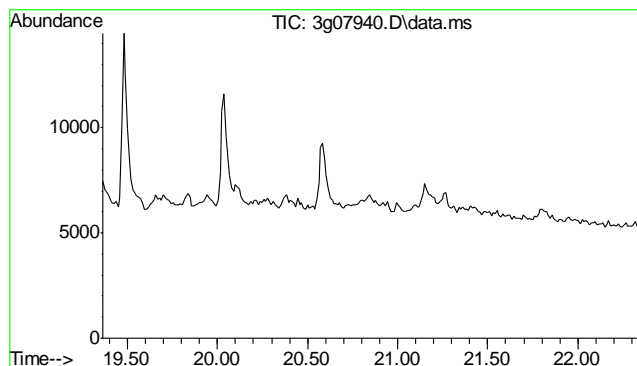


#26
Benzo(a)pyrene
Concen: N.D. ug/mL
Expected RT: 19.04 min

Lab File: 3g07940.D
Acq: 14 Feb 12 9:25 am

| Tgt Ion: | 252 |
|----------|-----------|
| Sig | Exp Ratio |
| 252 | 100 |
| 253 | 20.5 |
| 126 | 30.6 |
| 125 | 23.4 |

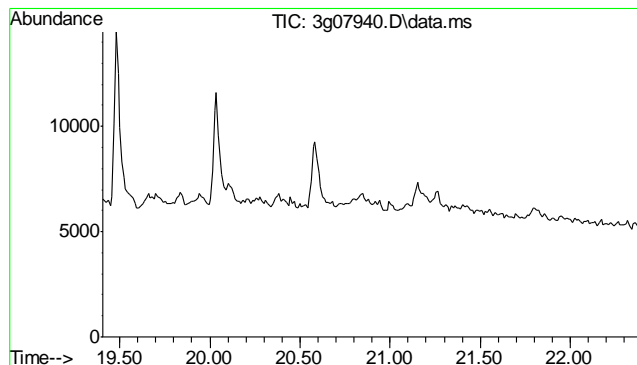
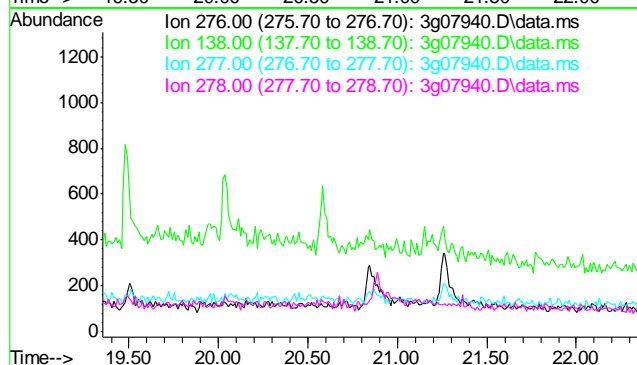




#27
 Indeno(1,2,3-cd)pyrene
 Concen: N.D. ug/mL
 Expected RT: 20.86 min

 Lab File: 3g07940.D
 Acq: 14 Feb 12 9:25 am

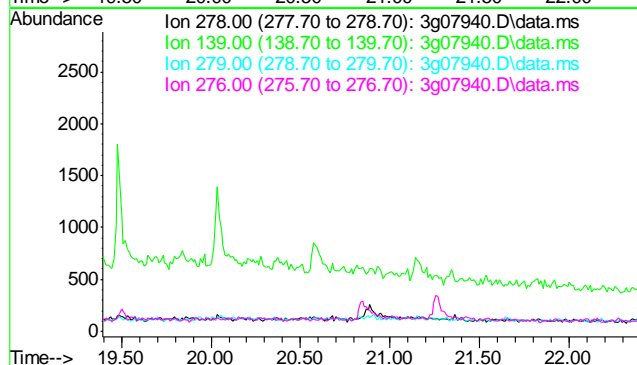
| Tgt Ion | Exp Ratio |
|---------|-----------|
| 276 | 100 |
| 138 | 20.3 |
| 277 | 25.0 |
| 278 | 79.9 |

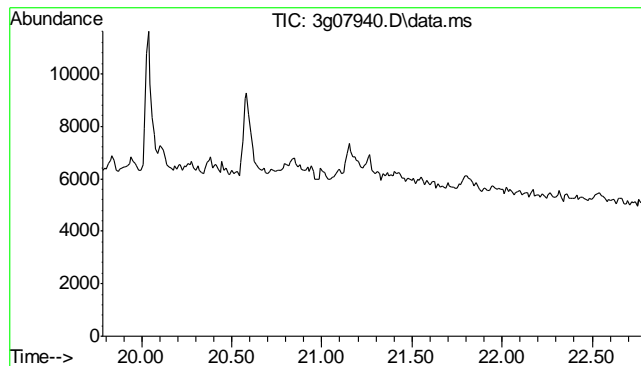


#28
 Dibenzo(a,h)anthracene
 Concen: N.D. ug/mL
 Expected RT: 20.90 min

 Lab File: 3g07940.D
 Acq: 14 Feb 12 9:25 am

| Tgt Ion | Exp Ratio |
|---------|-----------|
| 278 | 100 |
| 139 | 26.9 |
| 279 | 23.2 |
| 276 | 125.2 |

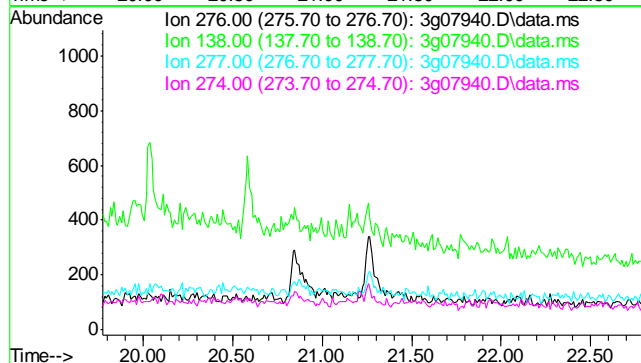




#29
 Benzo(g,h,i)perylene
 Concen: N.D. ug/mL
 Expected RT: 21.28 min

 Lab File: 3g07940.D
 Acq: 14 Feb 12 9:25 am

| Tgt Ion | Exp Ratio |
|---------|-----------|
| 276 | 100 |
| 138 | 32.8 |
| 277 | 23.5 |
| 274 | 20.8 |



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\021312\
Data File : 3g07926.D
Acq On : 13 Feb 2012 1:50 pm
Operator : JAMESR
Sample : OP5338-MB
Misc : OP5338,E3G313,30.00,,,1,1
ALS Vial : 4 Sample Multiplier: 1

Quant Time: Feb 14 10:15:25 2012
Quant Method : C:\msdchem\1\METHODS\SIMPE3G305.M
Quant Title : PAHSIM BASE
QLast Update : Tue Feb 07 13:46:29 2012
Response via : Initial Calibration

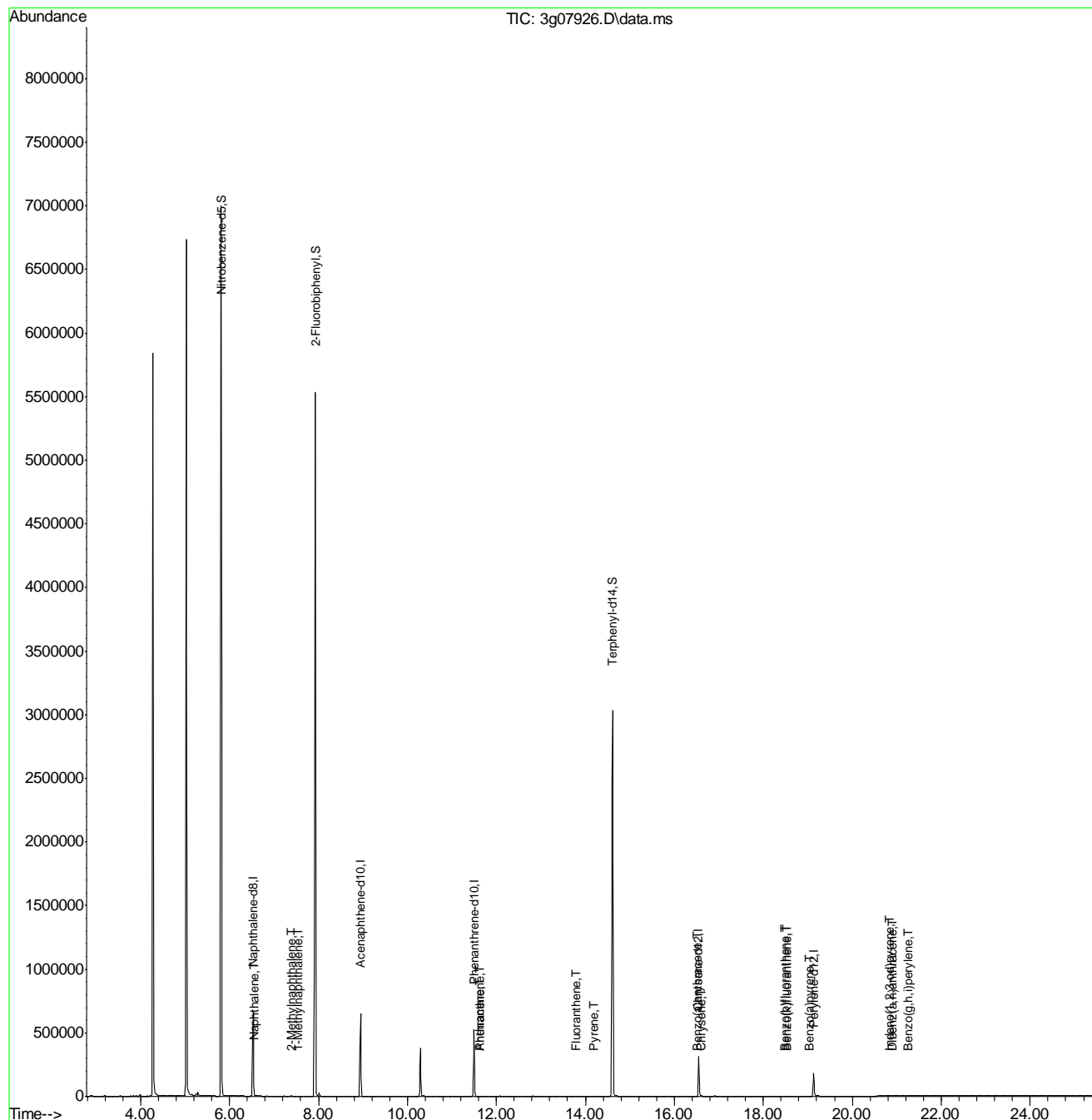
| Compound | R.T. | QIon | Response | Conc | Units | Dev(Min) |
|-----------------------------|--------|-------|----------|----------|--------|----------|
| Internal Standards | | | | | | |
| 1) Naphthalene-d8 | 6.532 | 136 | 670507 | 4.00 | ug/mL | 0.00 |
| 6) Acenaphthene-d10 | 8.945 | 164 | 369682 | 4.00 | ug/mL | 0.00 |
| 14) Phenanthrene-d10 | 11.493 | 188 | 535158 | 4.00 | ug/mL | 0.00 |
| 18) Chrysene-d12 | 16.547 | 240 | 344888 | 4.00 | ug/mL | 0.00 |
| 23) Perylene-d12 | 19.132 | 264 | 235013 | 4.00 | ug/mL | 0.00 |
| System Monitoring Compounds | | | | | | |
| 2) Nitrobenzene-d5 | 5.809 | 82 | 4079467 | 44.54 | ug/mL | -0.01 |
| Spiked Amount | 50.000 | Range | 25 - 135 | Recovery | = | 89.08% |
| 7) 2-Fluorobiphenyl | 7.929 | 172 | 5736210 | 39.62 | ug/mL | 0.00 |
| Spiked Amount | 50.000 | Range | 25 - 135 | Recovery | = | 79.24% |
| 20) Terphenyl-d14 | 14.611 | 244 | 3521450 | 49.26 | ug/mL | 0.00 |
| Spiked Amount | 50.000 | Range | 25 - 135 | Recovery | = | 98.52% |
| Target Compounds | | | | | | |
| | | | | | Qvalue | |
| 3) N-Nitrosodimethylamine | 0.000 | | 0 | N.D. | d | |
| 4) N-Nitrosodi-propylamine | 0.000 | | 0 | N.D. | d | |
| 5) Naphthalene | 6.545 | 128 | 3271 | 0.02 | ug/mL | 82 |
| 8) 2-Methylnaphthalene | 7.393 | 142 | 936 | 0.01 | ug/mL | 84 |
| 9) 1-Methylnaphthalene | 7.530 | 142 | 643 | 0.00 | ug/mL# | 68 |
| 10) Acenaphthylene | 0.000 | | 0 | N.D. | d | |
| 11) Acenaphthene | 0.000 | | 0 | N.D. | d | |
| 12) Fluorene | 0.000 | | 0 | N.D. | d | |
| 13) Diphenylamine | 0.000 | | 0 | N.D. | d | |
| 15) Phenanthrene | 11.619 | 178 | 978 | 0.01 | ug/mL | 94 |
| 16) Anthracene | 11.619 | 178 | 978 | 0.01 | ug/mL | 95 |
| 17) Fluoranthene | 13.780 | 202 | 1658 | 0.01 | ug/mL | 99 |
| 19) Pyrene | 14.192 | 202 | 1866 | 0.01 | ug/mL | 96 |
| 21) Benzo(a)anthracene | 16.520 | 228 | 2796 | 0.03 | ug/mL | 89 |
| 22) Chrysene | 16.593 | 228 | 2544 | 0.02 | ug/mL | 95 |
| 24) Benzo(b)fluoranthene | 18.491 | 252 | 1623 | 0.06 | ug/mL | 97 |
| 25) Benzo(k)fluoranthene | 18.533 | 252 | 2005m | 0.02 | ug/mL | |
| 26) Benzo(a)pyrene | 19.027 | 252 | 1595 | 0.07 | ug/mL | 91 |
| 27) Indeno(1,2,3-cd)pyrene | 20.846 | 276 | 1457 | 0.09 | ug/mL | 84 |
| 28) Dibenz(a,h)anthracene | 20.899 | 278 | 1005 | 0.09 | ug/mL | 80 |
| 29) Benzo(g,h,i)perylene | 21.267 | 276 | 1468 | 0.07 | ug/mL | 92 |

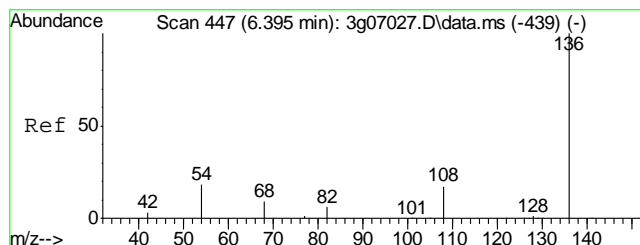
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\021312\
Data File : 3g07926.D
Acq On : 13 Feb 2012 1:50 pm
Operator : JAMESR
Sample : OP5338-MB
Misc : OP5338,E3G313,30.00,,,1,1
ALS Vial : 4 Sample Multiplier: 1

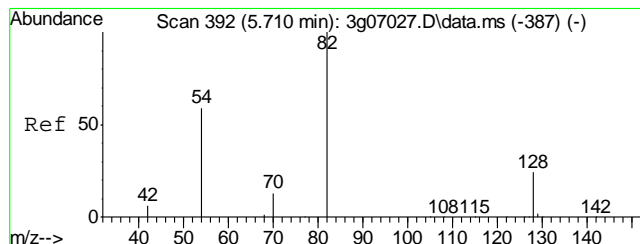
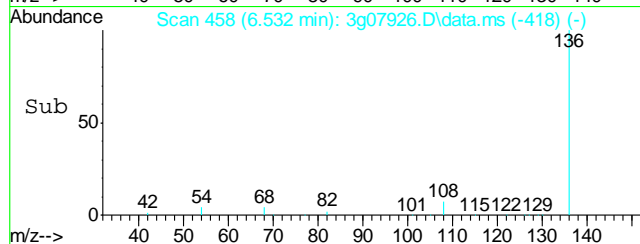
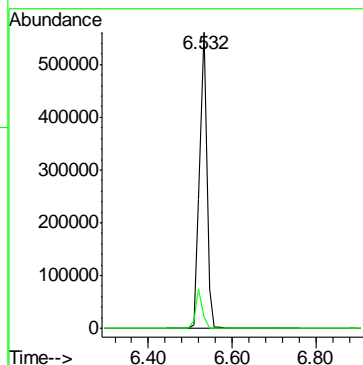
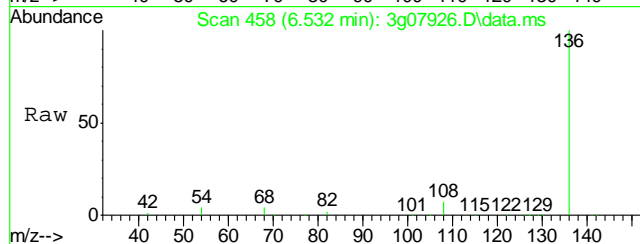
Quant Time: Feb 14 10:15:25 2012
Quant Method : C:\msdchem\1\METHODS\SIMPE3G305.M
Quant Title : PAHSIM BASE
QLast Update : Tue Feb 07 13:46:29 2012
Response via : Initial Calibration





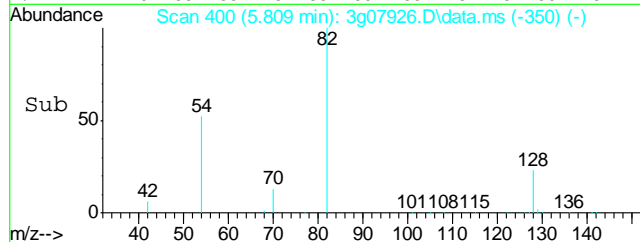
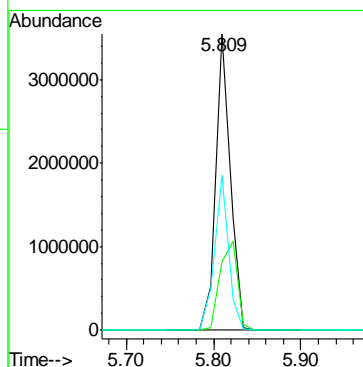
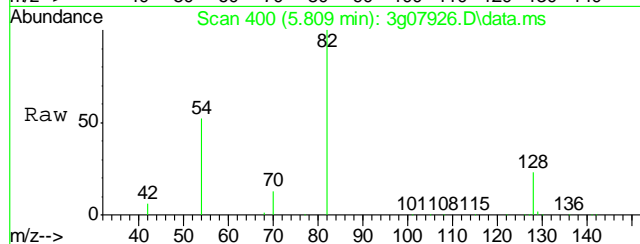
#1
Naphthalene-d8
Concen: 4.00 ug/mL
RT: 6.532 min Scan# 458
Delta R.T. -0.000 min
Lab File: 3g07926.D
Acq: 13 Feb 12 1:50 pm

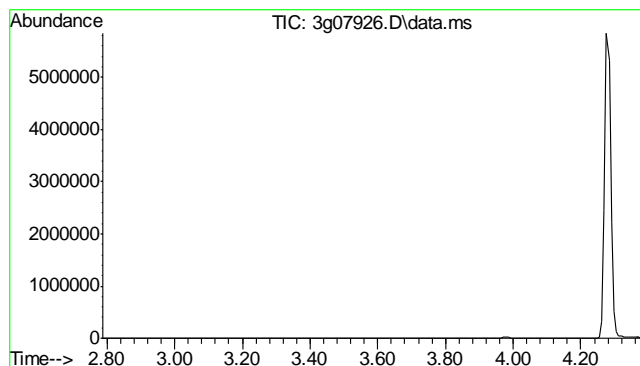
Tgt Ion: 136 Resp: 670507
Ion Ratio Lower Upper
136 100
68 12.6 0.0 31.7



#2
Nitrobenzene-d5
Concen: 44.54 ug/mL
RT: 5.809 min Scan# 400
Delta R.T. -0.013 min
Lab File: 3g07926.D
Acq: 13 Feb 12 1:50 pm

Tgt Ion: 82 Resp: 4079467
Ion Ratio Lower Upper
82 100
128 36.5 17.9 57.9
54 50.3 25.6 65.6

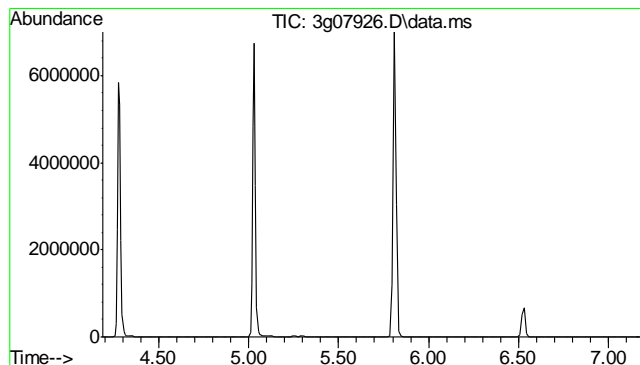
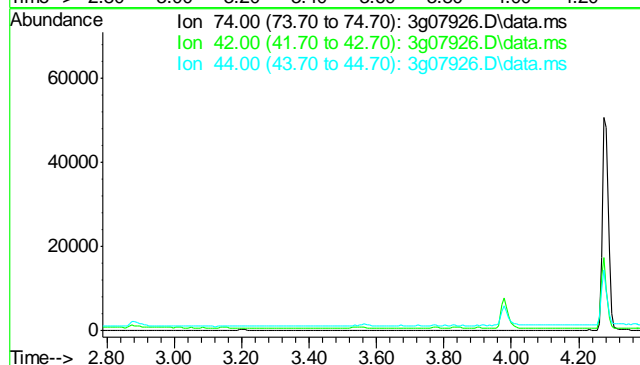




