



Company/Rig: NOBLE ENERGY/CORETECH  
WELL/API#: WELLS RANCH USX AA 33-25/05-123-26373  
DECLINATION: 8.18 DEGREES  
TD AS DRILLED: 6960 FEET  
COUNTY/STATE: WELD/COLORADO  
VS-Azi: 0.000 Degrees  
Latitude: 40.43938, Longitude: -104.44647  
Grid Convergence Applied = -0.68 degs (NAD 27)  
Grid North = True North -0.68 degs



DEPTH REFERENCE : RKB=SURFACE ELEVATION= 4741 FEET

DRILLOG MS GYRO SURVEY CALCULATIONS

Filename: msgyro\_run03-01-de\_01.ut  
Minimum Curvature Method  
Report Date/Time: 5/7/2015 / 08:53

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	0.271	155.011	100.000	-0.214	0.100	-0.214	0.236	155.011	0.271
200.000	0.444	167.562	199.998	-0.807	0.283	-0.807	0.855	160.665	0.189
300.000	0.381	184.726	299.995	-1.516	0.339	-1.516	1.554	167.393	0.138
400.000	0.308	173.366	399.993	-2.115	0.343	-2.115	2.142	170.792	0.099
500.000	0.230	195.895	499.992	-2.575	0.319	-2.575	2.595	172.943	0.130
600.000	0.501	185.501	599.990	-3.204	0.222	-3.204	3.211	176.039	0.277
700.000	0.745	178.614	699.984	-4.289	0.196	-4.289	4.294	177.388	0.255
800.000	0.709	183.001	799.976	-5.557	0.179	-5.557	5.560	178.155	0.066
900.000	0.788	182.113	899.968	-6.862	0.121	-6.862	6.863	178.987	0.079
1000.000	0.740	181.884	999.959	-8.194	0.075	-8.194	8.195	179.478	0.047
1100.000	0.837	180.750	1099.949	-9.570	0.044	-9.570	9.570	179.737	0.098
1200.000	0.737	160.332	1199.940	-10.906	0.251	-10.906	10.909	178.682	0.296
1300.000	0.578	198.939	1299.934	-11.989	0.304	-11.989	11.993	178.549	0.460
1400.000	0.593	169.935	1399.929	-12.975	0.230	-12.975	12.977	178.982	0.294
1500.000	0.336	184.345	1499.925	-13.777	0.299	-13.777	13.780	178.758	0.280
1600.000	0.159	187.446	1599.924	-14.207	0.258	-14.207	14.210	178.958	0.178
1700.000	0.332	293.726	1699.924	-14.228	-0.025	-14.228	14.228	180.099	0.406
1800.000	0.548	309.957	1799.921	-13.805	-0.656	-13.805	13.820	182.723	0.248

