

Company: NOBLE ENERGY

Well: DECHANT USX X1-6

API: 05-123-09840

Rig Name: PRODUCTION/LIGHTNING

State/County: COLORADO/WELD

Latitude: 40.170, Longitude: -104.615

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-de_01.ut

Minimum Curvature Method

Report Date/Time: 1/17/2013 / 16:41

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	0.678	173.095	99.998	-0.587	0.071	-0.587	0.592	173.095	0.678
200.000	0.659	191.711	199.991	-1.738	0.026	-1.738	1.738	179.159	0.217
300.000	0.854	218.801	299.983	-2.882	-0.558	-2.882	2.935	190.960	0.402
400.000	0.500	219.637	399.975	-3.798	-1.303	-3.798	4.015	198.937	0.354
500.000	0.779	250.571	499.969	-4.360	-2.223	-4.360	4.894	207.012	0.435
600.000	0.342	247.369	599.964	-4.701	-3.140	-4.701	5.654	213.737	0.438
700.000	0.865	250.190	699.958	-5.072	-4.126	-5.072	6.538	219.126	0.524
800.000	0.414	272.842	799.952	-5.310	-5.197	-5.310	7.430	224.384	0.509
900.000	0.860	253.467	899.946	-5.506	-6.277	-5.506	8.350	228.746	0.489
1000.000	0.596	301.119	999.938	-5.450	-7.442	-5.450	9.224	233.782	0.636
1100.000	0.570	305.572	1099.933	-4.892	-8.292	-4.892	9.628	239.463	0.052
1200.000	0.306	335.600	1199.930	-4.359	-8.807	-4.359	9.827	243.666	0.342
1300.000	0.502	315.603	1299.928	-3.803	-9.224	-3.803	9.977	247.592	0.239
1400.000	0.229	298.037	1399.926	-3.396	-9.707	-3.396	10.284	250.716	0.292
1500.000	0.282	335.447	1499.925	-3.078	-9.986	-3.078	10.450	252.866	0.171
1600.000	0.526	356.136	1599.922	-2.397	-10.119	-2.397	10.399	256.675	0.281
1700.000	0.391	328.220	1699.919	-1.649	-10.329	-1.649	10.460	260.930	0.257
1800.000	0.541	0.980	1799.916	-0.887	-10.501	-0.887	10.538	265.172	0.300
1900.000	0.691	352.972	1899.910	0.184	-10.567	0.184	10.568	270.998	0.173
2000.000	0.413	7.242	1999.906	1.141	-10.595	1.141	10.656	276.145	0.308
2100.000	0.548	358.500	2099.902	1.977	-10.562	1.977	10.745	280.601	0.153
2200.000	0.314	324.702	2199.899	2.678	-10.733	2.678	11.062	284.013	0.336
2300.000	0.658	7.339	2299.896	3.471	-10.817	3.471	11.361	287.791	0.477
2400.000	0.506	4.195	2399.891	4.482	-10.712	4.482	11.612	292.704	0.155
2500.000	0.619	332.284	2499.886	5.401	-10.931	5.401	12.192	296.293	0.328
2600.000	0.103	352.030	2599.884	5.968	-11.194	5.968	12.686	298.064	0.523
2700.000	0.327	260.733	2699.883	6.011	-11.489	6.011	12.966	297.620	0.345
2800.000	0.661	251.696	2799.879	5.784	-12.318	5.784	13.609	295.152	0.342
2900.000	0.633	286.608	2899.873	5.761	-13.396	5.761	14.582	293.270	0.389

