



COMPANY/RIG: Noble Energy/Production/CoreTech
WELL/API: Austyn J 9-5/05-123-23260
DECLINATION: 8.22 Degrees
TD AS DRILLED: 8030 Feet
COUNTY/STATE: Weld/Colorado
VS-Azi: 0.000 Degrees
Latitude: 40.41853, Longitude: -104.79069
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 / 12:39

LAT & LONG OBTAINED BY HANDHELD GPS AT WELLHEAD

NORTH REFERENCE: GRID

HENDERSON, COLORADO

303-853-4976

Surveyor: JUSTIN WILLIAMS / Austyn J 9-5

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	0.802	349.862	99.997	0.689	-0.123	0.689	0.700	349.862	0.802
200.000	0.609	338.822	199.989	1.873	-0.438	1.873	1.923	346.829	0.235
300.000	0.622	353.804	299.983	2.908	-0.689	2.908	2.989	346.674	0.161
400.000	0.622	358.087	399.978	3.990	-0.766	3.990	4.063	349.139	0.046
500.000	0.612	357.202	499.972	5.066	-0.810	5.066	5.130	350.919	0.014
600.000	0.573	315.800	599.967	5.958	-1.185	5.958	6.075	348.754	0.421
700.000	0.509	284.429	699.963	6.428	-1.964	6.428	6.721	343.011	0.299
800.000	1.835	202.989	799.943	5.064	-3.020	5.064	5.896	329.195	1.830
900.000	3.930	195.639	899.812	0.290	-4.569	0.290	4.578	273.630	2.123
1000.000	4.545	197.552	999.538	-6.788	-6.688	-6.788	9.529	224.573	0.631
1100.000	6.543	199.047	1099.065	-15.952	-9.742	-15.952	18.692	211.413	2.003
1200.000	9.162	199.844	1198.119	-28.828	-14.305	-28.828	32.182	206.391	2.621
1300.000	11.319	198.018	1296.520	-45.650	-20.043	-45.650	49.857	203.704	2.181
1400.000	12.847	196.052	1394.303	-65.668	-26.153	-65.668	70.684	201.716	1.582
1500.000	13.724	194.464	1491.626	-87.838	-32.190	-87.838	93.551	200.126	0.950
1600.000	13.841	197.277	1588.748	-110.746	-38.705	-110.746	117.315	199.264	0.680

