



COMPANY/RIG: Noble Energy/Production/CoreTech  
 WELL/API: Gemini B 29-05/05-123-13697  
 DECLINATION: 8.2 Degrees  
 TD AS DRILLED: 7095 Feet  
 COUNTY/STATE: Weld/Colorado  
 VS-Azi: 0.000 Degrees  
 Latitude: 40.37186, Longitude: -104.58085  
 Grid North = True North -0.59 degs (NAD 27)  
 Grid Correction Applied = -0.59 degs



DEPTH REFERENCE : RKB = GL Elevation = 4693

DRILLOG MS GYRO SURVEY CALCULATIONS

Filename: msgyrosurvey.ut

Minimum Curvature Method

Report Date/Time: 7/18/2016 / 09:09

LAT & LONG OBTAINED BY HANDHELD GPS AT WELLHEAD

NORTH REFERENCE: GRID

HENDERSON, COLORADO

303-853-4976

Surveyor: JUSTIN WILLIAMS / Gemini B 29-05

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	0.324	304.947	99.999	0.162	-0.232	0.162	0.283	304.947	0.324
200.000	0.227	302.103	199.998	0.429	-0.631	0.429	0.763	304.208	0.097
300.000	0.104	347.741	299.998	0.623	-0.819	0.623	1.029	307.281	0.172
400.000	0.184	359.621	399.998	0.872	-0.839	0.872	1.210	316.107	0.085
500.000	0.207	344.609	499.997	1.207	-0.888	1.207	1.498	323.646	0.056
600.000	0.304	15.771	599.996	1.636	-0.864	1.636	1.850	332.165	0.166
700.000	0.044	13.886	699.995	1.929	-0.783	1.929	2.082	337.917	0.260
800.000	0.174	350.793	799.995	2.117	-0.798	2.117	2.262	339.349	0.135
900.000	0.134	50.050	899.995	2.342	-0.732	2.342	2.454	342.637	0.157
1000.000	0.056	341.510	999.995	2.464	-0.658	2.464	2.550	345.045	0.125
1100.000	0.199	332.696	1099.995	2.665	-0.753	2.665	2.769	344.212	0.144
1200.000	0.115	320.444	1199.994	2.897	-0.897	2.897	3.033	342.790	0.090
1300.000	0.309	24.136	1299.994	3.221	-0.851	3.221	3.331	345.200	0.278
1400.000	0.349	26.251	1399.992	3.741	-0.606	3.741	3.789	350.801	0.042
1500.000	0.301	77.501	1499.991	4.071	-0.215	4.071	4.077	356.983	0.285
1600.000	0.231	100.592	1599.989	4.091	0.240	4.091	4.098	3.359	0.127
1700.000	0.566	127.828	1699.987	3.751	0.829	3.751	3.841	12.456	0.376
1800.000	0.587	121.596	1799.982	3.179	1.655	3.179	3.584	27.503	0.066

