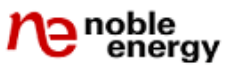


Company/Rig: Noble Energy/Production/VES
 Well/API: UPV 31-15G3/05-123-18782
 Declination: 8.47
 TD as Drilled: 6871'
 County/State: Weld/Colorado
 Latitude: 40.438, Longitude: -104.477
 GRID North is 0.660 Degrees East of True North
 VS-Azi: 0.000 Degrees



Depth Reference : RKB = GL / Elevation = 4698'

DRILLOG MV GYRO SURVEY CALCULATIONS

Filename: upv 31-15g3-de_01.ut

Minimum Curvature Method

Report Date/Time: 4/9/2013 / 13:10

LAT & LONG OBTAINED BY HANDHELD GPS AT WELLHEAD

NORTH REFERENCE: GRID

HENDERSON, COLORADO

303-853-4976

SURVEYOR: JUSTIN WILLIAMS

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	0.263	337.063	100.000	0.211	-0.089	0.211	0.230	337.063	0.263
200.000	0.159	263.524	199.999	0.407	-0.316	0.407	0.516	322.146	0.266
300.000	0.313	257.352	299.998	0.332	-0.721	0.332	0.794	294.707	0.157
400.000	0.299	256.078	399.997	0.209	-1.241	0.209	1.259	279.555	0.016
500.000	0.307	338.272	499.996	0.395	-1.594	0.395	1.642	283.923	0.399
600.000	0.335	314.662	599.994	0.850	-1.901	0.850	2.083	294.083	0.134
700.000	0.228	331.064	699.993	1.230	-2.206	1.230	2.526	299.142	0.133
800.000	0.378	329.359	799.992	1.688	-2.470	1.688	2.992	304.343	0.149
900.000	0.370	329.586	899.990	2.250	-2.802	2.250	3.593	308.764	0.008
1000.000	0.333	348.061	999.988	2.812	-3.025	2.812	4.130	312.911	0.119
1100.000	0.376	338.679	1099.986	3.402	-3.204	3.402	4.674	316.714	0.072
1200.000	0.309	313.130	1199.984	3.892	-3.520	3.892	5.248	317.870	0.165
1300.000	0.141	288.801	1299.983	4.116	-3.834	4.116	5.625	317.033	0.189
1400.000	0.084	238.412	1399.983	4.118	-4.013	4.118	5.749	315.739	0.109
1500.000	0.085	37.840	1499.983	4.138	-4.029	4.138	5.776	315.762	0.166
1600.000	0.182	36.453	1599.983	4.324	-3.889	4.324	5.816	318.031	0.097
1700.000	0.218	10.252	1699.982	4.639	-3.761	4.639	5.972	320.966	0.097
1800.000	0.097	320.593	1799.982	4.892	-3.781	4.892	6.183	322.297	0.172
1900.000	0.190	210.623	1899.982	4.815	-3.920	4.815	6.209	320.849	0.242
2000.000	0.351	227.524	1999.980	4.465	-4.230	4.465	6.151	316.545	0.178

