



Job Number: SVGJ-150259  
 Company: PDC  
 Lease/Well: Bauer 21-4  
 Location: Weld County, CO  
 Rig Name: MS Energy Wireline  
 RKB: 0'  
 G.L. or M.S.L.: GL

State/Country: Colorado/USA  
 Declination: 8.41°  
 Grid: East To True North  
 File name: W:\WINSER~1\2015SU~1\PDC\GJ\BAUER\214.SVY  
 Date/Time: 09-Nov-15 / 15:06  
 Curve Name: Surface - 6500' 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                  | .55                  | 61.47                     | 100.00                    | .23       | .42       | .23                       | .48            | 61.47            | .55                           |
| 200.00                  | .52                  | 58.50                     | 199.99                    | .70       | 1.23      | .70                       | 1.41           | 60.52            | .04                           |
| 300.00                  | .83                  | 62.52                     | 299.99                    | 1.27      | 2.26      | 1.27                      | 2.59           | 60.72            | .31                           |
| 400.00                  | .87                  | 64.28                     | 399.98                    | 1.93      | 3.59      | 1.93                      | 4.07           | 61.71            | .05                           |
| 500.00                  | 1.13                 | 74.07                     | 499.96                    | 2.53      | 5.22      | 2.53                      | 5.80           | 64.13            | .31                           |
| 600.00                  | 1.24                 | 77.22                     | 599.94                    | 3.04      | 7.22      | 3.04                      | 7.84           | 67.17            | .13                           |
| 700.00                  | .95                  | 89.39                     | 699.92                    | 3.29      | 9.11      | 3.29                      | 9.68           | 70.14            | .37                           |
| 800.00                  | .81                  | 109.80                    | 799.91                    | 3.06      | 10.60     | 3.06                      | 11.03          | 73.91            | .34                           |
| 900.00                  | .88                  | 114.22                    | 899.90                    | 2.50      | 11.97     | 2.50                      | 12.22          | 78.18            | .10                           |
| 1000.00                 | .88                  | 116.05                    | 999.89                    | 1.85      | 13.36     | 1.85                      | 13.48          | 82.11            | .03                           |
| 1100.00                 | .98                  | 118.20                    | 1099.87                   | 1.11      | 14.80     | 1.11                      | 14.84          | 85.71            | .11                           |
| 1200.00                 | 1.01                 | 119.70                    | 1199.86                   | .27       | 16.32     | .27                       | 16.32          | 89.05            | .04                           |

| 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 |                               |
| 1300.00                 | 1.01                 | 123.41                    | 1299.84                   | -.65      | 17.82     | -.65                      | 17.83          | 92.10            | .07                           |
| 1400.00                 | .99                  | 134.66                    | 1399.83                   | -1.75     | 19.17     | -1.75                     | 19.25          | 95.20            | .20                           |
| 1500.00                 | 1.01                 | 153.57                    | 1499.81                   | -3.14     | 20.18     | -3.14                     | 20.42          | 98.85            | .33                           |
| 1600.00                 | 1.06                 | 164.11                    | 1599.80                   | -4.82     | 20.82     | -4.82                     | 21.37          | 103.03           | .20                           |
| 1700.00                 | 1.18                 | 182.39                    | 1699.78                   | -6.74     | 21.03     | -6.74                     | 22.09          | 107.77           | .38                           |
| 1800.00                 | 1.27                 | 191.86                    | 1799.76                   | -8.85     | 20.76     | -8.85                     | 22.57          | 113.09           | .22                           |
| 1900.00                 | 1.34                 | 196.38                    | 1899.73                   | -11.06    | 20.20     | -11.06                    | 23.03          | 118.69           | .12                           |
| 2000.00                 | 1.36                 | 195.73                    | 1999.70                   | -13.32    | 19.55     | -13.32                    | 23.66          | 124.27           | .03                           |
| 2100.00                 | 1.47                 | 193.42                    | 2099.67                   | -15.71    | 18.93     | -15.71                    | 24.60          | 129.69           | .12                           |
