

Company: Anadarko Petroleum Corp.  
 Well/API#: Raymond Martin Gas Unit 1/05-123-08393  
 Tool Type: North Seeking Rate Gyro  
 Rig Name: Production / Summit  
 County/State: Weld/Colorado  
 Latitude: 40.27086, Longitude: -104.75967  
 Directions are relative to True North  
 VS-Azi: 0.000 Degrees



FIELD COPY ONLY (NOT DEFINITIVE)

Depth Reference : RKB = GL Elevation = 4780 Feet

DRILLOG MS GYRO SURVEY CALCULATIONS

Filename: msgyro\_run01-01-de\_01.ut  
 Minimum Curvature Method  
 Report Date/Time: 2/21/2015 / 18:21

Lat & Long Obtained by Handheld GPS At Wellhead  
 Handheld GPS Reference : NAD83/Device Error: ± 9 Feet  
 VES Survey International - Henderson, CO  
 Jordan Rolando  
 303-853-4976

| Measured Depth FT | Incl Angle Deg | Drift Direction Deg | TVD FT   | +N/-S FT | +E/-W FT | Vertical Section FT | Closure Distance FT | Closure Direction Deg | Dogleg Severity Deg/100 |
|-------------------|----------------|---------------------|----------|----------|----------|---------------------|---------------------|-----------------------|-------------------------|
| 0.000             | 0.000          | 0.000               | 0.000    | 0.000    | 0.000    | 0.000               | 0.000               | 0.000                 | ****                    |
| 100.000           | 0.540          | 41.606              | 99.999   | 0.352    | 0.313    | 0.352               | 0.471               | 41.606                | 0.540                   |
| 200.000           | 0.385          | 15.782              | 199.995  | 1.028    | 0.717    | 1.028               | 1.253               | 34.896                | 0.256                   |
| 300.000           | 0.434          | 62.564              | 299.993  | 1.526    | 1.145    | 1.526               | 1.908               | 36.876                | 0.329                   |
| 400.000           | 0.186          | 28.462              | 399.992  | 1.844    | 1.559    | 1.844               | 2.414               | 40.214                | 0.299                   |
| 500.000           | 0.302          | 78.664              | 499.991  | 2.038    | 1.894    | 2.038               | 2.782               | 42.909                | 0.232                   |
| 600.000           | 0.278          | 23.044              | 599.990  | 2.313    | 2.248    | 2.313               | 3.225               | 44.179                | 0.271                   |
| 700.000           | 0.086          | 80.317              | 699.989  | 2.549    | 2.416    | 2.549               | 3.512               | 43.472                | 0.243                   |
| 800.000           | 0.280          | 99.855              | 799.989  | 2.520    | 2.731    | 2.520               | 3.716               | 47.308                | 0.202                   |
| 900.000           | 0.233          | 16.419              | 899.988  | 2.673    | 3.030    | 2.673               | 4.040               | 48.584                | 0.343                   |
| 1000.000          | 0.217          | 150.314             | 999.988  | 2.703    | 3.181    | 2.703               | 4.174               | 49.642                | 0.414                   |
| 1100.000          | 0.170          | 122.462             | 1099.987 | 2.459    | 3.400    | 2.459               | 4.196               | 54.120                | 0.104                   |
| 1200.000          | 0.167          | 137.202             | 1199.987 | 2.273    | 3.624    | 2.273               | 4.278               | 57.906                | 0.043                   |
| 1300.000          | 0.193          | 159.003             | 1299.986 | 2.009    | 3.783    | 2.009               | 4.283               | 62.034                | 0.073                   |
| 1400.000          | 0.254          | 162.583             | 1399.985 | 1.640    | 3.910    | 1.640               | 4.240               | 67.247                | 0.063                   |
| 1500.000          | 0.352          | 172.625             | 1499.984 | 1.124    | 4.016    | 1.124               | 4.170               | 74.369                | 0.111                   |
| 1600.000          | 0.497          | 163.641             | 1599.981 | 0.403    | 4.177    | 0.403               | 4.197               | 84.493                | 0.160                   |
| 1700.000          | 0.720          | 165.688             | 1699.975 | -0.623   | 4.455    | -0.623              | 4.498               | 97.957                | 0.224                   |
| 1800.000          | 0.858          | 164.607             | 1799.966 | -1.953   | 4.809    | -1.953              | 5.190               | 112.105               | 0.138                   |
| 1900.000          | 0.824          | 165.802             | 1899.955 | -3.372   | 5.184    | -3.372              | 6.184               | 123.043               | 0.038                   |
| 2000.000          | 0.828          | 166.016             | 1999.945 | -4.770   | 5.535    | -4.770              | 7.307               | 130.756               | 0.005                   |
| 2100.000          | 0.779          | 161.818             | 2099.935 | -6.117   | 5.922    | -6.117              | 8.513               | 135.928               | 0.077                   |
| 2200.000          | 0.511          | 166.039             | 2199.929 | -7.195   | 6.241    | -7.195              | 9.525               | 139.061               | 0.272                   |
| 2300.000          | 0.437          | 172.921             | 2299.925 | -8.006   | 6.396    | -8.006              | 10.247              | 141.380               | 0.094                   |
| 2400.000          | 0.407          | 180.608             | 2399.922 | -8.740   | 6.439    | -8.740              | 10.855              | 143.619               | 0.064                   |
| 2500.000          | 0.396          | 184.671             | 2499.920 | -9.440   | 6.407    | -9.440              | 11.408              | 145.834               | 0.031                   |
| 2600.000          | 0.452          | 180.737             | 2599.917 | -10.178  | 6.374    | -10.178             | 12.009              | 147.945               | 0.063                   |
| 2700.000          | 0.416          | 173.260             | 2699.914 | -10.933  | 6.411    | -10.933             | 12.674              | 149.612               | 0.067                   |
| 2800.000          | 0.479          | 167.972             | 2799.911 | -11.702  | 6.541    | -11.702             | 13.406              | 150.797               | 0.075                   |
| 2900.000          | 0.392          | 167.104             | 2899.908 | -12.444  | 6.704    | -12.444             | 14.135              | 151.686               | 0.087                   |
| 3000.000          | 0.259          | 164.532             | 2999.907 | -12.996  | 6.841    | -12.996             | 14.687              | 152.237               | 0.133                   |
| 3100.000          | 0.192          | 218.602             | 3099.906 | -13.345  | 6.797    | -13.345             | 14.976              | 153.008               | 0.214                   |
| 3200.000          | 0.147          | 221.586             | 3199.906 | -13.572  | 6.607    | -13.572             | 15.095              | 154.041               | 0.045                   |
| 3300.000          | 0.119          | 277.590             | 3299.905 | -13.654  | 6.419    | -13.654             | 15.088              | 154.821               | 0.127                   |
| 3400.000          | 0.221          | 302.387             | 3399.905 | -13.537  | 6.154    | -13.537             | 14.870              | 155.555               | 0.124                   |

