



Company: Noble Energy
Rig: Production / V.E.S.

API # 05-123-32516

Date: 9/21/2013

Surveyor: Norman Cowan

VS: 0.000

Lat : 40.345

Long: -104.613

Well: Weidenkeller PC G01-31D

Location: Weld County, Colorado

North Reference: GRID

Convergence: Grid North is 0.57 Deg East of True

Declination: 8.47 Degrees

Depth Reference: Ground Level

Elevation: 4755 Feet

Total Depth as Drilled: 7675 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	0.283	27.453	0.219	0.114	100.000	0.283	0.219	0.247	27.453
200.000	0.155	23.281	0.563	0.281	199.999	0.129	0.563	0.629	26.557
300.000	0.125	332.994	0.784	0.285	299.999	0.122	0.784	0.834	20.007
400.000	1.084	180.287	-0.065	0.231	399.993	1.196	-0.065	0.240	105.720
500.000	3.279	172.900	-3.849	0.580	499.915	2.208	-3.849	3.893	171.429
600.000	5.739	180.924	-11.688	0.853	599.598	2.534	-11.688	11.719	175.826
700.000	7.368	191.710	-22.967	-0.529	698.945	2.034	-22.967	22.973	181.320
800.000	7.767	198.672	-35.648	-3.994	798.076	0.999	-35.648	35.871	186.393
900.000	9.160	214.819	-48.586	-10.703	896.999	2.741	-48.586	49.751	192.424
1000.000	10.688	224.254	-61.764	-21.721	995.506	2.227	-61.764	65.473	199.375
1100.000	12.135	234.020	-74.584	-36.700	1093.536	2.409	-74.584	83.124	206.200
1200.000	13.706	242.895	-86.159	-55.755	1191.011	2.527	-86.159	102.625	212.908
1300.000	15.579	248.547	-96.469	-78.802	1287.763	2.353	-96.469	124.564	219.244
1400.000	16.961	251.801	-105.937	-105.159	1383.758	1.655	-105.937	149.268	224.789
1500.000	18.752	254.632	-114.753	-134.517	1478.939	1.990	-114.753	176.814	229.533
1600.000	19.259	257.205	-122.665	-166.099	1573.489	0.980	-122.665	206.485	233.554
1700.000	20.434	257.440	-130.114	-199.222	1667.548	1.178	-130.114	237.948	236.851
1800.000	22.899	259.676	-137.399	-235.408	1760.477	2.598	-137.399	272.571	239.730
1900.000	25.576	260.993	-144.266	-275.875	1851.655	2.731	-144.266	311.319	242.393
2000.000	26.999	260.771	-151.286	-319.600	1941.311	1.426	-151.286	353.598	244.669
2100.000	26.071	258.522	-159.300	-363.542	2030.778	1.367	-159.300	396.912	246.338
2200.000	25.828	258.916	-167.861	-406.454	2120.696	0.298	-167.861	439.753	247.560
2300.000	26.399	258.924	-176.320	-449.649	2210.488	0.571	-176.320	482.983	248.588
2400.000	25.611	258.580	-184.870	-492.652	2300.363	0.802	-184.870	526.197	249.431
2500.000	25.579	259.399	-193.121	-535.056	2390.550	0.355	-193.121	568.842	250.154
2600.000	26.370	258.657	-201.461	-578.051	2480.449	0.856	-201.461	612.151	250.786
2700.000	26.477	257.720	-210.571	-621.608	2570.002	0.431	-210.571	656.305	251.286
2800.000	27.307	258.888	-219.733	-665.899	2659.188	0.983	-219.733	701.216	251.738
2900.000	27.616	258.085	-228.939	-711.085	2747.920	0.482	-228.939	747.031	252.154
3000.000	27.754	257.128	-238.911	-756.462	2836.472	0.466	-238.911	793.292	252.472
3100.000	26.627	256.775	-249.226	-800.977	2925.420	1.139	-249.226	838.855	252.716
3200.000	23.542	256.745	-258.933	-842.240	3015.977	3.085	-258.933	881.144	252.911
3300.000	24.325	257.979	-267.802	-881.824	3107.379	0.929	-267.802	921.592	253.107
3400.000	24.825	257.691	-276.567	-922.478	3198.320	0.515	-276.567	963.045	253.311
3500.000	22.212	259.683	-284.429	-961.591	3290.007	2.732	-284.429	1002.775	253.522

