



Company: NOBLE ENERGY  
Lease/Well: MCDANIEL/ #32-15  
A.P.I.#: 05-123-23547  
Rig Name: PRODUCTION  
State/County: COLORADO/WELD  
Latitude: 40.488, Longitude: -104.534  
GRID North is 0.620 Degrees East of True North  
VS-Azi: 0.000 Degrees



FIELD COPY ONLY (NOT DEFINITIVE)

Depth Reference : GL

DRILLOG MS GYRO SURVEY CALCULATIONS

Filename: run1-01\_ed.ut  
Minimum Curvature Method  
Report Date/Time: 3/1/2012 / 20:10

Vaughn Energy Services  
Henderson, Colorado  
866-835-8333  
Jay Hinman  
McDaniel 32-15

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	0.226	240.953	100.000	-0.096	-0.173	-0.096	0.197	240.953	0.226
200.000	0.306	203.790	199.999	-0.436	-0.453	-0.436	0.629	226.098	0.185
300.000	0.309	200.545	299.997	-0.933	-0.655	-0.933	1.140	215.089	0.018
400.000	0.247	190.014	399.996	-1.397	-0.787	-1.397	1.604	209.401	0.081
500.000	0.225	178.119	499.995	-1.806	-0.818	-1.806	1.983	204.378	0.053
600.000	0.237	178.155	599.994	-2.209	-0.805	-2.209	2.351	200.028	0.011
700.000	0.137	83.755	699.994	-2.402	-0.680	-2.402	2.497	195.794	0.283
800.000	0.343	55.393	799.993	-2.219	-0.314	-2.219	2.241	188.054	0.232
900.000	0.271	199.582	899.993	-2.272	-0.147	-2.272	2.277	183.699	0.585
1000.000	0.337	217.395	999.991	-2.729	-0.405	-2.729	2.759	188.441	0.115
1100.000	0.412	223.167	1099.989	-3.225	-0.830	-3.225	3.330	194.429	0.084
1200.000	0.647	237.394	1199.985	-3.792	-1.552	-3.792	4.097	202.254	0.267
1300.000	0.667	232.942	1299.978	-4.447	-2.492	-4.447	5.097	209.262	0.055
1400.000	0.569	226.669	1399.972	-5.138	-3.317	-5.138	6.116	212.845	0.118
1500.000	0.719	232.602	1499.966	-5.860	-4.177	-5.860	7.196	215.479	0.164
1600.000	0.614	237.541	1599.959	-6.529	-5.127	-6.529	8.301	218.144	0.119
1700.000	0.494	249.760	1699.955	-6.965	-5.984	-6.965	9.183	220.665	0.168
1800.000	0.323	252.725	1799.952	-7.198	-6.658	-7.198	9.805	222.765	0.172
1900.000	0.345	259.315	1899.950	-7.338	-7.223	-7.338	10.296	224.548	0.044
2000.000	0.316	261.847	1999.949	-7.433	-7.792	-7.433	10.768	226.351	0.033
2100.000	0.232	293.876	2099.948	-7.390	-8.250	-7.390	11.076	228.148	0.171
2200.000	0.331	304.147	2199.946	-7.146	-8.675	-7.146	11.239	230.520	0.111
2300.000	0.422	302.813	2299.944	-6.784	-9.224	-6.784	11.450	233.667	0.092
2400.000	0.475	305.895	2399.941	-6.341	-9.869	-6.341	11.731	237.279	0.058
2500.000	0.453	311.840	2499.938	-5.835	-10.499	-5.835	12.011	240.937	0.053
2600.000	0.456	309.174	2599.935	-5.320	-11.101	-5.320	12.310	244.395	0.021
2700.000	0.467	311.302	2699.931	-4.800	-11.716	-4.800	12.661	247.721	0.020
2800.000	0.423	300.491	2799.928	-4.344	-12.340	-4.344	13.082	250.607	0.095
2900.000	0.355	279.949	2899.926	-4.103	-12.963	-4.103	13.597	252.436	0.154
3000.000	0.330	213.236	2999.925	-4.290	-13.426	-4.290	14.094	252.278	0.377
3100.000	0.774	177.947	3099.920	-5.207	-13.559	-5.207	14.524	248.994	0.540
3200.000	1.066	170.533	3199.907	-6.799	-13.382	-6.799	15.010	243.064	0.314
3300.000	1.630	187.976	3299.879	-9.125	-13.426	-9.125	16.234	235.797	0.691
3400.000	1.904	197.646	3399.832	-12.117	-14.127	-12.117	18.612	229.380	0.404

