



Company/Rig: Noble Energy/CoreTech
WELL/API#: DPG F 12-18/05-123-29250
DECLINATION: 8.29 Degrees
TD AS DRILLED: 7089 Feet
COUNTY/STATE: Weld/Colorado
VS-Azi: 0.000 Degrees
Latitude: 40.41713, Longitude: -104.61148
Grid North = True North -0.57 degs (NAD 27)
Grid Correction Applied = -0.57 degs



DEPTH REFERENCE : RKB=GL Elevation=4608 Feet

DRILLOG MS GYRO SURVEY CALCULATIONS

Filename: survey-01-de_01.ut

Minimum Curvature Method

Report Date/Time: 12/7/2015 / 14:17

LAT & LONG OBTAINED BY HANDHELD GPS AT WELLHEAD

NORTH REFERENCE: GRID

HENDERSON, COLORADO

303-853-4976

Surveyor: Geof Davis / DPG F 12-18

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	0.229	38.155	100.000	0.157	0.123	0.157	0.200	38.155	0.229
200.000	0.468	81.774	199.998	0.372	0.651	0.372	0.750	60.219	0.341
300.000	0.434	86.325	299.995	0.455	1.432	0.455	1.503	72.378	0.049
400.000	0.459	85.406	399.992	0.511	2.210	0.511	2.268	76.970	0.026
500.000	0.378	74.517	499.989	0.631	2.927	0.631	2.994	77.825	0.113
600.000	0.456	71.455	599.987	0.846	3.622	0.846	3.720	76.851	0.081
700.000	0.533	69.184	699.983	1.138	4.435	1.138	4.578	75.606	0.079
800.000	0.520	65.325	799.979	1.493	5.282	1.493	5.489	74.217	0.038
900.000	0.426	59.247	899.975	1.872	6.014	1.872	6.299	72.705	0.107
1000.000	0.196	80.028	999.974	2.092	6.501	2.092	6.829	72.163	0.252
1100.000	0.108	122.736	1099.973	2.070	6.749	2.070	7.059	72.945	0.137
1200.000	0.026	135.666	1199.973	2.003	6.844	2.003	7.131	73.687	0.083
1300.000	0.166	180.813	1299.973	1.842	6.858	1.842	7.101	74.965	0.149
1400.000	0.438	171.395	1399.972	1.319	6.913	1.319	7.037	79.199	0.276
1500.000	0.483	173.734	1499.968	0.522	7.016	0.522	7.035	85.748	0.048
1600.000	0.444	199.571	1599.965	-0.262	6.932	-0.262	6.937	92.165	0.211
1700.000	0.330	206.981	1699.963	-0.884	6.672	-0.884	6.730	97.544	0.124
1800.000	0.589	247.165	1799.960	-1.340	6.068	-1.340	6.214	102.452	0.398

