



Company/Rig: Noble Energy/ VES
WELL/API#: Domenico MC 33-16X/05-013-06466
DECLINATION: 8.55 Degrees
TD AS DRILLED: 8440 Feet
COUNTY/STATE: Boulder/Colorado
Latitude: 40.002, Longitude: -105.114
GRID North is 0.250 Degrees East of True North
VS-Azi: 0.000 Degrees



DEPTH REFERENCE : RKB=GL/ ELEVATION= 5358 Feet

DRILLOG GYRO SURVEY CALCULATIONS

Filename: gyro-de_01.ut
Minimum Curvature Method
Report Date/Time: 12/30/2014 / 09:47

LAT & LONG OBTAINED BY HANDHELD GPS AT WELLHEAD

NORTH REFERENCE: GRID
HENDERSON, COLORADO
303-853-4976
Surveyor: Sean Bratt

| 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 | 0.421 | 77.945 | 99.999 | 0.077 | 0.359 | 0.077 | 0.367 | 77.945 | 0.421 |
| 200.000 | 0.427 | 87.213 | 199.996 | 0.172 | 1.091 | 0.172 | 1.104 | 81.061 | 0.069 |
| 300.000 | 0.506 | 82.561 | 299.993 | 0.247 | 1.900 | 0.247 | 1.916 | 82.600 | 0.087 |
| 400.000 | 0.231 | 60.371 | 399.991 | 0.404 | 2.513 | 0.404 | 2.546 | 80.876 | 0.305 |
| 500.000 | 0.127 | 327.986 | 499.991 | 0.598 | 2.630 | 0.598 | 2.697 | 77.197 | 0.268 |
| 600.000 | 0.724 | 319.359 | 599.987 | 1.172 | 2.159 | 1.172 | 2.456 | 61.516 | 0.599 |
| 700.000 | 0.991 | 325.261 | 699.976 | 2.362 | 1.254 | 2.362 | 2.674 | 27.973 | 0.281 |
| 800.000 | 0.708 | 272.786 | 799.966 | 3.103 | 0.145 | 3.103 | 3.106 | 2.672 | 0.793 |
| 900.000 | 0.657 | 294.395 | 899.959 | 3.370 | -0.994 | 3.370 | 3.513 | 343.560 | 0.261 |
| 1000.000 | 0.677 | 315.512 | 999.953 | 4.028 | -1.931 | 4.028 | 4.467 | 334.391 | 0.245 |
| 1100.000 | 0.452 | 265.645 | 1099.948 | 4.420 | -2.738 | 4.420 | 5.199 | 328.225 | 0.518 |
| 1200.000 | 0.477 | 313.256 | 1199.946 | 4.675 | -3.434 | 4.675 | 5.801 | 323.702 | 0.376 |
| 1300.000 | 0.783 | 342.058 | 1299.940 | 5.611 | -3.948 | 5.611 | 6.860 | 324.868 | 0.431 |
| 1400.000 | 0.968 | 340.093 | 1399.928 | 7.055 | -4.446 | 7.055 | 8.339 | 327.781 | 0.188 |
| 1500.000 | 0.861 | 281.613 | 1499.917 | 8.001 | -5.470 | 8.001 | 9.692 | 325.640 | 0.899 |
| 1600.000 | 0.743 | 284.263 | 1599.907 | 8.312 | -6.834 | 8.312 | 10.761 | 320.571 | 0.124 |
| 1700.000 | 0.846 | 302.971 | 1699.898 | 8.873 | -8.082 | 8.873 | 12.002 | 317.672 | 0.278 |
| 1800.000 | 0.982 | 352.562 | 1799.887 | 10.124 | -8.812 | 10.124 | 13.422 | 318.965 | 0.777 |
| 1900.000 | 1.071 | 354.336 | 1899.871 | 11.904 | -9.015 | 11.904 | 14.933 | 322.863 | 0.094 |

