



Company: Noble Energy
Well: Thomson B 12-25
API: 05-123-27280
Rig Name: Production/Lightning Wireline
State/County: Colorado/Weld
Latitude: 40.410, Longitude: -104.503
GRID North is 0.640 Degrees East of True North
VS-Azi: 0.000 Degrees



FIELD COPY ONLY (NOT DEFINITIVE)

Depth Reference : RKB=Ground Level

DRILLOG MS GYRO SURVEY CALCULATIONS

Filename: msgyro_run01-01_ed.ut

Minimum Curvature Method

Report Date/Time: 11/27/2012 / 12:49

Vaughn Energy Services
Henderson, CO
303-853-4976
Levi Sheldon

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	0.218	262.369	100.000	-0.025	-0.188	-0.025	0.190	262.369	0.218
200.000	0.479	240.446	199.998	-0.257	-0.740	-0.257	0.784	250.882	0.289
300.000	0.544	249.390	299.994	-0.630	-1.548	-0.630	1.672	247.862	0.103
400.000	0.634	239.788	399.989	-1.075	-2.471	-1.075	2.695	246.479	0.133
500.000	1.353	205.016	499.974	-2.424	-3.448	-2.424	4.214	234.897	0.907
600.000	1.289	197.926	599.947	-4.564	-4.293	-4.564	6.266	223.251	0.175
700.000	0.927	206.723	699.928	-6.357	-5.003	-6.357	8.090	218.206	0.400
800.000	0.824	190.788	799.917	-7.785	-5.502	-7.785	9.533	215.248	0.263
900.000	0.868	209.164	899.906	-9.152	-6.005	-9.152	10.947	213.270	0.274
1000.000	0.933	212.240	999.894	-10.502	-6.809	-10.502	12.516	212.955	0.081
1100.000	0.737	214.399	1099.883	-11.722	-7.606	-11.722	13.973	212.980	0.198
1200.000	0.647	203.852	1199.876	-12.768	-8.198	-12.768	15.173	212.702	0.156
1300.000	0.750	195.738	1299.868	-13.914	-8.603	-13.914	16.359	211.729	0.143
1400.000	0.711	200.468	1399.860	-15.125	-8.998	-15.125	17.599	210.748	0.072
1500.000	0.810	179.659	1499.852	-16.414	-9.211	-16.414	18.821	209.299	0.292
1600.000	1.073	173.169	1599.838	-18.051	-9.095	-18.051	20.212	206.742	0.284
1700.000	0.986	183.285	1699.822	-19.839	-9.033	-19.839	21.799	204.480	0.201
1800.000	1.237	175.639	1799.803	-21.775	-9.000	-21.775	23.561	202.457	0.291
1900.000	1.016	169.742	1899.784	-23.723	-8.760	-23.723	25.289	200.267	0.250
2000.000	0.813	177.750	1999.771	-25.305	-8.574	-25.305	26.718	198.719	0.239
2100.000	0.721	165.397	2099.762	-26.623	-8.388	-26.623	27.913	197.488	0.189
2200.000	0.891	141.758	2199.753	-27.843	-7.748	-27.843	28.901	195.550	0.370
2300.000	0.566	149.387	2299.744	-28.879	-7.015	-28.879	29.718	193.653	0.339
2400.000	0.888	134.619	2399.736	-29.848	-6.212	-29.848	30.488	191.756	0.370
2500.000	0.577	121.623	2499.728	-30.657	-5.231	-30.657	31.100	189.683	0.351
2600.000	0.549	176.347	2599.724	-31.399	-4.772	-31.399	31.759	188.641	0.518
2700.000	0.538	214.645	2699.720	-32.263	-5.008	-32.263	32.649	188.823	0.357
2800.000	0.185	190.989	2799.718	-32.808	-5.306	-32.808	33.234	189.187	0.376
2900.000	0.435	201.416	2899.716	-33.320	-5.475	-33.320	33.766	189.332	0.255
3000.000	0.623	243.463	2999.712	-33.916	-6.100	-33.916	34.460	190.196	0.418
3100.000	0.589	271.215	3099.707	-34.148	-7.100	-34.148	34.878	191.746	0.292
3200.000	0.948	216.641	3199.699	-34.800	-8.108	-34.800	35.732	193.115	0.773
3300.000	1.022	188.962	3299.685	-36.345	-8.740	-36.345	37.381	193.522	0.477
3400.000	1.265	174.614	3399.665	-38.325	-8.776	-38.325	39.317	192.897	0.374

