Company/Rig: Noble Energy/Production/VES
WELL/API#: Maggie B 13-12/05-123-17924
DECLINATION: 8.48
TD AS DRILLED: 6866'
COUNTY/STATE: Weld/Colorado
Latitude: 40.398, Longitude: -104.506
GRID North is 0.640 Degrees East of True North
VS-Azi: 0.000 Degrees

Depth Reference : RKB = GL / SE = 4582'

DRILLOG MV GYRO SURVEY CALCULATIONS
Filename: maggieb13-12_int.ut
Minimum Curvature Method
Report Date/Time: 4/4/2013 / 12:42

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	****
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	****
100.000	0.449	292.504	99.999	0.150	-0.362	0.150	0.392	292.504	0.449
200.000	0.347	292.537	199.997	0.416	-1.004	0.416	1.086	292.513	0.102
300.000	0.245	292.570	299.995	0.614	-1.481	0.614	1.603	292.525	0.102
400.000	0.567	274.733	399.993	0.737	-2.171	0.737	2.293	288.751	0.342
500.000	0.888	256.896	499.985	0.602	-3.418	0.602	3.471	279.989	0.390
600.000	0.968	272.271	599.972	0.460	-5.017	0.460	5.038	275.237	0.260
700.000	1.047	287.646	699.956	0.770	-6.731	0.770	6.775	276.528	0.281
800.000	1.043	278.287	799.940	1.178	-8.502	1.178	8.583	277.891	0.171
900.000	1.039	268.928	899.923	1.293	-10.309	1.293	10.390	277.147	0.170
1000.000	1.104	273.190	999.906	1.329	-12.178	1.329	12.250	276.229	0.103
1100.000	1.169	277.451	1099.886	1.515	-14.151	1.515	14.232	276.111	0.107
1200.000	1.308	279.161	1199.863	1.829	-16.290	1.829	16.392	276.407	0.144
1300.000	1.448	280.870	1299.834	2.249	-18.658	2.249	18.793	276.874	0.145
1400.000	1.591	285.761	1399.799	2.864	-21.234	2.864	21.426	277.683	0.193
1500.000	1.733	290.651	1499.757	3.775	-23.985	3.775	24.280	278.944	0.201
1600.000	1.460	291.649	1599.718	4.778	-26.584	4.778	27.010	280.189	0.274
1700.000	1.188	292.647	1699.691	5.647	-28.725	5.647	29.275	281.123	0.273
1800.000	1.111	281.867	1799.671	6.246	-30.631	6.246	31.261	281.525	0.229
1900.000	1.034	271.087	1899.654	6.462	-32.482	6.462	33.118	281.252	0.216

