

Company: Noble Energy  
Lease/Well: State A/26-3  
Location: Sec 36, T6N, R64W  
Rig Name: Lightning Wire  
State/County: Colorado/Weld  
Latitude: 40.45, Longitude: 0.00  
GRID North is 0.65 Degrees East of True North  
VS-Azi: 0.00 Degrees

**FIELD COPY ONLY (NOT DEFINITIVE)**

Service Company : Vaughn Energy Services

**DRILLOG MS GYRO SURVEY CALCULATIONS**

Filename: statea36-3-01.ut

Minimum Curvature Method

Report Date/Time: 10/27/2010 / 15:33

| Measured<br>Depth<br>FT | Incl<br>Angle<br>Deg | Drift<br>Direction<br>Deg | TVD<br>FT | +N/-S<br>FT | +E/-W<br>FT | Vertical<br>Section<br>FT | Closure<br>Distance<br>FT | Closure<br>Direction<br>Deg | Dogleg<br>Severity<br>Deg/100 |
|-------------------------|----------------------|---------------------------|-----------|-------------|-------------|---------------------------|---------------------------|-----------------------------|-------------------------------|
| 0.00                    | 0.00                 | 0.00                      | 0.00      | 0.00        | 0.00        | 0.00                      | 0.00                      | 0.00                        | ****                          |
| 100.00                  | 0.32                 | 195.93                    | 100.00    | -0.27       | -0.08       | -0.27                     | 0.28                      | 195.93                      | 0.32                          |
| 200.00                  | 0.13                 | 9.52                      | 200.00    | -0.42       | -0.13       | -0.42                     | 0.44                      | 197.55                      | 0.45                          |
| 300.00                  | 0.20                 | 227.80                    | 300.00    | -0.43       | -0.25       | -0.43                     | 0.50                      | 209.75                      | 0.31                          |
| 400.00                  | 0.08                 | 269.52                    | 400.00    | -0.55       | -0.45       | -0.55                     | 0.71                      | 218.97                      | 0.15                          |
| 500.00                  | 0.19                 | 211.13                    | 500.00    | -0.69       | -0.60       | -0.69                     | 0.92                      | 220.85                      | 0.16                          |
| 600.00                  | 0.18                 | 246.95                    | 600.00    | -0.90       | -0.83       | -0.90                     | 1.22                      | 222.79                      | 0.11                          |
| 700.00                  | 0.18                 | 281.06                    | 700.00    | -0.93       | -1.13       | -0.93                     | 1.46                      | 230.66                      | 0.11                          |
| 800.00                  | 0.26                 | 234.18                    | 800.00    | -1.03       | -1.47       | -1.03                     | 1.79                      | 235.03                      | 0.19                          |
| 900.00                  | 0.12                 | 283.35                    | 900.00    | -1.14       | -1.75       | -1.14                     | 2.09                      | 237.06                      | 0.20                          |
| 1000.00                 | 0.22                 | 277.28                    | 1000.00   | -1.09       | -2.04       | -1.09                     | 2.31                      | 241.92                      | 0.10                          |
| 1100.00                 | 0.23                 | 325.03                    | 1100.00   | -0.90       | -2.34       | -0.90                     | 2.51                      | 248.89                      | 0.18                          |
| 1200.00                 | 0.18                 | 242.74                    | 1199.99   | -0.81       | -2.59       | -0.81                     | 2.71                      | 252.56                      | 0.27                          |
| 1300.00                 | 0.13                 | 293.44                    | 1299.99   | -0.84       | -2.83       | -0.84                     | 2.95                      | 253.46                      | 0.14                          |
| 1400.00                 | 0.17                 | 306.06                    | 1399.99   | -0.71       | -3.06       | -0.71                     | 3.14                      | 256.94                      | 0.05                          |
| 1500.00                 | 0.18                 | 300.27                    | 1499.99   | -0.54       | -3.31       | -0.54                     | 3.36                      | 260.72                      | 0.02                          |
| 1600.00                 | 0.45                 | 306.04                    | 1599.99   | -0.23       | -3.77       | -0.23                     | 3.77                      | 266.51                      | 0.27                          |
| 1700.00                 | 0.59                 | 323.03                    | 1699.99   | 0.41        | -4.40       | 0.41                      | 4.42                      | 275.38                      | 0.21                          |
| 1800.00                 | 0.78                 | 329.54                    | 1799.98   | 1.41        | -5.05       | 1.41                      | 5.25                      | 285.64                      | 0.21                          |
| 1900.00                 | 0.71                 | 321.79                    | 1899.97   | 2.49        | -5.78       | 2.49                      | 6.29                      | 293.27                      | 0.13                          |
| 2000.00                 | 0.83                 | 329.82                    | 1999.96   | 3.59        | -6.52       | 3.59                      | 7.45                      | 298.85                      | 0.16                          |
| 2100.00                 | 0.88                 | 312.71                    | 2099.95   | 4.74        | -7.45       | 4.74                      | 8.83                      | 302.45                      | 0.26                          |

