TRC

# Source Collection Data Sheet

| | | | |
|---|---|---|---|
| Contract No. 184380 | Method 0010 Semi Volatiles | | Page 2 of 2 |
| Facility Exxon Mobil BTRF | Init. System Leak Rate (ft3 @ "Hg) 0.006 @ 17" Hg | | Operator S. Lockwood |
| Source T-601 Stack SRU | Final System Leak Rate (ft3 @ "Hg) 0.004 @ 18" Hg | | Pitot No. |
| Date 7-8-2011 | Start Time 09:00 | Meter No. 1446 | PTCF 0.84 |
| Condition Normal | End Time 13:26 | DGMCF 0.9721 | Init. Pitot Leak Check ✓ |
| Run No. 2 | Duration (min) 240 | ΔH@ 1.707 | Final Pitot Leak Check ✓ |
| Stat. Press. ("H2O) -0.96 | Bar. Press. ("Hg) 29.90 | Nozzle Diam. (") 0.462 | Kf 0.68 |

| Point | Time (24-hr) | Volume (ft3) | ΔP ("H2O) | ΔH ("H2O) | Temperatures (°F) | | | | | | Vacuum ("Hg) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Flue Gas | Probe | Filter | Impingers | Meter In | Meter Out | | |
| 3 | 11:46 | 327.65 | 3.1 | 2.10 | 102 | 256 | 252 | 69 | 105 | 98 | 11.5 | 63 |
| 3 | 11:51 | 332.96 | 3.1 | 2.10 | 101 | 250 | 258 | 68 | 105 | 98 | 11.5 | 63 |
| 4 | 11:56 | 336.21 | 3.7 | 2.51 | 101 | 260 | 257 | 68 | 105 | 99 | 13.0 | 63 |
| 4 | 12:01 | 340.76 | 3.5 | 2.38 | 101 | 259 | 253 | 68 | 106 | 99 | 13.0 | 63 |
| 5 | 12:06 | 345.33 | 2.9 | 1.97 | 102 | 247 | 256 | 68 | 105 | 99 | 11.0 | 63 |
| 5 | 12:11 | 349.54 | 3.5 | 2.38 | 101 | 263 | 252 | 68 | 105 | 99 | 11.5 | 63 |
| 6 | 12:16 | 353.90 | 4.9 | 3.33 | 102 | 260 | 256 | 69 | 105 | 99 | 16.5 | 63 |
| 6 | 12:21 | 358.91 | 4.8 | 3.26 | 101 | 263 | 258 | 66 | 105 | 99 | 16.5 | 62 |
| 7 | 12:26 | 364.00 | 4.6 | 3.13 | 101 | 252 | 256 | 66 | 104 | 99 | 16.5 | 61 |
| 7 | 12:31 | 369.05 | 4.5 | 3.06 | 99 | 258 | 255 | 64 | 103 | 99 | 16.5 | 61 |
| 8 | 12:36 | 374.14 | 4.0 | 2.72 | 101 | 258 | 254 | 67 | 102 | 98 | 14.0 | 62 |
| 8 | 12:41 | 378.99 | 4.0 | 2.72 | 102 | 253 | 255 | 66 | 103 | 99 | 13.0 | 62 |
| 9 | 12:46 | 383.76 | 3.5 | 2.38 | 102 | 252 | 253 | 64 | 103 | 99 | 12.0 | 61 |
| 9 | 12:51 | 388.46 | 3.5 | 2.38 | 101 | 258 | 257 | 62 | 104 | 99 | 12.0 | 60 |
| 10 | 12:56 | 392.84 | 3.4 | 2.31 | 101 | 248 | 256 | 61 | 105 | 99 | 12.0 | 59 |
| 10 | 13:01 | 397.36 | 3.4 | 2.31 | 102 | 250 | 256 | 62 | 105 | 99 | 12.0 | 60 |
| 11 | 13:06 | 401.86 | 3.4 | 2.31 | 101 | 250 | 256 | 61 | 106 | 99 | 12.0 | 59 |
| 11 | 13:11 | 406.35 | 3.4 | 2.31 | 101 | 248 | 256 | 63 | 107 | 100 | 12.0 | 60 |
| 12 | 13:16 | 410.85 | 2.9 | 1.97 | 101 | 262 | 254 | 64 | 107 | 100 | 11.0 | 60 |
| 12 | 13:21 | 415.01 | 2.8 | 1.90 | 101 | 249 | 258 | 59 | 106 | 100 | 10.5 | 57 |
| End | 13:26 | 419.195 | | | | | | | | | | |

Comments

Checked By: _____ (Project Manager or QA Manager - sign and date)

TRC

# Sample Recovery Data Sheet

| | |
|---|---|
| Contract No. 184380 | Method 0010 Semi Volatiles |
| Condition Normal | Run No. 2 |
| Date 7-8-11 | Operator RRn |

| Impinger No. | Contents | Volume (mL) | Configuration | Final Wt. (g) | - Initial Wt. (g) | = Net Gain (g) |
|---|---|---|---|---|---|---|
| 1 | — | | KO | 620.0 | 359.5 | 260.5 |
| 2 | Nitric | 100 | Mod | 682.7 | 693.3 | -10.6 |
| 3 | V | 100 | G-S | 710.2 | 710.0 | 0.2 |
| 4 | — | — | Mod | 629.3 | 607.5 | 21.8 |
| 5 | Sigel | ~600 | Mod | 953.0 | 906.8 | 46.2 |
| 6 | | | | | = | |
| 7 | | | | | = | |
| 8 | | | | | = | |
| 9 | | | | | = | |
| 10 | | | | | = | |
| | | | | Total Net Gain (g) = | | 318.1 |

Comments:

TRC

# Source Collection Data Sheet

| | | | |
|---|---|---|---|
| Contract No. 184380 | Method 0010 (Semi, Vols) | | Page 1 of 2 |
| Facility Exxon Mobil BTRF | Init. System Leak Rate (ft3 @ "Hg) 0.002 @ 19 "Hg | | Operator S. Lockwood |
| Source T-601 Stack SRU | Final System Leak Rate (ft3 @ "Hg) 0.002 @ 19" Hg | | Pitot No. |
| Date 7-8-2014 | Start Time 13:55 | Meter No. 1446 | PTCF 0.84 |
| Condition Normal | End Time 1824 | DGMCF .9721 | Init. Pitot Leak Check ✓ |
| Run No. 3 | Duration (min) 240 | ΔH@ 1.707 | Final Pitot Leak Check ✓ |
| Stat. Press. ("H2O) -1.0 | Bar. Press. ("Hg) 29.9 | Nozzle Diam. (") 0.162 | Kf 0.68 |

| Point | Time (24-hr) | Volume (ft3) | ΔP ("H2O) | ΔH ("H2O) | Temperatures (°F) Flue Gas | Probe | Filter | Impingers | Meter In | Meter Out | Vacuum ("Hg) | XAD |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| N | | | | | | | | | | | | |
| S1 | 13:55 | 419.713 | 4.6 | 3.12 | 102 | 255 | 249 | 69 | 102 | 101 | 14.5 | 64 |
| 1 | 14:00 | 424.69 | 2.6 | 1.77 | 107 | 266 | 251 | 62 | 105 | 102 | 9.0 | 58 |
| 2 | 14:05 | 428.092 | 2.7 | 1.84 | 102 | 263 | 253 | 58 | 107 | 102 | 10.0 | 53 |
| 2 | 14:10 | 430.65 | 2.7 | 1.84 | 102 | 266 | 257 | 58 | 107 | 102 | 10.0 | 53 |
| 3 | 14:15 | 432.83 | 2.9 | 1.97 | 103 | 256 | 254 | 59 | 108 | 103 | 10.0 | 53 |
| 3 | 14:20 | 437.125 | Stop | Add | Pump | oil | | | | | | |
| Start | 14:21 | 437.185 | 3.8 | 2.58 | 102 | 253 | 254 | 65 | 105 | 104 | 12.0 | 60 |
| 3 | 14:26 | 441.64 | 3.5 | 2.38 | 102 | 255 | 255 | 68 | 110 | 105 | 12.5 | 63 |
| 4 | 14:31 | 446.26 | 3.7 | 2.51 | 102 | 263 | 254 | 69 | 109 | 105 | 12.5 | 63 |
| 4 | 14:36 | 451.07 | 4.6 | 3.12 | 103 | 267 | 254 | 69 | 110 | 105 | 16.0 | 63 |
| 5 | 14:41 | 456.23 | 4.6 | 3.12 | 104 | 253 | 254 | 68 | 111 | 106 | 16.0 | 63 |
| 5 | 14:46 | 461.458 | 4.6 | 3.12 | 103 | 267 | 254 | 67 | 111 | 106 | 16.0 | 61 |
| 6 | 14:51 | 466.53 | 4.6 | 3.12 | 103 | 252 | 253 | 68 | 111 | 107 | 16.0 | 61 |
| 6 | 14:56 | 471.76 | 5.0 | 3.4 | 103 | 263 | 255 | 69 | 110 | 107 | 16.0 | 63 |
| 7 | 15:01 | 476.90 | 5.0 | 3.4 | 103 | 257 | 253 | 68 | 110 | 108 | 16.5 | 61 |
| 7 | 15:06 | 482.14 | 5.1 | 3.47 | 103 | 253 | 248 | 68 | 110 | 108 | 16.5 | 61 |
| 8 | 15:11 | 487.37 | 4.7 | 3.19 | 103 | 263 | 253 | 69 | 109 | 108 | 16.0 | 61 |
| 8 | 15:16 | 492.58 | 4.7 | 3.19 | 103 | 265 | 252 | 70 | 109 | 107 | 16.0 | 65 |
| 9 | 15:21 | 497.83 | 3.9 | 2.65 | 103 | 252 | 251 | 70 | 109 | 108 | 13.5 | 63 |
| 9 | 15:26 | 502.68 | 3.8 | 2.58 | 104 | 251 | 253 | 71 | 108 | 107 | 13.0 | 63 |
| 10 | 15:31 | 507.36 | 3.8 | 2.58 | 103 | 267 | 253 | 70 | 110 | 107 | 13.0 | 63 |
| 10 | 15:36 | 512.00 | 3.2 | 2.17 | 102 | 265 | 253 | 69 | 109 | 106 | 11.0 | 68 |
| 11 | 15:41 | 516.43 | 2.9 | 1.97 | 103 | 258 | 253 | 73 | 109 | 107 | 10.0 | 68 |
| 11 | 15:46 | 520.64 | 2.9 | 1.97 | 103 | 253 | 254 | 72 | 109 | 106 | 10.0 | 65 |
| 12 | 15:51 | 524.87 | 2.7 | 1.84 | 103 | 263 | 256 | 71 | 109 | 106 | 10.0 | 63 |
| 12 | 15:56 | 528.83 | 2.6 | 1.77 | 102 | 265 | 255 | 68 | 110 | 106 | 9.0 | 61 |
| End | 16:01 | 532.740 | | | | | | | | | | |
| | | | | | | | | | | | | |
| W | | | | | | | | | | | | |
| S1 | 16:24 | 533.484 | 2.3 | 1.56 | 103 | 248 | 253 | 67 | 104 | 104 | 9.0 | 61 |
| 1 | 16:29 | 537.18 | 2.1 | 1.43 | 103 | 247 | 254 | 66 | 105 | 104 | 8.5 | 60 |

Comments Interim leak Checks

1- 0.002 @ 19" 2- 0.002 @ 19"

Checked By: _____ (Project Manager or QA Manager - sign and date)

