



Company/Rig: Noble Energy/VES  
WELL/API#: Camolo Red D 27-04/05-123-17006  
DECLINATION: 8.09 Degrees  
TD AS DRILLED: 7188 Feet  
COUNTY/STATE: Weld/Colorado  
VS-Azi: 0.000 Degrees  
Latitude: 40.20197, Longitude: -104.54482  
Grid North = True North -0.62 degs (NAD 27)  
Grid Correction Applied = -0.62 degs



DEPTH REFERENCE : RKB=GL Elevation=4836 Feet

DRILLOG GYRO SURVEY CALCULATIONS

Filename: run1-de\_01.ut

Minimum Curvature Method

Report Date/Time: 5/11/2017 / 13:49

LAT & LONG OBTAINED BY HANDHELD GPS AT WELLHEAD

NORTH REFERENCE: GRID

HENDERSON, COLORADO

303-853-4976

Surveyor: Geof Davis / API 05-123-17006

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	0.713	251.819	99.997	-0.194	-0.591	-0.194	0.622	251.819	0.713
200.000	0.340	265.230	199.993	-0.413	-1.478	-0.413	1.534	254.388	0.391
300.000	0.367	262.877	299.991	-0.477	-2.091	-0.477	2.145	257.143	0.031
400.000	0.277	272.280	399.990	-0.507	-2.651	-0.507	2.699	259.164	0.104
500.000	0.314	302.577	499.988	-0.350	-3.124	-0.350	3.143	263.598	0.158
600.000	0.659	342.359	599.985	0.345	-3.529	0.345	3.545	275.584	0.464
700.000	1.347	316.759	699.969	1.750	-4.508	1.750	4.836	291.209	0.805
800.000	1.151	313.746	799.945	3.301	-6.040	3.301	6.883	298.657	0.207
900.000	0.995	317.783	899.928	4.638	-7.349	4.638	8.690	302.259	0.174
1000.000	1.113	313.680	999.911	5.952	-8.634	5.952	10.487	304.579	0.141
1100.000	0.591	298.306	1099.900	6.867	-9.791	6.867	11.959	305.046	0.566
1200.000	0.920	274.602	1199.891	7.176	-11.045	7.176	13.172	303.012	0.447
1300.000	0.772	224.240	1299.882	6.758	-12.315	6.758	14.048	298.757	0.732
1400.000	0.654	142.424	1399.876	5.824	-12.437	5.824	13.733	295.092	0.938
1500.000	0.473	109.891	1499.871	5.231	-11.701	5.231	12.817	294.088	0.360
1600.000	0.449	108.532	1599.868	4.966	-10.941	4.966	12.015	294.413	0.026

