

Company: Noble Energy

Lease/Well: KY Blue H / 25-24

API: 05-123-24447

Rig Name: Production / Lightning Wireline

State/County: Colorado / Weld

Latitude: 40.192, Longitude: -104.612

GRID North is 0.570 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: 3/13/2012 / 18:49

Vaughn Energy Services

Henderson Colorado

866-835-8333

Norman Cowan

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	0.273	353.382	100.000	0.236	-0.027	0.236	0.238	353.382	0.273
200.000	0.322	53.027	199.998	0.642	0.170	0.642	0.664	14.822	0.299
300.000	0.221	28.729	299.997	0.981	0.487	0.981	1.095	26.434	0.151
400.000	0.096	122.975	399.997	1.104	0.651	1.104	1.282	30.503	0.248
500.000	0.211	112.656	499.997	0.988	0.891	0.988	1.330	42.036	0.118
600.000	0.604	120.660	599.994	0.648	1.514	0.648	1.647	66.815	0.396
700.000	0.895	147.772	699.986	-0.281	2.384	-0.281	2.400	96.730	0.451
800.000	0.958	153.295	799.973	-1.689	3.176	-1.689	3.597	118.003	0.109
900.000	1.021	149.163	899.958	-3.201	4.009	-3.201	5.130	128.608	0.095
1000.000	1.016	153.222	999.942	-4.757	4.865	-4.757	6.804	134.361	0.072
1100.000	1.200	142.318	1099.923	-6.377	5.904	-6.377	8.691	137.207	0.279
1200.000	1.316	140.015	1199.899	-8.086	7.282	-8.086	10.881	137.994	0.127
1300.000	1.102	158.631	1299.877	-9.861	8.370	-9.861	12.935	139.676	0.444
1400.000	1.179	141.608	1399.858	-11.564	9.360	-11.564	14.877	141.013	0.346
1500.000	1.260	148.400	1499.835	-13.306	10.575	-13.306	16.997	141.526	0.166
1600.000	1.021	156.202	1599.815	-15.058	11.510	-15.058	18.954	142.606	0.285
1700.000	0.474	145.614	1699.806	-16.215	12.104	-16.215	20.234	143.260	0.562
1800.000	0.282	104.528	1799.804	-16.618	12.576	-16.618	20.840	142.884	0.321
1900.000	0.255	57.815	1899.803	-16.562	13.002	-16.562	21.056	141.865	0.214
2000.000	0.484	0.093	1999.801	-16.021	13.191	-16.021	20.752	140.533	0.409
2100.000	0.830	350.649	2099.795	-14.884	13.074	-14.884	19.811	138.704	0.361
2200.000	0.958	339.890	2199.783	-13.385	12.669	-13.385	18.430	136.574	0.211
2300.000	0.957	346.930	2299.769	-11.786	12.193	-11.786	16.958	134.029	0.118
2400.000	0.883	13.656	2399.756	-10.224	12.186	-10.224	15.907	129.996	0.431
2500.000	1.457	9.133	2499.735	-8.219	12.570	-8.219	15.018	123.181	0.581
2600.000	1.722	350.844	2599.697	-5.481	12.532	-5.481	13.678	113.620	0.569
2700.000	2.196	346.516	2699.638	-2.134	11.847	-2.134	12.037	100.212	0.496
2800.000	2.375	340.377	2799.559	1.681	10.704	1.681	10.835	81.077	0.303
2900.000	2.367	347.917	2899.474	5.651	9.576	5.651	11.119	59.453	0.312
3000.000	2.359	351.291	2999.389	9.704	8.832	9.704	13.122	42.306	0.139
3100.000	2.030	356.198	3099.315	13.506	8.403	13.506	15.907	31.889	0.378
3200.000	1.858	8.609	3199.258	16.876	8.528	16.876	18.909	26.809	0.454
3300.000	1.498	8.972	3299.215	19.770	8.975	19.770	21.712	24.416	0.361
3400.000	1.480	4.747	3399.181	22.348	9.286	22.348	24.201	22.562	0.111