TRC

# Source Collection Data Sheet

| | | | |
|---|---|---|---|
| Contract No. 184380 | Method 0010 Semi Volatiles | | Page 2 of 2 |
| Facility Exxon Mobil BTRF | Init. System Leak Rate (ft3 @ "Hg) 0.002 @ 19" Hg | | Operator S. Lockwood |
| Source T-601 Stack SRU | Final System Leak Rate (ft3 @ "Hg) 0.002 @ 19" Hg | | Pitot No. |
| Date 7-8-2011 | Start Time 13:55 | Meter No. 1446 | PTCF 0.84 |
| Condition Normal | End Time 1824 | DGMCF 0.9721 | Init. Pitot Leak Check ✓ |
| Run No. 3 | Duration (min) 240 | ΔH@ 1.707 | Final Pitot Leak Check ✓ |
| Stat. Press. ("H2O) -1.0 | Bar. Press. ("Hg) 29.90 | Nozzle Diam. (") 0.162 | Kf 0.68 |

| Point | Time (24-hr) | Volume (ft3) | ΔP ("H2O) | ΔH ("H2O) | Temperatures (°F) | | | | | | Vacuum ("Hg) | XAD |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Flue Gas | Probe | Filter | Impingers | Meter In | Meter Out | | |
| 2 | 16:34 | 540.83 | 2.2 | 1.50 | 101 | 250 | 255 | 64 | 106 | 104 | 8.5 | 58 |
| 2 | 16:39 | 544.41 | 2.2 | 1.50 | 103 | 248 | 253 | 63 | 107 | 104 | 8.5 | 57 |
| 3 | 16:44 | 548.02 | 2.5 | 1.70 | 101 | 247 | 253 | 62 | 108 | 104 | 9.0 | 57 |
| 3 | 16:49 | 551.75 | 2.5 | 1.70 | 102 | 248 | 254 | 62 | 108 | 104 | 9.0 | 57 |
| 4 | 16:54 | 555.49 | 3.1 | 2.11 | 102 | 249 | 253 | 61 | 108 | 104 | 11.0 | 56 |
| 4 | 16:59 | 559.52 | 3.4 | 2.31 | 103 | 250 | 255 | 61 | 108 | 103 | 11.0 | 56 |
| 5 | 17:04 | 563.92 | 4.1 | 2.79 | 102 | 261 | 254 | 61 | 108 | 103 | 13.0 | 56 |
| 5 | 17:09 | 568.66 | 4.0 | 2.72 | 102 | 246 | 254 | 62 | 107 | 103 | 13.0 | 56 |
| 6 | 17:14 | 573.45 | 4.2 | 2.86 | 102 | 246 | 253 | 63 | 106 | 103 | 15.0 | 56 |
| 6 | 17:19 | 578.52 | 4.8 | 3.26 | 102 | 246 | 254 | 62 | 106 | 103 | 16.0 | 57 |
| 7 | 17:24 | 583.28 | 4.8 | 3.26 | 102 | 262 | 253 | 62 | 105 | 103 | 16.0 | 57 |
| 7 | 17:29 | 588.38 | 4.8 | 3.26 | 102 | 256 | 253 | 64 | 105 | 103 | 16.0 | 59 |
| 8 | 17:34 | 593.47 | 4.9 | 3.33 | 102 | 261 | 254 | 65 | 105 | 103 | 16.0 | 59 |
| 8 | 17:39 | 598.56 | 4.9 | 3.33 | 102 | 248 | 253 | 65 | 104 | 103 | 16.0 | 59 |
| 9 | 17:44 | 603.64 | 4.6 | 3.12 | 102 | 245 | 254 | 66 | 105 | 103 | 15.5 | 60 |
| 9 | 17:49 | 608.72 | 3.9 | 2.65 | 102 | 261 | 254 | 66 | 104 | 102 | 15.0 | 60 |
| 10 | 17:54 | 613.57 | 3.8 | 2.58 | 102 | 255 | 255 | 66 | 104 | 103 | 15.0 | 60 |
| 10 | 17:59 | 618.49 | 3.8 | 2.58 | 102 | 259 | 254 | 66 | 104 | 102 | 15.0 | 60 |
| 11 | 18:04 | 623.15 | 2.9 | 1.97 | 102 | 261 | 253 | 67 | 105 | 103 | 11.0 | 60 |
| 11 | 18:09 | 627.32 | 2.8 | 1.90 | 102 | 260 | 254 | 67 | 105 | 103 | 11.0 | 61 |
| 12 | 18:14 | 631.42 | 2.8 | 1.90 | 102 | 252 | 254 | 67 | 106 | 102 | 11.0 | 61 |
| 12 | 18:19 | 635.54 | 2.8 | 1.90 | 102 | 246 | 253 | 66 | 106 | 102 | 11.0 | 60 |
| End | 18:24 | 639.763 | | | | | | | | | | |

Comments

Checked By: _____ (Project Manager or QA Manager - sign and date)

TRC

# Sample Recovery Data Sheet

| | | | |
|---|---|---|---|
| Contract No. | 184380 | Method | 0010 Semi Volatiles |
| Condition | Normal | Run No. | 3 |
| Date | 7-8-11 | Operator | pn |

| Impinger No. | Contents | Volume (mL) | Configuration | Final Wt. (g) | - Initial Wt. (g) | = Net Gain (g) |
|---|---|---|---|---|---|---|
| 1 | — | — | KO | 848.6 | 482.5 | 366.1 |
| 2 | HPLC H2O | 100 | Mod | 701.1 | 705.0 | -3.9 |
| 3 | ↓ | 100 | 6/S | 622.3 | 626.0 | -3.7 |
| 4 | — | — | Mod | 589.2 | 584.0 | 5.2 |
| 5 | Sigel | ~600 | Mod | 1031.2 | 980.6 | 50.6 |
| 6 | | | | | = | |
| 7 | | | | | = | |
| 8 | | | | | = | |
| 9 | | | | | = | |
| 10 | | | | | = | |
| | | | | Total Net Gain (g) = | | 414.3 |

Comments:

# **Meter Box:** Orifice Full Calibration

| | |
|---|---|
| **Date:** | 2/22/2011 |
| **Prev. Calib. Date:** | 1/19/2010 |
| **Location:** | TRC Austin, TX Lab |
| **Technician:** | MRL |
| **Meter Serial No:** | 1446 |
| **Meter Box ID:** | 1446.00 |
| **Atm. Pressure (corr. In H** | 29.41 ncorrected: 29.57 |
| **Critical Vacuum + 2 in Hg** | 16 in. Hg. (required minimum) |
| **Prev. Calib Factor (Y):** | 0.9861 |

| **Reference Orifice Set** | | Orifice (#) | K' Factor |
|---|---|---|---|
| **Manufacturer:** | Apex Instruments | 40 | 0.2353 |
| **Model:** | LA40-73 | 48 | 0.3451 |
| **Tested By:** | EW | 55 | 0.4549 |
| | | 63 | 0.5886 |

| | | | | | | | Initial Temperatures | | Final Temperatures | | | Ambient Temperatures | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Orifice Serial # | K' coefficient (see above) | dH (in. H2O) | Time (min) | Vol (initial) (cu ft) | Vol (final) (cu ft) | Vol. Total (cu ft) | Inlet (deg F) | Outlet (deg F) | Inlet (deg F) | Outlet (deg F) | Vacuum (in Hg) | Initial (deg F) | Final (deg F) |
| 40 | 0.2353 | 0.27 | 31 | 929.125 | 938.912 | 9.787 | 73 | 73 | 73 | 74 | 24 | 73.0 | 74.0 |
| 48 | 0.3451 | 0.57 | 29 | 938.912 | 952.369 | 13.457 | 73 | 74 | 74 | 74 | 21 | 74.0 | 75.0 |
| 55 | 0.4549 | 1.1 | 38 | 952.369 | 975.626 | 23.257 | 74 | 74 | 75 | 75 | 19 | 75.0 | 76.0 |
| 63 | 0.5886 | 1.8 | 39 | 975.626 | ####### | 30.853 | 75 | 75 | 78 | 76 | 17 | 76.0 | 78.0 |

| Meter Box Dry Gas Meter | | | Critical Orifice | | Dry Gas Meter Calibration Factor (Y) | | Orifice Calibration Factor (dH@) | |
|---|---|---|---|---|---|---|---|---|
| Volume Corrected Vm (std) (cu ft) | Volume Corrected Vm (std) (liters) | Flow Rate (CFM) | Volume Corrected Vcr (std) (cu ft) | Volume Corrected Vm (std) (liters) | Value (#) | Variation (#) | Value (in H2O) | Variation (in H2O) |
| 9.53 | 269.77 | 0.316 | 9.29 | 262.97 | 0.975 | 0.003 | 1.640 | -0.07 |
| 13.10 | 370.87 | 0.464 | 12.73 | 360.46 | 0.972 | 0.000 | 1.617 | -0.09 |
| 22.63 | 640.90 | 0.612 | 21.97 | 622.03 | 0.971 | -0.002 | 1.803 | 0.10 |
| 29.99 | 849.32 | 0.791 | 29.13 | 824.87 | 0.971 | -0.001 | 1.768 | 0.06 |

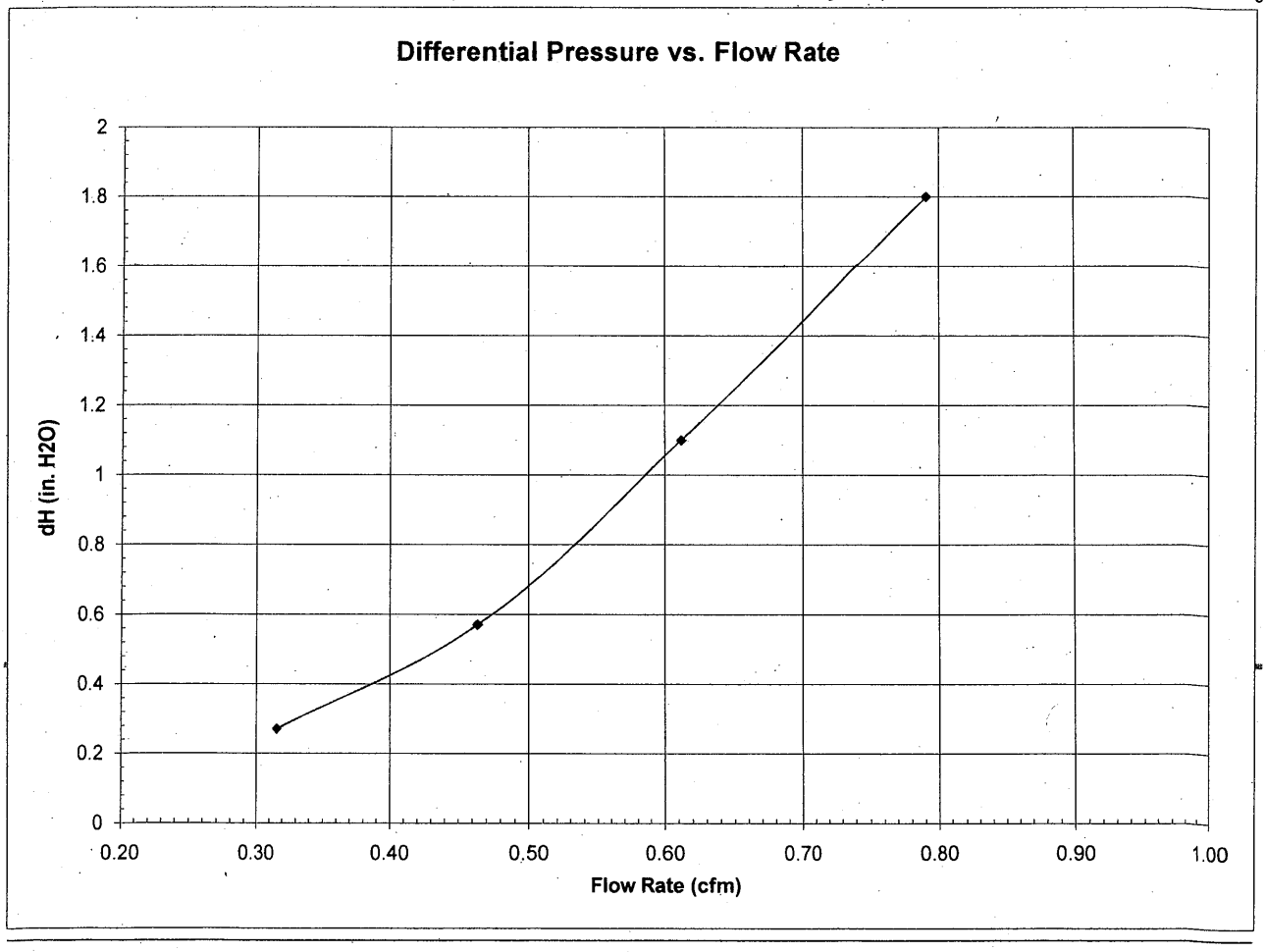
**Meter Box**

| **Calibration Test Results** | **Pass/Fail** |
|---|---|
| *** Average Y: 0.9721** | ***PASS*** |
| Ave. Y w/in 5% of previous value: | *YES* |
| 0.95 >= Y <= 1.05: | *PASS* |
| **** Average dH: 1.707** | ***PASS*** |

Criteria:

* Y- ratio of the reading of the calibration meter (critical orifice) to the Meter Box DGM. Acceptable tolerance of individual values from the average is +/- 0.02.

