







# Cathedral Energy Services

## Survey Report

|                  |                            |                                     |                                      |
|------------------|----------------------------|-------------------------------------|--------------------------------------|
| <b>Company:</b>  | EnCana Oil & Gas (USA) Inc | <b>Local Co-ordinate Reference:</b> | Well Federal 29-5A                   |
| <b>Project:</b>  | S. Piceance (Parachute)    | <b>TVD Reference:</b>               | WELL @ 6058.0ft (Original Well Elev) |
| <b>Site:</b>     | S29-T7S-R95W (PF-29 Pad)   | <b>MD Reference:</b>                | WELL @ 6058.0ft (Original Well Elev) |
| <b>Well:</b>     | Federal 29-5A              | <b>North Reference:</b>             | True                                 |
| <b>Wellbore:</b> | DD                         | <b>Survey Calculation Method:</b>   | Minimum Curvature                    |
| <b>Design:</b>   | FINAL                      | <b>Database:</b>                    | USA EDM 5000 Multi Users DB          |

|                    |  |                      |                |
|--------------------|--|----------------------|----------------|
| <b>Project</b>     | S. Piceance (Parachute), Garfield County, CO |                      |                |
| <b>Map System:</b> | US State Plane 1983                          | <b>System Datum:</b> | Mean Sea Level |
| <b>Geo Datum:</b>  | North American Datum 1983                    |                      |                |
| <b>Map Zone:</b>   | Colorado Central Zone                        |                      |                |

|                              |                          |                     |                 |                                  |
|------------------------------|--------------------------|---------------------|-----------------|----------------------------------|
| <b>Site</b>                  | S29-T7S-R95W (PF-29 Pad) |                     |                 |                                  |
| <b>Site Position:</b>        |                          | <b>Northing:</b>    | 1,584,347.66 ft | <b>Latitude:</b> 39.410580       |
| <b>From:</b>                 | Lat/Long                 | <b>Easting:</b>     | 2,286,791.27 ft | <b>Longitude:</b> -108.024590    |
| <b>Position Uncertainty:</b> | 0.0 ft                   | <b>Slot Radius:</b> | 13.200 in       | <b>Grid Convergence:</b> -1.59 ° |

|                             |               |        |                            |                 |
|-----------------------------|---------------|--------|----------------------------|-----------------|
| <b>Well</b>                 | Federal 29-5A |        |                            |                 |
| <b>Well Position</b>        | <b>+N/-S</b>  | 0.0 ft | <b>Northing:</b>           | 1,584,320.28 ft |
|                             | <b>+E/-W</b>  | 0.0 ft | <b>Easting:</b>            | 2,286,740.20 ft |
| <b>Position Uncertainty</b> | 0.0 ft        |        | <b>Wellhead Elevation:</b> | ft              |
|                             |               |        | <b>Ground Level:</b>       | 6,036.0 ft      |

|                  |                   |                    |                        |                      |                            |
|------------------|-------------------|--------------------|------------------------|----------------------|----------------------------|
| <b>Wellbore</b>  | DD                |                    |                        |                      |                            |
| <b>Magnetics</b> | <b>Model Name</b> | <b>Sample Date</b> | <b>Declination (°)</b> | <b>Dip Angle (°)</b> | <b>Field Strength (nT)</b> |
|                  | IGRF2010          | 6/11/2012          | 10.23                  | 65.64                | 52,099                     |

|                          |                              |                   |                   |                          |
|--------------------------|------------------------------|-------------------|-------------------|--------------------------|
| <b>Design</b>            | FINAL                        |                   |                   |                          |
| <b>Audit Notes:</b>      |                              |                   |                   |                          |
| <b>Version:</b>          | 1.0                          | <b>Phase:</b>     | ACTUAL            | <b>Tie On Depth:</b> 0.0 |
| <b>Vertical Section:</b> | <b>Depth From (TVD) (ft)</b> | <b>+N/-S (ft)</b> | <b>+E/-W (ft)</b> | <b>Direction (°)</b>     |
|                          | 0.0                          | 0.0               | 0.0               | 258.94                   |

