

Company: Anadarko Petroleum Corp.  
 Well/API: Neale UPRR 42-15 2/05-123-14589  
 Tool Type: North Seeking Rate Gyro  
 Rig Name: Production/ Summit  
 County/State: Weld/Colorado  
 Latitude: 40.227, Longitude: -104.757  
 Directions are relative to True North  
 VS-Azi: 0.000 Degrees



**FIELD COPY ONLY (NOT DEFINITIVE)**

Depth Reference : RKB=GL Elevation= 4901 Feet

**DRILLOG MS GYRO SURVEY CALCULATIONS**

Filename: msgyro\_run01-01-de\_01.ut

Minimum Curvature Method

Report Date/Time: 7/19/2014 / 18:08

Lat/Long & Elevation Obtained By Handheld GPS At Wellhead

Handheld GPS Reference: NAD83/Device Error: ±9 Feet

VES Survey International - Henderson CO

Sean Bratt

303-853-4976

| 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                 | 0.073                | 199.398                   | 100.000   | -0.060      | -0.021      | -0.060                    | 0.063                     | 199.398                     | 0.073                         |
| 200.000                 | 0.163                | 73.830                    | 200.000   | -0.080      | 0.094       | -0.080                    | 0.124                     | 130.223                     | 0.213                         |
| 300.000                 | 0.152                | 100.357                   | 299.999   | -0.064      | 0.361       | -0.064                    | 0.367                     | 100.063                     | 0.073                         |
| 400.000                 | 0.105                | 93.386                    | 399.999   | -0.093      | 0.583       | -0.093                    | 0.590                     | 99.090                      | 0.049                         |
| 500.000                 | 0.150                | 157.424                   | 499.999   | -0.219      | 0.725       | -0.219                    | 0.757                     | 106.824                     | 0.140                         |
| 600.000                 | 0.382                | 248.791                   | 599.998   | -0.460      | 0.464       | -0.460                    | 0.654                     | 134.755                     | 0.413                         |
| 700.000                 | 0.650                | 302.122                   | 699.995   | -0.279      | -0.327      | -0.279                    | 0.430                     | 229.534                     | 0.522                         |
| 800.000                 | 0.183                | 277.914                   | 799.992   | 0.045       | -0.966      | 0.045                     | 0.967                     | 272.645                     | 0.489                         |
| 900.000                 | 0.216                | 288.818                   | 899.991   | 0.128       | -1.303      | 0.128                     | 1.309                     | 275.591                     | 0.050                         |
| 1000.000                | 0.230                | 315.634                   | 999.990   | 0.332       | -1.622      | 0.332                     | 1.656                     | 281.573                     | 0.104                         |
| 1100.000                | 0.399                | 329.547                   | 1099.989  | 0.776       | -1.939      | 0.776                     | 2.089                     | 291.810                     | 0.184                         |
| 1200.000                | 0.400                | 292.901                   | 1199.987  | 1.212       | -2.437      | 1.212                     | 2.722                     | 296.439                     | 0.251                         |
| 1300.000                | 0.446                | 295.127                   | 1299.984  | 1.513       | -3.111      | 1.513                     | 3.460                     | 295.935                     | 0.049                         |
| 1400.000                | 0.274                | 314.749                   | 1399.982  | 1.846       | -3.633      | 1.846                     | 4.075                     | 296.940                     | 0.209                         |
| 1500.000                | 0.341                | 301.958                   | 1499.980  | 2.172       | -4.056      | 2.172                     | 4.601                     | 298.175                     | 0.096                         |
| 1600.000                | 0.362                | 325.534                   | 1599.979  | 2.590       | -4.487      | 2.590                     | 5.181                     | 299.997                     | 0.145                         |
| 1700.000                | 0.376                | 300.900                   | 1699.977  | 3.019       | -4.948      | 3.019                     | 5.796                     | 301.394                     | 0.158                         |
| 1800.000                | 0.338                | 298.616                   | 1799.975  | 3.329       | -5.488      | 3.329                     | 6.419                     | 301.242                     | 0.041                         |
| 1900.000                | 0.359                | 328.442                   | 1899.973  | 3.737       | -5.911      | 3.737                     | 6.993                     | 302.304                     | 0.180                         |
| 2000.000                | 0.362                | 341.008                   | 1999.971  | 4.302       | -6.177      | 4.302                     | 7.528                     | 304.857                     | 0.079                         |
| 2100.000                | 0.472                | 347.257                   | 2099.968  | 5.003       | -6.371      | 5.003                     | 8.100                     | 308.142                     | 0.119                         |
| 2200.000                | 0.219                | 258.652                   | 2199.967  | 5.367       | -6.649      | 5.367                     | 8.545                     | 308.911                     | 0.516                         |
| 2300.000                | 0.453                | 325.796                   | 2299.965  | 5.656       | -7.058      | 5.656                     | 9.045                     | 308.707                     | 0.419                         |
| 2400.000                | 0.254                | 219.189                   | 2399.964  | 5.811       | -7.420      | 5.811                     | 9.425                     | 308.067                     | 0.578                         |
| 2500.000                | 0.437                | 264.110                   | 2499.962  | 5.601       | -7.939      | 5.601                     | 9.716                     | 305.200                     | 0.314                         |
| 2600.000                | 1.367                | 268.426                   | 2599.949  | 5.529       | -9.511      | 5.529                     | 11.001                    | 300.169                     | 0.932                         |
| 2700.000                | 1.173                | 269.005                   | 2699.924  | 5.478       | -11.727     | 5.478                     | 12.943                    | 295.040                     | 0.194                         |
| 2800.000                | 1.079                | 273.266                   | 2799.905  | 5.514       | -13.691     | 5.514                     | 14.759                    | 291.938                     | 0.126                         |
| 2900.000                | 0.784                | 271.305                   | 2899.892  | 5.583       | -15.314     | 5.583                     | 16.301                    | 290.031                     | 0.297                         |
| 3000.000                | 0.584                | 239.388                   | 2999.885  | 5.339       | -16.437     | 5.339                     | 17.282                    | 287.996                     | 0.422                         |
| 3100.000                | 0.973                | 237.000                   | 3099.875  | 4.617       | -17.588     | 4.617                     | 18.184                    | 284.709                     | 0.390                         |
| 3200.000                | 0.961                | 260.903                   | 3199.862  | 4.022       | -19.129     | 4.022                     | 19.547                    | 281.874                     | 0.401                         |
| 3300.000                | 1.056                | 243.559                   | 3299.846  | 3.479       | -20.782     | 3.479                     | 21.071                    | 279.504                     | 0.318                         |
| 3400.000                | 1.280                | 244.618                   | 3399.826  | 2.590       | -22.616     | 2.590                     | 22.764                    | 276.533                     | 0.225                         |

HORIZONTAL DISPLACEMENT IS  
108.601 FEET AT 251.760 DEGREES