



Company: Noble Energy  
 Rig: Producton / V.E.S.  
 API # 05-123-33412  
 Date: 12/20/2013  
 Surveyor: Norman Cowan  
 VS: 0.000  
 Lat : 40.516  
 Long: -104.640

Well: Brown PC E02-31D  
 Location: Weld County, Colorado  
 North Reference: GRID  
 Convergence: Grid north is 0.56 Deg East of Tru  
 Declination: 8.47 Degrees  
 Depth Reference: Ground Level  
 Elevation: 4836 Feet  
 Total Depth as Drilled: 7463 Feet

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
100.000	0.141	64.415	0.053	0.111	100.000	0.141	0.053	0.123	64.415
200.000	0.292	88.521	0.113	0.477	199.999	0.173	0.113	0.490	76.681
300.000	1.465	12.804	1.366	1.015	299.987	1.422	1.366	1.702	36.604
400.000	3.794	12.211	5.847	1.998	399.875	2.329	5.847	6.179	18.866
500.000	5.292	14.901	13.537	3.884	499.558	1.513	13.537	14.083	16.008
600.000	5.961	14.839	23.012	6.399	599.076	0.670	23.012	23.886	15.540
700.000	5.934	15.834	33.005	9.140	698.538	0.107	33.005	34.247	15.478
800.000	6.846	16.596	43.689	12.252	797.915	0.916	43.689	45.375	15.666
900.000	9.250	14.467	57.185	15.963	896.924	2.423	57.185	59.372	15.597
1000.000	10.788	14.907	74.012	20.379	995.396	1.539	74.012	76.767	15.395
1100.000	12.390	16.930	93.321	25.911	1093.354	1.653	93.321	96.851	15.518
1200.000	13.503	16.383	114.786	32.328	1190.811	1.120	114.786	119.252	15.729
1300.000	14.570	17.439	137.988	39.391	1287.823	1.097	137.988	143.500	15.932
1400.000	15.641	13.350	163.105	46.273	1384.370	1.510	163.105	169.542	15.839
1500.000	16.535	10.794	190.200	52.051	1480.454	1.141	190.200	197.194	15.305
1600.000	16.863	14.079	218.248	58.245	1576.238	0.999	218.248	225.887	14.942
1700.000	16.691	18.260	245.955	66.273	1671.985	1.219	245.955	254.728	15.080
1800.000	16.451	16.156	273.194	74.712	1767.833	0.646	273.194	283.226	15.295
1900.000	16.381	17.644	300.232	82.926	1863.757	0.426	300.232	311.474	15.441
2000.000	15.538	15.658	326.567	90.815	1959.903	1.004	326.567	338.959	15.541
2100.000	15.718	18.045	352.343	98.626	2056.207	0.668	352.343	365.886	15.638
2200.000	15.853	21.999	377.886	107.939	2152.438	1.084	377.886	393.000	15.941
2300.000	15.235	19.068	402.969	117.348	2248.782	0.999	402.969	419.708	16.236
2400.000	14.216	11.522	427.422	124.094	2345.505	2.170	427.422	445.072	16.190
2500.000	14.932	8.555	452.194	128.463	2442.288	1.034	452.194	470.088	15.859
2600.000	12.835	10.251	475.867	132.357	2539.361	2.135	475.867	493.931	15.543
2700.000	13.245	17.592	497.720	137.796	2636.789	1.705	497.720	516.442	15.475
2800.000	14.276	23.320	519.964	146.140	2733.922	1.707	519.964	540.111	15.698
2900.000	16.374	22.716	544.291	156.465	2830.361	2.104	544.291	566.334	16.038
3000.000	17.411	18.387	571.493	166.628	2926.048	1.630	571.493	595.289	16.255
3100.000	16.892	18.821	599.442	176.035	3021.601	0.535	599.442	624.755	16.366
3200.000	16.201	17.007	626.534	184.802	3117.460	0.863	626.534	653.220	16.434
3300.000	16.480	15.588	653.536	192.694	3213.421	0.487	653.536	681.352	16.428
3400.000	16.926	17.114	681.111	200.789	3309.202	0.626	681.111	710.090	16.425
3500.000	14.980	17.756	707.334	209.015	3405.346	1.954	707.334	737.570	16.462

