



Company/Rig: Noble Energy/Production/CoreTech  
WELL/API#: BROWN, H I 01-27/05-123-11466  
DECLINATION: 8.21 Degrees  
TD AS DRILLED: 7350'  
COUNTY/STATE: WELD/COLORADO  
VS-Azi: 0.000 Degrees  
Latitude: 40.45376, Longitude: -104.76213  
Grid North = True North -0.48 degs (NAD 27)  
Grid Correction Applied = -0.48 degs



Depth Reference : RKB=SURFACE ELEVATION=4696'

DRILLOG MS GYRO SURVEY CALCULATIONS

Filename: run3-01-de\_01.ut

Minimum Curvature Method

Report Date/Time: 5/22/2017 / 15:04

LAT & LONG OBTAINED BY HANDHELD GPS AT WELLHEAD

NORTH REFERENCE: GRID

COMMERCE CITY, COLORADO

303-853-4976

Surveyor: JAY HINMAN / Brown, H I 01-27

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	0.359	288.707	99.999	0.101	-0.297	0.101	0.313	288.707	0.359
200.000	0.465	258.975	199.997	0.123	-0.992	0.123	0.999	277.099	0.235
300.000	0.426	245.496	299.994	-0.108	-1.728	-0.108	1.731	266.413	0.111
400.000	0.025	102.762	399.993	-0.267	-2.045	-0.267	2.062	262.549	0.447
500.000	0.267	176.329	499.993	-0.505	-2.009	-0.505	2.071	255.895	0.261
600.000	0.292	103.042	599.992	-0.795	-1.745	-0.795	1.918	245.514	0.334
700.000	0.251	72.269	699.991	-0.786	-1.288	-0.786	1.508	238.613	0.150
800.000	0.245	215.919	799.990	-0.892	-1.204	-0.892	1.498	233.472	0.472
900.000	0.249	9.350	899.990	-0.851	-1.294	-0.851	1.549	236.678	0.480
1000.000	0.335	110.898	999.989	-0.741	-0.985	-0.741	1.233	233.054	0.456
1100.000	0.229	334.448	1099.989	-0.665	-0.798	-0.665	1.039	230.196	0.526
1200.000	0.291	102.275	1199.988	-0.539	-0.636	-0.539	0.833	229.735	0.468
1300.000	0.322	126.611	1299.987	-0.760	-0.162	-0.760	0.777	192.048	0.133
1400.000	0.326	179.358	1399.985	-1.212	0.066	-1.212	1.214	176.870	0.288
1500.000	0.226	336.728	1499.985	-1.316	-0.008	-1.316	1.316	180.369	0.542
1600.000	0.287	68.765	1599.984	-1.044	0.147	-1.044	1.054	171.963	0.372

