



Company/Rig: NOBLE ENERGY/
WELL/API#: NORRIS Y 6-5/05-123-18483
DECLINATION: 8.25 Degrees
TD AS DRILLED: 7675'
COUNTY/STATE: WELD/COLORADO
VS-Azi: 0.000 Degrees
Latitude: 40.17021, Longitude: -104.59959
Grid North = True North -0.58 degs (NAD 27)
Grid Correction Applied = -0.58 degs



DEPTH REFERENCE : RKB=SURFACE ELEVATION=4820'

DRILLOG MS GYRO SURVEY CALCULATIONS

Filename: run1-01-de_01.ut

Minimum Curvature Method

Report Date/Time: 12/17/2015 / 16:33

LAT & LONG OBTAINED BY HANDHELD GPS AT WELLHEAD

NORTH REFERENCE: GRID

HENDERSON, COLORADO

303-853-4976

Surveyor: JAY HINMAN / Norris Y 6-5

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	0.371	173.413	99.999	-0.322	0.037	-0.322	0.324	173.413	0.371
200.000	0.327	212.761	199.998	-0.883	-0.080	-0.883	0.887	185.178	0.239
300.000	0.304	207.874	299.996	-1.357	-0.358	-1.357	1.404	194.787	0.035
400.000	0.186	190.795	399.995	-1.751	-0.513	-1.751	1.825	196.318	0.137
500.000	0.268	166.081	499.994	-2.137	-0.487	-2.137	2.192	192.832	0.126
600.000	0.344	154.882	599.993	-2.636	-0.303	-2.636	2.654	186.558	0.097
700.000	0.438	148.657	699.991	-3.235	0.023	-3.235	3.235	179.590	0.102
800.000	0.423	152.119	799.988	-3.887	0.395	-3.887	3.907	174.205	0.030
900.000	0.446	166.549	899.985	-4.593	0.658	-4.593	4.640	171.848	0.112
1000.000	0.297	151.989	999.983	-5.200	0.870	-5.200	5.273	170.501	0.176
1100.000	0.586	109.068	1099.980	-5.596	1.475	-5.596	5.787	165.235	0.420
1200.000	0.469	145.711	1199.976	-6.101	2.188	-6.101	6.481	160.266	0.350
1300.000	0.446	287.386	1299.975	-6.322	2.048	-6.322	6.646	162.055	0.864
1400.000	0.617	65.660	1399.973	-5.984	2.167	-5.984	6.365	160.094	0.995
1500.000	0.445	122.581	1499.969	-5.971	2.985	-5.971	6.676	153.442	0.528
1600.000	0.839	84.464	1599.963	-6.110	4.040	-6.110	7.325	146.524	0.561
1700.000	1.009	54.442	1699.951	-5.527	5.485	-5.527	7.787	135.221	0.506
1800.000	0.493	82.107	1799.942	-4.956	6.627	-4.956	8.276	126.793	0.616

