



Company/Rig: NOBLE ENERGY/ CORETECH
WELL: DECHANT STATE H36-11
DECLINATION: 8.33
TD AS DRILLED: 7,720 FEET
COUNTY/STATE: WELD/COLORADO
Latitude: 40.180, Longitude: -104.615
GRID North is 0.570 Degrees East of True North
VS-Azi: 0.000 Degrees



DEPTH REFERENCE : RKB=SURFACE ELEVATION=4,819 FEET

DRILLOG MS GYRO SURVEY CALCULATIONS

Filename: msgyro_run01-01-de_01.ut

Minimum Curvature Method

Report Date/Time: 10/3/2014 / 08:39

LAT & LONG OBTAINED BY HANDHELD GPS AT WELLHEAD

NORTH REFERENCE: GRID

HENDERSON, COLORADO

303-853-4976

Surveyor: LEVI SHELDON

| 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 | 0.029 | 13.091 | 100.000 | 0.025 | 0.006 | 0.025 | 0.025 | 13.091 | 0.029 |
| 200.000 | 0.124 | 15.934 | 200.000 | 0.153 | 0.041 | 0.153 | 0.159 | 15.025 | 0.095 |
| 300.000 | 0.194 | 309.968 | 300.000 | 0.366 | -0.059 | 0.366 | 0.370 | 350.878 | 0.182 |
| 400.000 | 0.210 | 342.725 | 399.999 | 0.650 | -0.243 | 0.650 | 0.693 | 339.508 | 0.115 |
| 500.000 | 0.214 | 9.497 | 499.998 | 1.009 | -0.266 | 1.009 | 1.044 | 345.213 | 0.098 |
| 600.000 | 0.198 | 61.541 | 599.998 | 1.276 | -0.084 | 1.276 | 1.279 | 356.250 | 0.181 |
| 700.000 | 0.273 | 56.160 | 699.997 | 1.491 | 0.266 | 1.491 | 1.515 | 10.127 | 0.078 |
| 800.000 | 0.242 | 53.655 | 799.996 | 1.749 | 0.634 | 1.749 | 1.860 | 19.933 | 0.033 |
| 900.000 | 0.394 | 21.469 | 899.994 | 2.194 | 0.930 | 2.194 | 2.383 | 22.972 | 0.229 |
| 1000.000 | 0.584 | 26.614 | 999.991 | 2.970 | 1.284 | 2.970 | 3.235 | 23.385 | 0.194 |
| 1100.000 | 0.748 | 32.674 | 1099.984 | 3.975 | 1.865 | 3.975 | 4.390 | 25.135 | 0.178 |
| 1200.000 | 0.786 | 45.121 | 1199.975 | 5.008 | 2.703 | 5.008 | 5.691 | 28.359 | 0.171 |
| 1300.000 | 0.627 | 47.487 | 1299.967 | 5.862 | 3.592 | 5.862 | 6.875 | 31.503 | 0.162 |
| 1400.000 | 0.982 | 36.178 | 1399.957 | 6.923 | 4.502 | 6.923 | 8.258 | 33.033 | 0.388 |
| 1500.000 | 1.031 | 43.124 | 1499.942 | 8.272 | 5.623 | 8.272 | 10.002 | 34.206 | 0.131 |
| 1600.000 | 1.194 | 45.950 | 1599.923 | 9.654 | 6.987 | 9.654 | 11.917 | 35.897 | 0.172 |
| 1700.000 | 1.405 | 56.160 | 1699.898 | 11.061 | 8.755 | 11.061 | 14.106 | 38.361 | 0.312 |
| 1800.000 | 1.333 | 59.479 | 1799.869 | 12.334 | 10.775 | 12.334 | 16.378 | 41.139 | 0.107 |
| 1900.000 | 1.112 | 29.835 | 1899.847 | 13.767 | 12.260 | 13.767 | 18.434 | 41.686 | 0.661 |