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|-------------------------|----------------------|---------------------------|-----------|-------------|-------------|---------------------------|---------------------------|-----------------------------|-------------------------------|
| 2000.000 | 0.731 | 317.650 | 1999.859 | 13.306 | -9.537 | 13.306 | 16.370 | 324.368 | 0.652 |
| 2100.000 | 0.981 | 339.169 | 2099.848 | 14.577 | -10.271 | 14.577 | 17.832 | 324.831 | 0.403 |
| 2200.000 | 1.028 | 323.673 | 2199.833 | 16.099 | -11.107 | 16.099 | 19.559 | 325.398 | 0.275 |
| 2300.000 | 0.809 | 278.201 | 2299.821 | 16.922 | -12.337 | 16.922 | 20.942 | 323.907 | 0.738 |
| 2400.000 | 0.938 | 297.595 | 2399.810 | 17.402 | -13.761 | 17.402 | 22.186 | 321.664 | 0.320 |
| 2500.000 | 1.003 | 323.904 | 2499.796 | 18.488 | -15.002 | 18.488 | 23.809 | 320.943 | 0.446 |
| 2600.000 | 1.140 | 337.453 | 2599.778 | 20.115 | -15.899 | 20.115 | 25.639 | 321.676 | 0.287 |
| 2700.000 | 1.009 | 342.529 | 2699.761 | 21.873 | -16.545 | 21.873 | 27.426 | 322.896 | 0.162 |
| 2800.000 | 0.663 | 349.759 | 2799.750 | 23.283 | -16.912 | 23.283 | 28.777 | 324.006 | 0.361 |
| 2900.000 | 0.569 | 301.520 | 2899.745 | 24.112 | -17.439 | 24.112 | 29.757 | 324.124 | 0.511 |
| 3000.000 | 0.566 | 280.104 | 2999.740 | 24.458 | -18.349 | 24.458 | 30.576 | 323.122 | 0.211 |
| 3100.000 | 0.730 | 238.014 | 3099.734 | 24.207 | -19.376 | 24.207 | 31.007 | 321.326 | 0.490 |
| 3200.000 | 0.898 | 250.511 | 3199.724 | 23.608 | -20.655 | 23.608 | 31.368 | 318.818 | 0.243 |
| 3300.000 | 0.995 | 251.801 | 3299.711 | 23.076 | -22.218 | 23.076 | 32.033 | 316.086 | 0.099 |
| 3400.000 | 1.027 | 269.851 | 3399.695 | 22.803 | -23.938 | 22.803 | 33.060 | 313.608 | 0.319 |
| 3500.000 | 0.997 | 284.936 | 3499.680 | 23.024 | -25.674 | 23.024 | 34.486 | 311.885 | 0.267 |
| 3600.000 | 0.721 | 284.656 | 3599.668 | 23.408 | -27.124 | 23.408 | 35.828 | 310.794 | 0.276 |
| 3700.000 | 0.769 | 323.942 | 3699.661 | 24.110 | -28.128 | 24.110 | 37.047 | 310.602 | 0.503 |
| 3800.000 | 0.804 | 346.747 | 3799.651 | 25.335 | -28.683 | 25.335 | 38.270 | 311.453 | 0.313 |
| 3900.000 | 1.002 | 11.906 | 3899.639 | 26.873 | -28.664 | 26.873 | 39.291 | 313.153 | 0.438 |
| 4000.000 | 1.403 | 20.044 | 3999.617 | 28.879 | -28.064 | 28.879 | 40.269 | 315.820 | 0.434 |
| 4100.000 | 1.403 | 25.389 | 4099.587 | 31.134 | -27.120 | 31.134 | 41.289 | 318.942 | 0.131 |
| 4200.000 | 1.128 | 52.962 | 4199.564 | 32.833 | -25.809 | 32.833 | 41.763 | 321.830 | 0.659 |
| 4300.000 | 0.690 | 54.268 | 4299.551 | 33.778 | -24.534 | 33.778 | 41.748 | 324.007 | 0.438 |
| 4400.000 | 0.104 | 344.544 | 4399.548 | 34.217 | -24.070 | 34.217 | 41.835 | 324.876 | 0.661 |
| 4500.000 | 0.302 | 235.708 | 4499.548 | 34.156 | -24.312 | 34.156 | 41.925 | 324.557 | 0.350 |
| 4600.000 | 0.741 | 228.916 | 4599.543 | 33.583 | -25.017 | 33.583 | 41.877 | 323.316 | 0.442 |
| 4700.000 | 0.963 | 210.350 | 4699.533 | 32.433 | -25.929 | 32.433 | 41.524 | 321.359 | 0.351 |
| 4800.000 | 1.315 | 180.371 | 4799.514 | 30.561 | -26.361 | 30.561 | 40.359 | 319.220 | 0.680 |
| 4900.000 | 1.455 | 178.454 | 4899.484 | 28.144 | -26.334 | 28.144 | 38.543 | 316.903 | 0.148 |
| 5000.000 | 1.424 | 180.153 | 4999.453 | 25.632 | -26.303 | 25.632 | 36.727 | 314.260 | 0.053 |
| 5100.000 | 0.896 | 183.494 | 5099.432 | 23.609 | -26.354 | 23.609 | 35.383 | 311.855 | 0.532 |
| 5200.000 | 0.245 | 141.273 | 5199.427 | 22.662 | -26.268 | 22.662 | 34.693 | 310.784 | 0.734 |
| 5300.000 | 0.290 | 74.837 | 5299.426 | 22.561 | -25.890 | 22.561 | 34.341 | 311.070 | 0.296 |
| 5400.000 | 0.360 | 55.071 | 5399.424 | 22.808 | -25.388 | 22.808 | 34.128 | 311.935 | 0.131 |
| 5500.000 | 0.367 | 5.579 | 5499.422 | 23.306 | -25.099 | 23.306 | 34.251 | 312.879 | 0.304 |
| 5600.000 | 0.439 | 335.377 | 5599.420 | 23.973 | -25.228 | 23.973 | 34.802 | 313.539 | 0.221 |
| 5700.000 | 0.535 | 331.874 | 5699.416 | 24.733 | -25.607 | 24.733 | 35.602 | 314.005 | 0.100 |
| 5800.000 | 0.634 | 342.153 | 5799.411 | 25.671 | -25.997 | 25.671 | 36.536 | 314.639 | 0.143 |
| 5900.000 | 0.584 | 325.370 | 5899.406 | 26.617 | -26.456 | 26.617 | 37.528 | 315.173 | 0.184 |

