



COMPANY/RIG: Noble Energy/Production/CoreTech  
WELL/API: Austyn J 9-6/05-123-23258  
DECLINATION: 8.22 Degrees  
TD AS DRILLED: 7638 Feet  
COUNTY/STATE: Weld/Colorado  
VS-Azi: 0.000 Degrees  
Latitude: 40.41860, Longitude: -104.79054  
Grid North = True North -0.46 degs (NAD 27)  
Grid Correction Applied = -0.46 degs



DEPTH REFERENCE : RKB = GL Elevation = 4759

DRILLOG MS GYRO SURVEY CALCULATIONS

Filename: msgyrosurvey.ut

Minimum Curvature Method

Report Date/Time: 6/15/2017 / 12:59

LAT & LONG OBTAINED BY HANDHELD GPS AT WELLHEAD

NORTH REFERENCE: GRID

HENDERSON, COLORADO

303-853-4976

Surveyor: JUSTIN WILLIAMS / Austyn J 9-6

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	0.632	234.151	99.998	-0.323	-0.447	-0.323	0.551	234.151	0.632
200.000	0.569	227.762	199.992	-0.979	-1.261	-0.979	1.597	232.169	0.092
300.000	0.507	249.354	299.988	-1.469	-2.042	-1.469	2.516	234.276	0.210
400.000	0.567	271.605	399.984	-1.611	-2.951	-1.611	3.362	241.368	0.215
500.000	0.917	267.674	499.975	-1.630	-4.245	-1.630	4.547	248.999	0.353
600.000	1.073	268.504	599.960	-1.687	-5.981	-1.687	6.214	254.252	0.157
700.000	1.106	269.406	699.942	-1.721	-7.882	-1.721	8.068	257.684	0.037
800.000	0.942	231.330	799.927	-2.245	-9.489	-2.245	9.751	256.691	0.686
900.000	3.263	168.588	899.862	-5.549	-9.568	-5.549	11.061	239.889	2.953
1000.000	5.087	161.314	999.593	-12.539	-7.585	-12.539	14.655	211.168	1.896
1100.000	6.670	155.985	1099.064	-22.045	-3.800	-22.045	22.370	189.781	1.673
1200.000	8.237	148.507	1198.219	-33.459	2.306	-33.459	33.538	176.057	1.840
1300.000	9.641	140.530	1297.005	-46.032	11.372	-46.032	47.416	166.124	1.869
1400.000	10.659	131.146	1395.446	-58.582	23.660	-58.582	63.180	158.008	1.939
1500.000	11.516	130.282	1493.579	-71.122	38.239	-71.122	80.750	151.735	0.874
1600.000	13.893	130.557	1591.123	-85.384	54.978	-85.384	101.553	147.223	2.377

