



Company/Rig: Noble Energy/ CoreTech  
WELL/API#: CPC BOULTER 31-2/05-123-13328  
DECLINATION: 8.22 Degrees  
TD AS DRILLED: 7163'  
COUNTY/STATE: WELD/COLORADO  
VS-Azi: 0.000 Degrees  
Latitude: 40.36142, Longitude: -104.58508  
Grid North = True North -0.59 degs (NAD 27)  
Grid Correction Applied = -0.59 degs



Depth Reference : RKB=SURFACE ELEVATION=4761'

DRILLOG MS GYRO SURVEY CALCULATIONS

Filename: run1-01-de\_01.ut  
Minimum Curvature Method  
Report Date/Time: 6/1/2016 / 14:40

LAT & LONG OBTAINED BY HANDHELD GPS AT WELLHEAD  
NORTH REFERENCE: GRID  
HENDERSON, COLORADO  
303-853-4976

Surveyor: JAY HINMAN / CPC Boulter 31-2

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	0.310	27.107	100.000	0.241	0.123	0.241	0.271	27.107	0.310
200.000	0.237	321.142	199.999	0.643	0.117	0.643	0.653	10.327	0.304
300.000	0.274	142.913	299.998	0.613	0.132	0.613	0.627	12.141	0.511
400.000	0.329	111.238	399.997	0.318	0.544	0.318	0.630	59.682	0.173
500.000	0.334	108.860	499.995	0.120	1.087	0.120	1.094	83.713	0.015
600.000	0.231	354.157	599.995	0.226	1.342	0.226	1.361	80.453	0.479
700.000	0.384	29.271	699.993	0.719	1.486	0.719	1.650	64.191	0.237
800.000	0.379	21.083	799.991	1.319	1.769	1.319	2.207	53.278	0.055
900.000	0.346	116.930	899.990	1.491	2.157	1.491	2.622	55.344	0.538
1000.000	0.469	87.808	999.987	1.370	2.835	1.370	3.149	64.211	0.237
1100.000	0.370	126.197	1099.985	1.195	3.505	1.195	3.703	71.176	0.292
1200.000	0.118	54.959	1199.984	1.063	3.850	1.063	3.994	74.561	0.350
1300.000	0.450	79.527	1299.983	1.194	4.320	1.194	4.482	74.554	0.346
1400.000	0.251	139.027	1399.981	1.100	4.850	1.100	4.973	77.220	0.388
1500.000	0.200	75.212	1499.980	0.980	5.162	0.980	5.254	79.256	0.242
1600.000	0.545	88.795	1599.978	1.034	5.807	1.034	5.898	79.901	0.353
1700.000	0.446	75.645	1699.974	1.141	6.659	1.141	6.756	80.279	0.150
1800.000	0.171	187.420	1799.973	1.090	7.017	1.090	7.101	81.174	0.534

