



**Company:** Noble Energy  
**Rig:** Production / VES  
**API #** 05-123-15412

**Date:** 11/6/2013  
**Surveyor:** CJ Hines

**VS:** 0.000  
**Lat :** 40.36803  
**Long:** -104.567

**Well:** Blake B #29-9  
**Location:** Weld County, Colorado  
**North Reference:** GRID  
**Convergence:** Grid north is 0.60 East of True Noi

**Declination:** 8.43  
**Depth Reference:** Ground Level  
**Elevation:** 4680

**Total Depth as Drilled:** 7083

**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	0.574	184.110	-0.500	-0.036	99.998	0.574	-0.500	0.501	184.110
200.000	0.193	216.790	-1.135	-0.173	199.996	0.425	-1.135	1.148	188.651
300.000	0.257	212.625	-1.459	-0.395	299.995	0.067	-1.459	1.511	195.134
400.000	0.142	262.014	-1.665	-0.638	399.995	0.197	-1.665	1.783	200.975
500.000	0.199	252.988	-1.733	-0.927	499.994	0.063	-1.733	1.965	208.140
600.000	0.350	237.845	-1.946	-1.351	599.993	0.166	-1.946	2.369	214.770
700.000	0.283	304.596	-1.968	-1.813	699.992	0.352	-1.968	2.676	222.643
800.000	0.292	314.771	-1.649	-2.197	799.991	0.052	-1.649	2.747	233.109
900.000	0.332	315.632	-1.263	-2.580	899.989	0.040	-1.263	2.872	243.921
1000.000	0.424	299.878	-0.871	-3.103	999.987	0.138	-0.871	3.223	254.314
1100.000	0.366	299.229	-0.531	-3.703	1099.985	0.058	-0.531	3.741	261.838
1200.000	0.476	309.459	-0.111	-4.303	1199.982	0.133	-0.111	4.304	268.523
1300.000	0.316	314.471	0.346	-4.820	1299.979	0.164	0.346	4.833	274.110
1400.000	0.375	324.547	0.806	-5.207	1399.978	0.084	0.806	5.269	278.796
1500.000	0.383	354.048	1.405	-5.431	1499.976	0.193	1.405	5.610	284.500
1600.000	0.471	5.158	2.146	-5.429	1599.973	0.120	2.146	5.838	291.573
1700.000	0.305	13.159	2.815	-5.331	1699.970	0.174	2.815	6.029	297.835
1800.000	0.362	3.711	3.389	-5.250	1799.969	0.079	3.389	6.249	302.846
1900.000	0.430	10.906	4.073	-5.159	1899.966	0.084	4.073	6.573	308.292
2000.000	0.468	7.771	4.846	-5.032	1999.963	0.046	4.846	6.986	313.920
2100.000	0.505	19.229	5.667	-4.832	2099.960	0.104	5.667	7.447	319.548
2200.000	0.473	32.001	6.433	-4.468	2199.956	0.113	6.433	7.833	325.217
2300.000	0.505	40.563	7.118	-3.963	2299.952	0.080	7.118	8.147	330.893
2400.000	0.267	76.560	7.507	-3.449	2399.950	0.329	7.507	8.262	335.324
2500.000	0.394	71.234	7.672	-2.897	2499.949	0.130	7.672	8.201	339.314
2600.000	0.082	28.350	7.846	-2.537	2599.948	0.338	7.846	8.246	342.077
2700.000	0.105	156.295	7.825	-2.466	2699.948	0.169	7.825	8.204	342.504
2800.000	0.161	116.267	7.678	-2.303	2799.947	0.105	7.678	8.016	343.301
2900.000	0.207	119.709	7.527	-2.020	2899.947	0.047	7.527	7.793	344.974
3000.000	0.118	22.540	7.532	-1.824	2999.947	0.251	7.532	7.750	346.388
3100.000	0.114	128.102	7.565	-1.706	3099.946	0.185	7.565	7.755	347.293
3200.000	0.280	47.348	7.669	-1.448	3199.946	0.285	7.669	7.805	349.310
3300.000	0.289	82.821	7.866	-1.018	3299.945	0.174	7.866	7.932	352.627
3400.000	0.282	73.925	7.966	-0.531	3399.944	0.045	7.966	7.983	356.187
3500.000	0.328	84.695	8.060	-0.009	3499.942	0.074	8.060	8.060	359.934

3600.000	0.351	107.236	7.996	0.568	3599.940	0.135	7.996	8.016	4.066
3700.000	0.468	79.686	7.979	1.263	3699.938	0.226	7.979	8.078	8.994
3800.000	0.658	77.144	8.179	2.225	3799.933	0.191	8.179	8.477	15.215
3900.000	0.734	80.989	8.408	3.417	3899.926	0.089	8.408	9.075	22.118
4000.000	0.685	93.784	8.468	4.646	3999.918	0.166	8.468	9.659	28.751
4100.000	0.432	115.420	8.267	5.583	4099.913	0.325	8.267	9.976	34.031
4200.000	0.332	150.199	7.854	6.067	4199.911	0.247	7.854	9.924	37.688
4300.000	0.361	146.505	7.339	6.385	4299.909	0.036	7.339	9.728	41.024
4400.000	0.451	149.147	6.739	6.761	4399.907	0.092	6.739	9.546	45.094
4500.000	0.571	147.303	5.982	7.232	4499.903	0.121	5.982	9.385	50.404
4600.000	0.718	135.202	5.118	7.942	4599.897	0.200	5.118	9.449	57.201
4700.000	1.277	87.008	4.732	9.496	4699.883	0.961	4.732	10.610	63.513
4800.000	1.653	81.520	5.003	12.035	4799.850	0.401	5.003	13.033	67.428
4900.000	1.412	85.923	5.303	14.690	4899.814	0.268	5.303	15.618	70.151
5000.000	0.959	60.023	5.809	16.644	4999.793	0.690	5.809	17.628	70.760
5100.000	0.825	36.907	6.803	17.801	5099.781	0.381	6.803	19.056	69.086
5200.000	0.797	28.146	7.992	18.561	5199.771	0.127	7.992	20.209	66.705
5300.000	1.567	47.443	9.530	19.897	5299.750	0.856	9.530	22.061	64.407
5400.000	2.058	67.597	11.139	22.565	5399.700	0.798	11.139	25.165	63.726
5500.000	2.546	86.377	11.964	26.442	5499.621	0.892	11.964	29.023	65.654
5600.000	2.417	105.533	11.540	30.690	5599.528	0.835	11.540	32.788	69.393
5700.000	2.614	123.020	9.733	34.633	5699.434	0.789	9.733	35.975	74.303
5800.000	2.593	104.056	7.941	38.740	5799.332	0.858	7.941	39.545	78.416
5900.000	1.681	102.464	7.075	42.366	5899.262	0.915	7.075	42.953	80.519
6000.000	1.476	102.460	6.481	45.056	5999.224	0.205	6.481	45.519	81.815
6100.000	2.387	113.527	5.372	48.223	6099.166	0.981	5.372	48.521	83.644
6200.000	2.602	112.000	3.690	52.237	6199.071	0.225	3.690	52.367	85.960
6300.000	2.942	113.265	1.826	56.700	6298.954	0.346	1.826	56.729	88.156

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