| 2200.00                 | 2.12                 | 172.67                    | 2199.62                   | -18.79    | 18.87     | -18.79                    | 26.63          | 134.88           | .91                           |
| 2300.00                 | 2.18                 | 172.08                    | 2299.55                   | -22.51    | 19.37     | -22.51                    | 29.70          | 139.29           | .06                           |
| 2400.00                 | 1.98                 | 171.62                    | 2399.49                   | -26.11    | 19.88     | -26.11                    | 32.82          | 142.71           | .20                           |
| 2500.00                 | 1.72                 | 173.32                    | 2499.43                   | -29.31    | 20.31     | -29.31                    | 35.66          | 145.28           | .27                           |
| 2600.00                 | 1.62                 | 176.71                    | 2599.39                   | -32.21    | 20.57     | -32.21                    | 38.21          | 147.44           | .14                           |
| 2700.00                 | 1.66                 | 177.92                    | 2699.35                   | -35.07    | 20.70     | -35.07                    | 40.72          | 149.45           | .05                           |
| 2800.00                 | 1.68                 | 183.34                    | 2799.31                   | -37.98    | 20.67     | -37.98                    | 43.24          | 151.45           | .16                           |
| 2900.00                 | 1.37                 | 182.21                    | 2899.27                   | -40.63    | 20.53     | -40.63                    | 45.53          | 153.19           | .31                           |
| 3000.00                 | 1.19                 | 176.72                    | 2999.25                   | -42.87    | 20.55     | -42.87                    | 47.54          | 154.39           | .22                           |
| 3100.00                 | .71                  | 162.21                    | 3099.23                   | -44.49    | 20.80     | -44.49                    | 49.11          | 154.95           | .53                           |
| 3200.00                 | .30                  | 141.49                    | 3199.23                   | -45.29    | 21.15     | -45.29                    | 49.98          | 154.97           | .44                           |
| 3300.00                 | .46                  | 284.25                    | 3299.23                   | -45.39    | 20.92     | -45.39                    | 49.98          | 155.25           | .72                           |
| 3400.00                 | .85                  | 293.83                    | 3399.22                   | -45.00    | 19.86     | -45.00                    | 49.18          | 156.19           | .40                           |
| 3500.00                 | 1.03                 | 319.41                    | 3499.21                   | -44.01    | 18.59     | -44.01                    | 47.78          | 157.10           | .45                           |
| 3600.00                 | 1.27                 | 333.58                    | 3599.19                   | -42.34    | 17.51     | -42.34                    | 45.82          | 157.53           | .37                           |
| 3700.00                 | 1.32                 | 332.60                    | 3699.16                   | -40.32    | 16.49     | -40.32                    | 43.56          | 157.76           | .05                           |
| 3800.00                 | 1.39                 | 332.15                    | 3799.14                   | -38.23    | 15.39     | -38.23                    | 41.21          | 158.06           | .07                           |
| 3900.00                 | 1.65                 | 336.25                    | 3899.10                   | -35.84    | 14.25     | -35.84                    | 38.57          | 158.32           | .28                           |
| 4000.00                 | 1.84                 | 339.03                    | 3999.05                   | -33.02    | 13.09     | -33.02                    | 35.52          | 158.37           | .21                           |
| 4100.00                 | 2.28                 | 339.63                    | 4098.99                   | -29.66    | 11.83     | -29.66                    | 31.93          | 158.26           | .44                           |
| 4200.00                 | 2.70                 | 336.17                    | 4198.89                   | -25.64    | 10.18     | -25.64                    | 27.59          | 158.34           | .45                           |
| 4300.00                 | 3.24                 | 332.94                    | 4298.76                   | -20.97    | 7.95      | -20.97                    | 22.42          | 159.24           | .57                           |
| 4400.00                 | 3.77                 | 332.79                    | 4398.57                   | -15.53    | 5.16      | -15.53                    | 16.36          | 161.63           | .53                           |
