



Job Number: SVGJ-140908

Company: PDC

Lease/Well: Spaur 10-1

Location: Weld County, CO

Rig Name: MS Wireline

RKB: 0'

G.L. or M.S.L.: GL

State/Country: Colorado/USA

Declination: 8.51°

Grid: East To True North

File name: Y:\WINSER~1\2014SU~1\PDC\GJ\SPAUR\101.SVY

Date/Time: 24-Jul-14 / 12:32

Curve Name: Surface - 3633' M.D. (Rate Gyro)

### MS Survey

#### WINSERVE SURVEY CALCULATIONS

*Minimum Curvature Method*

*Vertical Section Plane .00*

*Vertical Section Referenced to Wellhead*

*Rectangular Coordinates Referenced to Wellhead*

| Measured<br>Depth<br>FT | Incl<br>Angle<br>Deg | Drift<br>Direction<br>Deg | True<br>Vertical<br>Depth | N-S<br>FT | E-W<br>FT | Vertical<br>Section<br>FT | C L O S U R E  |                  | Dogleg<br>Severity<br>Deg/100 |
|-------------------------|----------------------|---------------------------|---------------------------|-----------|-----------|---------------------------|----------------|------------------|-------------------------------|
|                         |                      |                           |                           |           |           |                           | Distance<br>FT | Direction<br>Deg |                               |
| .00                     | .00                  | .00                       | .00                       | .00       | .00       | .00                       | .00            | .00              | .00                           |
| 100.00                  | .25                  | 264.41                    | 100.00                    | -.02      | -.22      | -.02                      | .22            | 264.41           | .25                           |
| 200.00                  | .19                  | 243.93                    | 200.00                    | -.12      | -.58      | -.12                      | .59            | 258.81           | .10                           |
| 300.00                  | .24                  | 240.37                    | 300.00                    | -.29      | -.91      | -.29                      | .96            | 252.30           | .05                           |
| 400.00                  | .54                  | 247.85                    | 400.00                    | -.57      | -1.53     | -.57                      | 1.64           | 249.50           | .30                           |
| 500.00                  | .53                  | 240.07                    | 499.99                    | -.98      | -2.37     | -.98                      | 2.57           | 247.51           | .07                           |
| 600.00                  | .57                  | 240.64                    | 599.99                    | -1.46     | -3.20     | -1.46                     | 3.52           | 245.56           | .04                           |
| 700.00                  | .48                  | 251.90                    | 699.98                    | -1.83     | -4.04     | -1.83                     | 4.43           | 245.61           | .14                           |
| 800.00                  | .68                  | 247.15                    | 799.98                    | -2.19     | -4.98     | -2.19                     | 5.44           | 246.26           | .21                           |
| 900.00                  | .69                  | 244.94                    | 899.97                    | -2.68     | -6.07     | -2.68                     | 6.64           | 246.22           | .03                           |

