



Company/Rig: NOBLE ENERGY/ CORETECH  
WELL/API#: WELLS RANCH USX BB 3-13/05-123-26263  
DECLINATION: 8.16  
TD AS DRILLED: 6,879 FEET  
COUNTY/STATE: WELD/COLORADO  
VS-Azi: 0.000 Degrees  
Latitude: 40.42300, Longitude: -104.43000  
Grid Convergence Applied = -0.69 degs (NAD 27)  
Grid North = True North -0.69 degs



DEPTH REFERENCE : RKB=SURFACE ELEVATION=4,711 FEET

DRILLOG MS GYRO SURVEY CALCULATIONS

Filename: msgyro\_run01-01-de\_01.ut

Minimum Curvature Method

Report Date/Time: 5/19/2015 / 15:11

LAT & LONG OBTAINED BY HANDHELD GPS AT WELLHEAD

NORTH REFERENCE: GRID

HENDERSON, COLORADO

303-853-4976

Surveyor: LEVI SHELDON

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	335.447	99.999	0.285	-0.130	0.285	0.313	335.447	0.359
200.000	0.360	323.132	199.997	0.820	-0.448	0.820	0.935	331.339	0.077
300.000	0.698	300.809	299.993	1.384	-1.160	1.384	1.806	320.023	0.390
400.000	0.865	300.027	399.984	2.073	-2.337	2.073	3.124	311.581	0.167
500.000	1.283	313.710	499.966	3.225	-3.800	3.225	4.984	310.321	0.488
600.000	1.777	311.294	599.930	5.022	-5.774	5.022	7.653	311.014	0.497
700.000	1.787	311.099	699.882	7.070	-8.114	7.070	10.762	311.066	0.012
800.000	1.867	305.045	799.831	9.031	-10.623	9.031	13.943	310.368	0.209
900.000	2.058	306.668	899.772	11.038	-13.397	11.038	17.359	309.487	0.199
1000.000	2.156	298.061	999.705	12.996	-16.498	12.996	21.002	308.229	0.331
1100.000	2.226	300.372	1099.632	14.863	-19.833	14.863	24.784	306.847	0.112
1200.000	2.285	298.831	1199.554	16.806	-23.255	16.806	28.692	305.855	0.085
1300.000	2.319	295.266	1299.474	18.631	-26.832	18.631	32.666	304.775	0.147
1400.000	2.395	297.097	1399.389	20.446	-30.521	20.446	36.737	303.818	0.107
1500.000	2.405	295.143	1499.301	22.289	-34.280	22.289	40.889	303.032	0.082
1600.000	2.189	290.618	1599.221	23.853	-37.967	23.853	44.838	302.139	0.281
1700.000	1.584	297.003	1699.167	25.153	-40.987	25.153	48.090	301.537	0.640
1800.000	1.267	316.084	1799.136	26.577	-42.985	26.577	50.538	301.728	0.567

