



Company: Noble Energy
Well: Lucci B 01-18
API: 05-123-25933
Rig Name: Production/Lightning Wireline
State/County: Colorado/ Weld
Latitude: 40.432, Longitude: -104.498
GRID North is 0.650 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-de_01.ut

Minimum Curvature Method

Report Date/Time: 12/11/2012 / 20:14

Vaughn Energy Services
Henderson, Colorado
866-835-8333
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	0.415	200.611	99.999	-0.339	-0.127	-0.339	0.362	200.611	0.415
200.000	0.525	146.647	199.996	-1.060	-0.003	-1.060	1.060	180.142	0.438
300.000	0.574	163.630	299.992	-1.924	0.391	-1.924	1.963	168.522	0.169
400.000	0.311	115.321	399.989	-2.521	0.777	-2.521	2.638	162.860	0.435
500.000	0.033	313.522	499.988	-2.618	1.002	-2.618	2.803	159.045	0.342
600.000	0.111	271.405	599.988	-2.596	0.885	-2.596	2.742	161.166	0.089
700.000	0.517	250.639	699.987	-2.743	0.363	-2.743	2.767	172.454	0.415
800.000	0.495	237.949	799.983	-3.122	-0.428	-3.122	3.151	187.813	0.114
900.000	0.643	247.963	899.978	-3.561	-1.314	-3.561	3.796	200.258	0.178
1000.000	0.476	262.763	999.973	-3.824	-2.246	-3.824	4.435	210.432	0.219
1100.000	0.443	265.217	1099.970	-3.909	-3.044	-3.909	4.954	217.910	0.038
1200.000	0.592	239.764	1199.966	-4.201	-3.876	-4.201	5.716	222.694	0.270
1300.000	0.593	248.882	1299.961	-4.648	-4.805	-4.648	6.685	225.954	0.094
1400.000	0.568	260.145	1399.955	-4.919	-5.777	-4.919	7.587	229.584	0.117
1500.000	0.846	260.195	1499.948	-5.130	-6.993	-5.130	8.673	233.738	0.278
1600.000	0.442	259.382	1599.941	-5.327	-8.100	-5.327	9.694	236.670	0.405
1700.000	0.644	242.281	1699.937	-5.659	-8.976	-5.659	10.611	237.770	0.257
1800.000	0.606	223.395	1799.931	-6.305	-9.837	-6.305	11.684	237.343	0.209
1900.000	0.832	183.167	1899.924	-7.414	-10.240	-7.414	12.643	234.095	0.538
2000.000	1.825	178.993	1999.895	-9.732	-10.253	-9.732	14.136	226.493	0.997
2100.000	2.455	169.415	2099.826	-13.430	-9.831	-13.430	16.643	216.206	0.723
2200.000	2.228	157.281	2199.743	-17.328	-8.687	-17.328	19.384	206.626	0.544
2300.000	2.250	168.434	2299.667	-21.044	-7.543	-21.044	22.355	199.719	0.436
2400.000	2.492	170.470	2399.581	-25.111	-6.789	-25.111	26.013	195.129	0.256
2500.000	2.449	161.583	2499.488	-29.282	-5.754	-29.282	29.842	191.118	0.385
2600.000	2.166	151.353	2599.408	-32.968	-4.173	-32.968	33.231	187.215	0.499
2700.000	1.885	146.427	2699.345	-35.997	-2.358	-35.997	36.074	183.748	0.330
2800.000	1.856	144.690	2799.292	-38.689	-0.512	-38.689	38.692	180.758	0.064
2900.000	1.506	156.962	2899.249	-41.220	0.938	-41.220	41.230	178.696	0.500
3000.000	1.741	158.189	2999.209	-43.839	2.017	-43.839	43.885	177.366	0.237
3100.000	1.353	166.635	3099.172	-46.397	2.854	-46.397	46.485	176.480	0.449
3200.000	1.407	169.417	3199.143	-48.753	3.352	-48.753	48.868	176.067	0.086
3300.000	1.107	170.379	3299.119	-50.912	3.739	-50.912	51.049	175.799	0.300
3400.000	0.809	205.439	3399.106	-52.502	3.598	-52.502	52.625	176.080	0.643