#3
N-Nitrosodimethylamine
Concen: N.D. ug/mL
Expected RT: 2.88 min

Lab File: 3g07926.D
Acq: 13 Feb 12 1:50 pm

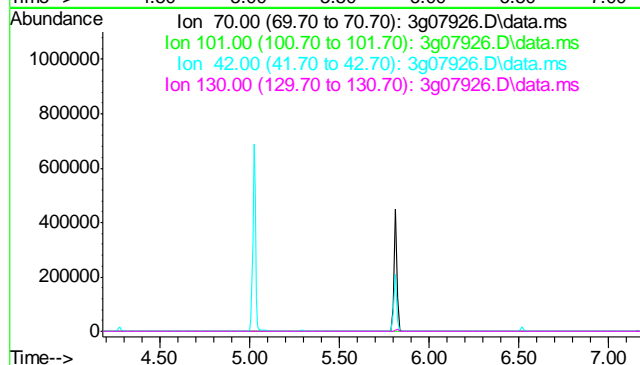
| | |
|----------|-----------|
| Tgt Ion: | 74 |
| Sig | Exp Ratio |
| 74 | 100 |
| 42 | 56.1 |
| 44 | 4.0 |

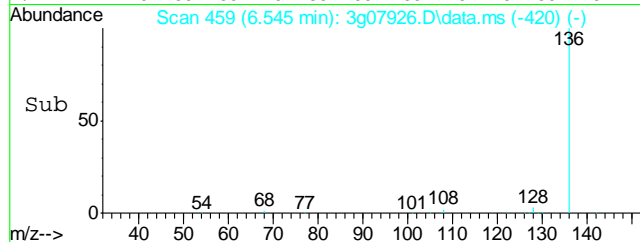
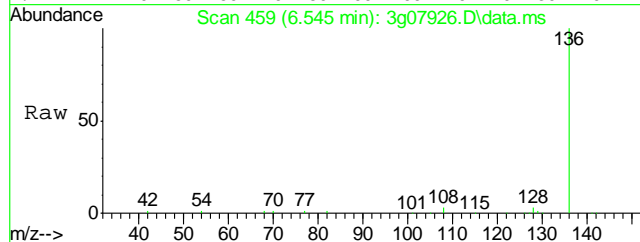
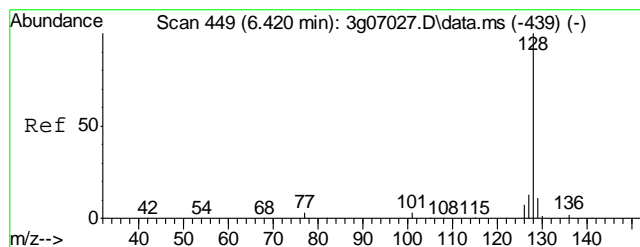


#4
N-Nitrosodi-propylamine
Concen: N.D. ug/mL
Expected RT: 5.68 min

Lab File: 3g07926.D
Acq: 13 Feb 12 1:50 pm

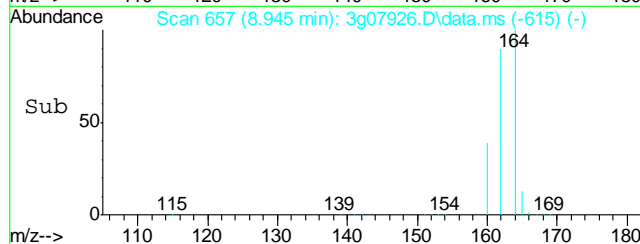
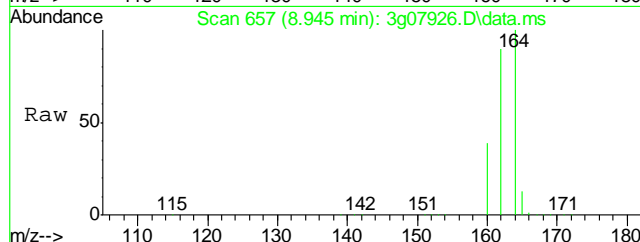
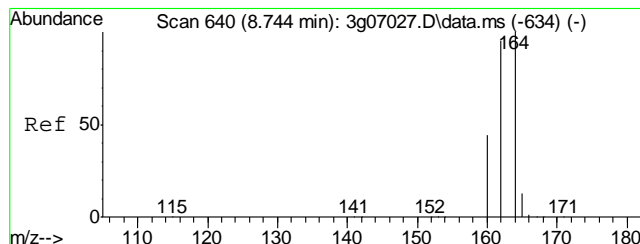
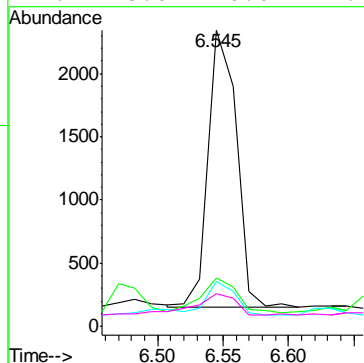
| | |
|----------|-----------|
| Tgt Ion: | 70 |
| Sig | Exp Ratio |
| 70 | 100 |
| 101 | 11.0 |
| 42 | 48.6 |
| 130 | 21.4 |





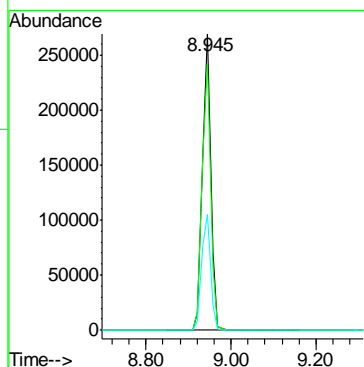
#5
Naphthalene
Concen: 0.02 ug/mL
RT: 6.545 min Scan# 459
Delta R.T. -0.013 min
Lab File: 3g07926.D
Acq: 13 Feb 12 1:50 pm

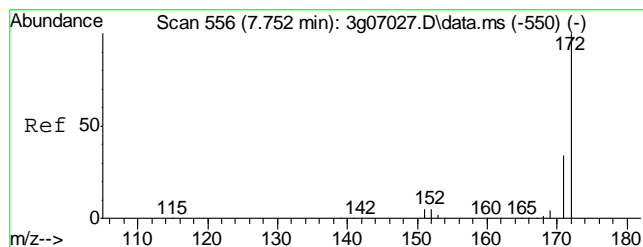
| Tgt Ion | 128 | Ratio | 100 | Resp | 3271 |
|---------|-----|-------|-----|-------|-------|
| Ion | 128 | 100 | | Lower | Upper |
| | 129 | 15.8 | | 0.0 | 30.7 |
| | 127 | 19.1 | | 0.0 | 32.0 |
| | 126 | 15.0 | | 0.0 | 27.4 |



#6
Acenaphthene-d10
Concen: 4.00 ug/mL
RT: 8.945 min Scan# 657
Delta R.T. -0.000 min
Lab File: 3g07926.D
Acq: 13 Feb 12 1:50 pm

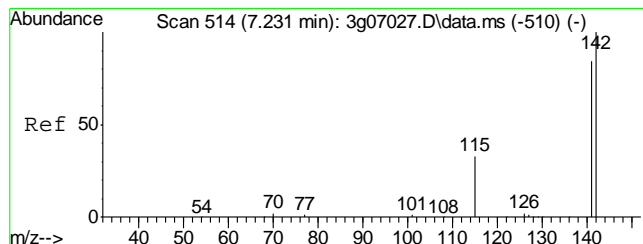
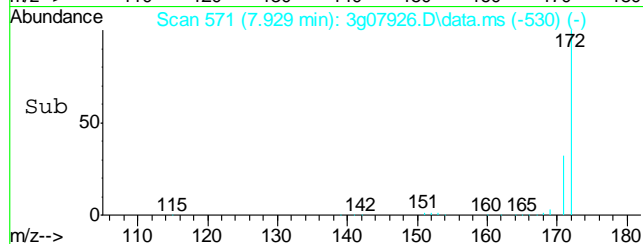
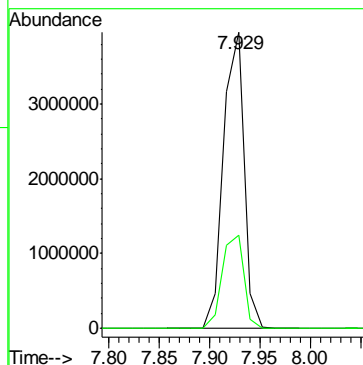
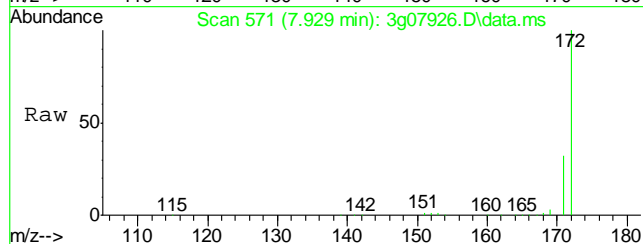
| Tgt Ion | 164 | Ratio | 100 | Resp | 369682 |
|---------|-----|-------|-----|-------|--------|
| Ion | 164 | 100 | | Lower | Upper |
| | 162 | 92.2 | | 74.0 | 114.0 |
| | 160 | 41.6 | | 23.2 | 63.2 |





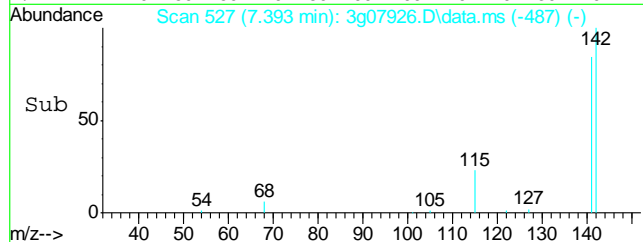
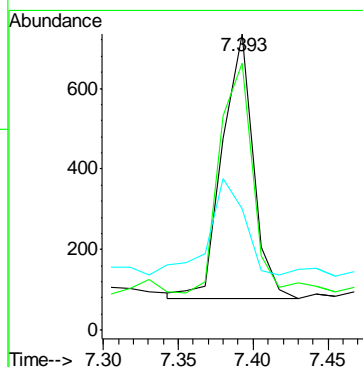
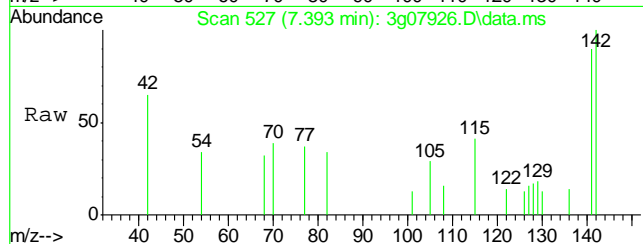
#7
2-Fluorobiphenyl
Concen: 39.62 ug/mL
RT: 7.929 min Scan# 571
Delta R.T. -0.000 min
Lab File: 3g07926.D
Acq: 13 Feb 12 1:50 pm

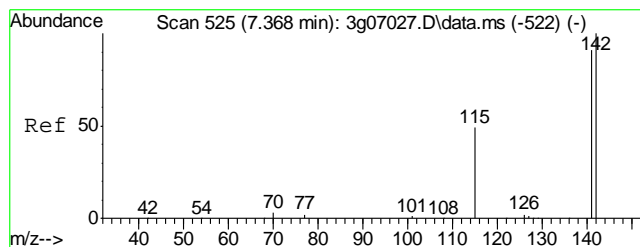
Tgt Ion:172 Resp: 5736210
Ion Ratio Lower Upper
172 100
171 33.1 12.9 52.9



#8
2-Methylnaphthalene
Concen: 0.01 ug/mL
RT: 7.393 min Scan# 527
Delta R.T. -0.000 min
Lab File: 3g07926.D
Acq: 13 Feb 12 1:50 pm

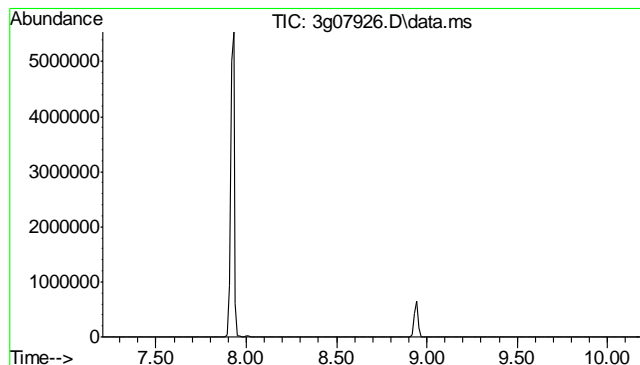
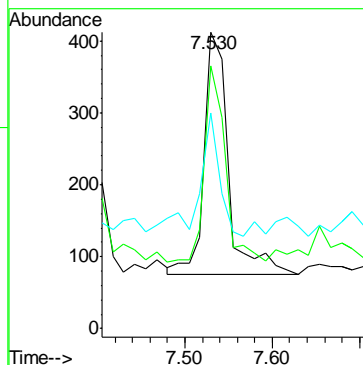
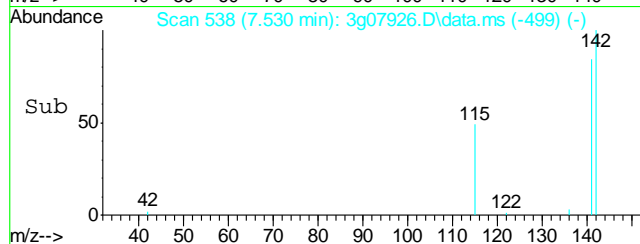
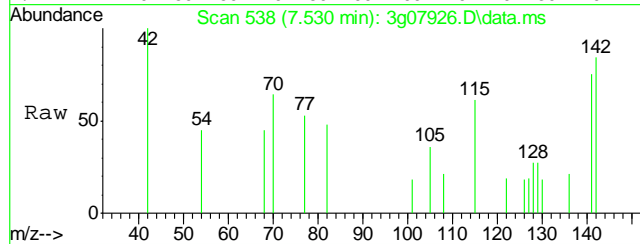
Tgt Ion:142 Resp: 936
Ion Ratio Lower Upper
142 100
141 97.1 62.6 102.6
115 42.1 13.5 53.5





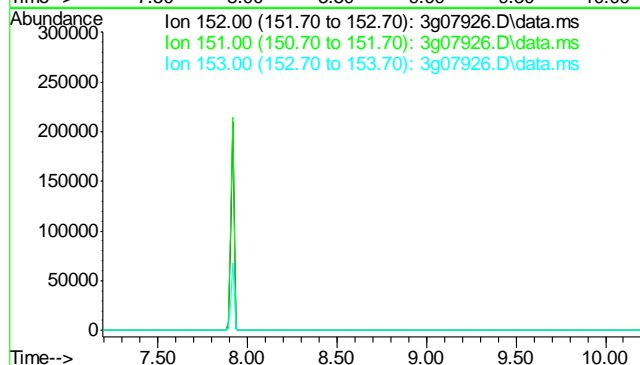
#9
1-Methylnaphthalene
Concen: 0.00 ug/mL
RT: 7.530 min Scan# 538
Delta R.T. -0.013 min
Lab File: 3g07926.D
Acq: 13 Feb 12 1:50 pm

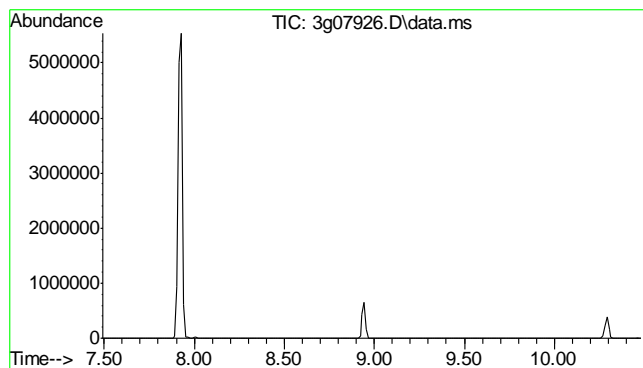
Tgt Ion: 142 Resp: 643
Ion Ratio Lower Upper
142 100
141 67.8 66.1 106.1
115 0.0 16.0 56.0#



#10
Acenaphthylene
Concen: N.D. ug/mL
Expected RT: 8.70 min
Lab File: 3g07926.D
Acq: 13 Feb 12 1:50 pm

Tgt Ion: 152
Sig Exp Ratio
152 100
151 18.7
153 12.9

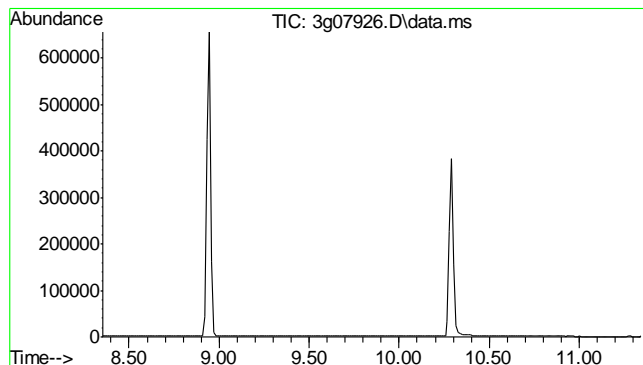
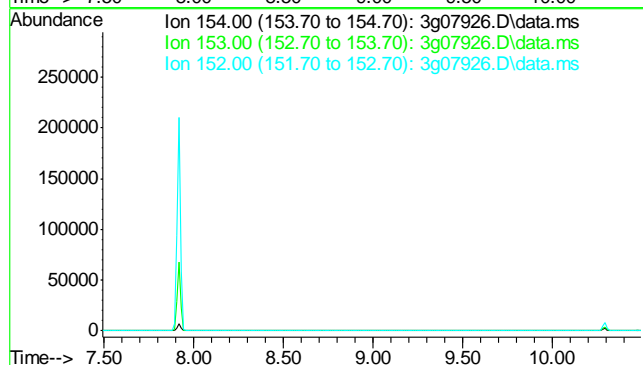




#11
Acenaphthene
Concen: N.D. ug/mL
Expected RT: 8.99 min

Lab File: 3g07926.D
Acq: 13 Feb 12 1:50 pm

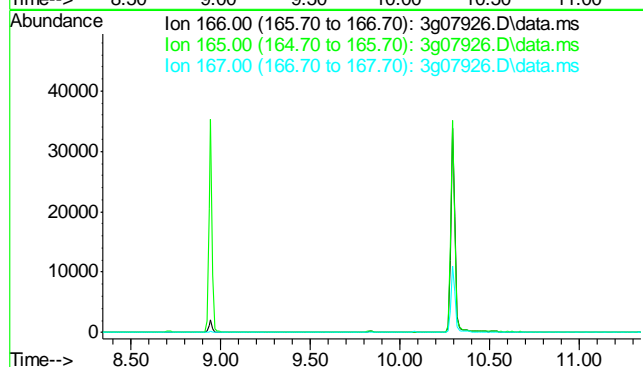
| Tgt Ion: | 154 |
|----------|-----------|
| Sig | Exp Ratio |
| 154 | 100 |
| 153 | 103.9 |
| 152 | 49.2 |

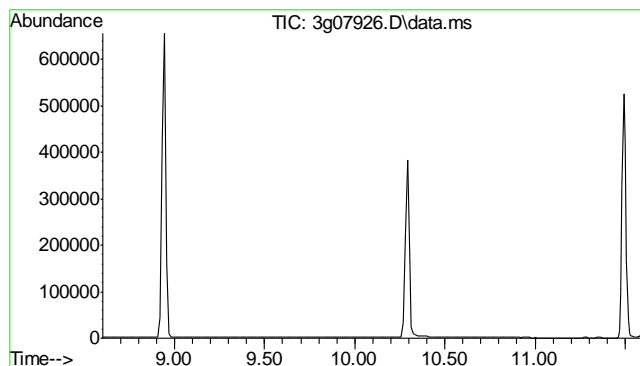


#12
Fluorene
Concen: N.D. ug/mL
Expected RT: 9.84 min

Lab File: 3g07926.D
Acq: 13 Feb 12 1:50 pm

| Tgt Ion: | 166 |
|----------|-----------|
| Sig | Exp Ratio |
| 166 | 100 |
| 165 | 90.9 |
| 167 | 13.1 |

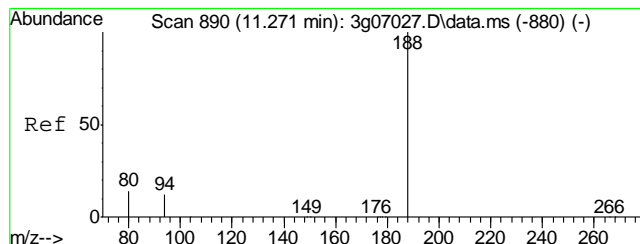
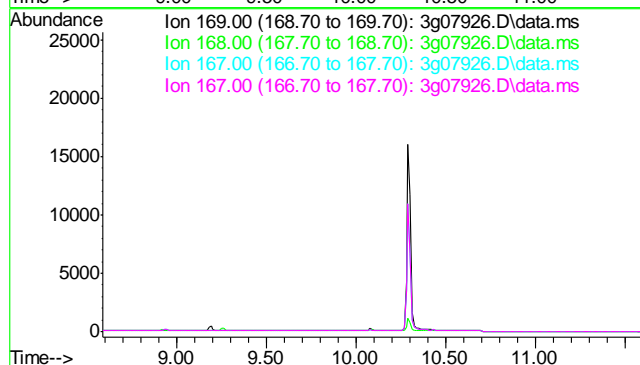




