

Method TO-15 Calculation Checks for H&P Mobile Level IV Data Package AEE111513-11

VOC Average RF ICAL

Concentration based off a 250ml sample size (SOP listed concentrations off 50ml sample size)

Instrument: GC MS #12

Calibration Date: 23-Oct-13

File Names: ICAL0-1 to ICAL100H

Level IV
Values

| Toluene | Conc (ppbv) | Difluorobenzene | | IS Conc | Response | RRF | RRF |
|----------|-------------|-----------------|---------|---------|----------|--------|-------|
| | | Target Area | IS Area | | | | |
| Level 1 | 0.1 | 6998 | 482440 | 50 | 0.7253 | 7.2527 | 7.253 |
| Level 2 | 0.2 | 11216 | 478540 | 50 | 1.1719 | 5.8595 | 5.859 |
| Level 3 | 0.4 | 22506 | 489527 | 50 | 2.2987 | 5.7469 | 5.747 |
| Level 4 | 1 | 56597 | 504956 | 50 | 5.6042 | 5.6042 | 5.604 |
| Level 5 | 2 | 108603 | 513760 | 50 | 10.5694 | 5.2847 | 5.285 |
| Level 6 | 4 | 215263 | 520638 | 50 | 20.6730 | 5.1683 | 5.168 |
| Level 7 | 10 | 566801 | 552121 | 50 | 51.3294 | 5.1329 | 5.133 |
| Level 8 | 20 | 1414995 | 598043 | 50 | 118.3021 | 5.9151 | 5.915 |
| Level 9 | 40 | 2861143 | 571599 | 50 | 250.2754 | 6.2569 | 6.257 |
| Level 10 | 100 | 8518786 | 589388 | 50 | 722.6806 | 7.2268 | 7.227 |

10-pt avg RRF 5.94479 10-pt %RSD 12.92
 Level IV Values 5.945 12.92 criteria 30%

Level IV
Values

| o-Xylene | Conc (ppbv) | Chlorobenzene-d5 | | IS Conc | Response | RRF | RRF |
|----------|-------------|------------------|---------|---------|----------|---------|-------|
| | | Target Area | IS Area | | | | |
| Level 1 | 0.1 | 5480 | 236167 | 50 | 1.1602 | 11.6020 | 11.6 |
| Level 2 | 0.2 | 12481 | 237744 | 50 | 2.6249 | 13.1244 | 13.12 |
| Level 3 | 0.4 | 30877 | 242548 | 50 | 6.3651 | 15.9128 | 15.91 |
| Level 4 | 1 | 69700 | 254081 | 50 | 13.7161 | 13.7161 | 13.72 |
| Level 5 | 2 | 149899 | 256484 | 50 | 29.2219 | 14.6110 | 14.61 |
| Level 6 | 4 | 312467 | 264829 | 50 | 58.9941 | 14.7485 | 14.75 |
| Level 7 | 10 | 836857 | 307128 | 50 | 136.2391 | 13.6239 | 13.62 |
| Level 8 | 20 | 1996298 | 352049 | 50 | 283.5256 | 14.1763 | 14.18 |
| Level 9 | 40 | 4155985 | 399162 | 50 | 520.5888 | 13.0147 | 13.01 |

9-pt avg RRF 13.83663 9-pt %RSD 8.89
 Level IV Values 13.840 8.89 criteria 30%

VOA ICV

Instrument: GC MS #12
Injected on: 23-Dec-13
File Name: LCS

| | | Level IV Value | | | Level IV Value |
|--------------------------------|-----------|----------------|--------------------------------|----------|----------------|
| Average RF | Toluene | | Average RF | o-Xylene | |
| target area: | 100241 | | target area: | 134253 | |
| IS area: | 511156 | | IS area: | 251754 | |
| IS amount (ppbv): | 50 | | IS amount (ppbv): | 50 | |
| Avg. RF for target: | 5.94479 | 5.945 | Avg. RF for target: | 13.83663 | 13.84 |
| Calculated Amount (ppbv): | 1.649 | 1.649 | Calculated Amount (ppbv): | 1.927 | 1.927 |
| Expected Concentration (ppbv): | 2.0 | | Expected Concentration (ppbv): | 2.0 | |
| %D: | 18 | | %D: | 4 | |