** dH- the orifice differential pressure in inches of H2O that equates to 0.75 cfm of air flow at 68 F and 29.92 in Hg, acceptable tolerance of individual values from the averag



TRC

Console No. 1442

Temperature Display Type Jenco-765

Temperature Display Serial No. JC 08171

S. O. P. Reference AM - 103

Calibrator Type Omega Model XL23A

Calibrator Serial No. T-239267

| | Reference Temperature ( ₀F) | 32 | Reference Temperature ( ₀ F) | 212 | Reference Temperature ( ₀ F) | 500 | Reference Temperature ( ₀ F) | 1000 | Reference Temperature ( ₀ F) | 1500 |
|---|---|---|---|---|---|---|---|---|---|---|
| Display Channel No. | Measured Temperature ( ₀F) | Relative Error (%) | Measured Temperature ( ₀F) | Relative Error (%) | Measured Temperature ( ₀ F) | Relative Error (%) | Measured Temperature ( ₀ F) | Relative Error (%) | Measured Temperature ( ₀ F) | Relative Error (%) |
| 1 (Stack) | 29 | 0.6 | 211 | 0.1 | 498 | 0.2 | 999 | 0.1 | 1499 | 0.1 |
| 2 (Probe) | 30 | 0.4 | 211 | 0.1 | 497 | 0.3 | 999 | 0.1 | 1499 | 0.1 |
| 3 (Filter) | 29 | 0.6 | 210 | 0.3 | 496 | 0.4 | 998 | 0.1 | 1498 | 0.1 |
| 4 (Dryer) | 28 | 0.8 | 210 | 0.3 | 496 | 0.4 | 998 | 0.1 | 1498 | 0.1 |
| 5 (Aux) | 28 | 0.8 | 209 | 0.4 | 496 | 0.4 | 998 | 0.1 | 1498 | 0.1 |
| 6 (DGM Inlet) | 28 | 0.8 | 210 | 0.3 | 495 | 0.5 | 998 | 0.1 | 1498 | 0.1 |
| 7 (DGM Outlet) | 30 | 0.4 | 209 | 0.4 | 495 | 0.5 | 999 | 0.1 | 1498 | 0.1 |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |

Relative Error must meet criteria of +/- 1.5 % (absolute temperature, R)

Operator DKA

Date 3/23/2011

Note:
Display Type - type J, K, T etc…
Calibrator Type - must match display type
Display Serial Number - Located on T/C readout, not the same as meter box number
Enter data in shaded boxes

# ExxonMobil Baytown Texas Refinery

# SCU2 T-601 ICR Test

# SW-846 Method 0011

# Aldehydes

| | | | |
|---|---|---|---|
| Project Number | 184380 | | |
| Client / Location | ExxonMobil SRU | | |
| Source | T601 | | |
| Sampling Location | | | |
| Sample Type / Method | 0011(Aldehyde/Ketone) | | |
| Condition Number | Normal | Normal | Normal |
| Run Number | 1 | 2 | 3 |
| Method Number | 11 | 11 | 11 |
| Date | 07/07/11 | 07/08/11 | 07/08/11 |
| Time Start (24-hr clock) | 1134 | 900 | 1355 |
| Time Stop (24-hr clock) | 1529 | 1226 | 1724 |
| Total Collection Time (min) | 120 | 120 | 120 |
| Pitot Tube Correction Factor | 0.84 | 0.84 | 0.84 |
| Nozzle Diameter (in.) | 0.162 | 0.162 | 0.162 |
| Nozzle Area ($ft^2$) | 0.000143 | 0.000143 | 0.000143 |
| Equivalent Duct Diameter (in) | 48.00 | 48.00 | 48.00 |
| Equivalent Duct Diameter (ft) | 4.00 | 4.00 | 4.00 |
| Duct Cross-Sectional Area ($ft^2$) | 12.566 | 12.566 | 12.566 |
| Barometric Pressure (in. Hg) | 29.90 | 29.90 | 29.90 |
| Elevation of Sampling Location Relative to Barometer (ft) | 150.00 | 150.00 | 150.00 |
| Barometric Pressure at Sampling Location (in. Hg) | 29.75 | 29.75 | 29.75 |
| Static Pressure (in. $H_2O$) | -2.00 | -0.96 | -1.00 |
| Absolute Stack Pressure (in. Hg) | 29.60 | 29.68 | 29.68 |
| $O_2$ (%) | 0.0 | 0.0 | 0.0 |
| $CO_2$ (%) | 0.0 | 0.0 | 0.0 |
| Dry Molecular Weight (g/g-mole) | | | |
| Condensate (mL) | 166.1 | 164.5 | 172.9 |
| Moisture Content (%) (measured) | 7.13 | 6.96 | 7.33 |
| Moisture Content at Saturation (%) | 6.31 | 6.39 | 6.88 |
| Moisture Content (%) (used in further calculations) | 7.13 | 6.96 | 7.33 |
| Wet Molecular Weight (g/g-mole) | 27.29 | 27.30 | 27.27 |
| Initial Meter Volume ($ft^3$) | 356.017 | 469.535 | 581.276 |
| Final Meter Volume ($ft^3$) | 466.424 | 580.819 | 692.657 |
| Leak Check Volume ($ft^3$) | 0.483 | 0.490 | 0.610 |
| Meter Volume ($ft^3$) | 109.924 | 110.794 | 110.771 |
| Meter Calibration Factor, Y | 0.986 | 0.986 | 0.986 |
| Average Meter Temperature (F) | 103.5 | 98.7 | 102.4 |
| Absolute Meter Temperature (F) | 563.5 | 558.7 | 562.4 |
| Average Delta H (in. $H_2O$) | 2.3 | 2.3 | 2.3 |
| Elevation of Meter Relative to Barometer (ft) | 0.0 | 0.0 | 0.0 |
| Corrected Meter Volume (dscf) | 102.076 | 103.758 | 103.060 |
| Average Stack Temperature (F) | 99.0 | 99.5 | 101.9 |
| Absolute Stack Temperature (R) | 559.0 | 559.5 | 561.9 |
| Average Delta P (in. H2O) | 3.43 | 3.43 | 3.43 |
| Average Square Root of delta P | 1.84 | 1.85 | 1.84 |
| Unadjusted Gas Velocity (ft/sec) | 110.14 | 110.12 | 110.30 |
| WAF | 1.00 | 1.00 | 1.00 |
| Adjusted Gas Velocity (ft/sec) | 110.14 | 110.12 | 110.30 |
| Adjusted Gas Velocity (ft/min) | 6,608 | 6,607 | 6,618 |
| Actual Flow Rate (acfh) | 4,982,393 | 4,981,559 | 4,990,031 |
| Actual Flow Rate (acfm) | 83,040 | 83,026 | 83,167 |
| Corrected Flow Rate (wscfh) | 4,656,566 | 4,663,641 | 4,650,674 |
| Corrected Flow Rate (wscfm) | 77,609 | 77,727 | 77,511 |
| Corrected Flow Rate (kwscfh) | 4,657 | 4,664 | 4,651 |
| Corrected Flow Rate (kwscfm) | 78 | 78 | 78 |
| Corrected Flow Rate (dscfh) | 4,324,764 | 4,339,278 | 4,309,770 |
| Corrected Flow Rate (dscfm) | 72,079 | 72,321 | 71,830 |
| Corrected Flow Rate (kdscfh) | 4,325 | 4,339 | 4,310 |
| Corrected Flow Rate (kdscfm) | 72 | 72 | 72 |
| Isokinetic Sampling Rate (%) | 103.61 | 104.96 | 104.97 |
| | | Tabulated Data | |
| STP is defined as 528 R and 29.92 "Hg | | Calculations | |
| | | Data Entry | |

## Run Data

Run 1

| Impinger No. | Initial Wt. (g) | Final Wt. (g) | Total Gain (g) |
|---|---|---|---|
| 1 | 832.6 | 946.8 | 114.2 |
| 2 | 667.8 | 696.6 | 28.8 |
| 3 | 615.6 | 615.8 | 0.2 |
| 4 | 635.0 | 638.0 | 3 |
| 5 | 973.1 | 993.0 | 19.9 |
| 6 | | | |
| | | sum = | 166.1 |

| | Temperatures | | | | | |
|---|---|---|---|---|---|---|
| dP | Stack | Meter Inlet | Meter Outlet | dH | SQRT dP | SQRT dH |
| 2.40 | 95 | 94 | 93 | 1.65 | 1.55 | 1.28 |
| 2.40 | 95 | 94 | 92 | 1.65 | 1.55 | 1.28 |
| 2.60 | 96 | 96 | 93 | 1.77 | 1.61 | 1.33 |
| 3.10 | 96 | 97 | 93 | 2.11 | 1.76 | 1.45 |
| 3.50 | 96 | 99 | 93 | 2.38 | 1.87 | 1.54 |
| 3.50 | 96 | 100 | 94 | 2.38 | 1.87 | 1.54 |
| 4.60 | 97 | 103 | 99 | 3.13 | 2.14 | 1.77 |
| 4.40 | 97 | 104 | 98 | 2.99 | 2.10 | 1.73 |
| 3.70 | 98 | 105 | 99 | 2.52 | 1.92 | 1.59 |
| 3.10 | 98 | 106 | 99 | 2.11 | 1.76 | 1.45 |
| 2.70 | 98 | 106 | 99 | 1.84 | 1.64 | 1.36 |
| 2.70 | 98 | 107 | 99 | 1.84 | 1.64 | 1.36 |
| 2.90 | 99 | 100 | 99 | 1.97 | 1.70 | 1.40 |
| 2.70 | 101 | 106 | 102 | 1.84 | 1.64 | 1.36 |
| 2.70 | 101 | 109 | 103 | 1.84 | 1.64 | 1.36 |
| 3.50 | 101 | 112 | 104 | 2.38 | 1.87 | 1.54 |
| 4.10 | 101 | 113 | 105 | 2.79 | 2.02 | 1.67 |
| 4.40 | 101 | 114 | 105 | 2.99 | 2.10 | 1.73 |
| 3.7 | 101 | 114 | 106 | 2.52 | 1.92 | 1.59 |
| 4.2 | 102 | 114 | 107 | 2.86 | 2.05 | 1.69 |
| 4.4 | 102 | 115 | 107 | 2.99 | 2.10 | 1.73 |
| 3.9 | 102 | 115 | 108 | 2.65 | 1.97 | 1.63 |
| 3.6 | 102 | 115 | 108 | 2.45 | 1.90 | 1.57 |
| 3.6 | 102 | 115 | 109 | 2.45 | 1.90 | 1.57 |
| **3.43** | **99.0** | **103.5** | | **2.34** | **1.84** | **1.52** |