#13
Diphenylamine
Concen: N.D. ug/mL
Expected RT: 10.09 min

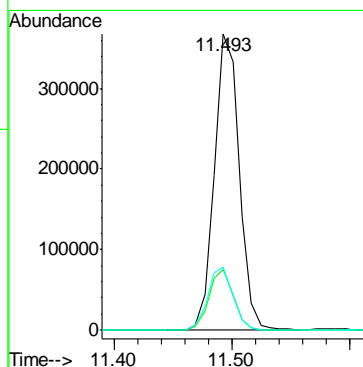
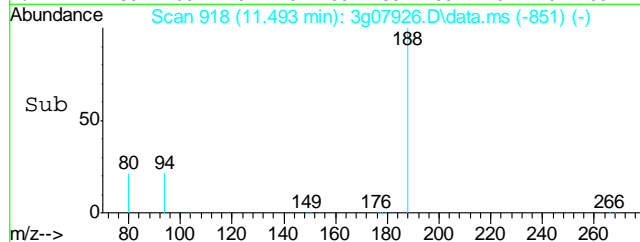
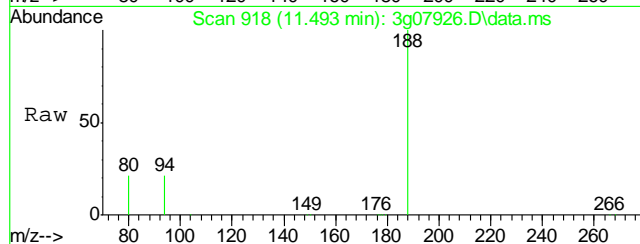
Lab File: 3g07926.D
Acq: 13 Feb 12 1:50 pm

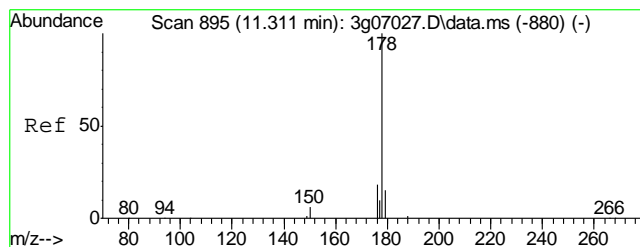
Tgt Ion: 169
Sig Exp Ratio
169 100
168 61.2
167 33.1
167 33.1



#14
Phenanthrene-d10
Concen: 4.00 ug/mL
RT: 11.493 min Scan# 918
Delta R.T. -0.008 min
Lab File: 3g07926.D
Acq: 13 Feb 12 1:50 pm

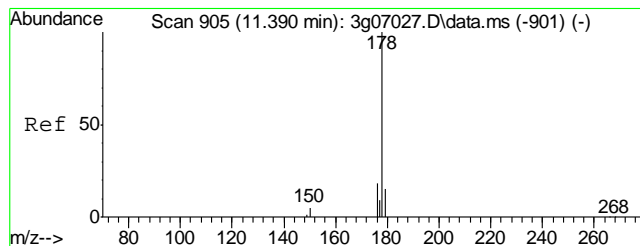
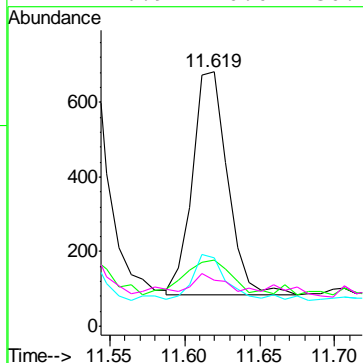
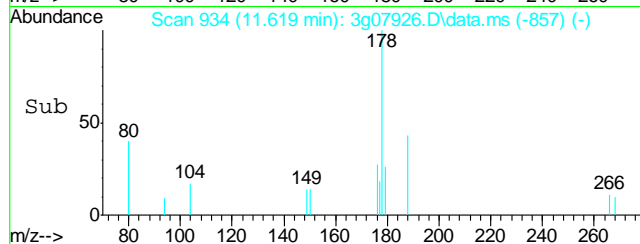
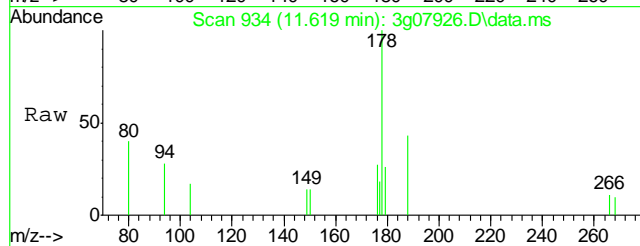
Tgt Ion: 188 Resp: 535158
Ion Ratio Lower Upper
188 100
94 20.3 0.0 39.4
80 21.3 0.2 40.2





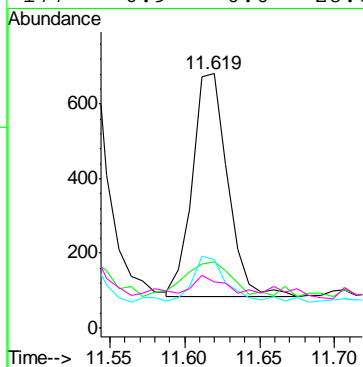
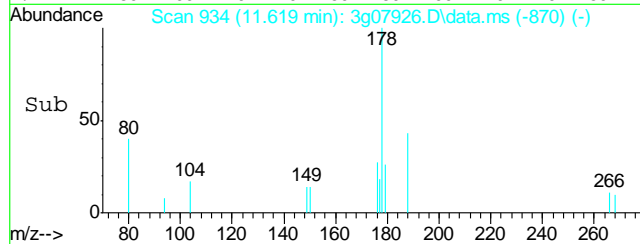
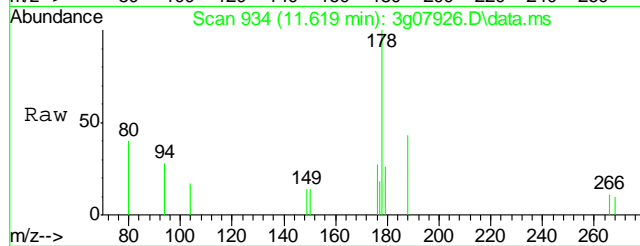
#15
Phenanthrene
Concen: 0.01 ug/mL
RT: 11.619 min Scan# 934
Delta R.T. 0.079 min
Lab File: 3g07926.D
Acq: 13 Feb 12 1:50 pm

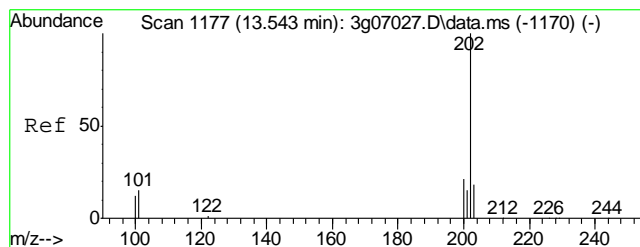
Tgt Ion: 178 Resp: 978
Ion Ratio Lower Upper
178 100
179 19.1 0.0 35.1
176 17.7 0.0 38.4
177 6.9 0.0 30.1



#16
Anthracene
Concen: 0.01 ug/mL
RT: 11.619 min Scan# 934
Delta R.T. -0.008 min
Lab File: 3g07926.D
Acq: 13 Feb 12 1:50 pm

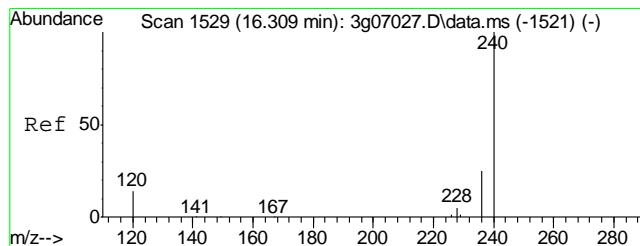
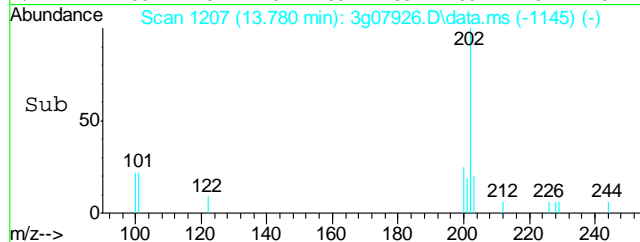
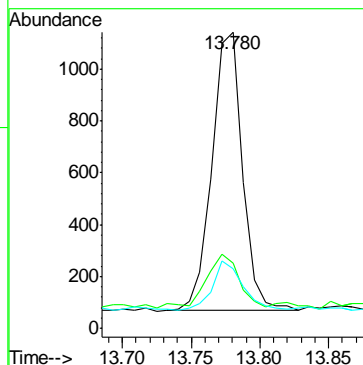
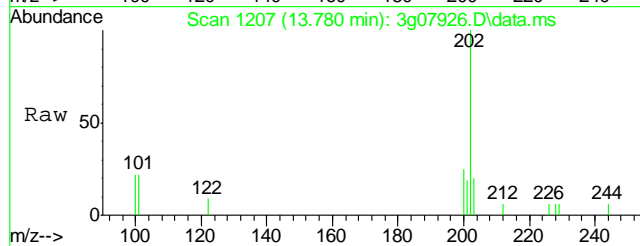
Tgt Ion: 178 Resp: 978
Ion Ratio Lower Upper
178 100
179 19.1 0.0 35.0
176 17.7 0.0 37.6
177 6.9 0.0 28.6





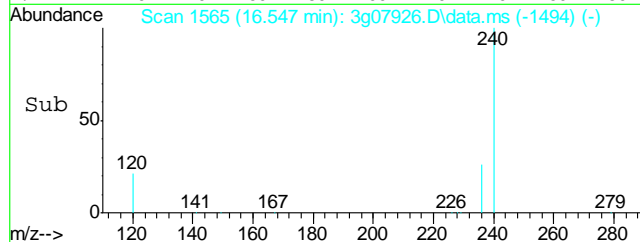
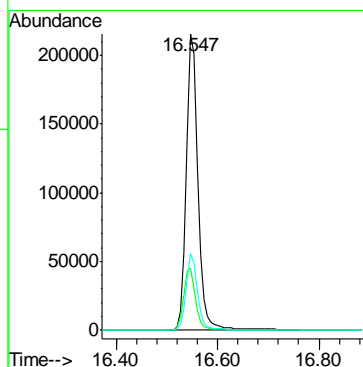
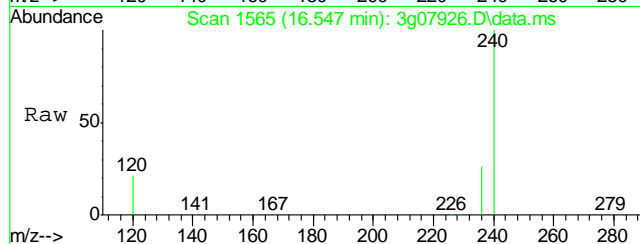
#17
Fluoranthene
Concen: 0.01 ug/mL
RT: 13.780 min Scan# 1207
Delta R.T. -0.008 min
Lab File: 3g07926.D
Acq: 13 Feb 12 1:50 pm

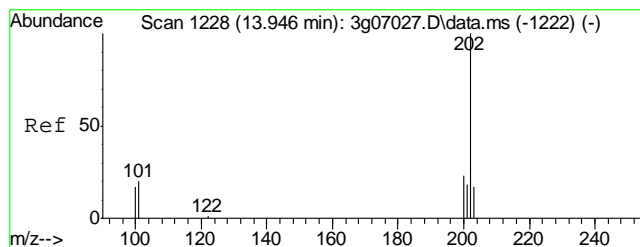
| | | | |
|-----------|-------|-------|------|
| Tgt Ion: | 202 | Resp: | 1658 |
| Ion Ratio | Lower | Upper | |
| 202 | 100 | | |
| 101 | 19.1 | 0.0 | 39.8 |
| 203 | 17.6 | 0.0 | 37.2 |



#18
Chrysene-d12
Concen: 4.00 ug/mL
RT: 16.547 min Scan# 1565
Delta R.T. -0.007 min
Lab File: 3g07926.D
Acq: 13 Feb 12 1:50 pm

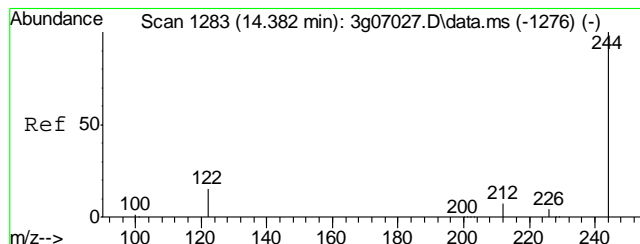
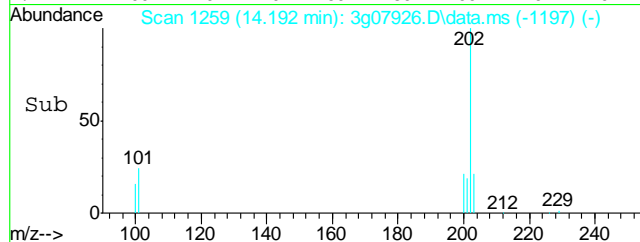
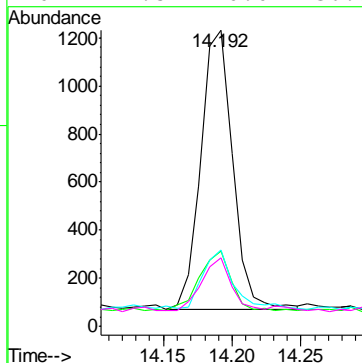
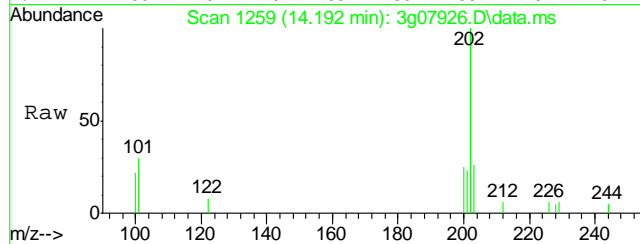
| | | | |
|-----------|-------|-------|--------|
| Tgt Ion: | 240 | Resp: | 344888 |
| Ion Ratio | Lower | Upper | |
| 240 | 100 | | |
| 120 | 21.0 | 10.4 | 50.4 |
| 236 | 25.3 | 5.8 | 45.8 |





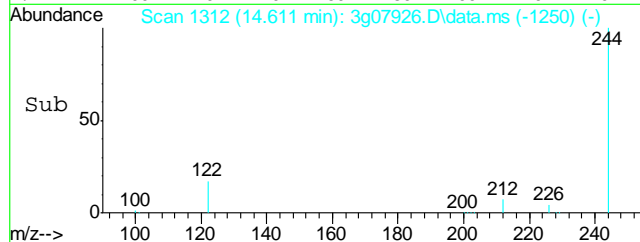
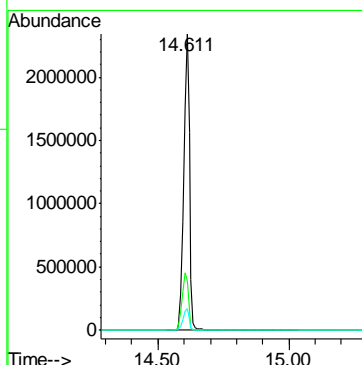
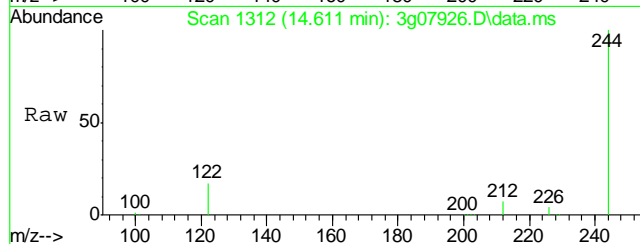
#19
Pyrene
Concen: 0.01 ug/mL
RT: 14.192 min Scan# 1259
Delta R.T. -0.008 min
Lab File: 3g07926.D
Acq: 13 Feb 12 1:50 pm

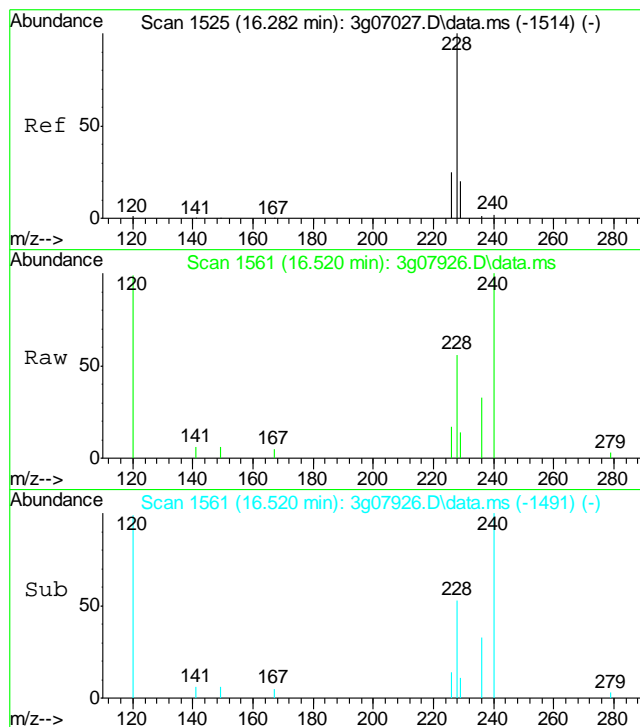
| | | | |
|-----------|-------|-------|------|
| Tgt Ion: | 202 | Resp: | 1866 |
| Ion Ratio | Lower | Upper | |
| 202 | 100 | | |
| 200 | 21.7 | 0.1 | 40.1 |
| 203 | 20.8 | 0.0 | 37.8 |
| 201 | 17.5 | 0.0 | 36.5 |



#20
Terphenyl-d14
Concen: 49.26 ug/mL
RT: 14.611 min Scan# 1312
Delta R.T. -0.008 min
Lab File: 3g07926.D
Acq: 13 Feb 12 1:50 pm

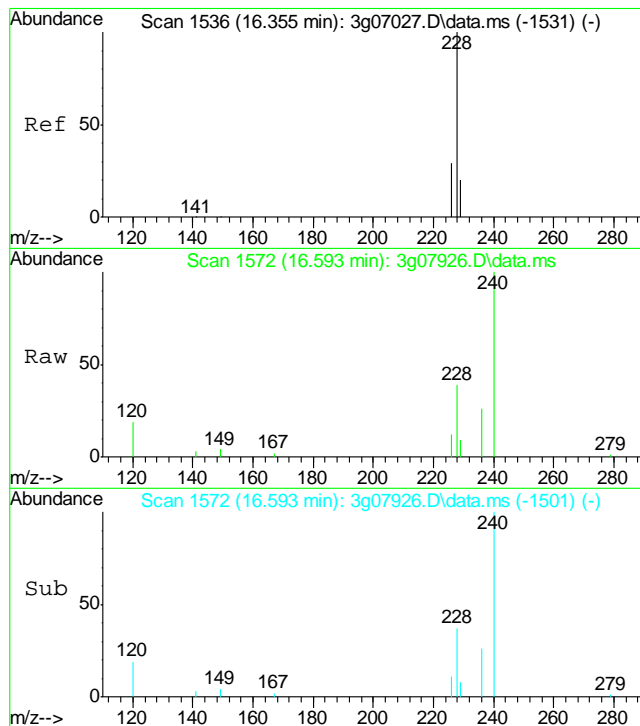
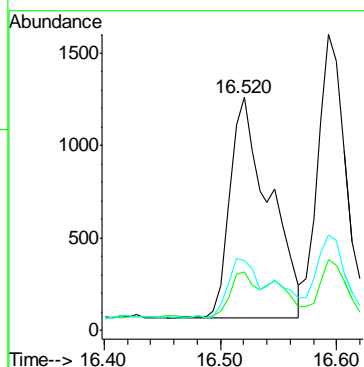
| | | | |
|-----------|-------|-------|---------|
| Tgt Ion: | 244 | Resp: | 3521450 |
| Ion Ratio | Lower | Upper | |
| 244 | 100 | | |
| 122 | 20.6 | 9.9 | 49.9 |
| 212 | 7.3 | 0.0 | 27.9 |





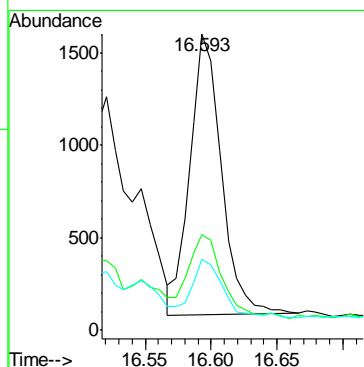
#21
Benzo(a)anthracene
Concen: 0.03 ug/mL
RT: 16.520 min Scan# 1561
Delta R.T. -0.007 min
Lab File: 3g07926.D
Acq: 13 Feb 12 1:50 pm

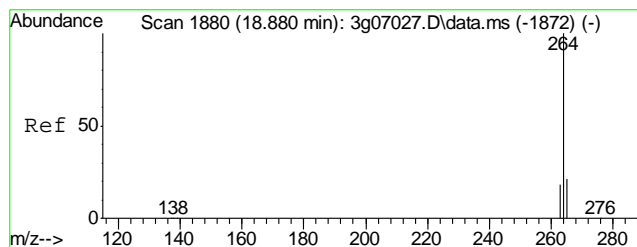
| | | | |
|-----------|-------|-------|------|
| Tgt Ion: | 228 | Resp: | 2796 |
| Ion Ratio | Lower | Upper | |
| 228 | 100 | | |
| 229 | 13.8 | 0.0 | 39.6 |
| 226 | 21.4 | 6.2 | 46.2 |



#22
Chrysene
Concen: 0.02 ug/mL
RT: 16.593 min Scan# 1572
Delta R.T. -0.013 min
Lab File: 3g07926.D
Acq: 13 Feb 12 1:50 pm

