



Company: Noble Energy
Rig: Production/Coretech
API # 05-123-26611
Date: 1-3-14
Surveyor: Justin Williams
VS: 0.000
Lat : 40.482
Long: -104.493

Well: Johnson A 13-23
Location: Weld County, Colorado
North Reference: GRID
Convergence: GRID North is 0.65 De
Declination: 8.38
Depth Reference: RKB = Ground Level
Elevation: 4653
Total Depth as Drilled: 6944

Lat & Long obtained by handheld GPS at wellhead

MS Gyro Survey Calculations

Depth	Inc	AzG	N/-S	E/-W	TVD	DL	VS	CD
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
100.000	0.481	66.805	0.165	0.385	99.999	0.481	0.165	0.419
200.000	0.336	64.275	0.458	1.035	199.996	0.145	0.458	1.132
300.000	0.367	97.943	0.541	1.617	299.994	0.206	0.541	1.705
400.000	0.434	132.319	0.242	2.215	399.992	0.245	0.242	2.228
500.000	0.017	264.172	-0.014	2.479	499.991	0.445	-0.014	2.479
600.000	0.047	99.279	-0.023	2.505	599.991	0.064	-0.023	2.505
700.000	0.231	63.678	0.060	2.727	699.991	0.195	0.060	2.728
800.000	0.492	126.865	-0.108	3.252	799.989	0.439	-0.108	3.253
900.000	0.443	120.699	-0.563	3.928	899.986	0.070	-0.563	3.968
1000.000	0.381	71.797	-0.657	4.577	999.984	0.346	-0.657	4.623
1100.000	0.526	158.016	-0.978	5.064	1099.981	0.629	-0.978	5.158
1200.000	0.704	110.773	-1.621	5.810	1199.976	0.519	-1.621	6.032
1300.000	0.349	108.478	-1.935	6.673	1299.972	0.356	-1.935	6.948
1400.000	0.298	26.065	-1.798	7.075	1399.971	0.428	-1.798	7.300
1500.000	0.806	78.225	-1.421	7.878	1499.966	0.666	-1.421	8.005
1600.000	0.561	42.152	-0.914	8.895	1599.959	0.483	-0.914	8.942
1700.000	0.393	269.393	-0.554	8.881	1699.958	0.877	-0.554	8.898
1800.000	0.331	355.636	-0.270	8.516	1799.956	0.496	-0.270	8.521
1900.000	0.453	307.528	0.258	8.181	1899.954	0.339	0.258	8.185
2000.000	1.407	321.808	1.464	7.108	1999.940	0.974	1.464	7.257
2100.000	1.464	315.337	3.337	5.451	2099.909	0.172	3.337	6.392
2200.000	1.264	293.548	4.686	3.542	2199.881	0.552	4.686	5.874
2300.000	1.684	293.667	5.717	1.185	2299.848	0.420	5.717	5.838
2400.000	1.838	283.759	6.688	-1.718	2399.801	0.340	6.688	6.905
2500.000	1.609	288.918	7.524	-4.603	2499.755	0.276	7.524	8.821
2600.000	1.695	276.114	8.137	-7.402	2599.714	0.378	8.137	11.000
2700.000	1.468	279.016	8.496	-10.138	2699.676	0.240	8.496	13.227
2800.000	1.389	266.896	8.631	-12.614	2799.645	0.312	8.631	15.284
2900.000	1.220	275.744	8.672	-14.883	2899.619	0.262	8.672	17.225
3000.000	1.441	279.980	8.996	-17.180	2999.592	0.241	8.996	19.393
3100.000	1.364	285.320	9.528	-19.566	3099.562	0.151	9.528	21.763
3200.000	1.135	262.822	9.719	-21.696	3199.539	0.537	9.719	23.773
3300.000	0.606	204.360	9.114	-22.896	3299.529	0.967	9.114	24.643
3400.000	1.414	174.484	7.404	-22.996	3399.513	0.939	7.404	24.158

