



Company: Noble Energy  
Well: Bashor State AA 16-25  
API #: 05-123-26117  
Rig Name: Production/Lightning  
State/County: Colorado/Weld  
Latitude: 40.483, Longitude: -104.447  
GRID North is 0.680 Degrees East of True North  
VS-Azi: 0.000 Degrees



FIELD COPY ONLY (NOT DEFINITIVE)

Depth Reference : Ground Level

DRILLOG MS GYRO SURVEY CALCULATIONS

Filename: msgyro\_run01-01\_ed.ut

Minimum Curvature Method

Report Date/Time: 10/18/2012 / 12:12

Vaughn Energy Services

Henderson, Colorado

866-835-8333

Randy Holcomb

RKB=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	0.563	340.853	99.998	0.464	-0.161	0.464	0.491	340.853	0.563
200.000	0.190	250.763	199.997	0.874	-0.479	0.874	0.996	331.259	0.595
300.000	0.455	119.874	299.996	0.621	-0.292	0.621	0.686	334.839	0.597
400.000	0.573	60.012	399.992	0.673	0.485	0.673	0.830	35.760	0.523
500.000	0.296	13.078	499.990	1.175	0.976	1.175	1.528	39.719	0.429
600.000	1.241	342.351	599.980	2.459	0.707	2.459	2.558	16.035	0.997
700.000	1.352	324.476	699.955	4.451	-0.307	4.451	4.461	356.051	0.418
800.000	0.736	317.251	799.937	5.883	-1.429	5.883	6.054	346.347	0.629
900.000	1.032	324.158	899.925	7.085	-2.392	7.085	7.478	341.341	0.314
1000.000	1.165	292.564	999.908	8.205	-3.858	8.205	9.066	334.815	0.611
1100.000	1.301	298.924	1099.885	9.144	-5.790	9.144	10.823	327.657	0.193
1200.000	1.854	314.386	1199.847	10.824	-7.939	10.824	13.424	323.740	0.693
1300.000	1.720	317.616	1299.798	13.064	-10.107	13.064	16.517	322.273	0.168
1400.000	1.779	319.534	1399.752	15.353	-12.126	15.353	19.564	321.699	0.083
1500.000	1.785	326.407	1499.704	17.831	-13.995	17.831	22.667	321.874	0.214
1600.000	1.801	327.407	1599.655	20.452	-15.703	20.452	25.785	322.484	0.035
1700.000	0.920	319.439	1699.626	22.387	-17.072	22.387	28.153	322.671	0.899
1800.000	0.412	331.121	1799.618	23.312	-17.767	23.312	29.311	322.686	0.523
1900.000	0.227	193.700	1899.618	23.434	-17.988	23.434	29.542	322.490	0.599
2000.000	0.631	178.301	1999.615	22.691	-18.019	22.691	28.975	321.548	0.416
2100.000	0.545	171.252	2099.609	21.671	-17.930	21.671	28.127	320.397	0.112
2200.000	0.737	186.879	2199.603	20.562	-17.935	20.562	27.285	318.905	0.258
2300.000	0.249	27.859	2299.601	20.117	-17.910	20.117	26.934	318.321	0.974
2400.000	0.726	46.796	2399.597	20.743	-17.346	20.743	27.040	320.096	0.497
2500.000	1.504	80.200	2499.578	21.400	-15.591	21.400	26.478	323.925	0.982
2600.000	1.246	76.824	2599.549	21.872	-13.239	21.872	25.567	328.812	0.269
2700.000	1.640	88.060	2699.518	22.168	-10.750	22.168	24.637	334.129	0.483
2800.000	1.958	117.886	2799.471	21.417	-7.810	21.417	22.797	339.966	0.975
2900.000	1.593	109.819	2899.422	20.147	-4.992	20.147	20.756	346.083	0.442
3000.000	0.893	76.722	2999.400	19.855	-2.927	19.855	20.069	351.614	0.975
3100.000	0.643	98.597	3099.391	19.950	-1.614	19.950	20.015	355.374	0.381
3200.000	0.884	178.223	3199.384	19.095	-1.036	19.095	19.123	356.895	0.995
3300.000	1.479	218.797	3299.364	17.318	-1.820	17.318	17.413	354.000	0.991
3400.000	2.243	238.365	3399.311	15.285	-4.295	15.285	15.877	344.305	0.984

