



Company/Rig: Noble Energy/Coretech
WELL/API#: Shoemaker A 12-1/05-123-24923
DECLINATION: 8.24
TD AS DRILLED: 7023'
COUNTY/STATE: Weld/Colorado
Latitude: 40.506, Longitude: -104.491
GRID North is 0.650 Degrees East of True North
VS-Azi: 0.000 Degrees



DEPTH REFERENCE : RKB = Surface Elevation = 4705'

DRILLOG MS GYRO SURVEY CALCULATIONS

Filename: msgyro_run01-01-de_01.ut

Minimum Curvature Method

Report Date/Time: 2/19/2015 / 08:14

LAT & LONG OBTAINED BY HANDHELD GPS AT WELLHEAD

NORTH REFERENCE: GRID

HENDERSON, COLORADO

303-853-4976

SURVEYOR: JASON KINCHELOW

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	0.663	264.765	99.998	-0.053	-0.576	-0.053	0.578	264.765	0.663
200.000	0.571	262.990	199.992	-0.166	-1.647	-0.166	1.655	264.230	0.094
300.000	0.370	266.622	299.989	-0.246	-2.463	-0.246	2.476	264.292	0.203
400.000	0.231	291.878	399.987	-0.190	-2.972	-0.190	2.979	266.339	0.189
500.000	0.294	265.119	499.986	-0.137	-3.415	-0.137	3.417	267.703	0.136
600.000	0.193	245.374	599.985	-0.229	-3.823	-0.229	3.830	266.573	0.130
700.000	0.137	221.475	699.985	-0.389	-4.055	-0.389	4.074	264.524	0.088
800.000	0.302	161.475	799.984	-0.728	-4.051	-0.728	4.116	259.805	0.262
900.000	0.341	160.533	899.983	-1.259	-3.868	-1.259	4.067	251.972	0.039
1000.000	0.370	173.782	999.981	-1.860	-3.734	-1.860	4.171	243.522	0.087
1100.000	0.378	170.609	1099.979	-2.506	-3.645	-2.506	4.423	235.492	0.022
1200.000	0.342	174.080	1199.977	-3.128	-3.560	-3.128	4.739	228.696	0.042
1300.000	0.388	165.206	1299.975	-3.752	-3.443	-3.752	5.093	222.540	0.072
1400.000	0.495	172.354	1399.972	-4.508	-3.299	-4.508	5.586	216.203	0.121
1500.000	0.503	157.621	1499.968	-5.342	-3.075	-5.342	6.163	209.924	0.128
1600.000	0.419	173.460	1599.965	-6.111	-2.866	-6.111	6.750	205.124	0.152
1700.000	0.431	162.283	1699.962	-6.833	-2.710	-6.833	7.351	201.630	0.084
1800.000	0.596	170.599	1799.958	-7.705	-2.510	-7.705	8.104	198.044	0.180
1900.000	0.847	186.229	1899.950	-8.953	-2.505	-8.953	9.297	195.633	0.316