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|-------------------------|----------------------|---------------------------|-----------|-------------|-------------|---------------------------|---------------------------|-----------------------------|-------------------------------|
| 2000.000 | 0.224 | 336.907 | 1999.840 | 14.788 | 12.665 | 14.788 | 19.471 | 40.579 | 0.993 |
| 2100.000 | 0.457 | 301.576 | 2099.838 | 15.177 | 12.249 | 15.177 | 19.503 | 38.907 | 0.303 |
| 2200.000 | 0.502 | 289.336 | 2199.835 | 15.530 | 11.496 | 15.530 | 19.323 | 36.511 | 0.112 |
| 2300.000 | 0.598 | 285.767 | 2299.830 | 15.817 | 10.581 | 15.817 | 19.030 | 33.781 | 0.102 |
| 2400.000 | 0.815 | 283.818 | 2399.822 | 16.129 | 9.388 | 16.129 | 18.662 | 30.202 | 0.219 |
| 2500.000 | 0.946 | 275.110 | 2499.811 | 16.372 | 7.875 | 16.372 | 18.168 | 25.687 | 0.186 |
| 2600.000 | 1.132 | 248.938 | 2599.795 | 16.091 | 6.132 | 16.091 | 17.220 | 20.859 | 0.504 |
| 2700.000 | 1.297 | 250.645 | 2699.772 | 15.361 | 4.142 | 15.361 | 15.910 | 15.090 | 0.169 |
| 2800.000 | 1.485 | 249.558 | 2799.743 | 14.533 | 1.859 | 14.533 | 14.652 | 7.291 | 0.190 |
| 2900.000 | 1.722 | 246.842 | 2899.703 | 13.490 | -0.736 | 13.490 | 13.510 | 356.875 | 0.248 |
| 3000.000 | 1.298 | 242.035 | 2999.669 | 12.368 | -3.118 | 12.368 | 12.755 | 345.851 | 0.442 |
| 3100.000 | 1.257 | 242.367 | 3099.644 | 11.328 | -5.090 | 11.328 | 12.419 | 335.806 | 0.042 |
| 3200.000 | 0.903 | 248.670 | 3199.626 | 10.533 | -6.795 | 10.533 | 12.535 | 327.173 | 0.373 |
| 3300.000 | 0.836 | 242.072 | 3299.614 | 9.905 | -8.174 | 9.905 | 12.842 | 320.469 | 0.120 |
| 3400.000 | 1.062 | 256.994 | 3399.601 | 9.354 | -9.722 | 9.354 | 13.491 | 313.897 | 0.333 |
| 3500.000 | 0.795 | 242.471 | 3499.588 | 8.825 | -11.240 | 8.825 | 14.290 | 308.136 | 0.354 |
| 3600.000 | 0.577 | 158.740 | 3599.582 | 8.034 | -11.673 | 8.034 | 14.171 | 304.540 | 0.930 |
| 3700.000 | 0.856 | 144.672 | 3699.575 | 6.956 | -11.058 | 6.956 | 13.064 | 302.170 | 0.327 |
| 3800.000 | 0.778 | 163.335 | 3799.565 | 5.696 | -10.432 | 5.696 | 11.885 | 298.636 | 0.276 |
| 3900.000 | 1.362 | 174.152 | 3899.547 | 3.863 | -10.116 | 3.863 | 10.829 | 290.903 | 0.615 |
| 4000.000 | 1.828 | 188.490 | 3999.508 | 1.104 | -10.230 | 1.104 | 10.290 | 276.157 | 0.610 |
| 4100.000 | 1.790 | 185.038 | 4099.458 | -2.030 | -10.603 | -2.030 | 10.796 | 259.161 | 0.115 |
| 4200.000 | 1.774 | 181.758 | 4199.410 | -5.133 | -10.788 | -5.133 | 11.947 | 244.553 | 0.103 |
| 4300.000 | 1.923 | 171.280 | 4299.358 | -8.339 | -10.581 | -8.339 | 13.472 | 231.757 | 0.369 |
| 4400.000 | 2.205 | 173.228 | 4399.293 | -11.908 | -10.100 | -11.908 | 15.614 | 220.303 | 0.290 |
| 4500.000 | 2.045 | 174.351 | 4499.224 | -15.593 | -9.697 | -15.593 | 18.363 | 211.877 | 0.165 |
| 4600.000 | 1.963 | 181.679 | 4599.163 | -19.081 | -9.572 | -19.081 | 21.347 | 206.640 | 0.269 |
| 4700.000 | 1.834 | 185.067 | 4699.109 | -22.386 | -9.763 | -22.386 | 24.422 | 203.563 | 0.171 |
| 4800.000 | 1.749 | 174.979 | 4799.060 | -25.500 | -9.771 | -25.500 | 27.308 | 200.965 | 0.326 |
| 4900.000 | 2.008 | 181.294 | 4899.006 | -28.772 | -9.677 | -28.772 | 30.355 | 198.590 | 0.331 |
| 5000.000 | 1.975 | 175.211 | 4998.946 | -32.240 | -9.573 | -32.240 | 33.631 | 196.537 | 0.214 |
| 5100.000 | 2.256 | 170.772 | 5098.878 | -35.900 | -9.113 | -35.900 | 37.038 | 194.244 | 0.325 |
| 5200.000 | 2.227 | 168.034 | 5198.801 | -39.743 | -8.395 | -39.743 | 40.620 | 191.927 | 0.111 |
| 5300.000 | 2.128 | 180.309 | 5298.730 | -43.500 | -8.002 | -43.500 | 44.230 | 190.423 | 0.476 |
| 5400.000 | 1.631 | 157.053 | 5398.677 | -46.667 | -7.457 | -46.667 | 47.259 | 189.079 | 0.901 |
| 5500.000 | 1.400 | 149.284 | 5498.642 | -49.028 | -6.279 | -49.028 | 49.428 | 187.298 | 0.308 |
| 5600.000 | 1.068 | 108.684 | 5598.621 | -50.376 | -4.772 | -50.376 | 50.602 | 185.411 | 0.911 |
| 5700.000 | 1.308 | 62.132 | 5698.601 | -50.141 | -2.880 | -50.141 | 50.224 | 183.288 | 0.965 |
| 5800.000 | 1.109 | 49.137 | 5798.579 | -48.975 | -1.139 | -48.975 | 48.988 | 181.332 | 0.338 |
| 5900.000 | 0.681 | 8.932 | 5898.568 | -47.755 | -0.315 | -47.755 | 47.756 | 180.378 | 0.735 |

