

GyroTracer Directional:

Date: 10/4/2018
 Operator : Adrian Bruner
 API: 05-123-26537
 Well Name: **Kammerzell J 29-19**
 Field : Noble Energy Inc
 Tool Type And Number: 1605
 Bottom Depth : 7250.00
 Total Well Depth: 7536.00
 Latitude : 40.374131 N
 Longitude : 104.807899 W
 Grid Offset : 0.45

**Starting Point Coordinates (in local grid):**

Northing: 0.00 Easting: 0.00 Altitude: 4923.00

Description:

Azimuth measured in degrees and referenced to local grid

Inclination measured from Vertical

Length measured in US survey feet

Start Time: 10/4/2018 7:19

End Time: 10/4/2018 8:27

| Depth | Inclination | Azimuth | Closure Direction | True Depth | Coordinates | | Dogleg Severity | Closure Distance |
|----------|-------------|---------|----------------------|------------|-------------|--------|--------------------|---------------------|
| | | | | | +N/-S | +E/-W | | |
| 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 100.000 | 0.460 | 241.776 | 225.000 | 100.000 | -0.560 | -0.560 | 0.460 | 0.792 |
| 200.000 | 0.466 | 227.942 | 229.497 | 199.997 | -0.979 | -1.146 | 0.119 | 1.507 |
| 300.000 | 0.583 | 218.541 | 225.504 | 299.994 | -1.568 | -1.596 | 0.135 | 2.237 |
| 400.000 | 0.393 | 192.821 | 220.648 | 399.990 | -2.320 | -1.992 | 0.196 | 3.058 |
| 500.000 | 0.577 | 193.274 | 216.696 | 499.986 | -3.096 | -2.307 | 0.226 | 3.861 |
| 600.000 | 0.382 | 182.521 | 212.474 | 599.982 | -3.931 | -2.502 | 0.118 | 4.659 |
| 700.000 | 0.591 | 182.461 | 207.301 | 699.976 | -4.964 | -2.562 | 0.211 | 5.587 |
| 800.000 | 0.584 | 179.857 | 202.413 | 799.970 | -6.071 | -2.504 | 0.044 | 6.567 |
| 900.000 | 0.517 | 164.683 | 198.562 | 899.965 | -7.001 | -2.351 | 0.108 | 7.386 |
| 1000.000 | 0.479 | 156.975 | 195.100 | 999.961 | -7.759 | -2.094 | 0.050 | 8.037 |
| 1100.000 | 0.446 | 152.147 | 192.614 | 1099.958 | -8.477 | -1.897 | 0.048 | 8.687 |
| 1200.000 | 0.710 | 173.617 | 190.710 | 1199.954 | -9.335 | -1.766 | 0.315 | 9.501 |
| 1300.000 | 0.670 | 191.126 | 189.396 | 1299.949 | -10.329 | -1.709 | 0.197 | 10.469 |
| 1400.000 | 0.662 | 192.757 | 189.183 | 1399.942 | -11.452 | -1.851 | 0.019 | 11.600 |
| 1500.000 | 0.702 | 180.912 | 189.804 | 1499.935 | -12.555 | -2.170 | 0.141 | 12.741 |
| 1600.000 | 0.793 | 186.144 | 189.823 | 1599.928 | -13.690 | -2.370 | 0.039 | 13.894 |
| 1700.000 | 0.754 | 189.497 | 189.692 | 1699.922 | -14.795 | -2.527 | 0.080 | 15.009 |
| 1800.000 | 0.304 | 220.969 | 190.650 | 1799.917 | -15.644 | -2.942 | 0.261 | 15.918 |
| 1900.000 | 0.359 | 230.362 | 192.192 | 1899.914 | -16.157 | -3.491 | 0.079 | 16.530 |
| 2000.000 | 0.420 | 248.493 | 194.119 | 1999.911 | -16.463 | -4.141 | 0.200 | 16.976 |
| 2100.000 | 0.508 | 254.424 | 196.523 | 2099.908 | -16.652 | -4.940 | 0.048 | 17.369 |
| 2200.000 | 0.694 | 251.573 | 198.985 | 2199.903 | -16.807 | -5.782 | 0.211 | 17.773 |
| 2300.000 | 0.620 | 266.902 | 201.172 | 2299.899 | -17.026 | -6.594 | 0.202 | 18.258 |