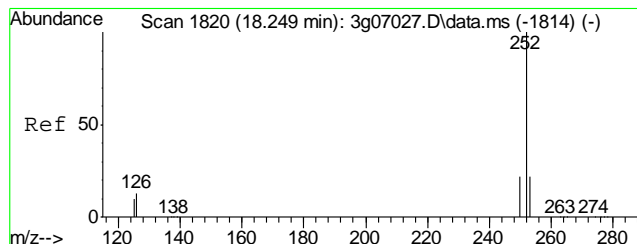
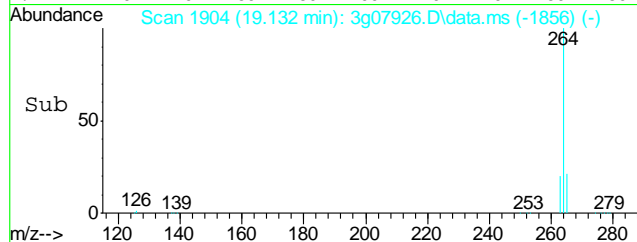
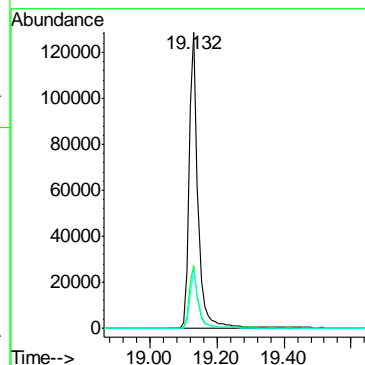
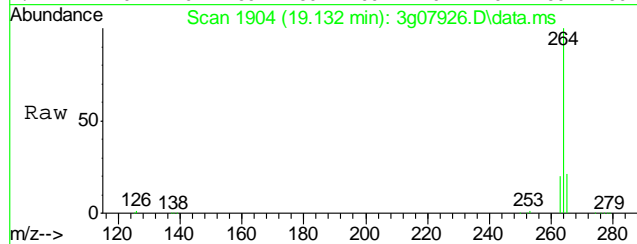
| | | | |
|-----------|-------|-------|------|
| Tgt Ion: | 228 | Resp: | 2544 |
| Ion Ratio | Lower | Upper | |
| 228 | 100 | | |
| 226 | 31.8 | 8.7 | 48.7 |
| 229 | 21.3 | 0.0 | 39.3 |





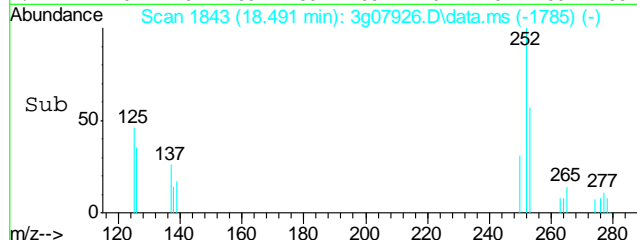
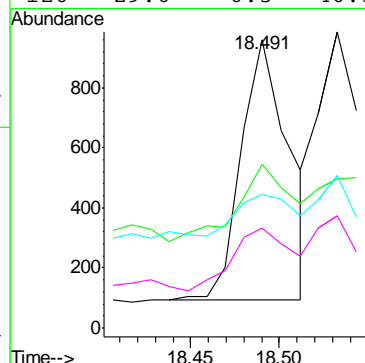
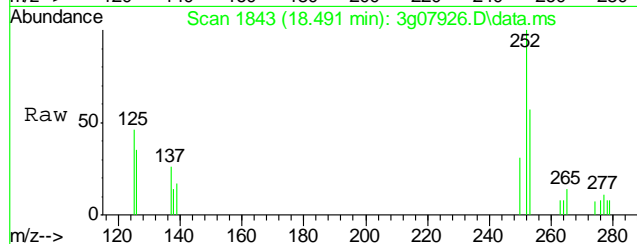
#23
Perylene-d12
Concen: 4.00 ug/mL
RT: 19.132 min Scan# 1904
Delta R.T. -0.000 min
Lab File: 3g07926.D
Acq: 13 Feb 12 1:50 pm

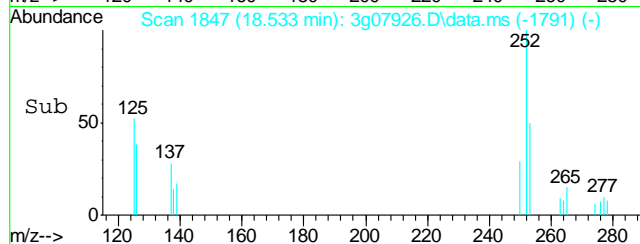
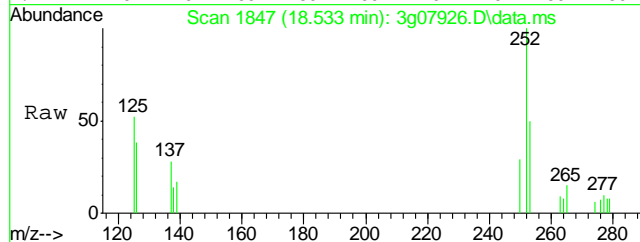
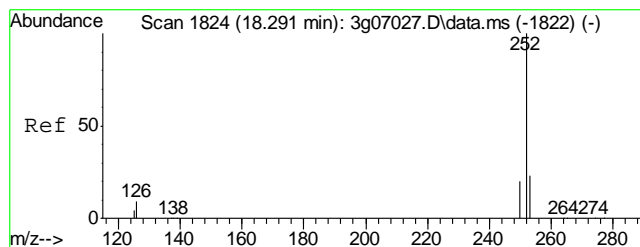
| | | | |
|-----------|-------|-------|--------|
| Tgt Ion: | 264 | Resp: | 235013 |
| Ion Ratio | Lower | Upper | |
| 264 | 100 | | |
| 265 | 20.9 | 1.1 | 41.1 |
| 263 | 19.1 | 0.0 | 39.2 |



#24
Benzo(b)fluoranthene
Concen: 0.06 ug/mL
RT: 18.491 min Scan# 1843
Delta R.T. -0.011 min
Lab File: 3g07926.D
Acq: 13 Feb 12 1:50 pm

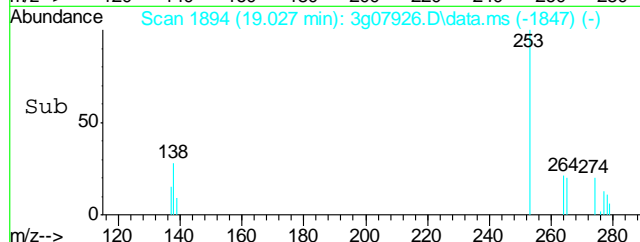
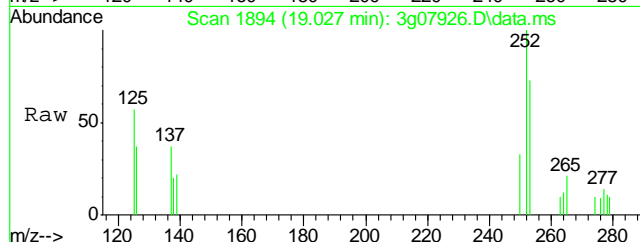
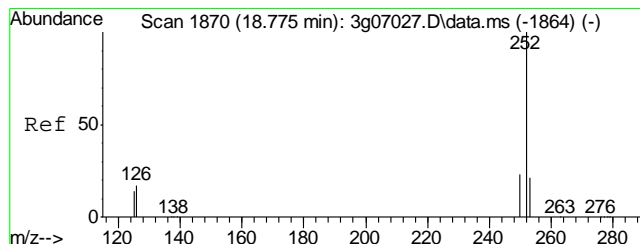
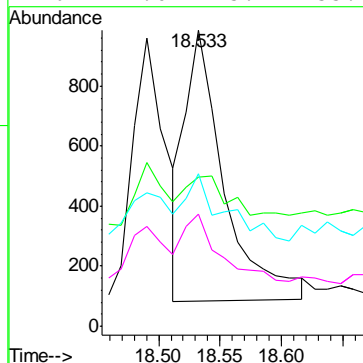
| | | | |
|-----------|-------|-------|------|
| Tgt Ion: | 252 | Resp: | 1623 |
| Ion Ratio | Lower | Upper | |
| 252 | 100 | | |
| 253 | 20.1 | 1.4 | 41.4 |
| 125 | 18.7 | 0.0 | 38.7 |
| 126 | 29.6 | 6.3 | 46.3 |





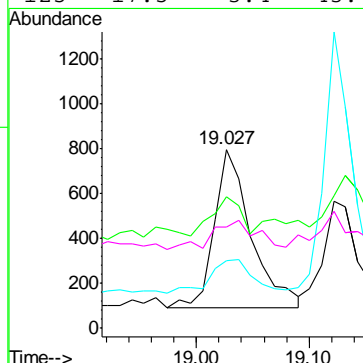
#25
Benzo(k)fluoranthene
Concen: 0.02 ug/mL m
RT: 18.533 min Scan# 1847
Delta R.T. -0.011 min
Lab File: 3g07926.D
Acq: 13 Feb 12 1:50 pm

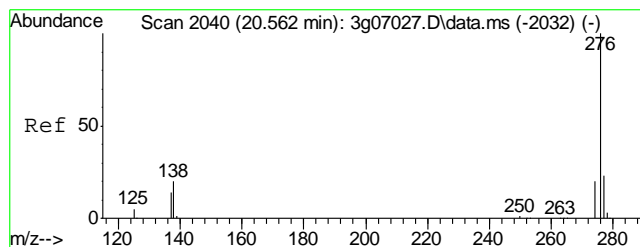
| | |
|--------------|-------------|
| Tgt Ion: 252 | Resp: 2005 |
| Ion Ratio | Lower Upper |
| 252 100 | |
| 253 16.3 | 1.6 41.6 |
| 125 15.2 | 2.6 42.6 |
| 126 24.0 | 15.2 55.2 |



#26
Benzo(a)pyrene
Concen: 0.07 ug/mL
RT: 19.027 min Scan# 1894
Delta R.T. -0.011 min
Lab File: 3g07926.D
Acq: 13 Feb 12 1:50 pm

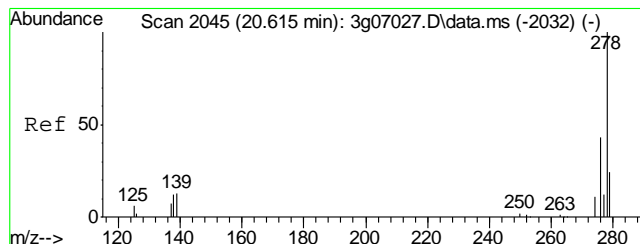
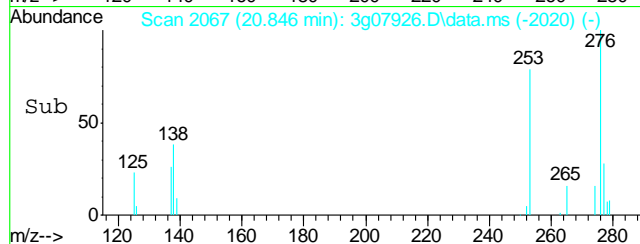
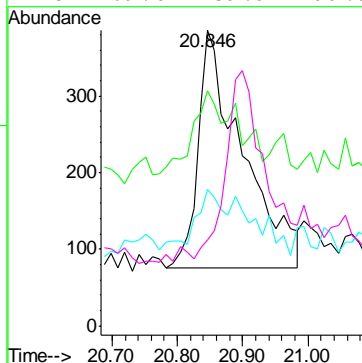
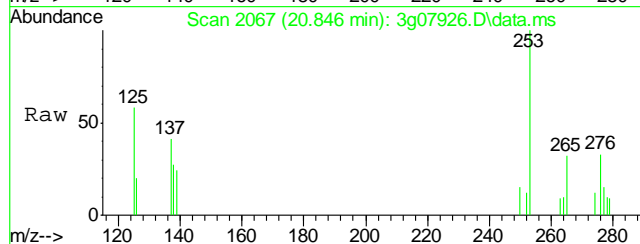
| | |
|--------------|-------------|
| Tgt Ion: 252 | Resp: 1595 |
| Ion Ratio | Lower Upper |
| 252 100 | |
| 253 19.0 | 0.5 40.5 |
| 126 24.2 | 10.6 50.6 |
| 125 17.5 | 3.4 43.4 |





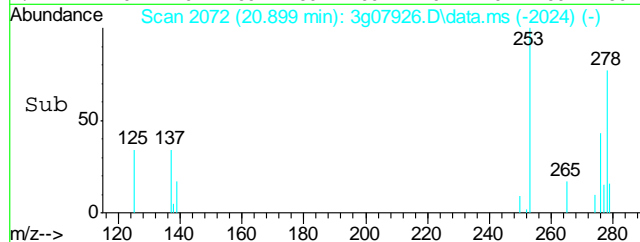
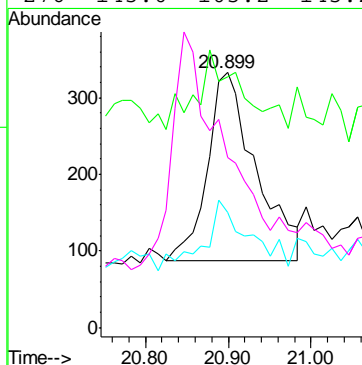
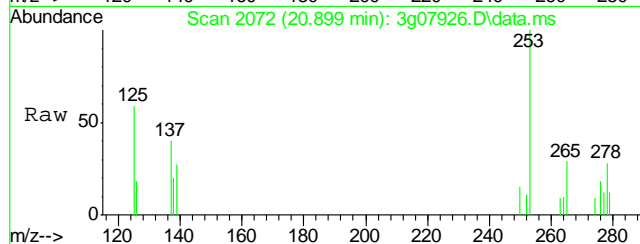
#27
Indeno(1,2,3-cd)pyrene
Concen: 0.09 ug/mL
RT: 20.846 min Scan# 2067
Delta R.T. -0.010 min
Lab File: 3g07926.D
Acq: 13 Feb 12 1:50 pm

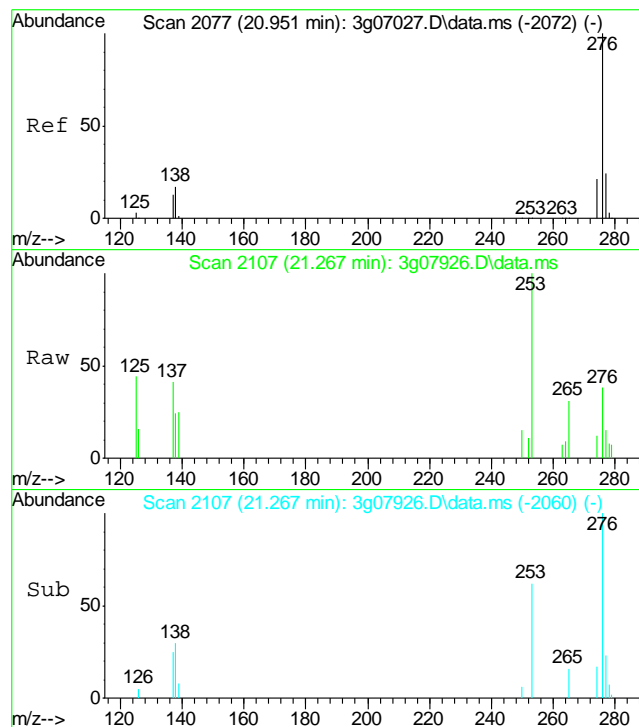
| Tgt Ion | Ratio | Lower | Upper |
|---------|-------|-------|-------|
| 276 | 100 | | |
| 138 | 34.7 | 0.3 | 40.3 |
| 277 | 16.5 | 5.0 | 45.0 |
| 278 | 69.0 | 59.9 | 99.9 |



#28
Dibenz(a,h)anthracene
Concen: 0.09 ug/mL
RT: 20.899 min Scan# 2072
Delta R.T. 0.001 min
Lab File: 3g07926.D
Acq: 13 Feb 12 1:50 pm

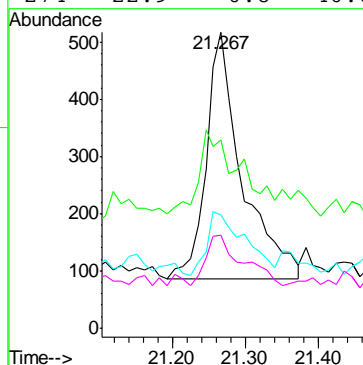
| Tgt Ion | Ratio | Lower | Upper |
|---------|-------|-------|-------|
| 278 | 100 | | |
| 139 | 45.7 | 6.9 | 46.9 |
| 279 | 31.6 | 3.2 | 43.2 |
| 276 | 145.0 | 105.2 | 145.2 |





#29
Benzo(g,h,i)perylene
Concen: 0.07 ug/mL
RT: 21.267 min Scan# 2107
Delta R.T. -0.010 min
Lab File: 3g07926.D
Acq: 13 Feb 12 1:50 pm

| | | | |
|-----------|-------|-------|------|
| Tgt Ion: | 276 | Resp: | 1468 |
| Ion Ratio | Lower | Upper | |
| 276 | 100 | | |
| 138 | 38.1 | 12.8 | 52.8 |
| 277 | 27.5 | 3.5 | 43.5 |
| 274 | 22.9 | 0.8 | 40.8 |



GC Volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Job Number: D31747
Account: XTOKRWR XTO Energy
Project: FRU 297-28C

| | | | | | | | |
|-----------|-----------|----|----------|----|-----------|------------|------------------|
| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
| GGB836-MB | GB14786.D | 1 | 02/09/12 | SK | n/a | n/a | GGB836 |

The QC reported here applies to the following samples: Method: SW846 8015B

D31747-1

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---------|------------------|--------|----|-----|-------|---|
| | TPH-GRO (C6-C10) | ND | 10 | 5.0 | mg/kg | |

| CAS No. | Surrogate Recoveries | Limits |
|----------|------------------------|--------------|
| 120-82-1 | 1,2,4-Trichlorobenzene | 122% 60-140% |

9.1.1
9

Blank Spike Summary

Job Number: D31747
Account: XTOKRWR XTO Energy
Project: FRU 297-28C

| | | | | | | | |
|-----------|-----------|----|----------|----|-----------|------------|------------------|
| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
| GGB836-BS | GB14787.D | 1 | 02/09/12 | SK | n/a | n/a | GGB836 |

The QC reported here applies to the following samples: Method: SW846 8015B

D31747-1

| CAS No. | Compound | Spike mg/kg | BSP mg/kg | BSP % | Limits |
|---------|------------------|----------------|--------------|----------|--------|
| | TPH-GRO (C6-C10) | 110 | 100 | 91 | 70-130 |

| CAS No. | Surrogate Recoveries | BSP | Limits |
|----------|------------------------|------|---------|
| 120-82-1 | 1,2,4-Trichlorobenzene | 127% | 60-140% |

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: D31747
Account: XTOKRWR XTO Energy
Project: FRU 297-28C

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|-------------|-----------|----|----------|----|-----------|------------|------------------|
| D31663-1MS | GB14789.D | 1 | 02/09/12 | SK | n/a | n/a | GGB836 |
| D31663-1MSD | GB14790.D | 1 | 02/09/12 | SK | n/a | n/a | GGB836 |
| D31663-1 | GB14788.D | 1 | 02/09/12 | SK | n/a | n/a | GGB836 |

The QC reported here applies to the following samples: Method: SW846 8015B

D31747-1

| CAS No. | Compound | D31663-1 mg/kg | Q | Spike mg/kg | MS mg/kg | MS % | MSD mg/kg | MSD % | RPD | Limits Rec/RPD |
|---------|------------------|-------------------|---|----------------|-------------|---------|--------------|----------|-----|-------------------|
| | TPH-GRO (C6-C10) | 6.66 | J | 144 | 132 | 87 | 129 | 85 | 2 | 70-130/30 |

| CAS No. | Surrogate Recoveries | MS | MSD | D31663-1 | Limits |
|----------|------------------------|------|------|----------|---------|
| 120-82-1 | 1,2,4-Trichlorobenzene | 120% | 116% | 112% | 60-140% |

GC Volatiles

Raw Data

Judy Melson
02/10/12 11:04

Quantitation Report (QT Reviewed)

Signal #1 : Y:\1\DATA\020912\GB14792.D\FID1A.CH Vial: 11
Signal #2 : Y:\1\DATA\020912\GB14792.D\FID2B.CH
Acq On : 9 Feb 2012 8:56 pm Operator: StephK
Sample : D31747-1, 50X Inst : GC/MS Ins
Misc : GC2597,GGB836,5.014,,100,5,1 Multiplr: 1.00
IntFile Signal #1: TVH1.E IntFile Signal #2: FB2.E
Quant Time: Feb 10 09:01:04 2012 Quant Results File: TB791GB791SOIL.RES

Quant Method : C:\MSDCHEM\1...\TB791GB791SOIL.M (Chemstation Integrator)
Title : 8015B/8021B TVH/BTEX
Last Update : Wed Feb 08 09:52:31 2012
Response via : Initial Calibration
DataAcq Meth : TVB4.M

