



Company: NOBLE ENERGY
 Lease/Well: TREBOR/B11-13
 A.P.I.#: 05-123-13821
 Rig Name: PRODUCTION
 State/County: COLORADO/WELD
 Latitude: 40.400, Longitude: -104.517
 GRID North is 0.640 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: 10/25/2011 / 17:50

Vaughn Energy Services
 Henderson, Colorado
 866-835-8333
 Jay Hinman
 Trebor B11-13

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	0.708	140.936	99.997	-0.480	0.390	-0.480	0.618	140.936	0.708
200.000	0.201	139.895	199.994	-1.094	0.892	-1.094	1.412	140.806	0.507
300.000	0.344	96.962	299.993	-1.265	1.303	-1.265	1.816	134.147	0.240
400.000	0.503	82.217	399.990	-1.242	2.036	-1.242	2.385	121.380	0.192
500.000	0.591	79.138	499.986	-1.085	2.978	-1.085	3.170	110.026	0.092
600.000	0.416	75.840	599.982	-0.900	3.836	-0.900	3.940	103.198	0.178
700.000	0.455	75.481	699.979	-0.711	4.572	-0.711	4.627	98.843	0.040
800.000	0.297	99.196	799.977	-0.653	5.213	-0.653	5.253	97.142	0.218
900.000	0.166	336.972	899.976	-0.561	5.412	-0.561	5.441	95.921	0.411
1000.000	0.363	277.369	999.975	-0.387	5.041	-0.387	5.056	94.393	0.314
1100.000	0.227	256.942	1099.974	-0.391	4.534	-0.391	4.551	94.933	0.170
1200.000	0.412	310.750	1199.973	-0.201	4.069	-0.201	4.074	92.832	0.333
1300.000	0.413	312.086	1299.970	0.275	3.529	0.275	3.540	85.541	0.010
1400.000	0.353	328.556	1399.968	0.780	3.101	0.780	3.197	75.888	0.125
1500.000	0.092	103.698	1499.967	1.023	3.018	1.023	3.187	71.273	0.423
1600.000	0.103	244.806	1599.967	0.966	3.015	0.966	3.166	72.238	0.184
1700.000	0.176	141.493	1699.967	0.807	3.029	0.807	3.134	75.077	0.224
1800.000	0.465	214.862	1799.966	0.354	2.892	0.354	2.914	83.026	0.448
1900.000	0.497	188.022	1899.962	-0.409	2.599	-0.409	2.631	98.942	0.225
2000.000	0.410	189.574	1999.959	-1.192	2.479	-1.192	2.751	115.671	0.088
2100.000	0.400	219.029	2099.957	-1.816	2.200	-1.816	2.853	129.541	0.206
2200.000	0.421	188.147	2199.954	-2.451	1.928	-2.451	3.119	141.814	0.220
2300.000	0.415	203.667	2299.952	-3.147	1.731	-3.147	3.591	151.190	0.113
2400.000	0.593	182.698	2399.948	-3.995	1.561	-3.995	4.289	158.657	0.254
2500.000	0.562	176.114	2499.943	-5.001	1.570	-5.001	5.241	162.572	0.073
2600.000	0.688	186.861	2599.937	-6.086	1.531	-6.086	6.275	165.877	0.172
2700.000	0.571	165.483	2699.931	-7.164	1.584	-7.164	7.337	167.530	0.261
2800.000	0.697	155.645	2799.925	-8.200	1.960	-8.200	8.431	166.558	0.166
2900.000	0.562	133.731	2899.919	-9.094	2.565	-9.094	9.448	164.246	0.274
3000.000	0.535	109.198	2999.914	-9.586	3.360	-9.586	10.158	160.682	0.235
3100.000	0.512	117.417	3099.910	-9.945	4.197	-9.945	10.794	157.118	0.078
3200.000	0.279	90.513	3199.908	-10.153	4.837	-10.153	11.246	154.525	0.291
3300.000	0.645	66.202	3299.904	-9.928	5.596	-9.928	11.396	150.591	0.407
3400.000	0.510	63.349	3399.899	-9.501	6.509	-9.501	11.517	145.584	0.138

