



Company/Rig: Noble Energy/ CoreTech
WELL/API#: GEMINI-UPRR B31-6/05-123-13723
DECLINATION: 8.23 Degrees
TD AS DRILLED: 7213'
COUNTY/STATE: WELD/COLORADO
VS-Azi: 0.000 Degrees
Latitude: 40.35750, Longitude: -104.59492
Grid North = True North -0.58 degs (NAD 27)
Grid Correction Applied = -0.58 degs



Depth Reference : RKB=SURFACE ELEVATION=4776'

DRILLOG MS GYRO SURVEY CALCULATIONS

Filename: survey-de_01.ut
Minimum Curvature Method
Report Date/Time: 6/2/2016 / 11:02

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

Surveyor: JAY HINMAN / Gemini-UPRR B31-6

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	0.197	158.151	100.000	-0.160	0.064	-0.160	0.172	158.151	0.197
200.000	0.225	314.584	200.000	-0.181	-0.012	-0.181	0.182	183.742	0.413
300.000	0.119	130.690	299.999	-0.111	-0.073	-0.111	0.133	213.244	0.344
400.000	0.422	67.183	399.998	-0.036	0.345	-0.036	0.347	95.993	0.384
500.000	0.196	118.501	499.997	0.025	0.835	0.025	0.835	88.283	0.336
600.000	0.031	128.669	599.997	-0.074	1.006	-0.074	1.009	94.179	0.165
700.000	0.420	9.649	699.996	0.271	1.089	0.271	1.122	76.026	0.436
800.000	0.311	11.624	799.994	0.898	1.205	0.898	1.503	53.300	0.110
900.000	0.316	95.929	899.993	1.135	1.534	1.135	1.908	53.498	0.421
1000.000	0.231	102.044	999.992	1.065	2.006	1.065	2.271	62.047	0.090
1100.000	0.176	323.857	1099.991	1.147	2.113	1.147	2.404	61.508	0.381
1200.000	0.097	341.530	1199.991	1.351	1.995	1.351	2.410	55.897	0.089
1300.000	0.523	18.741	1299.989	1.863	2.115	1.863	2.818	48.628	0.449
1400.000	0.787	69.504	1399.984	2.535	2.905	2.535	3.856	48.889	0.610
1500.000	0.440	72.058	1499.978	2.894	3.914	2.894	4.868	53.520	0.348
1600.000	0.735	41.735	1599.972	3.491	4.706	3.491	5.859	53.434	0.418
1700.000	0.878	79.688	1699.963	4.106	5.886	4.106	7.177	55.102	0.542
1800.000	0.552	47.838	1799.956	4.566	6.997	4.566	8.355	56.871	0.502

