



Company: Noble Energy
Rig: Production/VES
API # 05-123-22275

Date: 5-20-13
Surveyor: Justin Williams

VS: 0.000
Lat : 40.0997

Long: -104.727

Well: Marcus State W36-03J
Location: Weld County, Colorado
North Reference: GRID

Convergence: Grid north is -0.5 of True North
Declination: 8.56

Depth Reference: RKB = Ground Level
Elevation: 5059

Total Depth as Drilled: 8068

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	0.199	196.971	-0.166	-0.051	100.000	0.199	-0.166	0.173	196.971
200.000	0.108	212.273	-0.411	-0.151	199.999	0.099	-0.411	0.438	200.220
300.000	0.318	153.262	-0.739	-0.077	299.999	0.278	-0.739	0.743	185.939
400.000	0.355	98.865	-1.034	0.354	399.997	0.309	-1.034	1.093	161.113
500.000	0.580	140.233	-1.471	0.983	499.994	0.392	-1.471	1.770	146.237
600.000	0.564	193.617	-2.339	1.191	599.990	0.514	-2.339	2.625	153.010
700.000	0.514	175.684	-3.265	1.109	699.985	0.175	-3.265	3.448	161.239
800.000	0.523	231.021	-3.999	0.788	799.982	0.482	-3.999	4.076	168.854
900.000	0.570	206.424	-4.731	0.212	899.978	0.237	-4.731	4.736	177.436
1000.000	0.597	228.699	-5.520	-0.401	999.973	0.227	-5.520	5.535	184.150
1100.000	0.548	273.930	-5.831	-1.269	1099.968	0.442	-5.831	5.967	192.275
1200.000	0.596	280.972	-5.699	-2.256	1199.963	0.085	-5.699	6.130	201.598
1300.000	0.658	288.795	-5.415	-3.310	1299.957	0.106	-5.415	6.347	211.436
1400.000	0.701	264.247	-5.292	-4.462	1399.950	0.292	-5.292	6.922	220.139
1500.000	0.827	264.416	-5.423	-5.789	1499.941	0.127	-5.423	7.932	226.867
1600.000	0.681	274.965	-5.442	-7.099	1599.933	0.201	-5.442	8.945	232.526
1700.000	0.783	263.836	-5.464	-8.370	1699.925	0.174	-5.464	9.995	236.863
1800.000	0.614	252.519	-5.698	-9.560	1799.917	0.217	-5.698	11.129	239.203
1900.000	0.855	261.030	-5.975	-10.807	1899.909	0.264	-5.975	12.349	241.062
2000.000	0.614	263.229	-6.155	-12.076	1999.901	0.243	-6.155	13.554	242.994
2100.000	0.706	255.479	-6.372	-13.204	2099.894	0.128	-6.372	14.662	244.239
2200.000	0.553	268.451	-6.540	-14.283	2199.888	0.208	-6.540	15.709	245.398
2300.000	0.495	259.924	-6.629	-15.191	2299.884	0.097	-6.629	16.574	246.426
2400.000	0.418	256.586	-6.789	-15.971	2399.881	0.082	-6.789	17.354	246.972
2500.000	0.398	359.207	-6.526	-16.330	2499.879	0.637	-6.526	17.586	248.217
2600.000	0.515	19.809	-5.756	-16.183	2599.876	0.200	-5.756	17.176	250.421
2700.000	0.710	61.039	-5.033	-15.488	2699.871	0.468	-5.033	16.285	251.998
2800.000	0.709	66.125	-4.483	-14.380	2799.863	0.063	-4.483	15.063	252.687
2900.000	0.339	5.173	-3.937	-13.788	2899.859	0.620	-3.937	14.339	254.062
3000.000	0.543	332.895	-3.221	-13.978	2999.856	0.314	-3.221	14.344	257.025
3100.000	0.853	323.899	-2.197	-14.632	3099.849	0.328	-2.197	14.796	261.460
3200.000	0.670	324.293	-1.121	-15.412	3199.840	0.183	-1.121	15.453	265.840
3300.000	1.005	320.492	0.030	-16.311	3299.829	0.339	0.030	16.311	270.106
3400.000	1.084	320.065	1.432	-17.476	3399.813	0.080	1.432	17.535	274.685
3500.000	1.022	332.363	2.948	-18.497	3499.796	0.234	2.948	18.730	279.054

