



Company: Noble Energy
Lease / Well: Hamilton / 25-15B
API#: 05-123-16497
Rig Name: Production / Lightning Wireline
State / County: Colorado / Weld County
Latitude: 40.364, Longitude: -104.610
GRID North is 0.580 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: 8/31/2011 / 13:41

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	0.283	229.133	100.000	-0.162	-0.187	-0.162	0.247	229.133	0.283
200.000	0.338	210.088	199.998	-0.578	-0.521	-0.578	0.778	222.040	0.116
300.000	0.410	258.837	299.996	-0.902	-1.020	-0.902	1.362	228.507	0.316
400.000	0.409	226.120	399.994	-1.219	-1.629	-1.219	2.035	233.184	0.231
500.000	0.688	258.644	499.989	-1.585	-2.475	-1.585	2.939	237.364	0.408
600.000	0.700	264.354	599.982	-1.764	-3.672	-1.764	4.074	244.347	0.070
700.000	0.918	262.867	699.972	-1.923	-5.075	-1.923	5.428	249.247	0.219
800.000	0.881	243.617	799.960	-2.364	-6.559	-2.364	6.972	250.178	0.303
900.000	0.506	259.473	899.952	-2.787	-7.682	-2.787	8.172	250.062	0.418
1000.000	0.949	261.648	999.944	-2.988	-8.936	-2.988	9.423	251.514	0.444
1100.000	0.828	248.189	1099.932	-3.377	-10.427	-3.377	10.960	252.057	0.241
1200.000	0.258	287.835	1199.928	-3.576	-11.312	-3.576	11.864	252.457	0.651
1300.000	0.903	250.198	1299.922	-3.774	-12.268	-3.774	12.835	252.901	0.716
1400.000	0.960	270.458	1399.909	-4.034	-13.847	-4.034	14.423	253.757	0.332
1500.000	0.865	242.516	1499.897	-4.376	-15.354	-4.376	15.965	254.093	0.450
1600.000	0.871	248.652	1599.886	-5.001	-16.731	-5.001	17.463	253.359	0.093
1700.000	0.488	308.077	1699.879	-5.015	-17.774	-5.015	18.468	254.245	0.751
1800.000	0.584	238.621	1799.876	-5.017	-18.545	-5.017	19.212	254.861	0.616
1900.000	0.944	269.096	1899.867	-5.296	-19.804	-5.296	20.500	255.029	0.531
2000.000	0.415	199.645	1999.861	-5.650	-20.749	-5.650	21.505	254.769	0.888
2100.000	0.572	212.271	2099.857	-6.412	-21.137	-6.412	22.089	253.125	0.190
2200.000	0.740	226.534	2199.851	-7.278	-21.872	-7.278	23.052	251.595	0.233
2300.000	1.068	246.820	2299.839	-8.089	-23.198	-8.089	24.568	250.776	0.454
2400.000	1.097	242.559	2399.821	-8.898	-24.905	-8.898	26.447	250.340	0.085
2500.000	0.734	246.487	2499.808	-9.594	-26.342	-9.594	28.035	249.987	0.369
2600.000	0.851	250.960	2599.798	-10.092	-27.631	-10.092	29.416	249.936	0.132
2700.000	1.209	265.048	2699.782	-10.425	-29.383	-10.425	31.178	250.466	0.437
2800.000	0.743	241.969	2799.768	-10.821	-31.007	-10.821	32.841	250.762	0.601
2900.000	0.470	232.112	2899.762	-11.377	-31.903	-11.377	33.871	250.373	0.292
3000.000	0.500	224.133	2999.758	-11.942	-32.530	-11.942	34.652	249.842	0.074
3100.000	0.422	225.897	3099.755	-12.511	-33.098	-12.511	35.383	249.294	0.079
3200.000	0.978	224.765	3199.747	-13.373	-33.963	-13.373	36.501	248.508	0.556
3300.000	0.709	230.754	3299.736	-14.370	-35.043	-14.370	37.875	247.703	0.282
3400.000	1.125	220.139	3399.724	-15.512	-36.155	-15.512	39.343	246.778	0.447

