



Company/Rig: NOBLE ENERGY/CORETECH  
WELL/API#: WELLS RANCH USX AA 33-23/05-123-25114  
DECLINATION: 8.17 DEGREES  
TD AS DRILLED: 7017 FEET  
COUNTY/STATE: WELD/COLORADO  
VS-Azi: 0.000 Degrees  
Latitude: 40.43908, Longitude: -104.43752  
Grid Convergence Applied = -0.69 degs (NAD 27)  
Grid North = True North -0.69 degs



DEPTH REFERENCE : RKB=SURFACE ELEVATION= 4799 FEET

DRILLOG MS GYRO SURVEY CALCULATIONS

Filename: msgyro\_run02-02-de\_01.ut

Minimum Curvature Method

Report Date/Time: 5/7/2015 / 08:37

LAT & LONG OBTAINED BY HANDHELD GPS AT WELLHEAD

NORTH REFERENCE: GRID

HENDERSON, COLORADO

303-853-4976

Surveyor: KEVIN MCDOWELL

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	0.718	81.192	99.997	0.096	0.620	0.096	0.627	81.192	0.718
200.000	0.244	61.761	199.994	0.293	1.427	0.293	1.456	78.403	0.495
300.000	0.040	58.879	299.993	0.412	1.644	0.412	1.695	75.943	0.204
400.000	0.373	102.480	399.992	0.360	1.992	0.360	2.024	79.766	0.345
500.000	0.518	62.877	499.990	0.495	2.712	0.495	2.756	79.648	0.331
600.000	0.559	327.393	599.987	1.112	2.851	1.112	3.060	68.683	0.798
700.000	0.378	35.082	699.984	1.794	2.777	1.794	3.306	57.146	0.543
800.000	0.383	38.500	799.982	2.326	3.175	2.326	3.936	53.782	0.023
900.000	0.596	333.961	899.979	3.055	3.155	3.055	4.392	45.927	0.553
1000.000	0.465	39.086	999.975	3.838	3.183	3.838	4.986	39.675	0.582
1100.000	0.409	322.999	1099.973	4.437	3.225	4.437	5.485	36.006	0.540
1200.000	0.287	3.819	1199.971	4.972	3.027	4.972	5.821	31.333	0.268
1300.000	0.330	2.270	1299.970	5.509	3.055	5.509	6.300	29.008	0.044
1400.000	0.399	15.508	1399.968	6.133	3.159	6.133	6.899	27.256	0.108
1500.000	0.607	23.997	1499.964	6.953	3.468	6.953	7.770	26.511	0.221
1600.000	0.657	21.550	1599.958	7.970	3.894	7.970	8.871	26.040	0.056
1700.000	0.675	20.563	1699.951	9.055	4.312	9.055	10.029	25.463	0.022
1800.000	0.700	33.307	1799.944	10.117	4.854	10.117	11.221	25.631	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
1900.000	0.633	36.986	1899.937	11.068	5.521	11.068	12.369	26.512	0.079
2000.000	0.659	52.279	1999.931	11.861	6.309	11.861	13.435	28.007	0.174
2100.000	0.662	85.348	2099.925	12.260	7.339	12.260	14.289	30.906	0.376
2200.000	0.363	100.744	2199.921	12.248	8.226	12.248	14.754	33.885	0.326
2300.000	0.335	108.838	2299.919	12.095	8.813	12.095	14.965	36.079	0.057
2400.000	0.250	133.148	2399.918	11.851	9.248	11.851	15.033	37.966	0.148
2500.000	0.375	154.831	2499.916	11.406	9.546	11.406	14.874	39.926	0.170
2600.000	0.670	151.669	2599.912	10.596	9.963	10.596	14.544	43.237	0.297
2700.000	0.445	130.975	2699.907	9.826	10.534	9.826	14.405	46.990	0.299
2800.000	0.161	151.291	2799.906	9.448	10.894	9.448	14.421	49.065	0.300
2900.000	0.176	156.660	2899.905	9.184	11.022	9.184	14.347	50.197	0.022