VES Survey Date: 04/03/2013

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
2000.000	1.157	270.731	1999.635	6.492	-34.394	6.492	35.001	280.690	0.124
2100.000	1.281	270.374	2099.613	6.513	-36.521	6.513	37.098	280.111	0.124
2200.000	1.404	271.632	2199.585	6.555	-38.864	6.555	39.413	279.573	0.126
2300.000	1.527	272.891	2299.552	6.657	-41.419	6.657	41.951	279.131	0.127
2400.000	1.579	279.183	2399.516	6.944	-44.110	6.944	44.654	278.946	0.178
2500.000	1.632	285.474	2499.476	7.544	-46.843	7.544	47.447	279.149	0.184
2600.000	1.649	282.065	2599.435	8.225	-49.623	8.225	50.300	279.411	0.099
2700.000	1.667	278.657	2699.394	8.744	-52.469	8.744	53.192	279.462	0.100
2800.000	1.607	278.608	2799.353	9.173	-55.293	9.173	56.049	279.420	0.060
2900.000	1.548	278.559	2899.315	9.584	-58.016	9.584	58.802	279.381	0.060
3000.000	1.165	277.409	2999.287	9.916	-60.359	9.916	61.168	279.330	0.384
3100.000	0.781	276.259	3099.272	10.122	-62.044	10.122	62.865	279.265	0.384
3200.000	1.259	277.163	3199.256	10.333	-63.812	10.333	64.643	279.198	0.478
3300.000	1.737	278.068	3299.222	10.683	-66.402	10.683	67.256	279.139	0.479
3400.000	2.324	278.045	3399.158	11.179	-69.910	11.179	70.798	279.085	0.587
3500.000	2.910	278.022	3499.054	11.817	-74.431	11.817	75.363	279.021	0.587
3600.000	2.945	275.233	3598.923	12.406	-79.502	12.406	80.464	278.869	0.147
3700.000	2.979	272.445	3698.790	12.751	-84.656	12.751	85.611	278.565	0.148
3800.000	3.018	271.149	3798.653	12.914	-89.885	12.914	90.808	278.176	0.078
3900.000	3.058	269.854	3898.512	12.960	-95.184	12.960	96.063	277.754	0.079
4000.000	3.154	271.062	3998.365	13.005	-100.602	13.005	101.439	277.366	0.116
4100.000	3.249	272.269	4098.209	13.168	-106.183	13.168	106.997	277.069	0.117
4200.000	3.355	273.752	4198.043	13.471	-111.935	13.471	112.742	276.863	0.136
4300.000	3.461	275.236	4297.866	13.938	-117.860	13.938	118.682	276.745	0.138
4400.000	3.376	272.620	4397.689	14.348	-123.807	14.348	124.636	276.611	0.178
4500.000	3.290	270.003	4497.519	14.483	-129.618	14.483	130.424	276.376	0.174
4600.000	2.754	268.299	4597.380	14.412	-134.888	14.412	135.656	276.099	0.543
4700.000	2.218	266.595	4697.286	14.226	-139.221	14.226	139.946	275.834	0.541
4800.000	2.158	268.856	4797.213	14.073	-143.035	14.073	143.726	275.619	0.105
4900.000	2.097	271.117	4897.144	14.071	-146.746	14.071	147.419	275.477	0.103
5000.000	1.929	266.651	4997.082	14.008	-150.256	14.008	150.908	275.326	0.229
5100.000	1.762	262.184	5097.030	13.701	-153.460	13.701	154.070	275.102	0.221
5200.000	1.784	258.849	5196.982	13.191	-156.511	13.191	157.065	274.818	0.106
5300.000	1.807	255.513	5296.933	12.495	-159.565	12.495	160.053	274.478	0.107
5400.000	1.647	257.413	5396.888	11.788	-162.494	11.788	162.921	274.149	0.170
5500.000	1.487	259.314	5496.850	11.234	-165.171	11.234	165.553	273.891	0.168
5600.000	1.405	249.828	5596.819	10.571	-167.597	10.571	167.930	273.609	0.253
5700.000	1.323	240.341	5696.790	9.577	-169.751	9.577	170.021	273.229	0.240
5800.000	1.409	234.506	5796.762	8.291	-171.756	8.291	171.956	272.764	0.164
5900.000	1.496	228.670	5896.730	6.715	-173.737	6.715	173.867	272.213	0.171
6000.000	1.473	228.463	5996.696	5.001	-175.679	5.001	175.751	271.630	0.024
6100.000	1.450	228.255	6096.664	3.306	-177.586	3.306	177.616	271.067	0.024

VES Survey Date: 04/03/2013

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
6200.000	1.259	231.441	6196.636	1.779	-179.389	1.779	179.397	270.568	0.205
6300.000	1.068	234.627	6296.615	0.555	-181.008	0.555	181.008	270.176	0.202
6400.000	2.017	234.192	6396.578	-1.014	-183.194	-1.014	183.197	269.683	0.949
6500.000	2.965	233.757	6496.482	-3.573	-186.707	-3.573	186.741	268.904	0.949
19.8' Ellipse Uncertainty									
6600.000	2.984	229.428	6596.348	-6.795	-190.770	-6.795	190.891	267.960	0.225

VES Survey Date: 04/03/2013