Run 2

| Impinger No. | Initial Wt. (g) | Final Wt. (g) | Total Gain (g) |
|---|---|---|---|
| 1 | 816.0 | 940.0 | 124 |
| 2 | 765.2 | 780.6 | 15.4 |
| 3 | 718.5 | 720.8 | 2.3 |
| 4 | 618.2 | 620.8 | 2.6 |
| 5 | 916.8 | 937.0 | 20.2 |
| 6 | | | 0 |
| | | sum = | 164.5 |

| | Temperatures | | | | | |
|---|---|---|---|---|---|---|
| dP | Stack | Meter Inlet | Meter Outlet | dH | SQRT dP | SQRT dH |
| 2.90 | 99 | 89 | 85 | 1.97 | 1.70 | 1.40 |
| 2.90 | 99 | 91 | 86 | 1.97 | 1.70 | 1.40 |
| 3.40 | 100 | 94 | 88 | 2.31 | 1.84 | 1.52 |
| 3.70 | 100 | 95 | 89 | 2.52 | 1.92 | 1.59 |
| 4.10 | 99 | 97 | 89 | 2.79 | 2.02 | 1.67 |
| 4.00 | 100 | 99 | 90 | 2.72 | 2.00 | 1.65 |
| 4.00 | 100 | 101 | 92 | 2.72 | 2.00 | 1.65 |
| 4.30 | 100 | 102 | 93 | 2.92 | 2.07 | 1.71 |
| 3.90 | 100 | 103 | 94 | 2.65 | 1.97 | 1.63 |
| 3.00 | 99 | 104 | 95 | 2.04 | 1.73 | 1.43 |
| 3.00 | 100 | 105 | 96 | 2.04 | 1.73 | 1.43 |
| 3.20 | 99 | 104 | 97 | 2.18 | 1.79 | 1.48 |
| 3.20 | 99 | 101 | 100 | 2.18 | 1.79 | 1.48 |
| 3.00 | 100 | 104 | 100 | 2.04 | 1.73 | 1.43 |
| 3.20 | 100 | 105 | 100 | 2.18 | 1.79 | 1.48 |
| 3.10 | 100 | 106 | 100 | 2.11 | 1.76 | 1.45 |
| 3.60 | 100 | 106 | 100 | 2.45 | 1.90 | 1.57 |
| 4.40 | 99 | 106 | 101 | 2.99 | 2.10 | 1.73 |
| 4.6 | 99 | 106 | 101 | 3.13 | 2.14 | 1.77 |
| 4.1 | 99 | 106 | 101 | 2.79 | 2.02 | 1.67 |
| 3.2 | 99 | 105 | 101 | 2.18 | 1.79 | 1.48 |
| 2.8 | 99 | 104 | 100 | 1.9 | 1.67 | 1.38 |
| 2.6 | 99 | 104 | 100 | 1.77 | 1.61 | 1.33 |
| 2.2 | 99 | 104 | 100 | 1.5 | 1.48 | 1.22 |
| **3.43** | **99.5** | **98.7** | | **2.34** | **1.85** | **1.52** |

## Run Data

Run 3

| Impinger No. | Initial Wt. (g) | Final Wt. (g) | Total Gain (g) |
|---|---|---|---|
| 1 | 831.5 | 942.5 | 111 |
| 2 | 672.1 | 708.8 | 36.7 |
| 3 | 617.9 | 616.4 | -1.5 |
| 4 | 639.5 | 640.6 | 1.1 |
| 5 | 942.2 | 967.8 | 25.6 |
| 6 | | | 0 |
| | | sum = | 172.9 |

| | Temperatures | | | | | |
|---|---|---|---|---|---|---|
| dP | Stack | Meter Inlet | Meter Outlet | dH | SQRT dP | SQRT dH |
| 3.00 | 101 | 98 | 98 | 2.04 | 1.73 | 1.43 |
| 3.00 | 102 | 100 | 99 | 2.04 | 1.73 | 1.43 |
| 3.40 | 102 | 102 | 99 | 2.31 | 1.84 | 1.52 |
| 3.70 | 102 | 103 | 99 | 2.51 | 1.92 | 1.58 |
| 3.90 | 102 | 103 | 99 | 2.65 | 1.97 | 1.63 |
| 4.60 | 102 | 104 | 100 | 3.13 | 2.14 | 1.77 |
| 3.70 | 102 | 104 | 101 | 2.51 | 1.92 | 1.58 |
| 3.80 | 102 | 104 | 101 | 2.58 | 1.95 | 1.61 |
| 3.30 | 102 | 105 | 102 | 2.25 | 1.82 | 1.50 |
| 3.30 | 103 | 105 | 102 | 2.25 | 1.82 | 1.50 |
| 2.10 | 102 | 105 | 103 | 1.43 | 1.45 | 1.20 |
| 2.10 | 102 | 106 | 103 | 1.43 | 1.45 | 1.20 |
| 2.70 | 103 | 102 | 102 | 1.84 | 1.64 | 1.36 |
| 2.70 | 102 | 102 | 102 | 1.84 | 1.64 | 1.36 |
| 3.10 | 102 | 104 | 102 | 2.11 | 1.76 | 1.45 |
| 3.80 | 101 | 104 | 102 | 2.58 | 1.95 | 1.61 |
| 4.30 | 101 | 105 | 102 | 2.92 | 2.07 | 1.71 |
| 4.60 | 101 | 105 | 102 | 3.13 | 2.14 | 1.77 |
| 3.7 | 102 | 104 | 102 | 2.51 | 1.92 | 1.58 |
| 3.2 | 102 | 104 | 101 | 2.18 | 1.79 | 1.48 |
| 3.6 | 102 | 104 | 101 | 2.45 | 1.90 | 1.57 |
| 4.1 | 102 | 105 | 101 | 2.79 | 2.02 | 1.67 |
| 3.3 | 102 | 105 | 102 | 2.25 | 1.82 | 1.50 |
| 3.3 | 102 | 105 | 102 | 2.25 | 1.82 | 1.50 |
| **3.43** | **101.9** | **102.4** | | **2.33** | **1.84** | **1.52** |

TRC

# Source Collection Data Sheet

| | | | |
|---|---|---|---|
| Contract No. 184380 | Method 0011 (Aldehyde/Ketone) | | Page 1 of 1 |
| Facility ExxonMobil BTRF | Init. System Leak Rate (ft3 @ "Hg) 0.007 @ 12"Hg | | Operator A. Nava |
| Source SRU T-601 Stack | Final System Leak Rate (ft3 @ "Hg) 0.008 @ 14"Hg | | Pitot No. |
| Date 7-7-11 | Start Time 1134 | Meter No. 1442 | PTCF 0.84 |
| Condition Normal | End Time 1529 | DGMCF 0.986 0 | Init. Pitot Leak Check ✓ |
| Run No. 1 | Duration (min) 120 | ΔH@ 1.698 | Final Pitot Leak Check ✓ |
| Stat. Press. ("H2O) -2.0 | Bar. Press. ("Hg) 29.90 | Nozzle Diam. (") 0.162 | Kf 0.68 |

| Point | Time (24-hr) | Volume (ft3) | ΔP ("H2O) | ΔH ("H2O) | Temperatures (°F) Flue Gas | Probe | Filter | Impingers | Meter In | Meter Out | Vacuum ("Hg) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1134 | 356.017 | 2.4 | 1.65 | 95 | 253 | 257 | 66 | 94 | 93 | 6 | |
| 2 | 1139 | 359.83 | 2.4 | 1.65 | 95 | 253 | 257 | 65 | 94 | 92 | 6 | |
| 3 | 1144 | 363.67 | 2.6 | 1.77 | 96 | 252 | 257 | 64 | 96 | 93 | 6 | |
| 4 | 1149 | 367.54 | 3.1 | 2.11 | 96 | 250 | 257 | 58 | 97 | 93 | 8 | |
| 5 | 1154 | 372.08 | 3.5 | 2.38 | 96 | 257 | 257 | 57 | 99 | 93 | 8 | |
| 6 | 1159 | 376.30 | 3.5 | 2.38 | 96 | 255 | 257 | 58 | 100 | 94 | 10 | |
| 7 | 1236 | 380.944 | 4.6 | 3.13 | 97 | 255 | 258 | 67 | 103 | 99 | 12 | |
| 8 | 1241 | 386.15 | 4.4 | 2.99 | 97 | 249 | 256 | 66 | 104 | 98 | 12 | |
| 9 | 1246 | 391.35 | 3.7 | 2.52 | 98 | 250 | 259 | 64 | 105 | 99 | 10 | |
| 10 | 1251 | 395.21 | 3.1 | 2.11 | 98 | 254 | 261 | 61 | 106 | 99 | 10 | |
| 11 | 1256 | 400.63 | 2.7 | 1.84 | 98 | 253 | 257 | 62 | 106 | 99 | 8 | |
| 12 | 1301 | 404.87 | 2.7 | 1.84 | 98 | 252 | 259 | 60 | 107 | 99 | 7 | |
| Stop | 1306 | 408.770 | — | — | — | — | — | — | — | — | — | — |
| | | | | | | | | | | | | |
| W 12 | 1429 | 409.253 | 2.9 | 1.97 | 99 | 257 | 257 | 65 | 100 | 99 | 7 | |
| 11 | 1434 | 413.46 | 2.7 | 1.84 | 101 | 247 | 260 | 62 | 106 | 102 | 7 | |
| 10 | 1439 | 417.62 | 2.7 | 1.84 | 101 | 252 | 258 | 62 | 109 | 103 | 7 | |
| 9 | 1444 | 421.96 | 3.5 | 2.38 | 101 | 249 | 259 | 63 | 112 | 104 | 9 | |
| 8 | 1449 | 426.63 | 4.1 | 2.79 | 101 | 254 | 258 | 61 | 113 | 105 | 10 | |
| 7 | 1454 | 431.53 | 4.4 | 2.99 | 101 | 247 | 257 | 60 | 114 | 105 | 10 | |
| 6 | 1459 | 436.71 | 3.7 | 2.52 | 101 | 247 | 258 | 60 | 114 | 106 | 9 | |
| 5 | 1504 | 441.68 | 4.2 | 2.86 | 102 | 254 | 258 | 60 | 114 | 107 | 10 | |
| 4 | 1509 | 446.55 | 4.4 | 2.99 | 102 | 247 | 257 | 61 | 115 | 107 | 11 | |
| 3 | 1514 | 451.77 | 3.9 | 2.65 | 102 | 250 | 256 | 62 | 115 | 108 | 10 | |
| 2 | 1519 | 456.76 | 3.6 | 2.45 | 102 | 245 | 257 | 64 | 115 | 108 | 9 | |
| 1 | 1524 | 461.69 | 3.6 | 2.45 | 102 | 254 | 258 | 65 | 115 | 109 | 9 | |
| Stop | 1529 | 466.424 | — | — | — | — | — | — | — | — | — | — |

Comments 1204: stopped due to moglo probe in way
1236 resumed testing
Post "S" pot leak check 0.004 @ 15" Pre "W" leak check 0.008 @ 15"

Checked By: _____ (Project Manager or QA Manager - sign and date)

