



Company: NOBLE ENERGY
Lease/Well: TREBOR B/#11-16
A.P.I.#: 05-123-13415
Rig Name: PRODUCTION
State/County: COLORADO/WELD
Latitude: 40.400, 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 : GL

DRILLOG MS GYRO SURVEY CALCULATIONS

Filename: run2-01_ed.ut
Minimum Curvature Method
Report Date/Time: 10/25/2011 / 10:01

Vaughn Energy Services
Rifle, Colorado
866-835-8333
Jay Hinman
Trebtor B11-16

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	0.184	241.412	100.000	-0.077	-0.141	-0.077	0.161	241.412	0.184
200.000	0.187	304.206	199.999	-0.062	-0.417	-0.062	0.422	261.562	0.194
300.000	0.161	86.727	299.999	0.038	-0.412	0.038	0.414	275.268	0.330
400.000	0.193	28.228	399.999	0.194	-0.192	0.194	0.273	315.330	0.175
500.000	0.182	16.837	499.998	0.495	-0.066	0.495	0.499	352.350	0.039
600.000	0.214	19.417	599.998	0.823	0.042	0.823	0.824	2.905	0.033
700.000	0.237	13.031	699.997	1.201	0.151	1.201	1.211	7.148	0.034
800.000	0.267	26.348	799.996	1.612	0.301	1.612	1.640	10.571	0.066
900.000	0.262	21.299	899.995	2.034	0.487	2.034	2.091	13.474	0.024
1000.000	0.297	33.219	999.994	2.463	0.712	2.463	2.564	16.123	0.068
1100.000	0.261	60.605	1099.993	2.791	1.052	2.791	2.983	20.650	0.136
1200.000	0.396	74.843	1199.991	2.993	1.583	2.993	3.386	27.877	0.157
1300.000	0.403	77.480	1299.988	3.159	2.259	3.159	3.884	35.571	0.020
1400.000	0.521	84.159	1399.985	3.282	3.055	3.282	4.484	42.950	0.130
1500.000	0.616	95.501	1499.980	3.277	4.043	3.277	5.204	50.976	0.147
1600.000	0.518	97.979	1599.975	3.162	5.026	3.162	5.938	57.824	0.101
1700.000	0.250	166.841	1699.973	2.887	5.524	2.887	6.232	62.409	0.488
1800.000	0.301	181.658	1799.972	2.411	5.566	2.411	6.066	66.575	0.087
1900.000	0.358	192.465	1899.971	1.844	5.491	1.844	5.792	71.434	0.084
2000.000	0.363	196.759	1999.969	1.236	5.332	1.236	5.474	76.948	0.028
2100.000	0.399	204.043	2099.967	0.614	5.099	0.614	5.136	83.129	0.060
2200.000	0.450	133.275	2199.964	0.027	5.243	0.027	5.243	89.704	0.493
2300.000	0.543	116.115	2299.961	-0.451	5.954	-0.451	5.971	94.328	0.174
2400.000	0.455	106.841	2399.957	-0.774	6.760	-0.774	6.804	96.535	0.119
2500.000	0.433	95.080	2499.954	-0.923	7.517	-0.923	7.573	97.000	0.094
2600.000	0.542	103.424	2599.950	-1.066	8.353	-1.066	8.421	97.274	0.130
2700.000	0.497	105.667	2699.946	-1.293	9.231	-1.293	9.321	97.975	0.050
2800.000	0.477	105.366	2799.943	-1.521	10.050	-1.521	10.164	98.604	0.020
2900.000	0.529	108.575	2899.939	-1.778	10.889	-1.778	11.033	99.273	0.059
3000.000	0.450	115.452	2999.935	-2.094	11.681	-2.094	11.867	100.161	0.098
3100.000	0.464	102.428	3099.932	-2.350	12.431	-2.350	12.651	100.703	0.105
3200.000	0.304	86.358	3199.930	-2.420	13.091	-2.420	13.313	100.473	0.192
3300.000	0.093	47.119	3299.929	-2.348	13.416	-2.348	13.620	99.926	0.239
3400.000	0.190	269.708	3399.929	-2.293	13.309	-2.293	13.505	99.777	0.266