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	0.267	94.218	1699.983	-0.970	0.614	-0.970	1.148	147.668	0.124
1800.000	0.369	154.275	1799.982	-1.277	0.986	-1.277	1.614	142.318	0.330
1900.000	0.304	229.080	1899.980	-1.741	0.926	-1.741	1.972	151.986	0.412
2000.000	0.383	205.456	1999.979	-2.216	0.582	-2.216	2.291	165.280	0.161
2100.000	0.533	163.897	2099.976	-2.965	0.568	-2.965	3.019	169.164	0.354
2200.000	0.470	136.560	2199.972	-3.709	0.978	-3.709	3.836	165.225	0.245
2300.000	0.455	213.618	2299.970	-4.338	1.040	-4.338	4.461	166.517	0.576
2400.000	0.467	248.414	2399.967	-4.819	0.441	-4.819	4.839	174.767	0.276
2500.000	0.874	243.908	2499.960	-5.304	-0.622	-5.304	5.340	186.689	0.410
2600.000	0.949	262.401	2599.947	-5.749	-2.128	-5.749	6.130	200.312	0.302
2700.000	0.981	266.420	2699.933	-5.912	-3.803	-5.912	7.029	212.755	0.075
2800.000	0.987	244.917	2799.918	-6.330	-5.437	-6.330	8.345	220.661	0.367
2900.000	0.652	266.104	2899.908	-6.734	-6.785	-6.734	9.559	225.215	0.447
3000.000	0.494	309.157	2999.904	-6.500	-7.686	-6.500	10.066	229.780	0.445
3100.000	0.607	264.384	3099.900	-6.280	-8.548	-6.280	10.607	233.698	0.432
3200.000	0.505	291.367	3199.895	-6.171	-9.486	-6.171	11.316	236.954	0.278
3300.000	0.510	290.911	3299.891	-5.851	-10.312	-5.851	11.856	240.427	0.007
3400.000	0.899	328.642	3399.884	-5.022	-11.136	-5.022	12.216	245.725	0.586
3500.000	1.713	351.683	3499.858	-2.873	-11.761	-2.873	12.107	256.272	0.953
3600.000	2.228	15.107	3599.800	0.483	-11.470	0.483	11.481	272.410	0.946
3700.000	2.493	16.771	3699.715	4.442	-10.336	4.442	11.250	293.254	0.273
3800.000	2.590	4.526	3799.617	8.776	-9.530	8.776	12.956	312.640	0.550
3900.000	2.468	5.099	3899.520	13.173	-9.161	13.173	16.045	325.183	0.124
4000.000	2.015	359.170	3999.443	17.075	-8.995	17.075	19.299	332.220	0.508
4100.000	1.608	333.063	4099.395	20.084	-9.656	20.084	22.285	334.322	0.909
4200.000	1.417	316.856	4199.360	22.237	-11.137	22.237	24.870	333.396	0.467
4300.000	1.543	313.593	4299.327	24.067	-12.958	24.067	27.334	331.702	0.151
4400.000	1.290	315.942	4399.296	25.805	-14.716	25.805	29.706	330.305	0.259
4500.000	1.159	315.275	4499.273	27.333	-16.211	27.333	31.778	329.328	0.132
4600.000	0.578	319.870	4599.261	28.437	-17.248	28.437	33.259	328.762	0.584
4700.000	0.157	80.496	4699.260	28.846	-17.438	28.846	33.707	328.846	0.672
4800.000	0.502	16.035	4799.258	29.289	-17.181	29.289	33.957	329.603	0.456
4900.000	0.082	116.865	4899.257	29.677	-16.997	29.677	34.200	330.200	0.523
5000.000	0.540	3.131	4999.256	30.116	-16.907	30.116	34.537	330.691	0.578
5100.000	0.769	30.647	5099.249	31.164	-16.539	31.164	35.281	332.045	0.383
5200.000	1.125	25.665	5199.235	32.627	-15.772	32.627	36.239	334.201	0.365
5300.000	1.478	32.362	5299.209	34.601	-14.656	34.601	37.577	337.043	0.384
5400.000	1.945	35.049	5399.165	37.079	-12.992	37.079	39.289	340.691	0.473
5500.000	2.241	48.101	5499.098	39.773	-10.562	39.773	41.152	345.128	0.559

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	2.627	52.033	5599.008	42.489	-7.301	42.489	43.111	350.250	0.420
5700.000	1.779	55.041	5698.933	44.788	-4.222	44.788	44.986	354.615	0.855
5800.000	1.642	48.364	5798.889	46.629	-1.879	46.629	46.667	357.693	0.242
5900.000	1.355	66.734	5898.855	48.049	0.279	48.049	48.050	0.332	0.556
6000.000	1.103	59.037	5998.832	49.011	2.191	49.011	49.060	2.559	0.301
6100.000	1.112	49.873	6098.813	50.132	3.758	50.132	50.273	4.287	0.177
6200.000	0.784	67.019	6198.800	51.024	5.130	51.024	51.282	5.741	0.431
6300.000	0.519	12.563	6298.794	51.733	5.858	51.733	52.064	6.460	0.641
6400.000	0.585	19.636	6398.789	52.656	6.128	52.656	53.011	6.638	0.095
6500.000	0.843	331.054	6498.782	53.781	5.944	53.781	54.108	6.306	0.633
6600.000	0.674	344.398	6598.774	54.991	5.429	54.991	55.258	5.639	0.244
6700.000	1.117	321.464	6698.762	56.320	4.664	56.320	56.513	4.734	0.562
6800.000	1.225	323.763	6798.741	57.944	3.425	57.944	58.045	3.383	0.117
6900.000	1.470	337.339	6898.713	59.990	2.299	59.990	60.034	2.195	0.401
7000.000	1.620	323.401	6998.677	62.309	0.962	62.309	62.316	0.884	0.403
7100.000	1.793	337.447	7098.633	64.889	-0.481	64.889	64.890	359.575	0.451