



**Company:** Noble Energy  
**Rig:** Production  
**API #** 05-123-32256  
**Date:** 12/28/13  
**Surveyor:** Brian Brewbaker  
**VS:** 0.000  
**Lat :** 40.48302  
**Long:** -104.46

**Well:** Bashor PC AA 17-24  
**Location:** Weld County, Colorado  
**North Reference:** GRID  
**Convergence:** Grid north is 0.67 degrees East of  
**Declination:** 8.37  
**Depth Reference:** Ground Level  
**Elevation:** 4670  
**Total Depth as Drilled:** 6928

**Lat & Long obtained by handheld GPS at wellhead**

HA Gyro Survey Calculations

Depth	Inc	AzG	N/-S	E/-W	TVD	DL	VS	CD	Cbrg
100.000	0.945	346.959	0.804	-0.186	99.995	0.945	0.804	0.825	346.959
200.000	0.771	358.892	2.280	-0.385	199.984	0.248	2.280	2.313	350.409
300.000	0.544	47.514	3.274	-0.048	299.978	0.580	3.274	3.274	359.154
400.000	1.754	113.250	2.990	1.708	399.959	1.609	2.990	3.444	29.738
500.000	3.321	120.687	0.908	5.606	499.858	1.597	0.908	5.679	80.801
600.000	3.400	127.374	-2.370	10.452	599.687	0.400	-2.370	10.718	102.776
700.000	3.383	122.230	-5.743	15.304	699.512	0.305	-5.743	16.347	110.570
800.000	3.130	118.382	-8.614	20.202	799.351	0.334	-8.614	21.962	113.094
900.000	2.803	119.422	-11.113	24.733	899.216	0.331	-11.113	27.115	114.195
1000.000	2.865	117.278	-13.460	29.084	999.094	0.123	-13.460	32.047	114.834
1100.000	2.664	113.976	-15.549	33.429	1098.978	0.257	-15.549	36.868	114.946
1200.000	2.280	116.520	-17.382	37.332	1198.885	0.399	-17.382	41.181	114.967
1300.000	1.853	110.770	-18.844	40.624	1298.819	0.475	-18.844	44.781	114.884
1400.000	1.745	115.577	-20.074	43.509	1398.770	0.185	-20.074	47.916	114.768
1500.000	1.514	113.524	-21.259	46.093	1498.730	0.239	-21.259	50.760	114.760
1600.000	1.247	112.390	-22.201	48.311	1598.701	0.268	-22.201	53.167	114.681
1700.000	0.758	102.691	-22.760	49.962	1698.685	0.516	-22.760	54.902	114.492
1800.000	0.434	80.738	-22.845	50.981	1798.680	0.391	-22.845	55.865	114.137
1900.000	0.560	95.855	-22.834	51.840	1898.676	0.181	-22.834	56.646	113.772
2000.000	0.141	215.362	-22.984	52.255	1998.674	0.641	-22.984	57.086	113.742
2100.000	1.022	188.836	-23.965	52.047	2098.668	0.898	-23.965	57.299	114.724
2200.000	1.102	218.824	-25.595	51.307	2198.652	0.555	-25.595	57.337	116.513
2300.000	1.340	216.339	-27.286	50.012	2298.629	0.245	-27.286	56.971	118.617
2400.000	1.252	208.103	-29.192	48.804	2398.604	0.206	-29.192	56.868	120.886
2500.000	1.257	200.494	-31.183	47.905	2498.580	0.167	-31.183	57.160	123.062
2600.000	0.993	243.218	-32.601	46.747	2598.562	0.855	-32.601	56.992	124.891
2700.000	0.911	233.378	-33.466	45.336	2698.548	0.183	-33.466	56.350	126.434
2800.000	0.621	247.053	-34.152	44.198	2798.539	0.341	-34.152	55.855	127.693
2900.000	0.794	267.709	-34.391	43.006	2898.532	0.305	-34.391	55.066	128.648
3000.000	0.597	233.361	-34.729	41.896	2998.525	0.452	-34.729	54.419	129.656
3100.000	1.032	258.423	-35.220	40.596	3098.515	0.553	-35.220	53.745	130.944
3200.000	0.992	252.599	-35.660	38.887	3198.499	0.110	-35.660	52.762	132.521
3300.000	0.153	326.522	-35.808	37.987	3298.494	0.961	-35.808	52.204	133.309
3400.000	0.637	82.391	-35.623	38.465	3398.492	0.717	-35.623	52.427	132.803
3500.000	1.282	75.222	-35.264	40.098	3498.477	0.654	-35.264	53.398	131.330
3600.000	1.018	64.870	-34.602	41.984	3598.457	0.335	-34.602	54.405	129.494