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	1.643	221.419	3499.694	-17.338	-37.737	-17.338	41.529	245.324	0.519
3600.000	2.077	234.784	3599.642	-19.458	-40.166	-19.458	44.631	244.152	0.610
3700.000	1.739	243.740	3699.586	-21.174	-43.007	-21.174	47.937	243.787	0.450
3800.000	1.447	250.107	3799.548	-22.275	-45.554	-22.275	50.709	243.942	0.341
3900.000	1.439	242.093	3899.516	-23.292	-47.851	-23.292	53.219	244.045	0.202
4000.000	1.979	227.346	3999.472	-25.050	-50.230	-25.050	56.129	243.495	0.692
4100.000	2.001	221.146	4099.411	-27.534	-52.648	-27.534	59.413	242.391	0.216
4200.000	1.836	233.035	4199.356	-29.812	-55.077	-29.812	62.628	241.574	0.430
4300.000	2.638	234.406	4299.279	-32.115	-58.229	-32.115	66.498	241.122	0.803
4400.000	3.103	228.173	4399.153	-35.260	-62.117	-35.260	71.426	240.419	0.560
4500.000	3.048	225.033	4499.009	-38.943	-66.015	-38.943	76.645	239.463	0.177
4600.000	2.927	228.692	4598.873	-42.507	-69.813	-42.507	81.736	238.664	0.226
4700.000	2.927	217.788	4698.744	-46.210	-73.295	-46.210	86.646	237.770	0.556
4800.000	2.342	201.294	4798.639	-50.132	-75.602	-50.132	90.713	236.452	0.952
4900.000	1.560	206.916	4898.580	-53.249	-76.960	-53.249	93.586	235.320	0.804
5000.000	1.600	222.196	4998.543	-55.497	-78.514	-55.497	96.148	234.746	0.422
5100.000	1.214	204.048	5098.513	-57.499	-79.883	-57.499	98.425	234.254	0.586
5200.000	0.433	157.115	5198.503	-58.814	-80.168	-58.814	99.428	233.735	0.971
5300.000	1.147	111.537	5298.493	-59.529	-79.090	-59.529	98.990	233.032	0.899
5400.000	1.841	105.111	5398.459	-60.315	-76.609	-60.315	97.503	231.786	0.713
5500.000	2.478	95.601	5498.388	-60.945	-72.906	-60.945	95.024	230.107	0.729
5600.000	3.416	97.167	5598.254	-61.527	-67.799	-61.527	91.555	227.776	0.941
5700.000	3.030	86.436	5698.097	-61.735	-62.206	-61.735	87.640	225.218	0.715
5800.000	2.614	87.065	5797.975	-61.454	-57.291	-61.454	84.017	222.992	0.416
5900.000	1.992	72.266	5897.895	-60.808	-53.358	-60.808	80.899	221.267	0.856
6000.000	1.678	67.537	5997.844	-59.719	-50.350	-59.719	78.112	220.135	0.348
6100.000	1.175	59.190	6097.812	-58.634	-48.116	-58.634	75.849	219.373	0.543
6200.000	0.609	24.046	6197.801	-57.624	-47.019	-57.624	74.373	219.213	0.762
6300.000	0.380	353.534	6297.797	-56.809	-46.840	-56.809	73.629	219.506	0.341
6400.000	0.367	331.872	6397.795	-56.197	-47.028	-56.197	73.279	219.924	0.141
6500.000	0.277	260.708	6497.794	-55.954	-47.417	-55.954	73.343	220.279	0.382
6600.000	0.326	237.608	6597.792	-56.145	-47.896	-56.145	73.799	220.466	0.130
6700.000	0.329	212.429	6697.791	-56.540	-48.290	-56.540	74.355	220.500	0.143
6800.000	0.304	130.504	6797.790	-56.955	-48.242	-56.955	74.641	220.265	0.416
6900.000	0.575	117.980	6897.787	-57.363	-47.598	-57.363	74.539	219.685	0.286
6960.000	0.753	155.597	6957.783	-57.863	-47.169	-57.863	74.653	219.187	0.767
HORIZONTAL DISPLACEMENT IS 74.653 FEET AT 219.187 DEGREES									