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	13.693	198.336	1685.875	-133.402	-45.981	-133.402	141.105	199.018	0.292
1800.000	13.526	197.088	1783.067	-155.816	-53.141	-155.816	164.628	198.832	0.337
1900.000	13.589	196.605	1880.281	-178.252	-59.935	-178.252	188.058	198.585	0.129
2000.000	13.843	194.978	1977.429	-201.066	-66.384	-201.066	211.741	198.271	0.462
2100.000	14.035	193.979	2074.485	-224.390	-72.405	-224.390	235.782	197.884	0.307
2200.000	13.822	192.437	2171.545	-247.821	-77.907	-247.821	259.778	197.451	0.428
2300.000	13.431	192.015	2268.730	-270.845	-82.897	-270.845	283.247	197.018	0.403
2400.000	13.565	193.754	2365.968	-293.596	-88.102	-293.596	306.530	196.703	0.427
2500.000	14.088	194.198	2463.070	-316.785	-93.876	-316.785	330.402	196.507	0.533
2600.000	14.419	194.316	2559.992	-340.648	-99.940	-340.648	355.006	196.351	0.333
2700.000	15.906	195.503	2656.508	-365.919	-106.681	-365.919	381.153	196.254	1.519
2800.000	16.131	197.791	2752.626	-392.351	-114.589	-392.351	408.742	196.281	0.670
2900.000	14.610	196.975	2849.047	-417.642	-122.516	-417.642	435.241	196.349	1.536
3000.000	14.512	195.178	2945.835	-441.796	-129.478	-441.796	460.379	196.334	0.462
3100.000	13.778	194.076	3042.803	-465.439	-135.655	-465.439	484.805	196.249	0.782
3200.000	13.185	195.931	3140.048	-487.956	-141.681	-487.956	508.109	196.191	0.734
3300.000	13.534	197.162	3237.342	-510.103	-148.265	-510.103	531.214	196.207	0.451
3400.000	12.763	196.853	3334.719	-531.856	-154.920	-531.856	553.959	196.240	0.775
3500.000	13.364	195.924	3432.131	-553.541	-161.293	-553.541	576.561	196.245	0.637
3600.000	13.612	193.866	3529.373	-576.079	-167.284	-576.079	599.876	196.192	0.540
3700.000	14.190	195.962	3626.444	-599.288	-173.475	-599.288	623.891	196.144	0.766
3800.000	14.846	198.440	3723.252	-623.226	-180.899	-623.226	648.949	196.186	0.903
3900.000	15.160	198.850	3819.843	-647.754	-189.175	-647.754	674.813	196.280	0.332
4000.000	15.397	198.114	3916.309	-672.745	-197.527	-672.745	701.144	196.363	0.306
4100.000	13.899	197.706	4013.056	-696.806	-205.308	-696.806	726.423	196.417	1.501
4200.000	12.377	191.675	4110.440	-718.745	-211.130	-718.745	749.113	196.370	2.047
4300.000	13.637	190.753	4207.873	-740.822	-215.499	-740.822	771.529	196.219	1.277
4400.000	14.281	191.948	4304.919	-764.470	-220.251	-764.470	795.566	196.072	0.705
4500.000	15.006	193.535	4401.671	-789.123	-225.835	-789.123	820.803	195.970	0.829
4600.000	14.600	194.805	4498.352	-813.895	-232.085	-813.895	846.338	195.916	0.520
4700.000	13.130	194.561	4595.436	-837.074	-238.162	-837.074	870.295	195.882	1.471
4800.000	10.984	197.803	4693.225	-857.140	-243.931	-857.140	891.174	195.886	2.250
4900.000	8.999	198.305	4791.704	-873.637	-249.300	-873.637	908.511	195.927	1.987
5000.000	8.053	194.052	4890.599	-887.858	-253.457	-887.858	923.326	195.932	1.136
5100.000	6.770	191.439	4989.761	-900.430	-256.327	-900.430	936.204	195.890	1.327
5200.000	5.200	196.962	5089.214	-910.541	-258.818	-910.541	946.611	195.868	1.671
5300.000	3.676	199.285	5188.911	-917.902	-261.199	-917.902	954.342	195.884	1.533
5400.000	2.119	188.009	5288.781	-922.759	-262.515	-922.759	959.374	195.881	1.651
5500.000	0.579	172.426	5388.751	-925.090	-262.706	-925.090	961.668	195.853	1.569

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	0.267	141.636	5488.748	-925.773	-262.495	-925.773	962.268	195.830	0.375
5700.000	0.536	178.329	5588.746	-926.423	-262.337	-926.423	962.850	195.811	0.360
5800.000	0.895	174.768	5688.738	-927.669	-262.252	-927.669	964.026	195.786	0.361
5900.000	1.227	176.503	5788.720	-929.515	-262.116	-929.515	965.765	195.748	0.333
6000.000	1.470	185.431	5888.693	-931.860	-262.172	-931.860	968.038	195.714	0.321
6100.000	1.222	186.402	5988.665	-934.196	-262.412	-934.196	970.352	195.690	0.248
6200.000	1.198	169.700	6088.643	-936.284	-262.344	-936.284	972.344	195.653	0.352
6300.000	1.463	186.414	6188.616	-938.581	-262.300	-938.581	974.544	195.614	0.467
6400.000	1.117	156.941	6288.592	-940.746	-262.061	-940.746	976.565	195.566	0.736
6500.000	0.909	157.579	6388.576	-942.375	-261.377	-942.375	977.951	195.502	0.208
6600.000	0.975	160.541	6488.563	-943.910	-260.791	-943.910	979.274	195.445	0.082
6700.000	0.982	147.655	6588.548	-945.436	-260.049	-945.436	980.548	195.379	0.220
6800.000	1.049	146.347	6688.533	-946.922	-259.084	-946.922	981.726	195.302	0.071
6900.000	0.914	153.145	6788.518	-948.395	-258.216	-948.395	982.919	195.231	0.178
7000.000	0.931	140.185	6888.505	-949.731	-257.336	-949.731	983.977	195.161	0.209
7100.000	0.703	128.818	6988.495	-950.739	-256.338	-950.739	984.690	195.089	0.279
7200.000	1.012	97.007	7088.484	-951.231	-254.984	-951.231	984.813	195.006	0.556
Stacked out at 7300									
7300.000	1.804	157.161	7188.458	-952.789	-253.496	-952.789	985.935	194.899	1.569