



Company: NOBLE ENERGY  
 Lease/Well: WELLS RANCH USX/AA35-6  
 A.P.I.#: 05-123-25881  
 Rig Name: PRODUCTION  
 State/County: COLORADO/WELD  
 Latitude: 40.434, Longitude: -104.400  
 GRID North is 0.710 Degrees East of True North  
 VS-Azi: 0.000 Degrees



FIELD COPY ONLY (NOT DEFINITIVE)

Depth Reference : GL

DRILLOG MS GYRO SURVEY CALCULATIONS

Filename: run2-01\_ed.ut  
 Minimum Curvature Method  
 Report Date/Time: 10/26/2011 / 14:10

Vaughn Energy Services  
 Henderson, Colorado  
 866-835-8333  
 Jay Hinman  
 Wells Ranch USX AA35-6

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	0.269	206.029	100.000	-0.211	-0.103	-0.211	0.235	206.029	0.269
200.000	0.118	90.971	199.999	-0.424	-0.103	-0.424	0.436	193.632	0.337
300.000	0.052	89.695	299.999	-0.426	0.046	-0.426	0.428	173.823	0.066
400.000	0.435	103.914	399.998	-0.517	0.460	-0.517	0.692	138.321	0.384
500.000	0.553	131.830	499.994	-0.930	1.188	-0.930	1.508	128.049	0.265
600.000	0.744	105.870	599.988	-1.429	2.172	-1.429	2.600	123.343	0.346
700.000	0.711	114.420	699.980	-1.863	3.362	-1.863	3.844	118.997	0.113
800.000	0.265	151.050	799.976	-2.322	4.039	-2.322	4.659	119.899	0.523
900.000	0.275	78.959	899.976	-2.479	4.387	-2.479	5.039	119.472	0.318
1000.000	0.274	21.852	999.975	-2.211	4.712	-2.211	5.205	115.140	0.263
1100.000	0.210	120.377	1099.974	-2.082	4.958	-2.082	5.378	112.773	0.369
1200.000	0.132	18.409	1199.974	-2.065	5.153	-2.065	5.551	111.840	0.270
1300.000	0.098	69.889	1299.974	-1.927	5.269	-1.927	5.610	110.086	0.104
1400.000	0.089	103.807	1399.974	-1.916	5.425	-1.916	5.753	109.453	0.055
1500.000	0.076	348.873	1499.973	-1.870	5.488	-1.870	5.798	108.815	0.139
1600.000	0.072	33.538	1599.973	-1.752	5.510	-1.752	5.782	107.644	0.056
1700.000	0.034	63.664	1699.973	-1.687	5.571	-1.687	5.821	106.847	0.046
1800.000	0.101	127.193	1799.973	-1.727	5.668	-1.727	5.925	106.949	0.091
1900.000	0.040	220.879	1899.973	-1.807	5.716	-1.807	5.994	107.545	0.111
2000.000	0.077	34.118	1999.973	-1.778	5.730	-1.778	6.000	107.236	0.116
2100.000	0.069	350.938	2099.973	-1.663	5.759	-1.663	5.994	106.109	0.054
2200.000	0.292	173.417	2199.973	-1.857	5.778	-1.857	6.069	107.815	0.361
2300.000	1.471	222.442	2299.960	-3.058	4.941	-3.058	5.811	121.749	1.299
2400.000	1.258	216.805	2399.932	-4.884	3.417	-4.884	5.961	145.020	0.252
2500.000	1.400	217.013	2499.905	-6.738	2.024	-6.738	7.036	163.281	0.143
2600.000	0.964	214.340	2599.883	-8.408	0.814	-8.408	8.448	174.470	0.440
2700.000	0.651	240.775	2699.873	-9.380	-0.156	-9.380	9.381	180.954	0.479
2800.000	0.485	260.533	2799.869	-9.727	-1.070	-9.727	9.786	186.276	0.254
2900.000	0.164	341.384	2899.867	-9.661	-1.533	-9.661	9.782	189.017	0.487
3000.000	0.265	141.627	2999.867	-9.707	-1.435	-9.707	9.813	188.409	0.423
3100.000	0.120	157.455	3099.866	-9.985	-1.251	-9.985	10.063	187.142	0.154
3200.000	0.389	164.544	3199.865	-10.409	-1.121	-10.409	10.469	186.145	0.270
3300.000	0.448	179.546	3299.863	-11.127	-1.027	-11.127	11.174	185.274	0.124
3400.000	1.132	177.198	3399.852	-12.505	-0.976	-12.505	12.543	184.462	0.685

