



Company/Rig: NOBLE ENERGY / PRODUCTION

WELL/API#: FOSS 14-44 / 05-123-26499

DECLINATION: 8.22 DEGREES

TD AS DRILLED: 7175 FEET

COUNTY/STATE: WELD COUNTY / COLORADO

Latitude: 40.480, Longitude: -104.510

GRID North is 0.640 Degrees East of True North

VS-Azi: 0.000 Degrees



DEPTH REFERENCE : RKB=SURFACE ELEVATION=4667 FEET

DRILLOG MS GYRO SURVEY CALCULATIONS

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

Minimum Curvature Method

Report Date/Time: 4/21/2015 / 13:57

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	0.848	327.710	99.996	0.626	-0.396	0.626	0.740	327.710	0.848
200.000	0.679	337.472	199.987	1.799	-1.018	1.799	2.067	330.496	0.213
300.000	0.540	334.936	299.982	2.773	-1.445	2.773	3.127	332.483	0.142
400.000	0.720	338.151	399.976	3.783	-1.878	3.783	4.224	333.599	0.184
500.000	0.304	300.455	499.972	4.501	-2.341	4.501	5.073	332.525	0.514
600.000	0.397	311.880	599.970	4.867	-2.827	4.867	5.628	329.848	0.116
700.000	0.554	288.038	699.966	5.248	-3.545	5.248	6.333	325.962	0.250
800.000	0.670	287.039	799.961	5.569	-4.563	5.569	7.200	320.666	0.117
900.000	0.697	288.599	899.954	5.934	-5.699	5.934	8.228	316.157	0.033
1000.000	0.841	299.501	999.945	6.489	-6.914	6.489	9.483	313.184	0.204
1100.000	1.075	311.055	1099.931	7.467	-8.261	7.467	11.135	312.111	0.303
1200.000	1.437	307.626	1199.907	8.849	-9.961	8.849	13.324	311.615	0.369
1300.000	1.875	306.264	1299.865	10.582	-12.273	10.582	16.205	310.767	0.440
1400.000	2.265	305.994	1399.799	12.711	-15.191	12.711	19.808	309.920	0.390
1500.000	2.965	306.045	1499.694	15.395	-18.882	15.395	24.362	309.191	0.700
1600.000	3.434	304.408	1599.538	18.609	-23.445	18.609	29.932	308.441	0.478
1700.000	3.641	302.145	1699.348	21.991	-28.604	21.991	36.081	307.553	0.249
1800.000	3.669	305.063	1799.144	25.519	-33.912	25.519	42.441	306.962	0.188
1900.000	3.291	300.330	1898.960	28.806	-39.008	28.806	48.492	306.445	0.475