| Measured<br>Depth<br>FT    | Incl<br>Angle<br>Deg | Drift<br>Direction<br>Deg | True<br>Vertical<br>Depth | N-S<br>FT | E-W<br>FT | Vertical<br>Section<br>FT | C L O S U R E  |                  | Dogleg<br>Severity<br>Deg/100 |
|----------------------------|----------------------|---------------------------|---------------------------|-----------|-----------|---------------------------|----------------|------------------|-------------------------------|
|                            |                      |                           |                           |           |           |                           | Distance<br>FT | Direction<br>Deg |                               |
| 1000.00                    | .53                  | 249.61                    | 999.96                    | -3.09     | -7.05     | -3.09                     | 7.70           | 246.32           | .17                           |
| 1100.00                    | .68                  | 248.07                    | 1099.96                   | -3.48     | -8.04     | -3.48                     | 8.76           | 246.62           | .15                           |
| 1200.00                    | .64                  | 251.69                    | 1199.95                   | -3.87     | -9.12     | -3.87                     | 9.91           | 246.99           | .06                           |
| 1300.00                    | .69                  | 265.83                    | 1299.95                   | -4.09     | -10.25    | -4.09                     | 11.03          | 248.24           | .17                           |
| 1400.00                    | .61                  | 263.01                    | 1399.94                   | -4.20     | -11.38    | -4.20                     | 12.13          | 249.74           | .09                           |
| 1500.00                    | .75                  | 269.86                    | 1499.93                   | -4.27     | -12.56    | -4.27                     | 13.26          | 251.24           | .16                           |
| 1600.00                    | .63                  | 285.87                    | 1599.93                   | -4.12     | -13.74    | -4.12                     | 14.35          | 253.32           | .23                           |
| 1700.00                    | .65                  | 280.04                    | 1699.92                   | -3.87     | -14.83    | -3.87                     | 15.33          | 255.38           | .07                           |
| 1800.00                    | .45                  | 275.44                    | 1799.91                   | -3.73     | -15.78    | -3.73                     | 16.21          | 256.69           | .20                           |
| 1900.00                    | .16                  | 265.15                    | 1899.91                   | -3.71     | -16.31    | -3.71                     | 16.73          | 257.20           | .29                           |
| 2000.00                    | .09                  | 230.74                    | 1999.91                   | -3.77     | -16.51    | -3.77                     | 16.93          | 257.14           | .10                           |
| 2100.00                    | .17                  | 266.37                    | 2099.91                   | -3.83     | -16.72    | -3.83                     | 17.15          | 257.11           | .11                           |
| 2200.00                    | .19                  | 237.18                    | 2199.91                   | -3.93     | -17.01    | -3.93                     | 17.45          | 257.00           | .09                           |
| 2300.00                    | .27                  | 216.95                    | 2299.91                   | -4.20     | -17.29    | -4.20                     | 17.79          | 256.33           | .11                           |
| 2400.00                    | .41                  | 229.95                    | 2399.91                   | -4.62     | -17.70    | -4.62                     | 18.30          | 255.36           | .16                           |
| 2500.00                    | .41                  | 236.69                    | 2499.91                   | -5.05     | -18.28    | -5.05                     | 18.96          | 254.55           | .05                           |
| 2600.00                    | .42                  | 238.72                    | 2599.90                   | -5.44     | -18.89    | -5.44                     | 19.65          | 253.94           | .02                           |
| 2700.00                    | .50                  | 242.90                    | 2699.90                   | -5.83     | -19.59    | -5.83                     | 20.44          | 253.44           | .09                           |
| 2800.00                    | .51                  | 232.48                    | 2799.90                   | -6.30     | -20.33    | -6.30                     | 21.28          | 252.79           | .09                           |
| 2900.00                    | .52                  | 243.46                    | 2899.89                   | -6.77     | -21.09    | -6.77                     | 22.15          | 252.20           | .10                           |
| 3000.00                    | .48                  | 248.43                    | 2999.89                   | -7.13     | -21.88    | -7.13                     | 23.02          | 251.96           | .06                           |
| 3100.00                    | .41                  | 251.69                    | 3099.89                   | -7.39     | -22.61    | -7.39                     | 23.79          | 251.90           | .07                           |
| 3200.00                    | .52                  | 258.78                    | 3199.88                   | -7.59     | -23.40    | -7.59                     | 24.60          | 252.02           | .12                           |
| 3300.00                    | .60                  | 251.40                    | 3299.88                   | -7.85     | -24.34    | -7.85                     | 25.57          | 252.13           | .11                           |
| 3400.00                    | .59                  | 248.42                    | 3399.87                   | -8.21     | -25.32    | -8.21                     | 26.61          | 252.04           | .03                           |
| 3500.00                    | .63                  | 254.17                    | 3499.87                   | -8.54     | -26.32    | -8.54                     | 27.67          | 252.02           | .07                           |
| 3600.00                    | .76                  | 252.84                    | 3599.86                   | -8.89     | -27.49    | -8.89                     | 28.89          | 252.08           | .13                           |
| Last Survey Depth Recorded |                      |                           |                           |           |           |                           |                |                  |                               |
| 3633.00                    | .77                  | 258.08                    | 3632.86                   | -9.00     | -27.91    | -9.00                     | 29.33          | 252.13           | .21                           |