



Company: Noble Energy
Well: Cecil USX A 1-14
API: 05-123-24340
Rig Name: Production/Lightning Wireline
State/County: Colorado/ Weld
Latitude: 40.510, Longitude: -104.500
GRID North is 0.650 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_ed.ut

Minimum Curvature Method

Report Date/Time: 3/29/2012 / 12:25

Vaughn Energy Services
Henderson, Colorado
866-835-8333
Jason Kinchelow

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	0.481	49.391	99.999	0.273	0.319	0.273	0.420	49.391	0.481
200.000	0.418	49.565	199.996	0.783	0.915	0.783	1.205	49.444	0.063
300.000	0.427	72.982	299.993	1.129	1.550	1.129	1.918	53.920	0.172
400.000	0.490	98.898	399.990	1.172	2.329	1.172	2.607	63.281	0.215
500.000	0.483	122.190	499.986	0.882	3.108	0.882	3.231	74.164	0.197
600.000	0.463	46.957	599.984	0.933	3.760	0.933	3.874	76.067	0.577
700.000	0.085	72.360	699.983	1.231	4.125	1.231	4.305	73.388	0.388
800.000	0.286	65.399	799.982	1.357	4.422	1.357	4.626	72.943	0.202
900.000	0.622	112.039	899.979	1.257	5.152	1.257	5.303	76.292	0.474
1000.000	0.393	160.390	999.975	0.730	5.771	0.730	5.817	82.790	0.466
1100.000	0.494	125.089	1099.973	0.159	6.239	0.159	6.241	88.539	0.286
1200.000	0.177	44.647	1199.971	0.021	6.700	0.021	6.700	89.821	0.497
1300.000	0.271	95.091	1299.970	0.110	7.044	0.110	7.045	89.107	0.209
1400.000	0.222	184.551	1399.970	-0.104	7.265	-0.104	7.265	90.822	0.349
1500.000	0.341	177.536	1499.969	-0.595	7.262	-0.595	7.286	94.684	0.124
1600.000	0.173	104.855	1599.968	-0.931	7.421	-0.931	7.479	97.154	0.334
1700.000	0.349	172.904	1699.967	-1.272	7.605	-1.272	7.711	99.498	0.326
1800.000	0.078	28.207	1799.966	-1.515	7.675	-1.515	7.823	101.164	0.415
1900.000	0.330	246.725	1899.966	-1.568	7.442	-1.568	7.606	101.901	0.394
2000.000	0.521	248.691	1999.963	-1.848	6.754	-1.848	7.002	105.300	0.192
2100.000	0.514	263.401	2099.959	-2.064	5.884	-2.064	6.236	109.333	0.133
2200.000	0.676	266.899	2199.954	-2.148	4.849	-2.148	5.304	113.890	0.166
2300.000	1.017	213.443	2299.944	-2.920	3.772	-2.920	4.770	127.749	0.820
2400.000	0.907	219.961	2399.930	-4.267	2.775	-4.267	5.089	146.964	0.155
2500.000	1.390	190.191	2499.910	-6.067	2.052	-6.067	6.404	161.312	0.752
2600.000	1.224	187.582	2599.884	-8.318	1.697	-8.318	8.490	168.473	0.176
2700.000	1.367	187.700	2699.859	-10.558	1.396	-10.558	10.650	172.469	0.143
2800.000	1.060	223.484	2799.838	-12.411	0.600	-12.411	12.426	177.233	0.801
2900.000	0.911	177.507	2899.824	-13.876	-0.002	-13.876	13.876	180.008	0.782
3000.000	0.939	214.708	2999.812	-15.344	-0.434	-15.344	15.350	181.620	0.591
3100.000	0.526	206.216	3099.804	-16.429	-1.103	-16.429	16.466	183.842	0.426
3200.000	0.696	195.179	3199.798	-17.427	-1.465	-17.427	17.489	184.806	0.206
3300.000	1.187	168.361	3299.785	-19.028	-1.415	-19.028	19.081	184.253	0.647
3400.000	1.165	193.470	3399.764	-21.032	-1.443	-21.032	21.081	183.925	0.512