|                       |                |                          |                  |                    |
|-----------------------|----------------|--------------------------|------------------|--------------------|
| <b>Survey Program</b> | <b>Date</b>    | 6/19/2012                |                  |                    |
| <b>From (ft)</b>      | <b>To (ft)</b> | <b>Survey (Wellbore)</b> | <b>Tool Name</b> | <b>Description</b> |
| 112.0                 | 6,805.0        | Survey #1 (DD)           | MWD              | Geolink MWD        |

|                            |                        |                    |                            |                   |                   |                              |                              |                             |                              |
|----------------------------|------------------------|--------------------|----------------------------|-------------------|-------------------|------------------------------|------------------------------|-----------------------------|------------------------------|
| <b>Survey</b>              |                        |                    |                            |                   |                   |                              |                              |                             |                              |
| <b>Measured Depth (ft)</b> | <b>Inclination (°)</b> | <b>Azimuth (°)</b> | <b>Vertical Depth (ft)</b> | <b>+N/-S (ft)</b> | <b>+E/-W (ft)</b> | <b>Vertical Section (ft)</b> | <b>Dogleg Rate (°/100ft)</b> | <b>Build Rate (°/100ft)</b> | <b>Formations / Comments</b> |
| 0.0                        | 0.00                   | 0.00               | 0.0                        | 0.0               | 0.0               | 0.0                          | 0.00                         | 0.00                        |                              |
| 112.0                      | 0.80                   | 308.10             | 112.0                      | 0.5               | -0.6              | 0.5                          | 0.71                         | 0.71                        |                              |
| 143.0                      | 0.80                   | 307.10             | 143.0                      | 0.7               | -1.0              | 0.8                          | 0.05                         | 0.00                        |                              |
| 173.0                      | 0.40                   | 269.30             | 173.0                      | 0.9               | -1.2              | 1.0                          | 1.81                         | -1.33                       |                              |
| 204.0                      | 0.80                   | 227.00             | 204.0                      | 0.7               | -1.5              | 1.3                          | 1.84                         | 1.29                        |                              |
| 235.0                      | 1.00                   | 200.40             | 235.0                      | 0.3               | -1.7              | 1.7                          | 1.48                         | 0.65                        |                              |
| 266.0                      | 1.80                   | 179.50             | 266.0                      | -0.4              | -1.8              | 1.9                          | 3.02                         | 2.58                        |                              |
| 296.0                      | 2.40                   | 174.60             | 296.0                      | -1.5              | -1.8              | 2.0                          | 2.09                         | 2.00                        |                              |
| 327.0                      | 3.00                   | 174.70             | 326.9                      | -3.0              | -1.6              | 2.2                          | 1.94                         | 1.94                        |                              |
| 358.0                      | 4.20                   | 182.40             | 357.9                      | -4.9              | -1.6              | 2.5                          | 4.16                         | 3.87                        |                              |
| 388.0                      | 5.10                   | 186.30             | 387.8                      | -7.3              | -1.8              | 3.2                          | 3.18                         | 3.00                        |                              |
| 419.0                      | 5.90                   | 190.90             | 418.6                      | -10.3             | -2.3              | 4.2                          | 2.94                         | 2.58                        |                              |
| 449.0                      | 6.80                   | 200.90             | 448.4                      | -13.4             | -3.2              | 5.7                          | 4.74                         | 3.00                        |                              |

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|------------------|----------------------------|-------------------------------------|--------------------------------------|
| <b>Company:</b>  | EnCana Oil & Gas (USA) Inc | <b>Local Co-ordinate Reference:</b> | Well Federal 29-5A                   |
| <b>Project:</b>  | S. Piceance (Parachute)    | <b>TVD Reference:</b>               | WELL @ 6058.0ft (Original Well Elev) |
| <b>Site:</b>     | S29-T7S-R95W (PF-29 Pad)   | <b>MD Reference:</b>                | WELL @ 6058.0ft (Original Well Elev) |
| <b>Well:</b>     | Federal 29-5A              | <b>North Reference:</b>             | True                                 |
| <b>Wellbore:</b> | DD                         | <b>Survey Calculation Method:</b>   | Minimum Curvature                    |
| <b>Design:</b>   | FINAL                      | <b>Database:</b>                    | USA EDM 5000 Multi Users DB          |