Volume Inj. :
Signal #1 Phase : DB-624 Signal #2 Phase: DB-624
Signal #1 Info : 0.53 mm Signal #2 Info : 0.53 mm

| Compound | | R.T. | Response | Conc | Units | |
|-----------------------------|----------------------------|-------|----------|---------|-------|---|
| ----- | | | | | | |
| System Monitoring Compounds | | | | | | |
| 2) S | 1,2,4-Trichlorobenzene | 14.36 | 3175094 | 108.531 | % | m |
| 10) S | 1,2,4-Trichlorobenzene (P) | 14.36 | 28014197 | 121.886 | % | |
| Target Compounds | | | | | | |
| 1) H | TVH-Gasoline | 7.32 | 4914254 | <MDL | mg/L | |
| 4) T | Methyl-t-butyl-ether | 0.00 | 0 | N.D. | ug/L | d |
| 5) T | Benzene | 0.00 | 0 | N.D. | ug/L | d |
| 6) T | Toluene | 7.65 | 122319 | 0.216 | ug/L | |
| 7) T | Ethylbenzene | 0.00 | 0 | N.D. | ug/L | d |
| 8) T | m,p-Xylene | 0.00 | 0 | N.D. | ug/L | d |
| 9) T | o-Xylene | 0.00 | 0 | N.D. | ug/L | d |
| 11) T | Naphthalene | 14.55 | 5804451 | 22.551 | ug/L | |

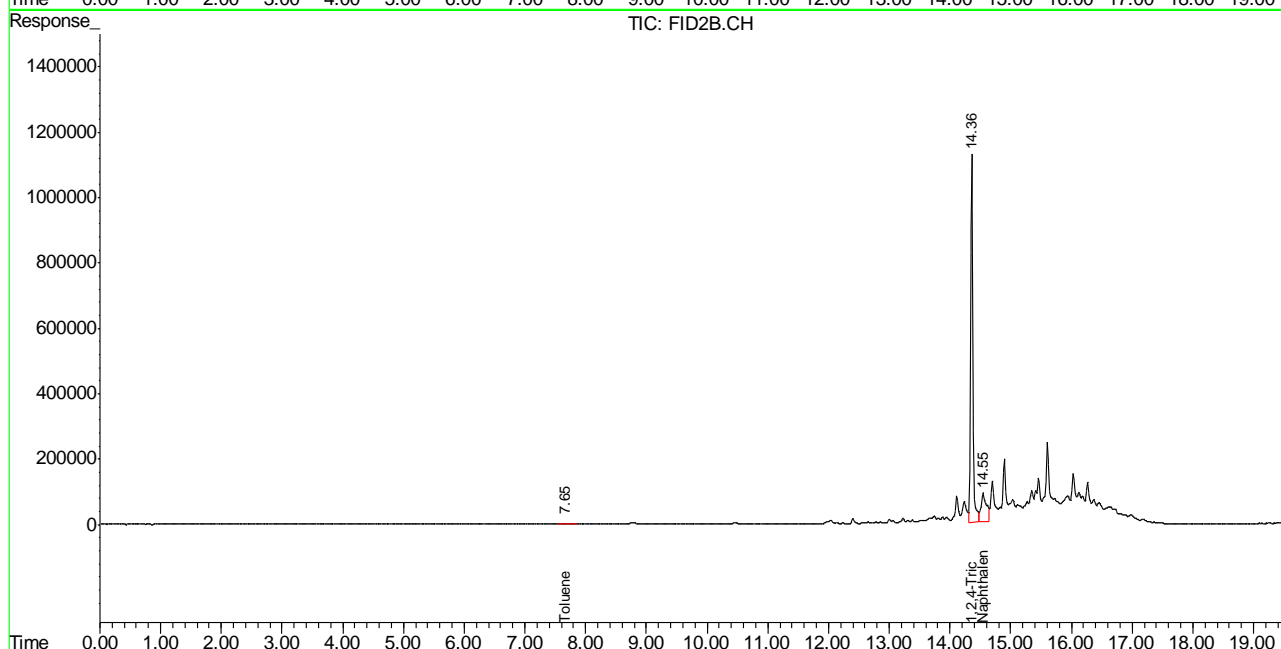
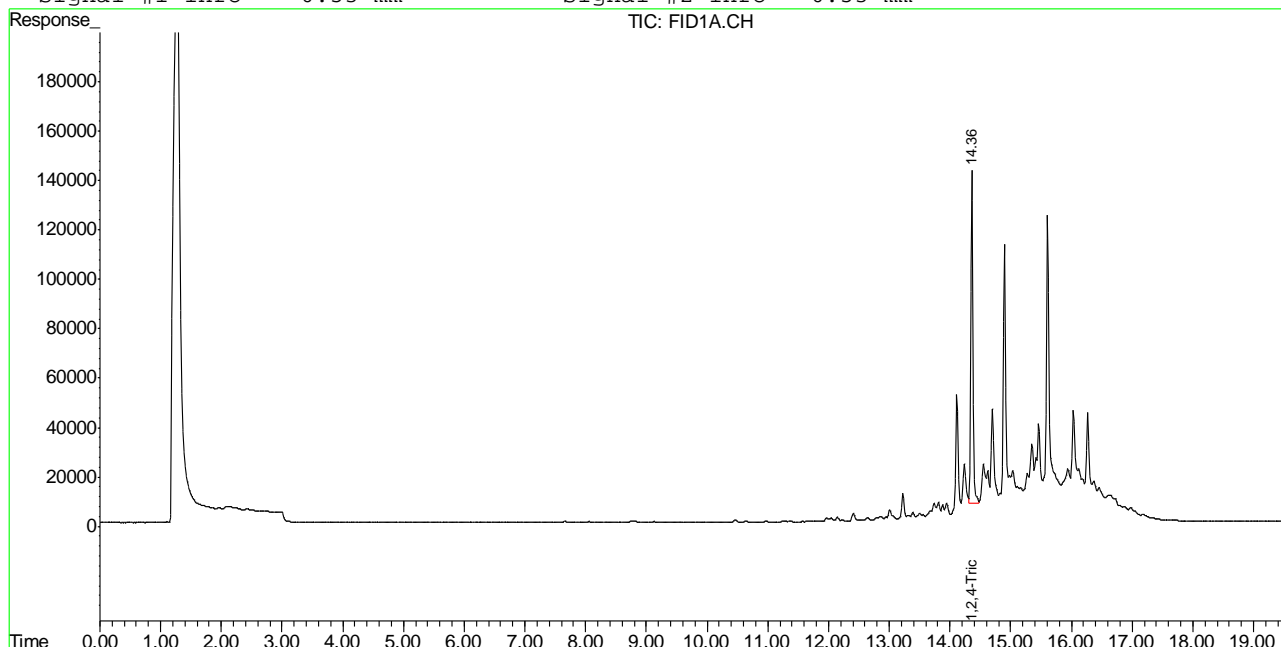
(f)=RT Delta > 1/2 Window (m)=manual int.
GB14792.D TB791GB791SOIL.M Fri Feb 10 09:03:44 2012 GC

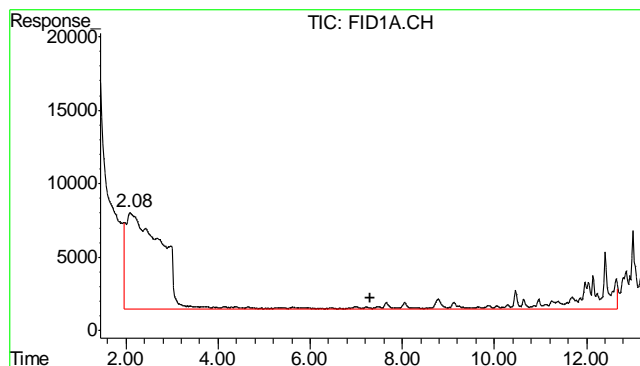
Quantitation Report (QT Reviewed)

Signal #1 : Y:\1\DATA\020912\GB14792.D\FID1A.CH Vial: 11
 Signal #2 : Y:\1\DATA\020912\GB14792.D\FID2B.CH
 Acq On : 9 Feb 2012 8:56 pm Operator: StephK
 Sample : D31747-1, 50X Inst : GC/MS Ins
 Misc : GC2597,GGB836,5.014,,100,5,1 Multiplr: 1.00
 IntFile Signal #1: TVH1.E IntFile Signal #2: FB2.E
 Quant Time: Feb 10 8:01 2012 Quant Results File: TB791GB791SOIL.RES

Quant Method : C:\MSDCHEM\1...\TB791GB791SOIL.M (Chemstation Integrator)
 Title : 8015B/8021B TVH/BTEX
 Last Update : Wed Feb 08 09:52:31 2012
 Response via : Multiple Level Calibration
 DataAcq Meth : TVB4.M

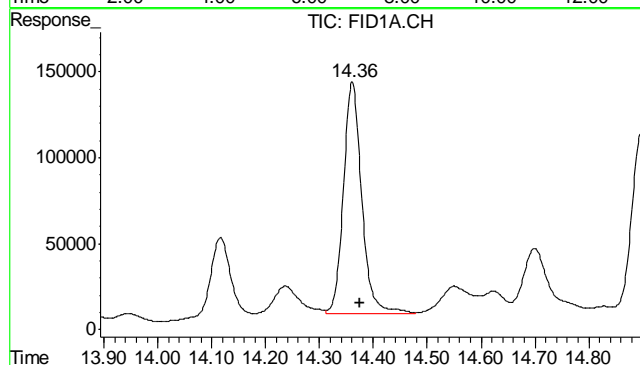
Volume Inj. :
 Signal #1 Phase : DB-624 Signal #2 Phase: DB-624
 Signal #1 Info : 0.53 mm Signal #2 Info : 0.53 mm





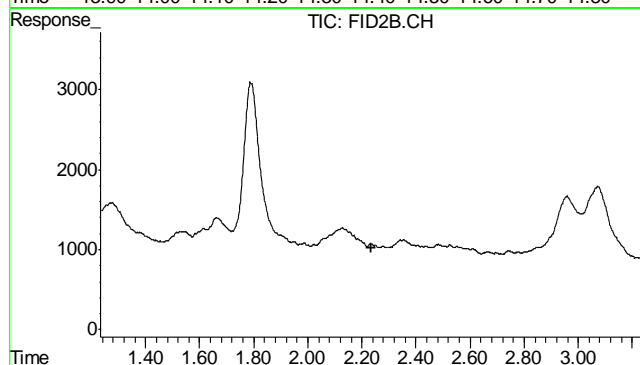
#1 TVH-Gasoline

R.T.: 7.315 min
Delta R.T.: 0.000 min
Response: 4914254
Conc: N.D.



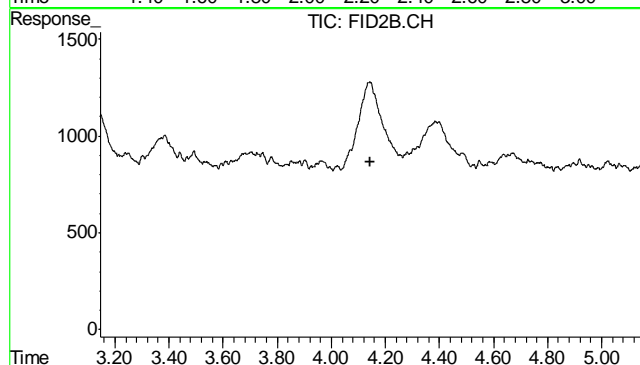
#2 1,2,4-Trichlorobenzene

R.T.: 14.360 min
Delta R.T.: -0.015 min
Response: 3175094
Conc: 108.53 % m



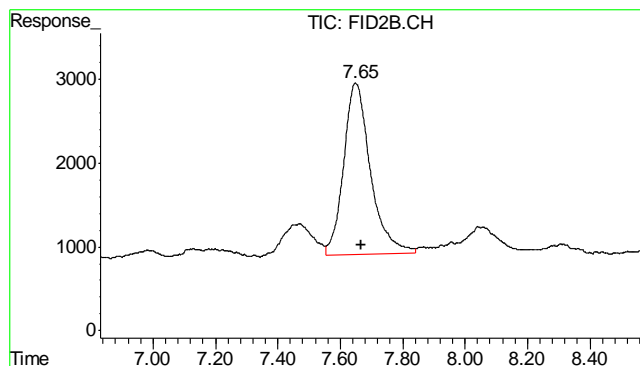
#4 Methyl-t-butyl-ether

R.T.: 0.000 min
Exp R.T.: 2.233 min
Response: 0
Conc: N.D.



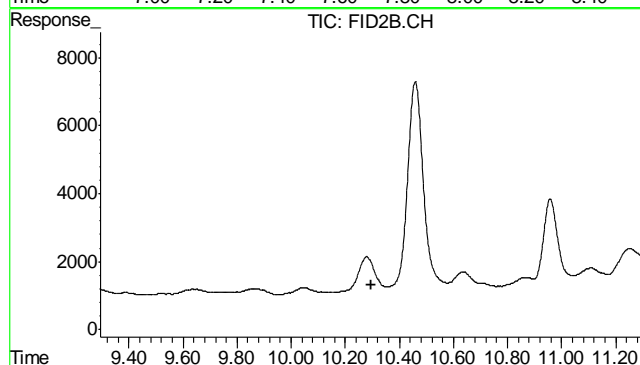
#5 Benzene

R.T.: 0.000 min
Exp R.T.: 4.145 min
Response: 0
Conc: N.D.



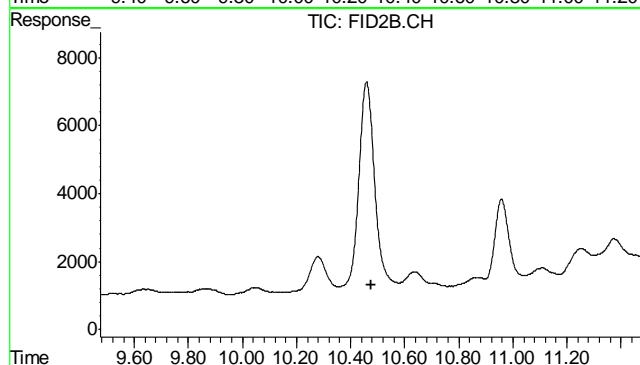
#6 Toluene

R.T.: 7.650 min
Delta R.T.: -0.015 min
Response: 122319
Conc: 0.22 ug/L



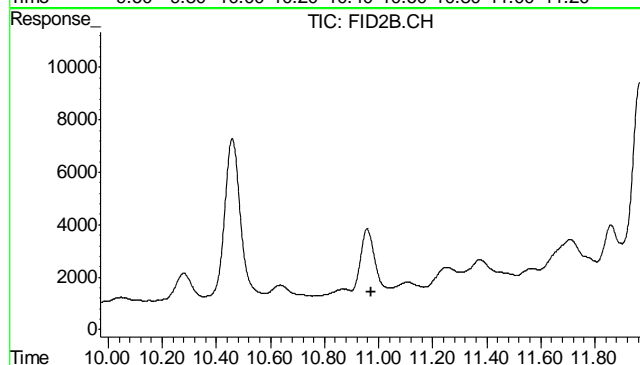
#7 Ethylbenzene

R.T.: 0.000 min
Exp R.T.: 10.295 min
Response: 0
Conc: N.D.



#8 m,p-Xylene

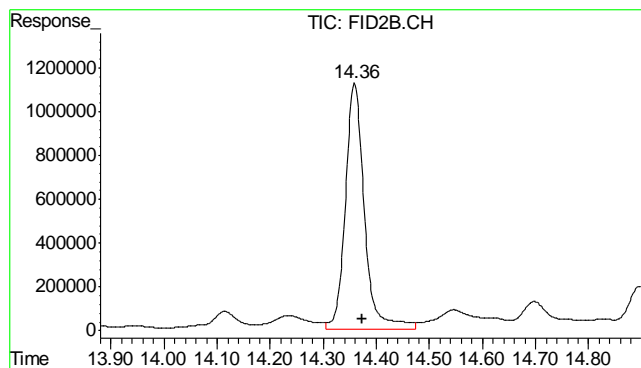
R.T.: 0.000 min
Exp R.T.: 10.475 min
Response: 0
Conc: N.D.



#9 o-Xylene

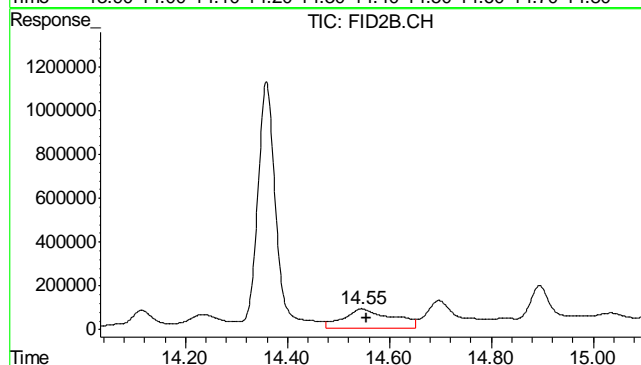
R.T.: 0.000 min
Exp R.T.: 10.971 min
Response: 0
Conc: N.D.

10.1.1 10



#10 1,2,4-Trichlorobenzene (P)

R.T.: 14.359 min
 Delta R.T.: -0.014 min
 Response: 28014197
 Conc: 121.89 %



#11 Naphthalene

R.T.: 14.546 min
 Delta R.T.: -0.009 min
 Response: 5804451
 Conc: 22.55 ug/L

10.1.1
10

Quantitation Report (QT Reviewed)

Signal #1 : Y:\1\DATA\020912\GB14786.D\FID1A.CH Vial: 5
 Signal #2 : Y:\1\DATA\020912\GB14786.D\FID2B.CH
 Acq On : 9 Feb 2012 5:18 pm Operator: StephK
 Sample : MB, S Inst : GC/MS Ins
 Misc : GC2597,GGB836,5.000,,100,5,1 Multiplr: 1.00
 IntFile Signal #1: TVH1.E IntFile Signal #2: FB2.E
 Quant Time: Feb 09 19:24:17 2012 Quant Results File: TB791GB791SOIL.RES

Quant Method : C:\MSDCHEM\1...\TB791GB791SOIL.M (Chemstation Integrator)
 Title : 8015B/8021B TVH/BTEX
 Last Update : Wed Feb 08 09:52:31 2012
 Response via : Initial Calibration
 DataAcq Meth : TVB4.M

Volume Inj. :
 Signal #1 Phase : DB-624 Signal #2 Phase: DB-624
 Signal #1 Info : 0.53 mm Signal #2 Info : 0.53 mm

| | Compound | R.T. | Response | Conc | Units |
|-----------------------------|----------------------------|-------|----------|---------|--------|
| ----- | | | | | |
| System Monitoring Compounds | | | | | |
| 2) S | 1,2,4-Trichlorobenzene | 14.38 | 3576546 | 122.254 | % |
| 10) S | 1,2,4-Trichlorobenzene (P) | 14.38 | 29110251 | 126.655 | % |
| Target Compounds | | | | | |
| 1) H | TVH-Gasoline | 7.32 | 4417227 | <MDL | mg/L |
| 4) T | Methyl-t-butyl-ether | 0.00 | 0 | N.D. | ug/L d |
| 5) T | Benzene | 0.00 | 0 | N.D. | ug/L d |
| 6) T | Toluene | 7.67 | 121628 | 0.215 | ug/L |
| 7) T | Ethylbenzene | 0.00 | 0 | N.D. | ug/L d |
| 8) T | m,p-Xylene | 0.00 | 0 | N.D. | ug/L d |
| 9) T | o-Xylene | 0.00 | 0 | N.D. | ug/L d |
| 11) T | Naphthalene | 14.56 | 347961 | 1.352 | ug/L |

