



Company/Rig: Noble Energy/CoreTech  
WELL/API#: DPG F 12-27X/05-123-29785  
DECLINATION: 8.29 Degrees  
TD AS DRILLED: 7063 Feet  
COUNTY/STATE: Weld/Colorado  
VS-Azi: 0.000 Degrees  
Latitude: 40.42013, Longitude: -104.60622  
Grid North = True North -0.58 degs (NAD 27)  
Grid Correction Applied = -0.58 degs



DEPTH REFERENCE : RKB=GL Elevation=4603 Feet

DRILLOG MS GYRO SURVEY CALCULATIONS

Filename: survey-01-de\_01.ut

Minimum Curvature Method

Report Date/Time: 12/7/2015 / 14:34

LAT & LONG OBTAINED BY HANDHELD GPS AT WELLHEAD

NORTH REFERENCE: GRID

HENDERSON, COLORADO

303-853-4976

Surveyor: Geof Davis / DPG F 12-27X

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	0.130	353.348	100.000	0.112	-0.013	0.112	0.113	353.348	0.130
200.000	0.312	227.555	199.999	0.041	-0.227	0.041	0.230	280.262	0.401
300.000	0.493	258.465	299.997	-0.228	-0.849	-0.228	0.879	254.937	0.276
400.000	0.392	250.823	399.994	-0.427	-1.593	-0.427	1.649	255.004	0.116
500.000	0.148	162.207	499.993	-0.662	-1.876	-0.662	1.990	250.556	0.416
600.000	0.577	110.090	599.991	-0.959	-1.364	-0.959	1.667	234.891	0.500
700.000	0.644	126.075	699.986	-1.462	-0.437	-1.462	1.526	196.628	0.182
800.000	0.685	121.573	799.979	-2.106	0.527	-2.106	2.171	165.964	0.067
900.000	0.481	127.706	899.974	-2.676	1.368	-2.676	3.005	152.922	0.213
1000.000	0.302	147.042	999.971	-3.154	1.844	-3.154	3.653	149.691	0.220
1100.000	0.181	145.576	1099.970	-3.506	2.077	-3.506	4.075	149.360	0.121
1200.000	0.217	148.080	1199.970	-3.797	2.266	-3.797	4.422	149.170	0.037
1300.000	0.093	237.982	1299.969	-4.001	2.298	-4.001	4.614	150.132	0.236
1400.000	0.219	279.800	1399.969	-4.012	2.041	-4.012	4.501	153.036	0.162
1500.000	0.510	263.903	1499.967	-4.027	1.410	-4.027	4.266	160.700	0.305
1600.000	0.694	263.494	1599.961	-4.142	0.366	-4.142	4.159	174.954	0.184
1700.000	1.110	253.131	1699.949	-4.492	-1.163	-4.492	4.640	194.509	0.445
1800.000	0.972	258.300	1799.932	-4.945	-2.919	-4.945	5.742	210.556	0.167