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	0.362	76.442	1899.953	4.963	7.661	4.963	9.128	57.061	0.291
2000.000	0.505	213.252	1999.951	4.669	7.726	4.669	9.027	58.856	0.808
2100.000	0.631	264.754	2099.947	4.250	6.936	4.250	8.135	58.505	0.506
2200.000	0.955	248.641	2199.937	3.896	5.612	3.896	6.832	55.233	0.390
2300.000	0.857	267.306	2299.925	3.557	4.089	3.557	5.420	48.979	0.309
2400.000	0.973	252.833	2399.912	3.272	2.531	3.272	4.136	37.724	0.258
2500.000	0.716	279.457	2499.902	3.124	1.103	3.124	3.313	19.446	0.462
2600.000	0.648	270.230	2599.895	3.229	-0.080	3.229	3.230	358.589	0.129
2700.000	0.703	252.066	2699.888	3.042	-1.229	3.042	3.281	337.997	0.220
2800.000	0.767	259.873	2799.880	2.735	-2.472	2.735	3.687	317.893	0.118
2900.000	0.681	282.442	2899.872	2.746	-3.711	2.746	4.616	306.496	0.296
3000.000	1.055	275.445	2999.860	2.961	-5.207	2.961	5.990	299.623	0.388
3100.000	0.904	289.076	3099.846	3.306	-6.869	3.306	7.623	295.702	0.276
3200.000	1.368	307.765	3199.826	4.295	-8.558	4.295	9.575	296.650	0.588
3300.000	1.364	331.928	3299.799	6.076	-10.062	6.076	11.755	301.127	0.572
3400.000	0.814	335.320	3399.780	7.772	-10.919	7.772	13.402	305.443	0.553
3500.000	0.460	38.279	3499.775	8.732	-10.967	8.732	14.019	308.529	0.731
3600.000	0.394	128.422	3599.773	8.834	-10.449	8.834	13.682	310.213	0.607
3700.000	0.342	179.781	3699.771	8.321	-10.178	8.321	13.146	309.269	0.323
3800.000	0.380	143.106	3799.769	7.757	-9.977	7.757	12.638	307.864	0.230
3900.000	0.421	147.002	3899.767	7.183	-9.578	7.183	11.972	306.870	0.049
4000.000	0.430	132.855	3999.764	6.620	-9.103	6.620	11.256	306.027	0.105
4100.000	0.143	121.190	4099.763	6.301	-8.721	6.301	10.759	305.846	0.291
4200.000	0.337	121.028	4199.762	6.084	-8.362	6.084	10.341	306.040	0.194
4300.000	0.292	203.490	4299.761	5.698	-8.211	5.698	9.994	304.759	0.417
4400.000	0.625	175.492	4399.758	4.920	-8.270	4.920	9.623	300.751	0.392
4500.000	0.757	177.755	4499.750	3.717	-8.201	3.717	9.004	294.380	0.134
4600.000	0.784	179.131	4599.741	2.372	-8.165	2.372	8.502	286.203	0.033
4700.000	0.797	175.700	4699.732	0.995	-8.102	0.995	8.163	277.000	0.049
4800.000	1.103	196.760	4799.718	-0.620	-8.328	-0.620	8.351	265.740	0.460
4900.000	1.219	192.916	4899.698	-2.579	-8.843	-2.579	9.212	253.741	0.140
5000.000	0.903	201.448	4999.680	-4.349	-9.369	-4.349	10.329	245.099	0.353
5100.000	0.965	219.025	5099.667	-5.737	-10.187	-5.737	11.691	240.616	0.292
5200.000	0.998	193.283	5199.653	-7.238	-10.918	-7.238	13.099	236.456	0.438
5300.000	0.498	216.386	5299.645	-8.436	-11.376	-8.436	14.162	233.440	0.574
5400.000	0.479	224.664	5399.641	-9.083	-11.927	-9.083	14.992	232.709	0.073
5500.000	0.816	207.829	5499.635	-10.010	-12.554	-10.010	16.056	231.431	0.383
5600.000	1.014	207.822	5599.622	-11.423	-13.299	-11.423	17.531	229.341	0.199
5700.000	0.330	203.051	5699.614	-12.470	-13.825	-12.470	18.618	227.949	0.686
5800.000	0.559	270.407	5799.612	-12.731	-14.425	-12.731	19.240	228.569	0.528

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	0.709	212.909	5899.607	-13.248	-15.249	-13.248	20.200	229.018	0.624
6000.000	0.602	232.493	5999.600	-14.087	-16.003	-14.087	21.320	228.642	0.247
6100.000	0.459	163.964	6099.597	-14.792	-16.309	-14.792	22.018	227.792	0.609
6200.000	0.517	178.722	6199.593	-15.627	-16.188	-15.627	22.501	226.010	0.138
6300.000	0.178	243.182	6299.591	-16.148	-16.317	-16.148	22.957	225.298	0.468
6400.000	0.616	159.203	6399.589	-16.721	-16.265	-16.721	23.327	224.207	0.623
6500.000	0.082	165.220	6499.587	-17.293	-16.055	-17.293	23.597	222.875	0.535
6600.000	0.314	211.681	6599.586	-17.595	-16.181	-17.595	23.904	222.603	0.264
6700.000	0.333	227.850	6699.585	-18.023	-16.541	-18.023	24.463	222.544	0.093
6800.000	0.483	156.924	6799.583	-18.606	-16.591	-18.606	24.929	221.724	0.489
6900.000	0.576	205.092	6899.579	-19.449	-16.640	-19.449	25.596	220.548	0.440