



Company: Noble Energy
Well: Stephens 07-12
API: 05-123-18525
Rig Name: Production/VES
State/County: Colorado/Weld
Latitude: 40.420, Longitude: -104.821
GRID North is 0.430 Degrees East of True North
VS-Azi: 0.000 Degrees



FIELD COPY ONLY (NOT DEFINITIVE)

Depth Reference : RKB=Ground Level

DRILLOG GYRO SURVEY CALCULATIONS

Filename: hgyro_run01-de_01.ut

Minimum Curvature Method

Report Date/Time: 2/28/2013 / 10:55

Vaughn Energy Services
Henderson, CO
303-853-4976
Levi Sheldon

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	0.307	282.748	100.000	0.059	-0.261	0.059	0.268	282.748	0.307
200.000	0.147	219.956	199.999	0.020	-0.605	0.020	0.605	271.855	0.273
300.000	0.244	180.432	299.998	-0.292	-0.689	-0.292	0.748	247.046	0.161
400.000	0.339	260.659	399.997	-0.553	-0.983	-0.553	1.127	240.641	0.383
500.000	0.411	309.303	499.995	-0.373	-1.552	-0.373	1.597	256.477	0.316
600.000	0.418	313.405	599.993	0.105	-2.095	0.105	2.098	272.863	0.030
700.000	0.316	20.646	699.991	0.613	-2.263	0.613	2.345	285.163	0.415
800.000	0.567	321.514	799.989	1.259	-2.474	1.259	2.776	296.963	0.487
900.000	0.647	321.455	899.983	2.087	-3.134	2.087	3.765	303.668	0.079
1000.000	0.737	306.201	999.976	2.908	-4.004	2.908	4.949	305.993	0.204
1100.000	0.441	308.072	1099.970	3.526	-4.826	3.526	5.977	306.149	0.296
1200.000	0.585	309.534	1199.966	4.088	-5.522	4.088	6.871	306.508	0.144
1300.000	0.558	292.526	1299.961	4.599	-6.365	4.599	7.853	305.847	0.171
1400.000	1.123	274.872	1399.950	4.868	-7.792	4.868	9.188	301.998	0.616
1500.000	0.726	285.491	1499.937	5.121	-9.379	5.121	10.686	298.635	0.431
1600.000	0.878	276.373	1599.927	5.375	-10.751	5.375	12.020	296.564	0.198
1700.000	1.303	264.409	1699.909	5.349	-12.643	5.349	13.729	292.933	0.480
1800.000	1.362	260.398	1799.882	5.040	-14.947	5.040	15.774	288.636	0.110
1900.000	1.435	267.682	1899.852	4.792	-17.370	4.792	18.018	285.422	0.192
2000.000	1.480	273.553	1999.820	4.821	-19.910	4.821	20.485	283.612	0.156
2100.000	1.505	275.640	2099.786	5.030	-22.506	5.030	23.061	282.599	0.060
2200.000	1.735	285.897	2199.746	5.574	-25.269	5.574	25.876	282.439	0.369
2300.000	1.859	292.311	2299.697	6.604	-28.225	6.604	28.988	283.169	0.236
2400.000	1.879	296.066	2399.644	7.941	-31.199	7.941	32.193	284.279	0.124
2500.000	1.884	295.815	2499.590	9.377	-34.151	9.377	35.415	285.353	0.010
2600.000	2.020	294.294	2599.532	10.818	-37.238	10.818	38.777	286.199	0.146
2700.000	2.027	295.854	2699.470	12.314	-40.436	12.314	42.270	286.937	0.056
2800.000	2.105	291.803	2799.405	13.768	-43.733	13.768	45.849	287.475	0.165
2900.000	2.277	295.181	2899.332	15.295	-47.236	15.295	49.650	287.942	0.215
3000.000	2.186	297.669	2999.256	17.026	-50.723	17.026	53.504	288.555	0.133
3100.000	2.470	293.381	3099.173	18.767	-54.390	18.767	57.537	289.037	0.333
3200.000	2.836	286.862	3199.066	20.340	-58.736	20.340	62.158	289.101	0.474
3300.000	3.047	284.321	3298.934	21.715	-63.679	21.715	67.280	288.830	0.248