TRC

# Sample Recovery Data Sheet

| | | | |
|---|---|---|---|
| Contract No. | 184380 | Method | 0011 Aldehydes |
| Condition | Normal | Run No. | 1 |
| Date | 7-7-2011 | Operator | Ron |

| Impinger No. | Contents | Volume (mL) | Configuration | Final Wt. (g) | - Initial Wt. (g) | = Net Gain (g) |
|---|---|---|---|---|---|---|
| 1 | DNPH soln | 200 | Mod | 946.8 | 832.6 | 114.2 |
| 2 | ↓ | 100 | 6/5 | 696.6 | 667.8 | 28.8 |
| 3 | ↓ | 100 | Mod | 615.8 | 615.6 | 0.2 |
| 4 | — | — | ↓ | 638.0 | 635.0 | 3.0 |
| 5 | Silgel | ~500 | ↓ | 993.0 | 973.1 | 19.9 |
| 6 | | | | | | = |
| 7 | | | | | | = |
| 8 | | | | | | = |
| 9 | | | | | | = |
| 10 | | | | | | = |
| | | | | | Total Net Gain (g) = | 166.1 |

Comments:

Balance cal

Scout PRO
ID 7131231039

| Actual | Measured |
|---|---|
| 500 g | 499.9 g |
| 1000 g | 999.8 g |
| 50 g | 50.0 g |

TRC

# Source Collection Data Sheet

| | | | |
|---|---|---|---|
| Contract No. 184380 | Method 0011 Aldehydes | | Page 1 of 1 |
| Facility Exxon Mobil BTRF | Init. System Leak Rate (ft3 @ "Hg) 0.003 @ 17 "Hg | | Operator R. Nava |
| Source SRU T-601 | Final System Leak Rate (ft3 @ "Hg) 0.004 @ 13 "Hg | | Pitot No. |
| Date 7-8-11 | Start Time 0900 | Meter No. 1442 | PTCF 0.84 |
| Condition Normal | End Time 1226 | DGMCF 0.9860 | Init. Pitot Leak Check ✓ |
| Run No. 2 | Duration (min) 120 | ΔH@ 1.698 | Final Pitot Leak Check ✓ |
| Stat. Press. ("H2O) -0.96 | Bar. Press. ("Hg) 29.9 | Nozzle Diam. (") 0.162 | Kf 0.68 |

| Point | Time (24-hr) | Volume (ft3) | ΔP ("H2O) | ΔH ("H2O) | Temperatures (°F) Flue Gas | Probe | Filter | Impingers | Meter In | Meter Out | Vacuum ("Hg) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 5 W1 | 0900 | 469.535 | 2.9 | 1.97 | 99 | 253 | 256 | 67 | 89 | 85 | 6 |
| 2 | 0905 | 473.83 | 2.9 | 1.97 | 99 | 251 | 258 | 61 | 91 | 86 | 6 |
| 3 | 0910 | 477.99 | 3.4 | 2.31 | 100 | 247 | 256 | 60 | 94 | 88 | 7 |
| 4 | 0915 | 482.47 | 3.7 | 2.52 | 100 | 247 | 255 | 61 | 95 | 89 | 8 |
| 5 | 0920 | 487.31 | 4.1 | 2.79 | 99 | 254 | 257 | 64 | 97 | 89 | 9 |
| 6 | 0925 | 492.22 | 4.0 | 2.72 | 100 | 248 | 258 | 65 | 99 | 90 | 9 |
| 7 | 0930 | 497.21 | 4.0 | 2.72 | 100 | 246 | 260 | 65 | 101 | 92 | 9 |
| 8 | 0935 | 502.18 | 4.3 | 2.92 | 100 | 250 | 260 | 62 | 102 | 93 | 9 |
| 9 | 0940 | 507.31 | 3.9 | 2.65 | 100 | 249 | 259 | 60 | 103 | 94 | 9 |
| 10 | 0945 | 512.20 | 3.0 | 2.04 | 99 | 251 | 260 | 60 | 104 | 95 | 7 |
| 11 | 0950 | 516.58 | 3.0 | 2.04 | 100 | 249 | 258 | 59 | 105 | 96 | 7 |
| 12 | 0955 | 520.89 | 3.2 | 2.18 | 99 | 250 | 260 | 59 | 104 | 97 | 7 |
| stop | 1000 | 525.342 | — | Post "H | pos | t 0.006 @ | 12" | Pre "W | pos | t 0.005 @ | 12 |
| W1 | 1126 | 525.832 | 3.2 | 2.18 | 99 | 258 | 256 | 66 | 101 | 100 | 7 |
| 2 | 1131 | 530.22 | 3.0 | 2.04 | 100 | 253 | 257 | 60 | 100 | 100 | 7 |
| 3 | 1136 | 534.59 | 3.2 | 2.18 | 100 | 252 | 257 | 55 | 105 | 100 | 7 |
| 4 | 1141 | 539.02 | 3.1 | 2.11 | 100 | 259 | 250 | 55 | 106 | 100 | 7 |
| 5 | 1146 | 543.44 | 3.6 | 2.45 | 100 | 256 | 258 | 55 | 106 | 100 | 9 |
| 6 | 1151 | 548.24 | 4.4 | 2.99 | 99 | 260 | 261 | 56 | 106 | 101 | 11 |
| 7 | 1156 | 553.53 | 4.6 | 3.13 | 99 | 254 | 259 | 57 | 106 | 101 | 11 |
| 8 | 1201 | 558.77 | 4.1 | 2.79 | 99 | 255 | 257 | 58 | 106 | 101 | 10 |
| 9 | 1206 | 563.90 | 3.2 | 2.18 | 99 | 258 | 261 | 55 | 105 | 101 | 8 |
| 10 | 1211 | 568.55 | 2.8 | 1.90 | 99 | 255 | 260 | 52 | 104 | 100 | 7 |
| 11 | 1216 | 572.84 | 2.6 | 1.77 | 99 | 262 | 260 | 52 | 104 | 100 | 7 |
| 12 | 1221 | 577.01 | 2.2 | 1.50 | 99 | 258 | 257 | 51 | 104 | 100 | 7 |
| stop | 1226 | 580.819 | — | — | — | — | — | — | — | — | — |

Comments

Checked By: _____ (Project Manager or QA Manager - sign and date)

TRC

# Sample Recovery Data Sheet

| | |
|---|---|
| Contract No. 184380 | Method 0011 Aldehydes |
| Condition SRU T-601 Stack | Run No. 2 |
| Date 7-8-11 | Operator RM |

| Impinger No. | Contents | Volume (mL) | Configuration | Final Wt. (g) | - | Initial Wt. (g) | = | Net Gain (g) |
|---|---|---|---|---|---|---|---|---|
| 1 | DNPH soln | 200 | Mod | 940.0 | - | 816.0 | = | 124.0 |
| 2 | ↓ | 100 | G/S | 780.6 | - | 765.2 | = | 15.4 |
| 3 | ↓ | 100 | Mod | 720.8 | - | 718.5 | = | 2.3 |
| 4 | — | — | ↓ | 620.8 | - | 618.2 | = | 2.6 |
| 5 | Silgel | ~600 | | 937.0 | - | 916.8 | = | 20.2 |
| 6 | | | | | - | | = | |
| 7 | | | | | - | | = | |
| 8 | | | | | - | | = | |
| 9 | | | | | - | | = | |
| 10 | | | | | - | | = | |
| | | | | | | Total Net Gain (g) = | | 164.5 |

Comments:

TRC

# Source Collection Data Sheet

| | | | | | |
|---|---|---|---|---|---|
| Contract No. 184380 | | Method 0011 Aldehydes | | | Page 1 of 1 |
| Facility Exxon Mobil BTRF | | Init. System Leak Rate (ft3 @ "Hg) 0.001 @ 15 "Hg | | | Operator A. Nava |
| Source SRU T-601 Stack | | Final System Leak Rate (ft3 @ "Hg) 0.003 @ 17 "Hg | | | Pitot No. |
| Date 7-8-11 | Start Time 1355 | | Meter No. 1442 | | PTCF 0.84 |
| Condition Normal | End Time 1724 | | DGMCF 0.9860 | | Init. Pitot Leak Check ✓ |
| Run No. 3 | Duration (min) 120 | | ΔH@ 1.69E | | Final Pitot Leak Check ✓ |
| Stat. Press. ("H2O) -1.0 | Bar. Press. ("Hg) 29.90 | | Nozzle Diam. (") 0.162 | | Kf 0.68 |

| Point | Time (24-hr) | Volume (ft3) | ΔP ("H2O) | ΔH ("H2O) | Temperatures (°F) Flue Gas | Probe | Filter | Impingers | Meter In | Meter Out | Vacuum ("Hg) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| W1 | 1355 | 581.276 | 3.0 | 2.04 | 101 | 256 | 258 | 67 | 98 | 98 | 9 | |
| 2 | 1400 | 585.57 | 3.0 | 2.04 | 102 | 253 | 260 | 65 | 100 | 99 | 9 | |
| 3 | 1405 | 589.91 | 3.4 | 2.31 | 102 | 252 | 261 | 62 | 102 | 99 | 9 | |
| 4 | 1410 | 594.36 | 3.7 | 2.51 | 102 | 248 | 260 | 61 | 103 | 99 | 12 | |
| 5 | 1415 | 599.11 | 3.9 | 2.65 | 102 | 251 | 261 | 63 | 103 | 99 | 13 | |
| 6 | 1420 | 603.97 | 4.6 | 3.13 | 102 | 257 | 257 | 61 | 104 | 100 | 15 | |
| 7 | 1425 | 609.22 | 3.7 | 2.51 | 102 | 252 | 259 | 60 | 104 | 101 | 13 | |
| 8 | 1430 | 614.20 | 3.8 | 2.58 | 102 | 258 | 260 | 60 | 104 | 101 | 14 | |
| 9 | 1435 | 618.98 | 3.3 | 2.25 | 103 | 251 | 260 | 58 | 105 | 102 | 11 | |
| 10 | 1440 | 623.52 | 3.3 | 2.25 | 102 | 253 | 259 | 59 | 105 | 102 | 11 | |
| 11 | 1445 | 628.91 | 2.1 | 1.43 | 102 | 249 | 252 | 60 | 105 | 103 | 7 | |
| ~~12~~ | ~~1450~~ | ~~628.32~~ | ~~2.1~~ | ~~1.43~~ | ~~102~~ | ~~250~~ | ~~251~~ | ~~60~~ | ~~105~~ | ~~103~~ | ~~7~~ | ~~adj~~ |
| 12 stop | 1450 | 632.101 | 2.1 | 1.43 | 103 | 260 | 258 | 61 | 106 | 103 | 7 | |
| stop | 1455 | 635.686 | Leak check port "W" 0.003 @ 17" Leak check port's 0.00 @ 1 | | | | | | | | | |
| S1 | 1624 | 636.296 | 2.7 | 1.84 | 102 | 252 | 272 | 66 | 102 | 102 | 7 | |
| 2 | 1629 | 640.45 | 2.7 | 1.84 | 102 | 255 | 266 | 60 | 102 | 102 | 7 | |
| 3 | 1634 | 644.59 | 3.1 | 2.11 | 101 | 252 | 262 | 59 | 104 | 102 | 9 | |
| 4 | 1639 | 648.91 | 3.8 | 2.58 | 101 | 254 | 254 | 61 | 104 | 102 | 9 adj 11 | |
| 5 | 1644 | 653.77 | 4.3 | 2.92 | 101 | 248 | 256 | 63 | 105 | 102 | 13 | |
| 6 | 1649 | 659.00 | 4.6 | 3.13 | 102 | 249 | 255 | 63 | 105 | 102 | 15 | |
| 7 | 1654 | 664.34 | 3.7 | 2.51 | 102 | 249 | 254 | 64 | 104 | 102 | 12 | |
| 8 | 1659 | 669.19 | 3.2 | 2.18 | 102 | 250 | 255 | 64 | 104 | 101 | 10 | |
| 9 | 1704 | 673.88 | 3.6 | 2.45 | 102 | 254 | 256 | 63 | 104 | 101 | 11 | |
| 10 | 1709 | 678.44 | 4.1 | 2.79 | 102 | 254 | 257 | 62 | 105 | 101 | 13 | |
| 11 | 1714 | 683.43 | 3.3 | 2.25 | 102 | 254 | 254 | 63 | 105 | 102 | 11 | |
| 12 | 1719 | 688.06 | 3.3 | 2.25 | 102 | 252 | 256 | 59 | 105 | 102 | 11 | |
| stop | 1724 | 692.65 | — | — | — | — | — | — | — | — | — | — |

