



Company: Noble Energy

Well: Sian E 27-6

API: 05-123-23619

Rig Name: Production/Lightning Wireline

State/County: Colorado/ Weld

Latitude: 40.459, Longitude: -104.651

GRID North is 0.550 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: 3/8/2012 / 15:21

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	0.180	188.314	100.000	-0.156	-0.023	-0.156	0.157	188.314	0.180
200.000	0.268	30.215	200.000	-0.110	0.072	-0.110	0.131	146.667	0.440
300.000	0.107	292.657	299.999	0.128	0.104	0.128	0.165	38.936	0.301
400.000	0.211	185.471	399.999	-0.019	0.000	-0.019	0.019	179.809	0.263
500.000	0.376	92.402	499.998	-0.215	0.311	-0.215	0.378	124.725	0.441
600.000	0.491	235.510	599.997	-0.472	0.286	-0.472	0.552	148.803	0.824
700.000	0.162	189.292	699.995	-0.854	-0.090	-0.854	0.859	186.039	0.397
800.000	0.405	193.808	799.994	-1.337	-0.197	-1.337	1.351	188.405	0.244
900.000	0.454	213.156	899.991	-2.011	-0.499	-2.011	2.072	193.922	0.152
1000.000	0.389	206.262	999.988	-2.648	-0.866	-2.648	2.786	198.105	0.082
1100.000	0.471	156.385	1099.986	-3.329	-0.852	-3.329	3.436	194.350	0.370
1200.000	0.408	96.412	1199.983	-3.745	-0.333	-3.745	3.760	185.083	0.442
1300.000	0.348	84.812	1299.981	-3.757	0.323	-3.757	3.771	175.079	0.097
1400.000	0.499	107.895	1399.979	-3.864	1.041	-3.864	4.001	164.924	0.225
1500.000	0.234	120.738	1499.976	-4.102	1.631	-4.102	4.414	158.320	0.277
1600.000	0.431	154.493	1599.975	-4.545	1.968	-4.545	4.953	156.591	0.270
1700.000	0.252	156.188	1699.973	-5.086	2.219	-5.086	5.549	156.433	0.179
1800.000	0.248	114.929	1799.972	-5.379	2.504	-5.379	5.933	155.037	0.176
1900.000	0.358	86.989	1899.971	-5.454	3.013	-5.454	6.230	151.081	0.181
2000.000	0.106	143.124	1999.970	-5.511	3.381	-5.511	6.465	148.473	0.312
2100.000	0.465	9.982	2099.969	-5.185	3.506	-5.185	6.260	145.933	0.543
2200.000	0.861	35.828	2199.962	-4.177	4.016	-4.177	5.795	136.123	0.486
2300.000	1.126	8.400	2299.948	-2.596	4.599	-2.596	5.282	119.445	0.537
2400.000	1.108	5.017	2399.929	-0.662	4.827	-0.662	4.873	97.806	0.068
2500.000	1.136	9.141	2499.910	1.280	5.069	1.280	5.229	75.827	0.086
2600.000	0.793	24.419	2599.895	2.890	5.513	2.890	6.224	62.340	0.426
2700.000	0.941	347.888	2699.885	4.322	5.627	4.322	7.095	52.471	0.561
2800.000	0.433	16.919	2799.877	5.487	5.565	5.487	7.815	45.405	0.600
2900.000	0.912	341.118	2899.871	6.602	5.417	6.602	8.540	39.372	0.615
3000.000	0.826	351.122	2999.859	8.067	5.049	8.067	9.516	32.040	0.174
3100.000	0.477	346.131	3099.853	9.183	4.837	9.183	10.379	27.779	0.353
3200.000	0.480	323.425	3199.849	9.924	4.488	9.924	10.892	24.335	0.188
3300.000	0.445	299.272	3299.846	10.450	3.900	10.450	11.154	20.463	0.197
3400.000	0.430	260.036	3399.843	10.575	3.191	10.575	11.046	16.792	0.294

