



Company/Rig: NOBLE ENERGY/ CORETECH  
WELL/API#: WELLS RANCH USX BB 5-13/05-123-25282  
DECLINATION: 8.18  
TD AS DRILLED: 6,974 FEET  
COUNTY/STATE: WELD/COLORADO  
VS-Azi: 0.000 Degrees  
Latitude: 40.42300, Longitude: -104.46800  
Grid Convergence Applied = -0.67 degs (NAD 27)  
Grid North = True North -0.67 degs



DEPTH REFERENCE : RKB=SURFACE ELEVATION=4,710 FEET

DRILLOG MS GYRO SURVEY CALCULATIONS

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

Minimum Curvature Method

Report Date/Time: 5/19/2015 / 15:52

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	0.249	25.219	100.000	0.196	0.092	0.196	0.217	25.219	0.249
200.000	0.219	13.781	199.999	0.578	0.230	0.578	0.622	21.728	0.055
300.000	0.351	40.183	299.998	0.998	0.474	0.998	1.105	25.394	0.183
400.000	0.161	42.119	399.997	1.337	0.766	1.337	1.541	29.815	0.190
500.000	0.367	48.208	499.995	1.655	1.099	1.655	1.986	33.597	0.207
600.000	0.405	46.994	599.993	2.109	1.596	2.109	2.645	37.122	0.038
700.000	0.317	51.567	699.991	2.522	2.071	2.522	3.264	39.398	0.092
800.000	0.320	58.316	799.990	2.841	2.526	2.841	3.801	41.642	0.038
900.000	0.390	40.436	899.988	3.246	2.984	3.246	4.409	42.588	0.131
1000.000	0.312	53.995	999.986	3.666	3.425	3.666	5.017	43.058	0.114
1100.000	0.304	62.742	1099.984	3.948	3.882	3.948	5.537	44.519	0.048
1200.000	0.339	64.500	1199.983	4.197	4.385	4.197	6.070	46.256	0.036
1300.000	0.323	61.401	1299.981	4.459	4.899	4.459	6.625	47.694	0.023
1400.000	0.346	56.254	1399.980	4.762	5.398	4.762	7.199	48.584	0.038
1500.000	0.327	63.578	1499.978	5.057	5.905	5.057	7.774	49.425	0.047
1600.000	0.304	58.207	1599.976	5.323	6.385	5.323	8.313	50.184	0.038
1700.000	0.154	48.730	1699.975	5.552	6.712	5.552	8.710	50.405	0.153
1800.000	0.807	328.393	1799.972	6.240	6.444	6.240	8.970	45.921	0.796

