



Company: Anadarko Petroleum Corp.
 Well/API: Webber 11-4/05-123-14830
 Tool Type: North Seeking Rate Gyro
 Rig Name: Production/Summit
 County/State: Weld/Colorado
 VS-Azi: 0.000 Degrees
 Latitude: 40.25908, Longitude: -104.79022
 All Azimuths referenced to True North
 No Grid Convergence Applied



Depth Reference : RKB= GL Elevation=4,787 Feet

DRILLOG MS GYRO SURVEY CALCULATIONS

Filename: msgyro_run01-01-de_01.ut

Minimum Curvature Method

Report Date/Time: 1/11/2016 / 11:32

Lat/Long Obtained by Handheld GPS at Wellhead

Handheld GPS Reference: NAD83/ Device Error: +/- 9 Feet

VES Survey International- Henderson Co

Surveyor: Levi Sheldon / Webber 11-4

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 | 0.376 | 321.221 | 99.999 | 0.256 | -0.205 | 0.256 | 0.328 | 321.221 | 0.376 |
| 200.000 | 0.373 | 332.766 | 199.997 | 0.801 | -0.560 | 0.801 | 0.978 | 325.046 | 0.075 |
| 300.000 | 0.360 | 329.632 | 299.995 | 1.362 | -0.868 | 1.362 | 1.616 | 327.491 | 0.024 |
| 400.000 | 0.342 | 351.105 | 399.993 | 1.929 | -1.073 | 1.929 | 2.208 | 330.904 | 0.132 |
| 500.000 | 0.341 | 2.709 | 499.992 | 2.521 | -1.106 | 2.521 | 2.753 | 336.322 | 0.069 |
| 600.000 | 0.293 | 6.737 | 599.990 | 3.072 | -1.062 | 3.072 | 3.251 | 340.940 | 0.053 |
| 700.000 | 0.262 | 23.570 | 699.989 | 3.536 | -0.940 | 3.536 | 3.659 | 345.108 | 0.087 |
| 800.000 | 0.256 | 31.658 | 799.988 | 3.935 | -0.732 | 3.935 | 4.003 | 349.469 | 0.037 |
| 900.000 | 0.311 | 28.768 | 899.987 | 4.364 | -0.483 | 4.364 | 4.390 | 353.678 | 0.057 |
| 1000.000 | 0.316 | 23.843 | 999.985 | 4.854 | -0.241 | 4.854 | 4.860 | 357.153 | 0.027 |
| 1100.000 | 0.332 | 37.506 | 1099.983 | 5.336 | 0.047 | 5.336 | 5.336 | 0.500 | 0.079 |
| 1200.000 | 0.319 | 29.102 | 1199.982 | 5.809 | 0.358 | 5.809 | 5.820 | 3.531 | 0.050 |
| 1300.000 | 0.212 | 19.857 | 1299.981 | 6.226 | 0.557 | 6.226 | 6.251 | 5.109 | 0.115 |
| 1400.000 | 0.150 | 12.684 | 1399.980 | 6.528 | 0.648 | 6.528 | 6.560 | 5.672 | 0.066 |
| 1500.000 | 0.202 | 306.560 | 1499.980 | 6.762 | 0.535 | 6.762 | 6.783 | 4.528 | 0.197 |
| 1600.000 | 0.275 | 283.365 | 1599.979 | 6.922 | 0.161 | 6.922 | 6.924 | 1.329 | 0.119 |
| 1700.000 | 0.568 | 275.483 | 1699.976 | 7.025 | -0.566 | 7.025 | 7.048 | 355.392 | 0.299 |
| 1800.000 | 0.542 | 309.098 | 1799.972 | 7.370 | -1.427 | 7.370 | 7.507 | 349.044 | 0.322 |