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	0.261	39.094	1899.940	-4.721	7.197	-4.721	8.607	123.263	0.351
2000.000	1.006	318.520	1999.934	-3.887	6.759	-3.887	7.797	119.900	0.997
2100.000	1.803	297.257	2099.904	-2.509	4.779	-2.509	5.397	117.695	0.939
2200.000	2.178	271.420	2199.845	-1.741	1.481	-1.741	2.286	139.617	0.962
2300.000	2.335	269.707	2299.768	-1.704	-2.456	-1.704	2.989	235.242	0.171
2400.000	1.643	286.543	2399.708	-1.306	-5.868	-1.306	6.011	257.448	0.898
2500.000	0.924	305.312	2499.683	-0.432	-7.900	-0.432	7.912	266.871	0.824
2600.000	1.092	328.904	2599.667	0.850	-9.050	0.850	9.090	275.365	0.444
2700.000	1.454	341.165	2699.643	2.867	-9.952	2.867	10.357	286.070	0.452
2800.000	1.434	344.951	2799.611	5.277	-10.687	5.277	11.919	296.278	0.098
2900.000	1.345	345.149	2899.582	7.620	-11.313	7.620	13.639	303.962	0.089
3000.000	1.316	322.525	2999.555	9.665	-12.312	9.665	15.653	308.133	0.523
3100.000	1.449	311.269	3099.526	11.411	-13.961	11.411	18.031	309.260	0.302
3200.000	1.566	300.495	3199.492	12.938	-16.089	12.938	20.646	308.805	0.306
3300.000	2.072	302.880	3299.441	14.613	-18.785	14.613	23.799	307.880	0.511
3400.000	1.757	325.893	3399.387	16.864	-21.163	16.864	27.060	308.550	0.824
3500.000	1.880	323.394	3499.336	19.450	-23.000	19.450	30.122	310.219	0.146
3600.000	2.483	333.609	3599.264	22.707	-24.941	22.707	33.729	312.315	0.715
3700.000	3.061	330.412	3699.146	26.969	-27.222	26.969	38.320	314.732	0.599
3800.000	3.051	329.356	3799.004	31.581	-29.897	31.581	43.488	316.569	0.057
3900.000	2.785	317.399	3898.875	35.659	-32.898	35.659	48.517	317.306	0.663
4000.000	2.899	316.043	3998.752	39.267	-36.298	39.267	53.474	317.250	0.132
4100.000	2.026	326.096	4098.660	42.555	-39.039	42.555	57.749	317.467	0.970
4200.000	1.595	338.002	4198.610	45.312	-40.546	45.312	60.805	318.177	0.571
4300.000	1.430	339.500	4298.575	47.771	-41.504	47.771	63.283	319.015	0.170
4400.000	1.587	2.148	4398.541	50.323	-41.889	50.323	65.476	320.226	0.612
4500.000	1.820	12.824	4498.497	53.255	-41.485	53.255	67.506	322.082	0.393
4600.000	1.011	3.810	4598.466	55.684	-41.074	55.684	69.193	323.586	0.837
4700.000	0.380	19.479	4698.458	56.876	-40.905	56.876	70.058	324.277	0.653
4800.000	0.635	230.676	4798.456	56.838	-41.223	56.838	70.213	324.048	0.980
4900.000	1.601	215.987	4898.436	55.357	-42.472	55.357	69.773	322.503	0.999
5000.000	2.300	195.546	4998.379	52.293	-43.831	52.293	68.233	320.031	0.976
5100.000	2.963	179.150	5098.274	47.776	-44.330	47.776	65.174	317.142	0.996
5200.000	2.556	163.091	5198.160	43.058	-43.643	43.058	61.309	314.614	0.869
5300.000	1.974	178.821	5298.082	39.203	-42.959	39.203	58.158	312.382	0.847
5400.000	2.068	161.758	5398.021	35.767	-42.359	35.767	55.440	310.177	0.607
5500.000	2.048	157.153	5497.956	32.407	-41.100	32.407	52.340	308.255	0.167
5600.000	1.736	182.915	5597.904	29.248	-40.484	29.248	49.944	305.847	0.896
5700.000	1.628	205.963	5697.862	26.458	-41.183	26.458	48.949	302.719	0.680
5800.000	1.937	196.894	5797.813	23.564	-42.295	23.564	48.416	299.123	0.418

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	1.439	183.160	5897.770	20.693	-42.856	20.693	47.590	295.773	0.638
6000.000	0.907	155.951	5997.749	18.716	-42.602	18.716	46.532	293.716	0.756
6100.000	1.022	151.888	6097.735	17.206	-41.860	17.206	45.258	292.345	0.134
6200.000	1.129	125.504	6197.718	15.847	-40.637	15.847	43.618	291.304	0.502
6300.000	1.322	136.683	6297.695	14.436	-39.044	14.436	41.628	290.291	0.307
6400.000	0.845	153.082	6397.677	12.939	-37.919	12.939	40.066	288.841	0.564
6500.000	0.762	139.708	6497.668	11.774	-37.155	11.774	38.976	287.583	0.205
6600.000	0.832	196.252	6597.659	10.570	-36.928	10.570	38.411	285.973	0.757
6700.000	0.913	221.446	6697.648	9.276	-37.658	9.276	38.784	283.837	0.389
6800.000	0.908	208.514	6797.636	7.982	-38.564	7.982	39.382	281.694	0.205
6900.000	0.774	212.024	6897.625	6.713	-39.301	6.713	39.870	279.693	0.143
7000.000	0.460	139.072	6997.620	5.837	-39.396	5.837	39.826	278.428	0.776
7100.000	0.433	199.747	7097.618	5.178	-39.261	5.178	39.601	277.514	0.452
7200.000	0.467	78.450	7197.616	4.904	-38.989	4.904	39.297	277.169	0.785
7300.000	0.812	70.155	7297.610	5.226	-37.924	5.226	38.282	277.846	0.357
7400.000	0.377	139.970	7397.605	5.215	-37.045	5.215	37.411	278.013	0.768
7500.000	0.369	140.340	7497.603	4.715	-36.628	4.715	36.930	277.335	0.008