



COMPANY/RIG: Noble Energy/Production/CoreTech
WELL/API: Austyn J 9-3/05-123-23257
DECLINATION: 8.22 Degrees
TD AS DRILLED: 7521 Feet
COUNTY/STATE: Weld/Colorado
VS-Azi: 0.000 Degrees
Latitude: 40.41864, Longitude: -104.79047
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 / 11:06

LAT & LONG OBTAINED BY HANDHELD GPS AT WELLHEAD

NORTH REFERENCE: GRID

HENDERSON, COLORADO

303-853-4976

Surveyor: JUSTIN WILLIAMS / Austyn J 9-3

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	0.735	324.167	99.997	0.520	-0.375	0.520	0.641	324.167	0.735
200.000	0.373	296.399	199.993	1.184	-1.042	1.184	1.578	318.653	0.441
300.000	0.351	273.375	299.991	1.347	-1.639	1.347	2.122	309.410	0.146
400.000	0.369	281.219	399.989	1.428	-2.261	1.428	2.674	302.269	0.053
500.000	0.379	281.105	499.987	1.554	-2.902	1.554	3.292	298.174	0.009
600.000	0.720	310.307	599.982	2.024	-3.705	2.024	4.222	298.649	0.431
700.000	0.810	325.439	699.973	3.013	-4.585	3.013	5.486	303.308	0.221
800.000	1.738	38.872	799.952	4.776	-4.034	4.776	6.252	319.810	1.695
900.000	3.740	52.704	899.834	7.933	-0.488	7.933	7.948	356.481	2.094
1000.000	5.753	60.920	999.487	12.345	6.487	12.345	13.946	27.722	2.120
1100.000	7.067	63.163	1098.860	17.559	16.357	17.559	23.997	42.971	1.338
1200.000	9.393	66.560	1197.824	23.583	29.335	23.583	37.639	51.204	2.375
1300.000	11.926	66.906	1296.090	30.882	46.328	30.882	55.678	56.313	2.534
1400.000	12.799	68.020	1393.771	39.081	66.104	39.081	76.793	59.408	0.905
1500.000	13.060	68.728	1491.236	47.326	86.905	47.326	98.955	61.428	0.305
1600.000	13.512	68.470	1588.559	55.712	108.301	55.712	121.790	62.778	0.456

