



Company/Rig: Noble Energy/VES
WELL/API#: Camolo Red D 27-05/05-123-17007
DECLINATION: 8.09 Degrees
TD AS DRILLED: 7206 Feet
COUNTY/STATE: Weld/Colorado
VS-Azi: 0.000 Degrees
Latitude: 40.19827, Longitude: -104.54438
Grid North = True North -0.62 degs (NAD 27)
Grid Correction Applied = -0.62 degs



DEPTH REFERENCE : RKB=GL Elevation=4851 Feet

DRILLOG GYRO SURVEY CALCULATIONS

Filename: run1-de_01.ut

Minimum Curvature Method

Report Date/Time: 5/12/2017 / 11:37

LAT & LONG OBTAINED BY HANDHELD GPS AT WELLHEAD

NORTH REFERENCE: GRID

HENDERSON, COLORADO

303-853-4976

Surveyor: Geof Davis / Camolo Red D 27-05

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	0.315	341.827	99.999	0.261	-0.086	0.261	0.275	341.827	0.315
200.000	0.399	333.178	199.998	0.833	-0.328	0.833	0.895	338.476	0.099
300.000	0.514	323.582	299.994	1.504	-0.752	1.504	1.681	333.445	0.138
400.000	0.483	225.571	399.992	1.570	-1.319	1.570	2.051	319.965	0.753
500.000	0.593	220.685	499.988	0.883	-1.957	0.883	2.147	294.272	0.119
600.000	0.673	327.757	599.984	0.987	-2.608	0.987	2.789	290.731	1.019
700.000	0.245	332.979	699.981	1.674	-3.019	1.674	3.452	299.017	0.430
800.000	0.161	16.055	799.980	2.000	-3.077	2.000	3.669	303.019	0.168
900.000	0.352	35.718	899.979	2.384	-2.859	2.384	3.722	309.818	0.207
1000.000	0.249	90.704	999.978	2.630	-2.463	2.630	3.603	316.879	0.292
1100.000	0.352	104.704	1099.977	2.549	-1.949	2.549	3.209	322.599	0.126
1200.000	0.319	127.362	1199.975	2.303	-1.431	2.303	2.711	328.136	0.136
1300.000	0.430	146.020	1299.973	1.822	-1.000	1.822	2.079	331.241	0.164
1400.000	0.479	146.155	1399.970	1.163	-0.557	1.163	1.290	334.407	0.049
1500.000	0.383	147.463	1499.967	0.534	-0.144	0.534	0.553	344.875	0.096
1600.000	0.418	171.095	1599.964	-0.108	0.092	-0.108	0.142	139.604	0.167