| Measured<br>Depth<br>FT | Incl<br>Angle<br>Deg | Drift<br>Direction<br>Deg | TVD<br>FT | +N/-S<br>FT | +E/-W<br>FT | Vertical<br>Section<br>FT | Closure<br>Distance<br>FT | Closure<br>Direction<br>Deg | Dogleg<br>Severity<br>Deg/100 |
|-------------------------|----------------------|---------------------------|-----------|-------------|-------------|---------------------------|---------------------------|-----------------------------|-------------------------------|
| 2200.00                 | 1.10                 | 307.46                    | 2199.94   | 5.84        | -8.78       | 5.84                      | 10.54                     | 303.65                      | 0.23                          |
| 2300.00                 | 1.23                 | 308.96                    | 2299.92   | 7.10        | -10.37      | 7.10                      | 12.57                     | 304.40                      | 0.13                          |
| 2400.00                 | 1.25                 | 300.08                    | 2399.89   | 8.32        | -12.15      | 8.32                      | 14.73                     | 304.41                      | 0.19                          |
| 2500.00                 | 1.25                 | 304.59                    | 2499.87   | 9.49        | -13.99      | 9.49                      | 16.90                     | 304.14                      | 0.10                          |
| 2600.00                 | 1.00                 | 313.22                    | 2599.85   | 10.70       | -15.52      | 10.70                     | 18.85                     | 304.58                      | 0.30                          |
| 2700.00                 | 0.86                 | 307.94                    | 2699.84   | 11.76       | -16.75      | 11.76                     | 20.46                     | 305.07                      | 0.16                          |
| 2800.00                 | 0.91                 | 306.34                    | 2799.83   | 12.69       | -17.98      | 12.69                     | 22.01                     | 305.21                      | 0.05                          |
| 2900.00                 | 0.76                 | 309.63                    | 2899.81   | 13.58       | -19.13      | 13.58                     | 23.46                     | 305.38                      | 0.16                          |
| 3000.00                 | 0.76                 | 298.26                    | 2999.81   | 14.32       | -20.22      | 14.32                     | 24.78                     | 305.30                      | 0.15                          |
| 3100.00                 | 0.62                 | 289.79                    | 3099.80   | 14.82       | -21.32      | 14.82                     | 25.96                     | 304.80                      | 0.18                          |
| 3200.00                 | 0.77                 | 279.96                    | 3199.79   | 15.11       | -22.49      | 15.11                     | 27.09                     | 303.91                      | 0.19                          |
| 3300.00                 | 0.72                 | 264.90                    | 3299.78   | 15.18       | -23.77      | 15.18                     | 28.20                     | 302.55                      | 0.20                          |
| 3400.00                 | 0.55                 | 238.62                    | 3399.78   | 14.87       | -24.80      | 14.87                     | 28.92                     | 300.95                      | 0.33                          |
| 3500.00                 | 0.80                 | 224.01                    | 3499.77   | 14.12       | -25.69      | 14.12                     | 29.32                     | 298.80                      | 0.30                          |
| 3600.00                 | 0.98                 | 230.79                    | 3599.76   | 13.09       | -26.83      | 13.09                     | 29.85                     | 296.00                      | 0.21                          |
| 3700.00                 | 1.03                 | 227.10                    | 3699.74   | 11.93       | -28.15      | 11.93                     | 30.58                     | 292.97                      | 0.08                          |
| 3800.00                 | 0.96                 | 233.06                    | 3799.73   | 10.82       | -29.48      | 10.82                     | 31.40                     | 290.16                      | 0.12                          |
| 3900.00                 | 0.93                 | 234.22                    | 3899.71   | 9.84        | -30.81      | 9.84                      | 32.34                     | 287.72                      | 0.03                          |
| 4000.00                 | 1.09                 | 242.10                    | 3999.70   | 8.93        | -32.30      | 8.93                      | 33.51                     | 285.44                      | 0.21                          |
| 4100.00                 | 1.17                 | 244.25                    | 4099.68   | 8.04        | -34.06      | 8.04                      | 35.00                     | 283.28                      | 0.10                          |
| 4200.00                 | 1.12                 | 246.35                    | 4199.66   | 7.20        | -35.88      | 7.20                      | 36.60                     | 281.34                      | 0.06                          |
| 4300.00                 | 1.10                 | 252.02                    | 4299.64   | 6.51        | -37.69      | 6.51                      | 38.25                     | 279.80                      | 0.11                          |
| 4400.00                 | 1.22                 | 251.45                    | 4399.62   | 5.87        | -39.62      | 5.87                      | 40.05                     | 278.43                      | 0.12                          |
| 4500.00                 | 1.19                 | 252.09                    | 4499.60   | 5.21        | -41.62      | 5.21                      | 41.94                     | 277.14                      | 0.04                          |
| 4600.00                 | 0.96                 | 258.24                    | 4599.58   | 4.73        | -43.42      | 4.73                      | 43.68                     | 276.21                      | 0.26                          |
| 4700.00                 | 0.77                 | 269.35                    | 4699.57   | 4.55        | -44.91      | 4.55                      | 45.14                     | 275.78                      | 0.25                          |
| 4800.00                 | 0.59                 | 329.20                    | 4799.56   | 4.98        | -45.85      | 4.98                      | 46.12                     | 276.20                      | 0.70                          |
| 4900.00                 | 0.82                 | 323.28                    | 4899.56   | 6.00        | -46.54      | 6.00                      | 46.93                     | 277.35                      | 0.24                          |
| 5000.00                 | 0.70                 | 310.11                    | 4999.55   | 6.97        | -47.44      | 6.97                      | 47.95                     | 278.36                      | 0.21                          |
| 5100.00                 | 0.53                 | 313.27                    | 5099.54   | 7.68        | -48.25      | 7.68                      | 48.86                     | 279.05                      | 0.18                          |
| 5200.00                 | 0.38                 | 341.03                    | 5199.54   | 8.32        | -48.69      | 8.32                      | 49.40                     | 279.69                      | 0.26                          |
| 5300.00                 | 0.39                 | 83.46                     | 5299.54   | 8.67        | -48.46      | 8.67                      | 49.23                     | 280.14                      | 0.60                          |
| 5400.00                 | 0.61                 | 149.83                    | 5399.53   | 8.25        | -47.86      | 8.25                      | 48.56                     | 279.78                      | 0.58                          |
| 5500.00                 | 0.99                 | 167.57                    | 5499.52   | 6.94        | -47.40      | 6.94                      | 47.91                     | 278.33                      | 0.44                          |
| 5600.00                 | 1.21                 | 174.99                    | 5599.51   | 5.05        | -47.13      | 5.05                      | 47.40                     | 276.12                      | 0.26                          |
| 5700.00                 | 1.56                 | 183.22                    | 5699.48   | 2.65        | -47.11      | 2.65                      | 47.18                     | 273.22                      | 0.40                          |
| 5800.00                 | 1.67                 | 179.10                    | 5799.44   | -0.16       | -47.16      | -0.16                     | 47.16                     | 269.80                      | 0.16                          |