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|-------------------------|----------------------|---------------------------|-----------|-------------|-------------|---------------------------|---------------------------|-----------------------------|-------------------------------|
| 6000.000 | 0.358 | 308.795 | 5998.564 | -46.972 | -0.466 | -46.972 | 46.974 | 180.569 | 0.591 |
| 6100.000 | 0.226 | 302.273 | 6098.563 | -46.671 | -0.877 | -46.671 | 46.679 | 181.077 | 0.136 |
| 6200.000 | 0.686 | 281.725 | 6198.559 | -46.444 | -1.630 | -46.444 | 46.472 | 182.010 | 0.480 |
| 6300.000 | 0.789 | 276.884 | 6298.551 | -46.239 | -2.899 | -46.239 | 46.330 | 183.588 | 0.120 |
| 6400.000 | 0.736 | 277.395 | 6398.542 | -46.074 | -4.219 | -46.074 | 46.267 | 185.232 | 0.053 |
| 6500.000 | 1.133 | 265.517 | 6498.529 | -46.069 | -5.842 | -46.069 | 46.438 | 187.227 | 0.440 |
| 6600.000 | 0.856 | 268.609 | 6598.514 | -46.164 | -7.575 | -46.164 | 46.782 | 189.318 | 0.283 |
| 6700.000 | 1.158 | 273.680 | 6698.498 | -46.118 | -9.329 | -46.118 | 47.052 | 191.436 | 0.315 |
| 6800.000 | 1.323 | 310.832 | 6798.476 | -45.298 | -11.211 | -45.298 | 46.665 | 193.901 | 0.806 |
| 6900.000 | 1.515 | 16.709 | 6898.451 | -43.277 | -11.704 | -43.277 | 44.832 | 195.133 | 1.551 |
| 7000.000 | 1.870 | 48.226 | 6998.410 | -40.924 | -10.107 | -40.924 | 42.154 | 193.873 | 0.980 |
| 7100.000 | 1.642 | 38.710 | 7098.363 | -38.720 | -7.995 | -38.720 | 39.536 | 191.667 | 0.369 |
| 7200.000 | 1.633 | 42.182 | 7198.322 | -36.546 | -6.142 | -36.546 | 37.058 | 189.540 | 0.100 |
| 7300.000 | 1.448 | 36.893 | 7298.286 | -34.480 | -4.427 | -34.480 | 34.763 | 187.316 | 0.234 |
| 7400.000 | 1.352 | 44.507 | 7398.256 | -32.628 | -2.842 | -32.628 | 32.752 | 184.978 | 0.209 |
| 7450.000 | 1.329 | 48.976 | 7448.243 | -31.827 | -1.991 | -31.827 | 31.890 | 183.580 | 0.214 |