3600.000	14.951	16.749	731.996	216.674	3501.955	0.262	731.996	763.391	16.489
3700.000	14.631	15.430	756.523	223.752	3598.641	0.465	756.523	788.918	16.476
3800.000	13.769	13.196	780.284	229.829	3695.585	1.022	780.284	813.428	16.412
3900.000	12.779	12.587	802.664	234.956	3792.913	1.000	802.664	836.346	16.316
4000.000	12.556	13.621	824.021	239.926	3890.479	0.318	824.021	858.240	16.234
4100.000	13.156	13.096	845.670	245.064	3987.972	0.611	845.670	880.462	16.161
4200.000	13.593	12.610	868.222	250.208	4085.259	0.451	868.222	903.556	16.076
4300.000	13.163	14.161	890.729	255.560	4182.546	0.560	890.729	926.666	16.009
4400.000	12.787	9.983	912.669	260.264	4279.995	1.010	912.669	949.053	15.916
4500.000	13.827	13.166	935.205	264.904	4377.309	1.272	935.205	972.000	15.815
4600.000	14.306	20.542	958.413	271.962	4474.318	1.854	958.413	996.252	15.842
4700.000	13.474	20.433	980.899	280.365	4571.393	0.833	980.899	1020.180	15.951
4800.000	14.537	17.360	1003.796	288.177	4668.421	1.297	1003.796	1044.343	16.018
4900.000	15.200	16.636	1028.335	295.675	4765.072	0.688	1028.335	1069.999	16.041
5000.000	12.005	16.981	1050.849	302.467	4862.254	3.196	1050.849	1093.512	16.057
5100.000	10.282	16.004	1069.375	307.966	4960.365	1.734	1069.375	1112.837	16.066
5200.000	8.774	23.137	1084.968	313.423	5058.987	1.912	1084.968	1129.332	16.113
5300.000	7.287	38.419	1096.952	320.362	5158.015	2.589	1096.952	1142.776	16.280
5400.000	3.284	47.934	1103.843	326.432	5257.571	4.084	1103.843	1151.099	16.474
5500.000	1.396	49.394	1106.555	329.484	5357.483	1.890	1106.555	1154.567	16.581
5600.000	1.458	50.780	1108.152	331.394	5457.452	0.071	1108.152	1156.643	16.649
5700.000	1.706	55.113	1109.808	333.600	5557.414	0.275	1109.808	1158.862	16.730
5800.000	1.375	109.125	1110.266	335.954	5657.382	1.429	1110.266	1159.981	16.835
5900.000	1.046	145.103	1109.124	337.611	5757.361	0.811	1109.124	1159.369	16.930
6000.000	0.677	229.418	1107.990	337.684	5857.353	1.189	1107.990	1158.306	16.950
6100.000	0.531	195.961	1107.160	337.108	5957.348	0.375	1107.160	1157.344	16.934
6200.000	0.517	163.663	1106.281	337.107	6057.344	0.292	1106.281	1156.503	16.947
6300.000	0.844	141.467	1105.272	337.693	6157.337	0.414	1105.272	1155.709	16.989
6400.000	0.967	127.671	1104.181	338.820	6257.324	0.250	1104.181	1154.995	17.059
6500.000	1.112	124.943	1103.109	340.283	6357.308	0.153	1103.109	1154.401	17.144
6600.000	1.518	119.675	1101.897	342.230	6457.281	0.422	1101.897	1153.819	17.254
6700.000	1.867	126.430	1100.274	344.691	6557.238	0.402	1100.274	1153.003	17.395
6800.000	1.694	144.712	1098.101	346.855	6657.190	0.591	1098.101	1151.579	17.530
6900.000	1.398	150.204	1095.835	348.315	6757.154	0.330	1095.835	1149.860	17.633
7000.000	1.421	144.310	1093.770	349.645	6857.124	0.147	1093.770	1148.296	17.727
7100.000	1.511	133.729	1091.852	351.320	6957.091	0.285	1091.852	1146.982	17.836

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