| Measured<br>Depth<br>FT | Incl<br>Angle<br>Deg | Drift<br>Direction<br>Deg | TVD<br>FT | +N/-S<br>FT | +E/-W<br>FT | Vertical<br>Section<br>FT | Closure<br>Distance<br>FT | Closure<br>Direction<br>Deg | Dogleg<br>Severity<br>Deg/100 |
|-------------------------|----------------------|---------------------------|-----------|-------------|-------------|---------------------------|---------------------------|-----------------------------|-------------------------------|
| 5900.00                 | 1.67                 | 174.84                    | 5899.39   | -3.07       | -47.01      | -3.07                     | 47.11                     | 266.26                      | 0.12                          |
| 6000.00                 | 1.78                 | 168.13                    | 5999.35   | -6.05       | -46.56      | -6.05                     | 46.95                     | 262.60                      | 0.23                          |
| 6100.00                 | 1.38                 | 160.12                    | 6099.31   | -8.70       | -45.83      | -8.70                     | 46.65                     | 259.25                      | 0.46                          |
| 6200.00                 | 1.54                 | 149.47                    | 6199.28   | -10.99      | -44.73      | -10.99                    | 46.07                     | 256.19                      | 0.32                          |
| 6300.00                 | 1.64                 | 140.62                    | 6299.24   | -13.26      | -43.14      | -13.26                    | 45.14                     | 252.92                      | 0.26                          |
| 6400.00                 | 1.91                 | 133.47                    | 6399.19   | -15.51      | -41.03      | -15.51                    | 43.86                     | 249.29                      | 0.35                          |
| 6500.00                 | 2.47                 | 126.52                    | 6499.12   | -17.94      | -38.09      | -17.94                    | 42.10                     | 244.79                      | 0.61                          |
| 6600.00                 | 1.95                 | 132.35                    | 6599.04   | -20.36      | -35.11      | -20.36                    | 40.58                     | 239.89                      | 0.57                          |
| 6700.00                 | 1.52                 | 131.82                    | 6699.00   | -22.39      | -32.86      | -22.39                    | 39.76                     | 235.73                      | 0.42                          |
| 6800.00                 | 1.08                 | 142.48                    | 6798.97   | -24.02      | -31.30      | -24.02                    | 39.45                     | 232.49                      | 0.50                          |
| 6850.00                 | 0.74                 | 146.57                    | 6848.97   | -24.66      | -30.83      | -24.66                    | 39.48                     | 231.34                      | 0.68                          |

HORIZONTAL DISPLACEMENT IS  
39.48 FEET AT 231.34 DEGREES