



Company/Rig: Noble Energy/Production
Well/API#: Ottoson 12-14G6/05-123-18233
Declination: 8.37
TD As Drilled: 7521 Feet
County/State: Weld/Colorado
Latitude: 40.497, Longitude: -104.728
GRID North is 0.500 Degrees East of True North
VS-Azi: 0.000 Degrees



Depth Reference : RKB = GL Elevation = 4773 Feet

DRILLOG GYRO SURVEY CALCULATIONS

Filename: gyro_run01-de_01.ut

Minimum Curvature Method

Report Date/Time: 2/2/2015 / 12:14

Lat & Long Verified by Handheld GPS At Wellhead

North Reference : Grid

Henderson, CO

303-853-4976

Surveyor: Jordan Rolando

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	TVD FT	+N/-S FT	+E/-W FT	Vertical Section FT	Closure Distance FT	Closure Direction Deg	Dogleg Severity Deg/100
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	****
100.000	0.701	119.079	99.998	-0.297	0.535	-0.297	0.612	119.079	0.701
200.000	0.595	136.525	199.991	-0.972	1.427	-0.972	1.726	124.256	0.223
300.000	0.269	149.492	299.988	-1.551	1.903	-1.551	2.455	129.177	0.338
400.000	0.473	141.060	399.986	-2.075	2.282	-2.075	3.085	132.275	0.211
500.000	0.423	121.120	499.983	-2.587	2.858	-2.587	3.855	132.150	0.163
600.000	0.286	116.475	599.981	-2.890	3.399	-2.890	4.461	130.374	0.140
700.000	0.427	161.629	699.979	-3.355	3.740	-3.355	5.024	131.895	0.303
800.000	0.814	144.084	799.973	-4.284	4.274	-4.284	6.051	135.068	0.427
900.000	0.867	139.322	899.963	-5.433	5.184	-5.433	7.510	136.345	0.088
1000.000	1.087	125.229	999.948	-6.555	6.452	-6.555	9.197	135.451	0.324
1100.000	0.928	126.609	1099.933	-7.585	7.877	-7.585	10.935	133.916	0.161
1200.000	0.890	133.070	1199.920	-8.598	9.095	-8.598	12.516	133.392	0.109
1300.000	1.094	135.808	1299.905	-9.814	10.328	-9.814	14.247	133.537	0.209
1400.000	1.154	149.906	1399.886	-11.370	11.499	-11.370	16.171	134.676	0.282
1500.000	1.029	135.525	1499.868	-12.882	12.633	-12.882	18.043	135.559	0.300
1600.000	1.143	177.141	1599.852	-14.519	13.312	-14.519	19.698	137.484	0.779
1700.000	1.075	133.136	1699.835	-16.157	14.047	-16.157	21.409	138.997	0.834
1800.000	0.853	151.198	1799.821	-17.451	15.090	-17.451	23.071	139.150	0.374
1900.000	0.796	159.172	1899.810	-18.753	15.696	-18.753	24.455	140.072	0.128