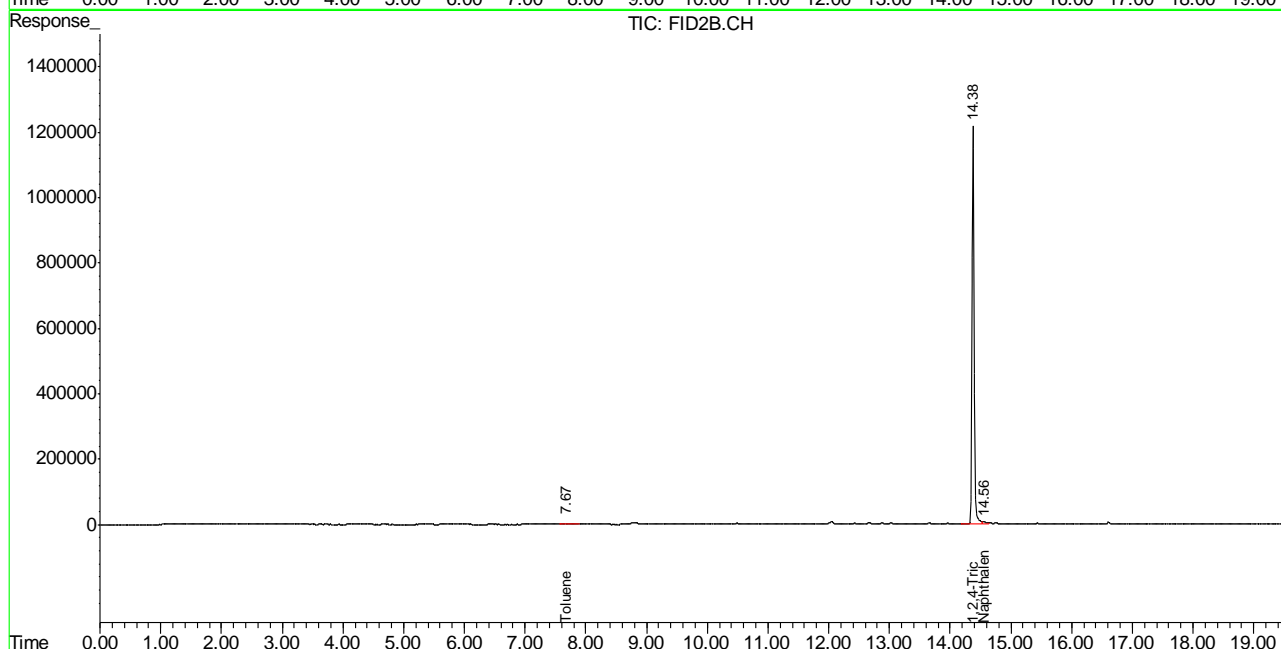
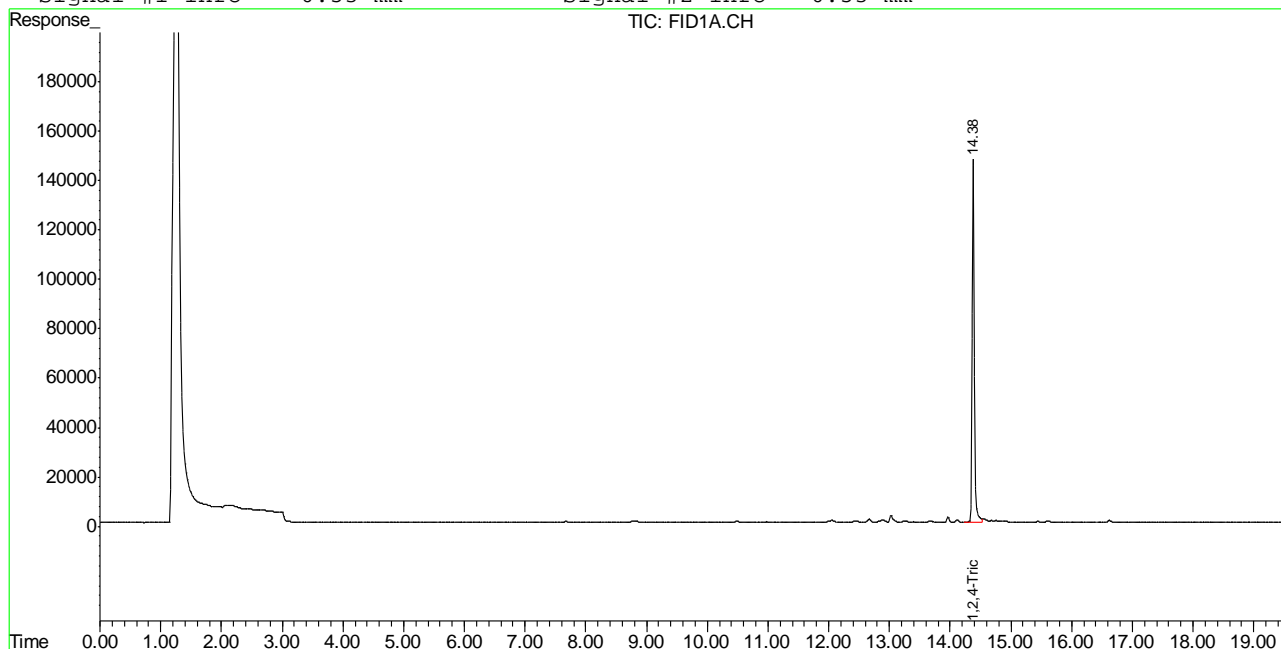
 (f)=RT Delta > 1/2 Window (m)=manual int.
 GB14786.D TB791GB791SOIL.M Fri Feb 10 09:07:18 2012 GC

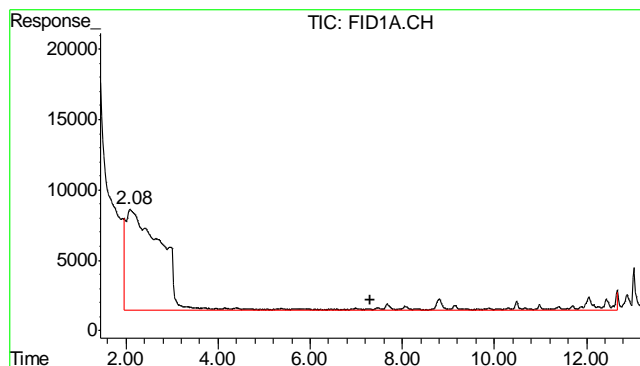
Quantitation Report (QT Reviewed)

Signal #1 : Y:\1\DATA\020912\GB14786.D\FID1A.CH Vial: 5
Signal #2 : Y:\1\DATA\020912\GB14786.D\FID2B.CH
Acq On : 9 Feb 2012 5:18 pm Operator: StephK
Sample : MB, S Inst : GC/MS Ins
Misc : GC2597,GGB836,5.000,,100,5,1 Multiplr: 1.00
IntFile Signal #1: TVH1.E IntFile Signal #2: FB2.E
Quant Time: Feb 9 18:24 2012 Quant Results File: TB791GB791SOIL.RES

Quant Method : C:\MSDCHEM\1...\TB791GB791SOIL.M (Chemstation Integrator)
Title : 8015B/8021B TVH/BTEX
Last Update : Wed Feb 08 09:52:31 2012
Response via : Multiple Level Calibration
DataAcq Meth : TVB4.M

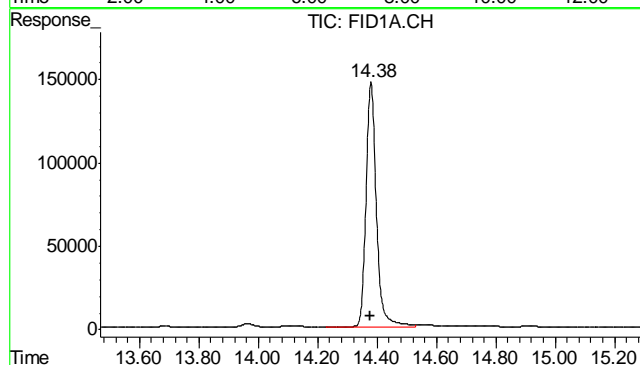
Volume Inj. :
Signal #1 Phase : DB-624 Signal #2 Phase: DB-624
Signal #1 Info : 0.53 mm Signal #2 Info : 0.53 mm





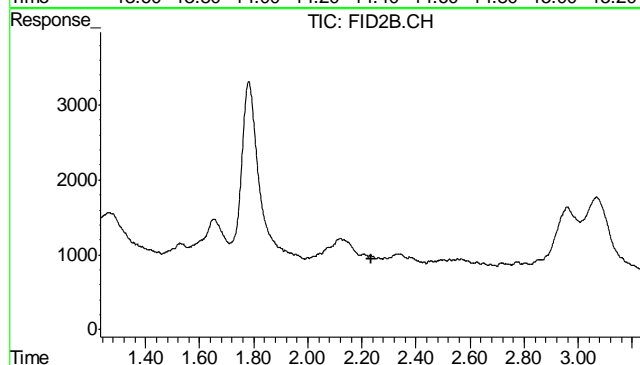
#1 TVH-Gasoline

R.T.: 7.315 min
Delta R.T.: 0.000 min
Response: 4417227
Conc: N.D.



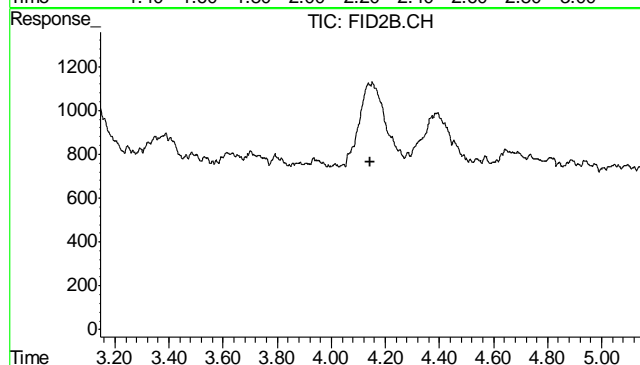
#2 1,2,4-Trichlorobenzene

R.T.: 14.380 min
Delta R.T.: 0.004 min
Response: 3576546
Conc: 122.25 %



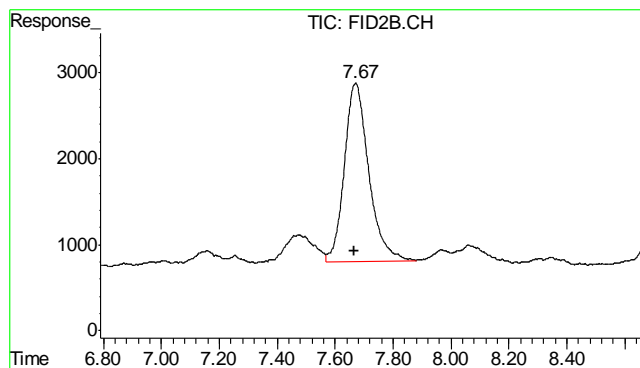
#4 Methyl-t-butyl-ether

R.T.: 0.000 min
Exp R.T.: 2.233 min
Response: 0
Conc: N.D.



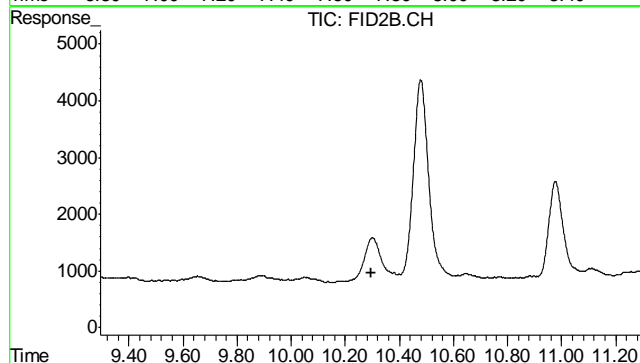
#5 Benzene

R.T.: 0.000 min
Exp R.T.: 4.145 min
Response: 0
Conc: N.D.



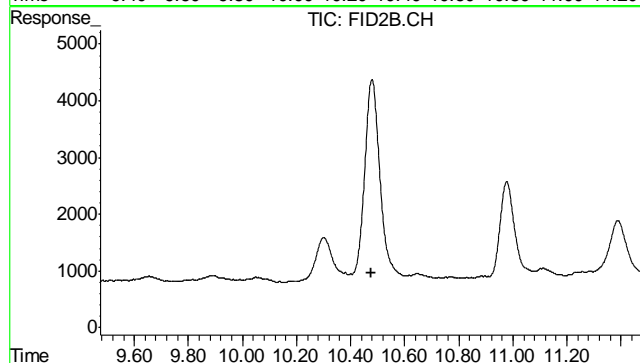
#6 Toluene

R.T.: 7.671 min
Delta R.T.: 0.006 min
Response: 121628
Conc: 0.21 ug/L



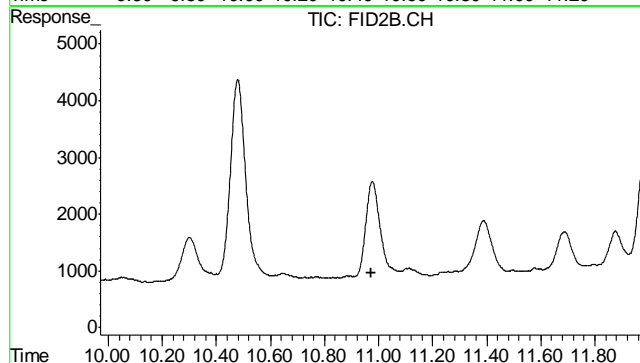
#7 Ethylbenzene

R.T.: 0.000 min
Exp R.T. : 10.295 min
Response: 0
Conc: N.D.



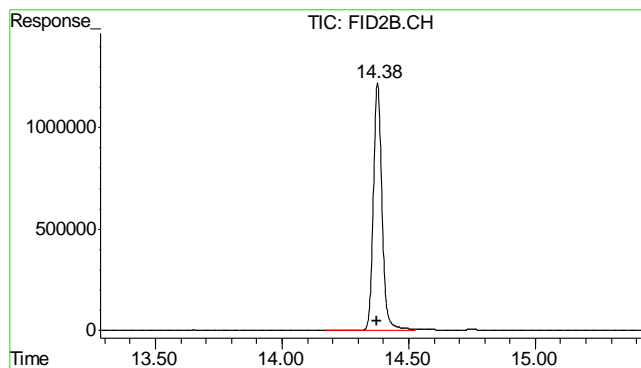
#8 m,p-Xylene

R.T.: 0.000 min
Exp R.T. : 10.475 min
Response: 0
Conc: N.D.



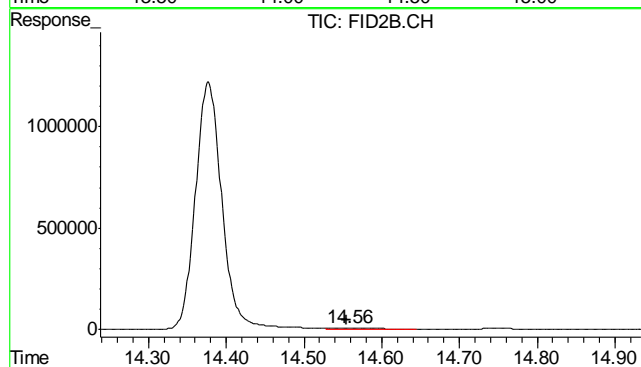
#9 o-Xylene

R.T.: 0.000 min
Exp R.T. : 10.971 min
Response: 0
Conc: N.D.



#10 1,2,4-Trichlorobenzene (P)

R.T.: 14.377 min
Delta R.T.: 0.004 min
Response: 29110251
Conc: 126.65 %



#11 Naphthalene

R.T.: 14.557 min
Delta R.T.: 0.002 min
Response: 347961
Conc: 1.35 ug/L

10.2.1
10

GC Semi-volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Page 1 of 1

Job Number: D31747
Account: XTOKRWR XTO Energy
Project: FRU 297-28C

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|-----------|------------|----|----------|----|-----------|------------|------------------|
| OP5339-MB | FH001199.D | 1 | 02/12/12 | TR | 02/10/12 | OP5339 | GFH52 |

The QC reported here applies to the following samples:

Method: SW846-8015B

D31747-1

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---------|-------------------|--------|----|-----|-------|---|
| | TPH-DRO (C10-C28) | ND | 13 | 8.7 | mg/kg | |

| CAS No. | Surrogate Recoveries | Limits |
|---------|----------------------|-------------|
| 84-15-1 | o-Terphenyl | 92% 43-136% |

Blank Spike Summary

Job Number: D31747
Account: XTOKRWR XTO Energy
Project: FRU 297-28C

| | | | | | | | |
|-----------|------------|----|----------|----|-----------|------------|------------------|
| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
| OP5339-BS | FH001201.D | 1 | 02/12/12 | TR | 02/10/12 | OP5339 | GFH52 |

The QC reported here applies to the following samples: Method: SW846-8015B

D31747-1

| CAS No. | Compound | Spike mg/kg | BSP mg/kg | BSP % | Limits |
|---------|-------------------|----------------|--------------|----------|--------|
| | TPH-DRO (C10-C28) | 667 | 629 | 94 | 58-130 |

| CAS No. | Surrogate Recoveries | BSP | Limits |
|---------|----------------------|------|---------|
| 84-15-1 | o-Terphenyl | 100% | 43-136% |

11.2.1
11

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: D31747
Account: XTOKRWR XTO Energy
Project: FRU 297-28C

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|------------|------------|----|----------|----|-----------|------------|------------------|
| OP5339-MS | FH001203.D | 1 | 02/12/12 | TR | 02/10/12 | OP5339 | GFH52 |
| OP5339-MSD | FH001205.D | 1 | 02/12/12 | TR | 02/10/12 | OP5339 | GFH52 |
| D31747-1 | FH001207.D | 1 | 02/12/12 | TR | 02/10/12 | OP5339 | GFH52 |

The QC reported here applies to the following samples: Method: SW846-8015B

D31747-1

| CAS No. | Compound | D31747-1 mg/kg | Q | Spike mg/kg | MS mg/kg | MS % | MSD mg/kg | MSD % | RPD | Limits Rec/RPD |
|---------|-------------------|-------------------|---|----------------|-------------|---------|--------------|----------|-----|-------------------|
| | TPH-DRO (C10-C28) | 548 | | 747 | 1130 | 78 | 1100 | 74 | 3 | 20-183/43 |

| CAS No. | Surrogate Recoveries | MS | MSD | D31747-1 | Limits |
|---------|----------------------|-----|-----|----------|---------|
| 84-15-1 | o-Terphenyl | 85% | 83% | 79% | 43-136% |

11.3.1
11

GC Semi-volatiles

Raw Data

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\FH021212\
Data File : FH001207.D
Signal(s) : FID1A.ch
Acq On : 12 Feb 2012 4:59 pm
Operator : tedr
Sample : D31747-1
Misc : OP5339,GFH52,30.02,,,2,1
ALS Vial : 57 Sample Multiplier: 1

Integration File: events.e
Quant Time: Feb 13 16:45:04 2012
Quant Method : C:\msdchem\1\METHODS\DRO-GFH34F.M
Quant Title : DRO-ORO FRONT
QLast Update : Tue Jan 31 13:20:35 2012
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

| Compound | R.T. | Response | Conc Units |
|-----------------------------|--------|------------|----------------|
| ----- | | | |
| System Monitoring Compounds | | | |
| 2) s o-Terphenyl | 12.469 | 1163140418 | 791.209 ug/ml |
| Target Compounds | | | |
| 1) H TPH-DRO (C10-C28) | 10.011 | 8911912228 | 7310.622 ug/ml |
| ----- | | | |

(f)=RT Delta > 1/2 Window

(m)=manual int.

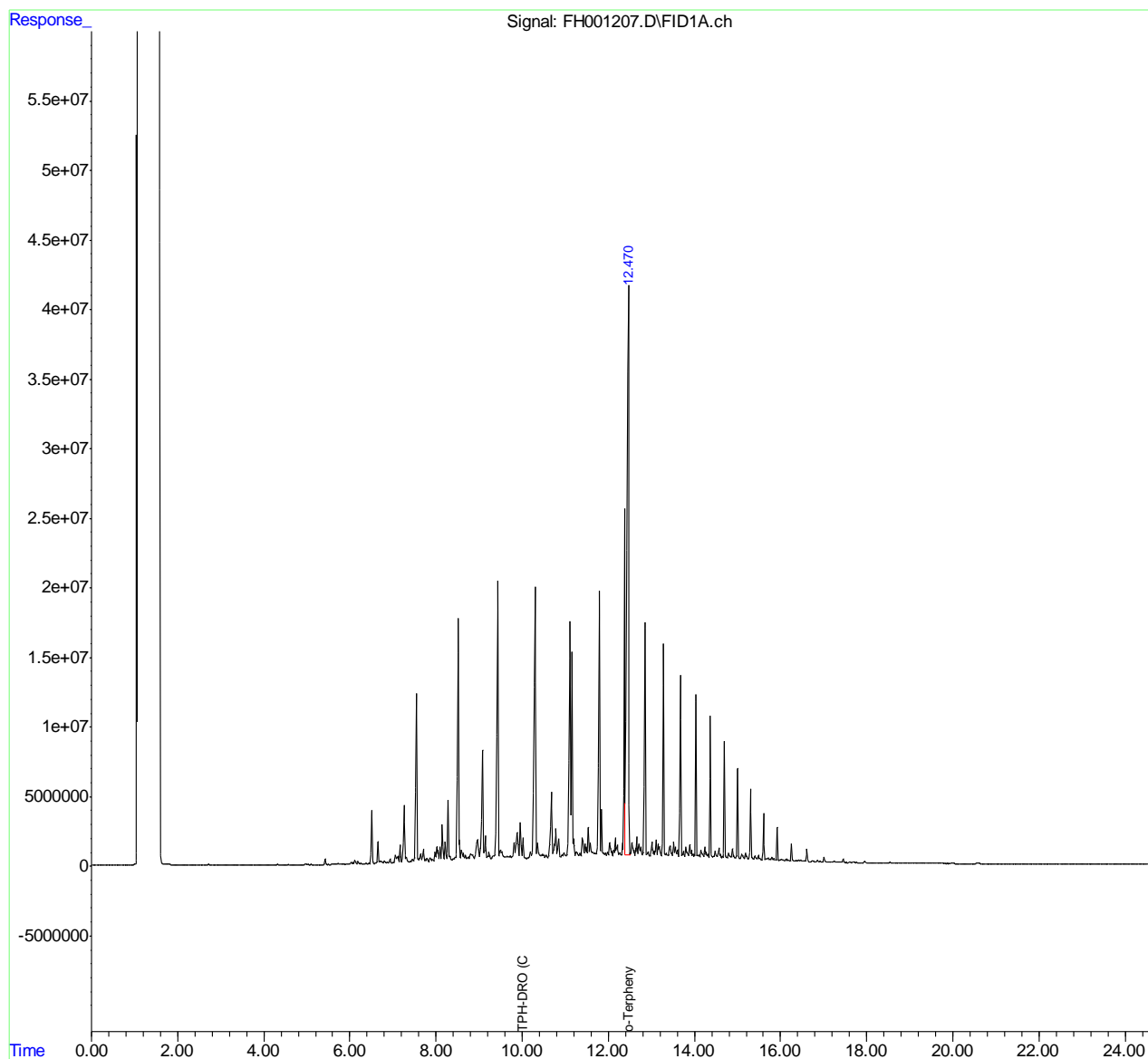
12.1.1
12

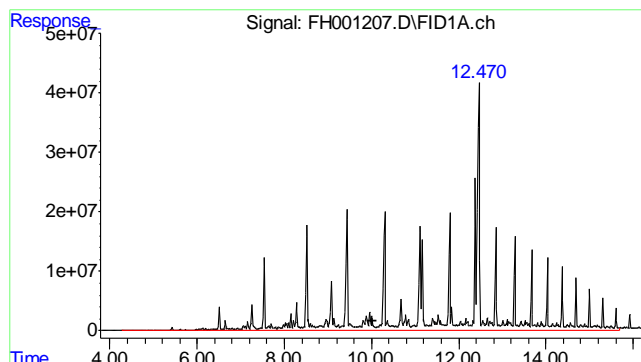
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\FH021212\
Data File : FH001207.D
Signal(s) : FID1A.ch
Acq On : 12 Feb 2012 4:59 pm
Operator : tedr
Sample : D31747-1
Misc : OP5339,GFH52,30.02,,,2,1
ALS Vial : 57 Sample Multiplier: 1

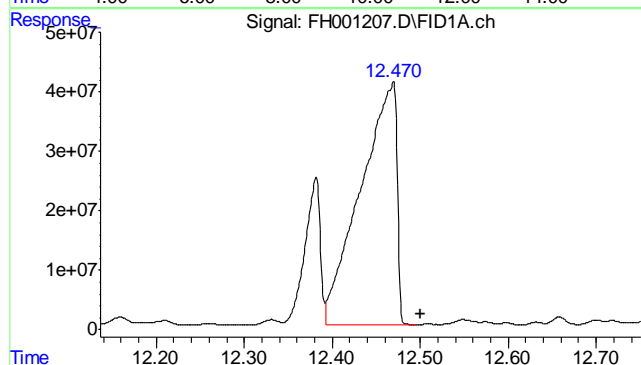
Integration File: events.e
Quant Time: Feb 13 16:45:04 2012
Quant Method : C:\msdchem\1\METHODS\DRO-GFH34F.M
Quant Title : DRO-ORO FRONT
QLast Update : Tue Jan 31 13:20:35 2012
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :





#1 TPH-DRO (C10-C28)
 R.T.: 10.011 min
 Delta R.T.: 0.000 min
 Response: 8911912228
 Conc: 7310.62 ug/ml m



#2 o-Terphenyl
 R.T.: 12.469 min
 Delta R.T.: -0.031 min
 Response: 1163140418
 Conc: 791.21 ug/ml

12.1.1
 12

Judy Melson
02/14/12 10:01

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\FH021212\
Data File : FH001199.D
Signal(s) : FID1A.ch
Acq On : 12 Feb 2012 2:37 pm
Operator : tedr
Sample : OP5339-MB
Misc : OP5339,GFH52,30.00,,,2,1
ALS Vial : 53 Sample Multiplier: 1

Integration File: events.e
Quant Time: Feb 13 16:41:55 2012
Quant Method : C:\msdchem\1\METHODS\DRO-GFH34F.M
Quant Title : DRO-ORO FRONT
QLast Update : Tue Jan 31 13:20:35 2012
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

| Compound | R.T. | Response | Conc Units |
|-----------------------------|--------|------------|----------------|
| ----- | | | |
| System Monitoring Compounds | | | |
| 2) s o-Terphenyl | 12.469 | 1356037211 | 922.424 ug/mlm |
| Target Compounds | | | |
| 1) H TPH-DRO (C10-C28) | 10.011 | 16700495 | 13.700 ug/ml |
| ----- | | | |

(f)=RT Delta > 1/2 Window

(m)=manual int.