| | | | | | | | | |
|----------|-------|---------|---------|----------|---------|---------|-------|--------|
| 2400.000 | 0.470 | 300.333 | 203.231 | 2399.896 | -17.048 | -7.318 | 0.413 | 18.552 |
| 2500.000 | 0.393 | 310.904 | 205.945 | 2499.892 | -16.518 | -8.037 | 0.159 | 18.369 |
| 2600.000 | 0.694 | 309.846 | 208.719 | 2599.887 | -15.870 | -8.696 | 0.460 | 18.096 |
| 2700.000 | 0.646 | 295.877 | 211.978 | 2699.881 | -15.321 | -9.565 | 0.179 | 18.062 |
| 2800.000 | 0.800 | 290.416 | 215.887 | 2799.873 | -14.756 | -10.676 | 0.092 | 18.213 |
| 2900.000 | 0.958 | 282.720 | 220.072 | 2899.863 | -14.218 | -11.961 | 0.192 | 18.580 |
| 3000.000 | 0.989 | 274.751 | 224.237 | 2999.850 | -13.851 | -13.487 | 0.189 | 19.333 |
| 3100.000 | 1.200 | 278.328 | 228.280 | 3099.834 | -13.528 | -15.173 | 0.276 | 20.329 |
| 3200.000 | 1.123 | 267.970 | 231.705 | 3199.815 | -13.509 | -17.109 | 0.222 | 21.800 |
| 3300.000 | 1.389 | 259.482 | 234.188 | 3299.795 | -13.782 | -19.101 | 0.325 | 23.554 |
| 3400.000 | 1.348 | 229.751 | 235.656 | 3399.771 | -14.420 | -21.105 | 0.791 | 25.561 |
| 3500.000 | 2.165 | 247.500 | 237.268 | 3499.725 | -15.376 | -23.921 | 0.934 | 28.437 |
| 3600.000 | 1.810 | 252.093 | 238.976 | 3599.667 | -16.318 | -27.131 | 0.500 | 31.660 |
| 3700.000 | 1.716 | 253.651 | 239.656 | 3699.621 | -17.504 | -29.901 | 0.079 | 34.647 |
| 3800.000 | 1.650 | 231.489 | 239.898 | 3799.574 | -18.886 | -32.578 | 0.681 | 37.657 |
| 3900.000 | 1.463 | 223.855 | 238.962 | 3899.535 | -20.815 | -34.589 | 0.348 | 40.369 |
| 4000.000 | 1.282 | 218.325 | 238.299 | 3999.503 | -22.499 | -36.428 | 0.248 | 42.816 |
| 4100.000 | 1.160 | 218.089 | 237.375 | 4099.476 | -24.271 | -37.915 | 0.151 | 45.019 |
| 4200.000 | 1.083 | 190.013 | 236.073 | 4199.455 | -26.093 | -38.790 | 0.657 | 46.750 |
| 4300.000 | 1.195 | 171.593 | 233.908 | 4299.432 | -28.205 | -38.690 | 0.317 | 47.880 |
| 4400.000 | 1.039 | 182.315 | 231.734 | 4399.409 | -30.297 | -38.411 | 0.314 | 48.921 |
| 4500.000 | 0.569 | 144.699 | 230.400 | 4499.399 | -31.635 | -38.240 | 0.658 | 49.630 |
| 4600.000 | 0.247 | 289.318 | 230.575 | 4599.397 | -31.711 | -38.570 | 0.699 | 49.932 |
| 4700.000 | 0.743 | 188.135 | 230.853 | 4699.395 | -31.734 | -38.982 | 0.892 | 50.266 |
