



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

**API #** 05-123-21445

**Date:** 11/6/2013

**Surveyor:** Norman Cowan

**VS:** 0.000

**Lat :** 40.272

**Long:** -104.598

**Well:** Walters C 31-19

**Location:** Weld County, Colorado

**North Reference:** GRID

**Convergence:** Grid North is 0.58 Deg East of True

**Declination:** 8.44 Degrees

**Depth Reference:** Ground Level

**Elevation:** 4870 Feet

**Total Depth as Drilled:** 7264 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	1.216	296.646	0.476	-0.949	99.992	1.216	0.476	1.061	296.646
200.000	0.752	339.935	1.568	-2.122	199.979	0.845	1.568	2.639	306.460
300.000	0.945	283.775	2.381	-3.148	299.969	0.817	2.381	3.947	307.096
400.000	0.840	313.418	3.081	-4.482	399.958	0.468	3.081	5.439	304.506
500.000	0.915	309.319	4.091	-5.632	499.946	0.097	4.091	6.961	305.993
600.000	1.014	315.167	5.224	-6.874	599.932	0.139	5.224	8.633	307.236
700.000	0.589	9.600	6.358	-7.412	699.923	0.825	6.358	9.765	310.626
800.000	0.826	8.765	7.578	-7.216	799.915	0.238	7.578	10.464	316.401
900.000	1.046	329.895	9.080	-7.564	899.903	0.657	9.080	11.818	320.205
1000.000	0.843	346.484	10.586	-8.194	999.889	0.339	10.586	13.387	322.258
1100.000	0.749	322.671	11.821	-8.762	1099.880	0.341	11.821	14.714	323.452
1200.000	1.307	344.627	13.440	-9.461	1199.864	0.674	13.440	16.436	324.858
1300.000	1.267	348.690	15.624	-9.980	1299.839	0.100	15.624	18.540	327.432
1400.000	0.888	318.715	17.291	-10.708	1399.822	0.667	17.291	20.338	328.231
1500.000	1.380	323.649	18.842	-11.933	1499.802	0.501	18.842	22.303	327.655
1600.000	1.152	329.374	20.677	-13.158	1599.777	0.260	20.677	24.509	327.528
1700.000	1.156	325.110	22.370	-14.248	1699.757	0.086	22.370	26.522	327.506
1800.000	1.178	328.576	24.075	-15.361	1799.736	0.074	24.075	28.558	327.460
1900.000	1.147	329.468	25.815	-16.405	1899.716	0.036	25.815	30.586	327.564
2000.000	1.082	336.186	27.540	-17.295	1999.697	0.146	27.540	32.521	327.872
2100.000	1.176	344.727	29.394	-17.947	2099.678	0.193	29.394	34.440	328.594
2200.000	1.199	4.838	31.426	-18.129	2199.656	0.415	31.426	36.280	330.021
2300.000	1.121	9.245	33.434	-17.883	2299.636	0.118	33.434	37.916	331.858
2400.000	1.450	27.566	35.521	-17.141	2399.611	0.522	35.521	39.441	334.241
2500.000	1.499	36.754	37.691	-15.772	2499.578	0.241	37.691	40.858	337.292
2600.000	1.497	45.229	39.659	-14.063	2599.544	0.221	39.659	42.078	340.476
2700.000	1.540	45.215	41.525	-12.182	2699.509	0.043	41.525	43.275	343.650
2800.000	1.486	48.578	43.329	-10.256	2799.474	0.104	43.329	44.526	346.683
2900.000	1.460	51.118	44.986	-8.292	2899.441	0.070	44.986	45.744	349.556
3000.000	1.613	55.919	46.575	-6.135	2999.405	0.200	46.575	46.977	352.496
3100.000	1.420	72.033	47.746	-3.791	3099.371	0.466	47.746	47.896	355.460
3200.000	1.248	80.139	48.314	-1.540	3199.344	0.255	48.314	48.339	358.175
3300.000	1.037	95.109	48.420	0.434	3299.324	0.364	48.420	48.422	0.514
3400.000	0.808	121.305	47.973	1.938	3399.311	0.474	47.973	48.012	2.313
3500.000	0.957	128.746	47.084	3.192	3499.299	0.188	47.084	47.192	3.879