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	0.815	180.223	3499.749	-22.732	-1.683	-22.732	22.794	184.233	0.416
3600.000	0.692	226.281	3599.742	-23.860	-2.122	-23.860	23.954	185.082	0.600
3700.000	1.042	233.041	3699.730	-24.824	-3.285	-24.824	25.041	187.539	0.364
3800.000	1.147	234.783	3799.712	-25.949	-4.830	-25.949	26.394	190.544	0.110
3900.000	1.331	225.410	3899.688	-27.341	-6.475	-27.341	28.098	193.324	0.273
4000.000	1.314	204.231	3999.662	-29.202	-7.773	-29.202	30.219	194.905	0.486
4100.000	1.102	220.622	4099.640	-30.978	-8.870	-30.978	32.223	195.978	0.403
4200.000	1.193	185.794	4199.622	-32.744	-9.601	-32.744	34.123	196.342	0.692
4300.000	1.226	183.723	4299.599	-34.848	-9.776	-34.848	36.193	195.670	0.054
4400.000	1.374	185.513	4399.573	-37.109	-9.960	-37.109	38.422	195.025	0.154
4500.000	1.267	184.937	4499.547	-39.403	-10.171	-39.403	40.695	194.473	0.108
4600.000	0.927	195.674	4599.529	-41.283	-10.484	-41.283	42.594	194.250	0.396
4700.000	0.521	236.689	4699.521	-42.311	-11.082	-42.311	43.738	194.677	0.634
4800.000	0.260	23.884	4799.520	-42.353	-11.370	-42.353	43.852	195.027	0.753
4900.000	0.255	30.119	4899.519	-41.953	-11.166	-41.953	43.413	194.905	0.029
5000.000	0.468	11.819	4999.517	-41.361	-10.971	-41.361	42.791	194.856	0.240
5100.000	0.737	351.339	5099.511	-40.326	-10.984	-40.326	41.795	195.237	0.340
5200.000	0.316	353.968	5199.507	-39.415	-11.110	-39.415	40.951	195.742	0.421
5300.000	0.937	355.430	5299.500	-38.326	-11.204	-38.326	39.930	196.296	0.621
5400.000	1.018	345.566	5399.486	-36.650	-11.491	-36.650	38.409	197.408	0.187
5500.000	0.947	338.744	5499.471	-35.019	-12.012	-35.019	37.022	198.933	0.137
5600.000	1.155	12.413	5599.455	-33.264	-12.095	-33.264	35.395	199.982	0.640
5700.000	1.129	45.461	5699.436	-31.589	-11.176	-31.589	33.508	199.484	0.650
5800.000	1.386	14.061	5799.413	-29.724	-10.180	-29.724	31.419	198.905	0.724
5900.000	1.922	12.869	5899.371	-26.917	-9.513	-26.917	28.548	199.464	0.536
6000.000	1.954	13.210	5999.314	-23.622	-8.749	-23.622	25.190	200.324	0.035
6100.000	2.343	3.018	6099.244	-19.921	-8.252	-19.921	21.562	202.502	0.543
6200.000	1.043	354.810	6199.198	-16.973	-8.227	-16.973	18.862	205.860	1.319
6300.000	0.292	3.435	6299.191	-15.812	-8.294	-15.812	17.855	207.679	0.756
6400.000	0.507	148.792	6399.190	-15.936	-8.050	-15.936	17.854	206.799	0.765
6500.000	0.826	160.928	6499.183	-16.996	-7.585	-16.996	18.611	204.051	0.348
6600.000	1.571	171.562	6599.160	-19.033	-7.148	-19.033	20.331	200.584	0.775
6700.000	1.929	169.775	6699.114	-22.046	-6.648	-22.046	23.026	196.782	0.361
6800.000	1.922	166.542	6799.057	-25.333	-5.959	-25.333	26.025	193.237	0.109
6900.000	0.656	165.320	6899.030	-27.518	-5.424	-27.518	28.048	191.150	1.267

HORIZONTAL DISPLACEMENT IS
28.048 FEET AT 191.150 DEGREES