VOA CCV

Instrument: GC MS #12
Injected on: **19-Nov-13**
File Name: CCV2E

| | | Level IV Value | | | Level IV Value |
|-------------------------|------------|----------------|-------------------------|-------------|----------------|
| Average RF | Toluene | | Average RF | o-Xylene | |
| target area: | 123458 | | target area: | 175901 | |
| IS area: | 537773 | | IS area: | 269539 | |
| IS amount (ppbv): | 50 | | IS amount (ppbv): | 50 | |
| Compound Amount (ppbv): | 2 | | Compound Amount (ppbv): | 2 | |
| RRF: | 5.73932 | 5.739 | RRF: | 16.31499 | 16.315 |
| Avg. RF for target: | 5.94479 | 5.945 | Avg. RF for target: | 13.83663 | 13.84 |
| %D: | 3.5 | 3.5 | %D: | 17.9 | 17.9 |

VOA Spike

LCS

Instrument: GC MS #12
 Injected on: 19-Nov-13
 File Name: LCS

Level IV Value

Level IV Value

| Average RF | | Toluene | | Average RF | | o-Xylene | |
|-------------------------------------|-----------|-----------|--|-------------------------------------|-----------|-------------|--|
| target area: | 77661 | | | target area: | 104998 | | |
| IS area: | 415843 | | | IS area: | 217699 | | |
| IS amount (ppbv): | 50 | | | IS amount (ppbv): | 50 | | |
| Avg. RF for target: | 5.94479 | 5.945 | | Avg. RF for target: | 13.83663 | 13.84 | |
| Volume Analyzed (ml): | 50 | | | Volume Analyzed (ml): | 50 | | |
| Dilution Factor base on 250ml: | 5 | | | Dilution Factor base on 250ml: | 5 | | |
| Calculated Amount (ppbv): | 7.85 | 7.854 | | Calculated Amount (ppbv): | 8.71 | 8.714 | |
| Molecular Weight (g/mol): | 92.14 | | | Molecular Weight (g/mol): | 106.16 | | |
| Concentration (ug/m ³): | 29.60 | 30 | | Concentration (ug/m ³): | 37.84 | 38 | |
| Spiked Conc.(ug/m ³): | 37.68 | 38.4 | | Spiked Conc.(ug/m ³): | 43.42 | 44.2 | |
| %Recovery: | 79 | 78 | | %Recovery: | 87 | 86.7 | |

Presume the difference is related to the temperature and pressure at time of testing. I do not have that information so I assumed standard temperature and pressure in my calculation.

| | | | | | |
|---------------------------------|------|-----|---------------------------------|------|-----|
| Reporting Limit: | 3.77 | 3.8 | Reporting Limit: | 4.34 | 4.4 |
| Low standard conc. used (ppbv): | 1.0 | | Low standard conc. used (ppbv): | 1.0 | |

LCSD

Instrument: GC MS #12
 Injected on: 19-Nov-13
 File Name: LCSD

Level IV Value

Level IV Value

| Average RF | | Toluene | | Average RF | | o-Xylene | |
|-------------------------------------|-----------|---------|--|-------------------------------------|-----------|----------|--|
| target area: | 83887 | | | target area: | 110428 | | |
| IS area: | 444878 | | | IS area: | 228271 | | |
| IS amount (ppbv): | 50 | | | IS amount (ppbv): | 50 | | |
| Avg. RF for target: | 5.94479 | 5.945 | | Avg. RF for target: | 13.83663 | 13.84 | |
| Volume Analyzed (ml): | 50 | | | Volume Analyzed (ml): | 50 | | |
| Dilution Factor base on 250ml: | 5 | | | Dilution Factor base on 250ml: | 5 | | |
| Calculated Amount (ppbv): | 7.93 | 7.93 | | Calculated Amount (ppbv): | 8.74 | 8.741 | |
| Molecular Weight (g/mol): | 92.14 | | | Molecular Weight (g/mol): | 106.16 | | |
| Concentration (ug/m ³): | 29.88 | | | Concentration (ug/m ³): | 37.95 | | |
| Spiked Conc.(ug/m ³): | 37.68 | | | Spiked Conc.(ug/m ³): | 43.42 | | |
| %Recovery: | 79 | | | %Recovery: | 87 | | |

Presume the difference is related to the temperature and pressure at time of testing. I do not have that information so I assumed standard temperature and pressure in my calculation.

| | | | |
|-----------------|---------|-----------------|---------|
| Spike Value | 29.6 | Spike Value | 37.84 |
| Spike Dup Value | 29.88 | Spike Dup Value | 37.95 |
| %RPD | -0.9415 | %RPD | -0.2903 |

| | | | | | |
|---------------------------------|------|-----|---------------------------------|------|-----|
| Reporting Limit: | 3.77 | 3.8 | Reporting Limit: | 4.34 | 4.4 |
| Low standard conc. used (ppbv): | 1.0 | | Low standard conc. used (ppbv): | 1.0 | |