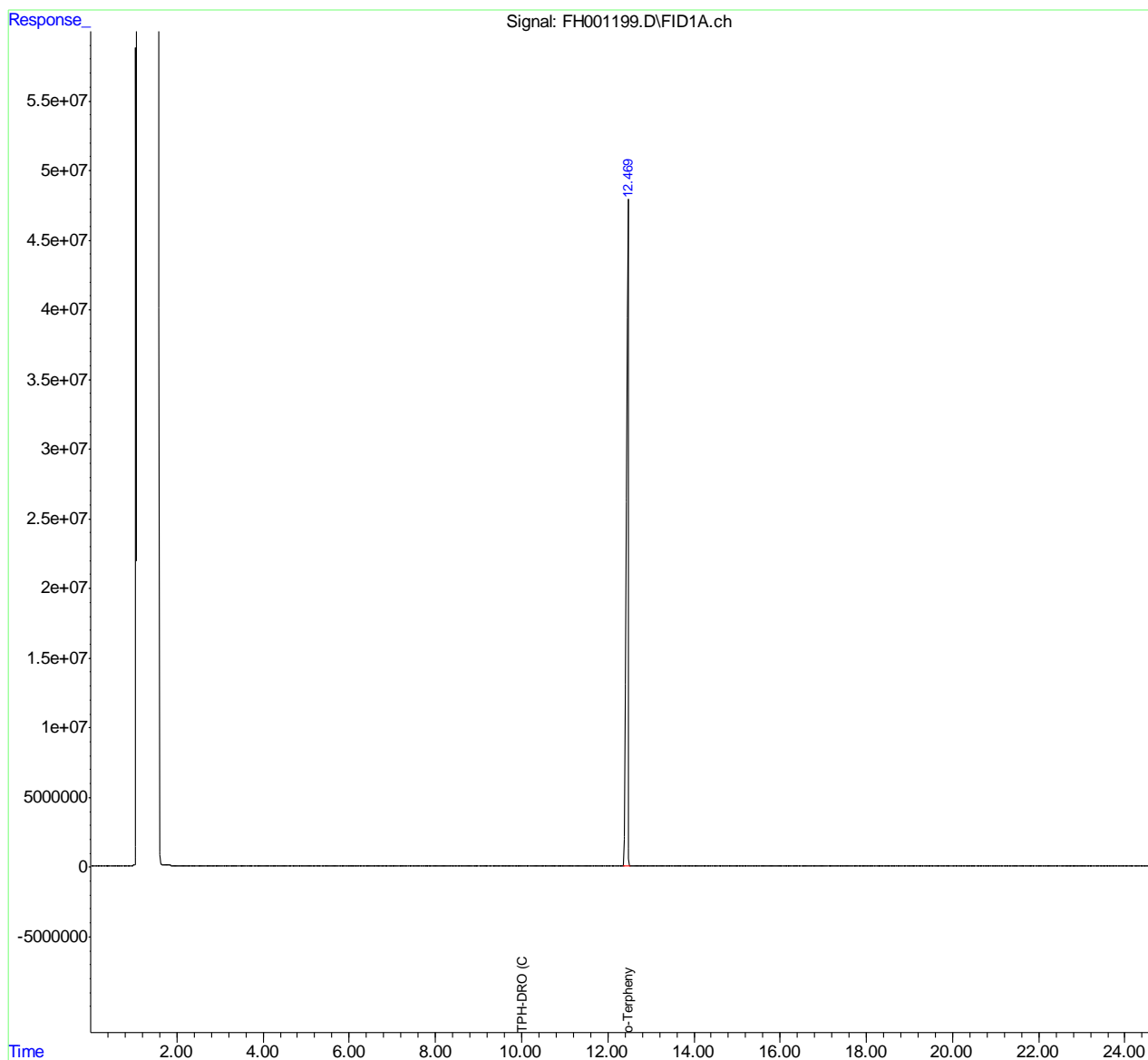
12.2.1
12

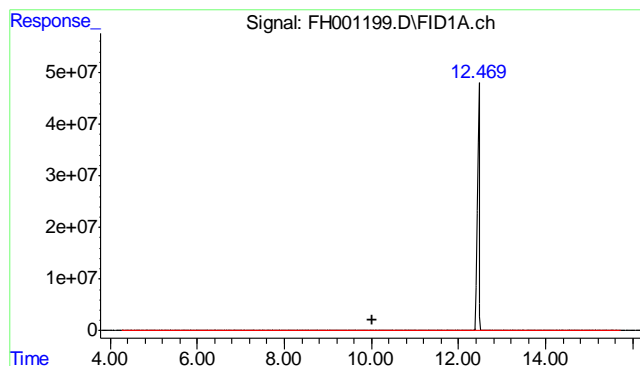
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\FH021212\
Data File : FH001199.D
Signal(s) : FID1A.ch
Acq On : 12 Feb 2012 2:37 pm
Operator : tedr
Sample : OP5339-MB
Misc : OP5339,GFH52,30.00,,,2,1
ALS Vial : 53 Sample Multiplier: 1

Integration File: events.e
Quant Time: Feb 13 16:41:55 2012
Quant Method : C:\msdchem\1\METHODS\DRO-GFH34F.M
Quant Title : DRO-ORO FRONT
QLast Update : Tue Jan 31 13:20:35 2012
Response via : Initial Calibration
Integrator: ChemStation

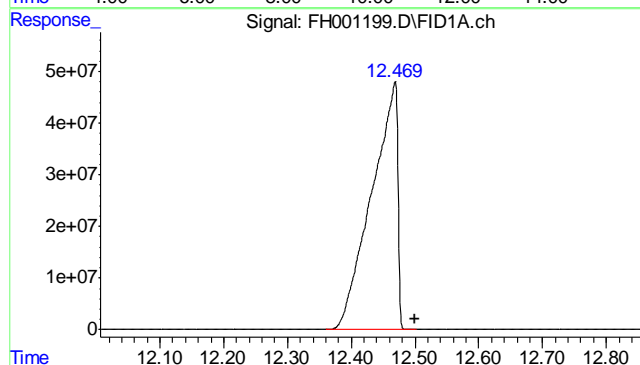
Volume Inj. :
Signal Phase :
Signal Info :





#1 TPH-DRO (C10-C28)

R.T.: 10.011 min
Delta R.T.: 0.000 min
Response: 16700495
Conc: 13.70 ug/ml m



#2 o-Terphenyl

R.T.: 12.469 min
Delta R.T.: -0.031 min
Response: 1356037211
Conc: 922.42 ug/ml m

12.2.1
12

Metals Analysis

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Matrix Spike and Duplicate Summaries
- Blank Spike and Lab Control Sample Summaries
- Serial Dilution Summaries

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D31747
Account: XTOKRWR - XTO Energy
Project: FRU 297-28C

QC Batch ID: MP6825
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date: 02/10/12

| Metal | RL | IDL | MDL | MB raw | final |
|------------|------|-------|------|-----------|-------|
| Aluminum | 10 | .59 | .59 | | |
| Antimony | 3.0 | .31 | .31 | | |
| Arsenic | 2.5 | .59 | .59 | | |
| Barium | 1.0 | .11 | .11 | 0.060 | <1.0 |
| Beryllium | 1.0 | .044 | .1 | | |
| Boron | 5.0 | .48 | .48 | | |
| Cadmium | 1.0 | .027 | .27 | 0.050 | <1.0 |
| Calcium | 40 | .96 | 1.1 | | |
| Chromium | 1.0 | .018 | .031 | 0.060 | <1.0 |
| Cobalt | 0.50 | .035 | .035 | | |
| Copper | 1.0 | .085 | .16 | 0.040 | <1.0 |
| Iron | 7.0 | .34 | 2 | | |
| Lead | 5.0 | .16 | .21 | -0.060 | <5.0 |
| Lithium | 0.20 | .028 | .031 | | |
| Magnesium | 20 | .58 | 1.4 | | |
| Manganese | 0.50 | .0053 | .012 | | |
| Molybdenum | 1.0 | .045 | .054 | | |
| Nickel | 3.0 | .043 | .099 | 0.010 | <3.0 |
| Phosphorus | 10 | 1.1 | 1.2 | | |
| Potassium | 200 | 5.5 | 9.2 | | |
| Selenium | 5.0 | .38 | .5 | 0.24 | <5.0 |
| Silicon | 5.0 | .38 | .51 | | |
| Silver | 3.0 | .018 | .051 | -0.020 | <3.0 |
| Sodium | 40 | 11 | 11 | | |
| Strontium | 5.0 | | .017 | | |
| Thallium | 1.0 | .29 | .34 | | |
| Tin | 5.0 | .55 | 1.3 | | |
| Titanium | 1.0 | .011 | .1 | | |
| Uranium | 5.0 | .15 | .2 | | |
| Vanadium | 1.0 | .016 | .025 | | |
| Zinc | 3.0 | .028 | .06 | 0.25 | <3.0 |

Associated samples MP6825: D31747-1

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D31747
Account: XTOKRWR - XTO Energy
Project: FRU 297-28C

QC Batch ID: MP6825
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date:

Metal

(anr) Analyte not requested

13.1.1

13

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D31747
Account: XTOKRWR - XTO Energy
Project: FRU 297-28C

QC Batch ID: MP6825
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date: 02/10/12

| Metal | D31737-4 Original MS | | SpikeLot MPICPALL % Rec | | QC Limits |
|------------|-------------------------|------|----------------------------|----------|--------------|
| Aluminum | | | | | |
| Antimony | | | | | |
| Arsenic | | | | | |
| Beryllium | | | | | |
| Boron | | | | | |
| Cadmium | 0.089 | 52.9 | 65.1 | 81.2 | 75-125 |
| Calcium | | | | | |
| Chromium | 14.0 | 69.7 | 65.1 | 85.6 | 75-125 |
| Cobalt | | | | | |
| Copper | 16.2 | 74.6 | 65.1 | 89.7 | 75-125 |
| Iron | | | | | |
| Lead | 179 | 244 | 130 | 49.9N(a) | 75-125 |
| Lithium | | | | | |
| Magnesium | | | | | |
| Manganese | | | | | |
| Molybdenum | | | | | |
| Nickel | 19.6 | 70.6 | 65.1 | 78.4 | 75-125 |
| Phosphorus | | | | | |
| Potassium | | | | | |
| Selenium | 1.0 | 114 | 130 | 86.8 | 75-125 |
| Silicon | | | | | |
| Silver | 0.064 | 23.8 | 26 | 91.2 | 75-125 |
| Sodium | | | | | |
| Strontium | | | | | |
| Thallium | | | | | |
| Tin | | | | | |
| Titanium | | | | | |
| Uranium | | | | | |
| Vanadium | | | | | |
| Zinc | 191 | 217 | 65.1 | 40.0N(a) | 75-125 |

Associated samples MP6825: D31747-1

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D31747
Account: XTOKRWR - XTO Energy
Project: FRU 297-28C

QC Batch ID: MP6825
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date:

Metal

(a) Spike recovery indicates possible matrix interference and/or sample nonhomogeneity.

13.1.2
13

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D31747
Account: XTOKRWR - XTO Energy
Project: FRU 297-28C

QC Batch ID: MP6825
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date: 02/10/12

| Metal | D31737-4 Original | MSD | Spikelet MPICPALL | % Rec | MSD RPD | QC Limit |
|------------|----------------------|------|----------------------|----------|------------|-------------|
| Aluminum | | | | | | |
| Antimony | | | | | | |
| Arsenic | | | | | | |
| Beryllium | | | | | | |
| Boron | | | | | | |
| Cadmium | 0.089 | 49.6 | 61.9 | 80.0 | 6.4 | 20 |
| Calcium | | | | | | |
| Chromium | 14.0 | 66.9 | 61.9 | 85.4 | 4.1 | 20 |
| Cobalt | | | | | | |
| Copper | 16.2 | 71.1 | 61.9 | 88.7 | 4.8 | 20 |
| Iron | | | | | | |
| Lead | 179 | 191 | 124 | 9.7N (a) | 24.4 (b) | 20 |
| Lithium | | | | | | |
| Magnesium | | | | | | |
| Manganese | | | | | | |
| Molybdenum | | | | | | |
| Nickel | 19.6 | 66.3 | 61.9 | 75.4 | 6.3 | 20 |
| Phosphorus | | | | | | |
| Potassium | | | | | | |
| Selenium | 1.0 | 106 | 124 | 84.8 | 7.3 | 20 |
| Silicon | | | | | | |
| Silver | 0.064 | 22.3 | 24.8 | 89.8 | 6.5 | 20 |
| Sodium | | | | | | |
| Strontium | | | | | | |
| Thallium | | | | | | |
| Tin | | | | | | |
| Titanium | | | | | | |
| Uranium | | | | | | |
| Vanadium | | | | | | |
| Zinc | 191 | 185 | 61.9 | -9.7N(a) | 15.9 | 20 |

Associated samples MP6825: D31747-1

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D31747
Account: XTOKRWR - XTO Energy
Project: FRU 297-28C

QC Batch ID: MP6825
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date:

Metal

- (a) Spike recovery indicates possible matrix interference and/or sample nonhomogeneity.
- (b) High RPD due to possible sample matrix or nonhomogeneity.

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D31747
Account: XTOKRWR - XTO Energy
Project: FRU 297-28C

QC Batch ID: MP6825
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date: 02/10/12

| Metal | BSP Result | Spikelot MPICPALL | % Rec | QC Limits |
|------------|---------------|----------------------|-------|--------------|
| Aluminum | | | | |
| Antimony | | | | |
| Arsenic | | | | |
| Barium | 202 | 200 | 101.0 | 80-120 |
| Beryllium | | | | |
| Boron | | | | |
| Cadmium | 45.4 | 50 | 90.8 | 80-120 |
| Calcium | | | | |
| Chromium | 48.5 | 50 | 97.0 | 80-120 |
| Cobalt | | | | |
| Copper | 47.8 | 50 | 95.6 | 80-120 |
| Iron | | | | |
| Lead | 90.9 | 100 | 90.9 | 80-120 |
| Lithium | | | | |
| Magnesium | | | | |
| Manganese | | | | |
| Molybdenum | | | | |
| Nickel | 45.6 | 50 | 91.2 | 80-120 |
| Phosphorus | | | | |
| Potassium | | | | |
| Selenium | 94.5 | 100 | 94.5 | 80-120 |
| Silicon | | | | |
| Silver | 20.0 | 20 | 100.0 | 80-120 |
| Sodium | | | | |
| Strontium | | | | |
| Thallium | | | | |
| Tin | | | | |
| Titanium | | | | |
| Uranium | | | | |
| Vanadium | | | | |
| Zinc | 45.8 | 50 | 91.6 | 80-120 |

Associated samples MP6825: D31747-1

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits

13.1.3
13

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D31747
Account: XTOKRWR - XTO Energy
Project: FRU 297-28C

QC Batch ID: MP6825
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date:

Metal

(anr) Analyte not requested

13.1.3

13

SERIAL DILUTION RESULTS SUMMARY

Login Number: D31747
Account: XTOKRWR - XTO Energy
Project: FRU 297-28C

QC Batch ID: MP6825
Matrix Type: SOLID

Methods: SW846 6010C
Units: ug/l

Prep Date: 02/10/12

| Metal | D31737-4 Original | SDL 1:5 | %DIF | QC Limits |
|------------|----------------------|---------|----------|--------------|
| Aluminum | | | | |
| Antimony | | | | |
| Arsenic | | | | |
| Beryllium | | | | |
| Boron | | | | |
| Cadmium | 0.700 | 0.00 | 100.0(a) | 0-10 |
| Calcium | | | | |
| Chromium | 110 | 112 | 2.1 | 0-10 |
| Cobalt | | | | |
| Copper | 127 | 119 | 6.5 | 0-10 |
| Iron | | | | |
| Lead | 1410 | 1490 | 5.7 | 0-10 |
| Lithium | | | | |
| Magnesium | | | | |
| Manganese | | | | |
| Molybdenum | | | | |
| Nickel | 154 | 166 | 7.8 | 0-10 |
| Phosphorus | | | | |
| Potassium | | | | |
| Selenium | 8.10 | 0.00 | 100.0(a) | 0-10 |
| Silicon | | | | |
| Silver | 0.500 | 4.00 | 700.0(a) | 0-10 |
| Sodium | | | | |
| Strontium | | | | |
| Thallium | | | | |
| Tin | | | | |
| Titanium | | | | |
| Uranium | | | | |
| Vanadium | | | | |
| Zinc | 1490 | 1740 | 16.6*(b) | 0-10 |

Associated samples MP6825: D31747-1

Results < IDL are shown as zero for calculation purposes

(*) Outside of QC limits

(anr) Analyte not requested

(a) Percent difference acceptable due to low initial sample concentration (< 50 times IDL).

SERIAL DILUTION RESULTS SUMMARY

Login Number: D31747
Account: XTOKRWR - XTO Energy
Project: FRU 297-28C

QC Batch ID: MP6825
Matrix Type: SOLID

Methods: SW846 6010C
Units: ug/l

Prep Date:

Metal

(b) Serial dilution indicates possible matrix interference.