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
3500.000	1.100	172.948	3499.643	-40.377	-8.554	-40.377	41.273	191.962	0.169
3600.000	0.975	174.067	3599.627	-42.175	-8.349	-42.175	42.994	191.197	0.127
3700.000	0.897	164.254	3699.614	-43.775	-8.048	-43.775	44.509	190.418	0.178
3800.000	0.870	153.800	3799.602	-45.210	-7.501	-45.210	45.828	189.420	0.163
3900.000	0.778	116.863	3899.592	-46.197	-6.560	-46.197	46.661	188.082	0.529
4000.000	0.901	111.294	3999.582	-46.790	-5.221	-46.790	47.080	186.367	0.148
4100.000	1.526	78.700	4099.560	-46.815	-3.183	-46.815	46.923	183.890	0.907
4200.000	1.484	62.335	4199.526	-45.953	-0.731	-45.953	45.958	180.911	0.430
4300.000	1.900	57.273	4299.482	-44.455	1.810	-44.455	44.492	177.669	0.441
4400.000	1.902	66.760	4399.427	-42.905	4.729	-42.905	43.164	173.710	0.314
4500.000	1.999	65.299	4499.369	-41.521	7.839	-41.521	42.254	169.309	0.109
4600.000	2.063	68.143	4599.306	-40.122	11.094	-40.122	41.627	164.543	0.119
4700.000	1.811	79.233	4699.249	-39.156	14.317	-39.156	41.692	159.915	0.451
4800.000	2.056	73.483	4799.193	-38.351	17.589	-38.351	42.192	155.362	0.312
4900.000	2.059	75.951	4899.128	-37.405	21.051	-37.405	42.922	150.630	0.089
5000.000	1.335	94.590	4999.084	-37.063	23.954	-37.063	44.130	147.125	0.901
5100.000	1.072	70.945	5099.063	-36.850	26.000	-36.850	45.099	144.795	0.556
5200.000	1.071	78.741	5199.045	-36.362	27.801	-36.362	45.772	142.600	0.146
5300.000	0.907	79.573	5299.030	-36.037	29.496	-36.037	46.569	140.700	0.165
5400.000	0.450	58.835	5399.023	-35.690	30.610	-35.690	47.019	139.381	0.512
5500.000	0.414	44.149	5499.021	-35.227	31.198	-35.227	47.056	138.471	0.116
5600.000	0.267	138.322	5599.019	-35.142	31.605	-35.142	47.264	138.033	0.509
5700.000	0.305	225.430	5699.018	-35.504	31.571	-35.504	47.510	138.356	0.395
5800.000	0.574	222.682	5799.015	-36.059	31.041	-36.059	47.579	139.276	0.270
5900.000	1.150	258.265	5899.004	-36.631	29.719	-36.631	47.171	140.947	0.760
6000.000	1.426	265.794	5998.979	-36.926	27.496	-36.926	46.039	143.328	0.323
6100.000	1.522	267.899	6098.946	-37.066	24.929	-37.066	44.669	146.077	0.110
6200.000	0.608	260.935	6198.928	-37.199	23.078	-37.199	43.776	148.185	0.921
6300.000	0.484	158.286	6298.925	-37.675	22.710	-37.675	43.990	148.918	0.856
6400.000	0.996	125.149	6398.917	-38.568	23.577	-38.568	45.203	148.561	0.647
6500.000	1.562	129.023	6498.891	-39.926	25.347	-39.926	47.292	147.591	0.572
6600.000	1.074	134.315	6598.865	-41.439	27.076	-41.439	49.500	146.839	0.502
6650.000	1.479	132.508	6648.852	-42.202	27.887	-42.202	50.584	146.543	0.814
HORIZONTAL DISPLACEMENT IS 50.584 FEET AT 146.543 DEGREES									