3500.000	1.449	135.272	5.277	-21.987	3499.484	0.961	5.277	22.611
3600.000	1.596	159.375	3.075	-20.606	3599.450	0.652	3.075	20.835
3700.000	1.634	160.487	0.427	-19.639	3699.410	0.049	0.427	19.644
3800.000	2.112	140.306	-2.334	-17.986	3799.358	0.807	-2.334	18.137
3900.000	2.016	163.180	-5.435	-16.301	3899.294	0.824	-5.435	17.183
4000.000	1.730	168.272	-8.597	-15.485	3999.241	0.330	-8.597	17.711
4100.000	1.888	172.963	-11.710	-14.976	4099.191	0.216	-11.710	19.011
4200.000	1.644	179.410	-14.779	-14.760	4199.144	0.314	-14.779	20.887
4300.000	1.170	207.023	-17.123	-15.209	4299.114	0.814	-17.123	22.902
4400.000	1.377	221.350	-18.935	-16.467	4399.090	0.378	-18.935	25.093
4500.000	1.192	213.755	-20.702	-17.839	4499.065	0.251	-20.702	27.327
4600.000	0.798	160.784	-22.224	-18.187	4599.051	0.955	-22.224	28.717
4700.000	0.764	82.473	-22.794	-17.297	4699.045	0.987	-22.794	28.614
4800.000	1.343	37.835	-21.781	-15.917	4799.029	0.963	-21.781	26.977
4900.000	1.817	5.826	-19.278	-15.037	4898.992	0.983	-19.278	24.449
5000.000	2.704	355.475	-15.349	-15.062	4998.914	0.973	-15.349	21.505
5100.000	2.737	353.794	-10.624	-15.506	5098.801	0.086	-10.624	18.797
5200.000	2.829	349.086	-5.828	-16.231	5198.683	0.246	-5.828	17.246
5300.000	2.130	347.960	-1.587	-17.086	5298.589	0.701	-1.587	17.160
5400.000	1.343	8.865	1.388	-17.293	5398.543	0.998	1.388	17.349
5500.000	1.178	26.640	3.465	-16.651	5498.520	0.422	3.465	17.008
5600.000	0.981	20.202	5.188	-15.895	5598.502	0.231	5.188	16.720
5700.000	0.616	50.650	6.332	-15.183	5698.492	0.548	6.332	16.451
5800.000	0.141	147.157	6.570	-14.700	5798.490	0.648	6.570	16.102
5900.000	0.393	32.624	6.755	-14.449	5898.490	0.469	6.755	15.950
6000.000	0.116	240.302	6.993	-14.352	5998.489	0.499	6.993	15.965
6100.000	0.144	268.776	6.940	-14.566	6098.489	0.069	6.940	16.135
6200.000	0.195	105.364	6.893	-14.527	6198.489	0.336	6.893	16.079
6300.000	0.242	106.105	6.789	-14.160	6298.488	0.047	6.789	15.704
6400.000	0.397	200.489	6.406	-14.079	6398.487	0.480	6.406	15.468
6500.000	0.476	164.832	5.681	-14.091	6498.484	0.278	5.681	15.193
6600.000	0.442	140.367	4.983	-13.737	6598.481	0.197	4.983	14.612
6700.000	0.313	123.447	4.535	-13.262	6698.479	0.169	4.535	14.016

0

degrees East of True North

Cbrg

0.000
66.805
66.150
71.511
83.770
90.335
90.519
88.736
91.900
98.157
98.164
100.929
105.588
106.172
104.257
100.222
95.867
93.572
91.819
88.192
78.363
58.527
37.083
11.712
345.594
328.542
317.708
309.962
304.381
300.228
297.638
295.966
294.131
291.705
287.848

283.496
278.488
271.247
262.605
251.559
240.961
231.978
224.962
221.612
221.012
220.751
219.296
217.192
216.158
217.954
224.458
235.581
250.249
264.692
274.589
281.755
288.075
292.639
294.080
295.057
295.979
295.477
295.382
295.615
294.466
291.956
289.938
288.878