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	0.174	100.270	1699.867	4.814	-10.419	4.814	11.478	294.799	0.278
1800.000	0.388	98.318	1799.865	4.738	-9.935	4.738	11.007	295.497	0.214
1900.000	0.337	77.842	1899.863	4.751	-9.312	4.751	10.454	297.031	0.138
2000.000	0.515	76.352	1999.860	4.919	-8.587	4.919	9.896	299.805	0.178
2100.000	0.767	164.639	2099.856	4.379	-7.973	4.379	9.097	298.780	0.911
2200.000	1.115	224.151	2199.845	3.036	-8.473	3.036	9.001	289.710	0.982
2300.000	1.109	228.547	2299.826	1.697	-9.877	1.697	10.021	279.747	0.086
2400.000	1.351	237.533	2399.803	0.423	-11.597	0.423	11.604	272.089	0.308
2500.000	1.113	232.166	2499.780	-0.805	-13.358	-0.805	13.382	266.550	0.264
2600.000	1.719	227.086	2599.749	-2.422	-15.224	-2.422	15.415	260.959	0.619
2700.000	1.778	230.254	2699.702	-4.436	-17.515	-4.436	18.068	255.789	0.113
2800.000	1.697	245.174	2799.657	-6.049	-20.052	-6.049	20.944	253.213	0.458
2900.000	1.989	278.446	2899.608	-6.416	-23.113	-6.416	23.987	254.486	1.092
3000.000	1.803	306.948	2999.555	-5.215	-26.087	-5.215	26.603	258.695	0.951
3100.000	1.966	300.592	3099.501	-3.396	-28.821	-3.396	29.021	263.279	0.265
3200.000	2.122	310.999	3199.438	-1.309	-31.695	-1.309	31.722	267.636	0.402
3300.000	2.410	331.277	3299.361	1.750	-34.103	1.750	34.148	272.938	0.847
3400.000	2.737	335.486	3399.260	5.766	-36.104	5.766	36.562	279.074	0.377
3500.000	2.806	334.797	3499.143	10.153	-38.137	10.153	39.466	284.908	0.076
3600.000	1.969	327.725	3599.056	13.820	-40.097	13.820	42.412	289.017	0.885
3700.000	1.083	280.474	3699.023	15.444	-41.944	15.444	44.697	290.215	1.468
3800.000	0.268	224.679	3799.015	15.450	-43.037	15.450	45.727	289.748	0.958
3900.000	0.580	250.733	3899.013	15.117	-43.680	15.117	46.222	289.089	0.359
4000.000	0.441	307.455	3999.009	15.183	-44.463	15.183	46.984	288.854	0.500
4100.000	1.868	303.202	4098.986	16.310	-46.132	16.310	48.931	289.470	1.429
4200.000	2.326	314.555	4198.920	18.626	-48.942	18.626	52.367	290.835	0.616
4300.000	2.598	327.911	4298.828	21.969	-51.592	21.969	56.075	293.066	0.633
4400.000	2.294	331.296	4398.737	25.645	-53.757	25.645	59.561	295.503	0.336
4500.000	2.238	325.552	4498.659	29.010	-55.822	29.010	62.910	297.460	0.234
4600.000	2.361	326.152	4598.578	32.330	-58.074	32.330	66.467	299.105	0.125
4700.000	1.726	329.144	4698.514	35.333	-59.993	35.333	69.625	300.496	0.643
4800.000	0.491	313.095	4798.494	36.919	-61.079	36.919	71.370	301.151	1.262
4900.000	1.180	300.487	4898.483	37.734	-62.279	37.734	72.819	301.211	0.709
5000.000	1.652	314.814	4998.452	39.272	-64.189	39.272	75.250	301.459	0.586
5100.000	1.848	313.507	5098.405	41.398	-66.381	41.398	78.232	301.950	0.201
5200.000	1.926	331.362	5198.352	43.983	-68.356	43.983	81.284	302.759	0.591
5300.000	2.161	314.104	5298.289	46.770	-70.515	46.770	84.616	303.555	0.656
5400.000	2.649	294.031	5398.203	49.024	-73.980	49.024	88.749	303.531	0.966
5500.000	2.775	276.366	5498.092	50.234	-78.496	50.234	93.194	302.617	0.842

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	1.877	266.657	5598.009	50.407	-82.537	50.407	96.711	301.413	0.977
5700.000	1.322	250.034	5697.971	49.917	-85.256	49.917	98.794	300.349	0.718
5800.000	1.260	249.492	5797.945	49.138	-87.370	49.138	100.240	299.354	0.063
5900.000	1.019	237.190	5897.925	48.271	-89.147	48.271	101.377	298.434	0.342
6000.000	1.806	229.684	5997.894	46.770	-91.096	46.770	102.401	297.176	0.806
6100.000	2.196	241.596	6097.834	44.839	-93.983	44.839	104.131	295.506	0.569
6200.000	1.450	234.668	6197.782	43.196	-96.700	43.196	105.910	294.070	0.776
6300.000	1.030	232.531	6297.759	41.917	-98.446	41.917	106.998	293.064	0.423
6400.000	1.123	233.240	6397.741	40.784	-99.944	40.784	107.945	292.199	0.094
6500.000	1.136	241.411	6497.722	39.724	-101.599	39.724	109.089	291.355	0.161
6600.000	0.499	253.749	6597.711	39.127	-102.888	39.127	110.077	290.821	0.657
6700.000	1.197	225.261	6697.700	38.270	-104.048	38.270	110.863	290.194	0.795
6800.000	0.873	211.709	6797.684	36.886	-105.191	36.886	111.471	289.324	0.404
6900.000	0.203	211.577	6897.679	36.087	-105.684	36.087	111.676	288.853	0.671