3600.000	0.969	316.618	4.352	-19.491	3599.781	0.278	4.352	19.971	282.586
3700.000	1.078	327.065	5.756	-20.584	3699.765	0.216	5.756	21.374	285.623
3800.000	1.230	311.236	7.253	-21.902	3799.745	0.351	7.253	23.072	288.323
3900.000	1.014	327.761	8.709	-23.182	3899.726	0.387	8.709	24.764	290.591
4000.000	1.169	329.649	10.338	-24.169	3999.708	0.159	10.338	26.288	293.159
4100.000	1.253	329.791	12.164	-25.235	4099.685	0.084	12.164	28.014	295.736
4200.000	1.184	328.213	13.987	-26.330	4199.663	0.077	13.987	29.814	297.979
4300.000	1.360	328.981	15.883	-27.486	4299.638	0.177	15.883	31.745	300.022
4400.000	1.444	334.348	18.036	-28.643	4399.608	0.155	18.036	33.848	302.198
4500.000	1.658	332.139	20.450	-29.864	4499.572	0.222	20.450	36.195	304.402
4600.000	2.290	336.597	23.562	-31.333	4599.512	0.650	23.562	39.204	306.942
4700.000	2.333	334.441	27.231	-33.005	4699.431	0.097	27.231	42.788	309.525
4800.000	2.826	335.013	31.301	-34.924	4799.329	0.494	31.301	46.898	311.869
4900.000	2.827	325.352	35.564	-37.367	4899.208	0.476	35.564	51.586	313.584
5000.000	2.809	322.970	39.549	-40.245	4999.087	0.118	39.549	56.425	314.500
5100.000	2.708	317.821	43.256	-43.307	5098.971	0.268	43.256	61.210	314.966
5200.000	2.616	318.875	46.726	-46.394	5198.863	0.104	46.726	65.847	315.204
5300.000	2.073	313.913	49.700	-49.198	5298.779	0.579	49.700	69.932	315.290
5400.000	1.868	321.029	52.221	-51.526	5398.720	0.319	52.221	73.362	315.384
5500.000	1.525	317.419	54.468	-53.451	5498.676	0.358	54.468	76.314	315.540
5600.000	1.295	307.717	56.139	-55.246	5598.646	0.331	56.139	78.763	315.459
5700.000	0.890	309.231	57.321	-56.741	5698.628	0.406	57.321	80.655	315.291
5800.000	0.809	329.327	58.420	-57.703	5798.617	0.307	58.420	82.112	315.354
5900.000	0.681	352.931	59.616	-58.136	5898.609	0.330	59.616	83.270	315.720
6000.000	0.798	46.715	60.683	-57.702	5998.601	0.677	60.683	83.737	316.443
6100.000	1.008	46.005	61.772	-56.562	6098.589	0.210	61.772	83.756	317.521
6200.000	1.386	49.976	63.161	-55.003	6198.567	0.386	63.161	83.753	318.949
6300.000	1.227	58.482	64.498	-53.164	6298.541	0.250	64.498	83.585	320.502
6400.000	1.377	29.482	66.104	-51.660	6398.516	0.668	66.104	83.896	321.993
6500.000	0.939	16.142	67.937	-50.841	6498.496	0.511	67.937	84.854	323.191
6600.000	0.719	40.819	69.200	-50.203	6598.486	0.415	69.200	85.492	324.040
6700.000	0.699	39.643	70.144	-49.403	6698.478	0.025	70.144	85.796	324.842
6800.000	0.461	62.388	70.800	-48.658	6798.473	0.326	70.800	85.908	325.501
6900.000	0.551	12.953	71.455	-48.193	6898.469	0.431	71.455	86.189	326.002
7000.000	0.385	10.019	72.255	-48.027	6998.466	0.168	72.255	86.761	326.389
7100.000	0.323	67.071	72.696	-47.709	7098.464	0.343	72.696	86.953	326.724
7200.000	0.654	45.285	73.208	-47.043	7198.461	0.374	73.208	87.020	327.276
7300.000	0.660	5.433	74.183	-46.583	7298.455	0.448	74.183	87.596	327.874
7400.000	0.618	35.021	75.197	-46.219	7398.449	0.329	75.197	88.266	328.424
7500.000	0.399	51.847	75.853	-45.636	7498.445	0.263	75.853	88.523	328.967
7600.000	0.352	47.970	76.274	-45.134	7598.443	0.053	76.274	88.628	329.386
7700.000	0.571	68.571	76.662	-44.442	7698.439	0.271	76.662	88.612	329.899
7800.000	0.690	93.817	76.804	-43.377	7798.433	0.299	76.804	88.207	330.543
7850.000	0.556	92.313	76.774	-42.834	7848.431	0.269	76.774	87.915	330.842