



Company/Rig: Noble Energy/ CoreTech
WELL/API#: STATE M 36-7/05-123-23206
DECLINATION: 8.27 Degrees
TD AS DRILLED: 7655'
COUNTY/STATE: WELD/COLORADO
VS-Azi: 0.000 Degrees
Latitude: 40.44508, Longitude: -104.83956
Grid North = True North -0.43 degs (NAD 83)
Grid Correction Applied = -0.43 degs



Depth Reference : RKB=SURFACE ELEVATION=4720'

DRILLOG MS GYRO SURVEY CALCULATIONS

Filename: run1-01-de_01.ut

Minimum Curvature Method

Report Date/Time: 3/30/2017 / 16:21

LAT & LONG OBTAINED BY HANDHELD GPS AT WELLHEAD

NORTH REFERENCE: GRID

COMMERCE CITY, COLORADO

303-853-4976

Surveyor: JAY HINMAN / State M 36-7

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	0.937	266.468	99.996	-0.050	-0.816	-0.050	0.818	266.468	0.937
200.000	1.160	241.495	199.979	-0.584	-2.522	-0.584	2.589	256.966	0.503
300.000	1.001	277.372	299.963	-0.955	-4.278	-0.955	4.383	257.417	0.682
400.000	0.933	264.616	399.948	-0.919	-5.955	-0.919	6.025	261.225	0.225
500.000	1.161	265.579	499.932	-1.074	-7.776	-1.074	7.849	262.138	0.228
600.000	1.252	263.083	599.909	-1.283	-9.870	-1.283	9.953	262.592	0.105
700.000	1.547	278.468	699.880	-1.216	-12.289	-1.216	12.349	264.349	0.475
800.000	1.437	260.218	799.847	-1.230	-14.861	-1.230	14.911	265.267	0.485
900.000	1.539	262.466	899.813	-1.620	-17.428	-1.620	17.503	264.691	0.117
1000.000	1.367	257.167	999.781	-2.061	-19.923	-2.061	20.029	264.095	0.218
1100.000	1.391	274.892	1099.752	-2.222	-22.295	-2.222	22.406	264.308	0.426
1200.000	1.252	274.262	1199.726	-2.038	-24.594	-2.038	24.678	265.264	0.140
1300.000	1.149	279.399	1299.704	-1.793	-26.672	-1.793	26.732	266.155	0.149
1400.000	1.193	262.803	1399.683	-1.759	-28.694	-1.759	28.748	266.491	0.341
1500.000	1.420	274.836	1499.657	-1.785	-30.962	-1.785	31.013	266.700	0.355
1600.000	1.369	276.784	1599.627	-1.540	-33.383	-1.540	33.418	267.359	0.070

