



Company: Noble Energy
Lease / Well: Trebor B / 11-11
API#: 05-123-13820
Rig Name: Production / Lightning Wireline
State / County: Colorado / Weld County
Latitude: 40.412, Longitude: -104.519
GRID North is 0.630 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: inrun_ed.ut

Minimum Curvature Method

Report Date/Time: 10/6/2011 / 19:34

Vaughn Energy Services
Henderson, CO
303-853-4976
Robert Davis

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	0.631	71.000	99.998	0.179	0.521	0.179	0.551	71.000	0.631
200.000	0.367	31.431	199.994	0.632	1.209	0.632	1.364	62.395	0.419
300.000	0.137	62.304	299.993	0.961	1.482	0.961	1.766	57.033	0.259
400.000	0.440	67.990	399.992	1.160	1.943	1.160	2.263	59.158	0.304
500.000	0.475	147.900	499.990	0.953	2.520	0.953	2.694	69.285	0.588
600.000	0.693	92.591	599.985	0.574	3.344	0.574	3.393	80.258	0.575
700.000	0.570	148.005	699.980	0.125	4.211	0.125	4.213	88.297	0.597
800.000	0.917	94.603	799.972	-0.361	5.272	-0.361	5.284	93.913	0.736
900.000	0.931	131.098	899.960	-0.959	6.681	-0.959	6.750	98.166	0.579
1000.000	0.974	136.258	999.946	-2.107	7.881	-2.107	8.158	104.965	0.096
1100.000	0.864	139.376	1099.934	-3.293	8.959	-3.293	9.545	110.179	0.121
1200.000	1.169	112.115	1199.918	-4.249	10.395	-4.249	11.230	112.232	0.564
1300.000	1.092	135.226	1299.899	-5.310	12.012	-5.310	13.133	113.847	0.459
1400.000	1.056	136.648	1399.882	-6.656	13.316	-6.656	14.887	116.560	0.045
1500.000	1.262	140.093	1499.861	-8.171	14.655	-8.171	16.779	119.143	0.217
1600.000	1.302	146.347	1599.836	-9.961	15.991	-9.961	18.839	121.920	0.145
1700.000	1.842	142.678	1699.798	-12.185	17.594	-12.185	21.402	124.704	0.549
1800.000	1.842	144.894	1799.747	-14.778	19.493	-14.778	24.461	127.166	0.071
1900.000	1.677	164.509	1899.700	-17.502	20.808	-17.502	27.190	130.068	0.621
2000.000	1.860	169.236	1999.653	-20.507	21.502	-20.507	29.713	133.642	0.234
2100.000	2.019	186.461	2099.596	-23.851	21.607	-23.851	32.183	137.826	0.601
2200.000	2.065	184.882	2199.533	-27.396	21.256	-27.396	34.675	142.194	0.073
2300.000	2.169	191.576	2299.465	-31.045	20.722	-31.045	37.326	146.277	0.268
2400.000	2.510	193.545	2399.381	-35.027	19.830	-35.027	40.251	150.485	0.350
2500.000	2.629	204.986	2499.281	-39.234	18.349	-39.234	43.313	154.936	0.525
2600.000	2.732	210.592	2599.172	-43.364	16.167	-43.364	46.280	159.553	0.282
2700.000	2.807	203.779	2699.056	-47.657	13.967	-47.657	49.661	163.665	0.337
2800.000	2.805	208.235	2798.936	-52.053	11.822	-52.053	53.379	167.205	0.218
2900.000	2.923	213.369	2898.811	-56.339	9.261	-56.339	57.095	170.665	0.282
3000.000	2.877	214.105	2998.683	-60.547	6.452	-60.547	60.890	173.918	0.059
3100.000	2.426	214.536	3098.576	-64.369	3.844	-64.369	64.483	176.582	0.452
3200.000	1.684	206.948	3198.511	-67.422	1.978	-67.422	67.451	178.319	0.788
3300.000	0.852	216.701	3298.486	-69.328	0.868	-69.328	69.334	179.282	0.857
3400.000	0.901	245.894	3398.474	-70.245	-0.294	-70.245	70.246	180.239	0.444

