



Company: Noble Energy

Well: Lucci B 1-22

API: 05-123-25940

Rig Name: Production/Lightning

Location: Weld County, Colorado

Latitude: 40.429, Longitude: -104.494

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: 12/12/2012 / 13:35

Vaughn Energy Services

Henderson, CO.

Justin Williams

303-853-4976

RKB = Ground Level

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	0.948	240.058	99.995	-0.413	-0.717	-0.413	0.827	240.058	0.948
200.000	0.797	224.071	199.984	-1.326	-1.918	-1.326	2.331	235.345	0.285
300.000	0.931	233.374	299.973	-2.310	-3.053	-2.310	3.829	232.891	0.193
400.000	0.928	228.803	399.959	-3.328	-4.314	-3.328	5.449	232.356	0.074
500.000	0.728	214.115	499.949	-4.387	-5.280	-4.387	6.865	230.278	0.290
600.000	0.810	212.019	599.940	-5.512	-6.011	-5.512	8.155	227.479	0.087
700.000	0.813	197.567	699.930	-6.787	-6.599	-6.787	9.467	224.197	0.204
800.000	0.857	201.212	799.920	-8.160	-7.084	-8.160	10.806	220.962	0.069
900.000	1.178	214.840	899.904	-9.700	-7.942	-9.700	12.537	219.307	0.400
1000.000	1.178	215.808	999.883	-11.378	-9.130	-11.378	14.588	218.746	0.020
1100.000	1.663	219.178	1099.852	-13.336	-10.648	-13.336	17.065	218.606	0.491
1200.000	1.920	210.047	1199.803	-15.910	-12.403	-15.910	20.174	217.939	0.384
1300.000	1.871	225.681	1299.749	-18.501	-14.410	-18.501	23.450	217.914	0.518
1400.000	1.858	221.017	1399.696	-20.864	-16.641	-20.864	26.688	218.576	0.152
1500.000	1.378	213.119	1499.656	-23.095	-18.363	-23.095	29.505	218.488	0.528
1600.000	1.407	196.387	1599.627	-25.280	-19.366	-25.280	31.845	217.454	0.406
1700.000	1.695	221.899	1699.591	-27.558	-20.700	-27.558	34.467	216.911	0.740
1800.000	1.388	209.777	1799.555	-29.710	-22.289	-29.710	37.142	216.878	0.447
1900.000	1.895	216.359	1899.514	-32.093	-23.871	-32.093	39.997	216.642	0.541
2000.000	1.949	214.191	1999.458	-34.831	-25.807	-34.831	43.349	216.535	0.090
2100.000	1.371	224.195	2099.416	-37.095	-27.596	-37.095	46.234	216.647	0.644
2200.000	0.989	215.463	2199.394	-38.656	-28.931	-38.656	48.283	216.812	0.421
2300.000	0.851	221.895	2299.381	-39.912	-29.927	-39.912	49.886	216.864	0.173
2400.000	0.925	235.999	2399.369	-40.916	-31.092	-40.916	51.389	217.232	0.230
2500.000	0.883	219.590	2499.357	-41.961	-32.253	-41.961	52.924	217.547	0.261
2600.000	0.811	237.917	2599.346	-42.931	-33.343	-42.931	54.358	217.836	0.279
2700.000	1.038	238.552	2699.333	-43.779	-34.716	-43.779	55.873	218.414	0.227
2800.000	1.177	231.851	2799.315	-44.886	-36.296	-44.886	57.725	218.960	0.190
2900.000	1.255	214.670	2899.293	-46.421	-37.726	-46.421	59.818	219.101	0.371
3000.000	1.587	204.938	2999.262	-48.577	-38.933	-48.577	62.253	218.711	0.410
3100.000	1.486	200.116	3099.226	-51.050	-39.963	-51.050	64.832	218.054	0.164
3200.000	1.071	222.054	3199.201	-52.962	-41.035	-52.962	66.999	217.768	0.635
3300.000	1.324	260.030	3299.181	-53.856	-42.799	-53.856	68.792	218.474	0.815
3400.000	1.269	291.437	3399.157	-53.652	-44.968	-53.652	70.005	219.968	0.704