<i>Measured Depth FT</i>	<i>Incl Angle Deg</i>	<i>Drift Direction Deg</i>	<i>TVD FT</i>	<i>+N/-S FT</i>	<i>+E/-W FT</i>	<i>Vertical Section FT</i>	<i>Closure Distance FT</i>	<i>Closure Direction Deg</i>	<i>Dogleg Severity Deg/100</i>
3500.000	0.623	28.753	3499.895	-8.824	7.169	-8.824	11.369	140.908	0.354
3600.000	0.548	349.730	3599.890	-7.877	7.345	-7.877	10.770	136.999	0.398
3700.000	0.566	10.985	3699.885	-6.922	7.354	-6.922	10.099	133.264	0.206
3800.000	0.543	340.316	3799.881	-5.991	7.289	-5.991	9.435	129.416	0.294
3900.000	0.577	346.697	3899.876	-5.055	7.014	-5.055	8.645	125.781	0.071
4000.000	1.067	358.586	3999.866	-3.634	6.875	-3.634	7.776	117.861	0.517
4100.000	1.384	3.000	4099.843	-1.497	6.915	-1.497	7.075	102.218	0.330
4200.000	1.861	355.463	4199.802	1.327	6.850	1.327	6.977	79.035	0.522
4300.000	2.175	346.150	4299.740	4.789	6.267	4.789	7.887	52.615	0.453
4400.000	2.284	352.719	4399.665	8.608	5.560	8.608	10.248	32.858	0.278
4500.000	1.782	354.488	4499.602	12.133	5.158	12.133	13.184	23.031	0.506
4600.000	1.273	4.204	4599.566	14.789	5.090	14.789	15.640	18.993	0.570
4700.000	1.104	359.491	4699.544	16.859	5.163	16.859	17.632	17.027	0.195
4800.000	0.811	354.283	4799.530	18.527	5.084	18.527	19.212	15.345	0.305
4900.000	0.661	8.690	4899.522	19.802	5.101	19.802	20.448	14.445	0.237
5000.000	0.520	356.402	4999.517	20.825	5.159	20.825	21.454	13.915	0.189
5100.000	0.410	41.541	5099.514	21.545	5.368	21.545	22.204	13.990	0.371
5200.000	0.295	38.518	5199.512	22.014	5.765	22.014	22.757	14.676	0.116
5300.000	0.559	53.781	5299.509	22.504	6.319	22.504	23.375	15.685	0.285
5400.000	0.634	125.265	5399.505	22.473	7.165	22.473	23.588	17.684	0.700
5500.000	0.366	92.665	5499.501	22.139	7.936	22.139	23.518	19.721	0.381
5600.000	0.530	136.827	5599.498	21.787	8.571	21.787	23.412	21.476	0.369
5700.000	0.332	255.135	5699.497	21.375	8.608	21.375	23.043	21.935	0.746
5800.000	0.414	204.295	5799.495	20.971	8.179	20.971	22.510	21.307	0.329
5900.000	0.044	136.636	5899.494	20.614	8.057	20.614	22.133	21.348	0.400
6000.000	0.438	266.043	5999.493	20.560	7.702	20.560	21.955	20.537	0.467
6100.000	0.461	273.448	6099.490	20.557	6.920	20.557	21.691	18.603	0.062
6200.000	0.383	242.203	6199.487	20.426	6.223	20.426	21.353	16.944	0.239
6300.000	0.228	263.706	6299.486	20.248	5.730	20.248	21.043	15.801	0.190
6400.000	0.401	263.804	6399.484	20.189	5.185	20.189	20.844	14.403	0.173
6500.000	0.231	230.227	6499.483	20.022	4.682	20.022	20.562	13.162	0.244
6600.000	0.412	272.171	6599.481	19.906	4.167	19.906	20.338	11.824	0.286
6650.000	0.392	262.953	6649.480	19.892	3.818	19.892	20.255	10.864	0.135

HORIZONTAL DISPLACEMENT IS
20.255 FEET AT 10.864 DEGREES