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	1.598	311.141	1899.949	7.757	5.025	7.757	9.243	32.936	0.861
2000.000	1.941	305.797	1999.902	9.665	2.602	9.665	10.009	15.068	0.380
2100.000	1.968	305.983	2099.843	11.664	-0.161	11.664	11.665	359.210	0.028
2200.000	1.409	319.738	2199.800	13.611	-2.345	13.611	13.812	350.224	0.687
2300.000	1.181	334.048	2299.775	15.477	-3.591	15.477	15.888	346.937	0.394
2400.000	1.335	336.012	2399.751	17.468	-4.516	17.468	18.042	345.505	0.160
2500.000	1.485	336.177	2499.720	19.718	-5.513	19.718	20.474	344.379	0.149
2600.000	1.478	336.558	2599.687	22.087	-6.549	22.087	23.037	343.483	0.012
2700.000	1.350	330.659	2699.656	24.297	-7.640	24.297	25.469	342.545	0.194
2800.000	1.275	333.855	2799.630	26.322	-8.707	26.322	27.725	341.696	0.104
2900.000	0.839	315.852	2899.613	27.846	-9.707	27.846	29.490	340.781	0.543
3000.000	0.498	302.044	2999.606	28.603	-10.586	28.603	30.499	339.690	0.375
3100.000	0.315	285.701	3099.604	28.908	-11.219	28.908	31.008	338.789	0.215
3200.000	0.479	225.254	3199.602	28.688	-11.780	28.688	31.012	337.676	0.424
3300.000	0.649	202.340	3299.597	27.870	-12.291	27.870	30.460	336.201	0.279
3400.000	0.741	190.162	3399.590	26.710	-12.621	26.710	29.542	334.709	0.174
3500.000	1.123	164.214	3499.577	25.131	-12.468	25.131	28.054	333.612	0.560
3600.000	1.392	156.671	3599.553	23.073	-11.721	23.073	25.879	333.070	0.315
3700.000	1.808	157.234	3699.513	20.503	-10.629	20.503	23.094	332.596	0.417
3800.000	1.904	155.506	3799.461	17.536	-9.330	17.536	19.864	331.985	0.111
3900.000	1.995	159.833	3899.403	14.391	-8.042	14.391	16.485	330.804	0.173
4000.000	1.688	160.076	3999.351	11.373	-6.940	11.373	13.323	328.609	0.306
4100.000	1.356	163.881	4099.316	8.851	-6.109	8.851	10.754	325.386	0.347
4200.000	0.952	167.651	4199.295	6.903	-5.603	6.903	8.891	320.935	0.411
4300.000	0.411	151.518	4299.288	5.776	-5.254	5.776	7.808	317.710	0.568
4400.000	0.039	313.790	4399.287	5.484	-5.108	5.484	7.495	317.037	0.449
4500.000	0.456	335.010	4499.286	5.869	-5.301	5.869	7.909	317.913	0.420
4600.000	1.005	359.619	4599.278	7.107	-5.475	7.107	8.971	322.391	0.620
4700.000	1.449	12.506	4699.255	9.218	-5.207	9.218	10.587	330.541	0.520
4800.000	2.053	9.388	4799.208	12.220	-4.641	12.220	13.072	339.204	0.611
4900.000	2.723	0.622	4899.121	16.362	-4.323	16.362	16.923	345.200	0.761
5000.000	2.792	353.624	4999.005	21.158	-4.568	21.158	21.645	347.817	0.343
5100.000	2.139	1.014	5098.912	25.444	-4.805	25.444	25.894	349.306	0.725
5200.000	1.788	5.689	5198.853	28.862	-4.617	28.862	29.229	350.911	0.386
5300.000	1.466	5.355	5298.813	31.688	-4.344	31.688	31.984	352.195	0.322
5400.000	1.159	10.277	5398.787	33.956	-4.044	33.956	34.196	353.209	0.326
5500.000	1.142	7.611	5498.767	35.939	-3.731	35.939	36.132	354.072	0.056
5600.000	0.873	20.308	5598.751	37.641	-3.335	37.641	37.788	354.937	0.348
5700.000	0.413	6.534	5698.745	38.713	-3.030	38.713	38.831	355.525	0.482
5800.000	0.349	358.878	5798.742	39.375	-2.995	39.375	39.489	355.651	0.081

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	0.409	313.811	5898.740	39.927	-3.258	39.927	40.059	355.335	0.296
6000.000	0.876	275.421	5998.734	40.246	-4.277	40.246	40.473	353.933	0.611
6100.000	1.772	269.069	6098.707	40.293	-6.584	40.293	40.828	350.720	0.906
6200.000	2.344	268.379	6198.642	40.210	-10.173	40.210	41.477	345.802	0.573
6300.000	2.621	267.646	6298.548	40.059	-14.502	40.059	42.603	340.099	0.279
6400.000	2.500	266.395	6398.448	39.828	-18.962	39.828	44.111	334.540	0.133
6500.000	1.949	282.861	6498.373	40.069	-22.797	40.069	46.100	330.362	0.838
6600.000	1.660	283.136	6598.324	40.777	-25.865	40.777	48.288	327.612	0.289
6700.000	1.658	290.201	6698.282	41.605	-28.633	41.605	50.506	325.464	0.204