



Company: Noble Energy

Rig: Production/CoreTech

API # 05-123-24851

Date: 12/9/2013

Surveyor: Randy Holcomb

VS: 0.000

Lat : 40.517

Long: -104.627

Well: Irvine 2-13

Location: Weld County, Colorado

North Reference: GRID

Convergence: Grid north is 0.56 East of True North

Declination: 8.47

Depth Reference: Ground Level

Elevation: 4828 Feet

Total Depth as Drilled: 7364 Feet

Lat & Long obtained by handheld GPS at wellhead

MS 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	0.419	48.034	0.244	0.272	99.999	0.419	0.244	0.366	48.034
200.000	0.086	335.878	0.558	0.513	199.998	0.401	0.558	0.758	42.598
300.000	0.128	344.694	0.734	0.453	299.998	0.044	0.734	0.862	31.656
400.000	0.257	119.815	0.730	0.618	399.998	0.359	0.730	0.956	40.236
500.000	0.210	144.156	0.470	0.920	499.997	0.109	0.470	1.033	62.923
600.000	0.767	220.877	-0.184	0.589	599.993	0.747	-0.184	0.617	107.372
700.000	0.993	249.140	-0.999	-0.658	699.982	0.482	-0.999	1.196	213.398
800.000	1.005	256.795	-1.507	-2.322	799.967	0.134	-1.507	2.768	237.006
900.000	1.150	255.185	-1.964	-4.146	899.949	0.148	-1.964	4.588	244.647
1000.000	1.334	248.552	-2.647	-6.199	999.926	0.233	-2.647	6.741	246.882
1100.000	1.154	245.013	-3.497	-8.195	1099.902	0.196	-3.497	8.910	246.889
1200.000	1.257	235.677	-4.541	-10.013	1199.880	0.221	-4.541	10.995	245.606
1300.000	1.394	237.893	-5.806	-11.949	1299.853	0.146	-5.806	13.285	244.086
1400.000	1.348	247.030	-6.911	-14.062	1399.825	0.223	-6.911	15.669	243.827
1500.000	1.183	235.541	-7.954	-15.996	1499.801	0.302	-7.954	17.864	243.561
1600.000	1.109	237.094	-9.064	-17.659	1599.781	0.080	-9.064	19.849	242.831
1700.000	1.360	248.773	-10.019	-19.577	1699.757	0.354	-10.019	21.992	242.899
1800.000	1.367	247.544	-10.904	-21.786	1799.729	0.030	-10.904	24.362	243.412
1900.000	1.019	247.393	-11.702	-23.709	1899.707	0.348	-11.702	26.440	243.732
2000.000	1.005	259.700	-12.200	-25.393	1999.692	0.217	-12.200	28.172	244.338
2100.000	0.934	235.448	-12.819	-26.927	2099.678	0.413	-12.819	29.823	244.542
2200.000	1.088	226.669	-13.933	-28.289	2199.662	0.218	-13.933	31.534	243.779
2300.000	1.122	214.668	-15.389	-29.536	2299.644	0.233	-15.389	33.305	242.479
2400.000	1.152	208.831	-17.075	-30.578	2399.624	0.120	-17.075	35.022	240.820
2500.000	1.379	191.446	-19.135	-31.301	2499.600	0.443	-19.135	36.686	238.562
2600.000	1.291	178.182	-21.440	-31.504	2599.573	0.320	-21.440	38.107	235.763
2700.000	1.349	167.531	-23.715	-31.214	2699.547	0.252	-23.715	39.201	232.775
2800.000	1.201	173.301	-25.905	-30.838	2799.522	0.196	-25.905	40.274	229.969
2900.000	1.397	164.096	-28.118	-30.382	2899.497	0.286	-28.118	41.396	227.216
3000.000	1.352	170.607	-30.454	-29.855	2999.468	0.162	-30.454	42.647	224.431
3100.000	1.486	159.932	-32.835	-29.218	3099.437	0.296	-32.835	43.953	221.663
3200.000	1.336	171.471	-35.206	-28.600	3199.407	0.320	-35.206	45.359	219.089
3300.000	1.572	163.312	-37.674	-28.033	3299.375	0.313	-37.674	46.959	216.653
3400.000	1.263	158.878	-40.016	-27.242	3399.344	0.328	-40.016	48.409	214.246
3500.000	1.171	127.491	-41.667	-26.033	3499.323	0.664	-41.667	49.131	211.997
3600.000	1.194	118.516	-42.786	-24.307	3599.302	0.187	-42.786	49.209	209.601