3700.000	1.051	59.642	-33.761	43.579	3698.441	0.100	-33.761	55.126	127.765
3800.000	1.297	59.344	-32.720	45.344	3798.420	0.246	-32.720	55.917	125.815
3900.000	1.275	47.849	-31.397	47.142	3898.395	0.258	-31.397	56.640	123.664
4000.000	1.244	51.171	-29.970	48.812	3998.371	0.079	-29.970	57.278	121.549
4100.000	1.192	63.626	-28.828	50.589	4098.348	0.269	-28.828	58.226	119.676
4200.000	1.644	66.870	-27.802	52.840	4198.317	0.460	-27.802	59.708	117.752
4300.000	2.001	70.924	-26.668	55.809	4298.267	0.379	-26.668	61.854	115.540
4400.000	2.022	85.694	-25.965	59.219	4398.206	0.517	-25.965	64.661	113.675
4500.000	1.632	359.185	-24.408	60.958	4498.170	2.520	-24.408	65.663	111.821
4600.000	1.447	340.755	-21.792	60.522	4598.135	0.526	-21.792	64.326	109.802
4700.000	2.846	337.192	-18.311	59.143	4698.062	1.404	-18.311	61.913	107.203
4800.000	4.782	324.332	-12.636	55.750	4797.838	2.105	-12.636	57.164	102.770
4900.000	5.132	318.925	-5.878	50.381	4897.464	0.584	-5.878	50.723	96.654
5000.000	5.691	319.262	1.251	44.207	4997.018	0.559	1.251	44.224	88.380
5100.000	4.013	324.009	7.838	38.915	5096.657	1.724	7.838	39.697	78.612
5200.000	2.699	328.121	12.669	35.615	5196.483	1.335	12.669	37.801	70.419
5300.000	1.718	313.580	15.701	33.286	5296.408	1.122	15.701	36.803	64.746
5400.000	0.877	336.725	17.438	31.898	5396.383	0.974	17.438	36.353	61.335
5500.000	0.230	9.910	18.339	31.630	5496.377	0.696	18.339	36.562	59.894
5600.000	0.638	117.957	18.276	32.156	5596.375	0.742	18.276	36.987	60.388
5700.000	1.231	120.340	17.473	33.574	5696.362	0.594	17.473	37.849	62.507
5800.000	0.853	103.215	16.760	35.226	5796.345	0.486	16.760	39.010	64.556
5900.000	1.483	92.806	16.526	37.243	5896.324	0.663	16.526	40.745	66.071
6000.000	1.104	99.685	16.301	39.486	5996.298	0.409	16.301	42.718	67.568
6100.000	1.524	122.490	15.424	41.557	6096.273	0.663	15.424	44.328	69.637
6200.000	1.588	115.574	14.112	43.929	6196.236	0.198	14.112	46.140	72.191
6300.000	1.749	111.021	12.966	46.604	6296.193	0.208	12.966	48.374	74.452
6400.000	2.614	117.316	11.372	50.054	6396.120	0.897	11.372	51.330	77.200
6500.000	2.160	113.457	9.576	53.809	6496.033	0.481	9.576	54.654	79.909
6600.000	2.939	120.012	7.543	57.758	6595.934	0.831	7.543	58.248	82.559
6650.000	3.438	120.554	6.140	60.159	6645.856	0.999	6.140	60.471	84.173

True North