



Company: Noble Energy
Well: Lucci B 01-17
API: 05-123-29979
Rig Name: Production/Lightning Wireline
State/County: Colorado/ Weld
Latitude: 40.432, Longitude: -104.493
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: 12/10/2012 / 15:42

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	0.987	160.481	99.995	-0.812	0.288	-0.812	0.861	160.481	0.987
200.000	1.166	145.756	199.978	-2.464	1.148	-2.464	2.719	155.021	0.328
300.000	1.253	164.651	299.956	-4.360	2.010	-4.360	4.801	155.247	0.406
400.000	1.333	180.217	399.931	-6.577	2.295	-6.577	6.966	160.764	0.359
500.000	1.268	184.076	499.905	-8.845	2.212	-8.845	9.117	165.958	0.109
600.000	1.685	187.516	599.871	-11.406	1.941	-11.406	11.570	170.342	0.426
700.000	1.621	189.051	699.830	-14.260	1.526	-14.260	14.341	173.891	0.078
800.000	1.815	189.392	799.785	-17.219	1.045	-17.219	17.251	176.526	0.195
900.000	1.836	190.951	899.734	-20.355	0.482	-20.355	20.361	178.642	0.054
1000.000	1.675	195.243	999.687	-23.338	-0.206	-23.338	23.339	180.506	0.208
1100.000	1.715	197.125	1099.643	-26.177	-1.031	-26.177	26.198	182.255	0.069
1200.000	1.507	194.584	1199.604	-28.880	-1.802	-28.880	28.936	183.571	0.220
1300.000	1.490	188.625	1299.570	-31.438	-2.329	-31.438	31.524	184.236	0.157
1400.000	1.432	185.392	1399.537	-33.968	-2.641	-33.968	34.070	184.446	0.101
1500.000	1.130	200.260	1499.512	-36.138	-3.100	-36.138	36.270	184.903	0.447
1600.000	1.012	215.702	1599.495	-37.780	-3.957	-37.780	37.986	185.979	0.311
1700.000	1.178	233.532	1699.477	-39.107	-5.298	-39.107	39.464	187.715	0.377
1800.000	1.275	243.637	1799.454	-40.212	-7.121	-40.212	40.837	190.042	0.237
1900.000	1.348	245.454	1899.428	-41.194	-9.187	-41.194	42.206	192.572	0.084
2000.000	1.405	233.407	1999.399	-42.414	-11.241	-42.414	43.878	194.844	0.294
2100.000	1.320	222.723	2099.371	-43.990	-13.007	-43.990	45.873	196.472	0.268
2200.000	1.242	216.069	2199.346	-45.712	-14.426	-45.712	47.935	197.515	0.168
2300.000	1.216	211.789	2299.323	-47.490	-15.623	-47.490	49.994	198.210	0.096
2400.000	1.138	205.817	2399.302	-49.286	-16.614	-49.286	52.011	198.629	0.145
2500.000	1.145	199.295	2499.282	-51.123	-17.377	-51.123	53.996	198.773	0.130
2600.000	1.146	202.508	2599.263	-52.989	-18.090	-52.989	55.992	198.849	0.064
2700.000	1.153	207.851	2699.242	-54.802	-18.943	-54.802	57.984	199.068	0.107
2800.000	0.833	211.295	2799.227	-56.313	-19.790	-56.313	59.689	199.363	0.326
2900.000	0.610	215.594	2899.219	-57.366	-20.477	-57.366	60.912	199.644	0.229
3000.000	0.570	214.792	2999.214	-58.208	-21.071	-58.208	61.904	199.900	0.040
3100.000	0.690	195.075	3099.208	-59.198	-21.511	-59.198	62.985	199.970	0.246
3200.000	0.806	194.259	3199.200	-60.461	-21.841	-60.461	64.285	199.862	0.117
3300.000	1.147	194.096	3299.185	-62.114	-22.258	-62.114	65.981	199.715	0.341
3400.000	1.444	192.536	3399.159	-64.314	-22.775	-64.314	68.228	199.500	0.299

