



Company/Rig: Noble Energy/CoreTech  
 WELL/API#: Green USX EE 13-05/05-123-31159  
 DECLINATION: 8.32 Degrees  
 TD AS DRILLED: 7460 Feet  
 COUNTY/STATE: Weld/Colorado  
 VS-Azi: 0.000 Degrees  
 Latitude: 40.57501, Longitude: -104.61808  
 Grid North = True North -0.57 degs (NAD 27)  
 Grid Correction Applied = -0.57 degs



DEPTH REFERENCE : RKB=GL Elevation=4963 Feet

DRILLOG MS GYRO SURVEY CALCULATIONS

Filename: survey-01-de\_01.ut

Minimum Curvature Method

Report Date/Time: 11/2/2015 / 13:15

LAT & LONG OBTAINED BY HANDHELD GPS AT WELLHEAD

NORTH REFERENCE: GRID

HENDERSON, COLORADO

303-853-4976

Surveyor: Geof Davis / Green USX EE 13-05

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	0.115	32.373	100.000	0.085	0.054	0.085	0.100	32.373	0.115
200.000	0.194	34.367	200.000	0.310	0.203	0.310	0.370	33.286	0.079
300.000	0.134	85.256	299.999	0.459	0.416	0.459	0.619	42.132	0.151
400.000	0.147	96.671	399.999	0.454	0.659	0.454	0.801	55.437	0.031
500.000	0.090	132.084	499.999	0.387	0.845	0.387	0.929	65.401	0.090
600.000	0.094	102.066	599.999	0.317	0.983	0.317	1.033	72.127	0.048
700.000	0.340	81.291	699.998	0.345	1.357	0.345	1.400	75.740	0.255
800.000	0.649	80.939	799.994	0.479	2.210	0.479	2.261	77.769	0.309
900.000	0.721	99.778	899.987	0.461	3.389	0.461	3.421	82.248	0.235
1000.000	0.810	89.227	999.978	0.364	4.717	0.364	4.731	85.586	0.166
1100.000	1.023	99.788	1099.965	0.222	6.303	0.222	6.307	87.984	0.271
1200.000	1.140	102.734	1199.947	-0.149	8.153	-0.149	8.154	91.048	0.130
1300.000	1.276	74.898	1299.926	-0.078	10.198	-0.078	10.199	90.440	0.596
1400.000	1.286	118.381	1399.903	-0.322	12.261	-0.322	12.265	91.503	0.949
1500.000	1.302	107.522	1499.878	-1.197	14.332	-1.197	14.382	94.776	0.245
1600.000	1.346	106.154	1599.851	-1.866	16.544	-1.866	16.649	96.436	0.054
1700.000	1.388	77.757	1699.824	-1.936	18.855	-1.936	18.955	95.863	0.672
1800.000	1.222	101.087	1799.799	-1.885	21.086	-1.885	21.170	95.108	0.552