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	0.382	313.368	1899.918	-13.269	-1.265	-13.269	13.329	185.448	0.169
2000.000	0.262	69.255	1999.917	-12.959	-1.294	-12.959	13.023	185.702	0.549
2100.000	0.487	56.024	2099.914	-12.641	-0.728	-12.641	12.662	183.296	0.240
2200.000	0.565	69.428	2199.910	-12.230	0.086	-12.230	12.230	179.597	0.145
2300.000	0.517	43.778	2299.906	-11.730	0.860	-11.730	11.762	175.806	0.245
2400.000	0.641	91.072	2399.901	-11.415	1.732	-11.415	11.546	171.373	0.478
2500.000	0.958	85.372	2499.892	-11.358	3.124	-11.358	11.780	164.621	0.326
2600.000	0.589	76.236	2599.882	-11.168	4.456	-11.168	12.024	158.247	0.387
2700.000	0.662	72.848	2699.876	-10.875	5.508	-10.875	12.191	153.141	0.082
2800.000	0.736	80.030	2799.869	-10.594	6.693	-10.594	12.531	147.718	0.115
2900.000	0.436	77.378	2899.864	-10.399	7.697	-10.399	12.938	143.493	0.301
3000.000	0.423	62.276	2999.861	-10.144	8.396	-10.144	13.168	140.388	0.114
3100.000	0.144	11.948	3099.860	-9.850	8.749	-9.850	13.174	138.388	0.349
3200.000	0.344	62.053	3199.859	-9.586	9.040	-9.586	13.176	136.680	0.275
3300.000	0.543	51.915	3299.856	-9.153	9.678	-9.153	13.321	133.404	0.213
3400.000	0.686	69.898	3399.850	-8.655	10.613	-8.655	13.695	129.198	0.238
3500.000	0.657	128.516	3499.844	-8.806	11.623	-8.806	14.583	127.148	0.658
3600.000	1.110	155.532	3599.832	-10.045	12.473	-10.045	16.015	128.845	0.604
3700.000	1.154	165.944	3699.813	-11.904	13.119	-11.904	17.715	132.219	0.210
3800.000	1.217	162.557	3799.792	-13.893	13.682	-13.893	19.499	135.439	0.094
3900.000	1.463	148.505	3899.765	-15.994	14.667	-15.994	21.701	137.479	0.409
4000.000	1.239	137.788	3999.737	-17.883	16.060	-17.883	24.036	138.075	0.337
4100.000	1.589	118.105	4099.707	-19.337	18.009	-19.337	26.424	137.036	0.594
4200.000	1.846	112.560	4199.662	-20.608	20.719	-20.608	29.223	134.846	0.306
4300.000	2.658	118.408	4299.584	-22.329	24.246	-22.329	32.961	132.643	0.843
4400.000	3.510	120.228	4399.438	-24.974	28.931	-24.974	38.219	130.801	0.858
4500.000	3.916	120.880	4499.228	-28.267	34.507	-28.267	44.607	129.323	0.408
4600.000	3.777	110.690	4599.004	-31.184	40.520	-31.184	51.130	127.582	0.697
4700.000	3.349	101.259	4698.811	-32.918	46.466	-32.918	56.944	125.315	0.724
4800.000	3.059	97.555	4798.655	-33.839	51.976	-33.839	62.021	123.066	0.356
4900.000	2.991	110.118	4898.517	-35.087	57.071	-35.087	66.994	121.583	0.665
5000.000	2.521	116.709	4998.401	-36.973	61.485	-36.973	71.746	121.020	0.567
5100.000	1.751	129.733	5098.331	-38.938	64.624	-38.938	75.448	121.070	0.905
5200.000	1.764	139.037	5198.285	-41.077	66.808	-41.077	78.426	121.585	0.285
5300.000	1.607	130.353	5298.241	-43.147	68.886	-43.147	81.283	122.061	0.299
5400.000	1.292	140.625	5398.209	-44.927	70.670	-44.927	83.742	122.445	0.407
5500.000	1.054	134.346	5498.188	-46.441	72.043	-46.441	85.715	122.807	0.270
5600.000	0.693	155.663	5598.177	-47.635	72.950	-47.635	87.125	123.144	0.481
5700.000	1.557	132.388	5698.157	-49.102	74.203	-49.102	88.978	123.494	0.960
5800.000	1.444	103.498	5798.124	-50.312	76.431	-50.312	91.504	123.355	0.756

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	1.462	135.458	5898.094	-51.515	78.552	-51.515	93.937	123.257	0.800
6000.000	1.718	137.322	5998.055	-53.527	80.463	-53.527	96.641	123.633	0.261
6100.000	1.830	131.390	6098.007	-55.685	82.677	-55.685	99.681	123.961	0.215
6200.000	1.558	154.404	6197.965	-57.967	84.463	-57.967	102.441	124.462	0.726
6300.000	0.918	150.719	6297.941	-59.892	85.442	-59.892	104.342	125.029	0.645
6400.000	0.162	237.623	6397.936	-60.666	85.714	-60.666	105.011	125.290	0.923
6500.000	0.608	293.927	6497.934	-60.527	85.109	-60.527	104.437	125.419	0.535
6600.000	1.412	306.393	6597.918	-59.581	83.633	-59.581	102.686	125.466	0.829
6700.000	1.557	288.702	6697.885	-58.414	81.354	-58.414	100.154	125.679	0.479