



Company: Noble Energy  
 Well: Cobb 6-23  
 API#: 05-123-15898  
 Rig Name: Production / Lightning  
 Location: Weld County, Colorado  
 Latitude: 40.343, Longitude: -104.600  
 GRID North is 0.580 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: inrun\_ed.ut  
 Minimum Curvature Method  
 Report Date/Time: 1/23/2012 / 15:59

Vaughn Energy Services  
 Henderson, CO  
 303-853-4976  
 Robert Davis

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	0.317	36.918	99.999	0.221	0.166	0.221	0.277	36.918	0.317
200.000	0.182	133.824	199.999	0.332	0.447	0.332	0.557	53.386	0.384
300.000	0.195	185.932	299.998	0.053	0.544	0.053	0.547	84.482	0.166
400.000	0.092	255.671	399.998	-0.137	0.449	-0.137	0.469	106.954	0.185
500.000	0.606	94.067	499.996	-0.194	0.899	-0.194	0.919	102.196	0.694
600.000	0.595	77.277	599.991	-0.117	1.933	-0.117	1.937	93.475	0.176
700.000	0.410	77.254	699.987	0.076	2.789	0.076	2.790	88.440	0.185
800.000	0.573	68.124	799.983	0.341	3.602	0.341	3.618	84.588	0.180
900.000	0.465	93.965	899.979	0.499	4.471	0.499	4.499	83.625	0.255
1000.000	0.393	66.791	999.977	0.606	5.191	0.606	5.226	83.336	0.213
1100.000	0.485	75.108	1099.974	0.850	5.915	0.850	5.975	81.819	0.112
1200.000	0.511	83.680	1199.970	1.008	6.767	1.008	6.842	81.526	0.079
1300.000	0.444	62.594	1299.967	1.236	7.555	1.236	7.655	80.711	0.187
1400.000	0.473	68.090	1399.963	1.568	8.282	1.568	8.429	79.279	0.053
1500.000	0.365	74.816	1499.961	1.805	8.972	1.805	9.152	78.622	0.119
1600.000	0.477	77.701	1599.958	1.977	9.686	1.977	9.886	78.461	0.114
1700.000	0.361	84.476	1699.955	2.097	10.407	2.097	10.616	78.610	0.126
1800.000	0.432	113.803	1799.953	1.975	11.066	1.975	11.240	79.881	0.212
1900.000	0.674	123.896	1899.948	1.494	11.899	1.494	11.992	82.841	0.260
2000.000	0.678	151.624	1999.942	0.646	12.669	0.646	12.685	87.083	0.324
2100.000	0.772	172.251	2099.934	-0.542	13.041	-0.542	13.052	92.381	0.275
2200.000	0.777	221.540	2199.926	-1.717	12.682	-1.717	12.797	97.711	0.646
2300.000	1.233	237.727	2299.910	-2.799	11.322	-2.799	11.663	103.886	0.533
2400.000	1.533	247.814	2399.881	-3.879	9.174	-3.879	9.960	112.919	0.386
2500.000	1.728	251.734	2499.841	-4.857	6.503	-4.857	8.117	126.753	0.224
2600.000	2.086	255.809	2599.785	-5.775	3.307	-5.775	6.655	150.208	0.383
2700.000	2.217	265.460	2699.715	-6.375	-0.386	-6.375	6.387	183.468	0.385
2800.000	2.117	276.617	2799.644	-6.315	-4.149	-6.315	7.556	213.303	0.433
2900.000	2.412	262.708	2899.566	-6.369	-8.070	-6.369	10.281	231.718	0.622
3000.000	2.436	268.282	2999.477	-6.700	-12.282	-6.700	13.991	241.386	0.237
3100.000	2.410	269.087	3099.388	-6.797	-16.509	-6.797	17.853	247.620	0.043
3200.000	1.745	289.325	3199.323	-6.327	-20.047	-6.327	21.022	252.484	0.981
3300.000	1.149	321.691	3299.292	-5.037	-22.106	-5.037	22.672	257.165	0.989
3400.000	1.077	10.254	3399.275	-3.325	-22.560	-3.325	22.804	261.616	0.918