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	15.575	128.895	1687.832	-101.620	74.549	-101.620	126.033	143.736	1.734
1800.000	16.894	129.701	1783.843	-119.332	96.178	-119.332	153.265	141.132	1.338
1900.000	19.206	129.806	1878.915	-139.146	119.995	-139.146	183.740	139.226	2.312
2000.000	20.613	139.296	1972.961	-163.027	144.118	-163.027	217.596	138.523	3.520
2100.000	20.957	134.244	2066.460	-188.852	168.411	-188.852	253.036	138.274	1.825
2200.000	20.171	140.596	2160.099	-214.655	192.170	-214.655	288.108	138.163	2.365
2300.000	19.970	139.299	2254.027	-240.923	214.250	-240.923	322.408	138.354	0.488
2400.000	20.346	138.311	2347.902	-266.851	236.948	-266.851	356.867	138.397	0.507
2500.000	21.372	139.831	2441.347	-293.758	260.265	-293.758	392.468	138.460	1.160
2600.000	22.585	138.245	2534.079	-322.007	284.807	-322.007	429.888	138.508	1.350
2700.000	24.839	137.025	2625.631	-351.703	311.916	-351.703	470.093	138.431	2.307
2800.000	25.216	136.316	2716.242	-382.475	340.947	-382.475	512.379	138.285	0.482
2900.000	23.303	136.994	2807.408	-412.347	369.153	-412.347	553.447	138.164	1.933
3000.000	22.563	137.352	2899.503	-440.923	395.642	-440.923	592.407	138.098	0.752
3100.000	22.043	136.368	2992.022	-468.616	421.589	-468.616	630.348	138.024	0.640
3200.000	19.170	133.590	3085.616	-493.525	446.435	-493.525	665.486	137.868	3.034
3300.000	19.300	132.026	3180.034	-515.909	470.603	-515.909	698.305	137.629	0.531
3400.000	19.602	134.462	3274.328	-538.722	494.851	-538.722	731.505	137.431	0.866
3500.000	19.241	136.456	3368.639	-562.415	518.175	-562.415	764.733	137.344	0.755
3600.000	20.035	136.561	3462.822	-586.797	541.305	-586.797	798.337	137.309	0.795
3700.000	20.727	135.274	3556.561	-611.808	565.536	-611.808	833.151	137.251	0.824
3800.000	21.756	134.580	3649.767	-637.389	591.190	-637.389	869.350	137.154	1.059
3900.000	23.476	132.022	3742.076	-663.733	619.190	-663.733	907.710	136.989	1.982
4000.000	23.913	133.466	3833.647	-691.010	648.697	-691.010	947.788	136.809	0.726
4100.000	24.099	133.230	3924.997	-718.935	678.281	-718.935	988.399	136.667	0.209
4200.000	22.683	134.529	4016.777	-746.442	706.904	-746.442	1028.051	136.558	1.506
4300.000	21.388	134.367	4109.470	-772.715	733.686	-772.715	1065.544	136.484	1.296
4400.000	21.951	132.439	4202.404	-798.078	760.515	-798.078	1102.412	136.381	0.907
4500.000	21.111	130.969	4295.426	-822.499	787.907	-822.499	1138.992	136.231	0.998
4600.000	21.769	129.814	4388.506	-846.180	815.749	-846.180	1175.358	136.049	0.782
4700.000	20.696	129.959	4481.717	-869.402	843.537	-869.402	1211.369	135.865	1.074
4800.000	18.144	128.790	4576.020	-890.509	869.222	-890.509	1244.409	135.693	2.581
4900.000	15.837	127.062	4671.649	-908.490	892.251	-908.490	1273.368	135.517	2.361
5000.000	13.788	128.167	4768.321	-924.079	912.511	-924.079	1298.691	135.361	2.068
5100.000	12.247	127.196	4865.748	-937.856	930.330	-937.856	1321.018	135.231	1.556
5200.000	9.805	128.554	4963.895	-949.577	945.440	-949.577	1339.982	135.125	2.456
5300.000	8.103	129.229	5062.673	-959.341	957.558	-959.341	1355.453	135.053	1.705
5400.000	6.261	129.881	5161.884	-967.295	967.203	-967.295	1367.897	135.003	1.843
5500.000	4.658	129.252	5261.427	-973.361	974.533	-973.361	1377.369	134.966	1.604

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	3.230	127.752	5361.187	-977.656	979.905	-977.656	1384.205	134.934	1.432
5700.000	1.342	129.314	5461.103	-980.122	983.038	-980.122	1388.166	134.915	1.889
5800.000	0.766	139.415	5561.086	-981.372	984.379	-981.372	1389.997	134.912	0.603
5900.000	0.525	127.252	5661.080	-982.156	985.178	-982.156	1391.117	134.912	0.276
6000.000	0.518	115.041	5761.076	-982.624	985.951	-982.624	1391.995	134.903	0.111
6100.000	0.232	138.347	5861.073	-982.967	986.495	-982.967	1392.622	134.897	0.318
6200.000	0.217	167.892	5961.073	-983.303	986.670	-983.303	1392.983	134.902	0.115
6300.000	0.377	179.830	6061.071	-983.818	986.710	-983.818	1393.375	134.916	0.171
6400.000	0.354	204.137	6161.069	-984.429	986.585	-984.429	1393.718	134.937	0.156
6500.000	0.719	247.927	6261.065	-984.946	985.877	-984.946	1393.583	134.973	0.524
6600.000	1.028	248.340	6361.053	-985.513	984.462	-985.513	1392.983	135.031	0.309
6700.000	0.120	240.923	6461.047	-985.896	983.536	-985.896	1392.600	135.069	0.909
6800.000	0.813	103.265	6561.044	-986.109	984.135	-986.109	1393.174	135.057	0.905
6900.000	0.842	132.798	6661.034	-986.771	985.365	-986.771	1394.511	135.041	0.423
7000.000	0.854	142.923	6761.023	-987.865	986.353	-987.865	1395.983	135.044	0.150
7100.000	0.814	150.147	6861.013	-989.075	987.156	-989.075	1397.407	135.056	0.113
7200.000	0.829	121.226	6961.003	-990.066	988.128	-990.066	1398.795	135.056	0.410
7300.000	0.739	101.417	7060.994	-990.569	989.379	-990.569	1400.034	135.034	0.284
7350.000	0.879	103.608	7110.989	-990.723	990.067	-990.723	1400.630	135.019	0.287