



Job Number: SVGJ-140962
 Company: PDC
 Lease/Well: Guthrie 21-2
 Location: Adams County, CO
 Rig Name: MS Wireline
 RKB: 0'
 G.L. or M.S.L.: GL

State/Country: Colorado/USA
 Declination: 8.46°
 Grid: East To True North
 File name: Y:\WINSER~1\2014SU~1\PDC\GJ\GUTHRIE\212.SVY
 Date/Time: 08-Aug-14 / 12:54
 Curve Name: Surface - 8000' 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 Depth FT | Incl Angle Deg | Drift Direction Deg | True Vertical Depth | N-S FT | E-W FT | Vertical Section FT | C L O S U R E | | Dogleg Severity Deg/100 |
|-------------------------|----------------------|---------------------------|---------------------------|-----------|-----------|---------------------------|----------------|------------------|-------------------------------|
| | | | | | | | Distance FT | Direction Deg | |
| .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| 100.00 | .41 | 293.99 | 100.00 | .15 | -.33 | .15 | .36 | 293.99 | .41 |
| 200.00 | .19 | 285.24 | 200.00 | .33 | -.81 | .33 | .88 | 292.35 | .22 |
| 300.00 | .34 | 328.63 | 300.00 | .63 | -1.13 | .63 | 1.29 | 299.24 | .24 |
| 400.00 | .49 | 317.64 | 399.99 | 1.20 | -1.57 | 1.20 | 1.98 | 307.40 | .17 |
| 500.00 | .63 | 357.18 | 499.99 | 2.07 | -1.89 | 2.07 | 2.80 | 317.61 | .40 |
| 600.00 | .82 | 355.53 | 599.98 | 3.33 | -1.97 | 3.33 | 3.87 | 329.40 | .19 |
| 700.00 | .76 | 9.05 | 699.97 | 4.70 | -1.92 | 4.70 | 5.07 | 337.76 | .20 |
| 800.00 | .85 | 16.86 | 799.96 | 6.06 | -1.60 | 6.06 | 6.27 | 345.21 | .14 |
| 900.00 | .91 | 3.44 | 899.95 | 7.56 | -1.34 | 7.56 | 7.68 | 349.97 | .21 |

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|-------------------------|----------------------|---------------------------|---------------------------|-----------|-----------|---------------------------|----------------|------------------|-------------------------------|
| | | | | | | | Distance FT | Direction Deg | |
| 1000.00 | 1.47 | 10.40 | 999.93 | 9.62 | -1.06 | 9.62 | 9.68 | 353.72 | .58 |
| 1100.00 | 1.51 | 12.56 | 1099.89 | 12.17 | -.54 | 12.17 | 12.18 | 357.46 | .07 |
| 1200.00 | 1.59 | 7.57 | 1199.86 | 14.83 | -.07 | 14.83 | 14.83 | 359.72 | .16 |
| 1300.00 | 1.55 | 8.64 | 1299.82 | 17.54 | .31 | 17.54 | 17.54 | 1.03 | .05 |
| 1400.00 | 1.30 | 9.97 | 1399.79 | 19.99 | .71 | 19.99 | 20.01 | 2.05 | .25 |
| 1500.00 | 1.04 | 358.10 | 1499.77 | 22.02 | .88 | 22.02 | 22.04 | 2.29 | .35 |
| 1600.00 | .98 | 349.61 | 1599.75 | 23.77 | .70 | 23.77 | 23.78 | 1.68 | .16 |
| 1700.00 | 1.11 | 343.17 | 1699.74 | 25.53 | .26 | 25.53 | 25.54 | .59 | .18 |
| 1800.00 | 1.00 | 351.12 | 1799.72 | 27.32 | -.15 | 27.32 | 27.32 | 359.68 | .18 |
| 1900.00 | 1.23 | 343.69 | 1899.70 | 29.22 | -.59 | 29.22 | 29.22 | 358.84 | .27 |
| 2000.00 | 1.12 | 342.01 | 1999.68 | 31.18 | -1.19 | 31.18 | 31.20 | 357.81 | .12 |
| 2100.00 | 1.19 | 328.37 | 2099.66 | 32.99 | -2.04 | 32.99 | 33.05 | 356.46 | .28 |
| 2200.00 | 1.30 | 331.51 | 2199.64 | 34.87 | -3.13 | 34.87 | 35.01 | 354.88 | .13 |
| 2300.00 | 1.15 | 328.31 | 2299.61 | 36.72 | -4.19 | 36.72 | 36.96 | 353.49 | .16 |
| 2400.00 | .73 | 337.03 | 2399.60 | 38.16 | -4.97 | 38.16 | 38.48 | 352.58 | .44 |
| 2500.00 | .30 | 355.21 | 2499.60 | 39.01 | -5.24 | 39.01 | 39.36 | 352.35 | .45 |
| 2600.00 | .64 | 78.14 | 2599.59 | 39.39 | -4.71 | 39.39 | 39.67 | 353.17 | .67 |
| 2700.00 | .43 | 83.53 | 2699.59 | 39.54 | -3.80 | 39.54 | 39.72 | 354.52 | .22 |
| 2800.00 | .31 | 75.00 | 2799.59 | 39.65 | -3.16 | 39.65 | 39.78 | 355.44 | .13 |
| 2900.00 | .66 | 176.30 | 2899.58 | 39.15 | -2.86 | 39.15 | 39.25 | 355.82 | .78 |
| 3000.00 | .81 | 194.25 | 2999.58 | 37.89 | -3.00 | 37.89 | 38.01 | 355.47 | .27 |
| 3100.00 | 1.25 | 202.38 | 3099.56 | 36.20 | -3.59 | 36.20 | 36.37 | 354.34 | .46 |
| 3200.00 | 1.42 | 210.28 | 3199.53 | 34.12 | -4.63 | 34.12 | 34.43 | 352.27 | .25 |
| 3300.00 | 1.54 | 225.12 | 3299.50 | 32.10 | -6.21 | 32.10 | 32.69 | 349.06 | .40 |
| 3400.00 | 1.66 | 236.35 | 3399.46 | 30.35 | -8.36 | 30.35 | 31.48 | 344.59 | .34 |
| 3500.00 | 1.70 | 240.56 | 3499.42 | 28.82 | -10.86 | 28.82 | 30.80 | 339.35 | .13 |
| 3600.00 | 1.87 | 244.79 | 3599.37 | 27.39 | -13.63 | 27.39 | 30.60 | 333.55 | .21 |
| 3700.00 | 1.79 | 239.49 | 3699.32 | 25.90 | -16.45 | 25.90 | 30.69 | 327.58 | .19 |
| 3800.00 | 1.79 | 235.71 | 3799.27 | 24.23 | -19.09 | 24.23 | 30.85 | 321.77 | .12 |

