



COMPANY/RIG: Noble Energy/Production/CoreTech  
WELL/API: Stroh 1/05-123-11239  
DECLINATION: 8.16 Degrees  
TD AS DRILLED: 6845 Feet  
COUNTY/STATE: Weld/Colorado  
VS-Azi: 0.000 Degrees  
Latitude: 40.35775, Longitude: -104.52393  
Grid North = True North -0.63 degs (NAD 27)  
Grid Correction Applied = -0.63 degs



DEPTH REFERENCE : RKB = GL Elevation = 4628

DRILLOG MS GYRO SURVEY CALCULATIONS

Filename: msgyrosurvey.ut

Minimum Curvature Method

Report Date/Time: 8/30/2016 / 09:19

LAT & LONG OBTAINED BY HANDHELD GPS AT WELLHEAD

NORTH REFERENCE: GRID

HENDERSON, COLORADO

303-853-4976

Surveyor: JUSTIN WILLIAMS / Stroh 1

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	0.804	300.795	99.997	0.359	-0.603	0.359	0.702	300.795	0.804
200.000	0.516	301.418	199.990	0.953	-1.590	0.953	1.853	300.947	0.288
300.000	0.507	301.919	299.986	1.422	-2.349	1.422	2.746	301.180	0.010
400.000	0.274	1.012	399.984	1.895	-2.720	1.895	3.315	304.859	0.435
500.000	0.232	341.127	499.983	2.325	-2.781	2.325	3.625	309.899	0.097
600.000	0.378	336.820	599.982	2.820	-2.976	2.820	4.100	313.451	0.147
700.000	0.299	315.940	699.980	3.310	-3.288	3.310	4.666	315.195	0.145
800.000	0.312	341.974	799.978	3.757	-3.554	3.757	5.171	316.590	0.138
900.000	0.386	328.841	899.977	4.303	-3.812	4.303	5.749	318.464	0.109
1000.000	0.228	314.693	999.975	4.732	-4.128	4.732	6.279	318.898	0.174
1100.000	0.405	265.203	1099.974	4.842	-4.622	4.842	6.693	316.334	0.310
1200.000	0.781	262.523	1199.968	4.724	-5.650	4.724	7.364	309.897	0.377
1300.000	0.996	262.998	1299.956	4.529	-7.189	4.529	8.496	302.212	0.214
1400.000	1.481	265.413	1399.932	4.320	-9.340	4.320	10.290	294.821	0.488
1500.000	2.216	278.720	1499.880	4.509	-12.539	4.509	13.326	289.779	0.846
1600.000	2.133	282.604	1599.808	5.209	-16.267	5.209	17.080	287.755	0.169