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
1900.000	0.355	207.255	1899.972	0.666	6.856	0.666	6.888	84.450	0.203
2000.000	0.367	212.958	1999.970	0.122	6.540	0.122	6.541	88.933	0.038
2100.000	0.326	161.804	2099.969	-0.418	6.454	-0.418	6.468	93.701	0.302
2200.000	0.476	171.701	2199.966	-1.099	6.603	-1.099	6.694	99.452	0.165
2300.000	0.270	147.729	2299.964	-1.710	6.789	-1.710	7.001	104.134	0.255
2400.000	0.477	147.674	2399.962	-2.260	7.137	-2.260	7.486	107.571	0.207
2500.000	0.551	205.233	2499.958	-3.047	7.154	-3.047	7.776	113.067	0.499
2600.000	0.441	217.870	2599.955	-3.786	6.713	-3.786	7.707	119.421	0.155
2700.000	0.189	146.690	2699.953	-4.228	6.568	-4.228	7.811	122.770	0.420
2800.000	0.339	139.323	2799.952	-4.590	6.851	-4.590	8.247	123.822	0.154
2900.000	0.353	145.531	2899.951	-5.069	7.219	-5.069	8.821	125.076	0.040
3000.000	0.398	157.933	2999.948	-5.645	7.524	-5.645	9.406	126.881	0.093
3100.000	0.615	198.845	3099.945	-6.475	7.481	-6.475	9.894	130.876	0.408
3200.000	0.453	218.422	3199.940	-7.292	7.062	-7.292	10.151	135.917	0.242
3300.000	0.611	273.026	3299.937	-7.573	6.284	-7.573	9.841	140.313	0.508
3400.000	0.815	286.424	3399.929	-7.344	5.070	-7.344	8.924	145.381	0.262
3500.000	0.911	264.604	3499.918	-7.217	3.596	-7.217	8.064	153.515	0.340
3600.000	1.232	278.569	3599.900	-7.132	1.742	-7.132	7.342	166.272	0.411
3700.000	1.215	281.406	3699.878	-6.762	-0.359	-6.762	6.772	183.043	0.063
3800.000	1.270	278.781	3799.854	-6.383	-2.494	-6.383	6.853	201.341	0.080
3900.000	1.337	292.695	3899.829	-5.764	-4.666	-5.764	7.416	218.992	0.323
4000.000	1.536	294.952	3999.797	-4.748	-6.958	-4.748	8.424	235.687	0.206
4100.000	2.070	293.972	4099.747	-3.450	-9.822	-3.450	10.411	250.649	0.535
4200.000	2.361	293.522	4199.672	-1.894	-13.361	-1.894	13.494	261.931	0.292
4300.000	2.781	290.833	4299.572	-0.209	-17.516	-0.209	17.518	269.316	0.437
4400.000	3.045	296.535	4399.442	1.840	-22.160	1.840	22.237	274.747	0.392
4500.000	3.026	290.730	4499.302	3.961	-27.005	3.961	27.294	278.345	0.308
4600.000	3.161	295.237	4599.157	6.071	-31.968	6.071	32.539	280.753	0.278
4700.000	3.344	297.909	4698.996	8.611	-37.039	8.611	38.027	283.089	0.237
4800.000	2.752	287.747	4798.855	10.708	-41.902	10.708	43.249	284.335	0.799
4900.000	2.197	284.014	4898.761	11.904	-46.048	11.904	47.562	284.495	0.577
5000.000	1.742	288.533	4998.702	12.852	-49.350	12.852	50.995	284.597	0.481
5100.000	1.605	296.658	5098.659	13.963	-52.042	13.963	53.883	285.019	0.273
5200.000	1.325	283.897	5198.627	14.869	-54.417	14.869	56.411	285.283	0.429
5300.000	0.841	273.442	5298.609	15.191	-56.271	15.191	58.286	285.107	0.521
5400.000	0.718	263.306	5398.599	15.162	-57.626	15.162	59.587	284.741	0.184
5500.000	0.550	245.619	5498.593	14.891	-58.685	14.891	60.545	284.238	0.255
5600.000	0.556	226.365	5598.589	14.358	-59.474	14.358	61.182	283.572	0.185
5700.000	0.257	173.214	5698.586	13.801	-59.798	13.801	61.370	282.996	0.451
5800.000	0.178	103.707	5798.586	13.541	-59.620	13.541	61.139	282.796	0.256

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
5900.000	0.258	121.090	5898.585	13.388	-59.276	13.388	60.770	282.727	0.103
6000.000	0.643	153.683	5998.582	12.769	-58.835	12.769	60.204	282.245	0.447
6100.000	0.605	157.421	6098.576	11.779	-58.383	11.779	59.560	281.406	0.055
6200.000	0.817	138.003	6198.568	10.761	-57.703	10.761	58.698	280.563	0.318
6300.000	1.227	152.145	6298.552	9.285	-56.726	9.285	57.481	279.295	0.478
6400.000	0.991	137.163	6398.534	7.704	-55.638	7.704	56.169	277.883	0.372
6500.000	1.551	157.562	6498.509	5.819	-54.533	5.819	54.843	276.091	0.711
6600.000	1.945	147.682	6598.463	3.134	-53.110	3.134	53.202	273.377	0.495
6700.000	2.381	147.636	6698.391	-0.055	-51.090	-0.055	51.090	269.938	0.437
6800.000	2.823	157.137	6798.288	-4.079	-49.021	-4.079	49.191	265.243	0.616
6900.000	3.118	150.675	6898.154	-8.719	-46.733	-8.719	47.539	259.431	0.445
6950.000	3.185	151.239	6948.079	-11.122	-45.398	-11.122	46.741	256.234	0.148