| Measured Depth FT | Incl Angle Deg | Drift Direction Deg | True Vertical Depth | N-S FT | E-W FT | Vertical Section FT | C L O S U R E | | Dogleg Severity Deg/100 |
|-------------------------|----------------------|---------------------------|---------------------------|-----------|-----------|---------------------------|----------------|------------------|-------------------------------|
| | | | | | | | Distance FT | Direction Deg | |
| 3900.00 | 1.66 | 220.34 | 3899.22 | 22.25 | -21.31 | 22.25 | 30.81 | 316.23 | .48 |
| 4000.00 | 1.61 | 219.71 | 3999.18 | 20.06 | -23.15 | 20.06 | 30.63 | 310.91 | .05 |
| 4100.00 | 1.63 | 220.08 | 4099.14 | 17.89 | -24.96 | 17.89 | 30.71 | 305.63 | .02 |
| 4200.00 | 1.77 | 217.27 | 4199.10 | 15.58 | -26.81 | 15.58 | 31.01 | 300.15 | .16 |
| 4300.00 | 1.48 | 219.49 | 4299.06 | 13.35 | -28.57 | 13.35 | 31.54 | 295.05 | .30 |
| 4400.00 | 1.51 | 220.91 | 4399.03 | 11.36 | -30.25 | 11.36 | 32.32 | 290.58 | .05 |
| 4500.00 | 1.92 | 223.90 | 4498.98 | 9.16 | -32.28 | 9.16 | 33.55 | 285.84 | .42 |
| 4600.00 | 2.17 | 212.68 | 4598.92 | 6.36 | -34.46 | 6.36 | 35.04 | 280.45 | .47 |
| 4700.00 | 1.53 | 198.97 | 4698.87 | 3.50 | -35.92 | 3.50 | 36.09 | 275.57 | .77 |
| 4800.00 | 1.33 | 196.80 | 4798.83 | 1.13 | -36.69 | 1.13 | 36.71 | 271.76 | .21 |
| 4900.00 | 1.26 | 209.52 | 4898.81 | -.94 | -37.57 | -.94 | 37.58 | 268.56 | .30 |
| 5000.00 | 1.20 | 213.56 | 4998.79 | -2.77 | -38.69 | -2.77 | 38.79 | 265.90 | .11 |
| 5100.00 | 1.59 | 222.34 | 5098.76 | -4.67 | -40.20 | -4.67 | 40.47 | 263.38 | .44 |
| 5200.00 | 2.08 | 225.51 | 5198.70 | -6.97 | -42.43 | -6.97 | 43.00 | 260.68 | .50 |
| 5300.00 | 2.60 | 236.07 | 5298.62 | -9.50 | -45.61 | -9.50 | 46.59 | 258.23 | .67 |
| 5400.00 | 3.01 | 237.08 | 5398.50 | -12.20 | -49.69 | -12.20 | 51.17 | 256.21 | .41 |
| 5500.00 | 3.00 | 238.18 | 5498.36 | -15.00 | -54.12 | -15.00 | 56.16 | 254.51 | .06 |
| 5600.00 | 3.15 | 238.53 | 5598.22 | -17.82 | -58.69 | -17.82 | 61.33 | 253.11 | .15 |
| 5700.00 | 3.03 | 237.65 | 5698.07 | -20.67 | -63.26 | -20.67 | 66.55 | 251.91 | .13 |
| 5800.00 | 2.23 | 236.22 | 5797.97 | -23.16 | -67.11 | -23.16 | 71.00 | 250.96 | .80 |
| 5900.00 | 1.78 | 232.15 | 5897.91 | -25.20 | -69.96 | -25.20 | 74.35 | 250.19 | .47 |
| 6000.00 | 1.27 | 234.05 | 5997.87 | -26.80 | -72.08 | -26.80 | 76.90 | 249.60 | .51 |
| 6100.00 | 1.04 | 244.41 | 6097.85 | -27.84 | -73.79 | -27.84 | 78.87 | 249.33 | .31 |
| 6200.00 | 1.08 | 242.10 | 6197.83 | -28.68 | -75.45 | -28.68 | 80.71 | 249.19 | .06 |
| 6300.00 | 1.05 | 244.03 | 6297.82 | -29.52 | -77.10 | -29.52 | 82.56 | 249.05 | .05 |
| 6400.00 | 1.07 | 246.92 | 6397.80 | -30.29 | -78.79 | -30.29 | 84.41 | 248.97 | .06 |
| 6500.00 | 1.24 | 254.78 | 6497.78 | -30.94 | -80.69 | -30.94 | 86.42 | 249.02 | .23 |
| 6600.00 | 1.10 | 257.28 | 6597.76 | -31.43 | -82.67 | -31.43 | 88.44 | 249.18 | .15 |
| 6700.00 | 1.24 | 279.80 | 6697.74 | -31.46 | -84.67 | -31.46 | 90.33 | 249.62 | .48 |