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
2100.000	0.160	272.031	2099.979	4.263	-4.596	4.263	6.269	312.847	0.262
2200.000	0.081	259.175	2199.979	4.255	-4.805	4.255	6.418	311.524	0.083
2300.000	0.443	236.663	2299.978	4.029	-5.198	4.029	6.576	307.781	0.370
2400.000	0.562	230.351	2399.974	3.503	-5.899	3.503	6.861	300.706	0.131
2500.000	0.598	222.865	2499.969	2.808	-6.631	2.808	7.201	292.950	0.084
2600.000	0.556	206.225	2599.964	1.990	-7.201	1.990	7.471	285.451	0.172
2700.000	0.555	223.031	2699.959	1.201	-7.745	1.201	7.838	278.815	0.162
2800.000	0.699	229.717	2799.953	0.453	-8.541	0.453	8.553	273.034	0.162
2900.000	0.685	227.554	2899.946	-0.345	-9.448	-0.345	9.454	267.907	0.030
3000.000	0.513	243.176	2999.941	-0.951	-10.289	-0.951	10.332	264.720	0.235
3100.000	0.475	239.423	3099.937	-1.364	-11.045	-1.364	11.129	262.962	0.050
3200.000	0.470	308.771	3199.934	-1.318	-11.721	-1.318	11.795	263.585	0.537
3300.000	0.972	347.162	3299.927	-0.234	-12.229	-0.234	12.232	268.903	0.671
3400.000	1.295	359.874	3399.907	1.723	-12.420	1.723	12.539	277.898	0.407
3500.000	1.558	27.717	3499.877	4.057	-11.791	4.057	12.469	288.986	0.732
3600.000	1.439	31.908	3599.843	6.326	-10.495	6.326	12.254	301.079	0.162
3700.000	1.360	26.970	3699.813	8.449	-9.293	8.449	12.560	312.278	0.144
3800.000	1.086	38.819	3799.790	10.246	-8.160	10.246	13.098	321.464	0.372
3900.000	0.842	66.203	3899.777	11.280	-6.894	11.280	13.220	328.568	0.514
4000.000	0.881	109.555	3999.766	11.319	-5.498	11.319	12.584	334.095	0.637
4100.000	1.096	122.952	4099.752	10.542	-3.971	10.542	11.265	339.361	0.314
4200.000	1.235	121.507	4199.731	9.459	-2.250	9.459	9.723	346.620	0.142
4300.000	1.258	158.465	4299.709	7.875	-0.928	7.875	7.929	353.277	0.790
4400.000	1.307	187.302	4399.685	5.722	-0.670	5.722	5.761	353.319	0.640
4500.000	2.198	200.025	4499.637	2.789	-1.472	2.789	3.154	332.180	0.966
4600.000	3.077	209.526	4599.531	-1.347	-3.451	-1.347	3.705	248.671	0.979
4700.000	3.099	218.716	4699.386	-5.792	-6.465	-5.792	8.680	228.140	0.495
4800.000	3.125	215.976	4799.239	-10.107	-9.757	-10.107	14.048	223.989	0.151
4900.000	2.348	209.859	4899.124	-14.089	-12.377	-14.089	18.754	221.299	0.829
5000.000	1.422	201.293	4999.069	-17.022	-13.848	-17.022	21.944	219.129	0.965
5100.000	0.681	170.697	5099.053	-18.765	-14.203	-18.765	23.534	217.120	0.905
5200.000	0.761	120.218	5199.046	-19.686	-13.533	-19.686	23.889	214.506	0.619
5300.000	0.895	87.530	5299.036	-19.987	-12.179	-19.987	23.405	211.357	0.483
5400.000	0.975	59.118	5399.023	-19.516	-10.669	-19.516	22.242	208.664	0.465
5500.000	0.681	109.097	5499.014	-19.274	-9.377	-19.274	21.434	205.943	0.749
5600.000	1.092	129.335	5599.002	-20.073	-8.078	-20.073	21.637	201.921	0.511
5700.000	1.626	154.846	5698.974	-21.961	-6.738	-21.961	22.971	197.056	0.794
5800.000	0.718	175.308	5798.952	-23.870	-6.083	-23.870	24.633	194.298	0.986
5900.000	0.265	352.918	5898.950	-24.265	-6.061	-24.265	25.010	194.024	0.983
6000.000	1.186	0.569	5998.941	-23.000	-6.079	-23.000	23.789	194.805	0.924
6100.000	2.091	1.627	6098.899	-20.141	-6.017	-20.141	21.020	196.633	0.905
6200.000	2.885	4.232	6198.804	-15.807	-5.779	-15.807	16.831	200.082	0.802

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
6300.000	3.753	358.128	6298.636	-10.027	-5.700	-10.027	11.534	209.619	0.936
6400.000	4.603	4.112	6398.370	-2.753	-5.520	-2.753	6.168	243.490	0.955
6500.000	3.939	5.085	6498.091	4.671	-4.927	4.671	6.789	313.468	0.668
6600.000	3.226	12.844	6597.896	10.835	-3.998	10.835	11.549	339.749	0.861
20.1' Ellipse of Uncertainty									
6700.000	2.730	18.602	6697.761	15.827	-2.620	15.827	16.042	350.601	0.585