



Company/Rig: NOBLE ENERGY / PRODUCTION
WELL/API#: WELLS RANCH USX BB 5-25 / 05-123-24998
DECLINATION: 8.27 DEGREES
TD AS DRILLED: 7010 FEET
COUNTY/STATE: WELD / COLORADO
VS-Azi: 0.000 Degrees
Latitude: 40.42508, Longitude: -104.46581
Grid Convergence Applied = -0.67 degs (NAD 27)
Grid North = True North -0.67 degs



DEPTH REFERENCE : RKB=SURFACE ELEVATION=4695 FEET

DRILLOG MS GYRO SURVEY CALCULATIONS

Filename: msgyro_run01-01-de_01.ut

Minimum Curvature Method

Report Date/Time: 5/12/2015 / 13:20

LAT & LONG OBTAINED BY HANDHELD GPS AT WELLHEAD

NORTH REFERENCE: GRID

HENDERSON, COLORADO

303-853-4976

Surveyor: NORMAN COWAN

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	0.471	301.362	99.999	0.214	-0.351	0.214	0.411	301.362	0.471
200.000	0.421	305.706	199.996	0.642	-0.999	0.642	1.188	302.703	0.060
300.000	0.490	300.435	299.993	1.073	-1.666	1.073	1.982	302.770	0.081
400.000	0.456	300.558	399.989	1.491	-2.378	1.491	2.807	302.101	0.034
500.000	0.653	327.289	499.985	2.173	-3.028	2.173	3.727	305.667	0.320
600.000	0.692	328.608	599.978	3.168	-3.651	3.168	4.834	310.953	0.041
700.000	0.731	333.294	699.970	4.253	-4.251	4.253	6.013	315.010	0.070
800.000	0.723	334.135	799.962	5.390	-4.813	5.390	7.226	318.236	0.013
900.000	0.663	329.159	899.955	6.454	-5.385	6.454	8.405	320.161	0.085
1000.000	0.718	327.420	999.948	7.478	-6.018	7.478	9.599	321.173	0.059
1100.000	0.623	321.089	1099.941	8.429	-6.697	8.429	10.765	321.532	0.120
1200.000	0.689	314.969	1199.934	9.277	-7.464	9.277	11.906	321.181	0.096
1300.000	0.660	314.981	1299.927	10.109	-8.297	10.109	13.078	320.623	0.029
1400.000	0.663	321.272	1399.921	10.968	-9.067	10.968	14.230	320.421	0.073
1500.000	0.667	318.486	1499.914	11.855	-9.815	11.855	15.391	320.380	0.033
1600.000	0.471	307.602	1599.909	12.542	-10.526	12.542	16.374	319.995	0.223
1700.000	0.319	328.722	1699.906	13.031	-10.997	13.031	17.051	319.840	0.208
1800.000	0.617	236.496	1799.904	12.972	-11.590	12.972	17.396	318.221	0.705