| Measured Depth FT | Incl Angle Deg | Drift Direction Deg | True Vertical Depth | N-S FT | E-W FT | Vertical Section FT | C L O S U R E | | Dogleg Severity Deg/100 |
|-----------------------------------|----------------------|---------------------------|---------------------------|-----------|-----------|---------------------------|----------------|------------------|-------------------------------|
| | | | | | | | Distance FT | Direction Deg | |
| 6800.00 | 1.25 | 276.37 | 6797.71 | -31.15 | -86.82 | -31.15 | 92.24 | 250.26 | .08 |
| 6900.00 | 1.22 | 273.11 | 6897.69 | -30.97 | -88.97 | -30.97 | 94.21 | 250.80 | .08 |
| 7000.00 | 1.28 | 263.30 | 6997.67 | -31.05 | -91.14 | -31.05 | 96.28 | 251.19 | .22 |
| 7100.00 | 1.26 | 269.68 | 7097.64 | -31.18 | -93.35 | -31.18 | 98.42 | 251.53 | .14 |
| 7200.00 | 1.42 | 258.77 | 7197.62 | -31.43 | -95.66 | -31.43 | 100.70 | 251.81 | .30 |
| 7300.00 | .96 | 273.51 | 7297.59 | -31.62 | -97.72 | -31.62 | 102.70 | 252.07 | .55 |
| 7400.00 | 1.08 | 293.97 | 7397.58 | -31.19 | -99.41 | -31.19 | 104.19 | 252.58 | .38 |
| 7500.00 | 1.75 | 286.82 | 7497.55 | -30.36 | -101.74 | -30.36 | 106.17 | 253.38 | .69 |
| 7600.00 | 2.77 | 322.58 | 7597.47 | -28.00 | -104.67 | -28.00 | 108.35 | 255.02 | 1.69 |
| 7700.00 | 1.85 | 338.79 | 7697.39 | -24.58 | -106.72 | -24.58 | 109.51 | 257.03 | 1.12 |
| 7800.00 | 1.56 | 342.59 | 7797.35 | -21.77 | -107.71 | -21.77 | 109.89 | 258.57 | .31 |
| 7900.00 | 1.45 | 357.38 | 7897.31 | -19.21 | -108.17 | -19.21 | 109.87 | 259.93 | .40 |
| Last Survey Depth Recorded | | | | | | | | | |
| 8000.00 | 1.48 | 354.87 | 7997.28 | -16.66 | -108.35 | -16.66 | 109.62 | 261.26 | .07 |