| 4800.000 | 1.131 | 167.982 | 229.544 | 4799.384 | -33.137 | -38.858 | 0.451 | 51.068 |
| 4900.000 | 1.235 | 158.620 | 227.415 | 4899.362 | -35.017 | -38.100 | 0.197 | 51.748 |
| 5000.000 | 0.790 | 146.088 | 225.261 | 4999.341 | -36.814 | -37.151 | 0.929 | 52.302 |
| 5100.000 | 1.155 | 157.885 | 223.730 | 5099.328 | -38.233 | -36.575 | 0.088 | 52.911 |
| 5200.000 | 0.743 | 165.918 | 222.294 | 5199.317 | -39.540 | -35.971 | 0.298 | 53.454 |
| 5300.000 | 0.368 | 155.793 | 221.336 | 5299.312 | -40.443 | -35.575 | 0.448 | 53.863 |
| 5400.000 | 0.581 | 176.194 | 220.344 | 5399.306 | -41.350 | -35.122 | 0.289 | 54.253 |
| 5500.000 | 0.806 | 192.446 | 219.924 | 5499.300 | -42.305 | -35.402 | 0.348 | 55.163 |
| 5600.000 | 0.897 | 200.566 | 219.716 | 5599.287 | -43.622 | -36.237 | 0.159 | 56.710 |
| 5700.000 | 1.172 | 215.587 | 219.308 | 5699.269 | -45.264 | -37.058 | 0.424 | 58.499 |
| 5800.000 | 0.941 | 185.331 | 218.710 | 5799.254 | -46.872 | -37.565 | 0.592 | 60.067 |
| 5900.000 | 0.638 | 149.080 | 217.700 | 5899.243 | -48.313 | -37.341 | 0.814 | 61.061 |
| 6000.000 | 0.709 | 169.177 | 216.796 | 5999.235 | -49.304 | -36.878 | 0.288 | 61.570 |
| 6100.000 | 0.820 | 137.718 | 215.743 | 6099.227 | -50.325 | -36.219 | 0.446 | 62.003 |
| 6200.000 | 0.700 | 128.192 | 214.652 | 6199.220 | -51.207 | -35.393 | 0.182 | 62.248 |
| 6300.000 | 0.774 | 134.396 | 213.559 | 6299.211 | -52.119 | -34.574 | 0.067 | 62.544 |
| 6400.000 | 0.627 | 110.289 | 212.389 | 6399.202 | -52.875 | -33.542 | 0.405 | 62.616 |
| 6500.000 | 0.763 | 117.932 | 211.259 | 6499.194 | -53.494 | -32.473 | 0.017 | 62.579 |
| 6600.000 | 1.101 | 68.135 | 209.986 | 6599.183 | -54.087 | -31.210 | 0.839 | 62.446 |
| 6700.000 | 0.490 | 97.286 | 208.725 | 6699.172 | -54.595 | -29.921 | 0.476 | 62.256 |
| 6800.000 | 1.059 | 111.574 | 207.191 | 6799.157 | -55.110 | -28.311 | 0.318 | 61.957 |
| 6900.000 | 1.120 | 111.610 | 205.383 | 6899.138 | -56.015 | -26.578 | 0.178 | 62.001 |
| 7000.000 | 0.832 | 133.486 | 203.414 | 6999.114 | -56.826 | -24.607 | 0.519 | 61.925 |
| 7100.000 | 1.847 | 85.008 | 201.183 | 7099.078 | -56.728 | -21.984 | 1.213 | 60.839 |
| 7200.000 | 2.500 | 55.665 | 198.631 | 7199.007 | -55.180 | -18.603 | 1.267 | 58.232 |
| 7250.000 | 2.600 | 70.060 | 196.787 | 7256.703 | -53.606 | -16.172 | 0.460 | 55.993 |