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	2.961	296.705	1998.811	31.416	-43.793	31.416	53.896	305.655	0.384
2100.000	2.605	291.249	2098.693	33.401	-48.218	33.401	58.656	304.710	0.444
2200.000	2.535	292.477	2198.593	35.070	-52.379	35.070	63.035	303.804	0.088
2300.000	2.325	304.275	2298.503	37.058	-56.099	37.058	67.234	303.448	0.541
2400.000	2.509	306.998	2398.414	39.517	-59.524	39.517	71.447	303.580	0.217
2500.000	2.842	304.845	2498.305	42.251	-63.307	42.251	76.111	303.719	0.348
2600.000	2.865	303.838	2598.181	45.059	-67.417	45.059	81.089	303.757	0.055
2700.000	3.311	311.089	2698.036	48.349	-71.670	48.349	86.454	304.004	0.592
2800.000	4.024	314.662	2797.831	52.714	-76.342	52.714	92.773	304.625	0.748
2900.000	4.728	312.437	2897.539	57.962	-81.880	57.962	100.319	305.294	0.724
3000.000	5.530	312.875	2997.137	64.021	-88.453	64.021	109.191	305.897	0.802
3100.000	6.971	309.768	3096.541	71.182	-96.649	71.182	120.032	306.372	1.480
3200.000	7.583	312.973	3195.735	79.562	-106.141	79.562	132.650	306.855	0.734
3300.000	7.392	317.896	3294.883	88.832	-115.282	88.832	145.537	307.617	0.669
3400.000	6.617	315.050	3394.136	97.682	-123.666	97.682	157.591	308.305	0.849
3500.000	6.153	315.169	3493.516	105.560	-131.514	105.560	168.638	308.752	0.464
3600.000	6.698	316.656	3592.888	113.602	-139.295	113.602	179.746	309.199	0.570
3700.000	8.567	312.960	3691.998	122.921	-148.750	122.921	192.967	309.569	1.932
3800.000	9.902	310.808	3790.700	133.617	-160.710	133.617	209.000	309.741	1.379
3900.000	12.041	306.304	3888.868	145.413	-175.627	145.413	228.013	309.624	2.303
4000.000	13.550	304.477	3986.382	158.221	-193.691	158.221	250.100	309.245	1.561
4100.000	14.051	301.940	4083.496	171.275	-213.649	171.275	273.826	308.718	0.786
4200.000	13.767	301.992	4180.564	184.001	-234.042	184.001	297.711	308.174	0.284
4300.000	13.711	303.783	4277.703	196.895	-253.984	196.895	321.365	307.784	0.429
4400.000	14.112	303.510	4374.770	210.215	-273.999	210.215	345.349	307.496	0.406
4500.000	15.971	300.889	4471.340	224.010	-295.972	224.010	371.187	307.121	1.979
4600.000	17.939	298.878	4566.990	238.512	-321.267	238.512	400.125	306.591	2.053
4700.000	19.362	296.131	4661.738	253.251	-349.637	253.251	431.720	305.917	1.672
4800.000	19.292	296.445	4756.102	267.908	-379.310	267.908	464.382	305.234	0.125
4900.000	18.561	295.325	4850.696	282.073	-408.487	282.073	496.414	304.626	0.817
5000.000	19.259	296.012	4945.298	296.114	-437.694	296.114	528.451	304.080	0.733
5100.000	21.254	292.505	5039.112	310.287	-469.266	310.287	562.573	303.473	2.335
5200.000	22.947	292.542	5131.761	324.698	-504.018	324.698	599.553	302.790	1.693
5300.000	24.066	290.538	5223.462	339.326	-541.118	339.326	638.710	302.091	1.375
5400.000	23.756	289.183	5314.880	353.098	-579.236	353.098	678.375	301.366	0.631
5500.000	23.042	288.008	5406.656	365.767	-616.872	365.767	717.159	300.665	0.853
5600.000	21.524	285.984	5499.187	376.869	-653.122	376.869	754.055	299.986	1.701
5700.000	20.878	286.066	5592.418	386.852	-687.881	386.852	789.199	299.353	0.647
5800.000	20.719	289.232	5685.905	397.610	-721.707	397.610	823.987	298.852	1.135
5900.000	19.974	287.932	5779.665	408.696	-754.660	408.696	858.221	298.438	0.872

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	18.780	288.314	5873.999	419.013	-786.192	419.013	890.881	298.056	1.201
6100.000	17.406	284.420	5969.056	427.796	-815.961	427.796	921.305	297.667	1.830
6200.000	16.042	282.074	6064.825	434.411	-843.960	434.411	949.201	297.236	1.522
6300.000	15.400	282.248	6161.084	440.118	-870.448	440.118	975.389	296.822	0.643
6400.000	14.076	281.046	6257.792	445.265	-895.360	445.265	999.965	296.441	1.359
6500.000	14.735	279.333	6354.648	449.658	-919.844	449.658	1023.868	296.051	0.785
6600.000	14.069	272.891	6451.511	452.333	-944.535	452.333	1047.259	295.590	1.734
6700.000	12.851	270.940	6548.763	453.129	-967.794	453.129	1068.621	295.089	1.300
6800.000	13.723	269.859	6646.085	453.282	-990.775	453.282	1089.541	294.584	0.907
6900.000	14.865	267.547	6742.988	452.704	-1015.45	452.704	1111.794	294.028	1.276
7000.000	16.452	264.080	6839.276	450.694	-1042.36	450.694	1135.620	293.383	1.841