



Company: Noble Energy
Rig: Production/VES
API # 05-123-33746
Date: 6/19/2013
Surveyor: Nick Kula
VS: 0.000
Lat : 40.24553
Long: -104.5490

Well: Guttersen D09-27D
Location: Weld County, Colorado
North Reference: GRID
Convergence: Grid north is -0.61 of Tr
Declination: 8.47
Depth Reference: Ground Level
Elevation: 4719'
Total Depth as Drilled: 7208'

Lat & Long obtained by handheld GPS at wellhead

HA Gyro Survey Calculations

Depth	Inc	AzG	N/-S	E/-W	TVD	DL	VS	CD	Cbrg
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
100.000	0.815	190.248	-0.700	-0.127	99.997	0.815	-0.700	0.711	190.248
200.000	0.686	244.355	-1.659	-0.793	199.989	0.692	-1.659	1.839	205.541
300.000	0.599	258.943	-2.019	-1.845	299.983	0.185	-2.019	2.735	222.434
400.000	0.601	268.937	-2.129	-2.883	399.978	0.105	-2.129	3.583	233.559
500.000	0.619	314.047	-1.763	-3.796	499.972	0.468	-1.763	4.185	245.088
600.000	0.923	301.460	-0.967	-4.871	599.963	0.346	-0.967	4.966	258.772
700.000	1.292	313.399	0.228	-6.377	699.945	0.433	0.228	6.381	272.048
800.000	1.640	312.374	1.967	-8.253	799.912	0.349	1.967	8.484	283.405
900.000	4.321	315.141	5.602	-11.968	899.767	2.684	5.602	13.214	295.084
1000.000	6.634	310.230	12.004	-19.036	999.305	2.358	12.004	22.505	302.235
1100.000	8.413	320.419	21.373	-28.108	1098.444	2.217	21.373	35.311	307.250
1200.000	10.567	321.861	34.224	-38.432	1197.070	2.167	34.224	51.462	311.685
1300.000	12.762	323.127	50.273	-50.724	1294.999	2.210	50.273	71.416	314.744
1400.000	15.004	316.480	68.498	-66.268	1392.078	2.749	68.498	95.307	315.948
1500.000	15.386	314.012	87.103	-84.723	1488.583	0.751	87.103	121.511	315.793
1600.000	15.374	315.836	105.829	-103.499	1585.002	0.484	105.829	148.027	315.638
1700.000	15.985	312.998	124.729	-122.806	1681.282	0.981	124.729	175.039	315.445
1800.000	16.059	315.177	143.930	-142.627	1777.398	0.606	143.930	202.628	315.261
1900.000	15.771	316.250	163.557	-161.775	1873.565	0.412	163.557	230.048	315.314
2000.000	15.137	314.367	182.504	-180.506	1969.950	0.808	182.504	256.691	315.315
2100.000	14.567	315.064	200.536	-198.722	2066.609	0.597	200.536	282.321	315.260
2200.000	13.611	316.443	217.966	-215.713	2163.600	1.014	217.966	306.661	315.298
2300.000	13.467	316.276	234.907	-231.869	2260.821	0.149	234.907	330.068	315.373
2400.000	13.792	317.764	252.147	-247.929	2358.005	0.478	252.147	353.620	315.483
2500.000	13.926	318.435	269.976	-263.925	2455.094	0.210	269.976	377.550	315.649
2600.000	14.044	315.343	287.611	-280.438	2552.131	0.756	287.611	401.703	315.723
2700.000	15.068	313.552	305.198	-298.387	2648.921	1.118	305.198	426.826	315.647
2800.000	14.703	316.063	323.293	-316.612	2745.566	0.741	323.293	452.506	315.598
2900.000	14.423	315.166	341.263	-334.198	2842.353	0.359	341.263	477.649	315.599
3000.000	14.460	316.024	359.079	-351.648	2939.194	0.217	359.079	502.588	315.599
3100.000	14.152	314.253	376.595	-369.074	3036.093	0.536	376.595	527.294	315.578
3200.000	14.232	314.661	393.766	-386.573	3133.041	0.128	393.766	551.806	315.528
3300.000	13.343	317.121	410.862	-403.168	3230.160	1.064	410.862	575.632	315.542
3400.000	14.344	315.954	428.223	-419.633	3327.254	1.039	428.223	599.555	315.580
3500.000	15.739	315.885	446.865	-437.687	3423.825	1.395	446.865	625.506	315.594

