



**Company:** Noble Energy  
**Rig:** Production/Lightning \  
**Latitude:** 40.409  
**Longitude:** -104.497  
**API #** 05-123-21415  
**Date:** 11/14/12

**Well:** KC B 12-15  
**Location:** Weld County  
**North Reference:** -0.65  
**Depth Reference:** RKB=Ground Level  
**Surveyor:** Levi Sheldon  
**VS:**

MS Gyro Survey Calculations

Depth	Inc	AzG	N/-S	E/-W	TVD	DL	VS	CD	Cbrg
0	0	0	0	0	0	****	0	0	0
100	0.465	115.743	-0.176	0.366	99.999	0.465	-0.176	0.406	115.743
200	0.426	121.145	-0.545	1.049	199.996	0.057	-0.545	1.183	117.441
300	0.264	117.466	-0.844	1.572	299.994	0.164	-0.844	1.784	118.216
400	0.072	3.902	-0.887	1.781	399.994	0.3	-0.887	1.99	116.469
500	0.429	337.488	-0.478	1.642	499.993	0.366	-0.478	1.71	106.226
600	0.506	289.834	0.018	1.083	599.99	0.384	0.018	1.083	89.053
700	0.182	257.34	0.133	0.513	699.988	0.366	0.133	0.529	75.447
800	0.391	288.008	0.204	0.033	799.986	0.253	0.204	0.206	9.127
900	0.4	266.891	0.291	-0.641	899.984	0.145	0.291	0.704	294.389
1000	0.293	215.707	0.064	-1.139	999.983	0.315	0.064	1.141	273.209
1100	0.628	195.243	-0.673	-1.432	1099.979	0.368	-0.673	1.582	244.847
1200	0.379	192.522	-1.524	-1.648	1199.975	0.25	-1.524	2.245	227.237
1300	0.535	212.454	-2.241	-1.97	1299.972	0.22	-2.241	2.984	221.321
1400	0.433	257.801	-2.715	-2.59	1399.969	0.385	-2.715	3.752	223.651
1500	0.563	247.518	-2.982	-3.413	1499.965	0.157	-2.982	4.532	228.851
1600	0.723	255.064	-3.333	-4.477	1599.959	0.181	-3.333	5.581	233.332
1700	0.621	269.564	-3.5	-5.629	1699.952	0.198	-3.5	6.628	238.129
1800	0.757	255.581	-3.668	-6.811	1799.945	0.215	-3.668	7.736	241.694
1900	0.859	238.043	-4.23	-8.087	1899.935	0.266	-4.23	9.126	242.39
2000	0.575	226.615	-4.971	-9.088	1999.927	0.317	-4.971	10.358	241.321
2100	0.699	227.433	-5.728	-9.902	2099.921	0.125	-5.728	11.439	239.949
2200	0.892	219.859	-6.738	-10.85	2199.911	0.219	-6.738	12.772	238.157
2300	0.736	218.374	-7.839	-11.747	2299.901	0.157	-7.839	14.122	236.284
2400	0.186	41.67	-8.221	-12.037	2399.899	0.922	-8.221	14.576	235.669
2500	0.35	31.105	-7.837	-11.771	2499.898	0.17	-7.837	14.142	236.344
2600	0.379	40.01	-7.322	-11.4	2599.896	0.064	-7.322	13.549	237.288
2700	0.589	28.681	-6.618	-10.941	2699.892	0.229	-6.618	12.787	238.832
2800	1.063	27.295	-5.342	-10.269	2799.881	0.475	-5.342	11.575	242.515
2900	0.935	29.585	-3.808	-9.44	2899.866	0.134	-3.808	10.179	248.033
3000	0.857	39.685	-2.523	-8.56	2999.854	0.176	-2.523	8.924	253.58
3100	0.737	67.875	-1.705	-7.487	3099.845	0.405	-1.705	7.678	257.17
3200	0.572	84.774	-1.417	-6.394	3199.838	0.252	-1.417	6.549	257.501
3300	0.27	84.247	-1.348	-5.663	3299.835	0.302	-1.348	5.821	256.607
3400	0.365	175.087	-1.642	-5.401	3399.834	0.457	-1.642	5.645	253.089
3500	0.523	186.643	-2.413	-5.427	3499.831	0.181	-2.413	5.939	246.03
3600	0.698	214.212	-3.37	-5.822	3599.826	0.337	-3.37	6.727	239.937
3700	1.014	211.811	-4.626	-6.631	3699.815	0.318	-4.626	8.085	235.101
3800	0.973	213.568	-6.085	-7.567	3799.8	0.051	-6.085	9.71	231.194

3900	1.105	214.115	-7.591	-8.577	3899.783	0.132	-7.591	11.454	228.491
4000	0.853	213.613	-9.009	-9.53	3999.768	0.251	-9.009	13.114	226.61
4100	1.182	228.395	-10.314	-10.713	4099.753	0.418	-10.314	14.871	226.088
4200	1.258	234.7	-11.632	-12.38	4199.73	0.154	-11.632	16.987	226.783
4300	1.309	238.248	-12.868	-14.247	4299.705	0.095	-12.868	19.197	227.911
4400	1.773	237.99	-14.289	-16.529	4399.669	0.464	-14.289	21.849	229.159
4500	2.347	240.647	-16.112	-19.626	4499.604	0.581	-16.112	25.392	230.615
4600	2.706	242.092	-18.221	-23.496	4599.506	0.366	-18.221	29.733	232.207
4700	2.115	239.953	-20.25	-27.18	4699.417	0.599	-20.25	33.894	233.313
4800	2.303	235.124	-22.322	-30.425	4799.343	0.264	-22.322	37.735	233.733
4900	2.013	237.687	-24.41	-33.558	4899.272	0.305	-24.41	41.496	233.968
5000	1.593	223.613	-26.355	-36.001	4999.223	0.607	-26.355	44.617	233.793
5100	1.596	215.687	-28.493	-37.772	5099.184	0.22	-28.493	47.314	232.972
5200	1.271	207.785	-30.605	-39.102	5199.153	0.379	-30.605	49.655	231.95
5300	1.328	187.085	-32.736	-39.762	5299.128	0.47	-32.736	51.504	230.535
5400	1.777	189.347	-35.415	-40.156	5399.091	0.453	-35.415	53.542	228.59
5500	1.968	182.798	-38.66	-40.492	5499.037	0.287	-38.66	55.984	226.326
5600	2.096	181.888	-42.202	-40.636	5598.975	0.131	-42.202	58.586	223.917
5700	1.821	187.971	-45.604	-40.916	5698.916	0.344	-45.604	61.269	221.899
5800	1.455	181.441	-48.447	-41.169	5798.875	0.411	-48.447	63.576	220.357
5900	0.93	181.143	-50.528	-41.217	5898.853	0.525	-50.528	65.206	219.205
6000	0.435	104.194	-51.432	-40.865	5998.847	0.934	-51.432	65.69	218.469
6100	0.414	104.526	-51.616	-40.147	6098.845	0.021	-51.616	65.391	217.876
6200	1.255	112.498	-52.126	-38.786	6198.833	0.847	-52.126	64.972	216.652
6300	1.903	110.029	-53.113	-36.214	6298.795	0.651	-53.113	64.284	214.287
6400	2.61	112.302	-54.546	-32.548	6398.717	0.712	-54.546	63.519	210.825
6500	3.283	105.687	-56.184	-27.685	6498.584	0.753	-56.184	62.635	206.232
6600	4.077	110.365	-58.195	-21.595	6598.377	0.848	-58.195	62.073	200.359