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	1.107	236.170	1899.892	12.137	-12.841	12.137	17.669	313.387	0.491
2000.000	1.101	230.662	1999.874	10.991	-14.386	10.991	18.104	307.379	0.106
2100.000	1.067	224.743	2099.856	9.720	-15.785	9.720	18.538	301.625	0.117
2200.000	0.957	197.007	2199.841	8.260	-16.685	8.260	18.617	296.339	0.497
2300.000	0.723	137.303	2299.832	6.998	-16.501	6.998	17.923	292.980	0.861
2400.000	0.626	137.784	2399.825	6.129	-15.706	6.129	16.859	291.318	0.097
2500.000	0.562	137.004	2499.820	5.366	-15.004	5.366	15.935	289.677	0.065
2600.000	0.442	127.752	2599.816	4.771	-14.365	4.771	15.136	288.372	0.144
2700.000	0.489	131.770	2699.812	4.250	-13.741	4.250	14.383	287.187	0.057
2800.000	0.519	122.969	2799.809	3.719	-13.043	3.719	13.563	285.915	0.083
2900.000	0.593	133.088	2899.804	3.119	-12.284	3.119	12.674	284.246	0.123
3000.000	0.633	132.917	2999.798	2.389	-11.502	2.389	11.747	281.734	0.039
3100.000	0.665	134.255	3099.792	1.608	-10.682	1.608	10.802	278.561	0.036
3200.000	0.576	147.880	3199.786	0.777	-9.999	0.777	10.029	274.443	0.172
3300.000	0.576	147.817	3299.781	-0.075	-9.463	-0.075	9.464	269.547	0.001
3400.000	1.097	154.032	3399.770	-1.361	-8.776	-1.361	8.881	261.187	0.527
3500.000	1.509	150.133	3499.744	-3.363	-7.701	-3.363	8.404	246.410	0.422
3600.000	1.661	157.651	3599.706	-5.845	-6.495	-5.845	8.738	228.011	0.257
3700.000	1.666	161.730	3699.664	-8.566	-5.488	-8.566	10.173	212.647	0.118
3800.000	1.805	153.391	3799.618	-11.354	-4.327	-11.354	12.151	200.862	0.288
3900.000	1.719	155.631	3899.571	-14.128	-3.003	-14.128	14.444	191.998	0.110
4000.000	1.491	158.397	3999.531	-16.704	-1.905	-16.704	16.813	186.505	0.241
4100.000	1.420	166.629	4099.499	-19.119	-1.139	-19.119	19.153	183.410	0.220
4200.000	1.698	168.521	4199.462	-21.777	-0.558	-21.777	21.785	181.467	0.283
4300.000	0.968	173.607	4299.434	-24.069	-0.169	-24.069	24.070	180.402	0.739
4400.000	0.145	254.781	4399.429	-24.942	-0.197	-24.942	24.943	180.452	0.957
4500.000	1.193	287.288	4499.421	-24.666	-1.314	-24.666	24.701	183.048	1.074
4600.000	2.320	278.715	4599.373	-24.050	-4.308	-24.050	24.433	190.156	1.153
4700.000	2.004	255.700	4699.303	-24.175	-8.003	-24.175	25.465	198.316	0.916
4800.000	1.182	238.221	4799.264	-25.150	-10.574	-25.150	27.282	202.803	0.945
4900.000	0.804	194.473	4899.251	-26.373	-11.626	-26.373	28.822	203.789	0.819
5000.000	0.682	192.196	4999.242	-27.634	-11.927	-27.634	30.098	203.345	0.126
5100.000	0.557	163.645	5099.237	-28.682	-11.916	-28.682	31.058	202.560	0.328
5200.000	0.675	111.309	5199.231	-29.362	-11.230	-29.362	31.436	200.930	0.554
5300.000	0.809	103.786	5299.223	-29.745	-9.995	-29.745	31.379	198.574	0.165
5400.000	0.361	141.402	5399.218	-30.159	-9.113	-30.159	31.506	196.813	0.568
5500.000	0.502	208.048	5499.216	-30.792	-9.123	-30.792	32.115	196.503	0.489
5600.000	0.662	216.753	5599.210	-31.642	-9.675	-31.642	33.088	197.001	0.182
5700.000	0.835	228.212	5699.202	-32.590	-10.563	-32.590	34.259	197.959	0.228
5800.000	0.773	231.109	5799.192	-33.499	-11.632	-33.499	35.461	199.148	0.074

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	0.925	238.912	5899.181	-34.340	-12.848	-34.340	36.665	200.514	0.191
6000.000	0.861	242.983	5999.169	-35.098	-14.209	-35.098	37.865	202.040	0.090
6100.000	0.951	246.930	6099.156	-35.765	-15.642	-35.765	39.036	203.623	0.109
6200.000	1.077	248.742	6199.141	-36.431	-17.282	-36.431	40.322	205.379	0.130
6300.000	1.054	249.186	6299.123	-37.098	-19.018	-37.098	41.689	207.141	0.025
6400.000	1.321	252.789	6399.102	-37.766	-20.978	-37.766	43.201	209.051	0.277
6500.000	1.657	241.428	6499.068	-38.799	-23.349	-38.799	45.282	211.039	0.446
6600.000	2.342	253.572	6599.007	-40.068	-26.578	-40.068	48.082	213.557	0.801
6700.000	2.356	270.493	6698.924	-40.628	-30.593	-40.628	50.858	216.980	0.691
6750.000	2.449	281.548	6748.881	-40.405	-32.667	-40.405	51.959	218.955	0.944