3400.000	3.141	283.237	3398.789	23.000	-68.922	23.000	72.658	288.454	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	3.004	288.546	3498.645	24.461	-74.073	24.461	78.008	288.274	0.316
3600.000	2.795	297.690	3598.517	26.427	-78.717	26.427	83.034	288.558	0.507
3700.000	2.578	291.197	3698.408	28.373	-82.972	28.373	87.689	288.879	0.373
3800.000	2.499	289.421	3798.310	29.911	-87.125	29.911	92.116	288.948	0.112
3900.000	2.407	290.051	3898.218	31.356	-91.153	31.356	96.395	288.983	0.096
4000.000	2.565	288.183	3998.124	32.774	-95.251	32.774	100.731	288.987	0.178
4100.000	2.680	304.295	4098.021	34.790	-99.308	34.790	105.225	289.306	0.744
4200.000	2.840	307.548	4197.905	37.617	-103.203	37.617	109.845	290.026	0.223
4300.000	2.852	311.674	4297.781	40.780	-107.025	40.780	114.531	290.858	0.205
4400.000	2.884	319.991	4397.657	44.360	-110.500	44.360	119.072	291.873	0.417
4500.000	3.162	327.526	4497.518	48.614	-113.598	48.614	123.563	293.168	0.484
4600.000	2.661	312.533	4597.390	52.509	-116.789	52.509	128.050	294.209	0.907
4700.000	2.823	291.897	4697.278	54.997	-120.784	54.997	132.716	294.481	0.995
4800.000	2.956	275.613	4797.152	56.167	-125.635	56.167	137.619	294.088	0.829
4900.000	3.120	274.683	4897.012	56.641	-130.913	56.641	142.641	293.396	0.171
5000.000	3.147	274.913	4996.862	57.099	-136.360	57.099	147.832	292.721	0.030
5100.000	3.119	276.225	5096.713	57.629	-141.799	57.629	153.062	292.117	0.077
5200.000	3.241	279.950	5196.559	58.412	-147.287	58.412	158.447	291.633	0.240
5300.000	3.520	280.439	5296.385	59.457	-153.090	59.457	164.230	291.225	0.281
5400.000	3.869	287.069	5396.177	61.003	-159.335	61.003	170.614	290.950	0.551
5500.000	4.308	283.222	5495.923	62.853	-166.217	62.853	177.703	290.714	0.517
5600.000	4.709	285.861	5595.613	64.834	-173.822	64.834	185.519	290.455	0.451
5700.000	4.352	293.906	5695.302	67.493	-181.239	67.493	193.398	290.425	0.728
5800.000	3.801	297.758	5795.048	70.575	-187.641	70.575	200.474	290.612	0.615
5900.000	3.547	294.706	5894.843	73.411	-193.384	73.411	206.849	290.787	0.321
6000.000	3.292	291.893	5994.665	75.774	-198.858	75.774	212.806	290.859	0.305
6100.000	3.510	291.727	6094.489	77.978	-204.366	77.978	218.737	290.885	0.219
6200.000	3.677	301.836	6194.293	80.803	-209.934	80.803	224.947	291.052	0.654
6300.000	3.108	295.059	6294.118	83.642	-215.113	83.642	230.802	291.247	0.695
6400.000	2.941	298.379	6393.979	86.010	-219.826	86.010	236.053	291.369	0.242
6500.000	2.982	284.698	6493.846	87.889	-224.599	87.889	241.183	291.371	0.706
6600.000	2.115	276.815	6593.747	88.768	-228.948	88.768	245.554	291.192	0.933
6700.000	2.950	284.583	6693.649	89.635	-233.270	89.635	249.899	291.019	0.901
6800.000	3.702	295.732	6793.480	91.684	-238.669	91.684	255.673	291.014	0.988
6900.000	4.311	305.454	6893.237	95.266	-244.638	95.266	262.533	291.277	0.910

HORIZONTAL DISPLACEMENT IS
262.533 FEET AT 291.277 DEGREES