VOA Sample Calculations

Sample#: **14G-SV (E311062-001)**

Injected on: **20-Nov-13**

File name: AMEC-14G-SV

| | | Level IV Value | | | Level IV Value |
|-------------------------------------|---------|----------------|-------------------------------------|----------|----------------|
| Average RF | Toluene | | Average RF | o-Xylene | |
| target area: | 189883 | | target area: | 40734 | |
| IS area: | 520479 | | IS area: | 280222 | |
| IS amount (ppbv): | 50 | | IS amount (ppbv): | 50 | |
| Avg. RF for target: | 5.94479 | 5.945 | Avg. RF for target: | 13.83663 | 13.84 |
| Volume Analyzed (ml): | 50 | | Volume Analyzed (ml): | 50 | |
| Dilution Factor base on 250ml: | 5 | | Dilution Factor base on 250ml: | 5 | |
| Calculated Amount (ppbv): | 15.34 | 15.342 | Calculated Amount (ppbv): | 2.63 | 2.626 |
| Molecular Weight (g/mol): | 92.14 | | Molecular Weight (g/mol): | 106.16 | |
| Concentration (ug/m ³): | 57.82 | 59 | Concentration (ug/m ³): | 11.40 | 12 |
| Reporting Limit: | 2.04 | 3.8 | Reporting Limit: | 2.04 | 4.4 |
| Low standard conc. used (ppbv): | 1.0 | | Low standard conc. used (ppbv): | 1.0 | |

Sample#: **14B-SV (E311062-002)**

Injected on: **20-Nov-13**

File name: AMEC-14G-SV

| | | Level IV Value | | | Level IV Value |
|-------------------------------------|---------|----------------|-------------------------------------|----------|----------------|
| Average RF | Toluene | | Average RF | o-Xylene | |
| target area: | 548069 | | target area: | 109139 | |
| IS area: | 553317 | | IS area: | 300131 | |
| IS amount (ppbv): | 50 | | IS amount (ppbv): | 50 | |
| Avg. RF for target: | 5.94479 | 5.945 | Avg. RF for target: | 13.83663 | 13.84 |
| Volume Analyzed (ml): | 50 | | Volume Analyzed (ml): | 50 | |
| Dilution Factor base on 250ml: | 5 | | Dilution Factor base on 250ml: | 5 | |
| Calculated Amount (ppbv): | 41.65 | 41.655 | Calculated Amount (ppbv): | 6.57 | 6.57 |
| Molecular Weight (g/mol): | 92.14 | | Molecular Weight (g/mol): | 106.16 | |
| Concentration (ug/m ³): | 156.97 | 160 | Concentration (ug/m ³): | 28.53 | 29 |

Sample#: **3B-SV (E311062-003)**

Injected on: **20-Nov-13**

File name: AMEC-14G-SV

| | | Level IV Value | | | Level IV Value |
|-------------------------------------|---------|----------------|-------------------------------------|----------|----------------|
| Average RF | Toluene | | Average RF | o-Xylene | |
| target area: | 206380 | | target area: | 72707 | |
| IS area: | 555516 | | IS area: | 295087 | |
| IS amount (ppbv): | 50 | | IS amount (ppbv): | 50 | |
| Avg. RF for target: | 5.94479 | 5.945 | Avg. RF for target: | 13.83663 | 13.84 |
| Volume Analyzed (ml): | 50 | | Volume Analyzed (ml): | 50 | |
| Dilution Factor base on 250ml: | 5 | | Dilution Factor base on 250ml: | 5 | |
| Calculated Amount (ppbv): | 15.62 | 15.623 | Calculated Amount (ppbv): | 4.45 | 4.452 |
| Molecular Weight (g/mol): | 92.14 | | Molecular Weight (g/mol): | 106.16 | |
| Concentration (ug/m ³): | 58.88 | 60 | Concentration (ug/m ³): | 19.33 | 20 |

