

Company: NOBLE ENERGY

Well: DINNER 14-34

API: 05-123-21945

Rig Name: PRODUCTION/LIGHTNING

State/County: COLORADO/WELD

Latitude: 40.481, Longitude: -104.634

GRID North is 0.560 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: 12/17/2012 / 16:18

VAUGHN ENERGY SERVICES

HENDERSON, COLORADO

866-835-8333

NICK KULA

DEPTH REFERENCE=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	0.487	292.204	99.999	0.161	-0.393	0.161	0.425	292.204	0.487
200.000	0.449	330.362	199.996	0.662	-0.981	0.662	1.183	304.009	0.308
300.000	0.382	239.298	299.994	0.832	-1.461	0.832	1.681	299.664	0.595
400.000	0.440	265.252	399.991	0.630	-2.130	0.630	2.221	286.478	0.193
500.000	0.473	235.551	499.988	0.365	-2.853	0.365	2.876	277.288	0.236
600.000	0.469	269.082	599.985	0.125	-3.602	0.125	3.604	271.986	0.272
700.000	0.235	274.718	699.983	0.135	-4.216	0.135	4.218	271.837	0.236
800.000	0.618	247.302	799.980	-0.056	-4.918	-0.056	4.919	269.346	0.424
900.000	0.509	262.736	899.976	-0.321	-5.857	-0.321	5.866	266.867	0.186
1000.000	0.462	276.905	999.972	-0.328	-6.698	-0.328	6.706	267.194	0.129
1100.000	0.754	274.055	1099.966	-0.233	-7.754	-0.233	7.758	268.277	0.294
1200.000	1.133	307.223	1199.953	0.411	-9.198	0.411	9.207	272.560	0.649
1300.000	0.495	281.635	1299.943	1.096	-10.408	1.096	10.465	276.013	0.719
1400.000	0.610	269.743	1399.938	1.181	-11.363	1.181	11.424	275.933	0.162
1500.000	0.743	264.843	1499.931	1.120	-12.541	1.120	12.591	275.104	0.145
1600.000	0.745	248.308	1599.923	0.821	-13.791	0.821	13.816	273.409	0.214
1700.000	0.637	211.516	1699.916	0.107	-14.686	0.107	14.687	270.418	0.448
1800.000	0.461	184.917	1799.912	-0.767	-15.012	-0.767	15.031	267.073	0.306
1900.000	0.442	216.218	1899.909	-1.479	-15.274	-1.479	15.346	264.468	0.244
2000.000	0.263	238.112	1999.907	-1.912	-15.697	-1.912	15.813	263.056	0.221
2100.000	0.559	270.363	2099.904	-2.030	-16.379	-2.030	16.505	262.936	0.365
2200.000	1.124	268.215	2199.893	-2.057	-17.848	-2.057	17.966	263.425	0.566
2300.000	1.000	287.157	2299.876	-1.830	-19.663	-1.830	19.748	264.682	0.370
2400.000	0.597	285.011	2399.866	-1.438	-21.000	-1.438	21.050	266.084	0.404
2500.000	0.931	281.904	2499.857	-1.135	-22.299	-1.135	22.327	267.086	0.336
2600.000	1.067	317.934	2599.843	-0.276	-23.717	-0.276	23.719	269.332	0.631
2700.000	1.086	306.425	2699.825	0.977	-25.103	0.977	25.122	272.229	0.217
2800.000	0.754	322.995	2799.813	2.066	-26.262	2.066	26.343	274.497	0.422
2900.000	0.506	276.111	2899.807	2.638	-27.097	2.638	27.225	275.561	0.551