3600.000	16.550	320.224	467.549	-456.241	3519.884	1.453	467.549	653.267	315.701
3700.000	16.613	317.715	489.072	-474.972	3615.727	0.719	489.072	681.755	315.838
3800.000	17.431	318.012	510.781	-494.611	3711.345	0.823	510.781	711.011	315.921
3900.000	17.743	317.149	533.085	-514.994	3806.671	0.407	533.085	741.214	315.989
4000.000	17.196	316.640	555.004	-535.506	3902.058	0.568	555.004	771.230	316.024
4100.000	17.291	320.222	577.173	-555.164	3997.566	1.066	577.173	800.834	316.113
4200.000	17.931	316.725	599.802	-575.226	4092.882	1.236	599.802	831.052	316.198
4300.000	16.159	317.883	621.333	-595.112	4188.486	1.804	621.333	860.356	316.235
4400.000	15.012	318.478	641.352	-613.030	4284.808	1.157	641.352	887.208	316.293
4500.000	13.821	315.869	659.623	-629.933	4381.658	1.357	659.623	912.095	316.319
4600.000	11.913	319.593	676.057	-644.941	4479.144	2.080	676.057	934.346	316.349
4700.000	9.761	319.036	690.318	-657.190	4577.355	2.154	690.318	953.120	316.408
4800.000	7.314	321.029	701.670	-666.752	4676.240	2.464	701.670	967.935	316.462
4900.000	4.744	329.311	710.176	-672.867	4775.680	2.707	710.176	978.315	316.545
5000.000	2.091	329.524	715.305	-675.903	4875.493	2.653	715.305	984.127	316.622
5100.000	1.278	340.307	717.927	-677.204	4975.450	0.869	717.927	986.927	316.672
5200.000	0.784	51.906	719.399	-677.041	5075.437	1.271	719.399	987.886	316.737
5300.000	1.177	57.707	720.370	-675.634	5175.422	0.404	720.370	987.631	316.835
5400.000	1.596	56.700	721.682	-673.603	5275.392	0.420	721.682	987.201	316.974
5500.000	1.182	69.783	722.803	-671.471	5375.363	0.519	722.803	986.569	317.108
5600.000	0.840	90.082	723.159	-669.771	5475.348	0.490	723.159	985.673	317.195
5700.000	0.804	95.772	723.087	-668.339	5575.337	0.089	723.087	984.648	317.253
5800.000	0.324	93.512	722.999	-667.359	5675.332	0.480	722.999	983.918	317.292
5900.000	0.662	126.322	722.639	-666.611	5775.329	0.427	722.639	983.147	317.309
6000.000	0.141	182.116	722.175	-666.150	5875.326	0.595	722.175	982.493	317.311
6100.000	0.419	147.294	721.744	-665.957	5975.325	0.314	721.744	982.045	317.302
6200.000	0.368	200.852	721.136	-665.873	6075.323	0.358	721.136	981.541	317.282
6300.000	0.475	206.919	720.466	-666.175	6175.320	0.115	720.466	981.255	317.242
6400.000	0.521	143.380	719.731	-666.091	6275.317	0.526	719.731	980.659	317.217
6500.000	0.325	101.164	719.311	-665.541	6375.314	0.355	719.311	979.977	317.224
6600.000	0.328	279.571	719.304	-665.545	6475.314	0.653	719.304	979.973	317.223
6700.000	0.530	181.227	718.889	-665.837	6575.312	0.662	718.889	979.867	317.194
6800.000	0.352	152.931	718.153	-665.707	6675.309	0.276	718.153	979.239	317.170
6900.000	0.513	131.757	717.582	-665.233	6775.306	0.224	717.582	978.498	317.168
6990.000	0.218	95.313	717.298	-664.762	6865.304	0.402	717.298	977.969	317.177

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