| Survey              |                 |             |                     |            |            |                       |                       |                      |                       |
|---------------------|-----------------|-------------|---------------------|------------|------------|-----------------------|-----------------------|----------------------|-----------------------|
| Measured Depth (ft) | Inclination (°) | Azimuth (°) | Vertical Depth (ft) | +N/-S (ft) | +E/-W (ft) | Vertical Section (ft) | Dogleg Rate (°/100ft) | Build Rate (°/100ft) | Formations / Comments |
| 480.0               | 7.20            | 206.30      | 479.2               | -16.9      | -4.7       | 7.9                   | 2.48                  | 1.29                 |                       |
| 511.0               | 7.40            | 208.90      | 510.0               | -20.4      | -6.5       | 10.3                  | 1.25                  | 0.65                 |                       |
| 541.0               | 7.70            | 221.20      | 539.7               | -23.6      | -8.8       | 13.1                  | 5.47                  | 1.00                 |                       |
| 572.0               | 8.00            | 227.80      | 570.4               | -26.6      | -11.7      | 16.6                  | 3.06                  | 0.97                 |                       |
| 603.0               | 8.20            | 234.20      | 601.1               | -29.3      | -15.1      | 20.5                  | 2.98                  | 0.65                 |                       |
| 633.0               | 8.60            | 243.20      | 630.8               | -31.6      | -18.9      | 24.6                  | 4.58                  | 1.33                 |                       |
| 664.0               | 8.80            | 249.90      | 661.4               | -33.5      | -23.2      | 29.2                  | 3.33                  | 0.65                 |                       |
| 695.0               | 9.00            | 253.00      | 692.0               | -35.0      | -27.7      | 33.9                  | 1.68                  | 0.65                 |                       |
| 726.0               | 9.70            | 258.20      | 722.6               | -36.2      | -32.6      | 38.9                  | 3.54                  | 2.26                 |                       |
| 757.0               | 10.10           | 261.40      | 753.2               | -37.2      | -37.8      | 44.3                  | 2.19                  | 1.29                 |                       |
| 787.0               | 11.10           | 262.50      | 782.7               | -37.9      | -43.3      | 49.8                  | 3.40                  | 3.33                 |                       |
| 879.0               | 13.80           | 266.40      | 872.5               | -39.8      | -63.0      | 69.5                  | 3.07                  | 2.93                 |                       |
| 971.0               | 14.50           | 266.80      | 961.7               | -41.1      | -85.5      | 91.8                  | 0.77                  | 0.76                 |                       |
| 1,002.0             | 14.90           | 266.70      | 991.7               | -41.6      | -93.3      | 99.6                  | 1.29                  | 1.29                 |                       |
| 1,068.0             | 15.00           | 268.10      | 1,055.5             | -42.3      | -110.3     | 116.4                 | 0.57                  | 0.15                 |                       |
| 1,164.0             | 14.90           | 267.60      | 1,148.2             | -43.3      | -135.1     | 140.9                 | 0.17                  | -0.10                |                       |
| 1,258.0             | 14.00           | 266.00      | 1,239.2             | -44.6      | -158.5     | 164.1                 | 1.05                  | -0.96                |                       |
| 1,354.0             | 13.80           | 266.80      | 1,332.4             | -46.0      | -181.5     | 187.0                 | 0.29                  | -0.21                |                       |
| 1,448.0             | 15.00           | 261.20      | 1,423.5             | -48.5      | -204.7     | 210.2                 | 1.95                  | 1.28                 |                       |
| 1,543.0             | 14.80           | 262.70      | 1,515.3             | -51.9      | -228.9     | 234.6                 | 0.46                  | -0.21                |                       |
| 1,639.0             | 15.20           | 258.80      | 1,608.0             | -55.9      | -253.4     | 259.5                 | 1.13                  | 0.42                 |                       |
| 1,734.0             | 14.90           | 259.00      | 1,699.7             | -60.7      | -277.6     | 284.1                 | 0.32                  | -0.32                |                       |
| 1,830.0             | 14.00           | 257.90      | 1,792.7             | -65.5      | -301.1     | 308.1                 | 0.98                  | -0.94                |                       |
| 1,925.0             | 13.50           | 259.10      | 1,885.0             | -70.0      | -323.2     | 330.7                 | 0.61                  | -0.53                |                       |
| 2,020.0             | 12.70           | 257.90      | 1,977.5             | -74.3      | -344.3     | 352.2                 | 0.89                  | -0.84                |                       |