| 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 |
|-------------------------|----------------------|---------------------------|-----------|------------|------------|---------------------------|---------------------------|-----------------------------|-------------------------------|
| 3500.000                | 0.464                | 319.105                   | 3499.903  | -13.128    | 5.725      | -13.128                   | 14.322                    | 156.437                     | 0.260                         |
| 3600.000                | 0.785                | 317.597                   | 3599.897  | -12.315    | 4.998      | -12.315                   | 13.291                    | 157.912                     | 0.321                         |
| 3700.000                | 0.894                | 301.898                   | 3699.886  | -11.397    | 3.873      | -11.397                   | 12.037                    | 161.229                     | 0.253                         |
| 3800.000                | 0.996                | 285.779                   | 3799.873  | -10.748    | 2.374      | -10.748                   | 11.007                    | 167.543                     | 0.284                         |
| 3900.000                | 0.949                | 283.097                   | 3899.859  | -10.324    | 0.731      | -10.324                   | 10.350                    | 175.951                     | 0.066                         |
| 4000.000                | 0.867                | 279.284                   | 3999.846  | -10.014    | -0.823     | -10.014                   | 10.048                    | 184.697                     | 0.102                         |
| 4100.000                | 0.655                | 259.615                   | 4099.837  | -9.995     | -2.132     | -9.995                    | 10.220                    | 192.041                     | 0.334                         |
| 4200.000                | 0.558                | 250.962                   | 4199.832  | -10.257    | -3.155     | -10.257                   | 10.731                    | 197.096                     | 0.133                         |
| 4300.000                | 0.600                | 245.735                   | 4299.827  | -10.631    | -4.092     | -10.631                   | 11.391                    | 201.052                     | 0.067                         |
| 4400.000                | 0.413                | 244.531                   | 4399.823  | -11.001    | -4.894     | -11.001                   | 12.040                    | 203.984                     | 0.187                         |
| 4500.000                | 0.446                | 247.476                   | 4499.820  | -11.305    | -5.578     | -11.305                   | 12.606                    | 206.265                     | 0.039                         |
| 4600.000                | 0.478                | 282.258                   | 4599.817  | -11.365    | -6.345     | -11.365                   | 13.016                    | 209.176                     | 0.278                         |
| 4700.000                | 0.686                | 298.369                   | 4699.812  | -10.992    | -7.280     | -10.992                   | 13.184                    | 213.518                     | 0.263                         |
| 4800.000                | 0.887                | 320.707                   | 4799.802  | -10.108    | -8.297     | -10.108                   | 13.077                    | 219.382                     | 0.363                         |
| 4900.000                | 0.933                | 318.023                   | 4899.790  | -8.904     | -9.332     | -8.904                    | 12.898                    | 226.346                     | 0.063                         |
| 5000.000                | 0.747                | 322.230                   | 4999.779  | -7.783     | -10.276    | -7.783                    | 12.891                    | 232.859                     | 0.196                         |
| 5100.000                | 0.646                | 312.964                   | 5099.772  | -6.884     | -11.087    | -6.884                    | 13.051                    | 238.164                     | 0.151                         |
| 5200.000                | 0.402                | 290.589                   | 5199.768  | -6.377     | -11.828    | -6.377                    | 13.438                    | 241.670                     | 0.313                         |
| 5300.000                | 0.236                | 269.791                   | 5299.766  | -6.254     | -12.363    | -6.254                    | 13.855                    | 243.167                     | 0.200                         |
| 5400.000                | 0.313                | 258.718                   | 5399.765  | -6.308     | -12.837    | -6.308                    | 14.303                    | 243.830                     | 0.093                         |
| 5500.000                | 0.314                | 255.753                   | 5499.763  | -6.429     | -13.370    | -6.429                    | 14.836                    | 244.320                     | 0.016                         |