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	2.123	290.668	1699.739	6.268	-19.815	6.268	20.783	287.554	0.299
1800.000	2.205	287.108	1799.668	7.488	-23.387	7.488	24.556	287.754	0.158
1900.000	2.758	294.268	1899.574	9.042	-27.418	9.042	28.871	288.252	0.633
2000.000	3.046	302.847	1999.446	11.472	-31.844	11.472	33.847	289.813	0.520
2100.000	3.548	309.356	2099.281	14.876	-36.468	14.876	39.385	292.191	0.625
2200.000	3.841	303.499	2199.073	18.686	-41.653	18.686	45.653	294.161	0.477
2300.000	4.186	305.866	2298.828	22.673	-47.404	22.673	52.547	295.561	0.383
2400.000	4.348	315.301	2398.552	27.507	-53.029	27.507	59.738	297.416	0.720
2500.000	3.804	319.483	2498.299	32.723	-57.851	32.723	66.465	299.495	0.620
2600.000	3.301	325.851	2598.107	37.628	-61.623	37.628	72.203	301.409	0.639
2700.000	2.658	326.496	2697.971	41.944	-64.518	41.944	76.954	303.028	0.644
2800.000	2.234	326.342	2797.880	45.499	-66.878	45.499	80.888	304.229	0.424
2900.000	1.935	333.871	2897.814	48.637	-68.702	48.637	84.175	305.296	0.405
3000.000	1.704	355.107	2997.764	51.634	-69.572	51.634	86.639	306.582	0.708
3100.000	1.130	23.058	3097.735	54.023	-69.313	54.023	87.879	307.933	0.882
3200.000	1.035	56.594	3197.718	55.428	-68.172	55.428	87.862	309.113	0.631
3300.000	1.204	65.873	3297.699	56.355	-66.459	56.355	87.136	310.297	0.247
3400.000	0.973	73.250	3397.681	57.029	-64.686	57.029	86.236	311.400	0.270
3500.000	1.055	86.632	3497.665	57.328	-62.954	57.328	85.145	312.322	0.250
3600.000	1.220	91.004	3597.645	57.363	-60.971	57.363	83.714	313.254	0.187
3700.000	1.369	91.358	3697.620	57.316	-58.713	57.316	82.051	314.310	0.149
3800.000	1.279	103.149	3797.593	57.034	-56.431	57.034	80.233	315.304	0.286
3900.000	1.323	101.367	3897.567	56.553	-54.212	56.553	78.340	316.211	0.060
4000.000	1.236	118.738	3997.543	55.806	-52.134	55.806	76.370	316.949	0.396
4100.000	1.249	127.056	4097.519	54.631	-50.318	54.631	74.273	317.353	0.181
4200.000	1.042	125.354	4197.499	53.448	-48.707	53.448	72.312	317.657	0.211
4300.000	1.071	127.232	4297.482	52.356	-47.221	52.356	70.505	317.952	0.046
4400.000	0.858	136.264	4397.468	51.250	-45.959	51.250	68.839	318.115	0.261
4500.000	0.659	125.086	4497.459	50.378	-44.971	50.378	67.531	318.246	0.247
4600.000	0.699	113.934	4597.452	49.800	-43.943	49.800	66.416	318.575	0.138
4700.000	0.623	112.458	4697.446	49.345	-42.883	49.345	65.375	319.008	0.078
4800.000	0.668	111.300	4797.439	48.925	-41.837	48.925	64.374	319.466	0.047
4900.000	0.420	129.271	4897.435	48.482	-41.010	48.482	63.500	319.773	0.299
5000.000	0.498	118.828	4997.432	48.040	-40.345	48.040	62.734	319.976	0.115
5100.000	0.569	136.733	5097.427	47.469	-39.624	47.469	61.833	320.147	0.180
5200.000	0.805	121.507	5197.420	46.740	-38.685	46.740	60.672	320.387	0.297
5300.000	0.626	120.277	5297.412	46.098	-37.614	46.098	59.496	320.787	0.180
5400.000	0.575	106.744	5397.407	45.678	-36.661	45.678	58.570	321.249	0.150
5500.000	0.626	121.074	5497.402	45.251	-35.713	45.251	57.646	321.719	0.158

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	0.838	112.737	5597.393	44.686	-34.570	44.686	56.498	322.274	0.237
5700.000	0.865	111.372	5697.382	44.129	-33.193	44.129	55.219	323.050	0.034
5800.000	1.063	111.782	5797.368	43.509	-31.628	43.509	53.790	323.985	0.198
5900.000	0.708	72.709	5897.357	43.348	-30.177	43.348	52.818	325.157	0.680
6000.000	0.706	67.492	5997.349	43.768	-29.018	43.768	52.513	326.456	0.064
6100.000	0.614	79.573	6097.343	44.101	-27.921	44.101	52.197	327.661	0.166
6200.000	0.482	69.206	6197.338	44.347	-27.002	44.347	51.920	328.664	0.165
6300.000	0.527	64.354	6297.334	44.695	-26.194	44.695	51.805	329.627	0.062
6400.000	0.297	100.851	6397.332	44.845	-25.525	44.845	51.601	330.352	0.338