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|-------------------------|----------------------|---------------------------|-----------|-------------|-------------|---------------------------|---------------------------|-----------------------------|-------------------------------|
| 6000.000 | 0.428 | 295.041 | 5999.402 | 27.194 | -27.084 | 27.194 | 38.380 | 315.116 | 0.305 |
| 6100.000 | 0.424 | 331.170 | 6099.399 | 27.676 | -27.600 | 27.676 | 39.086 | 315.078 | 0.264 |
| 6200.000 | 0.599 | 358.745 | 6199.395 | 28.522 | -27.790 | 28.522 | 39.822 | 315.745 | 0.297 |
| 6300.000 | 0.742 | 329.235 | 6299.389 | 29.601 | -28.133 | 29.601 | 40.837 | 316.457 | 0.369 |
| 6400.000 | 0.879 | 3.238 | 6399.379 | 30.924 | -28.421 | 30.924 | 42.000 | 317.415 | 0.492 |
| 6500.000 | 0.565 | 46.652 | 6499.372 | 32.028 | -28.019 | 32.028 | 42.554 | 318.820 | 0.609 |
| 6600.000 | 0.827 | 44.785 | 6599.365 | 32.879 | -27.152 | 32.879 | 42.641 | 320.449 | 0.262 |
| 6700.000 | 0.780 | 358.319 | 6699.356 | 34.071 | -26.664 | 34.071 | 43.264 | 321.954 | 0.635 |
| 6800.000 | 0.837 | 352.563 | 6799.346 | 35.476 | -26.778 | 35.476 | 44.448 | 322.954 | 0.099 |
| 6900.000 | 0.833 | 43.711 | 6899.337 | 36.726 | -26.370 | 36.726 | 45.212 | 324.320 | 0.721 |
| 7000.000 | 0.805 | 5.403 | 6999.327 | 37.951 | -25.802 | 37.951 | 45.891 | 325.789 | 0.538 |
| 7100.000 | 0.974 | 353.237 | 7099.315 | 39.494 | -25.836 | 39.494 | 47.194 | 326.809 | 0.253 |
| 7200.000 | 0.885 | 350.894 | 7199.302 | 41.101 | -26.058 | 41.101 | 48.665 | 327.625 | 0.097 |
| 7300.000 | 0.550 | 1.428 | 7299.294 | 42.344 | -26.168 | 42.344 | 49.777 | 328.284 | 0.358 |
| 7400.000 | 0.877 | 320.998 | 7399.287 | 43.419 | -26.638 | 43.419 | 50.939 | 328.470 | 0.581 |
| 7500.000 | 1.769 | 330.295 | 7499.259 | 45.354 | -27.885 | 45.354 | 53.241 | 328.416 | 0.914 |
| 7600.000 | 2.043 | 303.438 | 7599.206 | 47.677 | -30.137 | 47.677 | 56.403 | 327.703 | 0.924 |
| 7700.000 | 1.249 | 282.950 | 7699.164 | 48.903 | -32.686 | 48.903 | 58.821 | 326.242 | 0.976 |