



Company: Noble Energy

Well: Trebor B 11-8

API: 05-123-13402

Rig Name: Production / VES

State/County: Colorado/Weld County

Latitude: 40.415, Longitude: -104.510

GRID North is 0.640 Degrees East of True North

VS-Azi: 0.000 Degrees



FIELD COPY ONLY (NOT DEFINITIVE)

Service Company : RKB = Ground Level

DRILLOG HA GYRO SURVEY CALCULATIONS

Filename: trebor\_b11\_8\_calc.ut

Minimum Curvature Method

Report Date/Time: 2/16/2013 / 10:29

Vaughn Energy Services

Henderson, Colorado

(303) 853-4976

Tom Fisher

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	0.155	112.529	100.000	-0.052	0.125	-0.052	0.135	112.529	0.155
200.000	0.141	171.890	200.000	-0.225	0.267	-0.225	0.349	130.155	0.147
300.000	0.194	160.430	299.999	-0.506	0.341	-0.506	0.610	146.062	0.063
400.000	0.187	195.862	399.999	-0.823	0.353	-0.823	0.896	156.802	0.116
500.000	0.197	186.639	499.998	-1.151	0.288	-1.151	1.187	165.941	0.032
600.000	0.194	191.209	599.998	-1.488	0.236	-1.488	1.506	171.004	0.016
700.000	0.256	200.243	699.997	-1.864	0.125	-1.864	1.868	176.153	0.072
800.000	0.209	203.035	799.996	-2.241	-0.023	-2.241	2.241	180.595	0.049
900.000	0.200	205.456	899.995	-2.566	-0.169	-2.566	2.571	183.777	0.012
1000.000	0.250	203.209	999.995	-2.924	-0.330	-2.924	2.942	186.446	0.051
1100.000	0.162	223.282	1099.994	-3.227	-0.513	-3.227	3.268	189.038	0.113
1200.000	0.100	339.177	1199.994	-3.249	-0.641	-3.249	3.312	191.165	0.224
1300.000	0.125	354.430	1299.994	-3.059	-0.683	-3.059	3.135	192.581	0.039
1400.000	0.166	347.789	1399.993	-2.809	-0.724	-2.809	2.901	194.452	0.044
1500.000	0.170	350.561	1499.993	-2.521	-0.779	-2.521	2.639	197.172	0.009
1600.000	0.191	0.396	1599.992	-2.208	-0.802	-2.208	2.349	199.971	0.037
1700.000	0.251	10.686	1699.992	-1.825	-0.760	-1.825	1.977	202.617	0.072
1800.000	0.251	3.341	1799.991	-1.391	-0.707	-1.391	1.561	206.938	0.032
1900.000	0.235	354.700	1899.990	-0.969	-0.713	-0.969	1.203	216.351	0.040
2000.000	0.305	356.084	1999.989	-0.499	-0.750	-0.499	0.901	236.349	0.071
2100.000	0.421	349.119	2099.987	0.127	-0.838	0.127	0.847	278.602	0.123
2200.000	0.519	349.188	2199.983	0.932	-0.992	0.932	1.361	313.219	0.098
2300.000	0.689	341.075	2299.978	1.946	-1.272	1.946	2.325	326.828	0.190
2400.000	0.792	328.665	2399.969	3.105	-1.827	3.105	3.603	329.535	0.190
2500.000	0.825	325.953	2499.959	4.292	-2.589	4.292	5.012	328.901	0.050
2600.000	0.842	324.522	2599.949	5.486	-3.418	5.486	6.464	328.076	0.027
2700.000	0.830	323.748	2699.938	6.669	-4.273	6.669	7.920	327.351	0.016
2800.000	0.672	326.092	2799.929	7.740	-5.029	7.740	9.230	326.988	0.161
2900.000	0.530	327.804	2899.924	8.618	-5.602	8.618	10.279	326.974	0.143
3000.000	0.409	324.221	2999.921	9.299	-6.057	9.299	11.097	326.920	0.124
3100.000	0.417	328.048	3099.918	9.897	-6.458	9.897	11.817	326.873	0.029
3200.000	0.499	322.971	3199.915	10.553	-6.913	10.553	12.615	326.773	0.091
3300.000	0.656	315.607	3299.910	11.309	-7.575	11.309	13.612	326.185	0.173
3400.000	1.122	318.760	3399.897	12.454	-8.621	12.454	15.147	325.309	0.469