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	0.625	237.268	1899.954	-1.834	5.135	-1.834	5.453	109.659	0.111
2000.000	0.529	228.960	1999.949	-2.433	4.327	-2.433	4.964	119.345	0.127
2100.000	0.970	229.801	2099.940	-3.282	3.332	-3.282	4.678	134.568	0.441
2200.000	1.570	224.126	2199.915	-4.812	1.732	-4.812	5.115	160.207	0.613
2300.000	1.388	209.323	2299.882	-6.852	0.185	-6.852	6.854	178.455	0.422
2400.000	0.887	206.223	2399.862	-8.602	-0.750	-8.602	8.635	184.985	0.504
2500.000	0.819	210.612	2499.851	-9.912	-1.456	-9.912	10.018	188.359	0.095
2600.000	0.667	211.335	2599.843	-11.023	-2.123	-11.023	11.226	190.899	0.152
2700.000	0.705	207.659	2699.836	-12.065	-2.711	-12.065	12.366	192.663	0.058
2800.000	0.620	161.018	2799.830	-13.122	-2.820	-13.122	13.421	192.129	0.530
2900.000	0.342	143.362	2899.826	-13.873	-2.466	-13.873	14.090	190.079	0.313
3000.000	0.181	257.788	2999.826	-14.146	-2.442	-14.146	14.355	189.795	0.448
3100.000	0.359	294.303	3099.824	-14.050	-2.882	-14.050	14.342	191.593	0.240
3200.000	0.177	39.275	3199.824	-13.801	-3.070	-13.801	14.138	192.541	0.440
3300.000	1.031	113.785	3299.818	-14.044	-2.149	-14.044	14.208	188.699	0.999
3400.000	1.309	104.191	3399.797	-14.687	-0.218	-14.687	14.689	180.850	0.339
3500.000	1.376	90.685	3499.770	-14.982	2.090	-14.982	15.127	172.057	0.323
3600.000	1.546	79.964	3599.737	-14.761	4.619	-14.761	15.467	162.623	0.321
3700.000	1.387	73.874	3699.705	-14.190	7.110	-14.190	15.871	153.387	0.223
3800.000	1.195	74.285	3799.679	-13.571	9.276	-13.571	16.438	145.648	0.192
3900.000	0.778	85.748	3899.664	-13.238	10.957	-13.238	17.184	140.388	0.459
4000.000	0.540	143.948	3999.659	-13.569	11.911	-13.569	18.055	138.723	0.674
4100.000	1.048	185.478	4099.649	-14.861	12.101	-14.861	19.165	140.845	0.737
4200.000	1.476	189.008	4199.625	-17.043	11.812	-17.043	20.737	145.275	0.434
4300.000	1.670	201.098	4299.588	-19.675	11.086	-19.675	22.583	150.600	0.384
4400.000	1.976	196.810	4399.537	-22.685	10.063	-22.685	24.816	156.078	0.335
4500.000	1.378	221.680	4499.495	-25.233	8.765	-25.233	26.712	160.846	0.929
4600.000	1.455	260.184	4599.467	-26.348	6.714	-26.348	27.190	165.705	0.937
4700.000	1.753	291.162	4699.429	-26.012	4.036	-26.012	26.323	171.181	0.903
4800.000	1.448	303.441	4799.390	-24.764	1.555	-24.764	24.813	176.407	0.458
4900.000	1.241	311.763	4899.363	-23.347	-0.306	-23.347	23.349	180.752	0.284
5000.000	1.220	299.251	4999.340	-22.105	-2.043	-22.105	22.200	185.280	0.269
5100.000	0.637	279.330	5099.327	-21.495	-3.521	-21.495	21.781	189.302	0.658
5200.000	0.667	244.015	5199.320	-21.660	-4.592	-21.660	22.141	191.971	0.397
5300.000	0.689	217.279	5299.314	-22.393	-5.480	-22.393	23.054	193.750	0.314
5400.000	0.874	187.649	5399.305	-23.628	-5.946	-23.628	24.365	194.124	0.438
5500.000	1.155	221.469	5499.290	-25.139	-6.714	-25.139	26.020	194.954	0.648
5600.000	1.004	249.536	5599.273	-26.200	-8.203	-26.200	27.454	197.384	0.543
5700.000	0.514	220.347	5699.264	-26.848	-9.314	-26.848	28.418	199.132	0.610
5800.000	0.436	197.700	5799.261	-27.553	-9.720	-27.553	29.217	199.432	0.201

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	0.573	176.688	5899.257	-28.414	-9.807	-28.414	30.059	199.042	0.228
6000.000	0.671	184.498	5999.251	-29.496	-9.824	-29.496	31.089	198.420	0.130
6100.000	0.702	162.731	6099.244	-30.665	-9.688	-30.665	32.159	197.533	0.261
6200.000	0.626	146.203	6199.237	-31.703	-9.202	-31.703	33.012	196.186	0.205
6300.000	1.073	133.264	6299.226	-32.799	-8.217	-32.799	33.812	194.065	0.484
6400.000	1.226	139.090	6399.206	-34.248	-6.835	-34.248	34.924	191.286	0.192
6500.000	2.043	153.916	6499.165	-36.657	-5.351	-36.657	37.046	188.305	0.913
6600.000	2.312	179.030	6599.095	-40.275	-4.533	-40.275	40.529	186.422	0.982
6700.000	2.425	197.446	6699.011	-44.310	-5.133	-44.310	44.607	186.608	0.766
6800.000	3.464	214.320	6798.879	-48.824	-7.471	-48.824	49.393	188.700	1.342
6850.000	3.796	212.498	6848.779	-51.468	-9.212	-51.468	52.286	190.148	0.703