Comments

Checked By: _____ (Project Manager or QA Manager - sign and date)

TRC

# Sample Recovery Data Sheet

| | | | |
|---|---|---|---|
| Contract No. | 184380 | Method | 0011 Aldehydes |
| Condition | Normal | Run No. | 3 |
| Date | 7-8-11 | Operator | RM |

| Impinger No. | Contents | Volume (mL) | Configuration | Final Wt. (g) | - Initial Wt. (g) | = Net Gain (g) |
|---|---|---|---|---|---|---|
| 1 | DNPH soln | 200 | Mod | 942.5 | - 831.5 | = 111.0 |
| 2 | ↓ | 100 | G/S | 708.8 | - 672.1 | = 36.7 |
| 3 | ↓ | 100 | Mod | 616.4 | - 617.9 | = -1.5 |
| 4 | — | — | ↓ | 640.6 | - 639.5 | = 1.1 |
| 5 | Sigel | ~600 | ↓ | 967.8 | - 942.2 | = 25.6 |
| 6 | | | | | - | = |
| 7 | | | | | - | = |
| 8 | | | | | - | = |
| 9 | | | | | - | = |
| 10 | | | | | - | = |
| | | | | | Total Net Gain (g) = | 172.9 |

Comments:

Balance cal Scout Pro 7131231039

| Actual | Measured |
|---|---|
| 500 g | 499.9 g |
| 1000 g | 999.8 g |
| 50 g | 50.0 g |

# **Meter Box:** Orifice Full Calibration

| | | | |
|---|---|---|---|
| **Date:** | 9/14/2010 | | |
| **Prev. Calib. Date:** | 1/26/2009 | | |
| **Location:** | TRC Austin, TX Lab | | |
| **Technician:** | MRL | | |
| **Meter Serial No:** | 9543627 | | |
| **Meter Box ID:** | 1442 | | |
| **Atm. Pressure (corr. In Hg):** | 29.28 | ncorrected: 29.52 | |
| **Critical Vacuum + 2 in Hg:** | 16 | in. Hg. (required minimum) | |
| **Prev. Calib Factor (Y):** | 0.9790 | | |

| **Reference Orifice Set** | | Orifice (#) | K' Factor |
|---|---|---|---|
| **Manufacturer:** | Apex Instruments | 40 | 0.2332 |
| **Model:** | SX40-73 | 48 | 0.339 |
| **Tested By:** | EW | 55 | 0.4426 |
| **Date:** | 10/5/09 | 63 | 0.6126 |

| | | | | | | | Initial Temperatures | | Final Temperatures | | | Ambient Temperatures | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Orifice Serial # | K' coefficient (see above) | dH (in. H2O) | Time (min) | Vol (initial) (cu ft) | Vol (final) (cu ft) | Vol. Total (cu ft) | Inlet (deg F) | Outlet (deg F) | Inlet (deg F) | Outlet (deg F) | Vacuum (in Hg) | Initial (deg F) | Final (deg F) |
| 40 | 0.2332 | 0.25 | 10 | 28.170 | 31.248 | 3.078 | 69 | 69 | 70 | 70 | 24 | 74.7 | 75.2 |
| 48 | 0.339 | 0.55 | 10 | 31.248 | 35.756 | 4.508 | 70 | 70 | 71 | 70 | 23 | 75.2 | 75.1 |
| 55 | 0.4426 | 0.96 | 10 | 35.756 | 41.591 | 5.835 | 71 | 70 | 72 | 70 | 22 | 75.3 | 75.9 |
| 63 | 0.6126 | 1.97 | 10 | 41.591 | 49.520 | 7.929 | 72 | 72 | 72 | 73 | 20 | 76.1 | 76.3 |

| Meter Box Dry Gas Meter | | | Critical Orifice | | Dry Gas Meter Calibration Factor (Y) | | Orifice Calibration Factor (dH@) | |
|---|---|---|---|---|---|---|---|---|
| Volume Corrected Vm (std) (cu ft) | Volume Corrected Vm (std) (liters) | Flow Rate (CFM) | Volume Corrected Vcr (std) (cu ft) | Volume Corrected Vm (std) (liters) | Value (#) | Variation (#) | Value (in H2O) | Variation (in H2O) |
| 3.00 | 85.07 | 0.308 | 2.95 | 83.60 | 0.983 | -0.003 | 1.599 | -0.10 |
| 4.40 | 124.51 | 0.451 | 4.29 | 121.50 | 0.976 | -0.010 | 1.662 | -0.04 |
| 5.69 | 161.18 | 0.584 | 5.60 | 158.57 | 0.984 | -0.002 | 1.705 | 0.01 |
| 7.73 | 218.96 | 0.793 | 7.75 | 219.35 | 1.002 | 0.016 | 1.826 | 0.13 |

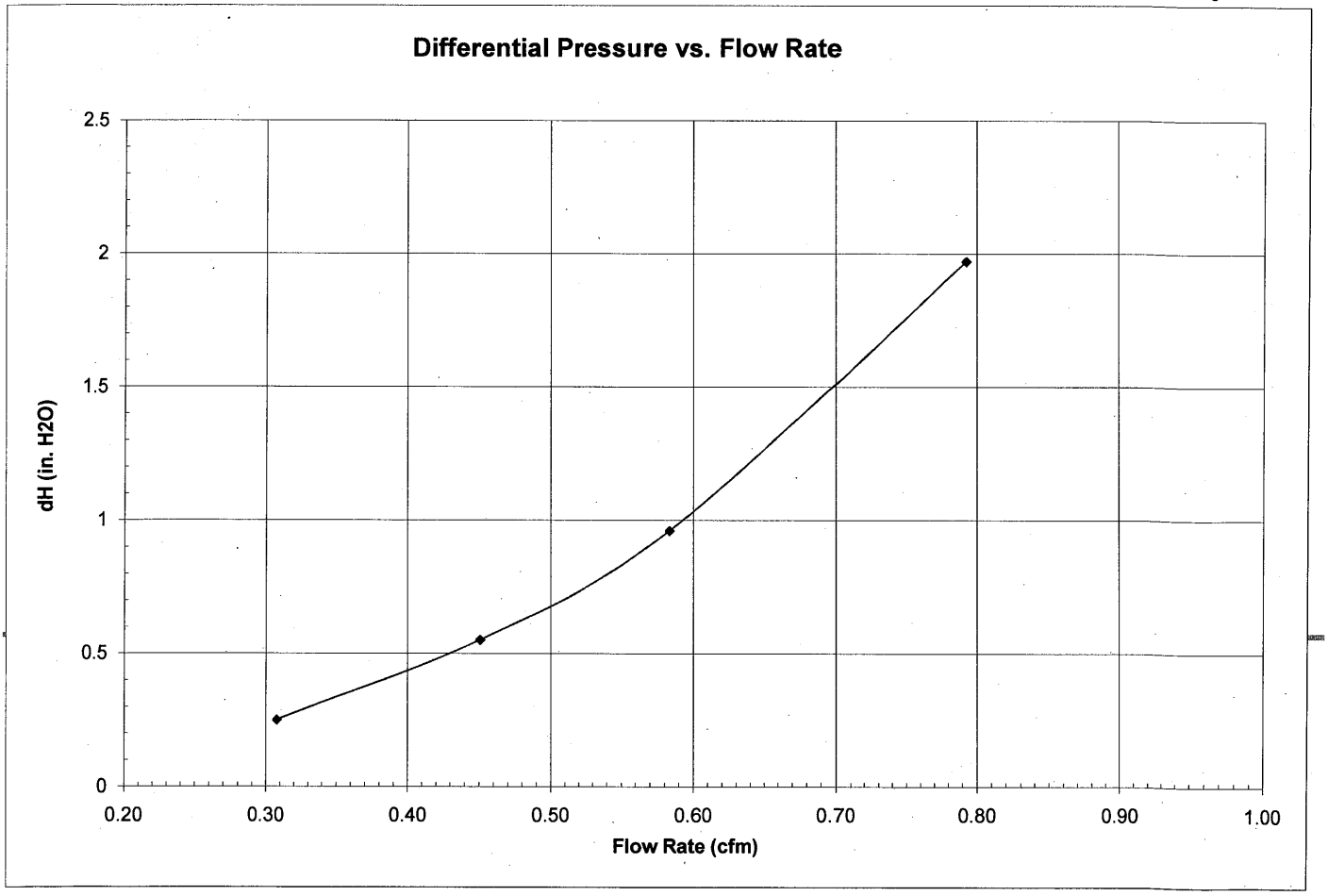
**Meter Box**

| **Calibration Test Results** | **Pass/Fail** |
|---|---|
| *** Average Y: 0.9860** | *PASS* |
| Ave. Y w/in 5% of previous value: | *YES* |
| 0.95 >= Y <= 1.05: | *PASS* |
| **** Average dH: 1.698** | *PASS* |

Criteria:

* Y- ratio of the reading of the calibration meter (critical orifice) to the Meter Box DGM. Acceptable tolerance of individual values from the average is +/- 0.02.

** dH- the orifice differential pressure in inches of H2O that equates to 0.75 cfm of air flow at 68 F and 29.92 in Hg, acceptable tolerance of individual values from the average is +/- 0.2.



TRC

Console No. 1446

Temperature Display Type Jenco - 765

Temperature Display Serial No. 2856R-078

S. O. P. Reference AM - 103

Calibrator Type Omega Model CL23A

Calibrator Serial No. T239267

| | Reference Temperature ( °F) | 32 | Reference Temperature (° F) | 212 | Reference Temperature (° F) | 500 | Reference Temperature (° F) | 1000 | Reference Temperature (° F) | 1500 |
|---|---|---|---|---|---|---|---|---|---|---|
| Display Channel No. | Measured Temperature ( °F) | Relative Error (%) | Measured Temperature ( °F) | Relative Error (%) | Measured Temperature ( °F) | Relative Error (%) | Measured Temperature ( °F) | Relative Error (%) | Measured Temperature ( °F) | Relative Error (%) |
| 1 (Stack) | 32 | 0.0 | 209 | 0.4 | 496 | 0.4 | 1000 | 0.0 | 1498 | 0.1 |
| 2 (Probe) | 31 | 0.2 | 209 | 0.4 | 497 | 0.3 | 1001 | -0.1 | 1498 | 0.1 |
| 3 (Filter) | 30 | 0.4 | 209 | 0.4 | 497 | 0.3 | 1000 | 0.0 | 1498 | 0.1 |
| 4 (Dryer) | 30 | 0.4 | 209 | 0.4 | 498 | 0.2 | 1001 | -0.1 | 1499 | 0.1 |
| 5 (Aux) | 31 | 0.2 | 208 | 0.6 | 498 | 0.2 | 1001 | -0.1 | 1499 | 0.1 |
| 6 (DGM Inlet) | 30 | 0.4 | 208 | 0.6 | 498 | 0.2 | 999 | 0.1 | 1499 | 0.1 |
| 7 (DGM Outlet) | 31 | 0.2 | 208 | 0.6 | 498 | 0.2 | 999 | 0.1 | 1498 | 0.1 |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |

Relative Error must meet criteria of +/- 1.5 % (absolute temperature, ° R)