| 2,115.0             | 14.30           | 261.40      | 2,069.9             | -78.2      | -366.2     | 374.4                 | 1.89                  | 1.68                 |                       |
| 2,211.0             | 14.20           | 259.10      | 2,162.9             | -82.2      | -389.4     | 398.0                 | 0.60                  | -0.10                |                       |
| 2,307.0             | 13.70           | 258.40      | 2,256.1             | -86.7      | -412.1     | 421.1                 | 0.55                  | -0.52                |                       |
| 2,402.0             | 13.00           | 259.80      | 2,348.5             | -90.9      | -433.7     | 443.1                 | 0.81                  | -0.74                |                       |
| 2,498.0             | 13.40           | 260.90      | 2,442.0             | -94.5      | -455.3     | 465.0                 | 0.49                  | 0.42                 |                       |
| 2,593.0             | 12.70           | 260.40      | 2,534.5             | -98.0      | -476.5     | 486.4                 | 0.75                  | -0.74                |                       |
| 2,688.0             | 14.30           | 260.90      | 2,626.9             | -101.6     | -498.3     | 508.6                 | 1.69                  | 1.68                 |                       |
| 2,784.0             | 13.90           | 263.20      | 2,720.0             | -104.9     | -521.5     | 531.9                 | 0.72                  | -0.42                |                       |
| 2,880.0             | 13.50           | 263.80      | 2,813.3             | -107.4     | -544.1     | 554.6                 | 0.44                  | -0.42                |                       |
| 2,975.0             | 14.60           | 260.70      | 2,905.5             | -110.6     | -566.9     | 577.6                 | 1.40                  | 1.16                 |                       |
| 3,071.0             | 14.10           | 261.30      | 2,998.5             | -114.3     | -590.4     | 601.4                 | 0.54                  | -0.52                |                       |
| 3,166.0             | 13.50           | 259.10      | 3,090.7             | -118.1     | -612.8     | 624.0                 | 0.84                  | -0.63                |                       |
| 3,262.0             | 13.40           | 259.70      | 3,184.1             | -122.2     | -634.7     | 646.4                 | 0.18                  | -0.10                |                       |
| 3,357.0             | 12.30           | 258.40      | 3,276.7             | -126.3     | -655.4     | 667.5                 | 1.20                  | -1.16                |                       |
| 3,452.0             | 14.30           | 261.10      | 3,369.2             | -130.1     | -676.9     | 689.3                 | 2.20                  | 2.11                 |                       |
| 3,548.0             | 13.30           | 259.50      | 3,462.4             | -133.9     | -699.5     | 712.2                 | 1.11                  | -1.04                |                       |
| 3,643.0             | 12.70           | 260.50      | 3,554.9             | -137.7     | -720.6     | 733.6                 | 0.67                  | -0.63                |                       |
| 3,738.0             | 11.90           | 261.30      | 3,647.8             | -140.9     | -740.5     | 753.8                 | 0.86                  | -0.84                |                       |
| 3,833.0             | 11.30           | 260.30      | 3,740.8             | -143.9     | -759.4     | 772.9                 | 0.67                  | -0.63                |                       |
| 3,929.0             | 10.70           | 260.50      | 3,835.1             | -147.0     | -777.5     | 791.2                 | 0.63                  | -0.62                |                       |
| 4,022.0             | 10.20           | 260.50      | 3,926.5             | -149.8     | -794.1     | 808.1                 | 0.54                  | -0.54                |                       |
| 4,118.0             | 9.10            | 259.10      | 4,021.2             | -152.6     | -809.9     | 824.2                 | 1.17                  | -1.15                |                       |
| 4,213.0             | 8.70            | 256.00      | 4,115.0             | -155.8     | -824.3     | 838.9                 | 0.66                  | -0.42                |                       |
| 4,309.0             | 7.80            | 254.60      | 4,210.0             | -159.2     | -837.6     | 852.6                 | 0.96                  | -0.94                |                       |
| 4,404.0             | 7.20            | 252.60      | 4,304.2             | -162.7     | -849.5     | 864.9                 | 0.69                  | -0.63                |                       |
| 4,499.0             | 6.00            | 253.20      | 4,398.6             | -166.0     | -859.9     | 875.8                 | 1.27                  | -1.26                |                       |
| 4,594.0             | 4.10            | 253.40      | 4,493.2             | -168.4     | -868.0     | 884.1                 | 2.00                  | -2.00                |                       |
| 4,690.0             | 2.80            | 264.60      | 4,589.0             | -169.6     | -873.6     | 889.9                 | 1.52                  | -1.35                |                       |

