

Company: NOBLE ENERGY

Well: MARTINSON K25-19

API: 05-123-30015

Rig Name: PRODUCTION/LIGHTNING

State/County: COLORADO/WELD

Latitude: 40.287, Longitude: -104.730

GRID North is 0.500 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\_run01-02-de\_01.ut

Minimum Curvature Method

Report Date/Time: 1/24/2013 / 16:57

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	0.967	34.525	99.995	0.695	0.478	0.695	0.844	34.525	0.967
200.000	0.629	26.661	199.985	1.880	1.203	1.880	2.232	32.598	0.355
300.000	0.631	13.536	299.979	2.906	1.578	2.906	3.306	28.497	0.144
400.000	0.546	23.575	399.974	3.878	1.897	3.878	4.317	26.068	0.133
500.000	0.670	335.951	499.969	4.848	1.849	4.848	5.189	20.879	0.504
600.000	0.605	0.255	599.963	5.910	1.614	5.910	6.126	15.271	0.276
700.000	0.923	343.862	699.954	7.211	1.392	7.211	7.344	10.927	0.383
800.000	1.031	339.479	799.940	8.827	0.853	8.827	8.868	5.518	0.132
900.000	1.038	343.062	899.923	10.536	0.273	10.536	10.540	1.486	0.065
1000.000	1.147	325.854	999.905	12.232	-0.552	12.232	12.244	357.414	0.344
1100.000	0.998	334.783	1099.888	13.848	-1.485	13.848	13.927	353.878	0.224
1200.000	1.308	318.774	1199.868	15.494	-2.608	15.494	15.712	350.444	0.444
1300.000	1.586	319.883	1299.836	17.411	-4.253	17.411	17.923	346.275	0.279
1400.000	1.502	318.612	1399.800	19.453	-6.011	19.453	20.360	342.829	0.091
1500.000	1.272	298.517	1499.771	20.966	-7.853	20.966	22.389	339.466	0.534
1600.000	1.221	287.215	1599.747	21.812	-9.846	21.812	23.931	335.704	0.251
1700.000	1.039	282.695	1699.728	22.326	-11.749	22.326	25.229	332.244	0.202
1800.000	0.759	290.603	1799.715	22.759	-13.254	22.759	26.337	329.785	0.306
1900.000	0.549	25.064	1899.711	23.426	-13.671	23.426	27.123	329.733	0.971
2000.000	1.391	56.407	1999.696	24.531	-12.457	24.531	27.513	333.079	0.965
2100.000	1.834	83.074	2099.658	25.396	-9.857	25.396	27.242	338.787	0.859
2200.000	1.677	92.542	2199.611	25.524	-6.807	25.524	26.416	345.067	0.329
2300.000	1.910	64.836	2299.564	26.167	-3.837	26.167	26.447	351.658	0.888
2400.000	1.580	35.097	2399.520	28.004	-1.536	28.004	28.046	356.861	0.950
2500.000	1.289	0.696	2499.490	30.257	-0.729	30.257	30.266	358.619	0.893
2600.000	1.665	340.435	2599.457	32.751	-1.202	32.751	32.773	357.898	0.638
2700.000	1.922	326.913	2699.409	35.525	-2.605	35.525	35.621	355.807	0.494
2800.000	2.013	328.128	2799.350	38.422	-4.448	38.422	38.679	353.397	0.100
2900.000	1.727	335.108	2899.296	41.280	-6.009	41.280	41.716	351.718	0.365