| 5600.000                | 0.369                | 260.621                   | 5599.762  | -6.549     | -13.953    | -6.549                    | 15.414                    | 244.857                     | 0.062                         |
| 5700.000                | 0.439                | 267.628                   | 5699.759  | -6.617     | -14.654    | -6.617                    | 16.079                    | 245.697                     | 0.086                         |
| 5800.000                | 0.076                | 100.277                   | 5799.758  | -6.645     | -14.972    | -6.645                    | 16.380                    | 246.067                     | 0.513                         |
| 5900.000                | 0.147                | 99.328                    | 5899.758  | -6.677     | -14.781    | -6.677                    | 16.219                    | 245.688                     | 0.071                         |
| 6000.000                | 0.215                | 143.164                   | 5999.758  | -6.848     | -14.542    | -6.848                    | 16.074                    | 244.783                     | 0.149                         |
| 6100.000                | 0.119                | 209.968                   | 6099.757  | -7.088     | -14.482    | -7.088                    | 16.123                    | 243.921                     | 0.200                         |
| 6200.000                | 0.270                | 252.647                   | 6199.757  | -7.248     | -14.758    | -7.248                    | 16.442                    | 243.843                     | 0.199                         |
| 6300.000                | 0.384                | 265.250                   | 6299.755  | -7.346     | -15.316    | -7.346                    | 16.987                    | 244.377                     | 0.134                         |
| 6400.000                | 0.409                | 263.695                   | 6399.753  | -7.413     | -16.004    | -7.413                    | 17.638                    | 245.148                     | 0.027                         |
| 6500.000                | 0.588                | 254.917                   | 6499.749  | -7.586     | -16.855    | -7.586                    | 18.483                    | 245.769                     | 0.194                         |
| 6600.000                | 0.464                | 255.859                   | 6599.745  | -7.818     | -17.743    | -7.818                    | 19.389                    | 246.220                     | 0.124                         |
| 6700.000                | 0.870                | 282.737                   | 6699.738  | -7.750     | -18.877    | -7.750                    | 20.406                    | 247.680                     | 0.502                         |
| 6800.000                | 0.693                | 246.970                   | 6799.729  | -7.819     | -20.174    | -7.819                    | 21.636                    | 248.816                     | 0.509                         |
| 6900.000                | 0.233                | 166.702                   | 6899.726  | -8.253     | -20.684    | -8.253                    | 22.269                    | 248.247                     | 0.693                         |
| 7000.000                | 0.265                | 165.620                   | 6999.725  | -8.675     | -20.579    | -8.675                    | 22.333                    | 247.143                     | 0.033                         |
| 7100.000                | 0.128                | 224.459                   | 7099.725  | -8.979     | -20.600    | -8.979                    | 22.472                    | 246.449                     | 0.227                         |
| 7200.000                | 0.359                | 261.457                   | 7199.724  | -9.106     | -20.989    | -9.106                    | 22.879                    | 246.547                     | 0.268                         |
| 7300.000                | 0.494                | 298.768                   | 7299.721  | -8.945     | -21.676    | -8.945                    | 23.449                    | 247.575                     | 0.301                         |
| 7400.000                | 0.395                | 299.982                   | 7399.718  | -8.565     | -22.352    | -8.565                    | 23.937                    | 249.033                     | 0.099                         |
| 7500.000                | 0.534                | 284.763                   | 7499.715  | -8.274     | -23.101    | -8.274                    | 24.539                    | 250.294                     | 0.185                         |
| 7600.000                | 0.425                | 285.097                   | 7599.711  | -8.059     | -23.910    | -8.059                    | 25.232                    | 251.373                     | 0.109                         |
| 7700.000                | 0.431                | 286.779                   | 7699.709  | -7.854     | -24.628    | -7.854                    | 25.850                    | 252.312                     | 0.014                         |

HORIZONTAL DISPLACEMENT IS  
25.850 FEET AT 252.312 DEGREES