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	2.391	245.345	3499.230	13.389	-7.857	13.389	15.524	329.594	0.318
3600.000	2.327	235.371	3599.146	11.365	-11.423	11.365	16.114	314.855	0.415
3700.000	2.480	234.158	3699.058	8.945	-14.847	8.945	17.333	301.069	0.161
3800.000	2.860	244.158	3798.949	6.591	-18.845	6.591	19.965	289.277	0.600
3900.000	2.088	231.950	3898.856	4.381	-22.525	4.381	22.947	281.006	0.930
4000.000	1.430	216.308	3998.809	2.252	-24.699	2.252	24.801	275.209	0.809
4100.000	1.101	191.003	4098.785	0.303	-25.621	0.303	25.623	270.678	0.641
4200.000	0.653	129.208	4198.775	-1.000	-25.363	-1.000	25.383	267.742	0.979
4300.000	0.432	82.675	4298.771	-1.312	-24.548	-1.312	24.583	266.940	0.474
4400.000	0.416	155.748	4398.769	-1.595	-24.025	-1.595	24.078	266.201	0.505
4500.000	0.316	304.342	4498.768	-1.771	-24.103	-1.771	24.168	265.798	0.705
4600.000	1.099	5.046	4598.761	-0.660	-24.246	-0.660	24.255	268.440	0.984
4700.000	2.493	0.515	4698.709	2.470	-24.142	2.470	24.268	275.841	1.400
4800.000	3.298	10.976	4798.581	7.469	-23.575	7.469	24.730	287.579	0.960
4900.000	2.973	3.326	4898.432	12.882	-22.877	12.882	26.254	299.385	0.529
5000.000	2.371	13.814	4998.323	17.480	-22.232	17.480	28.281	308.175	0.774
5100.000	1.722	12.704	5098.259	20.953	-21.408	20.953	29.956	314.385	0.650
5200.000	1.511	29.498	5198.220	23.566	-20.429	23.566	31.188	319.078	0.516
5300.000	1.831	8.424	5298.178	26.294	-19.546	26.294	32.763	323.374	0.688
5400.000	2.165	21.279	5398.118	29.634	-18.626	29.634	35.002	327.849	0.557
5500.000	1.709	27.005	5498.060	32.723	-17.264	32.723	36.998	332.185	0.495
5600.000	1.101	37.345	5598.030	34.816	-16.004	34.816	38.318	335.314	0.656
5700.000	1.222	49.278	5698.010	36.276	-14.612	36.276	39.108	338.060	0.270
5800.000	0.939	55.782	5797.992	37.432	-13.127	37.432	39.667	340.675	0.308
5900.000	0.919	59.481	5897.979	38.300	-11.759	38.300	40.064	342.933	0.063
6000.000	0.526	58.062	5997.970	38.950	-10.679	38.950	40.387	344.668	0.393
6100.000	0.417	72.095	6097.967	39.304	-9.943	39.304	40.543	345.804	0.158
6200.000	0.419	53.076	6197.964	39.636	-9.304	39.636	40.713	346.790	0.138
6300.000	0.776	79.660	6297.959	39.977	-8.345	39.977	40.839	348.209	0.443
6400.000	0.639	42.108	6397.952	40.512	-7.305	40.512	41.166	349.779	0.474
6500.000	0.657	76.925	6497.946	41.056	-6.373	41.056	41.547	351.177	0.388
6600.000	0.746	87.577	6597.938	41.213	-5.164	41.213	41.535	352.858	0.158
6700.000	0.897	70.132	6697.928	41.506	-3.777	41.506	41.678	354.801	0.291
HORIZONTAL DISPLACEMENT IS 41.678 FEET AT 354.801 DEGREES									