



Company: Noble Energy
Rig: Production/VES
API # 05-123-34854
Date: 1/12/2014
Surveyor: Nick Kula
VS: 0.000
Lat : 40.224
Long: -104.662

Well: Megan State H15-32D
Location: Weld County, Colorado
North Reference: GRID
Convergence: GRID North is 0.540 Degrees East
Declination: 8.45
Depth Reference: Ground Level
Elevation: 7905'
Total Depth as Drilled: 4819'

Lat & Long obtained by handheld GPS at wellhead

HA Gyro Survey Calculations

| Depth | Inc | AzG | N/-S | E/-W | TVD | DL | VS | CD | Cbrg |
|----------|--------|---------|---------|---------|----------|-------|---------|---------|--------|
| 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 100.000 | 0.201 | 28.991 | 0.154 | 0.085 | 100.000 | 0.201 | 0.154 | 0.176 | 28.991 |
| 200.000 | 0.330 | 104.094 | 0.237 | 0.449 | 199.999 | 0.339 | 0.237 | 0.508 | 62.176 |
| 300.000 | 0.547 | 114.890 | -0.034 | 1.161 | 299.996 | 0.232 | -0.034 | 1.161 | 91.672 |
| 400.000 | 1.047 | 85.321 | -0.160 | 2.504 | 399.986 | 0.631 | -0.160 | 2.509 | 93.661 |
| 500.000 | 2.245 | 84.005 | 0.119 | 5.362 | 499.943 | 1.199 | 0.119 | 5.363 | 88.730 |
| 600.000 | 4.246 | 87.657 | 0.475 | 11.010 | 599.778 | 2.011 | 0.475 | 11.020 | 87.531 |
| 700.000 | 6.570 | 81.188 | 1.503 | 20.364 | 699.327 | 2.399 | 1.503 | 20.419 | 85.779 |
| 800.000 | 7.979 | 68.146 | 4.963 | 32.461 | 798.526 | 2.162 | 4.963 | 32.838 | 81.307 |
| 900.000 | 9.284 | 50.133 | 12.719 | 45.096 | 897.410 | 2.985 | 12.719 | 46.856 | 74.249 |
| 1000.000 | 9.762 | 50.136 | 23.324 | 57.795 | 996.031 | 0.479 | 23.324 | 62.324 | 68.023 |
| 1100.000 | 11.437 | 44.264 | 35.860 | 71.224 | 1094.324 | 1.991 | 35.860 | 79.742 | 63.276 |
| 1200.000 | 13.793 | 39.942 | 52.102 | 85.800 | 1191.905 | 2.536 | 52.102 | 100.380 | 58.732 |
| 1300.000 | 14.701 | 37.508 | 71.307 | 101.179 | 1288.830 | 1.088 | 71.307 | 123.782 | 54.825 |
| 1400.000 | 15.287 | 36.186 | 92.013 | 116.688 | 1385.425 | 0.679 | 92.013 | 148.602 | 51.743 |
| 1500.000 | 15.492 | 37.050 | 113.312 | 132.518 | 1481.839 | 0.307 | 113.312 | 174.358 | 49.467 |
| 1600.000 | 15.392 | 30.871 | 135.362 | 147.375 | 1578.236 | 1.648 | 135.362 | 200.106 | 47.433 |
| 1700.000 | 15.303 | 29.557 | 158.232 | 160.694 | 1674.670 | 0.359 | 158.232 | 225.521 | 45.442 |
| 1800.000 | 15.622 | 30.514 | 181.311 | 174.040 | 1771.051 | 0.409 | 181.311 | 251.324 | 43.828 |
| 1900.000 | 15.421 | 29.921 | 204.434 | 187.509 | 1867.404 | 0.257 | 204.434 | 277.404 | 42.527 |
| 2000.000 | 15.412 | 28.527 | 227.632 | 200.486 | 1963.806 | 0.371 | 227.632 | 303.333 | 41.372 |
| 2100.000 | 14.980 | 32.283 | 250.233 | 213.735 | 2060.312 | 1.075 | 250.233 | 329.089 | 40.502 |
| 2200.000 | 15.094 | 32.836 | 272.100 | 227.698 | 2156.888 | 0.183 | 272.100 | 354.802 | 39.923 |
| 2300.000 | 15.384 | 29.323 | 294.605 | 241.254 | 2253.374 | 0.967 | 294.605 | 380.783 | 39.314 |
| 2400.000 | 14.057 | 33.250 | 316.327 | 254.410 | 2350.092 | 1.659 | 316.327 | 405.940 | 38.808 |
| 2500.000 | 13.207 | 27.530 | 336.614 | 266.349 | 2447.278 | 1.593 | 336.614 | 429.245 | 38.353 |
| 2600.000 | 12.335 | 28.608 | 356.122 | 276.744 | 2544.804 | 0.904 | 356.122 | 451.010 | 37.851 |
| 2700.000 | 12.830 | 30.092 | 375.105 | 287.425 | 2642.402 | 0.591 | 375.105 | 472.565 | 37.461 |
| 2800.000 | 13.896 | 32.391 | 394.852 | 299.425 | 2739.694 | 1.191 | 394.852 | 495.544 | 37.174 |
| 2900.000 | 14.397 | 28.365 | 415.932 | 311.764 | 2836.663 | 1.104 | 415.932 | 519.804 | 36.854 |
| 3000.000 | 14.078 | 31.442 | 437.248 | 324.015 | 2933.593 | 0.821 | 437.248 | 544.216 | 36.540 |
| 3100.000 | 13.757 | 32.298 | 457.675 | 336.712 | 3030.657 | 0.381 | 457.675 | 568.192 | 36.342 |
| 3200.000 | 13.547 | 30.406 | 477.827 | 348.993 | 3127.833 | 0.494 | 477.827 | 591.705 | 36.143 |
| 3300.000 | 13.356 | 32.087 | 497.714 | 361.056 | 3225.090 | 0.435 | 497.714 | 614.883 | 35.958 |
| 3400.000 | 12.370 | 31.818 | 516.603 | 372.840 | 3322.579 | 0.988 | 516.603 | 637.093 | 35.819 |
| 3500.000 | 11.810 | 34.854 | 534.102 | 384.335 | 3420.361 | 0.848 | 534.102 | 658.011 | 35.738 |