3600.000	21.799	263.049	-290.062	-998.620	3382.725	1.327	-290.062	1039.893	253.803
3700.000	22.425	263.564	-294.447	-1036.000	3475.370	0.655	-294.447	1077.034	254.134
3800.000	21.753	265.160	-298.148	-1073.420	3568.031	0.901	-298.148	1114.059	254.477
3900.000	20.426	262.769	-301.909	-1109.200	3661.333	1.582	-301.909	1149.553	254.774
4000.000	22.928	261.771	-306.894	-1145.790	3754.254	2.529	-306.894	1186.182	255.006
4100.000	24.322	260.607	-313.043	-1185.390	3845.871	1.470	-313.043	1226.029	255.207
4200.000	24.948	257.793	-320.864	-1226.320	3936.772	1.330	-320.864	1267.605	255.337
4300.000	24.459	256.870	-330.026	-1267.100	4027.620	0.623	-330.026	1309.371	255.401
4400.000	23.620	254.858	-339.962	-1306.600	4118.947	1.173	-339.962	1350.100	255.416
4500.000	25.510	258.319	-349.556	-1347.030	4209.897	2.374	-349.556	1391.645	255.453
4600.000	28.571	258.533	-358.671	-1391.560	4298.955	3.063	-358.671	1437.041	255.547
4700.000	29.318	256.323	-369.214	-1438.790	4386.466	1.305	-369.214	1485.405	255.608
4800.000	29.496	255.299	-381.251	-1486.390	4473.582	0.533	-381.251	1534.504	255.614
4900.000	28.980	253.688	-394.303	-1533.450	4560.843	0.941	-394.303	1583.335	255.580
5000.000	26.672	253.351	-407.539	-1578.210	4649.274	2.314	-407.539	1629.981	255.521
5100.000	24.846	252.097	-420.429	-1619.710	4739.334	1.906	-420.429	1673.386	255.449
5200.000	22.827	249.724	-433.611	-1657.900	4830.802	2.235	-433.611	1713.667	255.343
5300.000	20.646	250.768	-446.141	-1692.750	4923.686	2.215	-446.141	1750.552	255.235
5400.000	22.200	255.748	-456.601	-1727.710	5016.782	2.392	-456.601	1787.025	255.196
5500.000	21.947	256.853	-465.502	-1764.220	5109.453	0.486	-465.502	1824.597	255.219
5600.000	18.498	253.248	-474.328	-1797.620	5203.278	3.666	-474.328	1859.142	255.219
5700.000	16.482	253.519	-482.925	-1826.410	5298.650	2.017	-482.925	1889.179	255.189
5800.000	15.614	254.950	-490.445	-1853.010	5394.753	0.954	-490.445	1916.817	255.175
5900.000	11.423	257.018	-496.166	-1875.670	5491.961	4.218	-496.166	1940.183	255.183
6000.000	12.359	262.849	-499.723	-1895.940	5589.818	1.522	-499.723	1960.688	255.234
6100.000	10.542	265.005	-501.852	-1915.670	5687.824	1.866	-501.852	1980.314	255.320
6200.000	8.604	259.368	-504.029	-1932.140	5786.429	2.150	-504.029	1996.796	255.379
6300.000	6.921	256.719	-506.794	-1945.350	5885.509	1.720	-506.794	2010.284	255.398
6400.000	5.050	254.154	-509.380	-1955.450	5984.959	1.890	-509.380	2020.709	255.399
6500.000	3.785	246.469	-511.900	-1962.710	6084.661	1.394	-511.900	2028.370	255.382
6600.000	2.451	240.715	-514.263	-1967.600	6184.511	1.368	-514.263	2033.700	255.353
6700.000	1.717	246.009	-515.918	-1970.840	6284.444	0.759	-515.918	2037.247	255.331
6800.000	0.877	256.014	-516.712	-1972.950	6384.418	0.866	-516.712	2039.490	255.324
6900.000	0.502	247.710	-517.064	-1974.100	6484.411	0.387	-517.064	2040.690	255.323
7000.000	0.469	303.156	-517.006	-1974.850	6584.408	0.453	-517.006	2041.400	255.329
7100.000	0.567	302.919	-516.513	-1975.600	6684.403	0.098	-516.513	2042.009	255.348
7200.000	0.415	319.495	-515.969	-1976.260	6784.400	0.207	-515.969	2042.501	255.368
7300.000	0.465	336.002	-515.323	-1976.660	6884.397	0.135	-515.323	2042.725	255.388
7400.000	0.654	2.006	-514.382	-1976.800	6984.392	0.312	-514.382	2042.628	255.415

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