

Company: NOBLE ENERGY

Well: DINNER 14-35

API: 05-123-23129

Rig Name: PRODUCTION/LIGHTNING

State/County: COLORADO/WELD

Latitude: 40.482, Longitude: -104.636

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 / 14:12

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	0.330	256.647	99.999	-0.066	-0.280	-0.066	0.288	256.647	0.330
200.000	0.307	194.581	199.998	-0.392	-0.627	-0.392	0.740	237.976	0.329
300.000	0.512	316.956	299.997	-0.325	-1.000	-0.325	1.051	251.982	0.724
400.000	0.369	224.486	399.995	-0.228	-1.530	-0.228	1.547	261.517	0.644
500.000	0.854	282.004	499.990	-0.303	-2.484	-0.303	2.502	263.048	0.726
600.000	0.943	240.127	599.978	-0.558	-3.927	-0.558	3.966	261.911	0.648
700.000	0.982	273.373	699.965	-0.918	-5.496	-0.918	5.572	260.521	0.552
800.000	0.908	272.033	799.951	-0.839	-7.144	-0.839	7.193	263.301	0.078
900.000	0.888	275.373	899.939	-0.738	-8.708	-0.738	8.739	265.153	0.056
1000.000	1.148	250.199	999.924	-1.005	-10.421	-1.005	10.470	264.491	0.511
1100.000	1.167	254.626	1099.903	-1.614	-12.345	-1.614	12.450	262.550	0.091
1200.000	1.135	260.519	1199.883	-2.047	-14.304	-2.047	14.450	261.854	0.122
1300.000	0.658	274.146	1299.871	-2.169	-15.854	-2.169	16.002	262.209	0.519
1400.000	0.693	266.956	1399.864	-2.160	-17.030	-2.160	17.167	262.773	0.091
1500.000	0.744	263.660	1499.856	-2.263	-18.279	-2.263	18.419	262.941	0.066
1600.000	0.817	269.762	1599.847	-2.338	-19.637	-2.338	19.776	263.210	0.110
1700.000	0.786	267.983	1699.837	-2.365	-21.035	-2.365	21.168	263.585	0.040
1800.000	0.850	232.830	1799.827	-2.837	-22.311	-2.837	22.491	262.752	0.498
1900.000	0.830	245.567	1899.817	-3.585	-23.562	-3.585	23.833	261.348	0.187
2000.000	0.879	227.363	1999.806	-4.404	-24.786	-4.404	25.174	259.924	0.275
2100.000	1.005	225.500	2099.792	-5.538	-25.975	-5.538	26.559	257.964	0.129
2200.000	1.143	199.833	2199.775	-7.091	-26.939	-7.091	27.856	255.254	0.496
2300.000	0.987	195.557	2299.758	-8.858	-27.508	-8.858	28.899	252.150	0.174
2400.000	0.934	172.137	2399.744	-10.496	-27.628	-10.496	29.554	249.198	0.393
2500.000	0.604	187.218	2499.735	-11.826	-27.582	-11.826	30.011	246.792	0.385
2600.000	0.832	177.306	2599.727	-13.075	-27.614	-13.075	30.553	244.664	0.259
2700.000	0.825	168.594	2699.717	-14.506	-27.438	-14.506	31.036	242.135	0.126
2800.000	0.899	175.429	2799.706	-15.994	-27.233	-15.994	31.582	239.574	0.126
2900.000	0.647	199.134	2899.697	-17.309	-27.355	-17.309	32.371	237.677	0.402

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	0.626	207.161	2999.691	-18.328	-27.790	-18.328	33.290	236.594	0.091
3100.000	0.583	218.315	3099.685	-19.214	-28.355	-19.214	34.252	235.878	0.125
3200.000	0.654	204.638	3199.679	-20.132	-28.909	-20.132	35.228	235.147	0.163
3300.000	0.762	210.839	3299.672	-21.222	-29.487	-21.222	36.330	234.258	0.133
3400.000	0.686	239.900	3399.664	-22.093	-30.347	-22.093	37.537	233.944	0.371
3500.000	0.682	252.897	3499.657	-22.569	-31.434	-22.569	38.697	234.322	0.155
3600.000	0.857	265.372	3599.648	-22.804	-32.748	-22.804	39.906	235.149	0.241
3700.000	0.851	264.462	3699.637	-22.936	-34.233	-22.936	41.207	236.178	0.015
3800.000	0.890	256.724	3799.625	-23.186	-35.729	-23.186	42.593	237.018	0.124
3900.000	0.897	255.224	3899.613	-23.564	-37.241	-23.564	44.070	237.676	0.024
4000.000	0.971	251.552	3999.600	-24.032	-38.802	-24.032	45.641	238.228	0.095
4100.000	1.040	231.306	4099.585	-24.868	-40.314	-24.868	47.367	238.331	0.360
4200.000	1.364	220.362	4199.563	-26.342	-41.793	-26.342	49.402	237.777	0.395
4300.000	1.197	232.813	4299.538	-27.880	-43.396	-27.880	51.580	237.281	0.324
4400.000	1.312	209.864	4399.514	-29.505	-44.798	-29.505	53.641	236.631	0.512
4500.000	0.829	165.278	4499.498	-31.197	-45.184	-31.197	54.908	235.377	0.927
4600.000	1.133	131.684	4599.484	-32.554	-44.262	-32.554	54.944	233.666	0.637
4700.000	1.618	112.357	4699.456	-33.748	-42.218	-33.748	54.049	231.362	0.665
4800.000	1.721	110.461	4799.413	-34.811	-39.505	-34.811	52.653	228.614	0.117
4900.000	1.915	119.605	4899.363	-36.161	-36.644	-36.161	51.482	225.380	0.348
5000.000	1.769	116.855	4999.311	-37.684	-33.814	-37.684	50.631	221.901	0.171
5100.000	2.115	126.221	5099.254	-39.472	-30.948	-39.472	50.158	218.098	0.468
5200.000	2.226	130.056	5199.182	-41.812	-27.973	-41.812	50.306	213.783	0.183
5300.000	2.250	128.499	5299.106	-44.284	-24.950	-44.284	50.829	209.397	0.065

HORIZONTAL DISPLACEMENT IS
50.829 FEET AT 209.397 DEGREES