| 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 |
|-------------------------|----------------------|---------------------------|-----------|-------------|-------------|---------------------------|---------------------------|-----------------------------|-------------------------------|
| 1900.000 | 0.661 | 320.666 | 1899.966 | 8.115 | -2.160 | 8.115 | 8.397 | 345.098 | 0.170 |
| 2000.000 | 0.446 | 299.182 | 1999.962 | 8.751 | -2.865 | 8.751 | 9.208 | 341.870 | 0.295 |
| 2100.000 | 0.437 | 291.285 | 2099.959 | 9.079 | -3.561 | 9.079 | 9.753 | 338.587 | 0.062 |
| 2200.000 | 0.554 | 297.361 | 2199.955 | 9.440 | -4.345 | 9.440 | 10.392 | 335.284 | 0.129 |
| 2300.000 | 0.454 | 280.619 | 2299.951 | 9.735 | -5.164 | 9.735 | 11.020 | 332.056 | 0.177 |
| 2400.000 | 0.455 | 275.798 | 2399.948 | 9.849 | -5.948 | 9.849 | 11.506 | 328.868 | 0.038 |
| 2500.000 | 0.612 | 218.124 | 2499.944 | 9.469 | -6.673 | 9.469 | 11.584 | 324.825 | 0.533 |
| 2600.000 | 0.574 | 211.959 | 2599.939 | 8.624 | -7.268 | 8.624 | 11.278 | 319.877 | 0.074 |
| 2700.000 | 0.468 | 232.883 | 2699.935 | 7.952 | -7.859 | 7.952 | 11.180 | 315.340 | 0.216 |
| 2800.000 | 0.520 | 226.241 | 2799.931 | 7.392 | -8.512 | 7.392 | 11.274 | 310.972 | 0.077 |
| 2900.000 | 0.581 | 227.846 | 2899.927 | 6.738 | -9.215 | 6.738 | 11.416 | 306.174 | 0.063 |
| 3000.000 | 0.532 | 238.070 | 2999.922 | 6.152 | -9.986 | 6.152 | 11.729 | 301.638 | 0.110 |
| 3100.000 | 0.592 | 232.444 | 3099.917 | 5.592 | -10.789 | 5.592 | 12.152 | 297.397 | 0.081 |
| 3200.000 | 0.554 | 218.750 | 3199.912 | 4.900 | -11.501 | 4.900 | 12.501 | 293.076 | 0.142 |
| 3300.000 | 0.600 | 225.889 | 3299.907 | 4.159 | -12.180 | 4.159 | 12.870 | 288.852 | 0.085 |
| 3400.000 | 0.849 | 244.429 | 3399.899 | 3.474 | -13.224 | 3.474 | 13.673 | 284.721 | 0.339 |
| 3500.000 | 1.111 | 254.680 | 3499.884 | 2.898 | -14.828 | 2.898 | 15.108 | 281.060 | 0.314 |
| 3600.000 | 1.410 | 270.122 | 3599.860 | 2.645 | -16.993 | 2.645 | 17.198 | 278.846 | 0.450 |
| 3700.000 | 1.597 | 280.838 | 3699.826 | 2.909 | -19.593 | 2.909 | 19.808 | 278.446 | 0.337 |
| 3800.000 | 1.517 | 284.092 | 3799.789 | 3.494 | -22.246 | 3.494 | 22.519 | 278.926 | 0.119 |
| 3900.000 | 1.425 | 282.842 | 3899.756 | 4.093 | -24.742 | 4.093 | 25.078 | 279.392 | 0.098 |
| 4000.000 | 1.419 | 277.490 | 3999.726 | 4.530 | -27.182 | 4.530 | 27.557 | 279.462 | 0.133 |
| 4100.000 | 1.261 | 276.045 | 4099.698 | 4.808 | -29.504 | 4.808 | 29.893 | 279.255 | 0.162 |
| 4200.000 | 1.277 | 269.327 | 4199.674 | 4.910 | -31.713 | 4.910 | 32.091 | 278.802 | 0.150 |
| 4300.000 | 1.222 | 273.336 | 4299.650 | 4.959 | -33.892 | 4.959 | 34.253 | 278.325 | 0.103 |
| 4400.000 | 1.203 | 269.821 | 4399.627 | 5.018 | -36.007 | 5.018 | 36.355 | 277.934 | 0.077 |
| 4500.000 | 1.132 | 277.646 | 4499.607 | 5.146 | -38.036 | 5.146 | 38.383 | 277.705 | 0.174 |
| 4600.000 | 1.204 | 287.165 | 4599.586 | 5.588 | -40.020 | 5.588 | 40.408 | 277.949 | 0.207 |
| 4700.000 | 1.421 | 324.816 | 4699.562 | 6.912 | -41.739 | 6.912 | 42.307 | 279.403 | 0.872 |
| 4800.000 | 1.582 | 320.457 | 4799.527 | 8.990 | -43.332 | 8.990 | 44.255 | 281.720 | 0.197 |
| 4900.000 | 1.761 | 314.073 | 4899.485 | 11.123 | -45.314 | 11.123 | 46.659 | 283.791 | 0.258 |
| 5000.000 | 1.484 | 306.221 | 4999.445 | 12.957 | -47.463 | 12.957 | 49.200 | 285.269 | 0.354 |
| 5100.000 | 1.649 | 313.299 | 5099.407 | 14.709 | -49.555 | 14.709 | 51.692 | 286.532 | 0.254 |
| 5200.000 | 1.623 | 311.141 | 5199.367 | 16.627 | -51.669 | 16.627 | 54.278 | 287.839 | 0.067 |
| 5300.000 | 1.485 | 307.101 | 5299.330 | 18.341 | -53.769 | 18.341 | 56.811 | 288.835 | 0.176 |
| 5400.000 | 1.325 | 312.974 | 5399.300 | 19.910 | -55.648 | 19.910 | 59.103 | 289.687 | 0.215 |
| 5500.000 | 1.510 | 313.154 | 5499.269 | 21.600 | -57.455 | 21.600 | 61.381 | 290.603 | 0.185 |
| 5600.000 | 1.830 | 343.872 | 5599.228 | 24.035 | -58.860 | 24.035 | 63.578 | 292.212 | 0.937 |
| 5700.000 | 2.116 | 355.061 | 5699.169 | 27.409 | -59.463 | 27.409 | 65.475 | 294.747 | 0.479 |
| 5800.000 | 2.343 | 356.686 | 5799.094 | 31.289 | -59.740 | 31.289 | 67.438 | 297.644 | 0.235 |