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	1.599	193.781	3499.124	-66.899	-23.381	-66.899	70.867	199.265	0.159
3600.000	1.710	203.403	3599.082	-69.623	-24.306	-69.623	73.743	199.245	0.299
3700.000	1.453	201.000	3699.044	-72.175	-25.353	-72.175	76.499	199.355	0.265
3800.000	1.592	197.170	3799.009	-74.686	-26.217	-74.686	79.154	199.343	0.172
3900.000	1.413	206.880	3898.975	-77.113	-27.185	-77.113	81.764	199.419	0.311
4000.000	1.437	183.167	3998.945	-79.464	-27.811	-79.464	84.190	199.289	0.586
4100.000	1.320	176.202	4098.916	-81.865	-27.804	-81.865	86.458	198.759	0.204
4200.000	1.337	181.322	4198.889	-84.181	-27.755	-84.181	88.638	198.248	0.120
4300.000	1.484	170.236	4298.859	-86.624	-27.562	-86.624	90.903	197.650	0.309
4400.000	1.737	159.242	4398.819	-89.317	-26.805	-89.317	93.253	196.705	0.398
4500.000	2.079	154.052	4498.764	-92.366	-25.474	-92.366	95.815	195.419	0.383
4600.000	2.424	142.362	4598.687	-95.672	-23.389	-95.672	98.490	193.738	0.573
4700.000	2.471	143.403	4698.596	-99.078	-20.812	-99.078	101.240	191.863	0.065
4800.000	2.422	138.252	4798.505	-102.386	-18.120	-102.386	103.977	190.036	0.225
4900.000	2.111	140.523	4898.426	-105.384	-15.541	-105.384	106.524	188.389	0.324
5000.000	1.790	138.356	4998.368	-107.973	-13.333	-107.973	108.793	187.039	0.330
5100.000	1.378	132.403	5098.330	-109.951	-11.407	-109.951	110.541	185.923	0.443
5200.000	1.099	117.329	5198.307	-111.202	-9.667	-111.202	111.622	184.968	0.427
5300.000	0.453	115.424	5298.297	-111.812	-8.458	-111.812	112.132	184.326	0.646
5400.000	0.475	183.614	5398.294	-112.396	-8.126	-112.396	112.689	184.135	0.521
5500.000	0.364	156.587	5498.292	-113.101	-8.027	-113.101	113.386	184.059	0.224
5600.000	0.377	153.690	5598.290	-113.687	-7.755	-113.687	113.951	183.902	0.023
5700.000	0.513	163.252	5698.287	-114.411	-7.480	-114.411	114.655	183.741	0.155
5800.000	0.430	213.979	5798.284	-115.150	-7.561	-115.150	115.398	183.757	0.411
5900.000	0.315	135.669	5898.282	-115.658	-7.578	-115.658	115.906	183.749	0.478
6000.000	0.288	251.730	5998.281	-115.933	-7.625	-115.933	116.183	183.763	0.511
6100.000	0.150	270.286	6098.281	-116.011	-7.994	-116.011	116.286	183.942	0.153
6200.000	0.214	230.955	6198.280	-116.128	-8.270	-116.128	116.422	184.073	0.137
6300.000	0.257	230.341	6298.279	-116.389	-8.587	-116.389	116.705	184.220	0.043
6400.000	0.536	239.468	6398.277	-116.770	-9.163	-116.770	117.128	184.487	0.285
6500.000	0.479	247.934	6498.273	-117.164	-9.954	-117.164	117.586	184.856	0.094
6600.000	0.680	254.859	6598.268	-117.476	-10.914	-117.476	117.982	185.308	0.212
6700.000	0.269	234.804	6698.264	-117.766	-11.678	-117.766	118.344	185.663	0.437
6750.000	0.114	214.071	6748.264	-117.875	-11.802	-117.875	118.465	185.717	0.334
HORIZONTAL DISPLACEMENT IS 118.465 FEET AT 185.717 DEGREES									