Operator Neal Afflebach

Date 4/19/11

## APPENDIX D: CEMS DATA CO, THC, O2, CO2

| | |
|---|---|
| Operator: | J Glass |
| Plant Name: | ExxonMobil BTRF |
| Location: | SCU2 T-601 |
| Run Length: | 60 minutes |
| Sample Rate: | 30 per minute |
| Average Calibration Results: | 0.5 minutes |
| Automatic Sequence, Calibration Error: | No |
| Automatic Sequence, System Bias: | No |
| Max Response Time: | Manual |
| Max Response Time: | 1.5 minutes |
| Traverse During Run: | No |

| Active | Chan. | Analyte Name | Units | Span Units | Span Volts | Offset Volts |
|---|---|---|---|---|---|---|
| Yes | 1 | O2 | % | 20.44 | 0.81 | 0 |
| Yes | 2 | CO2 | % | 19.82 | 0.79 | 0 |
| Yes | 3 | CO | ppm | 404.2 | 0.8 | -0.004 |
| Yes | 6 | THC | ppm | 100 | 10 | 0 |

Measurement System Preparation Table

| Gas Name | Reference Cylinder Numbers 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| O2 | Z | M | H | | | | | L | | | | | | | | |
| CO2 | Z | M | H | | | | | L | | | | | | | | |
| CO | Z | | | M | H | | | | L | | | | | | | |
| THC | Z | | | | | L | M | H | | | | | | | | |

Measurement System Preparation Table

| Gas Name | Reference Cylinder Numbers 17 18 19 20 21 22 23 24 |
|---|---|
| O2 | |
| CO2 | |
| CO | |
| THC | |

| Gas Name | Zero Reference Cylinder No. | Conc | ID Number | Low Reference Cylinder No. | Conc | ID Number |
|---|---|---|---|---|---|---|
| O2 | 1 | 0 | CC321614 | 8 | 4 | |
| CO2 | 1 | 0 | CC321614 | 8 | 4 | |
| CO | 1 | 0 | CC321614 | 9 | 20 | |
| THC | 1 | 0 | CC321614 | 6 | 25.07 | CC128844 |

| Gas Name | Mid Reference Cylinder No. | Conc | ID Number | High Reference Cylinder No. | Conc | ID Number |
|---|---|---|---|---|---|---|
| O2 | 2 | 10 | XC031366B | 3 | 20.44 | CC183442 |
| CO2 | 2 | 10.01 | XC031366B | 3 | 19.82 | CC183442 |
| CO | 4 | 201.8 | CC334116 | 5 | 404.2 | CC40835N |
| THC | 7 | 45.4 | SG9165626BAL | 8 | 85.74 | SG9142486BAL |

| Seq Num | Calibration Error Test Sequence O2 | CO2 | CO | THC |
|---|---|---|---|---|
| 1 | Zero | Zero | Zero | |
| 2 | High | High | | |
| 3 | Mid | Mid | | |
| 4 | | | High | |
| 5 | | | Mid | |
| 6 | | | | Zero |
| 7 | | | | High |
| 8 | | | | Mid |
| 9 | | | | Low |
| 10 | | | | |
| 11 | | | | |
| 12 | | | | |
| 13 | | | | |
| 14 | | | | |
| 15 | | | | |

| | |
|---|---|
| 1 | |
| 2 | |
| 3 | |
| 4 | |
| 5 | |
| 6 | |
| 7 | |
| 8 | |
| 9 | |
| 10 | |
| 11 | |
| 12 | |
| 13 | |
| 14 | |
| 15 | |

| Seq Num | Calibration Error Valve Sequence 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | X | | | | | | | | | | | | | | | |
| 2 | | | X | | | | | | | | | | | | | |
| 3 | | X | | | | | | | | | | | | | | |
| 4 | | | | | X | | | | | | | | | | | |
| 5 | | | | X | | | | | | | | | | | | |
| 6 | X | | | | | | | | | | | | | | | |
| 7 | | | | | | | | X | | | | | | | | |
| 8 | | | | | | | X | | | | | | | | | |
| 9 | | | | | | X | | | | | | | | | | |
| 10 | | | | | | | | | | | | | | | | |
| 11 | | | | | | | | | | | | | | | | |
| 12 | | | | | | | | | | | | | | | | |
| 13 | | | | | | | | | | | | | | | | |
| 14 | | | | | | | | | | | | | | | | |
| 15 | | | | | | | | | | | | | | | | |

| Seq Num | System Bias Check Sequence O2 | CO2 | CO | THC |
|---|---|---|---|---|
| 1 | Zero | Zero | Zero | Zero |
| 2 | Mid | Mid | | |
| 3 | | | Mid | |
| 4 | | | | Mid |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| 8 | | | | |
| 9 | | | | |
| 10 | | | | |
| 11 | | | | |
| 12 | | | | |
| 13 | | | | |
| 14 | | | | |
| 15 | | | | |

| | |
|---|---|
| 1 | |
| 2 | |
| 3 | |
| 4 | |
| 5 | |
| 6 | |
| 7 | |
| 8 | |
| 9 | |
| 10 | |
| 11 | |
| 12 | |
| 13 | |
| 14 | |
| 15 | |

| Seq Num | System Bias Valve Sequence 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | X | | | | | | | | | | | | | | | |
| 2 | | X | | | | | | | | | | | | | | |
| 3 | | | X | | | | | | | | | | | | | |
| 4 | | | | | | | X | | | | | | | | | |
| 5 | | | | | | | | | | | | | | | | |
| 6 | | | | | | | | | | | | | | | | |
| 7 | | | | | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | | | | | |
| 11 | | | | | | | | | | | | | | | | |
| 12 | | | | | | | | | | | | | | | | |
| 13 | | | | | | | | | | | | | | | | |
| 14 | | | | | | | | | | | | | | | | |
| 15 | | | | | | | | | | | | | | | | |

| Seq Num | Calibration Error Valve Sequence 17 18 19 20 21 22 23 24 |
|---|---|
| 1 | |
| 2 | |
| 3 | |
| 4 | |
| 5 | |
| 6 | |
| 7 | |
| 8 | |
| 9 | |
| 10 | |
| 11 | |
| 12 | |
| 13 | |
| 14 | |
| 15 | |

| Seq Num | System Bias Valve Sequence 17 18 19 20 21 22 23 24 |
|---|---|
| 1 | |
| 2 | |
| 3 | |
| 4 | |
| 5 | |
| 6 | |
| 7 | |
| 8 | |
| 9 | |
| 10 | |
| 11 | |
| 12 | |
| 13 | |
| 14 | |
| 15 | |

STRATA Configuration End

Calibration Error Test, Run 1  STRATA Version 3.2
Operator:  J Glass
Plant Name:  ExxonMobil BTRF
Location:  SCU2 T-601

| | Reference Cylinder Numbers | | | |
|---|---|---|---|---|
| | Zero | Low-range | Mid-range | High-range |
| O2 | CC321614 | | XC031366B | CC183442 |
| CO2 | CC321614 | | XC031366B | CC183442 |
| CO | CC321614 | | CC334116 | CC40835N |
| THC | CC321614 | XC028402B | CC334116 | ~~SG9142406BAL~~ CC40835N |

PASSED

| Date/Time | 07-07-2011 | | 08:26:24 | |
|---|---|---|---|---|
| Analyte | O2 | CO2 | CO | THC |
| Units | % | % | ppm | ppm |
| Zero Ref Cyl | 0.000 | 0.000 | 0.00 | 0.00 |
| Zero Avg | 0.085 | 0.009 | 0.49 | 0.27 |
| Zero Error% | 0.4% | 0.0% | 0.1% | 0.1% |
| Low Ref Cyl | | | | 151.50 |
| Low Avg | | | | 152.54 |
| Low Error% | | | | 0.2% |
| Mid Ref Cyl | 10.000 | 10.010 | 201.80 | 266.60 |
| Mid Avg | 10.025 | 10.124 | 203.62 | 269.28 |
| Mid Error% | 0.1% | 0.6% | 0.5% | 0.5% |
| High Ref Cyl | 20.440 | 19.820 | 404.20 | 437.70 |
| High Avg | 20.529 | 19.817 | 400.46 | 437.70 |
| High Error% | 0.4% | 0.0% | 0.9% | 0.0% |

Calibration Error Test End

Initial System Bias Check, Run 1  STRATA Version 3.2
Operator:  J Glass
Plant Name:  ExxonMobil BTRF
Location:  SCU2 T-601

| | Reference Cylinder Numbers Zero | Span |
|---|---|---|
| O2 | CC321614 | XC031366B |
| CO2 | CC321614 | XC031366B |
| CO | CC321614 | CC334116 |
| THC | CC321614 | CC334116 |

Date/Time  07-07-2011  08:34:55  PASSED

| Analyte | O2 | CO2 | CO | THC |
|---|---|---|---|---|
| Units | % | % | ppm | ppm |
| Zero Ref Cyl | 0.000 | 0.000 | 0.00 | 0.00 |
| Zero Cal | 0.085 | 0.009 | 0.49 | 0.27 |
| Zero Avg | 0.035 | 0.063 | 0.96 | -0.19 |
| Zero Bias% | 0.2% | 0.3% | 0.1% | 0.1% |
| Zero Drift% | | | | |
| Span Ref Cyl | 10.000 | 10.010 | 201.80 | 266.60 |
| Span Cal | 10.025 | 10.124 | 203.62 | 269.28 |
| Span Avg | 9.906 | 9.984 | 203.19 | 268.98 |
| Span Bias% | 0.6% | 0.7% | 0.1% | 0.1% |
| Span Drift% | | | | |

System Bias Check End

Test Run 1 STRATA Version 3.2

Strat Check

| | O2 % | CO2 % | CO ppm | THC ppm |
|---|---|---|---|---|
| Begin calculating run averages | | | | |
| 07-07-2011 08:43:38 | 0.083 | 7.914 | 325.07 | 40.58 |
| 07-07-2011 08:44:38 | 0.073 | 7.873 | 325.13 | 40.10 |
| 07-07-2011 08:45:38 | 0.090 | 7.933 | 319.52 | 38.42 |
| 07-07-2011 08:46:38 | 0.091 | 7.957 | 301.81 | 38.52 |
| 07-07-2011 08:47:38 | 0.093 | 7.903 | 294.87 | 39.24 |
| 07-07-2011 08:48:38 | 0.089 | 7.876 | 303.87 | 39.14 |
| 07-07-2011 08:49:38 | 0.107 | 7.930 | 300.11 | 38.54 |
| 07-07-2011 08:50:38 | 0.098 | 7.952 | 296.68 | 38.84 |
| 07-07-2011 08:51:38 | 0.099 | 7.950 | 291.27 | 38.06 |
| 07-07-2011 08:52:38 | 0.104 | 7.924 | 288.30 | 38.31 |
| 07-07-2011 08:53:38 | 0.102 | 7.907 | 300.77 | 38.07 |
| 07-07-2011 08:54:38 | 0.106 | 7.963 | 311.97 | 38.76 |
| 07-07-2011 08:55:38 | 0.113 | 7.996 | 313.04 | 38.74 |
| 07-07-2011 08:56:38 | 0.109 | 8.010 | 317.94 | 38.48 |
| 07-07-2011 08:57:38 | 0.110 | 8.046 | 321.13 | 39.26 |
| 07-07-2011 08:58:38 | 0.112 | 8.037 | 330.06 | 41.15 |
| 07-07-2011 08:59:38 | 0.106 | 7.912 | 346.62 | 40.85 |
| 07-07-2011 09:00:38 | 0.113 | 7.962 | 342.86 | 39.09 |
| 07-07-2011 09:01:39 | 0.109 | 7.960 | 318.06 | 37.86 |
| 07-07-2011 09:02:39 | 0.115 | 7.890 | 306.34 | 37.80 |
| 07-07-2011 09:03:39 | 0.109 | 7.905 | 302.05 | 37.42 |
| 07-07-2011 09:04:39 | 0.111 | 7.887 | 283.95 | 37.48 |
| 07-07-2011 09:05:39 | 0.115 | 7.883 | 282.74 | 36.79 |
| 07-07-2011 09:06:39 | 0.112 | 7.870 | 282.88 | 36.40 |
| 07-07-2011 09:07:39 | 0.110 | 7.921 | 280.78 | 37.15 |
| 07-07-2011 09:08:39 | 0.121 | 7.924 | 283.24 | 37.49 |
| 07-07-2011 09:09:39 | 0.108 | 7.881 | 295.86 | 38.08 |
| 07-07-2011 09:10:39 | 0.119 | 7.940 | 298.93 | 37.82 |
| 07-07-2011 09:11:39 | 0.111 | 7.950 | 292.02 | 38.34 |
| 07-07-2011 09:12:39 | 0.121 | 8.018 | 295.22 | 38.48 |
| 07-07-2011 09:13:39 | 0.123 | 7.981 | 308.19 | 39.42 |
| 07-07-2011 09:14:39 | 0.111 | 7.940 | 340.16 | 39.38 |
| 07-07-2011 09:15:39 | 0.123 | 8.033 | 358.46 | 39.29 |
| 07-07-2011 09:16:39 | 0.117 | 7.955 | 356.20 | 39.69 |
| 07-07-2011 09:17:39 | 0.121 | 7.856 | 357.52 | 38.99 |
| 07-07-2011 09:18:39 | 0.118 | 7.869 | 351.62 | 39.04 |
| 07-07-2011 09:19:39 | 0.119 | 7.895 | 337.10 | 38.98 |
| 07-07-2011 09:20:39 | 0.120 | 7.804 | 324.74 | 39.03 |