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|-------------------------|----------------------|---------------------------|-----------|-------------|-------------|---------------------------|---------------------------|-----------------------------|-------------------------------|
| 5900.000 | 2.385 | 3.511 | 5899.009 | 35.407 | -59.730 | 35.407 | 69.436 | 300.659 | 0.285 |
| 6000.000 | 2.454 | 3.711 | 5998.920 | 39.620 | -59.464 | 39.620 | 71.455 | 303.675 | 0.070 |
| 6100.000 | 2.551 | 13.674 | 6098.825 | 43.920 | -58.800 | 43.920 | 73.392 | 306.757 | 0.445 |
| 6200.000 | 2.116 | 25.565 | 6198.742 | 47.748 | -57.477 | 47.748 | 74.722 | 309.718 | 0.649 |
| 6300.000 | 1.542 | 28.380 | 6298.691 | 50.597 | -56.040 | 50.597 | 75.502 | 312.078 | 0.581 |
| 6400.000 | 1.233 | 21.554 | 6398.661 | 52.781 | -55.006 | 52.781 | 76.233 | 313.818 | 0.350 |
| 6500.000 | 0.851 | 26.218 | 6498.645 | 54.448 | -54.282 | 54.448 | 76.884 | 315.087 | 0.391 |
| 6600.000 | 0.565 | 22.221 | 6598.637 | 55.571 | -53.768 | 55.571 | 77.325 | 315.945 | 0.290 |
| 6700.000 | 0.269 | 345.515 | 6698.634 | 56.254 | -53.640 | 56.254 | 77.729 | 316.363 | 0.385 |
| 6800.000 | 0.203 | 324.380 | 6798.633 | 56.626 | -53.802 | 56.626 | 78.110 | 316.465 | 0.108 |
| 6900.000 | 0.160 | 320.419 | 6898.633 | 56.877 | -53.994 | 56.877 | 78.424 | 316.490 | 0.045 |
| 7000.000 | 0.079 | 224.673 | 6998.633 | 56.936 | -54.131 | 56.936 | 78.561 | 316.447 | 0.185 |
| 7100.000 | 0.251 | 99.639 | 7098.633 | 56.850 | -53.963 | 56.850 | 78.384 | 316.492 | 0.303 |
| 7200.000 | 0.241 | 39.095 | 7198.632 | 56.977 | -53.614 | 56.977 | 78.236 | 316.742 | 0.248 |