



Company/Rig: NOBLE ENERGY/ CORETECH  
WELL: WELLS RANCH USX BB 1-16  
DECLINATION: 8.22  
TD AS DRILLED: 6,764 FEET  
COUNTY/STATE: WELD/COLORADO  
Latitude: 40.423, Longitude: -104.378  
GRID North is 0.720 Degrees East of True North  
VS-Azi: 0.000 Degrees



DEPTH REFERENCE : RKB=SURFACE ELEVATION=4,658 FEET

DRILLOG MS GYRO SURVEY CALCULATIONS

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

Minimum Curvature Method

Report Date/Time: 10/8/2014 / 13:39

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	0.426	314.888	99.999	0.263	-0.264	0.263	0.372	314.888	0.426
200.000	0.303	281.275	199.997	0.577	-0.786	0.577	0.975	306.255	0.242
300.000	0.375	265.884	299.995	0.605	-1.372	0.605	1.499	293.798	0.115
400.000	0.643	252.078	399.991	0.409	-2.232	0.409	2.269	280.377	0.294
500.000	0.658	247.698	499.985	0.018	-3.297	0.018	3.297	270.316	0.052
600.000	0.601	252.172	599.979	-0.360	-4.327	-0.360	4.342	265.243	0.075
700.000	0.471	271.676	699.975	-0.509	-5.237	-0.509	5.262	264.453	0.222
800.000	0.453	263.113	799.971	-0.544	-6.041	-0.544	6.065	264.854	0.071
900.000	0.511	269.848	899.968	-0.593	-6.879	-0.593	6.904	265.077	0.081
1000.000	0.474	275.484	999.964	-0.554	-7.737	-0.554	7.757	265.903	0.061
1100.000	0.633	288.416	1099.959	-0.340	-8.673	-0.340	8.680	267.755	0.202
1200.000	0.768	303.631	1199.952	0.206	-9.755	0.206	9.757	271.208	0.228
1300.000	0.561	304.599	1299.945	0.855	-10.716	0.855	10.750	274.559	0.207
1400.000	0.448	290.563	1399.941	1.270	-11.485	1.270	11.555	276.309	0.166
1500.000	0.297	290.884	1499.939	1.500	-12.094	1.500	12.186	277.069	0.151
1600.000	0.588	249.455	1599.936	1.412	-12.816	1.412	12.894	276.287	0.415
1700.000	0.569	246.143	1699.931	1.031	-13.751	1.031	13.790	274.288	0.038
1800.000	0.487	232.623	1799.927	0.572	-14.544	0.572	14.555	272.252	0.149
1900.000	0.687	251.977	1899.922	0.128	-15.451	0.128	15.452	270.476	0.278