3000.000	0.315	131.087	2999.904	8.863	11.290	8.863	14.353	51.867	0.173
3100.000	0.036	190.120	3099.904	8.651	11.492	8.651	14.384	53.026	0.298
3200.000	0.086	149.424	3199.904	8.555	11.524	8.555	14.353	53.410	0.063
3300.000	0.248	156.737	3299.903	8.292	11.648	8.292	14.298	54.553	0.162
3400.000	0.115	187.374	3399.903	7.994	11.720	7.994	14.187	55.703	0.160
3500.000	0.309	3.130	3499.902	8.165	11.722	8.165	14.285	55.143	0.424
3600.000	0.803	16.434	3599.897	9.106	11.935	9.106	15.013	52.658	0.507
3700.000	0.839	18.653	3699.887	10.472	12.368	10.472	16.206	49.744	0.048
3800.000	0.881	34.877	3799.876	11.797	13.042	11.797	17.586	47.869	0.246
3900.000	1.092	36.876	3899.861	13.190	14.053	13.190	19.274	46.815	0.214
4000.000	1.208	28.039	3999.841	14.883	15.121	14.883	21.216	45.455	0.211
4100.000	0.965	52.974	4099.824	16.320	16.288	16.320	23.057	44.944	0.526
4200.000	1.068	29.268	4199.808	17.639	17.416	17.639	24.788	44.634	0.430
4300.000	1.151	25.412	4299.790	19.360	18.302	19.360	26.642	43.392	0.112
4400.000	1.342	0.387	4399.767	21.438	18.741	21.438	28.475	41.160	0.571
4500.000	2.179	1.272	4499.719	24.510	18.791	24.510	30.884	37.477	0.837
4600.000	2.543	359.614	4599.633	28.629	18.819	28.629	34.260	33.318	0.371
4700.000	2.180	351.117	4699.549	32.727	18.510	32.727	37.599	29.492	0.503
4800.000	2.180	358.817	4799.476	36.508	18.177	36.508	40.783	26.469	0.293
4900.000	2.888	359.627	4899.378	40.929	18.122	40.929	44.761	23.882	0.708
5000.000	3.301	14.557	4999.234	46.234	18.829	46.234	49.921	22.159	0.902
5100.000	3.259	17.858	5099.070	51.726	20.424	51.726	55.612	21.547	0.193
5200.000	3.280	6.506	5198.908	57.274	21.620	57.274	61.218	20.681	0.647
5300.000	2.973	13.931	5298.760	62.632	22.568	62.632	66.574	19.816	0.508
5400.000	2.498	4.845	5398.646	67.320	23.376	67.320	71.263	19.149	0.642
5500.000	2.715	6.733	5498.543	71.843	23.838	71.843	75.695	18.356	0.234
5600.000	2.227	1.375	5598.449	76.138	24.163	76.138	79.880	17.607	0.539
5700.000	2.050	10.835	5698.380	79.837	24.545	79.837	83.525	17.090	0.394
5800.000	2.217	14.275	5798.311	83.469	25.359	83.469	87.236	16.899	0.210

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	2.276	7.011	5898.234	87.314	26.078	87.314	91.125	16.629	0.291
6000.000	2.022	14.522	5998.164	90.992	26.763	90.992	94.847	16.390	0.379
6100.000	1.782	27.044	6098.109	94.085	27.912	94.085	98.138	16.524	0.478
6200.000	1.567	30.166	6198.066	96.652	29.306	96.652	100.997	16.868	0.233
6300.000	1.726	0.437	6298.027	99.341	30.005	99.341	103.773	16.806	0.859
6400.000	1.650	24.114	6397.985	102.160	30.604	102.160	106.646	16.677	0.696
6500.000	1.950	48.101	6497.937	104.611	32.459	104.611	109.531	17.238	0.804
6600.000	2.073	70.314	6597.876	106.356	35.428	106.356	112.102	18.423	0.784
6700.000	2.175	45.673	6697.810	108.291	38.488	108.291	114.928	19.566	0.912