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
1700.000	1.452	265.423	1699.597	-1.500	-35.832	-1.500	35.863	267.603	0.291
1800.000	1.256	279.924	1799.570	-1.412	-38.174	-1.412	38.201	267.882	0.393
1900.000	1.363	277.305	1899.544	-1.072	-40.434	-1.072	40.448	268.482	0.123
2000.000	0.984	247.230	1999.523	-1.253	-42.406	-1.253	42.424	268.308	0.711
2100.000	1.065	224.605	2099.508	-2.247	-43.850	-2.247	43.907	267.067	0.410
2200.000	1.154	236.329	2199.489	-3.466	-45.340	-3.466	45.473	265.628	0.243
2300.000	1.070	208.784	2299.471	-4.843	-46.628	-4.843	46.879	264.070	0.536
2400.000	1.365	217.635	2399.448	-6.605	-47.805	-6.605	48.259	262.134	0.349
2500.000	1.186	206.019	2499.424	-8.478	-48.986	-8.478	49.715	260.181	0.314
2600.000	1.309	223.434	2599.400	-10.238	-50.226	-10.238	51.258	258.479	0.397
2700.000	1.045	238.892	2699.379	-11.538	-51.792	-11.538	53.062	257.441	0.411
2800.000	1.087	239.896	2799.362	-12.485	-53.394	-12.485	54.834	256.839	0.046
2900.000	1.627	216.800	2899.334	-14.098	-55.065	-14.098	56.841	255.640	0.758
3000.000	1.598	205.511	2999.295	-16.493	-56.515	-16.493	58.873	253.731	0.318
3100.000	1.917	219.450	3099.248	-19.043	-58.179	-19.043	61.216	251.876	0.531
3200.000	2.143	226.424	3199.186	-21.624	-60.597	-21.624	64.339	250.361	0.335
3300.000	2.178	217.815	3299.115	-24.414	-63.116	-24.414	67.673	248.853	0.326
3400.000	2.618	208.982	3399.027	-27.912	-65.388	-27.912	71.096	246.884	0.573
3500.000	2.988	216.505	3498.908	-32.005	-68.045	-32.005	75.196	244.810	0.521
3600.000	2.967	212.487	3598.773	-36.283	-70.985	-36.283	79.720	242.927	0.210
3700.000	3.052	211.891	3698.635	-40.726	-73.782	-40.726	84.275	241.102	0.090
3800.000	3.301	217.054	3798.482	-45.284	-76.923	-45.284	89.262	239.515	0.379
3900.000	3.234	221.104	3898.319	-49.707	-80.512	-49.707	94.620	238.309	0.240
4000.000	2.944	224.566	3998.174	-53.663	-84.169	-53.663	99.820	237.480	0.345
4100.000	2.297	228.959	4098.069	-56.808	-87.482	-56.808	104.309	237.002	0.678
4200.000	2.107	231.826	4197.995	-59.260	-90.439	-59.260	108.124	236.765	0.219
4300.000	2.305	216.611	4297.922	-62.010	-93.083	-62.010	111.847	236.329	0.616
4400.000	2.506	198.108	4397.835	-65.702	-94.962	-65.702	115.475	235.321	0.798
4500.000	1.848	192.026	4497.762	-69.357	-95.977	-69.357	118.415	234.147	0.696
4600.000	1.572	201.075	4597.718	-72.215	-96.807	-72.215	120.775	233.278	0.385
4700.000	1.608	181.544	4697.680	-74.898	-97.338	-74.898	122.818	232.423	0.540
4800.000	1.627	187.864	4797.640	-77.706	-97.570	-77.706	124.732	231.466	0.179
4900.000	0.835	196.895	4897.617	-79.810	-97.976	-79.810	126.368	230.834	0.813
5000.000	0.732	233.633	4997.608	-80.886	-98.702	-80.886	127.611	230.666	0.503
5100.000	0.519	191.269	5097.602	-81.708	-99.305	-81.708	128.599	230.552	0.494
5200.000	0.320	147.179	5197.600	-82.387	-99.242	-82.387	128.983	230.302	0.365
5300.000	0.107	270.164	5297.599	-82.621	-99.183	-82.621	129.088	230.205	0.389
5400.000	1.007	238.639	5397.594	-83.079	-100.027	-83.079	130.029	230.288	0.918
5500.000	1.117	242.483	5497.577	-83.986	-101.642	-83.986	131.851	230.433	0.131

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
5600.000	1.202	223.122	5597.556	-85.203	-103.224	-85.203	133.846	230.463	0.399
5700.000	0.851	219.033	5697.540	-86.546	-104.409	-86.546	135.615	230.344	0.358
5800.000	0.778	217.216	5797.530	-87.663	-105.287	-87.663	137.004	230.219	0.078
5900.000	0.927	242.283	5897.519	-88.580	-106.414	-88.580	138.457	230.226	0.398
6000.000	1.036	226.245	5997.505	-89.581	-107.783	-89.581	140.150	230.269	0.294
6100.000	0.655	256.487	6097.494	-90.340	-108.991	-90.340	141.564	230.346	0.574
6200.000	1.026	237.050	6197.484	-90.960	-110.298	-90.960	142.966	230.488	0.463
6300.000	0.900	256.046	6297.470	-91.637	-111.811	-91.637	144.565	230.663	0.341
6400.000	1.073	228.776	6397.455	-92.443	-113.277	-92.443	146.210	230.783	0.494
6500.000	0.719	243.498	6497.443	-93.340	-114.543	-93.340	147.758	230.824	0.419
6600.000	0.787	251.398	6597.435	-93.839	-115.755	-93.839	149.014	230.970	0.124
6700.000	0.791	229.711	6697.425	-94.504	-116.933	-94.504	150.347	231.055	0.297
6800.000	1.215	205.695	6797.410	-95.906	-117.919	-95.906	151.996	230.878	0.589
6900.000	0.560	190.793	6897.398	-97.341	-118.470	-97.341	153.332	230.592	0.689
6950.000	0.461	248.244	6947.396	-97.656	-118.703	-97.656	153.711	230.556	0.997