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	0.217	229.409	3499.928	-2.417	12.999	-2.417	13.222	100.535	0.143
3600.000	0.229	235.512	3599.927	-2.654	12.691	-2.654	12.965	101.812	0.027
3700.000	0.418	218.127	3699.926	-3.054	12.300	-3.054	12.674	103.946	0.211
3800.000	0.474	207.004	3799.923	-3.710	11.887	-3.710	12.453	107.334	0.103
3900.000	1.319	216.434	3899.910	-5.004	11.016	-5.004	12.100	114.431	0.855
4000.000	1.853	227.159	3999.871	-7.030	9.147	-7.030	11.536	127.543	0.610
4100.000	2.349	236.350	4099.804	-9.265	6.256	-9.265	11.179	145.972	0.597
4200.000	2.247	232.697	4199.724	-11.588	2.991	-11.588	11.967	165.526	0.178
4300.000	2.045	226.176	4299.654	-14.011	0.145	-14.011	14.012	179.408	0.316
4400.000	1.531	212.744	4399.605	-16.370	-1.865	-16.370	16.475	186.499	0.660
4500.000	1.056	206.823	4499.579	-18.315	-3.003	-18.315	18.560	189.311	0.492
4600.000	0.554	213.072	4599.569	-19.543	-3.683	-19.543	19.887	190.671	0.509
4700.000	0.691	224.062	4699.563	-20.381	-4.366	-20.381	20.844	192.090	0.182
4800.000	0.595	233.377	4799.557	-21.124	-5.202	-21.124	21.755	193.834	0.142
4900.000	0.524	248.419	4899.552	-21.602	-6.043	-21.602	22.431	195.629	0.162
5000.000	0.816	253.328	4999.545	-21.974	-7.150	-21.974	23.108	198.025	0.297
5100.000	1.266	261.759	5099.529	-22.337	-8.925	-22.337	24.054	201.781	0.474
5200.000	1.101	277.768	5199.508	-22.365	-10.970	-22.365	24.911	206.128	0.368
5300.000	1.078	284.935	5299.490	-21.993	-12.831	-21.993	25.462	210.259	0.138
5400.000	1.170	297.024	5399.470	-21.287	-14.649	-21.287	25.840	214.534	0.254
5500.000	1.165	304.444	5499.450	-20.248	-16.397	-20.248	26.054	219.000	0.151
5600.000	1.028	292.858	5599.432	-19.325	-18.062	-19.325	26.451	223.065	0.260
5700.000	0.590	299.664	5699.421	-18.721	-19.336	-18.721	26.914	225.925	0.447
5800.000	0.269	293.235	5799.418	-18.374	-19.999	-18.374	27.158	227.425	0.324
5900.000	0.082	262.169	5899.418	-18.291	-20.285	-18.291	27.314	227.959	0.203
6000.000	0.174	200.881	5999.418	-18.443	-20.410	-18.443	27.509	227.899	0.153
6100.000	0.258	206.461	6099.417	-18.786	-20.565	-18.786	27.854	227.588	0.086
6200.000	0.435	188.175	6199.415	-19.364	-20.719	-19.364	28.359	226.936	0.207
6300.000	0.519	195.050	6299.412	-20.178	-20.891	-20.178	29.044	225.995	0.102
6400.000	0.631	203.956	6399.407	-21.118	-21.232	-21.118	29.946	225.154	0.142
6500.000	0.730	222.395	6499.400	-22.092	-21.885	-22.092	31.097	224.731	0.239
6600.000	0.732	223.058	6599.392	-23.029	-22.751	-23.029	32.372	224.652	0.009

HORIZONTAL DISPLACEMENT IS
32.372 FEET AT 224.652 DEGREES