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
2000.000	1.190	200.931	1999.934	-10.657	-2.956	-10.657	11.059	195.504	0.429
2100.000	1.712	204.779	2099.902	-12.983	-3.953	-12.983	13.571	196.935	0.531
2200.000	2.035	203.965	2199.848	-15.961	-5.300	-15.961	16.818	198.370	0.325
2300.000	2.240	207.239	2299.779	-19.321	-6.916	-19.321	20.522	199.695	0.239
2400.000	2.230	214.958	2399.703	-22.654	-8.925	-22.654	24.349	201.504	0.301
2500.000	2.158	214.078	2499.629	-25.808	-11.095	-25.808	28.092	203.264	0.080
2600.000	1.849	210.554	2599.568	-28.756	-12.970	-28.756	31.546	204.277	0.332
2700.000	1.535	210.482	2699.525	-31.300	-14.470	-31.300	34.483	204.811	0.314
2800.000	1.525	208.797	2799.489	-33.620	-15.790	-33.620	37.144	205.158	0.046
2900.000	1.568	207.271	2899.452	-36.002	-17.058	-36.002	39.839	205.352	0.060
3000.000	1.374	201.641	2999.420	-38.332	-18.127	-38.332	42.402	205.309	0.241
3100.000	1.338	197.742	3099.392	-40.559	-18.925	-40.559	44.757	205.014	0.099
3200.000	0.758	183.747	3199.375	-42.331	-19.324	-42.331	46.533	204.536	0.630
3300.000	0.739	107.217	3299.368	-43.182	-18.751	-43.182	47.077	203.472	0.927
3400.000	0.721	106.079	3399.360	-43.547	-17.530	-43.547	46.943	201.928	0.023
3500.000	0.904	76.394	3499.350	-43.536	-16.159	-43.536	46.438	200.363	0.452
3600.000	1.644	93.835	3599.325	-43.446	-13.961	-43.446	45.634	197.814	0.827
3700.000	1.925	87.778	3699.277	-43.477	-10.851	-43.477	44.811	194.014	0.338
3800.000	1.905	85.170	3799.221	-43.272	-7.517	-43.272	43.920	189.855	0.089
3900.000	1.714	94.306	3899.171	-43.244	-4.370	-43.244	43.464	185.770	0.345
4000.000	1.175	126.893	3999.141	-43.972	-2.059	-43.972	44.020	182.681	0.961
4100.000	0.765	165.908	4099.127	-45.235	-1.076	-45.235	45.248	181.363	0.754
4200.000	1.407	225.781	4199.112	-46.739	-1.794	-46.739	46.773	182.198	1.218
4300.000	2.884	245.874	4299.040	-48.623	-4.970	-48.623	48.877	185.836	1.636
4400.000	2.831	264.728	4398.918	-49.879	-9.725	-49.879	50.818	191.033	0.937
4500.000	2.832	278.635	4498.797	-49.735	-14.627	-49.735	51.841	196.388	0.685
4600.000	2.321	283.531	4598.696	-48.890	-19.039	-48.890	52.466	201.277	0.556
4700.000	1.775	288.920	4698.631	-47.914	-22.473	-47.914	52.922	205.128	0.578
4800.000	1.226	289.833	4798.597	-47.049	-24.945	-47.049	53.252	207.932	0.550
4900.000	0.915	282.260	4898.579	-46.516	-26.732	-46.516	53.650	209.885	0.341
5000.000	0.810	292.821	4998.568	-46.072	-28.164	-46.072	53.999	211.437	0.190
5100.000	0.704	279.022	5098.559	-45.702	-29.422	-45.702	54.353	212.773	0.210
5200.000	0.547	280.494	5198.553	-45.518	-30.498	-45.518	54.791	213.823	0.158
5300.000	0.454	276.769	5298.549	-45.385	-31.361	-45.385	55.166	214.644	0.099
5400.000	0.483	265.609	5398.546	-45.370	-32.174	-45.370	55.621	215.342	0.096
5500.000	0.410	245.299	5498.543	-45.552	-32.920	-45.552	56.202	215.855	0.173
5600.000	0.178	215.884	5598.542	-45.827	-33.335	-45.827	56.669	216.033	0.269
5700.000	0.146	218.731	5698.541	-46.053	-33.506	-46.053	56.952	216.038	0.032
5800.000	0.256	208.002	5798.541	-46.349	-33.691	-46.349	57.300	216.013	0.115
5900.000	0.206	231.226	5898.540	-46.659	-33.936	-46.659	57.695	216.029	0.105

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
6000.000	0.162	153.052	5998.540	-46.898	-34.012	-46.898	57.933	215.951	0.235
6100.000	0.241	211.769	6098.539	-47.202	-34.059	-47.202	58.207	215.812	0.209
6200.000	0.037	175.755	6198.539	-47.413	-34.167	-47.413	58.441	215.777	0.212
6300.000	0.041	320.169	6298.539	-47.418	-34.187	-47.418	58.457	215.791	0.074
6400.000	0.249	11.973	6398.538	-47.178	-34.165	-47.178	58.249	215.911	0.226
6500.000	0.113	56.523	6498.538	-46.910	-34.037	-46.910	57.958	215.964	0.186
6600.000	0.210	120.373	6598.537	-46.948	-33.797	-46.948	57.848	215.749	0.190
6700.000	0.019	57.797	6698.537	-47.032	-33.625	-47.032	57.816	215.562	0.202
6800.000	0.307	165.397	6798.537	-47.283	-33.543	-47.283	57.973	215.352	0.313