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	0.629	246.732	2999.868	5.702	-14.429	5.702	15.515	291.562	0.430
3100.000	1.067	293.471	3099.858	5.856	-15.787	5.856	16.838	290.351	0.784
3200.000	0.993	305.064	3199.842	6.724	-17.350	6.724	18.608	291.185	0.221
3300.000	0.817	2.769	3299.831	7.934	-18.025	7.934	19.694	293.758	0.887
3400.000	1.167	53.542	3399.818	9.251	-17.172	9.251	19.505	298.314	0.908
3500.000	1.335	96.963	3499.796	9.715	-15.196	9.715	18.036	302.593	0.939
3600.000	0.618	100.450	3599.781	9.476	-13.508	9.476	16.501	305.050	0.719
3700.000	0.864	119.848	3699.772	9.003	-12.324	9.003	15.262	306.150	0.348
3800.000	0.433	162.282	3799.766	8.268	-11.555	8.268	14.208	305.584	0.617
3900.000	1.352	189.275	3899.753	6.744	-11.630	6.744	13.444	300.106	0.985
4000.000	1.128	199.307	3999.730	4.651	-12.146	4.651	13.006	290.953	0.311
4100.000	0.878	171.357	4099.715	2.965	-12.356	2.965	12.707	283.492	0.542
4200.000	0.759	131.376	4199.706	1.769	-11.744	1.769	11.876	278.567	0.571
4300.000	0.893	127.284	4299.695	0.859	-10.627	0.859	10.661	274.623	0.146
4400.000	0.573	105.766	4399.687	0.251	-9.525	0.251	9.529	271.512	0.416
4500.000	0.492	234.938	4499.685	-0.131	-9.395	-0.131	9.396	269.201	0.963
4600.000	1.491	255.693	4599.669	-0.699	-11.007	-0.699	11.029	266.366	1.045
4700.000	0.398	277.752	4699.654	-0.973	-12.611	-0.973	12.649	265.586	1.131
4800.000	0.255	283.674	4799.653	-0.874	-13.172	-0.874	13.201	266.204	0.147
4900.000	1.032	294.012	4899.646	-0.455	-14.210	-0.455	14.218	268.166	0.782
5000.000	0.112	320.494	4999.640	-0.013	-15.095	-0.013	15.095	269.949	0.933
5100.000	1.604	315.808	5099.626	1.065	-16.133	1.065	16.168	273.778	1.492
5200.000	0.343	348.584	5199.610	2.362	-17.167	2.362	17.329	277.835	1.329
5300.000	1.388	37.405	5299.598	3.618	-16.491	3.618	16.883	282.374	1.191
5400.000	0.394	41.274	5399.584	4.839	-15.528	4.839	16.264	287.307	0.996
5500.000	1.522	60.345	5499.569	5.754	-14.147	5.754	15.273	292.132	1.156
5600.000	0.800	53.340	5599.548	6.828	-12.434	6.828	14.185	298.773	0.734
5700.000	1.167	46.578	5699.533	7.944	-11.134	7.944	13.678	305.508	0.384
5800.000	2.041	37.267	5799.493	10.061	-9.317	10.061	13.712	317.200	0.909
5900.000	1.935	9.928	5899.435	13.141	-7.947	13.141	15.357	328.835	0.945
6000.000	1.333	357.563	5999.394	15.965	-7.706	15.965	17.727	334.235	0.694
6100.000	4.864	321.797	6099.238	20.460	-10.378	20.460	22.941	333.104	3.862
6200.000	3.686	325.047	6198.959	26.426	-14.842	26.426	30.308	330.680	1.202
6300.000	2.442	331.386	6298.814	30.931	-17.703	30.931	35.639	330.215	1.287
6400.000	2.421	345.595	6398.725	34.847	-19.249	34.847	39.810	331.084	0.602
6500.000	2.202	354.233	6498.644	38.804	-19.968	38.804	43.640	332.771	0.411
6600.000	2.944	13.649	6598.544	43.211	-19.555	43.211	47.430	335.651	1.134
6700.000	4.654	30.495	6698.324	49.203	-16.890	49.203	52.021	341.054	2.025
6800.000	5.862	48.195	6797.908	56.103	-11.024	56.103	57.176	348.883	2.009
6900.000	6.522	53.527	6897.324	62.883	-2.650	62.883	62.939	357.587	0.875
7000.000	6.757	60.689	6996.655	69.139	7.046	69.139	69.498	5.819	0.860
7100.000	7.676	58.568	7095.862	75.502	17.875	75.502	77.589	13.319	0.957
7200.000	6.082	60.969	7195.140	81.556	28.206	81.556	86.295	19.078	1.619
7300.000	6.223	65.168	7294.564	86.403	37.756	86.403	94.292	23.604	0.471
7400.000	6.400	67.668	7393.958	90.797	47.830	90.797	102.624	27.780	0.327
7500.000	6.700	60.867	7493.307	95.754	58.082	95.754	111.993	31.240	0.831
7550.000	7.264	68.390	7542.937	98.339	63.568	98.339	117.096	32.880	2.146

<div> HORIZONTAL DISPLACEMENT IS 117.096 FEET AT 32.880 DEGREES </div>