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	0.881	221.360	3499.837	9.933	2.314	9.933	10.199	13.112	0.608
3600.000	1.381	203.698	3599.817	8.253	1.322	8.253	8.359	9.098	0.604
3700.000	1.590	210.898	3699.784	5.960	0.125	5.960	5.961	1.203	0.280
3800.000	1.332	217.238	3799.751	3.844	-1.290	3.844	4.055	341.446	0.304
3900.000	1.256	208.527	3899.726	1.957	-2.517	1.957	3.188	307.862	0.210
4000.000	1.475	216.537	3999.698	-0.040	-3.806	-0.040	3.806	269.398	0.290
4100.000	1.544	204.907	4099.663	-2.295	-5.139	-2.295	5.629	245.934	0.313
4200.000	1.191	224.689	4199.635	-4.256	-6.438	-4.256	7.717	236.531	0.584
4300.000	1.185	240.665	4299.614	-5.502	-8.070	-5.502	9.767	235.717	0.330
4400.000	1.639	267.720	4399.584	-6.065	-10.401	-6.065	12.040	239.751	0.794
4500.000	1.834	267.137	4499.538	-6.202	-13.428	-6.202	14.791	245.208	0.195
4600.000	2.242	276.016	4599.475	-6.077	-16.970	-6.077	18.026	250.297	0.515
4700.000	2.423	275.603	4699.392	-5.666	-21.019	-5.666	21.769	254.914	0.182
4800.000	2.551	276.285	4799.298	-5.216	-25.334	-5.216	25.865	258.366	0.131
4900.000	2.901	277.841	4899.185	-4.627	-30.052	-4.627	30.406	261.247	0.358
5000.000	2.744	283.121	4999.064	-3.739	-34.890	-3.739	35.089	263.884	0.303
5100.000	2.248	283.453	5098.968	-2.739	-39.129	-2.739	39.224	265.996	0.496
5200.000	1.883	290.902	5198.903	-1.696	-42.571	-1.696	42.604	267.718	0.453
5300.000	0.911	286.437	5298.873	-0.885	-44.868	-0.885	44.877	268.870	0.977
5400.000	0.570	263.369	5398.864	-0.718	-46.125	-0.718	46.130	269.108	0.447
5500.000	0.258	150.631	5498.863	-0.971	-46.509	-0.971	46.519	268.804	0.711
5600.000	0.856	148.097	5598.857	-1.801	-46.004	-1.801	46.039	267.758	0.598
5700.000	0.932	154.470	5698.845	-3.169	-45.259	-3.169	45.369	265.994	0.125
5800.000	0.929	118.156	5798.833	-4.286	-44.193	-4.286	44.400	264.460	0.580
5900.000	1.118	146.219	5898.818	-5.480	-42.936	-5.480	43.284	262.727	0.529
6000.000	0.701	169.707	5998.805	-6.892	-42.284	-6.892	42.842	260.742	0.551
6100.000	0.632	129.166	6098.799	-7.843	-41.747	-7.843	42.477	259.360	0.466
6200.000	0.912	159.280	6198.790	-8.935	-41.038	-8.935	41.999	257.717	0.483
6300.000	0.667	169.072	6298.781	-10.250	-40.646	-10.250	41.919	255.846	0.279
6400.000	0.811	145.160	6398.772	-11.402	-40.132	-11.402	41.720	254.139	0.337
6500.000	0.385	96.976	6498.767	-12.024	-39.394	-12.024	41.188	253.027	0.624
6600.000	0.698	141.021	6598.763	-12.538	-38.677	-12.538	40.658	252.039	0.499
6700.000	1.158	126.296	6698.750	-13.609	-37.480	-13.609	39.874	250.044	0.514
6800.000	0.969	113.609	6798.733	-14.545	-35.891	-14.545	38.727	247.939	0.301
6900.000	1.055	112.527	6898.717	-15.237	-34.266	-15.237	37.501	246.027	0.089
7000.000	1.126	65.445	6998.701	-15.181	-32.522	-15.181	35.891	244.977	0.873
HORIZONTAL DISPLACEMENT IS 35.891 FEET AT 244.977 DEGREES									