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	2.333	207.901	3499.764	-15.499	-15.583	-15.499	21.978	225.156	0.570
3600.000	2.656	213.104	3599.669	-19.238	-17.801	-19.238	26.210	222.778	0.394
3700.000	2.965	217.863	3699.549	-23.220	-20.653	-23.220	31.077	221.652	0.387
3800.000	3.071	216.192	3799.410	-27.424	-23.823	-27.424	36.326	220.980	0.138
3900.000	2.997	216.383	3899.270	-31.690	-26.955	-31.690	41.603	220.384	0.075
4000.000	2.896	221.489	3999.138	-35.687	-30.179	-35.687	46.737	220.220	0.281
4100.000	2.535	223.756	4099.026	-39.177	-33.382	-39.177	51.470	220.434	0.377
4200.000	2.134	225.459	4198.942	-42.080	-36.238	-42.080	55.533	220.734	0.407
4300.000	2.008	219.277	4298.877	-44.741	-38.674	-44.741	59.139	220.840	0.256
4400.000	1.883	217.959	4398.820	-47.393	-40.793	-47.393	62.531	220.720	0.132
4500.000	1.792	220.878	4498.768	-49.870	-42.827	-49.870	65.736	220.655	0.130
4600.000	1.416	210.540	4598.729	-52.117	-44.479	-52.117	68.517	220.479	0.473
4700.000	1.280	203.243	4698.701	-54.208	-45.548	-54.208	70.803	220.038	0.219
4800.000	1.306	198.633	4798.676	-56.315	-46.353	-56.315	72.938	219.458	0.107
4900.000	1.308	189.966	4898.650	-58.519	-46.914	-58.519	75.003	218.719	0.198
5000.000	1.258	176.262	4998.625	-60.739	-47.040	-60.739	76.824	217.757	0.310
5100.000	1.077	164.460	5098.604	-62.740	-46.717	-62.740	78.222	216.672	0.300
5200.000	0.786	151.613	5198.591	-64.249	-46.139	-64.249	79.099	215.683	0.357
5300.000	0.680	138.589	5298.583	-65.298	-45.420	-65.298	79.541	214.822	0.197
5400.000	0.736	79.095	5398.577	-65.621	-44.397	-65.621	79.229	214.081	0.704
5500.000	1.007	46.376	5498.566	-64.894	-43.130	-64.894	77.919	213.609	0.555
5600.000	1.691	37.796	5598.537	-63.121	-41.589	-63.121	75.591	213.380	0.712
5700.000	2.312	47.952	5698.476	-60.604	-39.187	-60.604	72.170	212.887	0.712
5800.000	1.931	50.296	5798.408	-58.177	-36.393	-58.177	68.623	212.028	0.391
5900.000	1.889	65.637	5898.353	-56.421	-33.596	-56.421	65.666	210.772	0.511
6000.000	2.013	76.057	5998.295	-55.318	-30.390	-55.318	63.116	208.783	0.375
6100.000	2.216	76.098	6098.227	-54.430	-26.809	-54.430	60.674	206.222	0.202
6200.000	2.480	83.508	6198.143	-53.721	-22.782	-53.721	58.353	202.981	0.402
6300.000	2.158	82.841	6298.061	-53.242	-18.765	-53.242	56.452	199.415	0.324
6400.000	1.524	97.222	6398.009	-53.175	-15.577	-53.175	55.409	196.328	0.779
6500.000	0.968	106.154	6497.985	-53.577	-13.447	-53.577	55.239	194.089	0.587
6600.000	0.894	111.564	6597.972	-54.099	-11.910	-54.099	55.394	192.415	0.115
6700.000	0.921	103.504	6697.960	-54.573	-10.403	-54.573	55.556	190.792	0.130
6800.000	0.956	107.507	6797.946	-55.012	-8.826	-55.012	55.715	189.115	0.074
6850.000	0.968	105.899	6847.939	-55.253	-8.022	-55.253	55.832	188.261	0.060

HORIZONTAL DISPLACEMENT IS  
55.832 FEET AT 188.261 DEGREES