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	0.552	263.019	3498.466	-70.625	-1.489	-70.625	70.640	181.208	0.407
3600.000	0.500	257.192	3598.462	-70.780	-2.393	-70.780	70.820	181.937	0.075
3700.000	0.232	270.860	3698.460	-70.874	-3.021	-70.874	70.938	182.441	0.280
3800.000	0.190	40.341	3798.460	-70.745	-3.116	-70.745	70.813	182.522	0.382
3900.000	0.614	150.191	3898.458	-71.083	-2.743	-71.083	71.136	182.210	0.701
4000.000	1.077	168.946	3998.447	-72.471	-2.296	-72.471	72.507	181.815	0.534
4100.000	1.509	184.962	4098.421	-74.705	-2.230	-74.705	74.739	181.710	0.559
4200.000	1.386	187.520	4198.389	-77.217	-2.502	-77.217	77.257	181.856	0.139
4300.000	1.512	183.096	4298.357	-79.734	-2.732	-79.734	79.781	181.962	0.168
4400.000	2.315	182.463	4398.301	-83.069	-2.890	-83.069	83.120	181.992	0.803
4500.000	2.555	178.104	4498.211	-87.315	-2.903	-87.315	87.363	181.904	0.303
4600.000	2.097	181.801	4598.128	-91.371	-2.887	-91.371	91.417	181.810	0.482
4700.000	2.122	169.795	4698.061	-95.022	-2.616	-95.022	95.058	181.577	0.442
4800.000	1.493	169.877	4798.010	-98.126	-2.059	-98.126	98.148	181.202	0.630
4900.000	1.553	201.307	4897.977	-100.671	-2.323	-100.671	100.698	181.322	0.827
5000.000	1.487	216.346	4997.942	-102.979	-3.584	-102.979	103.042	181.993	0.403
5100.000	1.218	215.282	5097.914	-104.892	-4.967	-104.892	105.010	182.711	0.270
5200.000	0.996	239.182	5197.896	-106.205	-6.327	-106.205	106.393	183.409	0.508
5300.000	0.431	309.599	5297.889	-106.410	-7.363	-106.410	106.664	183.958	0.943
5400.000	0.716	314.394	5397.884	-105.733	-8.100	-105.733	106.043	184.381	0.288
5500.000	0.434	324.307	5497.879	-104.989	-8.767	-104.989	105.354	184.773	0.298
5600.000	1.127	320.943	5597.869	-103.918	-9.607	-103.918	104.361	185.282	0.694
5700.000	1.608	315.334	5697.840	-102.156	-11.213	-102.156	102.770	186.264	0.499
5800.000	2.025	331.139	5797.790	-99.610	-13.053	-99.610	100.462	187.466	0.648
5900.000	1.794	311.982	5897.736	-97.016	-15.070	-97.016	98.179	188.829	0.675
6000.000	2.188	333.042	5997.677	-94.267	-17.099	-94.267	95.805	190.281	0.824
6100.000	1.430	317.336	6097.627	-91.648	-18.810	-91.648	93.558	191.598	0.899
6200.000	1.476	322.608	6197.595	-89.707	-20.437	-89.707	92.006	192.834	0.142
6300.000	1.396	323.897	6297.563	-87.699	-21.937	-87.699	90.402	194.044	0.087
6400.000	1.074	311.833	6397.540	-86.091	-23.353	-86.091	89.202	195.177	0.412
6500.000	1.188	331.846	6497.521	-84.551	-24.540	-84.551	88.041	196.185	0.409
6600.000	0.788	335.445	6597.506	-83.012	-25.315	-83.012	86.786	196.959	0.405
6700.000	0.568	11.385	6697.499	-81.901	-25.503	-81.901	85.780	197.296	0.468
HORIZONTAL DISPLACEMENT IS 85.780 FEET AT 197.296 DEGREES									