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
2000.000	0.464	221.600	1999.917	-0.360	-16.290	-0.360	16.294	268.734	0.370
2100.000	0.442	203.745	2099.914	-1.016	-16.714	-1.016	16.745	266.521	0.142
2200.000	0.353	152.802	2199.912	-1.643	-16.729	-1.643	16.810	264.390	0.351
2300.000	0.344	146.073	2299.910	-2.166	-16.421	-2.166	16.563	262.486	0.042
2400.000	0.262	112.459	2399.909	-2.502	-16.043	-2.502	16.237	261.135	0.192
2500.000	0.124	97.741	2499.908	-2.604	-15.724	-2.604	15.939	260.597	0.145
2600.000	0.198	35.785	2599.908	-2.478	-15.516	-2.478	15.713	260.925	0.178
2700.000	0.291	0.825	2699.907	-2.084	-15.411	-2.084	15.552	262.297	0.171
2800.000	0.344	4.400	2799.905	-1.531	-15.385	-1.531	15.461	264.315	0.057
2900.000	0.629	324.602	2899.902	-0.784	-15.680	-0.784	15.699	267.136	0.426
3000.000	0.740	319.386	2999.895	0.153	-16.418	0.153	16.419	270.535	0.127
3100.000	0.634	352.975	3099.888	1.192	-16.906	1.192	16.948	274.033	0.410
3200.000	0.941	63.707	3199.880	2.105	-16.237	2.105	16.373	277.385	0.945
3300.000	0.724	74.792	3299.870	2.634	-14.892	2.634	15.123	280.031	0.269
3400.000	0.906	59.330	3399.860	3.203	-13.601	3.203	13.973	283.252	0.284
3500.000	0.863	51.795	3499.848	4.073	-12.329	4.073	12.984	288.279	0.124
3600.000	1.030	56.561	3599.834	5.034	-10.987	5.034	12.085	294.614	0.184
3700.000	1.382	68.036	3699.812	5.980	-9.119	5.980	10.905	303.255	0.425
3800.000	1.162	70.091	3799.787	6.776	-7.047	6.776	9.777	313.876	0.224
3900.000	0.905	54.194	3899.771	7.584	-5.453	7.584	9.341	324.281	0.383
4000.000	0.646	64.505	3999.762	8.288	-4.304	8.288	9.339	332.560	0.293
4100.000	0.297	54.065	4099.759	8.683	-3.585	8.683	9.394	337.568	0.358
4200.000	0.203	58.596	4199.758	8.928	-3.223	8.928	9.492	340.149	0.096
4300.000	0.117	16.333	4299.757	9.118	-3.043	9.118	9.613	341.543	0.141
4400.000	0.615	211.425	4399.756	8.758	-3.295	8.758	9.357	339.384	0.729
4500.000	1.236	224.569	4499.742	7.531	-4.331	7.531	8.688	330.097	0.652
4600.000	1.557	228.946	4599.712	5.871	-6.112	5.871	8.475	313.846	0.338
4700.000	1.694	230.838	4699.672	4.046	-8.282	4.046	9.218	296.033	0.147
4800.000	1.605	230.411	4799.631	2.220	-10.507	2.220	10.739	281.931	0.090
4900.000	1.039	236.178	4899.604	0.823	-12.339	0.823	12.367	273.817	0.580
5000.000	0.278	245.433	4999.596	0.218	-13.313	0.218	13.315	270.937	0.766
5100.000	0.176	238.343	5099.596	0.036	-13.664	0.036	13.664	270.152	0.106
5200.000	0.278	171.020	5199.595	-0.284	-13.757	-0.284	13.760	268.816	0.266
5300.000	0.241	199.437	5299.594	-0.723	-13.789	-0.723	13.808	266.999	0.133
5400.000	0.660	206.371	5399.591	-1.437	-14.115	-1.437	14.188	264.186	0.421
5500.000	0.357	201.148	5499.587	-2.244	-14.483	-2.244	14.656	261.193	0.305
5600.000	0.591	184.259	5599.583	-3.049	-14.634	-3.049	14.949	258.229	0.270
5700.000	0.548	205.753	5699.578	-3.994	-14.880	-3.994	15.407	254.974	0.217
5800.000	0.272	226.125	5799.576	-4.589	-15.259	-4.589	15.934	253.261	0.308
5900.000	0.319	255.175	5899.574	-4.825	-15.699	-4.825	16.424	252.916	0.155

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
6000.000	0.311	211.032	5999.573	-5.129	-16.109	-5.129	16.906	252.339	0.237
6100.000	0.666	262.504	6099.570	-5.437	-16.825	-5.437	17.682	252.090	0.531
6200.000	0.356	263.143	6199.566	-5.550	-17.709	-5.550	18.559	252.598	0.310
6300.000	0.466	263.758	6299.563	-5.632	-18.422	-5.632	19.264	253.002	0.109
6400.000	0.426	294.351	6399.560	-5.523	-19.165	-5.523	19.944	253.925	0.238
6500.000	0.633	295.232	6499.556	-5.134	-20.003	-5.134	20.651	255.606	0.208