| | | | | | | | | | |
|----------|--------|---------|---------|---------|----------|-------|---------|---------|--------|
| 3600.000 | 12.792 | 38.531 | 551.161 | 397.080 | 3518.066 | 1.256 | 551.161 | 679.302 | 35.771 |
| 3700.000 | 13.245 | 24.023 | 570.290 | 408.644 | 3615.521 | 3.291 | 570.290 | 701.584 | 35.624 |
| 3800.000 | 13.654 | 26.970 | 591.274 | 418.661 | 3712.780 | 0.798 | 591.274 | 724.487 | 35.301 |
| 3900.000 | 14.100 | 33.740 | 611.923 | 430.780 | 3809.867 | 1.683 | 611.923 | 748.346 | 35.145 |
| 4000.000 | 14.772 | 36.114 | 632.351 | 445.059 | 3906.711 | 0.895 | 632.351 | 773.270 | 35.139 |
| 4100.000 | 15.403 | 37.128 | 653.239 | 460.589 | 4003.263 | 0.684 | 653.239 | 799.289 | 35.187 |
| 4200.000 | 14.612 | 35.683 | 674.073 | 475.963 | 4099.852 | 0.875 | 674.073 | 825.176 | 35.226 |
| 4300.000 | 13.759 | 34.936 | 694.068 | 490.131 | 4196.802 | 0.872 | 694.068 | 849.682 | 35.229 |
| 4400.000 | 11.759 | 37.834 | 711.867 | 503.193 | 4294.329 | 2.100 | 711.867 | 871.756 | 35.255 |
| 4500.000 | 10.443 | 30.521 | 727.723 | 514.047 | 4392.460 | 1.925 | 727.723 | 890.969 | 35.236 |
| 4600.000 | 9.195 | 24.911 | 742.778 | 522.015 | 4490.996 | 1.571 | 742.778 | 907.865 | 35.099 |
| 4700.000 | 7.844 | 27.332 | 756.087 | 528.514 | 4589.890 | 1.397 | 756.087 | 922.493 | 34.954 |
| 4800.000 | 5.978 | 29.537 | 766.680 | 534.214 | 4689.160 | 1.885 | 766.680 | 934.443 | 34.868 |
| 4900.000 | 4.072 | 26.230 | 774.396 | 538.351 | 4788.771 | 1.927 | 774.396 | 943.138 | 34.807 |
| 5000.000 | 2.925 | 20.914 | 779.964 | 540.831 | 4888.583 | 1.191 | 779.964 | 949.126 | 34.738 |
| 5100.000 | 0.998 | 45.377 | 782.959 | 542.362 | 4988.521 | 2.058 | 782.959 | 952.460 | 34.711 |
| 5200.000 | 0.932 | 47.741 | 784.118 | 543.583 | 5088.507 | 0.078 | 784.118 | 954.109 | 34.731 |
| 5300.000 | 0.785 | 56.232 | 785.045 | 544.754 | 5188.496 | 0.194 | 785.045 | 955.538 | 34.757 |
| 5400.000 | 0.494 | 76.396 | 785.527 | 545.743 | 5288.490 | 0.363 | 785.527 | 956.498 | 34.790 |
| 5500.000 | 0.709 | 82.429 | 785.710 | 546.776 | 5388.484 | 0.224 | 785.710 | 957.238 | 34.834 |