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| <b>Project:</b>  | S. Piceance (Parachute)    | <b>TVD Reference:</b>               | WELL @ 6058.0ft (Original Well Elev) |
| <b>Site:</b>     | S29-T7S-R95W (PF-29 Pad)   | <b>MD Reference:</b>                | WELL @ 6058.0ft (Original Well Elev) |
| <b>Well:</b>     | Federal 29-5A              | <b>North Reference:</b>             | True                                 |
| <b>Wellbore:</b> | DD                         | <b>Survey Calculation Method:</b>   | Minimum Curvature                    |
| <b>Design:</b>   | FINAL                      | <b>Database:</b>                    | USA EDM 5000 Multi Users DB          |

| Survey              |                 |             |                     |            |            |                       |                       |                      |                                  |
|---------------------|-----------------|-------------|---------------------|------------|------------|-----------------------|-----------------------|----------------------|----------------------------------|
| Measured Depth (ft) | Inclination (°) | Azimuth (°) | Vertical Depth (ft) | +N/-S (ft) | +E/-W (ft) | Vertical Section (ft) | Dogleg Rate (°/100ft) | Build Rate (°/100ft) | Formations / Comments            |
| 4,785.0             | 2.90            | 232.30      | 4,683.9             | -171.2     | -877.8     | 894.3                 | 1.67                  | 0.11                 |                                  |
| 4,880.0             | 1.90            | 270.70      | 4,778.8             | -172.7     | -881.3     | 898.0                 | 1.94                  | -1.05                |                                  |
| 4,975.0             | 1.40            | 233.30      | 4,873.8             | -173.4     | -883.8     | 900.6                 | 1.22                  | -0.53                |                                  |
| 5,071.0             | 0.80            | 90.40       | 4,969.8             | -174.1     | -884.0     | 901.0                 | 2.18                  | -0.63                |                                  |
| 5,166.0             | 0.70            | 113.60      | 5,064.8             | -174.3     | -882.8     | 899.9                 | 0.33                  | -0.11                |                                  |
| 5,262.0             | 0.50            | 161.60      | 5,160.8             | -174.9     | -882.2     | 899.4                 | 0.54                  | -0.21                |                                  |
| 5,356.0             | 0.40            | 212.80      | 5,254.8             | -175.6     | -882.2     | 899.5                 | 0.42                  | -0.11                |                                  |
| 5,452.0             | 0.70            | 212.60      | 5,350.8             | -176.4     | -882.7     | 900.2                 | 0.31                  | 0.31                 |                                  |
| 5,548.0             | 0.90            | 142.80      | 5,446.8             | -177.5     | -882.6     | 900.2                 | 0.97                  | 0.21                 |                                  |
| 5,643.0             | 1.10            | 159.90      | 5,541.7             | -178.9     | -881.8     | 899.8                 | 0.38                  | 0.21                 |                                  |
| 5,738.0             | 0.30            | 15.10       | 5,636.7             | -179.5     | -881.4     | 899.5                 | 1.43                  | -0.84                |                                  |
| 5,833.0             | 0.30            | 29.50       | 5,731.7             | -179.1     | -881.2     | 899.2                 | 0.08                  | 0.00                 |                                  |
| 5,928.0             | 0.40            | 355.40      | 5,826.7             | -178.5     | -881.2     | 899.0                 | 0.24                  | 0.11                 |                                  |
| 6,024.0             | 0.90            | 288.10      | 5,922.7             | -178.0     | -881.9     | 899.7                 | 0.87                  | 0.52                 |                                  |
| 6,120.0             | 1.30            | 287.80      | 6,018.7             | -177.4     | -883.7     | 901.3                 | 0.42                  | 0.42                 |                                  |
| 6,215.0             | 2.10            | 277.20      | 6,113.7             | -176.9     | -886.4     | 903.9                 | 0.90                  | 0.84                 |                                  |
| 6,310.0             | 1.50            | 283.00      | 6,208.6             | -176.4     | -889.3     | 906.7                 | 0.66                  | -0.63                |                                  |
| 6,406.0             | 1.80            | 293.80      | 6,304.6             | -175.5     | -891.9     | 909.0                 | 0.45                  | 0.31                 |                                  |
| 6,502.0             | 1.80            | 291.30      | 6,400.5             | -174.3     | -894.7     | 911.6                 | 0.08                  | 0.00                 |                                  |
| 6,597.0             | 1.80            | 298.90      | 6,495.5             | -173.1     | -897.4     | 914.0                 | 0.25                  | 0.00                 |                                  |
| 6,691.0             | 2.00            | 286.70      | 6,589.4             | -171.9     | -900.3     | 916.5                 | 0.48                  | 0.21                 |                                  |
| 6,754.0             | 1.63            | 327.40      | 6,652.4             | -170.8     | -901.8     | 917.8                 | 2.08                  | -0.59                | Last Cathedral Survey@ 6,754' MD |
| 6,805.0             | 1.63            | 327.40      | 6,703.4             | -169.6     | -902.6     | 918.4                 | 0.00                  | 0.00                 | Projection to Bit @ 6805' MD     |