3700.000	0.709	124.364	-43.633	-22.880	3699.287	0.494	-43.633	49.268	207.671
3800.000	0.541	122.381	-44.235	-21.970	3799.282	0.170	-44.235	49.391	206.412
3900.000	0.394	130.243	-44.710	-21.309	3899.278	0.159	-44.710	49.529	205.483
4000.000	0.543	111.095	-45.103	-20.605	3999.275	0.214	-45.103	49.587	204.553
4100.000	0.670	105.707	-45.432	-19.600	4099.269	0.140	-45.432	49.479	203.336
4200.000	0.641	111.957	-45.800	-18.518	4199.263	0.077	-45.800	49.401	202.015
4300.000	0.685	110.358	-46.217	-17.439	4299.256	0.047	-46.217	49.397	200.673
4400.000	0.756	110.079	-46.651	-16.259	4399.248	0.071	-46.651	49.403	199.215
4500.000	0.742	111.858	-47.119	-15.038	4499.240	0.027	-47.119	49.460	197.701
4600.000	0.794	111.420	-47.613	-13.792	4599.231	0.052	-47.613	49.570	196.154
4700.000	0.585	100.547	-47.959	-12.645	4699.223	0.246	-47.959	49.598	194.771
4800.000	0.490	101.008	-48.134	-11.724	4799.219	0.095	-48.134	49.542	193.689
4900.000	0.308	95.796	-48.243	-11.037	4899.216	0.185	-48.243	49.489	192.887
5000.000	0.380	78.194	-48.202	-10.445	4999.215	0.127	-48.202	49.321	192.227
5100.000	0.574	41.962	-47.762	-9.786	5099.211	0.349	-47.762	48.754	191.579
5200.000	0.719	29.090	-46.841	-9.146	5199.205	0.204	-46.841	47.726	191.049
5300.000	0.687	13.335	-45.710	-8.703	5299.198	0.195	-45.710	46.531	190.780
5400.000	0.621	333.963	-44.638	-8.803	5399.192	0.445	-44.638	45.498	191.155
5500.000	0.716	322.194	-43.658	-9.423	5499.185	0.166	-43.658	44.663	192.180
5600.000	0.956	305.919	-42.675	-10.482	5599.174	0.336	-42.675	43.943	193.800
5700.000	1.707	291.588	-41.637	-12.543	5699.147	0.816	-41.637	43.486	196.765
5800.000	2.007	297.550	-40.279	-15.481	5799.094	0.356	-40.279	43.152	201.024
5900.000	1.614	287.862	-39.037	-18.374	5899.044	0.497	-39.037	43.145	205.206
6000.000	1.191	294.227	-38.179	-20.663	5999.014	0.450	-38.179	43.411	208.423
6100.000	0.982	285.060	-37.529	-22.438	6098.996	0.272	-37.529	43.726	210.874
6200.000	0.718	269.824	-37.309	-23.892	6198.985	0.345	-37.309	44.303	212.635
6300.000	0.570	265.088	-37.353	-25.014	6298.979	0.157	-37.353	44.955	213.809
6400.000	0.512	239.526	-37.622	-25.895	6398.975	0.246	-37.622	45.673	214.539
6500.000	0.565	221.172	-38.220	-26.604	6498.970	0.180	-38.220	46.568	214.841
6600.000	0.827	199.501	-39.271	-27.170	6598.963	0.367	-39.271	47.754	214.677
6700.000	1.093	190.282	-40.890	-27.581	6698.949	0.307	-40.890	49.323	214.000
6800.000	0.855	171.584	-42.567	-27.642	6798.935	0.394	-42.567	50.755	212.999
6900.000	1.079	152.176	-44.138	-27.093	6898.921	0.393	-44.138	51.790	211.543
7000.000	1.450	138.836	-45.922	-25.822	6998.896	0.471	-45.922	52.684	209.349
7100.000	2.009	139.189	-48.201	-23.843	7098.850	0.560	-48.201	53.776	206.320