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	1.197	14.131	3499.256	-1.387	-22.137	-1.387	22.181	266.414	0.143
3600.000	1.373	30.732	3599.231	0.656	-21.270	0.656	21.280	271.766	0.410
3700.000	1.403	15.711	3699.202	2.864	-20.327	2.864	20.527	278.020	0.364
3800.000	1.582	357.751	3799.168	5.421	-20.049	5.421	20.769	285.130	0.498
3900.000	1.637	13.173	3899.129	8.191	-19.778	8.191	21.407	292.496	0.435
4000.000	1.670	13.601	3999.088	10.997	-19.110	10.997	22.048	299.920	0.035
4100.000	1.617	19.768	4099.047	13.741	-18.290	13.741	22.877	306.918	0.185
4200.000	1.632	35.213	4199.007	16.233	-16.992	16.233	23.499	313.692	0.437
4300.000	1.379	43.147	4298.972	18.274	-15.348	18.274	23.864	319.975	0.328
4400.000	1.580	46.881	4398.939	20.094	-13.519	20.094	24.218	326.068	0.223
4500.000	1.650	61.853	4498.900	21.715	-11.243	21.715	24.453	332.626	0.426
4600.000	1.730	57.632	4598.856	23.203	-8.699	23.203	24.780	339.448	0.148
4700.000	2.042	57.727	4698.802	24.962	-5.917	24.962	25.654	346.665	0.312
4800.000	2.270	56.581	4798.731	27.004	-2.758	27.004	27.145	354.169	0.231
4900.000	3.163	52.291	4898.618	29.782	1.078	29.782	29.802	2.072	0.916
5000.000	3.893	49.610	4998.428	33.669	5.846	33.669	34.173	9.850	0.748
5100.000	3.508	47.572	5098.219	37.933	10.689	37.933	39.410	15.738	0.407
5200.000	2.662	52.523	5198.074	41.410	14.790	41.410	43.972	19.655	0.886
5300.000	1.823	64.672	5297.997	43.504	18.072	43.504	47.108	22.558	0.960
5400.000	1.328	64.249	5397.958	44.688	20.553	44.688	49.188	24.699	0.495
5500.000	0.938	58.542	5497.939	45.618	22.295	45.618	50.775	26.047	0.406
5600.000	0.991	64.999	5597.925	46.411	23.777	46.411	52.147	27.127	0.121
5700.000	0.770	50.274	5697.913	47.206	25.077	47.206	53.453	27.979	0.314
5800.000	0.890	53.208	5797.902	48.100	26.216	48.100	54.781	28.592	0.128
5900.000	0.868	49.128	5897.891	49.062	27.411	49.062	56.200	29.193	0.066
6000.000	0.878	47.202	5997.879	50.078	28.546	50.078	57.643	29.685	0.031
6100.000	1.111	47.925	6097.864	51.248	29.828	51.248	59.297	30.201	0.233
6200.000	1.842	55.197	6197.830	52.815	31.868	52.815	61.685	31.106	0.753
6300.000	1.462	66.025	6297.789	54.251	34.354	54.251	64.213	32.343	0.490
6400.000	1.032	58.134	6397.765	55.245	36.284	55.245	66.095	33.296	0.463
6500.000	1.081	45.410	6497.748	56.382	37.720	56.382	67.837	33.783	0.239
6600.000	1.071	46.610	6597.730	57.687	39.072	57.687	69.673	34.110	0.024
6700.000	0.511	51.651	6697.720	58.606	40.101	58.606	71.012	34.382	0.564
6800.000	1.088	50.033	6797.710	59.493	41.179	59.493	72.354	34.689	0.577
6900.000	1.216	47.675	6897.690	60.817	42.690	60.817	74.304	35.067	0.136
7000.000	1.249	49.242	6997.667	62.243	44.300	62.243	76.398	35.441	0.048
7060.000	1.041	54.634	7057.655	62.985	45.240	62.985	77.549	35.688	0.390
HORIZONTAL DISPLACEMENT IS 77.549 FEET AT 35.688 DEGREES									