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	0.528	6.679	3499.165	24.094	9.446	24.094	25.879	21.408	0.953
3600.000	1.067	5.539	3599.155	25.479	9.590	25.479	27.224	20.625	0.539
3700.000	1.092	357.189	3699.137	27.358	9.633	27.358	29.004	19.397	0.159
3800.000	1.457	346.656	3799.112	29.547	9.293	29.547	30.974	17.458	0.432
3900.000	1.413	343.076	3899.081	31.963	8.640	31.963	33.110	15.127	0.100
4000.000	1.050	332.233	3999.058	33.953	7.855	33.953	34.850	13.025	0.429
4100.000	0.962	339.785	4099.042	35.553	7.137	35.553	36.262	11.351	0.159
4200.000	1.016	352.695	4199.028	37.220	6.734	37.220	37.824	10.256	0.229
4300.000	1.159	334.033	4299.010	39.009	6.179	39.009	39.496	9.000	0.380
4400.000	1.284	335.261	4398.987	40.937	5.267	40.937	41.274	7.331	0.128
4500.000	1.345	337.286	4498.961	43.037	4.345	43.037	43.256	5.764	0.076
4600.000	1.467	341.538	4598.931	45.333	3.486	45.333	45.467	4.398	0.160
4700.000	1.764	349.251	4698.891	48.059	2.794	48.059	48.140	3.327	0.368
4800.000	2.783	350.449	4798.811	51.966	2.104	51.966	52.008	2.319	1.020
4900.000	3.166	348.221	4898.676	57.063	1.137	57.063	57.075	1.142	0.400
5000.000	2.979	346.984	4998.532	62.299	-0.012	62.299	62.299	359.989	0.198
5100.000	2.701	345.677	5098.409	67.114	-1.180	67.114	67.124	358.993	0.285
5200.000	2.206	357.524	5198.318	71.320	-1.846	71.320	71.344	358.517	0.707
5300.000	2.220	342.567	5298.244	75.090	-2.509	75.090	75.132	358.086	0.576
5400.000	2.109	338.979	5398.173	78.655	-3.749	78.655	78.745	357.271	0.175
5500.000	2.148	343.075	5498.104	82.166	-4.955	82.166	82.315	356.549	0.157
5600.000	1.806	326.788	5598.045	85.277	-6.364	85.277	85.514	355.732	0.655
5700.000	0.533	325.418	5698.022	86.979	-7.491	86.979	87.301	355.077	1.273
5800.000	0.284	113.669	5798.021	87.263	-7.528	87.263	87.587	355.069	0.789
5900.000	1.128	126.681	5898.013	86.575	-6.512	86.575	86.820	355.698	0.854
6000.000	1.220	126.839	5997.992	85.349	-4.871	85.349	85.488	356.734	0.092
6100.000	1.775	129.651	6097.957	83.723	-2.827	83.723	83.771	358.066	0.560
6200.000	2.190	131.866	6197.897	81.460	-0.212	81.460	81.460	359.851	0.422
6300.000	3.051	132.643	6297.792	78.382	3.168	78.382	78.446	2.315	0.862
6400.000	2.037	133.299	6397.692	75.361	6.419	75.361	75.634	4.868	1.015
6500.000	0.926	145.437	6497.657	73.476	8.171	73.476	73.929	6.345	1.148
6600.000	0.779	212.853	6597.648	72.240	8.261	72.240	72.710	6.524	0.954
6700.000	0.492	244.654	6697.642	71.485	7.504	71.485	71.878	5.993	0.444
6800.000	0.650	215.554	6797.637	70.840	6.787	70.840	71.164	5.472	0.325
6900.000	0.438	191.079	6897.633	70.003	6.383	70.003	70.294	5.210	0.310
7000.000	1.083	195.218	6997.624	68.716	6.062	68.716	68.983	5.041	0.647
<div> <div>HORIZONTAL DISPLACEMENT IS</div> <div>68.983 FEET AT 5.041 DEGREES</div> </div>									