



COMPANY/RIG: Noble Energy/Production/CoreTech  
WELL/API: Brown, H I 04-27/05-123-12649  
DECLINATION: 8.22 Degrees  
TD AS DRILLED: 7315 Feet  
COUNTY/STATE: Weld/Colorado  
VS-Azi: 0.000 Degrees  
Latitude: 40.45439, Longitude: -104.76625  
Grid North = True North -0.47 degs (NAD 27)  
Grid Correction Applied = -0.47 degs



DEPTH REFERENCE : RKB = GL Elevation = 4704

DRILLOG MS GYRO SURVEY CALCULATIONS

Filename: msgyrosurvey.ut

Minimum Curvature Method

Report Date/Time: 6/5/2017 / 08:40

LAT & LONG OBTAINED BY HANDHELD GPS AT WELLHEAD

NORTH REFERENCE: GRID

HENDERSON, COLORADO

303-853-4976

Surveyor: JUSTIN WILLIAMS / Brown, H I 04-27

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	0.517	17.173	99.999	0.431	0.133	0.431	0.451	17.173	0.517
200.000	0.261	347.966	199.996	1.084	0.219	1.084	1.106	11.407	0.316
300.000	0.240	281.245	299.996	1.348	-0.034	1.348	1.348	358.555	0.276
400.000	0.314	275.379	399.994	1.414	-0.512	1.414	1.504	340.090	0.080
500.000	0.077	245.539	499.994	1.412	-0.846	1.412	1.646	329.060	0.250
600.000	0.108	320.038	599.994	1.457	-0.968	1.457	1.749	326.383	0.115
700.000	0.328	274.892	699.993	1.554	-1.314	1.554	2.035	319.768	0.263
800.000	0.170	310.811	799.992	1.675	-1.712	1.675	2.395	314.376	0.215
900.000	0.344	287.239	899.991	1.861	-2.111	1.861	2.815	311.398	0.200
1000.000	0.445	266.099	999.989	1.924	-2.786	1.924	3.385	304.633	0.175
1100.000	0.468	245.239	1099.986	1.726	-3.544	1.726	3.942	295.974	0.167
1200.000	0.478	256.190	1199.982	1.456	-4.320	1.456	4.558	288.624	0.091
1300.000	0.601	236.509	1299.978	1.067	-5.162	1.067	5.271	281.678	0.221
1400.000	0.602	247.029	1399.972	0.573	-6.083	0.573	6.110	275.377	0.110
1500.000	0.704	244.921	1499.966	0.107	-7.123	0.107	7.124	270.861	0.105
1600.000	0.602	236.114	1599.959	-0.446	-8.116	-0.446	8.128	266.852	0.143