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	1.778	172.992	3499.820	-15.031	-0.738	-15.031	15.049	182.812	0.654
3600.000	0.587	175.006	3599.797	-17.081	-0.504	-17.081	17.088	181.691	1.192
3700.000	0.568	174.096	3699.792	-18.084	-0.409	-18.084	18.089	181.295	0.021
3800.000	0.042	166.211	3799.790	-18.613	-0.349	-18.613	18.616	181.075	0.527
3900.000	0.060	131.206	3899.790	-18.682	-0.301	-18.682	18.685	180.924	0.035
4000.000	0.021	13.456	3999.790	-18.699	-0.258	-18.699	18.700	180.789	0.072
4100.000	0.205	328.655	4099.789	-18.527	-0.346	-18.527	18.531	181.071	0.191
4200.000	0.199	306.217	4199.789	-18.272	-0.579	-18.272	18.281	181.816	0.079
4300.000	0.561	39.398	4299.787	-17.791	-0.408	-17.791	17.796	181.315	0.606
4400.000	0.206	322.527	4399.785	-17.270	-0.207	-17.270	17.271	180.686	0.552
4500.000	0.232	90.679	4499.785	-17.130	-0.114	-17.130	17.130	180.381	0.394
4600.000	0.257	345.883	4599.784	-16.915	0.034	-16.915	16.915	179.886	0.387
4700.000	0.621	28.174	4699.781	-16.221	0.235	-16.221	16.222	179.171	0.464
4800.000	0.450	48.195	4799.777	-15.481	0.783	-15.481	15.501	177.103	0.251
4900.000	0.324	50.086	4899.775	-15.038	1.293	-15.038	15.093	175.084	0.126
5000.000	0.434	75.310	4999.773	-14.760	1.877	-14.760	14.879	172.752	0.197
5100.000	0.205	294.065	5099.772	-14.591	2.081	-14.591	14.738	171.885	0.608
5200.000	0.443	352.791	5199.770	-14.134	1.869	-14.134	14.257	172.469	0.380
5300.000	0.633	4.483	5299.766	-13.200	1.863	-13.200	13.331	171.966	0.218
5400.000	1.300	16.442	5399.751	-11.562	2.227	-11.562	11.774	169.095	0.694
5500.000	1.306	24.764	5499.725	-9.439	3.026	-9.439	9.912	162.226	0.189
5600.000	1.205	29.203	5599.701	-7.487	4.016	-7.487	8.496	151.792	0.140
5700.000	1.104	18.690	5699.681	-5.657	4.838	-5.657	7.443	139.462	0.234
5800.000	0.947	7.846	5799.665	-3.925	5.259	-3.925	6.562	126.736	0.249
5900.000	0.717	14.189	5899.655	-2.500	5.525	-2.500	6.065	114.342	0.247
6000.000	0.221	39.760	5999.651	-1.744	5.802	-1.744	6.059	106.731	0.526
6100.000	0.150	350.244	6099.651	-1.466	5.904	-1.466	6.083	103.948	0.169
6200.000	0.195	83.613	6199.650	-1.318	6.051	-1.318	6.193	102.288	0.253
6300.000	0.177	228.007	6299.650	-1.403	6.105	-1.403	6.265	102.938	0.355
6400.000	0.148	206.034	6399.650	-1.622	5.934	-1.622	6.151	105.293	0.068
6500.000	0.238	276.851	6499.649	-1.714	5.671	-1.714	5.924	106.818	0.235
6600.000	0.170	287.633	6599.649	-1.644	5.324	-1.644	5.572	107.166	0.078
6700.000	0.102	260.420	6699.648	-1.614	5.095	-1.614	5.344	107.584	0.091

HORIZONTAL DISPLACEMENT IS  
5.344 FEET AT 107.584 DEGREES