3600.000	0.989	133.599	45.965	4.469	3599.285	0.088	45.965	46.182	5.553
3700.000	1.214	130.268	44.686	5.902	3699.266	0.233	44.686	45.074	7.524
3800.000	1.343	132.044	43.217	7.580	3799.242	0.135	43.217	43.876	9.949
3900.000	1.562	134.428	41.478	9.424	3899.209	0.227	41.478	42.535	12.800
4000.000	1.405	143.592	39.538	11.124	3999.176	0.284	39.538	41.073	15.714
4100.000	0.871	148.424	37.904	12.250	4099.156	0.542	37.904	39.834	17.909
4200.000	0.463	179.712	36.853	12.649	4199.149	0.533	36.853	38.963	18.944
4300.000	0.669	193.442	35.881	12.516	4299.144	0.245	35.881	38.001	19.229
4400.000	0.701	202.435	34.748	12.147	4399.137	0.112	34.748	36.810	19.268
4500.000	0.670	198.571	33.629	11.727	4499.130	0.055	33.629	35.615	19.225
4600.000	0.781	220.552	32.557	11.098	4599.122	0.297	32.557	34.396	18.823
4700.000	0.930	234.641	31.569	9.992	4699.111	0.257	31.569	33.112	17.564
4800.000	1.044	236.977	30.602	8.566	4799.096	0.121	30.602	31.778	15.638
4900.000	1.135	216.919	29.314	7.207	4899.079	0.390	29.314	30.187	13.813
5000.000	1.712	206.032	27.180	5.957	4999.047	0.635	27.180	27.825	12.361
5100.000	1.789	199.536	24.366	4.779	5099.001	0.213	24.366	24.831	11.097
5200.000	1.795	194.782	21.381	3.857	5198.952	0.149	21.381	21.726	10.227
5300.000	1.240	183.834	18.787	3.385	5298.917	0.624	18.787	19.090	10.215
5400.000	0.974	190.774	16.872	3.154	5398.898	0.297	16.872	17.165	10.589
5500.000	1.134	196.116	15.086	2.720	5498.881	0.188	15.086	15.329	10.222
5600.000	1.080	184.950	13.197	2.364	5598.863	0.222	13.197	13.407	10.158
5700.000	0.775	198.088	11.615	2.073	5698.849	0.370	11.615	11.799	10.120
5800.000	0.869	133.229	10.453	2.416	5798.841	0.885	10.453	10.728	13.012
5900.000	0.621	113.791	9.715	3.464	5898.833	0.350	9.715	10.314	19.625
6000.000	1.099	107.743	9.204	4.874	5998.821	0.486	9.204	10.415	27.902
6100.000	1.114	108.910	8.597	6.707	6098.803	0.027	8.597	10.903	37.959
6200.000	1.124	118.795	7.809	8.485	6198.784	0.193	7.809	11.532	47.374
6300.000	0.971	132.340	6.766	9.971	6298.767	0.290	6.766	12.050	55.838
6400.000	1.151	127.527	5.584	11.394	6398.750	0.200	5.584	12.688	63.891
6500.000	1.147	144.129	4.161	12.776	6498.730	0.332	4.161	13.437	71.959
6600.000	0.781	159.550	2.712	13.601	6598.716	0.445	2.712	13.869	78.724
6700.000	1.236	172.700	1.003	13.976	6698.700	0.507	1.003	14.012	85.894
6800.000	1.648	191.174	-1.477	13.835	6798.669	0.616	-1.477	13.913	96.093
6900.000	1.722	222.866	-3.988	12.534	6898.628	0.923	-3.988	13.153	107.652
7000.000	0.798	237.282	-5.466	10.926	6998.603	0.970	-5.466	12.217	116.578
7050.000	1.002	260.300	-5.728	10.202	7048.597	0.822	-5.728	11.700	119.311

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