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
1900.000	0.594	122.581	1899.977	2.632	2.528	2.632	3.649	43.851	0.012
2000.000	0.411	117.757	1999.973	2.186	3.282	2.186	3.943	56.339	0.187
2100.000	0.440	92.141	2099.970	2.004	3.983	2.004	4.459	63.289	0.191
2200.000	0.546	98.271	2199.966	1.921	4.839	1.921	5.206	68.343	0.119
2300.000	0.574	95.770	2299.962	1.802	5.809	1.802	6.082	72.761	0.037
2400.000	0.717	94.063	2399.955	1.708	6.931	1.708	7.138	76.157	0.144
2500.000	0.661	105.677	2499.948	1.508	8.110	1.508	8.249	79.468	0.150
2600.000	0.618	91.061	2599.942	1.342	9.204	1.342	9.301	81.704	0.168
2700.000	0.570	98.990	2699.937	1.254	10.234	1.254	10.310	83.013	0.095
2800.000	0.742	100.578	2799.930	1.058	11.362	1.058	11.411	84.682	0.173
2900.000	0.690	115.345	2899.922	0.681	12.543	0.681	12.561	86.892	0.191
3000.000	0.842	109.860	2999.913	0.174	13.778	0.174	13.779	89.278	0.168
3100.000	1.035	124.047	3099.900	-0.581	15.217	-0.581	15.228	92.188	0.301
3200.000	1.303	123.774	3199.879	-1.719	16.910	-1.719	16.997	95.805	0.268
3300.000	1.725	141.838	3299.844	-3.534	18.785	-3.534	19.114	100.655	0.632
3400.000	1.781	140.625	3399.798	-5.919	20.700	-5.919	21.530	105.957	0.067
3500.000	2.129	151.753	3499.740	-8.756	22.565	-8.756	24.205	111.208	0.513
3600.000	2.650	152.902	3599.652	-12.450	24.497	-12.450	27.480	116.941	0.523
3700.000	2.961	160.049	3699.533	-16.936	26.431	-16.936	31.392	122.649	0.467
3800.000	3.182	158.300	3799.389	-21.942	28.339	-21.942	35.840	127.749	0.240
3900.000	3.403	159.222	3899.224	-27.295	30.418	-27.295	40.869	131.903	0.228
4000.000	3.319	159.433	3999.052	-32.781	32.488	-32.781	46.152	135.257	0.086
4100.000	2.951	159.696	4098.902	-37.905	34.398	-37.905	51.186	137.777	0.368
4200.000	3.010	167.069	4198.767	-42.879	35.879	-42.879	55.909	140.079	0.388
4300.000	3.092	166.049	4298.625	-48.056	37.117	-48.056	60.721	142.319	0.098
4400.000	2.365	166.462	4398.511	-52.680	38.250	-52.680	65.102	144.017	0.727
4500.000	2.336	163.320	4498.427	-56.638	39.318	-56.638	68.948	145.232	0.132
4600.000	2.788	155.502	4598.327	-60.803	40.911	-60.803	73.285	146.065	0.570
4700.000	2.863	154.747	4698.206	-65.274	42.985	-65.274	78.156	146.634	0.084
4800.000	3.039	159.259	4798.073	-70.011	44.989	-70.011	83.220	147.275	0.291
4900.000	2.809	161.334	4897.943	-74.811	46.712	-74.811	88.197	148.020	0.253
5000.000	2.772	163.641	4997.825	-79.452	48.177	-79.452	92.918	148.769	0.118
5100.000	2.357	179.998	5097.726	-83.828	48.858	-83.828	97.027	149.765	0.837
5200.000	2.102	170.438	5197.650	-87.693	49.162	-87.693	100.533	150.724	0.450
5300.000	1.369	178.207	5297.604	-90.695	49.504	-90.695	103.326	151.373	0.768
5400.000	0.702	168.034	5397.587	-92.487	49.669	-92.487	104.980	151.763	0.689
5500.000	0.241	107.148	5497.584	-93.148	49.997	-93.148	105.718	151.776	0.621
5600.000	0.331	76.116	5597.583	-93.141	50.478	-93.141	105.940	151.544	0.176
5700.000	0.306	62.750	5697.581	-92.949	50.996	-92.949	106.020	151.249	0.078
5800.000	0.303	101.637	5797.580	-92.880	51.492	-92.880	106.199	150.996	0.203

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
5900.000	0.197	71.605	5897.579	-92.879	51.914	-92.879	106.403	150.798	0.165
6000.000	0.156	70.835	5997.578	-92.780	52.205	-92.780	106.459	150.635	0.041
6100.000	0.389	25.448	6097.577	-92.429	52.480	-92.429	106.289	150.413	0.301
6200.000	0.379	49.862	6197.575	-91.909	52.879	-91.909	106.035	150.087	0.163
6300.000	0.343	10.934	6297.573	-91.402	53.188	-91.402	105.751	149.804	0.243
6400.000	0.246	3.134	6397.572	-90.893	53.257	-90.893	105.347	149.633	0.105
6500.000	0.263	66.084	6497.571	-90.586	53.479	-90.586	105.194	149.444	0.266
6600.000	0.328	13.199	6597.570	-90.214	53.754	-90.214	105.015	149.212	0.270
6700.000	0.444	18.747	6697.568	-89.569	53.944	-89.569	104.559	148.941	0.122
6800.000	0.223	12.115	6797.566	-89.012	54.109	-89.012	104.168	148.705	0.224