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	1.071	338.568	1899.116	28.244	-44.093	28.244	52.363	302.641	0.494
2000.000	0.859	2.581	1999.102	29.863	-44.401	29.863	53.509	303.924	0.452
2100.000	0.472	30.398	2099.095	30.968	-44.159	30.968	53.935	305.041	0.494
2200.000	0.460	65.440	2199.092	31.490	-43.585	31.490	53.771	305.848	0.281
2300.000	0.711	97.668	2299.087	31.574	-42.605	31.574	53.030	306.541	0.404
2400.000	0.841	100.735	2399.078	31.354	-41.269	31.354	51.829	307.226	0.137
2500.000	0.612	67.386	2499.070	31.423	-40.055	31.423	50.910	308.114	0.471
2600.000	0.762	71.358	2599.063	31.841	-38.932	31.841	50.295	309.278	0.157
2700.000	1.115	83.479	2699.049	32.164	-37.335	32.164	49.279	310.745	0.403
2800.000	1.648	83.502	2799.020	32.437	-34.939	32.437	47.675	312.873	0.533
2900.000	1.717	87.430	2898.977	32.667	-32.013	32.667	45.739	315.579	0.134
3000.000	1.610	86.465	2998.935	32.821	-29.114	32.821	43.873	318.425	0.110
3100.000	1.373	83.339	3098.901	33.047	-26.522	33.047	42.373	321.251	0.251
3200.000	0.597	116.749	3198.886	32.951	-24.868	32.951	41.282	322.959	0.934
3300.000	0.850	200.539	3298.880	32.023	-24.663	32.023	40.419	322.398	0.984
3400.000	1.449	234.855	3398.861	30.600	-25.957	30.600	40.127	319.693	0.888
3500.000	1.743	236.240	3498.822	29.027	-28.255	29.027	40.509	315.772	0.296
3600.000	1.771	237.087	3598.775	27.343	-30.816	27.343	41.198	311.582	0.038
3700.000	1.948	255.939	3698.723	26.090	-33.762	26.090	42.669	307.696	0.634
3800.000	2.003	254.016	3798.664	25.196	-37.092	25.196	44.840	304.188	0.086
3900.000	1.815	257.434	3898.608	24.370	-40.318	24.370	47.111	301.151	0.220
4000.000	1.600	255.947	3998.564	23.686	-43.218	23.686	49.284	298.726	0.220
4100.000	1.282	250.834	4098.532	22.980	-45.629	22.980	51.089	296.731	0.343
4200.000	0.923	225.367	4198.514	22.047	-47.259	22.047	52.149	295.009	0.599
4300.000	0.961	209.236	4298.500	20.749	-48.242	20.749	52.515	293.272	0.267
4400.000	0.796	193.335	4398.489	19.341	-48.812	19.341	52.504	291.615	0.293
4500.000	0.607	176.521	4498.481	18.136	-48.940	18.136	52.193	290.333	0.277
4600.000	0.632	141.508	4598.476	17.175	-48.565	17.175	51.513	289.476	0.373
4700.000	1.208	94.856	4698.464	16.654	-47.172	16.654	50.025	289.446	0.900
4800.000	1.633	80.574	4798.433	16.798	-44.716	16.798	47.767	290.590	0.550
4900.000	1.703	84.892	4898.391	17.164	-41.830	17.164	45.215	292.310	0.144
5000.000	1.668	82.403	4998.347	17.489	-38.907	17.489	42.657	294.204	0.081
5100.000	1.406	91.245	5098.312	17.655	-36.237	17.655	40.309	295.975	0.353
5200.000	1.487	105.677	5198.280	17.277	-33.761	17.277	37.925	297.101	0.372
5300.000	1.870	117.478	5298.237	16.174	-31.064	16.174	35.022	297.504	0.514
5400.000	2.128	130.808	5398.177	14.207	-28.211	14.207	31.587	296.730	0.530
5500.000	2.032	137.432	5498.111	11.688	-25.607	11.688	28.148	294.535	0.259
5600.000	1.795	143.871	5598.055	9.118	-23.484	9.118	25.192	291.219	0.320
5700.000	1.902	152.325	5698.003	6.383	-21.790	6.383	22.706	286.328	0.293
5800.000	2.060	152.183	5797.944	3.324	-20.180	3.324	20.452	279.353	0.158

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	2.145	155.036	5897.876	0.038	-18.552	0.038	18.552	270.117	0.135
6000.000	2.588	144.915	5997.791	-3.506	-16.464	-3.506	16.833	257.977	0.608
6100.000	2.677	158.310	6097.687	-7.524	-14.303	-7.524	16.161	242.255	0.620
6200.000	2.850	166.145	6197.571	-12.107	-12.845	-12.107	17.651	226.695	0.415
6300.000	2.925	161.033	6297.444	-16.933	-11.421	-16.933	20.424	213.999	0.268
6400.000	3.247	165.109	6397.299	-22.082	-9.864	-22.082	24.185	204.070	0.389
6500.000	3.757	157.809	6497.112	-27.852	-7.899	-27.852	28.950	195.833	0.677
6600.000	3.628	171.513	6596.907	-34.015	-6.194	-34.015	34.574	190.321	0.890