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	1.049	330.362	3499.138	-52.452	-46.451	-52.452	70.064	221.528	0.800
3600.000	0.849	309.474	3599.124	-51.186	-47.476	-51.186	69.813	222.847	0.396
3700.000	1.080	304.567	3699.110	-50.180	-48.824	-50.180	70.013	224.215	0.245
3800.000	1.037	300.212	3799.093	-49.190	-50.382	-49.190	70.413	225.686	0.091
3900.000	0.957	284.203	3899.078	-48.529	-51.974	-48.529	71.108	226.963	0.289
4000.000	1.147	286.837	3999.061	-48.034	-53.742	-48.034	72.080	228.210	0.196
4100.000	1.441	275.793	4099.035	-47.618	-55.951	-47.618	73.471	229.600	0.384
4200.000	1.835	269.759	4198.994	-47.497	-58.803	-47.497	75.590	231.071	0.429
4300.000	1.889	264.673	4298.942	-47.657	-62.045	-47.657	78.235	232.472	0.174
4400.000	2.051	270.072	4398.883	-47.808	-65.475	-47.808	81.071	233.864	0.246
4500.000	1.852	298.282	4498.827	-47.040	-68.687	-47.040	83.251	235.595	0.970
4600.000	1.981	323.600	4598.773	-44.883	-71.136	-44.883	84.112	237.750	0.849
4700.000	1.734	337.052	4698.721	-42.099	-72.751	-42.099	84.054	239.944	0.499
4800.000	1.238	354.367	4798.687	-39.630	-73.447	-39.630	83.457	241.650	0.664
4900.000	1.069	14.731	4898.667	-37.653	-73.316	-37.653	82.419	242.816	0.440
5000.000	0.417	26.002	4998.658	-36.423	-72.919	-36.423	81.510	243.458	0.666
5100.000	0.316	166.444	5098.658	-36.365	-72.695	-36.365	81.283	243.424	0.690
5200.000	0.743	198.140	5198.653	-37.249	-72.832	-37.249	81.805	242.913	0.503
5300.000	1.060	137.615	5298.643	-38.548	-72.411	-38.548	82.032	241.971	0.949
5400.000	1.608	158.075	5398.616	-40.533	-71.263	-40.533	81.984	240.370	0.718
5500.000	1.838	163.516	5498.571	-43.372	-70.285	-43.372	82.590	238.322	0.282
5600.000	2.214	175.751	5598.508	-46.836	-69.687	-46.836	83.963	236.095	0.571
5700.000	2.293	175.461	5698.431	-50.756	-69.385	-50.756	85.968	233.814	0.080
5800.000	2.547	173.458	5798.342	-54.958	-68.974	-54.958	88.191	231.452	0.268
5900.000	2.104	179.973	5898.259	-59.002	-68.720	-59.002	90.574	229.351	0.515
6000.000	1.819	178.975	5998.201	-62.425	-68.690	-62.425	92.818	227.736	0.287
6100.000	1.789	185.927	6098.151	-65.564	-68.823	-65.564	95.054	226.389	0.221
6200.000	1.200	193.625	6198.117	-68.135	-69.231	-68.135	97.136	225.457	0.621
6300.000	1.176	192.433	6298.095	-70.155	-69.699	-70.155	98.892	224.813	0.034
6400.000	1.138	204.458	6398.075	-72.062	-70.331	-72.062	100.694	224.304	0.245
6500.000	1.635	224.439	6498.046	-73.984	-71.741	-73.984	103.055	224.118	0.686
6600.000	2.452	221.463	6597.982	-76.606	-74.156	-76.606	106.619	224.069	0.824
6700.000	1.607	223.602	6697.918	-79.225	-76.540	-79.225	110.159	224.013	0.848
HORIZONTAL DISPLACEMENT IS 110.159 FEET AT 224.013 DEGREES									