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	13.935	66.743	1685.704	64.754	130.231	64.754	145.442	63.562	0.589
1800.000	13.972	65.428	1782.753	74.529	152.273	74.529	169.534	63.921	0.319
1900.000	13.330	64.841	1879.928	84.450	173.687	84.450	193.130	64.070	0.658
2000.000	13.469	66.401	1977.206	94.013	194.794	94.013	216.294	64.237	0.388
2100.000	13.823	68.537	2074.384	103.047	216.584	103.047	239.848	64.556	0.615
2200.000	13.920	67.505	2171.467	112.020	238.815	112.020	263.782	64.870	0.266
2300.000	13.539	65.772	2268.610	121.426	260.603	121.426	287.504	65.017	0.561
2400.000	13.663	64.216	2365.806	131.367	281.912	131.367	311.017	65.015	0.386
2500.000	13.823	64.405	2462.943	141.665	303.320	141.665	334.772	64.965	0.166
2600.000	13.591	65.266	2560.096	151.742	324.766	151.742	358.466	64.956	0.309
2700.000	14.380	66.022	2657.131	161.704	346.783	161.704	382.631	65.000	0.810
2800.000	15.007	68.639	2753.861	171.466	370.186	171.466	407.969	65.147	0.913
2900.000	13.882	68.793	2850.699	180.522	393.428	180.522	432.867	65.352	1.125
3000.000	14.003	69.918	2947.753	189.015	415.975	189.015	456.905	65.563	0.297
3100.000	12.942	68.398	3045.000	197.292	437.751	197.292	480.156	65.739	1.119
3200.000	11.885	69.881	3142.661	204.957	457.832	204.957	501.615	65.883	1.104
3300.000	12.118	69.785	3240.475	212.126	477.351	212.126	522.362	66.040	0.234
3400.000	12.437	66.452	3338.189	220.056	497.073	220.056	543.605	66.121	0.777
3500.000	12.582	64.192	3435.815	229.100	516.751	229.100	565.259	66.090	0.511
3600.000	13.085	68.573	3533.319	237.977	537.094	237.977	587.455	66.103	1.095
3700.000	13.365	69.252	3630.667	246.207	558.440	246.207	610.305	66.208	0.320
3800.000	14.650	66.263	3727.693	255.393	580.825	255.393	634.494	66.265	1.474
3900.000	14.760	65.314	3824.417	265.803	603.975	265.803	659.877	66.246	0.265
4000.000	14.490	64.945	3921.177	276.421	626.883	276.421	685.121	66.205	0.285
4100.000	13.768	64.943	4018.152	286.759	648.996	286.759	709.526	66.162	0.722
4200.000	12.878	65.225	4115.459	296.469	669.894	296.469	732.566	66.128	0.892
4300.000	12.247	66.401	4213.065	305.385	689.733	305.385	754.315	66.118	0.681
4400.000	10.911	67.547	4311.027	313.247	708.200	313.247	774.384	66.140	1.355
4500.000	9.860	68.340	4409.388	320.022	724.905	320.022	792.403	66.180	1.061
4600.000	8.309	69.637	4508.130	325.697	739.638	325.697	808.172	66.234	1.565
4700.000	6.587	63.978	4607.284	330.728	751.567	330.728	821.117	66.248	1.869
4800.000	5.217	62.645	4706.752	335.334	760.760	335.334	831.387	66.213	1.377
4900.000	4.189	64.615	4806.414	338.989	768.098	338.989	839.576	66.186	1.040
5000.000	2.882	68.032	4906.221	341.495	773.730	341.495	845.741	66.185	1.323
5100.000	1.848	75.035	5006.135	342.852	777.620	342.852	849.847	66.207	1.072
5200.000	1.042	48.898	5106.103	343.867	779.863	343.867	852.309	66.206	1.021
5300.000	0.629	54.291	5206.093	344.785	780.994	344.785	853.714	66.180	0.421
5400.000	0.671	44.199	5306.086	345.525	781.848	345.525	854.794	66.158	0.122
5500.000	0.369	39.500	5406.082	346.193	782.461	346.193	855.626	66.133	0.304

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	0.343	25.323	5506.080	346.713	782.794	346.713	856.140	66.111	0.092
5700.000	0.094	291.731	5606.079	347.014	782.846	347.014	856.310	66.094	0.362
5800.000	0.267	288.272	5706.079	347.117	782.548	347.117	856.080	66.079	0.173
5900.000	0.397	322.571	5806.077	347.466	782.116	347.466	855.826	66.046	0.232
6000.000	0.307	355.489	5906.075	348.009	781.884	348.009	855.835	66.007	0.218
6100.000	0.526	349.444	6006.073	348.727	781.779	348.727	856.031	65.960	0.222
6200.000	0.621	336.502	6106.068	349.675	781.479	349.675	856.144	65.894	0.160
6300.000	0.684	344.605	6206.061	350.748	781.104	350.748	856.241	65.818	0.112
6400.000	0.940	0.343	6306.051	352.144	780.951	352.144	856.673	65.729	0.337
6500.000	1.016	4.316	6406.037	353.847	781.022	353.847	857.440	65.627	0.101
6600.000	1.245	8.176	6506.017	355.807	781.244	355.807	858.452	65.514	0.242
6700.000	1.465	10.289	6605.989	358.140	781.627	358.140	859.770	65.383	0.225
6800.000	1.503	12.348	6705.956	360.679	782.135	360.679	861.292	65.243	0.065
6900.000	1.479	16.957	6805.922	363.194	782.792	363.194	862.944	65.110	0.122
7000.000	1.418	22.433	6905.890	365.572	783.641	365.572	864.717	64.991	0.151
7100.000	2.393	23.079	7005.833	368.636	784.931	368.636	867.185	64.843	0.975
7200.000	2.947	17.257	7105.725	373.012	786.512	373.012	870.482	64.627	0.617