O2 0.1026 — 0.1131 — 0.1190

CO2 7.9536 — 7.9166

14

| Run Averages | O2 % | CO2 % | CO ppm | THC ppm |
|---|---|---|---|---|
| 07-07-2011 09:21:36 | 0.108 | 7.930 | 313.10 | 38.66 |

Operator: J Glass
Plant Name: ExxonMobil BTRF
Location: SCU2 T-601
Test Run 1 End

Initial System Bias Check, Run 1  STRATA Version 3.2
Operator:  J Glass
Plant Name:  ExxonMobil BTRF
Location:  SCU2 T-601

| | Reference Cylinder Numbers Zero | Span |
|---|---|---|
| O2 | CC321614 | XC031366B |
| CO2 | CC321614 | XC031366B |
| CO | CC321614 | CC334116 |
| THC | CC321614 | CC334116 |

Date/Time  07-07-2011  10:09:01  PASSED

| Analyte | O2 | CO2 | CO | THC |
|---|---|---|---|---|
| Units | % | % | ppm | ppm |
| Zero Ref Cyl | 0.000 | 0.000 | 0.00 | 0.00 |
| Zero Cal | 0.085 | 0.009 | 0.49 | 0.27 |
| Zero Avg | 0.164 | 0.088 | 1.19 | -0.90 |
| Zero Bias% | 0.4% | 0.4% | 0.2% | 0.2% |
| Zero Drift% | | | | |
| Span Ref Cyl | 10.000 | 10.010 | 201.80 | 266.60 |
| Span Cal | 10.025 | 10.124 | 203.62 | 269.28 |
| Span Avg | 10.006 | 10.004 | 202.38 | 268.26 |
| Span Bias% | 0.1% | 0.6% | 0.3% | 0.2% |
| Span Drift% | | | | |

System Bias Check End

Test Run 1 STRATA Version 3.2

| | O2 | CO2 | CO | THC |
|---|---|---|---|---|
| | % | % | ppm | ppm |
| Begin calculating run averages | | | | |
| 07-07-2011 11:31:19 | 0.161 | 7.940 | 379.66 | 30.88 |
| 07-07-2011 11:32:19 | 0.158 | 7.929 | 390.24 | 32.04 |
| 07-07-2011 11:33:19 | 0.159 | 7.925 | 398.22 | 32.55 |
| 07-07-2011 11:34:19 | 0.164 | 7.875 | 396.87 | 32.24 |
| 07-07-2011 11:35:19 | 0.159 | 7.861 | 383.85 | 30.61 |
| 07-07-2011 11:36:19 | 0.154 | 7.907 | 367.84 | 31.08 |
| 07-07-2011 11:37:19 | 0.165 | 7.859 | 350.13 | 31.64 |
| 07-07-2011 11:38:17 | 0.158 | 7.789 | 352.34 | 33.35 |
| 07-07-2011 11:39:17 | 0.165 | 7.772 | 353.47 | 34.83 |
| 07-07-2011 11:40:17 | 0.159 | 7.847 | 345.63 | 36.17 |
| 07-07-2011 11:41:17 | 0.161 | 7.840 | 331.86 | 37.47 |
| 07-07-2011 11:42:17 | 0.162 | 7.850 | 339.15 | 38.60 |
| 07-07-2011 11:43:17 | 0.160 | 7.874 | 340.81 | 38.94 |
| 07-07-2011 11:44:17 | 0.158 | 7.877 | 335.99 | 40.68 |
| 07-07-2011 11:45:17 | 0.164 | 7.857 | 342.39 | 41.26 |
| 07-07-2011 11:46:17 | 0.156 | 7.828 | 345.06 | 42.64 |
| 07-07-2011 11:47:17 | 0.163 | 7.872 | 349.55 | 40.79 |
| 07-07-2011 11:48:17 | 0.164 | 7.988 | 362.62 | 39.15 |
| 07-07-2011 11:49:17 | 0.165 | 8.032 | 366.23 | 37.38 |
| 07-07-2011 11:50:18 | 0.157 | 7.959 | 374.78 | 36.67 |
| 07-07-2011 11:51:18 | 0.160 | 7.961 | 391.30 | 35.20 |
| 07-07-2011 11:52:18 | 0.165 | 7.939 | 379.28 | 34.14 |
| 07-07-2011 11:53:18 | 0.162 | 7.872 | 359.80 | 33.82 |
| 07-07-2011 11:54:18 | 0.162 | 7.890 | 355.98 | 32.69 |
| 07-07-2011 11:55:18 | 0.161 | 7.892 | 348.39 | 32.43 |
| 07-07-2011 11:56:18 | 0.163 | 7.850 | 347.01 | 31.45 |
| 07-07-2011 11:57:18 | 0.161 | 7.902 | 344.07 | 32.10 |
| 07-07-2011 11:58:18 | 0.160 | 7.871 | 338.80 | 32.41 |
| 07-07-2011 11:59:18 | 0.168 | 7.918 | 343.76 | 32.18 |
| 07-07-2011 12:00:18 | 0.164 | 7.881 | 334.96 | 31.26 |
| 07-07-2011 12:01:18 | 0.158 | 7.883 | 338.02 | 30.81 |
| 07-07-2011 12:02:18 | 0.162 | 7.951 | 347.54 | 31.55 |
| 07-07-2011 12:03:18 | 0.166 | 7.924 | 348.14 | 34.31 |
| 07-07-2011 12:04:18 | 0.161 | 7.953 | 368.75 | 35.55 |
| 07-07-2011 12:05:18 | 0.169 | 7.995 | 381.79 | 34.41 |
| 07-07-2011 12:06:18 | 0.167 | 7.985 | 389.48 | 35.04 |
| 07-07-2011 12:07:18 | 0.166 | 7.981 | 387.27 | 32.99 |
| 07-07-2011 12:08:18 | 0.163 | 7.906 | 364.56 | 34.85 |
| 07-07-2011 12:09:19 | 0.166 | 7.858 | 354.41 | 35.23 |
| 07-07-2011 12:10:19 | 0.164 | 7.822 | 351.81 | 35.09 |
| 07-07-2011 12:11:19 | 0.171 | 7.857 | 351.16 | 34.18 |
| 07-07-2011 12:12:19 | 0.163 | 7.844 | 345.15 | 32.14 |
| 07-07-2011 12:13:19 | 0.161 | 7.859 | 331.98 | 34.64 |
| 07-07-2011 12:14:19 | 0.169 | 7.882 | 322.98 | 33.34 |
| 07-07-2011 12:15:17 | 0.165 | 7.840 | 319.44 | 33.22 |
| 07-07-2011 12:16:17 | 0.165 | 7.839 | 325.09 | 32.47 |
| 07-07-2011 12:17:17 | 0.167 | 7.924 | 333.95 | 33.19 |
| 07-07-2011 12:18:17 | 0.173 | 7.927 | 335.17 | 33.08 |
| 07-07-2011 12:19:17 | 0.165 | 7.858 | 344.61 | 32.13 |
| 07-07-2011 12:20:18 | 0.167 | 7.848 | 352.77 | 33.55 |
| 07-07-2011 12:21:18 | 0.170 | 7.873 | 360.29 | 31.85 |
| 07-07-2011 12:22:17 | 0.169 | 7.985 | 363.78 | 33.13 |
| 07-07-2011 12:23:17 | 0.162 | 7.970 | 369.40 | 34.48 |
| 07-07-2011 12:24:17 | 0.166 | 8.040 | 376.34 | 33.86 |
| 07-07-2011 12:25:17 | 0.173 | 7.944 | 370.61 | 32.89 |
| 07-07-2011 12:26:17 | 0.171 | 7.882 | 368.65 | 33.52 |
| 07-07-2011 12:27:17 | 0.167 | 7.906 | 362.74 | 32.71 |
| 07-07-2011 12:28:17 | 0.168 | 7.861 | 348.11 | 32.85 |
| 07-07-2011 12:29:17 | 0.168 | 7.865 | 352.10 | 33.32 |
| 07-07-2011 12:30:17 | 0.171 | 7.855 | 340.24 | 30.37 |

| Run Averages | O2 | CO2 | CO | THC |
|---|---|---|---|---|
| | % | % | ppm | ppm |
| 07-07-2011 12:30:17 | 0.164 | 7.896 | 355.97 | 34.12 |

Operator: J Glass
Plant Name: ExxonMobil BTRF
Location: SCU2 T-601
Test Run 1 End

Final System Bias Check, Run 1  STRATA Version 3.2
Operator:  J Glass
Plant Name:  ExxonMobil BTRF
Location:  SCU2 T-601

| | Reference Cylinder Numbers Zero | Span |
|---|---|---|
| O2 | CC321614 | XC031366B |
| CO2 | CC321614 | XC031366B |
| CO | CC321614 | CC334116 |
| THC | CC321614 | CC334116 |

Date/Time  07-07-2011  12:39:38  PASSED

| Analyte | O2 | CO2 | CO | THC |
|---|---|---|---|---|
| Units | % | % | ppm | ppm |
| Zero Ref Cyl | 0.000 | 0.000 | 0.00 | 0.00 |
| Zero Cal | 0.085 | 0.009 | 0.49 | 0.27 |
| Zero Avg | 0.197 | 0.078 | 1.09 | -0.60 |
| Zero Bias% | 0.5% | 0.3% | 0.1% | 0.2% |
| Zero Drift% | 0.2% | -0.1% | 0.0% | 0.1% |
| Span Ref Cyl | 10.000 | 10.010 | 201.80 | 266.60 |
| Span Cal | 10.025 | 10.124 | 203.62 | 269.28 |
| Span Avg | 10.002 | 9.949 | 201.36 | 265.64 |
| Span Bias% | 0.1% | 0.9% | 0.6% | 0.7% |
| Span Drift% | 0.0% | -0.3% | -0.3% | -0.5% |
| Ini Zero Avg | 0.164 | 0.088 | 1.19 | -0.90 |
| Ini Span Avg | 10.006 | 10.004 | 202.38 | 268.26 |
| Run Avg | 0.164 | 7.896 | 355.97 | 34.12 |
| Co | 0.180 | 0.083 | 1.14 | -0.75 |
| Cm | 10.004 | 9.976 | 201.87 | 266.95 |
| Correct Avg | -0.017 | 7.905 | 356.72 | 34.73 |

System Bias Check End