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	0.675	202.251	3499.098	-53.684	3.072	-53.684	53.772	176.725	0.140
3600.000	0.530	178.594	3599.092	-54.692	2.860	-54.692	54.766	177.007	0.285
3700.000	0.513	174.220	3699.088	-55.600	2.916	-55.600	55.676	176.997	0.043
3800.000	0.951	169.044	3799.080	-56.860	3.119	-56.860	56.945	176.860	0.442
3900.000	0.891	218.616	3899.068	-58.281	2.792	-58.281	58.348	177.258	0.774
4000.000	1.266	251.237	3999.051	-59.244	1.260	-59.244	59.257	178.781	0.705
4100.000	2.198	256.319	4099.004	-60.053	-1.649	-60.053	60.075	181.573	0.944
4200.000	2.831	264.398	4198.908	-60.747	-5.970	-60.747	61.040	185.613	0.724
4300.000	2.579	281.990	4298.798	-60.521	-10.629	-60.521	61.447	189.961	0.864
4400.000	1.851	299.425	4398.724	-59.260	-14.236	-59.260	60.946	193.508	0.984
4500.000	1.008	300.944	4498.692	-58.014	-16.398	-58.014	60.287	195.783	0.843
4600.000	0.492	7.375	4598.684	-57.136	-17.097	-57.136	59.640	196.659	0.928
4700.000	0.998	36.737	4698.676	-56.013	-16.522	-56.013	58.399	196.434	0.618
4800.000	0.332	78.820	4798.669	-55.260	-15.717	-55.260	57.451	195.877	0.783
4900.000	0.849	99.813	4898.664	-55.330	-14.702	-55.330	57.250	194.881	0.552
5000.000	0.307	138.170	4998.658	-55.656	-13.794	-55.656	57.339	193.920	0.638
5100.000	0.426	171.649	5098.656	-56.223	-13.561	-56.223	57.835	193.561	0.240
5200.000	0.780	157.050	5198.651	-57.218	-13.242	-57.218	58.730	193.031	0.383
5300.000	0.859	202.436	5298.642	-58.537	-13.263	-58.537	60.021	192.766	0.637
5400.000	0.804	223.469	5398.631	-59.739	-14.031	-59.739	61.365	193.218	0.308
5500.000	1.325	205.093	5498.614	-61.295	-15.004	-61.295	63.105	193.755	0.617
5600.000	1.061	195.378	5598.592	-63.235	-15.740	-63.235	65.165	193.978	0.331
5700.000	1.714	197.552	5698.562	-65.554	-16.437	-65.554	67.583	194.076	0.655
5800.000	1.302	203.212	5798.528	-68.023	-17.335	-68.023	70.198	194.297	0.438
5900.000	1.897	201.707	5898.488	-70.605	-18.395	-70.605	72.961	194.603	0.596
6000.000	2.156	198.493	5998.426	-73.926	-19.603	-73.926	76.481	194.852	0.283
6100.000	2.035	184.600	6098.360	-77.479	-20.342	-77.479	80.105	194.711	0.521
6200.000	1.722	194.269	6198.306	-80.704	-20.855	-80.704	83.355	194.489	0.444
6300.000	2.442	201.315	6298.239	-84.145	-22.000	-84.145	86.974	194.652	0.763
6400.000	2.325	196.368	6398.153	-88.077	-23.346	-88.077	91.118	194.846	0.237
6500.000	2.868	193.565	6498.050	-92.454	-24.504	-92.454	95.647	194.844	0.557
6600.000	3.027	192.078	6597.918	-97.468	-25.644	-97.468	100.785	194.740	0.177
6700.000	4.019	189.954	6697.727	-103.502	-26.802	-103.502	106.916	194.518	1.000
6750.000	3.109	185.086	6747.630	-106.578	-27.225	-106.578	110.001	194.329	1.916
HORIZONTAL DISPLACEMENT IS 110.001 FEET AT 194.329 DEGREES									