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	TVD FT	+N/-S FT	+E/-W FT	Vertical Section FT	Closure Distance FT	Closure Direction Deg	Dogleg Severity Deg/100
2000.000	0.833	172.476	1999.800	-20.124	16.038	-20.124	25.733	141.446	0.192
2100.000	1.022	170.264	2099.787	-21.723	16.284	-21.723	27.149	143.145	0.192
2200.000	0.944	209.485	2199.773	-23.319	16.029	-23.319	28.297	145.496	0.664
2300.000	0.939	210.189	2299.760	-24.745	15.212	-24.745	29.047	148.420	0.013
2400.000	1.372	251.165	2399.741	-25.840	13.666	-25.840	29.232	152.127	0.905
2500.000	2.025	276.378	2499.698	-26.030	10.777	-26.030	28.173	157.509	0.978
2600.000	1.863	277.405	2599.640	-25.625	7.409	-25.625	26.674	163.873	0.165
2700.000	1.711	272.685	2699.592	-25.345	4.305	-25.345	25.708	170.359	0.212
2800.000	1.470	266.627	2799.553	-25.351	1.533	-25.351	25.397	176.539	0.293
2900.000	1.761	285.136	2899.514	-25.025	-1.231	-25.025	25.055	182.816	0.594
3000.000	1.640	287.126	2999.470	-24.202	-4.082	-24.202	24.544	189.574	0.135
3100.000	1.229	294.397	3099.438	-23.338	-6.426	-23.338	24.206	195.395	0.449
3200.000	1.309	276.017	3199.414	-22.775	-8.539	-22.775	24.323	200.551	0.413
3300.000	1.171	262.579	3299.391	-22.787	-10.687	-22.787	25.169	205.126	0.321
3400.000	1.236	217.178	3399.371	-23.779	-12.352	-23.779	26.796	207.449	0.931
3500.000	1.607	218.887	3499.340	-25.730	-13.884	-25.730	29.237	208.352	0.373
3600.000	0.825	187.871	3599.318	-27.535	-14.863	-27.535	31.291	208.360	0.996
3700.000	1.017	162.918	3699.305	-29.097	-14.701	-29.097	32.600	206.805	0.440
3800.000	1.126	181.311	3799.288	-30.928	-14.463	-30.928	34.143	205.063	0.359
3900.000	1.262	163.412	3899.267	-32.966	-14.171	-32.966	35.883	203.261	0.395
4000.000	1.246	155.709	3999.243	-35.013	-13.409	-35.013	37.493	200.956	0.169
4100.000	1.110	180.420	4099.222	-36.973	-12.969	-36.973	39.182	199.329	0.521
4200.000	1.335	182.826	4199.199	-39.106	-13.033	-39.106	41.220	198.433	0.231
4300.000	1.109	185.765	4299.177	-41.232	-13.188	-41.232	43.290	197.737	0.234
4400.000	1.151	205.357	4399.157	-43.103	-13.716	-43.103	45.233	197.651	0.387
4500.000	1.052	226.401	4499.139	-44.644	-14.811	-44.644	47.037	198.353	0.414
4600.000	0.790	229.420	4599.126	-45.726	-15.999	-45.726	48.444	199.284	0.267
4700.000	0.886	245.711	4699.116	-46.492	-17.227	-46.492	49.581	200.331	0.256
4800.000	0.873	190.089	4799.106	-47.559	-18.064	-47.559	50.875	200.798	0.820
4900.000	0.910	211.986	4899.094	-48.983	-18.618	-48.983	52.402	200.812	0.341
5000.000	1.051	254.310	4999.081	-49.904	-19.922	-49.904	53.734	201.762	0.720
5100.000	0.550	186.817	5099.072	-50.629	-20.861	-50.629	54.758	202.394	0.982
5200.000	0.510	257.368	5199.069	-51.203	-21.353	-51.203	55.477	202.637	0.613
5300.000	0.425	301.467	5299.066	-51.107	-22.103	-51.107	55.682	203.388	0.360
5400.000	0.721	327.073	5399.061	-50.384	-22.762	-50.384	55.288	204.312	0.384
5500.000	1.440	340.482	5499.043	-48.672	-23.524	-48.672	54.059	205.795	0.757
5600.000	0.786	304.024	5599.024	-47.104	-24.512	-47.104	53.101	207.492	0.933
5700.000	0.745	247.153	5699.017	-46.973	-25.679	-46.973	53.534	208.664	0.730
5800.000	0.679	324.456	5799.011	-46.743	-26.622	-46.743	53.793	209.663	0.891
5900.000	0.610	303.951	5899.005	-45.964	-27.408	-45.964	53.516	210.807	0.239

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	TVD FT	+N/-S FT	+E/-W FT	Vertical Section FT	Closure Distance FT	Closure Direction Deg	Dogleg Severity Deg/100
6000.000	0.442	324.136	5999.001	-45.355	-28.075	-45.355	53.341	211.758	0.248
6100.000	0.172	204.950	6099.000	-45.179	-28.364	-45.179	53.345	212.122	0.547
6200.000	0.627	324.739	6198.998	-44.868	-28.744	-44.868	53.285	212.645	0.728
6300.000	0.645	291.679	6298.992	-44.213	-29.583	-44.213	53.197	213.786	0.362
6400.000	0.420	223.196	6398.989	-44.273	-30.356	-44.273	53.680	214.437	0.627
6500.000	0.368	243.646	6498.986	-44.682	-30.895	-44.682	54.323	214.661	0.149
6600.000	0.063	330.904	6598.986	-44.777	-31.209	-44.777	54.580	214.876	0.370
6700.000	1.523	34.255	6698.974	-43.630	-30.488	-43.630	53.227	214.945	1.495
6800.000	3.180	53.196	6798.887	-40.870	-27.519	-40.870	49.271	213.954	1.808
6900.000	3.943	65.892	6898.695	-37.804	-22.160	-37.804	43.820	210.378	1.093
7000.000	1.865	55.131	6998.562	-35.469	-17.686	-35.469	39.634	206.502	2.140
7100.000	0.576	54.438	7098.537	-34.247	-15.942	-34.247	37.775	204.962	1.289