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
1900.000	1.162	114.837	1899.777	-2.516	23.052	-2.516	23.189	96.228	0.292
2000.000	1.033	116.254	1999.759	-3.340	24.781	-3.340	25.005	97.677	0.132
2100.000	0.932	115.674	2099.744	-4.091	26.322	-4.091	26.638	98.835	0.101
2200.000	1.089	104.174	2199.729	-4.676	27.976	-4.676	28.364	99.489	0.256
2300.000	0.994	85.557	2299.712	-4.841	29.762	-4.841	30.153	99.240	0.350
2400.000	1.029	87.391	2399.697	-4.733	31.524	-4.733	31.877	98.539	0.047
2500.000	1.163	98.411	2499.679	-4.841	33.425	-4.841	33.774	98.241	0.249
2600.000	1.111	94.015	2599.659	-5.057	35.396	-5.057	35.756	98.131	0.101
2700.000	0.941	106.166	2699.643	-5.354	37.152	-5.354	37.536	98.200	0.276
2800.000	0.649	112.447	2799.633	-5.799	38.464	-5.799	38.899	98.573	0.304
2900.000	0.484	117.650	2899.628	-6.211	39.362	-6.211	39.849	98.967	0.172
3000.000	0.270	113.343	2999.626	-6.501	39.953	-6.501	40.478	99.241	0.216
3100.000	0.082	144.262	3099.626	-6.652	40.211	-6.652	40.758	99.393	0.204
3200.000	0.171	353.665	3199.626	-6.562	40.237	-6.562	40.768	99.263	0.245
3300.000	0.670	280.163	3299.623	-6.311	39.645	-6.311	40.144	99.045	0.642
3400.000	0.766	256.659	3399.615	-6.362	38.420	-6.362	38.943	99.403	0.307
3500.000	0.821	299.565	3499.607	-6.163	37.147	-6.163	37.654	99.421	0.582
3600.000	0.698	252.183	3599.599	-5.996	35.944	-5.996	36.441	99.471	0.620
3700.000	0.471	243.221	3699.593	-6.368	34.997	-6.368	35.572	100.312	0.244
3800.000	0.292	273.297	3799.591	-6.538	34.376	-6.538	34.992	100.769	0.263
3900.000	0.263	336.108	3899.590	-6.313	34.029	-6.313	34.610	100.511	0.290
4000.000	0.290	21.627	3999.589	-5.868	34.029	-5.868	34.531	99.784	0.215
4100.000	0.692	93.390	4099.586	-5.669	34.725	-5.669	35.185	99.272	0.662
4200.000	0.649	102.913	4199.579	-5.831	35.880	-5.831	36.351	99.231	0.119
4300.000	0.468	109.292	4299.574	-6.093	36.818	-6.093	37.319	99.397	0.191
4400.000	0.174	196.766	4399.573	-6.374	37.160	-6.374	37.703	99.732	0.492
4500.000	0.447	243.188	4499.572	-6.695	36.769	-6.695	37.373	100.320	0.350
4600.000	1.236	270.521	4599.561	-6.861	35.342	-6.861	36.002	100.986	0.864
4700.000	1.740	287.692	4699.527	-6.390	32.818	-6.390	33.435	101.018	0.667
4800.000	2.137	291.789	4799.470	-5.237	29.641	-5.237	30.100	100.019	0.421
4900.000	2.608	302.347	4899.384	-3.327	25.988	-3.327	26.200	97.296	0.641
5000.000	3.009	309.560	4999.264	-0.438	22.042	-0.438	22.047	91.139	0.534
5100.000	2.751	312.851	5099.138	2.865	18.260	2.865	18.483	81.083	0.306
5200.000	2.324	317.374	5199.040	5.989	15.127	5.989	16.270	68.401	0.471
5300.000	2.154	319.873	5298.963	8.918	12.543	8.918	15.390	54.588	0.196
5400.000	1.614	314.847	5398.909	11.348	10.333	11.348	15.348	42.321	0.564
5500.000	0.899	309.278	5498.884	12.838	8.728	12.838	15.523	34.210	0.725
5600.000	0.981	305.511	5598.871	13.831	7.424	13.831	15.698	28.226	0.103
5700.000	0.946	301.818	5698.857	14.764	6.026	14.764	15.946	22.203	0.071
5800.000	1.249	349.494	5798.840	16.271	5.125	16.271	17.059	17.484	0.929

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
5900.000	0.999	0.224	5898.821	18.214	4.930	18.214	18.870	15.145	0.326
6000.000	0.909	13.918	5998.807	19.857	5.124	19.857	20.507	14.470	0.244
6100.000	0.621	17.900	6098.798	21.143	5.482	21.143	21.842	14.535	0.293
6200.000	0.634	20.222	6198.792	22.178	5.839	22.178	22.934	14.751	0.029
6300.000	0.698	20.894	6298.785	23.266	6.248	23.266	24.090	15.032	0.064
6400.000	0.695	8.700	6398.778	24.434	6.557	24.434	25.299	15.021	0.148
6500.000	0.594	8.456	6498.772	25.547	6.725	25.547	26.417	14.748	0.101
6600.000	0.530	346.879	6598.767	26.510	6.696	26.510	27.343	14.175	0.220
6700.000	0.375	331.663	6698.764	27.249	6.436	27.249	27.998	13.289	0.195
6800.000	0.123	357.749	6798.763	27.644	6.276	27.644	28.347	12.792	0.270
6900.000	0.181	263.153	6898.763	27.732	6.115	27.732	28.398	12.436	0.227
7000.000	0.155	200.822	6998.762	27.586	5.910	27.586	28.212	12.093	0.175
7100.000	0.159	118.232	7098.762	27.394	5.984	27.394	28.040	12.323	0.207
7200.000	0.221	135.355	7198.762	27.192	6.242	27.192	27.899	12.928	0.083