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	0.877	276.672	1899.920	-5.028	-4.509	-5.028	6.754	221.887	0.310
2000.000	0.882	282.465	1999.908	-4.773	-6.020	-4.773	7.683	231.592	0.089
2100.000	1.020	286.455	2099.894	-4.355	-7.625	-4.355	8.781	240.269	0.153
2200.000	1.244	272.048	2199.875	-4.064	-9.564	-4.064	10.391	246.978	0.361
2300.000	1.589	234.457	2299.846	-4.831	-11.777	-4.831	12.729	247.695	0.969
2400.000	1.903	223.996	2399.800	-6.832	-14.059	-6.832	15.631	244.082	0.446
2500.000	2.076	227.473	2499.739	-9.251	-16.547	-9.251	18.958	240.792	0.211
2600.000	1.813	236.187	2599.682	-11.356	-19.197	-11.356	22.304	239.393	0.395
2700.000	1.515	235.578	2699.640	-12.983	-21.601	-12.983	25.203	238.992	0.299
2800.000	1.017	236.497	2799.615	-14.220	-23.432	-14.220	27.409	238.747	0.498
2900.000	0.590	235.753	2899.605	-15.000	-24.597	-15.000	28.810	238.624	0.428
3000.000	0.488	238.662	2999.600	-15.511	-25.387	-15.511	29.750	238.575	0.106
3100.000	0.535	219.866	3099.597	-16.091	-26.049	-16.091	30.618	238.296	0.173
3200.000	0.898	171.087	3199.589	-17.223	-26.227	-17.223	31.377	236.707	0.678
3300.000	1.089	173.138	3299.574	-18.941	-25.992	-18.941	32.161	233.919	0.195
3400.000	0.912	177.376	3399.559	-20.679	-25.842	-20.679	33.098	231.333	0.192
3500.000	0.912	182.519	3499.546	-22.269	-25.841	-22.269	34.113	229.246	0.082
3600.000	0.857	201.486	3599.535	-23.760	-26.150	-23.760	35.332	227.741	0.297
3700.000	0.813	221.385	3699.524	-24.989	-26.893	-24.989	36.711	227.102	0.292
3800.000	0.764	232.064	3799.515	-25.931	-27.888	-25.931	38.081	227.082	0.155
3900.000	0.962	203.274	3899.504	-27.112	-28.745	-27.112	39.514	226.675	0.470
4000.000	1.066	190.199	3999.488	-28.799	-29.242	-28.799	41.042	225.437	0.253
4100.000	1.259	189.717	4099.468	-30.797	-29.592	-30.797	42.710	223.857	0.194
4200.000	0.725	212.550	4199.453	-32.413	-30.118	-32.413	44.245	222.898	0.654
4300.000	0.538	216.570	4299.447	-33.323	-30.738	-33.323	45.335	222.689	0.192
4400.000	0.265	261.483	4399.444	-33.735	-31.246	-33.735	45.982	222.807	0.398
4500.000	1.006	333.481	4499.438	-32.984	-31.867	-32.984	45.863	224.013	0.958
4600.000	1.313	338.080	4599.418	-31.135	-32.686	-31.135	45.142	226.392	0.321
4700.000	1.541	342.999	4699.387	-28.786	-33.507	-28.786	44.175	229.334	0.259
4800.000	1.445	340.708	4799.353	-26.310	-34.317	-26.310	43.242	232.524	0.114
4900.000	1.234	333.477	4899.325	-24.157	-35.215	-24.157	42.704	235.550	0.270
5000.000	0.949	346.427	4999.307	-22.388	-35.890	-22.388	42.300	238.044	0.375
5100.000	0.570	40.793	5099.300	-21.206	-35.760	-21.206	41.575	239.331	0.772
5200.000	0.616	46.926	5199.294	-20.463	-35.042	-20.463	40.579	239.717	0.079
5300.000	0.601	52.380	5299.289	-19.775	-34.234	-19.775	39.535	239.987	0.060
5400.000	0.565	84.284	5399.284	-19.406	-33.327	-19.406	38.565	239.789	0.323
5500.000	0.150	73.557	5499.282	-19.319	-32.710	-19.319	37.990	239.433	0.419
5600.000	0.197	107.127	5599.281	-19.333	-32.421	-19.333	37.747	239.192	0.110
5700.000	0.170	136.445	5699.281	-19.491	-32.155	-19.491	37.601	238.778	0.096
5800.000	0.232	159.941	5799.280	-19.788	-31.983	-19.788	37.610	238.255	0.102

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	0.437	192.164	5899.278	-20.352	-31.994	-20.352	37.919	237.539	0.271
6000.000	0.260	222.457	5999.276	-20.892	-32.228	-20.892	38.407	237.046	0.250
6100.000	0.211	238.782	6099.276	-21.155	-32.539	-21.155	38.811	236.970	0.083
6200.000	0.574	268.491	6199.273	-21.264	-33.197	-21.264	39.423	237.358	0.404
6300.000	0.341	290.201	6299.270	-21.175	-33.976	-21.175	40.034	238.068	0.286
6400.000	0.258	234.699	6399.269	-21.202	-34.439	-21.202	40.442	238.382	0.288
6500.000	0.278	233.548	6499.268	-21.476	-34.818	-21.476	40.909	238.333	0.020
6600.000	0.220	165.039	6599.267	-21.806	-34.963	-21.806	41.206	238.049	0.284
6700.000	0.576	202.916	6699.265	-22.455	-35.110	-22.455	41.676	237.399	0.425
6800.000	0.699	172.910	6799.259	-23.523	-35.230	-23.523	42.362	236.269	0.350
6850.000	0.886	182.263	6849.254	-24.211	-35.208	-24.211	42.729	235.485	0.454