| 4500.00                 | 4.19                 | 333.19                    | 4498.33                   | -9.34     | 2.01      | -9.34                     | 9.55           | 167.88           | .42                           |
| 4600.00                 | 4.83                 | 330.80                    | 4598.02                   | -2.41     | -1.70     | -2.41                     | 2.94           | 215.17           | .67                           |

| 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 |                               |
| 4700.00                    | 4.86                 | 330.56                    | 4697.66                   | 4.96      | -5.83     | 4.96                      | 7.65           | 310.37           | .04                           |
| 4800.00                    | 3.79                 | 329.22                    | 4797.38                   | 11.49     | -9.61     | 11.49                     | 14.97          | 320.10           | 1.07                          |
| 4900.00                    | 2.78                 | 331.53                    | 4897.21                   | 16.46     | -12.45    | 16.46                     | 20.64          | 322.89           | 1.02                          |
| 5000.00                    | 2.51                 | 332.22                    | 4997.11                   | 20.53     | -14.63    | 20.53                     | 25.21          | 324.52           | .27                           |
| 5100.00                    | 1.39                 | 318.92                    | 5097.05                   | 23.38     | -16.45    | 23.38                     | 28.58          | 324.87           | 1.20                          |
| 5200.00                    | .83                  | 290.66                    | 5197.03                   | 24.55     | -17.92    | 24.55                     | 30.39          | 323.87           | .77                           |
| 5300.00                    | .68                  | 259.78                    | 5297.02                   | 24.70     | -19.18    | 24.70                     | 31.27          | 322.16           | .43                           |
| 5400.00                    | 1.03                 | 237.39                    | 5397.01                   | 24.11     | -20.52    | 24.11                     | 31.66          | 319.59           | .48                           |
| 5500.00                    | 1.61                 | 226.74                    | 5496.98                   | 22.66     | -22.30    | 22.66                     | 31.80          | 315.46           | .63                           |
| 5600.00                    | 1.21                 | 219.00                    | 5596.95                   | 20.88     | -23.99    | 20.88                     | 31.80          | 311.03           | .44                           |
| 5700.00                    | .55                  | 202.29                    | 5696.94                   | 19.61     | -24.84    | 19.61                     | 31.65          | 308.30           | .70                           |
| 5800.00                    | .53                  | 187.36                    | 5796.93                   | 18.71     | -25.08    | 18.71                     | 31.29          | 306.73           | .14                           |
| 5900.00                    | .41                  | 164.51                    | 5896.93                   | 17.91     | -25.04    | 17.91                     | 30.79          | 305.57           | .22                           |
| 6000.00                    | .40                  | 151.53                    | 5996.93                   | 17.26     | -24.78    | 17.26                     | 30.20          | 304.85           | .09                           |
| 6100.00                    | .29                  | 173.59                    | 6096.93                   | 16.70     | -24.59    | 16.70                     | 29.72          | 304.18           | .17                           |
| 6200.00                    | .43                  | 178.01                    | 6196.92                   | 16.07     | -24.55    | 16.07                     | 29.34          | 303.21           | .14                           |
| 6300.00                    | .43                  | 166.52                    | 6296.92                   | 15.33     | -24.45    | 15.33                     | 28.86          | 302.09           | .09                           |
| 6400.00                    | .35                  | 169.47                    | 6396.92                   | 14.67     | -24.30    | 14.67                     | 28.38          | 301.11           | .08                           |
| Last Survey Depth Recorded |                      |                           |                           |           |           |                           |                |                  |                               |
| 6500.00                    | .31                  | 181.47                    | 6496.92                   | 14.10     | -24.25    | 14.10                     | 28.05          | 300.16           | .08                           |