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
3000.000	0.667	253.420	2999.802	2.519	-28.094	2.519	28.207	275.124	0.279
3100.000	0.917	266.053	3099.792	2.298	-29.450	2.298	29.539	274.462	0.304
3200.000	0.939	259.597	3199.779	2.095	-31.054	2.095	31.125	273.859	0.107
3300.000	0.940	273.690	3299.766	2.000	-32.679	2.000	32.740	273.502	0.230
3400.000	0.982	294.119	3399.752	2.403	-34.279	2.403	34.363	274.010	0.343
3500.000	0.934	289.655	3499.738	3.027	-35.829	3.027	35.957	274.829	0.089
3600.000	1.002	295.944	3599.724	3.684	-37.383	3.684	37.564	275.628	0.126
3700.000	0.961	300.457	3699.709	4.492	-38.892	4.492	39.151	276.588	0.087
3800.000	1.258	295.593	3799.691	5.391	-40.605	5.391	40.961	277.563	0.311
3900.000	1.249	286.536	3899.667	6.175	-42.640	6.175	43.085	278.241	0.198
4000.000	1.030	301.527	3999.647	6.956	-44.451	6.956	44.992	278.893	0.368
4100.000	0.722	283.285	4099.635	7.570	-45.831	7.570	46.452	279.380	0.412
4200.000	0.610	263.199	4199.629	7.652	-46.972	7.652	47.591	279.253	0.257
4300.000	1.240	245.291	4299.615	7.136	-48.484	7.136	49.007	278.373	0.686
4400.000	0.936	246.922	4399.597	6.364	-50.219	6.364	50.621	277.222	0.306
4500.000	0.699	211.195	4499.588	5.522	-51.287	5.522	51.583	276.145	0.550
4600.000	1.027	149.967	4599.578	4.224	-51.154	4.224	51.329	274.720	0.923
4700.000	1.846	135.640	4699.546	2.297	-49.580	2.297	49.633	272.652	0.888
4800.000	2.265	123.526	4799.482	0.054	-46.806	0.054	46.806	270.066	0.601
4900.000	2.205	114.445	4899.406	-1.834	-43.408	-1.834	43.447	267.581	0.359
5000.000	2.349	130.995	4999.328	-3.974	-40.110	-3.974	40.307	264.342	0.670
5100.000	1.709	127.882	5099.265	-6.234	-37.387	-6.234	37.903	260.534	0.649
5200.000	1.882	121.645	5199.216	-8.011	-34.812	-8.011	35.722	257.041	0.261
5300.000	2.023	129.950	5299.158	-10.006	-32.061	-10.006	33.586	252.668	0.316
5400.000	2.119	110.354	5399.094	-11.782	-28.975	-11.782	31.279	247.872	0.711
5500.000	2.783	95.394	5499.003	-12.653	-24.825	-12.653	27.863	242.992	0.917
5600.000	3.036	97.681	5598.874	-13.235	-19.783	-13.235	23.802	236.217	0.278
5700.000	2.202	108.892	5698.770	-14.211	-15.342	-14.211	20.912	227.192	0.975
5800.000	1.769	103.646	5798.709	-15.197	-12.025	-15.197	19.379	218.354	0.469
5900.000	1.457	106.284	5898.670	-15.917	-9.305	-15.917	18.438	210.309	0.320
6000.000	1.311	105.847	5998.641	-16.586	-6.984	-16.586	17.997	202.836	0.147
6100.000	1.090	108.907	6098.619	-17.207	-4.984	-17.207	17.914	196.155	0.229
6200.000	1.078	97.348	6198.601	-17.635	-3.152	-17.635	17.915	190.132	0.219
6300.000	0.839	121.444	6298.587	-18.138	-1.594	-18.138	18.208	185.022	0.463
6400.000	0.779	83.548	6398.578	-18.444	-0.294	-18.444	18.446	180.912	0.529
6500.000	0.776	62.375	6498.569	-18.053	0.981	-18.053	18.080	176.889	0.286
6600.000	0.844	120.482	6598.560	-18.113	2.216	-18.113	18.248	173.026	0.789
6700.000	0.498	107.715	6698.553	-18.619	3.264	-18.619	18.903	170.057	0.375
6800.000	0.757	120.417	6798.547	-19.085	4.247	-19.085	19.552	167.454	0.293
6900.000	0.778	182.839	6898.540	-20.098	4.783	-20.098	20.659	166.612	0.795
6975.000	1.025	225.774	6973.532	-21.074	4.277	-21.074	21.504	168.527	0.932
<div> <div>HORIZONTAL DISPLACEMENT IS</div> <div>21.504 FEET AT 168.527 DEGREES</div> </div>									