| Targets  |               |              |          |            |            |               |              |           |             |
|--|---------------|--------------|----------|------------|------------|---------------|--------------|-----------|-------------|
| Target Name  | Dip Angle (°) | Dip Dir. (°) | TVD (ft) | +N/-S (ft) | +E/-W (ft) | Northing (ft) | Easting (ft) | Latitude  | Longitude   |
| - hit/miss target  |               |              |          |            |            |               |              |           |             |
| - Shape  |               |              |          |            |            |               |              |           |             |
| Federal 29-5A BHL  | 0.00          | 0.00         | 6,677.0  | -175.2     | -896.2     | 1,584,170.08  | 2,285,839.44 | 39.410020 | -108.027940 |
| - actual wellpath misses target center by 25.6ft at 6754.0ft MD (6652.4 TVD, -170.8 N, -901.8 E) |               |              |          |            |            |               |              |           |             |
| - Circle (radius 25.0)   |               |              |          |            |            |               |              |           |             |
| Federal 29-5A ToG  | 0.00          | 0.00         | 4,709.0  | -175.2     | -896.2     | 1,584,170.08  | 2,285,839.44 | 39.410020 | -108.027940 |
| - actual wellpath misses target center by 17.8ft at 4810.8ft MD (4709.7 TVD, -171.9 N, -878.8 E) |               |              |          |            |            |               |              |           |             |
| - Point  |               |              |          |            |            |               |              |           |             |

| Design Annotations  |                     |                   |            |                                  |  |
|---------------------|---------------------|-------------------|------------|----------------------------------|--|
| Measured Depth (ft) | Vertical Depth (ft) | Local Coordinates |            |                                  |  |
|                     |                     | +N/-S (ft)        | +E/-W (ft) | Comment                          |  |
| 6,754.0             | 6,652.4             | -170.8            | -901.8     | Last Cathedral Survey@ 6,754' MD |  |
| 6,805.0             | 6,703.4             | -169.6            | -902.6     | Projection to Bit @ 6805' MD     |  |

Checked By: \_\_\_\_\_ Approved By: \_\_\_\_\_ Date: \_\_\_\_\_