Sample#: **3G-SV (E311062-004)**

Injected on: **20-Nov-13**

File name: AMEC-14G-SV

| | | Level IV Value | | | Level IV Value |
|-------------------------------------|---------|----------------|-------------------------------------|----------|----------------|
| Average RF | Toluene | | Average RF | o-Xylene | |
| target area: | 509214 | | target area: | 84809 | |
| IS area: | 570092 | | IS area: | 301153 | |
| IS amount (ppbv): | 50 | | IS amount (ppbv): | 50 | |
| Avg. RF for target: | 5.94479 | 5.945 | Avg. RF for target: | 13.83663 | 13.84 |
| Volume Analyzed (ml): | 50 | | Volume Analyzed (ml): | 50 | |
| Dilution Factor base on 250ml: | 5 | | Dilution Factor base on 250ml: | 5 | |
| Calculated Amount (ppbv): | 37.56 | 37.563 | Calculated Amount (ppbv): | 5.09 | 5.088 |
| Molecular Weight (g/mol): | 92.14 | | Molecular Weight (g/mol): | 106.16 | |
| Concentration (ug/m ³): | 141.55 | 140 | Concentration (ug/m ³): | 22.09 | 22 |

Sample#: **10L-SV (E311062-005)**

Injected on: **20-Nov-13**

File name: AMEC-14G-SV

| | | Level IV Value | | | Level IV Value |
|-------------------------------------|---------|----------------|-------------------------------------|----------|----------------|
| Average RF | Toluene | | Average RF | o-Xylene | |
| target area: | 409446 | | target area: | 48510 | |
| IS area: | 860199 | | IS area: | 370869 | |
| IS amount (ppbv): | 50 | | IS amount (ppbv): | 50 | |
| Avg. RF for target: | 5.94479 | 5.945 | Avg. RF for target: | 13.83663 | 13.84 |
| Volume Analyzed (ml): | 50 | | Volume Analyzed (ml): | 50 | |
| Dilution Factor base on 250ml: | 5 | | Dilution Factor base on 250ml: | 5 | |
| Calculated Amount (ppbv): | 20.02 | 20.017 | Calculated Amount (ppbv): | 2.36 | 2.363 |
| Molecular Weight (g/mol): | 92.14 | | Molecular Weight (g/mol): | 106.16 | |
| Concentration (ug/m ³): | 75.43 | 76 | Concentration (ug/m ³): | 10.26 | 10 |

Sample#: 10B-SV (E311062-006)

Injected on: 20-Nov-13

File name: AMEC-14G-SV

| | | Level IV Value | | | Level IV Value |
|-------------------------------------|---------|----------------|-------------------------------------|----------|----------------|
| Average RF | Toluene | | Average RF | o-Xylene | |
| target area: | 54638 | | target area: | 18683 | |
| IS area: | 552774 | | IS area: | 287995 | |
| IS amount (ppbv): | 50 | | IS amount (ppbv): | 50 | |
| Avg. RF for target: | 5.94479 | 5.945 | Avg. RF for target: | 13.83663 | 13.84 |
| Volume Analyzed (ml): | 50 | | Volume Analyzed (ml): | 50 | |
| Dilution Factor base on 250ml: | 5 | | Dilution Factor base on 250ml: | 5 | |
| Calculated Amount (ppbv): | 4.16 | 4.157 | Calculated Amount (ppbv): | 1.17 | 1.172 |
| Molecular Weight (g/mol): | 92.14 | | Molecular Weight (g/mol): | 106.16 | |
| Concentration (ug/m ³): | 15.66 | 16 | Concentration (ug/m ³): | 5.09 | 5.2 |

Sample#: 10B-SV (Rep)(E311062-007)

Injected on: 20-Nov-13

File name: AMEC-14G-SV

| | | Level IV Value | | | Level IV Value |
|-------------------------------------|---------|----------------|-------------------------------------|----------|----------------|
| Average RF | Toluene | | Average RF | o-Xylene | |
| target area: | 39090 | | target area: | 20192 | |
| IS area: | 568308 | | IS area: | 299264 | |
| IS amount (ppbv): | 50 | | IS amount (ppbv): | 50 | |
| Avg. RF for target: | 5.94479 | 5.945 | Avg. RF for target: | 13.83663 | 13.84 |
| Volume Analyzed (ml): | 50 | | Volume Analyzed (ml): | 50 | |
| Dilution Factor base on 250ml: | 5 | | Dilution Factor base on 250ml: | 5 | |
| Calculated Amount (ppbv): | 2.89 | 2.893 | Calculated Amount (ppbv): | 1.22 | 1.219 |
| Molecular Weight (g/mol): | 92.14 | | Molecular Weight (g/mol): | 106.16 | |
| Concentration (ug/m ³): | 10.90 | 11 | Concentration (ug/m ³): | 5.29 | 5.4 |
| Sample Value | 15.66 | | Sample Value | 5.09 | |
| Sample Duplicate Value | 10.9 | | Sample Duplicate Value | 5.29 | |
| %RPD | 35.8434 | | %RPD | -3.8536 | |
| SOP Criteria | 35% | | | | |