



Company: Noble Energy  
Well: Brown USX AA 3-11  
API: 05-123-28143  
Rig Name: Production/Lightning Wireline  
State/County: Colorado/ Weld  
Latitude: 40.514, Longitude: -104.425  
GRID North is 0.690 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: 11/29/2012 / 10:36

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	0.333	32.873	99.999	0.244	0.158	0.244	0.291	32.873	0.333
200.000	0.469	30.773	199.997	0.840	0.525	0.840	0.991	32.006	0.136
300.000	0.441	16.497	299.994	1.561	0.844	1.561	1.774	28.397	0.116
400.000	0.464	7.200	399.991	2.331	1.004	2.331	2.538	23.296	0.077
500.000	0.480	1.483	499.987	3.151	1.065	3.151	3.326	18.677	0.050
600.000	0.464	358.210	599.984	3.975	1.063	3.975	4.114	14.979	0.032
700.000	0.591	347.583	699.980	4.883	0.940	4.883	4.973	10.895	0.160
800.000	0.568	330.555	799.975	5.818	0.585	5.818	5.847	5.746	0.173
900.000	0.652	319.883	899.969	6.684	-0.024	6.684	6.684	359.791	0.141
1000.000	0.660	317.272	999.963	7.542	-0.782	7.542	7.582	354.084	0.031
1100.000	0.668	323.639	1099.956	8.435	-1.518	8.435	8.571	349.796	0.074
1200.000	0.749	307.861	1199.948	9.306	-2.380	9.306	9.606	345.653	0.210
1300.000	0.615	312.801	1299.941	10.072	-3.290	10.072	10.596	341.908	0.146
1400.000	0.638	319.142	1399.935	10.858	-4.049	10.858	11.588	339.551	0.073
1500.000	0.739	297.016	1499.928	11.572	-4.987	11.572	12.601	336.685	0.282
1600.000	0.383	310.838	1599.923	12.083	-5.815	12.083	13.409	334.303	0.379
1700.000	0.158	256.193	1699.922	12.269	-6.201	12.269	13.747	333.185	0.318
1800.000	0.268	208.076	1799.922	12.029	-6.445	12.029	13.647	331.818	0.200
1900.000	0.376	229.274	1899.920	11.609	-6.804	11.609	13.456	329.627	0.159
2000.000	0.409	273.060	1999.918	11.414	-7.409	11.414	13.608	327.012	0.294
2100.000	0.392	318.625	2099.916	11.690	-7.992	11.690	14.161	325.642	0.311
2200.000	0.380	350.380	2199.913	12.274	-8.273	12.274	14.802	326.018	0.211
2300.000	0.437	339.255	2299.911	12.957	-8.464	12.957	15.477	326.848	0.097
2400.000	0.466	349.481	2399.908	13.714	-8.673	13.714	16.226	327.690	0.086
2500.000	0.477	350.602	2499.904	14.525	-8.815	14.525	16.990	328.746	0.014
2600.000	0.604	348.285	2599.900	15.452	-8.990	15.452	17.877	329.808	0.128
2700.000	0.688	339.297	2699.894	16.529	-9.309	16.529	18.970	330.611	0.131
2800.000	0.869	336.993	2799.884	17.789	-9.818	17.789	20.318	331.104	0.184
2900.000	0.804	334.605	2899.874	19.120	-10.415	19.120	21.773	331.422	0.074
3000.000	0.756	331.430	2999.864	20.333	-11.031	20.333	23.132	331.519	0.065
3100.000	0.546	326.816	3099.858	21.311	-11.607	21.311	24.267	331.424	0.216
3200.000	0.454	343.927	3199.854	22.090	-11.978	22.090	25.129	331.532	0.174
3300.000	0.652	337.361	3299.850	22.996	-12.306	22.996	26.082	331.846	0.207
3400.000	1.032	26.725	3399.840	24.325	-12.120	24.325	27.177	333.515	0.784

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	1.334	27.043	3499.818	26.167	-11.186	26.167	28.457	336.854	0.302
3600.000	1.318	15.488	3599.792	28.312	-10.349	28.312	30.144	339.920	0.267
3700.000	1.124	15.855	3699.769	30.363	-9.774	30.363	31.898	342.156	0.194
3800.000	0.931	9.103	3799.753	32.108	-9.378	32.108	33.450	343.718	0.228
3900.000	0.520	90.076	3899.747	32.909	-8.796	32.909	34.065	345.036	0.992
4000.000	0.759	190.269	3999.743	32.257	-8.460	32.257	33.348	345.304	0.993
4100.000	1.685	208.068	4099.719	30.308	-9.270	30.308	31.694	342.994	0.990
4200.000	2.013	214.289	4199.667	27.560	-10.951	27.560	29.656	338.330	0.384
4300.000	2.450	230.677	4299.592	24.755	-13.594	24.755	28.241	331.227	0.769
4400.000	2.428	223.192	4399.502	21.856	-16.697	21.856	27.504	322.622	0.319
4500.000	2.218	219.040	4499.420	18.809	-19.365	18.809	26.996	314.165	0.268
4600.000	1.593	234.287	4599.364	16.494	-21.713	16.494	27.267	307.223	0.800
4700.000	1.118	259.820	4699.337	15.511	-23.802	15.511	28.409	303.091	0.757
4800.000	1.280	288.163	4799.316	15.686	-25.823	15.686	30.215	301.277	0.608
4900.000	1.141	292.270	4899.294	16.412	-27.807	16.412	32.289	300.550	0.163
5000.000	0.727	337.742	4999.281	17.376	-28.969	17.376	33.780	300.957	0.817
5100.000	0.924	41.452	5099.273	18.567	-28.675	18.567	34.162	302.923	0.887
5200.000	0.769	105.081	5199.264	18.997	-27.494	18.997	33.419	304.643	0.902
5300.000	0.734	140.966	5299.256	18.325	-26.443	18.325	32.172	304.722	0.464
5400.000	0.510	139.578	5399.250	17.489	-25.751	17.489	31.129	304.183	0.225
5500.000	1.165	82.802	5499.240	17.278	-24.454	17.278	29.943	305.243	0.983
5600.000	1.581	76.319	5599.211	17.732	-22.105	17.732	28.338	308.735	0.444
5700.000	2.140	71.870	5699.158	18.639	-18.991	18.639	26.610	314.464	0.576
5800.000	1.840	94.421	5799.099	19.096	-15.616	19.096	24.668	320.725	0.832
5900.000	1.204	92.334	5899.063	18.930	-12.965	18.930	22.944	325.592	0.638
6000.000	0.452	86.346	5999.052	18.912	-11.522	18.912	22.145	328.649	0.756
6100.000	0.366	104.297	6099.050	18.858	-10.819	18.858	21.741	330.158	0.153
6200.000	0.425	90.451	6199.047	18.776	-10.138	18.776	21.339	331.633	0.112
6300.000	0.430	89.415	6299.045	18.777	-9.393	18.777	20.996	333.425	0.009
6400.000	0.481	104.528	6399.042	18.676	-8.611	18.676	20.565	335.246	0.130
6500.000	0.515	119.933	6499.038	18.346	-7.815	18.346	19.942	336.926	0.137
6600.000	0.485	119.863	6599.034	17.912	-7.059	17.912	19.252	338.490	0.030
6700.000	0.838	98.447	6699.027	17.593	-5.969	17.593	18.578	341.259	0.425
HORIZONTAL DISPLACEMENT IS 18.578 FEET AT 341.259 DEGREES									