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
1700.000	0.431	174.950	1699.962	-0.843	0.182	-0.843	0.862	167.841	0.032
1800.000	0.268	209.429	1799.960	-1.421	0.100	-1.421	1.425	175.988	0.259
1900.000	0.666	210.780	1899.956	-2.124	-0.313	-2.124	2.147	188.370	0.397
2000.000	0.784	236.425	1999.949	-3.002	-1.180	-3.002	3.225	201.459	0.342
2100.000	0.620	242.075	2099.941	-3.633	-2.228	-3.633	4.262	211.516	0.178
2200.000	0.667	244.317	2199.935	-4.139	-3.230	-4.139	5.250	217.971	0.054
2300.000	0.572	236.623	2299.929	-4.666	-4.172	-4.666	6.259	221.801	0.126
2400.000	0.429	268.647	2399.925	-4.949	-4.963	-4.949	7.009	225.078	0.309
2500.000	0.784	237.750	2499.920	-5.323	-5.915	-5.323	7.958	228.017	0.470
2600.000	1.364	224.641	2599.902	-6.535	-7.330	-6.535	9.820	228.283	0.626
2700.000	1.414	245.082	2699.873	-7.901	-9.285	-7.901	12.192	229.603	0.495
2800.000	1.528	207.587	2799.842	-9.603	-11.022	-9.603	14.618	228.935	0.952
2900.000	1.269	167.845	2899.815	-11.868	-11.406	-11.868	16.460	223.864	0.981
3000.000	1.439	109.034	2999.791	-13.360	-9.986	-13.360	16.680	216.777	1.338
3100.000	1.673	81.019	3099.756	-13.542	-7.357	-13.542	15.411	208.516	0.787
3200.000	1.639	73.452	3199.714	-12.906	-4.545	-12.906	13.683	199.400	0.221
3300.000	1.506	60.726	3299.677	-11.857	-2.028	-11.857	12.029	189.708	0.373
3400.000	1.072	36.785	3399.652	-10.465	-0.322	-10.465	10.470	181.762	0.682
3500.000	0.893	355.629	3499.638	-8.938	0.179	-8.938	8.940	178.852	0.711
3600.000	0.893	320.626	3599.627	-7.558	-0.375	-7.558	7.568	182.838	0.537
3700.000	0.973	240.520	3699.617	-7.373	-1.608	-7.373	7.547	192.303	1.202
3800.000	0.903	230.464	3799.604	-8.293	-2.955	-8.293	8.804	199.611	0.178
3900.000	0.580	204.467	3899.596	-9.255	-3.772	-9.255	9.994	202.175	0.459
4000.000	1.230	198.508	3999.583	-10.733	-4.322	-10.733	11.571	201.935	0.657
4100.000	0.816	200.083	4099.567	-12.420	-4.908	-12.420	13.354	201.561	0.416
4200.000	0.812	227.430	4199.557	-13.567	-5.674	-13.567	14.706	202.694	0.385
4300.000	1.117	215.361	4299.543	-14.841	-6.759	-14.841	16.308	204.487	0.365
4400.000	1.081	225.288	4399.524	-16.299	-7.993	-16.299	18.154	206.124	0.193
4500.000	1.137	220.826	4499.506	-17.713	-9.312	-17.713	20.012	207.731	0.103
4600.000	1.198	218.873	4599.485	-19.278	-10.617	-19.278	22.008	208.842	0.073
4700.000	1.269	249.930	4699.463	-20.472	-12.313	-20.472	23.890	211.025	0.664
4800.000	1.319	265.552	4799.438	-20.941	-14.501	-20.941	25.472	214.700	0.355
4900.000	2.037	281.780	4899.395	-20.668	-17.387	-20.668	27.009	220.073	0.854
5000.000	2.325	309.406	4999.325	-19.017	-20.694	-19.017	28.105	227.418	1.078
5100.000	2.127	332.174	5099.251	-16.089	-23.127	-16.089	28.173	235.175	0.900
5200.000	1.856	329.426	5199.191	-13.054	-24.817	-13.054	28.041	242.255	0.287
5300.000	1.385	301.567	5299.152	-11.028	-26.670	-11.028	28.860	247.535	0.904
5400.000	1.110	260.970	5399.130	-10.547	-28.656	-10.547	30.535	249.793	0.903
5500.000	0.417	209.580	5499.122	-11.015	-29.792	-11.015	31.763	249.708	0.910

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
5600.000	0.698	213.069	5599.117	-11.842	-30.304	-11.842	32.536	248.655	0.283
5700.000	1.471	216.935	5699.098	-13.378	-31.407	-13.378	34.138	246.928	0.776
5800.000	1.552	213.857	5799.063	-15.529	-32.933	-15.529	36.411	244.755	0.115
5900.000	1.525	193.833	5899.028	-17.946	-34.006	-17.946	38.451	242.178	0.536
6000.000	0.635	167.255	5999.010	-19.779	-34.202	-19.779	39.509	239.959	0.998
6100.000	0.507	122.811	6099.005	-20.559	-33.708	-20.559	39.483	238.620	0.448
6200.000	1.490	163.007	6198.990	-22.042	-32.956	-22.042	39.648	236.224	1.150
6300.000	1.770	154.550	6298.949	-24.680	-31.912	-24.680	40.342	232.283	0.369
6400.000	1.599	159.955	6398.906	-27.385	-30.770	-27.385	41.192	228.331	0.233
6500.000	1.839	151.273	6498.861	-30.103	-29.521	-30.103	42.163	224.440	0.353
6600.000	1.704	147.785	6598.814	-32.768	-27.957	-32.768	43.074	220.470	0.172
6700.000	2.838	146.542	6698.733	-36.092	-25.799	-36.092	44.365	215.558	1.135
6800.000	3.937	149.180	6798.557	-41.105	-22.676	-41.105	46.945	208.883	1.110
6900.000	4.527	145.932	6898.284	-47.323	-18.706	-47.323	50.886	201.568	0.637