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	1.154	318.012	3499.878	13.939	-9.940	13.939	17.120	324.507	0.035
3600.000	1.171	318.257	3599.857	15.450	-11.294	15.450	19.138	323.833	0.018
3700.000	1.197	319.034	3699.836	17.001	-12.659	17.001	21.196	323.328	0.030
3800.000	1.170	318.976	3799.814	18.560	-14.014	18.560	23.256	322.945	0.026
3900.000	0.874	306.862	3899.799	19.788	-15.294	19.788	25.009	322.299	0.365
4000.000	0.841	290.707	3999.787	20.504	-16.591	20.504	26.376	321.023	0.243
4100.000	0.709	272.884	4099.778	20.795	-17.895	20.795	27.434	319.287	0.273
4200.000	0.798	270.250	4199.770	20.829	-19.209	20.829	28.334	317.317	0.096
4300.000	0.909	271.634	4299.759	20.855	-20.698	20.855	29.383	315.216	0.112
4400.000	0.921	272.713	4399.746	20.915	-22.293	20.915	30.569	313.174	0.021
4500.000	0.628	269.061	4499.737	20.944	-23.644	20.944	31.587	311.535	0.297
4600.000	0.150	88.184	4599.735	20.940	-24.061	20.940	31.897	311.032	0.779
4700.000	0.349	97.277	4699.734	20.905	-23.628	20.905	31.549	311.501	0.202
4800.000	0.288	95.717	4799.733	20.842	-23.076	20.842	31.095	312.087	0.062
4900.000	0.176	123.058	4899.732	20.733	-22.698	20.733	30.742	312.410	0.154
5000.000	0.203	174.402	4999.731	20.473	-22.552	20.473	30.459	312.233	0.166
5100.000	0.363	182.677	5099.730	19.980	-22.550	19.980	30.128	311.542	0.165
5200.000	0.375	197.576	5199.728	19.351	-22.663	19.351	29.801	310.493	0.096
5300.000	0.437	209.190	5299.725	18.707	-22.948	18.707	29.606	309.187	0.103
5400.000	0.537	210.471	5399.722	17.970	-23.371	17.970	29.481	307.557	0.101
5500.000	0.619	219.618	5499.717	17.150	-23.954	17.150	29.460	305.601	0.123
5600.000	0.794	232.876	5599.709	16.315	-24.851	16.315	29.728	303.286	0.238
5700.000	0.885	231.868	5699.698	15.420	-26.011	15.420	30.238	300.661	0.092
5800.000	0.930	230.554	5799.686	14.428	-27.245	14.428	30.829	297.904	0.050
5900.000	0.923	232.222	5899.673	13.419	-28.508	13.419	31.508	295.206	0.028
6000.000	0.950	226.030	5999.659	12.349	-29.742	12.349	32.204	292.549	0.105
6100.000	1.182	230.824	6099.642	11.122	-31.138	11.122	33.065	289.657	0.248
6200.000	1.112	229.298	6199.622	9.838	-32.673	9.838	34.122	286.757	0.076
6300.000	1.441	241.424	6299.597	8.604	-34.513	8.604	35.569	283.998	0.423
6400.000	1.388	246.033	6399.567	7.511	-36.723	7.511	37.484	281.559	0.125
6500.000	1.339	256.231	6499.539	6.740	-38.965	6.740	39.544	279.814	0.247
6600.000	0.846	253.830	6599.520	6.257	-40.810	6.257	41.286	278.716	0.495
6680.000	0.890	259.370	6679.511	5.977	-41.988	5.977	42.411	278.102	0.119

HORIZONTAL DISPLACEMENT IS  
42.411 FEET AT 278.102 DEGREES