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	1.631	325.105	2999.254	43.815	-7.457	43.815	44.445	350.341	0.308
3100.000	1.717	323.968	3099.211	46.193	-9.153	46.193	47.091	348.793	0.092
3200.000	1.384	289.534	3199.176	47.808	-11.172	47.808	49.096	346.847	0.971
3300.000	1.551	295.287	3299.144	48.790	-13.533	48.790	50.632	344.497	0.222
3400.000	1.599	285.954	3399.106	49.751	-16.099	49.751	52.291	342.069	0.261
3500.000	1.925	278.140	3499.059	50.373	-19.103	50.373	53.873	339.232	0.404
3600.000	1.924	280.559	3599.002	50.918	-22.416	50.918	55.634	336.239	0.081
3700.000	2.575	267.351	3698.925	51.122	-26.310	51.122	57.495	332.768	0.828
3800.000	2.660	257.883	3798.821	50.531	-30.823	50.531	59.190	328.618	0.440
3900.000	2.419	259.431	3898.723	49.657	-35.167	49.657	60.848	324.694	0.251
4000.000	1.444	263.173	3998.665	49.120	-38.492	49.120	62.405	321.916	0.983
4100.000	1.485	263.319	4098.633	48.819	-41.031	48.819	63.772	319.954	0.042
4200.000	0.988	286.135	4198.609	48.908	-43.146	48.908	65.219	318.582	0.691
4300.000	0.801	342.981	4298.599	49.816	-44.178	49.816	66.583	318.432	0.867
4400.000	0.778	9.436	4398.590	51.154	-44.271	51.154	67.651	319.125	0.362
4500.000	0.383	348.147	4498.585	52.151	-44.228	52.151	68.380	319.699	0.444
4600.000	0.641	243.179	4598.582	52.226	-44.796	52.226	68.806	319.379	0.827
4700.000	1.556	253.874	4698.563	51.596	-46.599	51.596	69.525	317.913	0.934
4800.000	1.799	254.494	4798.520	50.799	-49.417	50.799	70.870	315.790	0.244
4900.000	2.122	251.331	4898.461	49.787	-52.684	49.787	72.487	313.381	0.340
5000.000	1.358	249.576	4998.414	48.781	-55.548	48.781	73.927	311.289	0.766
5100.000	1.592	250.591	5098.381	47.906	-57.968	47.906	75.202	309.571	0.235
5200.000	1.508	286.201	5198.347	47.812	-60.542	47.812	77.145	308.299	0.951
5300.000	1.750	266.166	5298.307	48.077	-63.330	48.077	79.511	307.204	0.615
5400.000	1.958	273.166	5398.255	48.069	-66.559	48.069	82.102	305.837	0.307
5500.000	2.132	279.250	5498.191	48.462	-70.100	48.462	85.221	304.657	0.278
5600.000	1.338	294.630	5598.145	49.248	-72.998	49.248	88.057	304.006	0.913
5700.000	1.290	308.190	5698.119	50.431	-74.944	50.431	90.332	303.937	0.314
5800.000	1.262	340.249	5798.096	52.163	-76.201	52.163	92.345	304.394	0.705
5900.000	1.080	314.070	5898.075	53.856	-77.250	53.856	94.170	304.883	0.559
6000.000	0.947	353.692	5998.061	55.333	-78.018	55.333	95.648	305.345	0.698
6100.000	0.973	20.859	6098.047	56.947	-77.807	56.947	96.420	306.201	0.452
6200.000	1.146	7.751	6198.030	58.732	-77.369	58.732	97.136	307.203	0.297
6300.000	1.530	47.791	6298.005	60.621	-76.245	60.621	97.407	308.487	0.985
6400.000	1.735	36.654	6397.965	62.732	-74.352	62.732	97.281	310.155	0.377
6500.000	1.853	19.456	6497.916	65.471	-72.910	65.471	97.991	311.923	0.549
6600.000	1.829	41.563	6597.866	68.189	-71.313	68.189	98.668	313.717	0.706
6700.000	1.177	40.004	6697.831	70.170	-69.594	70.170	98.829	315.236	0.654
6800.000	1.228	35.382	6797.809	71.830	-68.314	71.830	99.127	316.437	0.110
6900.000	2.181	34.349	6897.764	74.274	-66.620	74.274	99.774	318.110	0.954
7000.000	2.753	41.744	6997.671	77.637	-63.947	77.637	100.582	320.523	0.654
7100.000	3.422	47.084	7097.525	81.461	-60.162	81.461	101.269	323.553	0.727
7200.000	3.361	62.443	7197.352	84.849	-55.378	84.849	101.322	326.869	0.908
HORIZONTAL DISPLACEMENT IS 101.322 FEET AT 326.869 DEGREES									