13.1.4
13

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D31747
Account: XTOKRWR - XTO Energy
Project: FRU 297-28C

QC Batch ID: MP6826
Matrix Type: SOLID

Methods: SW846 6020A
Units: mg/kg

Prep Date: 02/10/12

| Metal | RL | IDL | MDL | MB raw | final |
|------------|-------|--------|-------|-----------|-------|
| Aluminum | 25 | .14 | 1.3 | | |
| Antimony | 0.20 | .001 | .012 | | |
| Arsenic | 0.40 | .049 | .1 | 0.029 | <0.40 |
| Barium | 1.0 | .0035 | .025 | | |
| Beryllium | 0.10 | .0075 | .055 | | |
| Boron | 20 | .97 | .6 | | |
| Cadmium | 0.050 | .023 | .034 | | |
| Calcium | 200 | 1.8 | 9.5 | | |
| Chromium | 1.0 | .021 | .041 | | |
| Cobalt | 0.10 | .0033 | .0085 | | |
| Copper | 1.0 | .011 | .055 | | |
| Iron | 20 | .81 | 18 | | |
| Lead | 0.25 | .0012 | .023 | | |
| Magnesium | 50 | .067 | .6 | | |
| Manganese | 0.50 | .007 | .039 | | |
| Molybdenum | 0.50 | .0044 | .025 | | |
| Nickel | 1.0 | .0029 | .031 | | |
| Phosphorus | 30 | 1.8 | 3.5 | | |
| Potassium | 100 | 2 | 6 | | |
| Selenium | 0.20 | .075 | .19 | | |
| Silver | 0.050 | .0008 | .022 | | |
| Sodium | 250 | .8 | 3 | | |
| Strontium | 10 | .004 | .024 | | |
| Thallium | 0.10 | .015 | .013 | | |
| Tin | 5.0 | .006 | .15 | | |
| Titanium | 1.0 | .035 | .12 | | |
| Uranium | 0.25 | .00038 | .008 | | |
| Vanadium | 2.0 | .052 | .19 | | |
| Zinc | 5.0 | .039 | .23 | | |

Associated samples MP6826: D31747-1

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D31747
Account: XTOKRWR - XTO Energy
Project: FRU 297-28C

QC Batch ID: MP6826
Matrix Type: SOLID

Methods: SW846 6020A
Units: mg/kg

Prep Date: 02/10/12

| Metal | D31737-4 Original MS | | Spikelot MPICPALL % Rec | QC Limits |
|------------|-------------------------|-----|----------------------------|--------------|
| Aluminum | | | | |
| Antimony | | | | |
| Arsenic | 5.1 | 103 | 130 | 75.2 75-125 |
| Barium | | | | |
| Beryllium | | | | |
| Boron | | | | |
| Cadmium | anr | | | |
| Calcium | | | | |
| Chromium | | | | |
| Cobalt | | | | |
| Copper | | | | |
| Iron | | | | |
| Lead | | | | |
| Magnesium | | | | |
| Manganese | | | | |
| Molybdenum | | | | |
| Nickel | | | | |
| Phosphorus | | | | |
| Potassium | | | | |
| Selenium | | | | |
| Silver | | | | |
| Sodium | | | | |
| Strontium | | | | |
| Thallium | | | | |
| Tin | | | | |
| Titanium | | | | |
| Uranium | | | | |
| Vanadium | | | | |
| Zinc | | | | |

Associated samples MP6826: D31747-1

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D31747
Account: XTOKRWR - XTO Energy
Project: FRU 297-28C

QC Batch ID: MP6826
Matrix Type: SOLID

Methods: SW846 6020A
Units: mg/kg

Prep Date: 02/10/12

| Metal | D31737-4 Original | MSD | Spikelot MPICPALL | % Rec | MSD RPD | QC Limit |
|------------|----------------------|------|----------------------|----------|------------|-------------|
| Aluminum | | | | | | |
| Antimony | | | | | | |
| Arsenic | 5.1 | 94.1 | 124 | 71.9N(a) | 4.3 | 20 |
| Barium | | | | | | |
| Beryllium | | | | | | |
| Boron | | | | | | |
| Cadmium | anr | | | | | |
| Calcium | | | | | | |
| Chromium | | | | | | |
| Cobalt | | | | | | |
| Copper | | | | | | |
| Iron | | | | | | |
| Lead | | | | | | |
| Magnesium | | | | | | |
| Manganese | | | | | | |
| Molybdenum | | | | | | |
| Nickel | | | | | | |
| Phosphorus | | | | | | |
| Potassium | | | | | | |
| Selenium | | | | | | |
| Silver | | | | | | |
| Sodium | | | | | | |
| Strontium | | | | | | |
| Thallium | | | | | | |
| Tin | | | | | | |
| Titanium | | | | | | |
| Uranium | | | | | | |
| Vanadium | | | | | | |
| Zinc | | | | | | |

Associated samples MP6826: D31747-1

Results < IDL are shown as zero for calculation purposes

(*) Outside of QC limits

(N) Matrix Spike Rec. outside of QC limits

(anr) Analyte not requested

(a) Spike recovery indicates possible matrix interference and/or sample nonhomogeneity.

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D31747
Account: XTOKRWR - XTO Energy
Project: FRU 297-28C

QC Batch ID: MP6826
Matrix Type: SOLID

Methods: SW846 6020A
Units: mg/kg

Prep Date: 02/10/12

| Metal | BSP Result | Spikelot MPICPALL | % Rec | QC Limits |
|------------|---------------|----------------------|-------|--------------|
| Aluminum | | | | |
| Antimony | | | | |
| Arsenic | 102 | 100 | 102.0 | 80-120 |
| Barium | | | | |
| Beryllium | | | | |
| Boron | | | | |
| Cadmium | anr | | | |
| Calcium | | | | |
| Chromium | | | | |
| Cobalt | | | | |
| Copper | | | | |
| Iron | | | | |
| Lead | | | | |
| Magnesium | | | | |
| Manganese | | | | |
| Molybdenum | | | | |
| Nickel | | | | |
| Phosphorus | | | | |
| Potassium | | | | |
| Selenium | | | | |
| Silver | | | | |
| Sodium | | | | |
| Strontium | | | | |
| Thallium | | | | |
| Tin | | | | |
| Titanium | | | | |
| Uranium | | | | |
| Vanadium | | | | |
| Zinc | | | | |

Associated samples MP6826: D31747-1

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

SERIAL DILUTION RESULTS SUMMARY

Login Number: D31747
Account: XTOKRWR - XTO Energy
Project: FRU 297-28C

QC Batch ID: MP6826
Matrix Type: SOLID

Methods: SW846 6020A
Units: ug/l

Prep Date: 02/10/12

| Metal | D31737-4 Original SDL 5:5 | | %DIF | QC Limits |
|------------|------------------------------|------|----------|--------------|
| Aluminum | | | | |
| Antimony | | | | |
| Arsenic | 42.6 | 63.1 | 44.8*(a) | 0-10 |
| Barium | | | | |
| Beryllium | | | | |
| Boron | | | | |
| Cadmium | anr | | | |
| Calcium | | | | |
| Chromium | | | | |
| Cobalt | | | | |
| Copper | | | | |
| Iron | | | | |
| Lead | | | | |
| Magnesium | | | | |
| Manganese | | | | |
| Molybdenum | | | | |
| Nickel | | | | |
| Phosphorus | | | | |
| Potassium | | | | |
| Selenium | | | | |
| Silver | | | | |
| Sodium | | | | |
| Strontium | | | | |
| Thallium | | | | |
| Tin | | | | |
| Titanium | | | | |
| Uranium | | | | |
| Vanadium | | | | |
| Zinc | | | | |

Associated samples MP6826: D31747-1

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested
(a) Serial dilution indicates possible matrix interference.

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D31747
Account: XTOKRWR - XTO Energy
Project: FRU 297-28C

QC Batch ID: MP6835
Matrix Type: AQUEOUS

Methods: SW846 6010C, USDA HANDBOOK 60
Units: ug/l

Prep Date: 02/10/12

| Metal | RL | IDL | MDL | MB raw | final |
|------------|------|-----|-----|-----------|-------|
| Aluminum | 500 | 30 | 30 | | |
| Antimony | 150 | 16 | 16 | | |
| Arsenic | 130 | 30 | 30 | | |
| Barium | 50 | 5.5 | 5.5 | | |
| Beryllium | 50 | 2.2 | 2.5 | | |
| Boron | 250 | 24 | 24 | | |
| Cadmium | 50 | 1.4 | 1.4 | | |
| Calcium | 2000 | 48 | 75 | 22.0 | <2000 |
| Chromium | 50 | .9 | 4 | | |
| Cobalt | 25 | 1.8 | 1.8 | | |
| Copper | 50 | 4.3 | 14 | | |
| Iron | 350 | 17 | 65 | | |
| Lead | 250 | 8 | 11 | | |
| Lithium | 10 | 1.4 | 6 | | |
| Magnesium | 1000 | 29 | 50 | 2.0 | <1000 |
| Manganese | 25 | .27 | 1.6 | | |
| Molybdenum | 50 | 2.3 | 4.4 | | |
| Nickel | 150 | 2.2 | 5 | | |
| Phosphorus | 500 | 55 | 100 | | |
| Potassium | 5000 | 280 | 280 | | |
| Selenium | 250 | 19 | 19 | | |
| Silicon | 250 | 19 | 19 | | |
| Silver | 150 | .9 | 1.6 | | |
| Sodium | 2000 | 570 | 570 | 38.5 | <2000 |
| Strontium | 25 | | 1.3 | | |
| Thallium | 50 | 15 | 15 | | |
| Tin | 250 | 28 | 50 | | |
| Titanium | 50 | .55 | 1.6 | | |
| Uranium | 250 | 7.5 | 18 | | |
| Vanadium | 50 | .8 | 1.1 | | |
| Zinc | 150 | 1.4 | 9 | | |

Associated samples MP6835: D31747-1A

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D31747
Account: XTOKRWR - XTO Energy
Project: FRU 297-28C

QC Batch ID: MP6835
Matrix Type: AQUEOUS

Methods: SW846 6010C, USDA HANDBOOK 60
Units: ug/l

Prep Date:

Metal

(anr) Analyte not requested

13.3.1

13

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D31747
Account: XTOKRWR - XTO Energy
Project: FRU 297-28C

QC Batch ID: MP6835
Matrix Type: AQUEOUS

Methods: SW846 6010C, USDA HANDBOOK 60
Units: ug/l

Prep Date: 02/10/12

| Metal | D31748-1A Original MS | | SpikeLot MPICPALL % Rec | | QC Limits |
|------------|--------------------------|---------|----------------------------|-------|--------------|
| Aluminum | | | | | |
| Antimony | | | | | |
| Arsenic | | | | | |
| Barium | | | | | |
| Beryllium | | | | | |
| Boron | | | | | |
| Cadmium | | | | | |
| Calcium | 23100 | 157000 | 125000 | 107.1 | 75-125 |
| Chromium | | | | | |
| Cobalt | | | | | |
| Copper | | | | | |
| Iron | | | | | |
| Lead | | | | | |
| Lithium | | | | | |
| Magnesium | 55.0 | 125000 | 125000 | 100.0 | 75-125 |
| Manganese | | | | | |
| Molybdenum | | | | | |
| Nickel | | | | | |
| Phosphorus | | | | | |
| Potassium | | | | | |
| Selenium | | | | | |
| Silicon | | | | | |
| Silver | | | | | |
| Sodium | 1110000 | 1240000 | 125000 | 104.0 | 75-125 |
| Strontium | | | | | |
| Thallium | | | | | |
| Tin | | | | | |
| Titanium | | | | | |
| Uranium | | | | | |
| Vanadium | | | | | |
| Zinc | | | | | |

Associated samples MP6835: D31747-1A

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits

13.3.2
13

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D31747
Account: XTOKRWR - XTO Energy
Project: FRU 297-28C

QC Batch ID: MP6835
Matrix Type: AQUEOUS

Methods: SW846 6010C, USDA HANDBOOK 60
Units: ug/l

Prep Date:

Metal

(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

13.3.2
13

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D31747
Account: XTOKRWR - XTO Energy
Project: FRU 297-28C

QC Batch ID: MP6835
Matrix Type: AQUEOUS

Methods: SW846 6010C, USDA HANDBOOK 60
Units: ug/l

Prep Date: 02/10/12

| Metal | D31748-1A Original MSD | | Spikelot MPICPALL % Rec | | MSD RPD | QC Limit |
|------------|---------------------------|---------|----------------------------|----------|------------|-------------|
| Aluminum | | | | | | |
| Antimony | | | | | | |
| Arsenic | | | | | | |
| Barium | | | | | | |
| Beryllium | | | | | | |
| Boron | | | | | | |
| Cadmium | | | | | | |
| Calcium | 23100 | 157000 | 125000 | 107.1 | 0.0 | 20 |
| Chromium | | | | | | |
| Cobalt | | | | | | |
| Copper | | | | | | |
| Iron | | | | | | |
| Lead | | | | | | |
| Lithium | | | | | | |
| Magnesium | 55.0 | 127000 | 125000 | 101.6 | 1.6 | 20 |
| Manganese | | | | | | |
| Molybdenum | | | | | | |
| Nickel | | | | | | |
| Phosphorus | | | | | | |
| Potassium | | | | | | |
| Selenium | | | | | | |
| Silicon | | | | | | |
| Silver | | | | | | |
| Sodium | 1110000 | 1290000 | 125000 | 144.0(a) | 4.0 | 20 |
| Strontium | | | | | | |
| Thallium | | | | | | |
| Tin | | | | | | |
| Titanium | | | | | | |
| Uranium | | | | | | |
| Vanadium | | | | | | |
| Zinc | | | | | | |

Associated samples MP6835: D31747-1A

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits

13.3.2
13

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D31747
Account: XTOKRWR - XTO Energy
Project: FRU 297-28C

QC Batch ID: MP6835
Matrix Type: AQUEOUS

Methods: SW846 6010C, USDA HANDBOOK 60
Units: ug/l

Prep Date:

Metal

- (N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested
(a) Spike amount low relative to the sample amount. Refer to lab control or spike blank for recovery information.

13.3.2
13

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D31747
Account: XTOKRWR - XTO Energy
Project: FRU 297-28C

QC Batch ID: MP6835
Matrix Type: AQUEOUS

Methods: SW846 6010C, USDA HANDBOOK 60
Units: ug/l

Prep Date: 02/10/12

| Metal | BSP Result | Spikelot MPICPALL | % Rec | QC Limits |
|------------|---------------|----------------------|-------|--------------|
| Aluminum | | | | |
| Antimony | | | | |
| Arsenic | | | | |
| Barium | | | | |
| Beryllium | | | | |
| Boron | | | | |
| Cadmium | | | | |
| Calcium | 135000 | 125000 | 108.0 | 80-120 |
| Chromium | | | | |
| Cobalt | | | | |
| Copper | | | | |
| Iron | | | | |
| Lead | | | | |
| Lithium | | | | |
| Magnesium | 130000 | 125000 | 104.0 | 80-120 |
| Manganese | | | | |
| Molybdenum | | | | |
| Nickel | | | | |
| Phosphorus | | | | |
| Potassium | | | | |
| Selenium | | | | |
| Silicon | | | | |
| Silver | | | | |
| Sodium | 131000 | 125000 | 104.8 | 80-120 |
| Strontium | | | | |
| Thallium | | | | |
| Tin | | | | |
| Titanium | | | | |
| Uranium | | | | |
| Vanadium | | | | |
| Zinc | | | | |

Associated samples MP6835: D31747-1A

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D31747
Account: XTOKRWR - XTO Energy
Project: FRU 297-28C

QC Batch ID: MP6835
Matrix Type: AQUEOUS

Methods: SW846 6010C, USDA HANDBOOK 60
Units: ug/l

Prep Date:

Metal

(anr) Analyte not requested

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D31747
Account: XTOKRWR - XTO Energy
Project: FRU 297-28C

QC Batch ID: MP6836
Matrix Type: SOLID

Methods: SW846 7471B
Units: mg/kg

Prep Date: 02/13/12

| Metal | RL | IDL | MDL | MB | |
|---------|------|-------|------|---------|-------|
| | | | | raw | final |
| Mercury | 0.10 | .0011 | .013 | 0.00067 | <0.10 |

Associated samples MP6836: D31747-1

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D31747
 Account: XTOKRWR - XTO Energy
 Project: FRU 297-28C

QC Batch ID: MP6836
 Matrix Type: SOLID

Methods: SW846 7471B
 Units: mg/kg

Prep Date: 02/13/12

| Metal | D31747-1 | | Spikelot | | QC | |
|---------|----------|------|----------|-------|--------|--|
| | Original | MS | HGWSR1 | % Rec | Limits | |
| Mercury | 0.0064 | 0.40 | 0.459 | 85.7 | 75-125 | |

Associated samples MP6836: D31747-1

Results < IDL are shown as zero for calculation purposes
 (*) Outside of QC limits
 (N) Matrix Spike Rec. outside of QC limits
 (anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D31747
 Account: XTOKRWR - XTO Energy
 Project: FRU 297-28C

QC Batch ID: MP6836
 Matrix Type: SOLID

Methods: SW846 7471B
 Units: mg/kg

Prep Date: 02/13/12

| Metal | D31747-1 Original | MSD | Spikelot HGWSR1 | % Rec | MSD RPD | QC Limit |
|---------|----------------------|------|--------------------|-------|------------|-------------|
| Mercury | 0.0064 | 0.38 | 0.433 | 86.4 | 5.1 | |

Associated samples MP6836: D31747-1

Results < IDL are shown as zero for calculation purposes
 (*) Outside of QC limits
 (N) Matrix Spike Rec. outside of QC limits
 (anr) Analyte not requested

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D31747
 Account: XTOKRWR - XTO Energy
 Project: FRU 297-28C

QC Batch ID: MP6836
 Matrix Type: SOLID

Methods: SW846 7471B
 Units: mg/kg

Prep Date: 02/13/12

| Metal | BSP Result | Spikelot HGWSR1 | % Rec | QC Limits |
|-------|---------------|--------------------|-------|--------------|
|-------|---------------|--------------------|-------|--------------|

| | | | | |
|---------|------|-----|------|--------|
| Mercury | 0.36 | 0.4 | 90.0 | 80-120 |
|---------|------|-----|------|--------|

Associated samples MP6836: D31747-1

Results < IDL are shown as zero for calculation purposes
 (*) Outside of QC limits
 (anr) Analyte not requested

General Chemistry

QC Data Summaries

Includes the following where applicable:

- Method Blank and Blank Spike Summaries
- Duplicate Summaries
- Matrix Spike Summaries

METHOD BLANK AND SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: D31747
Account: XTOKRWR - XTO Energy
Project: FRU 297-28C

| Analyte | Batch ID | RL | MB Result | Units | Spike Amount | BSP Result | BSP %Recov | QC Limits |
|-----------------------|----------------|----|--------------|----------|-----------------|---------------|---------------|--------------|
| Specific Conductivity | GP6515/GN13692 | | | umhos/cm | 9967 | 9950 | 99.8 | 90-110% |
| pH | GN13622 | | | su | 8.00 | 8.01 | 100.1 | 99.3-100.7% |

Associated Samples:
Batch GN13622: D31747-1
Batch GP6515: D31747-1
(*) Outside of QC limits

14.1
14

Misc. Forms

Custody Documents and Other Forms

(Accutest Labs of New England, Inc.)

Includes the following where applicable:

- Chain of Custody

Accutest Laboratories Sample Receipt Summary

Accutest Job Number: D31747

Client: AMS

Immediate Client Services Action Required: No

Date / Time Received: 2/10/2012

Delivery Method:

Client Service Action Required at Login: No

Project:

No. Coolers: 1

Airbill #'s:

Cooler Security

Y or N

Y or N

- | | | | | | |
|---------------------------|-------------------------------------|--------------------------|-----------------------|-------------------------------------|--------------------------|
| 1. Custody Seals Present: | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 3. COC Present: | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. Custody Seals Intact: | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 4. Smpl Dates/Time OK | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

Cooler Temperature

Y or N

- | | | |
|------------------------------|-------------------------------------|--------------------------|
| 1. Temp criteria achieved: | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. Cooler temp verification: | Infrared gun | |
| 3. Cooler media: | Ice (bag) | |

Quality Control Preservation

Y or N

N/A

- | | | | |
|---------------------------------|-------------------------------------|--------------------------|-------------------------------------|
| 1. Trip Blank present / cooler: | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 2. Trip Blank listed on COC: | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 3. Samples preserved properly: | <input checked="" type="checkbox"/> | <input type="checkbox"/> | |
| 4. VOCs headspace free: | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

Sample Integrity - Documentation

Y or N

- | | | |
|--|-------------------------------------|--------------------------|
| 1. Sample labels present on bottles: | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. Container labeling complete: | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 3. Sample container label / COC agree: | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

Sample Integrity - Condition

Y or N

- | | | |
|----------------------------------|-------------------------------------|--------------------------|
| 1. Sample recvd within HT: | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. All containers accounted for: | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 3. Condition of sample: | Intact | |

Sample Integrity - Instructions

Y or N N/A

- | | | | |
|---|-------------------------------------|-------------------------------------|-------------------------------------|
| 1. Analysis requested is clear: | <input checked="" type="checkbox"/> | <input type="checkbox"/> | |
| 2. Bottles received for unspecified tests | <input type="checkbox"/> | <input checked="" type="checkbox"/> | |
| 3. Sufficient volume recvd for analysis: | <input checked="" type="checkbox"/> | <input type="checkbox"/> | |
| 4. Compositing instructions clear: | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 5. Filtering instructions clear: | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

Comments

General Chemistry

QC Data Summaries

(Accutest Labs of New England, Inc.)

Includes the following where applicable:

- Method Blank and Blank Spike Summaries
- Duplicate Summaries
- Matrix Spike Summaries

METHOD BLANK AND SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: D31747
Account: ALMS - Accutest Mountain States
Project: XTOKRWR: FRU 297-28C

| Analyte | Batch ID | RL | MB Result | Units | Spike Amount | BSP Result | BSP %Recov | QC Limits |
|----------------------|-----------------|------|--------------|-------|-----------------|---------------|---------------|--------------|
| Chromium, Hexavalent | GP14149/GN37837 | 0.40 | 0.26 | mg/kg | 40 | 42.1 | 105.3 | 80-120% |
| Chromium, Hexavalent | GP14149/GN37837 | | | mg/kg | 1290 | 1420 | 110.1 | 80-120% |

Associated Samples:
Batch GP14149: D31747-1
(*) Outside of QC limits

DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: D31747
Account: ALMS - Accutest Mountain States
Project: XTOKRWR: FRU 297-28C

| Analyte | Batch ID | QC Sample | Units | Original Result | DUP Result | RPD | QC Limits |
|----------------------|-----------------|-----------|-------|-----------------|------------|-----|-----------|
| Chromium, Hexavalent | GP14149/GN37837 | D31747-1 | mg/kg | 0.64 | 0.58 | 9.8 | 0-20% |

Associated Samples:
Batch GP14149: D31747-1
(*) Outside of QC limits

MATRIX SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: D31747
Account: ALMS - Accutest Mountain States
Project: XTOKRWR: FRU 297-28C

| Analyte | Batch ID | QC Sample | Units | Original Result | Spike Amount | MS Result | %Rec | QC Limits |
|----------------------|-----------------|-----------|-------|-----------------|--------------|-----------|-------|-----------|
| Chromium, Hexavalent | GP14149/GN37837 | D31747-1 | mg/kg | 0.64 | 45 | 45.3 | 99.3 | 75-125% |
| Chromium, Hexavalent | GP14149/GN37837 | D31747-1 | mg/kg | 0.64 | 782 | 870 | 111.0 | 75-125% |

Associated Samples:
Batch GP14149: D31747-1
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits