



COMPANY/RIG: Noble Energy/Production/CoreTech  
WELL/API: Reistad C 5-9/05-123-21178  
DECLINATION: 8.2 Degrees  
TD AS DRILLED: 7127 Feet  
COUNTY/STATE: Weld/Colorado  
VS-Azi: 0.000 Degrees  
Latitude: 40.33909, Longitude: -104.56792  
Grid North = True North -0.60 degs (NAD 27)  
Grid Correction Applied = -0.60 degs



DEPTH REFERENCE : RKB = GL Elevation = 4741

DRILLOG MS GYRO SURVEY CALCULATIONS

Filename: msgyrosurvey.ut

Minimum Curvature Method

Report Date/Time: 6/14/2016 / 10:47

LAT & LONG OBTAINED BY HANDHELD GPS AT WELLHEAD

NORTH REFERENCE: GRID

HENDERSON, COLORADO

303-853-4976

Surveyor : JUSTIN WILLIAMS / Reistad C 5-9

| 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 |
|-------------------------|----------------------|---------------------------|-----------|-------------|-------------|---------------------------|---------------------------|-----------------------------|-------------------------------|
| 0.000                   | 0.000                | 0.000                     | 0.000     | 0.000       | 0.000       | 0.000                     | 0.000                     | 0.000                       | ****                          |
| 100.000                 | 0.405                | 222.660                   | 99.999    | -0.260      | -0.240      | -0.260                    | 0.354                     | 222.660                     | 0.405                         |
| 200.000                 | 0.105                | 170.524                   | 199.998   | -0.610      | -0.464      | -0.610                    | 0.766                     | 217.263                     | 0.351                         |
| 300.000                 | 0.366                | 56.423                    | 299.997   | -0.523      | -0.183      | -0.523                    | 0.554                     | 199.252                     | 0.420                         |
| 400.000                 | 0.388                | 75.051                    | 399.995   | -0.259      | 0.411       | -0.259                    | 0.486                     | 122.244                     | 0.124                         |
| 500.000                 | 0.422                | 101.911                   | 499.993   | -0.248      | 1.099       | -0.248                    | 1.126                     | 102.711                     | 0.191                         |
| 600.000                 | 0.615                | 154.765                   | 599.989   | -0.809      | 1.688       | -0.809                    | 1.872                     | 115.607                     | 0.493                         |
| 700.000                 | 0.789                | 167.058                   | 699.982   | -1.965      | 2.071       | -1.965                    | 2.855                     | 133.498                     | 0.229                         |
| 800.000                 | 0.710                | 160.618                   | 799.973   | -3.220      | 2.430       | -3.220                    | 4.034                     | 142.954                     | 0.115                         |
| 900.000                 | 0.911                | 158.116                   | 899.963   | -4.541      | 2.932       | -4.541                    | 5.406                     | 147.152                     | 0.204                         |
| 1000.000                | 0.774                | 158.538                   | 999.952   | -5.907      | 3.475       | -5.907                    | 6.854                     | 149.531                     | 0.136                         |
| 1100.000                | 0.812                | 154.860                   | 1099.943  | -7.178      | 4.024       | -7.178                    | 8.229                     | 150.726                     | 0.064                         |
| 1200.000                | 0.718                | 143.621                   | 1199.934  | -8.324      | 4.696       | -8.324                    | 9.557                     | 150.568                     | 0.177                         |
| 1300.000                | 0.439                | 156.318                   | 1299.929  | -9.179      | 5.222       | -9.179                    | 10.560                    | 150.365                     | 0.305                         |
| 1400.000                | 0.392                | 159.357                   | 1399.926  | -9.850      | 5.496       | -9.850                    | 11.279                    | 150.838                     | 0.052                         |
| 1500.000                | 0.519                | 153.292                   | 1499.923  | -10.574     | 5.820       | -10.574                   | 12.070                    | 151.171                     | 0.135                         |
| 1600.000                | 0.218                | 164.534                   | 1599.921  | -11.161     | 6.074       | -11.161                   | 12.707                    | 151.445                     | 0.308                         |
| 1700.000                | 0.186                | 152.462                   | 1699.920  | -11.489     | 6.200       | -11.489                   | 13.055                    | 151.646                     | 0.053                         |
| 1800.000                | 0.202                | 151.186                   | 1799.920  | -11.787     | 6.360       | -11.787                   | 13.394                    | 151.650                     | 0.016                         |

| 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 |
|-------------------------|----------------------|---------------------------|-----------|-------------|-------------|---------------------------|---------------------------|-----------------------------|-------------------------------|
| 1900.000                | 0.089                | 131.986                   | 1899.919  | -11.994     | 6.503       | -11.994                   | 13.643                    | 151.534                     | 0.121                         |
| 2000.000                | 0.074                | 171.978                   | 1999.919  | -12.110     | 6.569       | -12.110                   | 13.777                    | 151.521                     | 0.058                         |
| 2100.000                | 0.106                | 105.383                   | 2099.919  | -12.199     | 6.668       | -12.199                   | 13.902                    | 151.339                     | 0.102                         |
| 2200.000                | 0.294                | 93.411                    | 2199.918  | -12.238     | 7.012       | -12.238                   | 14.105                    | 150.187                     | 0.191                         |
| 2300.000                | 0.211                | 68.352                    | 2299.918  | -12.186     | 7.439       | -12.186                   | 14.277                    | 148.597                     | 0.136                         |
| 2400.000                | 0.205                | 105.950                   | 2399.917  | -12.167     | 7.782       | -12.167                   | 14.443                    | 147.397                     | 0.134                         |
| 2500.000                | 0.299                | 103.644                   | 2499.916  | -12.278     | 8.208       | -12.278                   | 14.769                    | 146.236                     | 0.095                         |
| 2600.000                | 0.515                | 96.684                    | 2599.913  | -12.392     | 8.908       | -12.392                   | 15.262                    | 144.288                     | 0.221                         |
| 2700.000                | 0.750                | 88.936                    | 2699.907  | -12.432     | 10.010      | -12.432                   | 15.961                    | 141.161                     | 0.250                         |
| 2800.000                | 1.091                | 75.019                    | 2799.894  | -12.174     | 11.584      | -12.174                   | 16.805                    | 136.421                     | 0.405                         |
| 2900.000                | 1.016                | 71.557                    | 2899.877  | -11.647     | 13.345      | -11.647                   | 17.713                    | 131.112                     | 0.098                         |
| 3000.000                | 1.220                | 63.400                    | 2999.858  | -10.890     | 15.139      | -10.890                   | 18.649                    | 125.729                     | 0.258                         |
| 3100.000                | 1.111                | 61.108                    | 3099.838  | -9.945      | 16.939      | -9.945                    | 19.643                    | 120.417                     | 0.119                         |
| 3200.000                | 1.031                | 60.318                    | 3199.820  | -9.031      | 18.569      | -9.031                    | 20.649                    | 115.937                     | 0.081                         |
| 3300.000                | 0.425                | 79.128                    | 3299.812  | -8.516      | 19.715      | -8.516                    | 21.475                    | 113.362                     | 0.643                         |
| 3400.000                | 0.583                | 126.344                   | 3399.808  | -8.748      | 20.489      | -8.748                    | 22.278                    | 113.119                     | 0.429                         |
| 3500.000                | 0.800                | 167.082                   | 3499.801  | -9.730      | 21.055      | -9.730                    | 23.195                    | 114.802                     | 0.523                         |
| 3600.000                | 1.160                | 169.016                   | 3599.787  | -11.404     | 21.404      | -11.404                   | 24.253                    | 118.049                     | 0.362                         |
| 3700.000                | 1.362                | 176.425                   | 3699.762  | -13.584     | 21.671      | -13.584                   | 25.577                    | 122.081                     | 0.259                         |
| 3800.000                | 1.756                | 168.926                   | 3799.725  | -16.274     | 22.040      | -16.274                   | 27.397                    | 126.442                     | 0.443                         |
| 3900.000                | 1.752                | 167.576                   | 3899.679  | -19.271     | 22.663      | -19.271                   | 29.748                    | 130.375                     | 0.042                         |
| 4000.000                | 1.861                | 173.723                   | 3999.629  | -22.377     | 23.169      | -22.377                   | 32.211                    | 134.004                     | 0.222                         |
| 4100.000                | 1.623                | 171.482                   | 4099.583  | -25.391     | 23.557      | -25.391                   | 34.636                    | 137.147                     | 0.248                         |
| 4200.000                | 1.277                | 187.694                   | 4199.551  | -27.896     | 23.617      | -27.896                   | 36.551                    | 139.749                     | 0.533                         |
| 4300.000                | 0.983                | 190.597                   | 4299.531  | -29.843     | 23.310      | -29.843                   | 37.868                    | 142.007                     | 0.300                         |
| 4400.000                | 0.684                | 206.798                   | 4399.521  | -31.219     | 22.883      | -31.219                   | 38.708                    | 143.759                     | 0.378                         |
| 4500.000                | 0.703                | 201.252                   | 4499.513  | -32.324     | 22.392      | -32.324                   | 39.322                    | 145.288                     | 0.070                         |
| 4600.000                | 1.095                | 186.013                   | 4599.501  | -33.846     | 22.069      | -33.846                   | 40.405                    | 146.893                     | 0.455                         |
| 4700.000                | 1.815                | 177.565                   | 4699.468  | -36.378     | 22.037      | -36.378                   | 42.532                    | 148.794                     | 0.750                         |
| 4800.000                | 1.751                | 169.304                   | 4799.420  | -39.461     | 22.387      | -39.461                   | 45.369                    | 150.433                     | 0.265                         |
| 4900.000                | 1.839                | 171.625                   | 4899.371  | -42.550     | 22.905      | -42.550                   | 48.323                    | 151.706                     | 0.114                         |
| 5000.000                | 1.502                | 182.436                   | 4999.329  | -45.446     | 23.083      | -45.446                   | 50.972                    | 153.074                     | 0.460                         |
| 5100.000                | 1.336                | 187.938                   | 5099.298  | -47.911     | 22.866      | -47.911                   | 53.087                    | 154.487                     | 0.214                         |
| 5200.000                | 1.006                | 187.668                   | 5199.277  | -49.935     | 22.588      | -49.935                   | 54.806                    | 155.661                     | 0.330                         |
| 5300.000                | 0.788                | 156.128                   | 5299.265  | -51.434     | 22.749      | -51.434                   | 56.241                    | 156.141                     | 0.531                         |
| 5400.000                | 0.636                | 142.332                   | 5399.258  | -52.503     | 23.367      | -52.503                   | 57.468                    | 156.008                     | 0.229                         |
| 5500.000                | 0.691                | 155.913                   | 5499.251  | -53.492     | 23.952      | -53.492                   | 58.610                    | 155.879                     | 0.166                         |
| 5600.000                | 0.937                | 178.640                   | 5599.241  | -54.860     | 24.217      | -54.860                   | 59.967                    | 156.182                     | 0.401                         |
| 5700.000                | 1.106                | 196.982                   | 5699.225  | -56.600     | 23.955      | -56.600                   | 61.461                    | 157.061                     | 0.366                         |
| 5800.000                | 1.165                | 205.131                   | 5799.206  | -58.444     | 23.241      | -58.444                   | 62.895                    | 158.314                     | 0.172                         |

| 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 |
|-------------------------|----------------------|---------------------------|-----------|-------------|-------------|---------------------------|---------------------------|-----------------------------|-------------------------------|
| 5900.000                | 1.228                | 197.593                   | 5899.184  | -60.386     | 22.485      | -60.386                   | 64.436                    | 159.577                     | 0.169                         |
| 6000.000                | 1.264                | 200.905                   | 5999.160  | -62.437     | 21.768      | -62.437                   | 66.123                    | 160.780                     | 0.080                         |
| 6100.000                | 1.166                | 217.146                   | 6099.138  | -64.279     | 20.760      | -64.279                   | 67.548                    | 162.101                     | 0.357                         |
| 6200.000                | 0.601                | 206.126                   | 6199.126  | -65.561     | 19.915      | -65.561                   | 68.519                    | 163.103                     | 0.587                         |
| 6300.000                | 0.618                | 181.491                   | 6299.120  | -66.571     | 19.669      | -66.571                   | 69.416                    | 163.539                     | 0.260                         |
| 6400.000                | 0.408                | 137.494                   | 6399.117  | -67.372     | 19.896      | -67.372                   | 70.248                    | 163.547                     | 0.431                         |
| 6500.000                | 0.465                | 107.572                   | 6499.114  | -67.756     | 20.523      | -67.756                   | 70.796                    | 163.149                     | 0.232                         |
| 6600.000                | 0.515                | 129.372                   | 6599.110  | -68.164     | 21.257      | -68.164                   | 71.401                    | 162.680                     | 0.192                         |
| 6700.000                | 0.495                | 118.535                   | 6699.107  | -68.655     | 21.984      | -68.655                   | 72.089                    | 162.245                     | 0.097                         |
| 6800.000                | 0.801                | 121.275                   | 6799.100  | -69.224     | 22.960      | -69.224                   | 72.932                    | 161.650                     | 0.308                         |
| 6850.000                | 0.487                | 124.931                   | 6849.097  | -69.527     | 23.433      | -69.527                   | 73.370                    | 161.374                     | 0.632                         |