| 5600.000 | 0.656 | 82.571 | 785.866 | 547.957 | 5488.477 | 0.054 | 785.866 | 958.041 | 34.887 |
| 5700.000 | 0.199 | 142.583 | 785.802 | 548.630 | 5588.474 | 0.582 | 785.802 | 958.373 | 34.922 |
| 5800.000 | 0.423 | 87.210 | 785.682 | 549.104 | 5688.473 | 0.351 | 785.682 | 958.546 | 34.949 |
| 5900.000 | 0.807 | 106.989 | 785.494 | 550.146 | 5788.467 | 0.433 | 785.494 | 958.990 | 35.007 |
| 6000.000 | 0.881 | 101.190 | 785.139 | 551.574 | 5888.456 | 0.113 | 785.139 | 959.519 | 35.089 |
| 6100.000 | 1.034 | 86.365 | 785.047 | 553.229 | 5988.442 | 0.290 | 785.047 | 960.396 | 35.173 |
| 6200.000 | 0.952 | 98.679 | 784.979 | 554.951 | 6088.427 | 0.228 | 784.979 | 961.334 | 35.259 |
| 6300.000 | 1.073 | 107.928 | 784.565 | 556.663 | 6188.412 | 0.203 | 784.565 | 961.986 | 35.356 |
| 6400.000 | 1.177 | 110.581 | 783.916 | 558.516 | 6288.393 | 0.117 | 783.916 | 962.530 | 35.469 |
| 6500.000 | 1.111 | 108.291 | 783.251 | 560.398 | 6388.373 | 0.081 | 783.251 | 963.082 | 35.583 |
| 6600.000 | 0.773 | 111.461 | 782.700 | 561.946 | 6488.359 | 0.342 | 782.700 | 963.536 | 35.677 |
| 6700.000 | 0.647 | 84.300 | 782.509 | 563.135 | 6588.352 | 0.355 | 782.509 | 964.075 | 35.741 |
| 6800.000 | 0.597 | 46.070 | 782.926 | 564.072 | 6688.346 | 0.410 | 782.926 | 964.961 | 35.771 |
| 6900.000 | 0.486 | 26.162 | 783.668 | 564.634 | 6788.342 | 0.216 | 783.668 | 965.892 | 35.773 |
| 7000.000 | 0.800 | 357.581 | 784.747 | 564.792 | 6888.336 | 0.440 | 784.747 | 966.860 | 35.743 |
| 7100.000 | 0.626 | 354.837 | 785.989 | 564.713 | 6988.328 | 0.178 | 785.989 | 967.822 | 35.696 |
| 7200.000 | 0.568 | 5.358 | 787.025 | 564.710 | 7088.322 | 0.124 | 787.025 | 968.662 | 35.660 |
| 7300.000 | 0.734 | 12.972 | 788.142 | 564.900 | 7188.316 | 0.187 | 788.142 | 969.681 | 35.631 |
| 7400.000 | 0.776 | 21.203 | 789.398 | 565.289 | 7288.307 | 0.116 | 789.398 | 970.927 | 35.607 |
| 7500.000 | 0.721 | 49.237 | 790.439 | 566.010 | 7388.299 | 0.366 | 790.439 | 972.194 | 35.605 |
| 7600.000 | 0.879 | 33.548 | 791.489 | 566.910 | 7488.289 | 0.269 | 791.489 | 973.572 | 35.612 |
| 7650.000 | 0.925 | 46.418 | 792.087 | 567.414 | 7538.283 | 0.414 | 792.087 | 974.351 | 35.616 |

of True North