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
1700.000	0.750	239.862	1699.952	-1.068	-9.119	-1.068	9.181	263.319	0.155
1800.000	0.912	248.520	1799.942	-1.688	-10.425	-1.688	10.561	260.802	0.204
1900.000	0.939	253.461	1899.929	-2.213	-11.950	-2.213	12.154	259.510	0.084
2000.000	1.118	260.147	1999.913	-2.613	-13.697	-2.613	13.944	259.200	0.216
2100.000	1.131	283.283	2099.894	-2.553	-15.619	-2.553	15.826	260.717	0.451
2200.000	1.051	285.194	2199.876	-2.086	-17.465	-2.086	17.589	263.190	0.087
2300.000	1.028	290.820	2299.859	-1.526	-19.189	-1.526	19.250	265.452	0.105
2400.000	0.993	291.054	2399.844	-0.896	-20.836	-0.896	20.856	267.537	0.036
2500.000	1.181	300.918	2499.826	-0.055	-22.529	-0.055	22.529	269.859	0.265
2600.000	1.047	292.015	2599.807	0.817	-24.261	0.817	24.274	271.928	0.219
2700.000	1.236	298.942	2699.787	1.681	-26.051	1.681	26.106	273.692	0.233
2800.000	1.274	298.783	2799.763	2.738	-27.969	2.738	28.103	275.591	0.038
2900.000	1.274	300.831	2899.738	3.843	-29.898	3.843	30.143	277.324	0.046
3000.000	1.414	303.752	2999.711	5.098	-31.878	5.098	32.283	279.086	0.156
3100.000	1.908	315.880	3099.669	6.979	-34.063	6.979	34.770	281.579	0.604
3200.000	2.002	305.697	3199.611	9.193	-36.641	9.193	37.776	284.085	0.359
3300.000	1.533	308.537	3299.563	11.046	-39.106	11.046	40.636	285.773	0.477
3400.000	1.225	305.394	3399.534	12.499	-41.023	12.499	42.885	286.945	0.317
3500.000	0.827	302.393	3499.518	13.505	-42.504	13.505	44.598	287.626	0.401
3600.000	0.742	309.318	3599.508	14.302	-43.615	14.302	45.900	288.155	0.127
3700.000	0.705	326.753	3699.501	15.227	-44.453	15.227	46.989	288.908	0.222
3800.000	0.764	321.622	3799.492	16.264	-45.205	16.264	48.042	289.788	0.088
3900.000	0.860	325.150	3899.482	17.403	-46.048	17.403	49.227	290.703	0.108
4000.000	0.576	317.834	3999.474	18.391	-46.814	18.391	50.297	291.448	0.298
4100.000	0.381	272.636	4099.471	18.779	-47.483	18.779	51.062	291.578	0.409
4200.000	0.508	252.947	4199.468	18.664	-48.239	18.664	51.724	291.152	0.197
4300.000	0.293	236.636	4299.466	18.394	-48.876	18.394	52.222	290.623	0.241
4400.000	0.355	234.230	4399.464	18.072	-49.341	18.072	52.546	290.116	0.064
4500.000	0.507	250.449	4499.461	17.743	-50.009	17.743	53.063	289.534	0.193
4600.000	0.587	250.026	4599.457	17.420	-50.907	17.420	53.805	288.891	0.080
4700.000	0.535	248.829	4699.452	17.076	-51.824	17.076	54.565	288.237	0.053
4800.000	0.617	289.800	4799.447	17.090	-52.766	17.090	55.464	287.946	0.410
4900.000	0.485	270.663	4899.443	17.277	-53.696	17.277	56.407	287.836	0.224
5000.000	0.717	299.840	4999.437	17.593	-54.662	17.593	57.424	287.841	0.377
5100.000	0.629	304.225	5099.431	18.214	-55.659	18.214	58.563	288.120	0.102
5200.000	0.728	311.685	5199.424	18.945	-56.587	18.945	59.674	288.510	0.132
5300.000	0.780	298.561	5299.415	19.692	-57.659	19.692	60.929	288.857	0.180
5400.000	0.805	304.591	5399.405	20.416	-58.835	20.416	62.276	289.137	0.087
5500.000	0.786	305.664	5499.396	21.215	-59.970	21.215	63.612	289.482	0.023

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
5600.000	0.711	332.807	5599.388	22.167	-60.811	22.167	64.725	290.028	0.359
5700.000	0.943	348.701	5699.377	23.525	-61.256	23.525	65.618	291.009	0.325
5800.000	1.350	353.211	5799.357	25.502	-61.556	25.502	66.630	292.504	0.416
5900.000	1.486	338.561	5899.327	27.878	-62.170	27.878	68.134	294.153	0.386
6000.000	1.584	333.502	5999.291	30.322	-63.260	30.322	70.152	295.610	0.167
6100.000	1.732	335.839	6099.249	32.938	-64.495	32.938	72.419	297.053	0.162
6200.000	1.814	320.794	6199.202	35.543	-66.114	35.543	75.063	298.262	0.471
6300.000	2.107	330.439	6299.143	38.369	-68.022	38.369	78.097	299.426	0.440
6400.000	1.910	325.018	6399.082	41.333	-69.884	41.333	81.192	300.602	0.273
6500.000	1.912	331.422	6499.026	44.163	-71.638	44.163	84.157	301.653	0.213
6600.000	1.736	328.149	6598.976	46.915	-73.235	46.915	86.974	302.644	0.204
6700.000	1.429	339.911	6698.938	49.373	-74.463	49.373	89.345	303.547	0.446
6800.000	1.412	341.095	6798.907	51.710	-75.291	51.710	91.338	304.482	0.034
6900.000	1.612	330.117	6898.872	54.095	-76.390	54.095	93.604	305.304	0.351
7000.000	2.080	317.515	6998.821	56.652	-78.316	56.652	96.659	305.881	0.617
7050.000	1.906	320.311	7048.790	57.961	-79.460	57.961	98.353	306.108	0.398