



COMPANY/RIG: Noble Energy/Production/VES
WELL/API: DPG Bird Farm 12-1H5/05-123-18251
DECLINATION: 8.28 Degrees
TD AS DRILLED: 7020 Feet
COUNTY/STATE: Weld/Colorado
VS-Azi: 0.000 Degrees
Latitude: 40.41889, Longitude: -104.60375
Grid North = True North -0.58 degs (NAD 27)
Grid Correction Applied = -0.58 degs



DEPTH REFERENCE : RKB = GL Elevation = 4602

DRILLOG GYRO SURVEY CALCULATIONS

Filename: gyrosurvey.ut

Minimum Curvature Method

Report Date/Time: 12/17/2015 / 14:46

LAT & LONG OBTAINED BY HANDHELD GPS AT WELLHEAD

NORTH REFERENCE: GRID

HENDERSON, COLORADO

303-853-4976

Surveyor: JUSTIN / DPG Bird Farm 12-1H5

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	0.488	174.720	99.999	-0.424	0.039	-0.424	0.426	174.720	0.488
200.000	0.477	171.267	199.995	-1.260	0.142	-1.260	1.268	173.587	0.031
300.000	0.492	158.239	299.992	-2.070	0.364	-2.070	2.102	170.030	0.111
400.000	0.437	109.645	399.989	-2.596	0.882	-2.596	2.742	161.240	0.385
500.000	0.542	356.368	499.987	-2.252	1.211	-2.252	2.557	151.738	0.820
600.000	0.488	297.107	599.983	-1.586	0.802	-1.586	1.778	153.181	0.511
700.000	0.183	51.553	699.982	-1.293	0.548	-1.293	1.405	157.040	0.587
800.000	0.677	333.820	799.980	-0.664	0.412	-0.664	0.782	148.175	0.662
900.000	0.591	301.256	899.974	0.133	-0.289	0.133	0.318	294.762	0.365
1000.000	0.685	342.576	999.968	0.972	-0.909	0.972	1.331	316.907	0.459
1100.000	0.352	271.847	1099.965	1.552	-1.395	1.552	2.087	318.052	0.659
1200.000	0.861	303.244	1199.959	1.974	-2.330	1.974	3.054	310.267	0.590
1300.000	0.578	334.138	1299.951	2.839	-3.179	2.839	4.262	311.774	0.471
1400.000	0.187	254.668	1399.949	3.250	-3.556	3.250	4.817	312.424	0.574
1500.000	0.628	282.722	1499.947	3.327	-4.248	3.327	5.396	308.069	0.472
1600.000	0.453	316.532	1599.942	3.735	-5.055	3.735	6.285	306.458	0.356
1700.000	0.191	281.871	1699.941	4.056	-5.490	4.056	6.826	306.457	0.315
1800.000	0.812	224.818	1799.937	3.588	-6.153	3.588	7.122	300.247	0.726

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	0.776	194.688	1899.928	2.430	-6.824	2.430	7.244	289.600	0.414
2000.000	0.649	193.150	1999.920	1.224	-7.124	1.224	7.229	279.746	0.129
2100.000	0.933	180.622	2099.910	-0.141	-7.262	-0.141	7.263	268.887	0.331
2200.000	1.181	173.667	2199.893	-1.979	-7.157	-1.979	7.426	254.543	0.279
2300.000	1.205	173.557	2299.872	-4.048	-6.926	-4.048	8.022	239.693	0.024
2400.000	0.922	180.743	2399.854	-5.897	-6.818	-5.897	9.015	229.141	0.312
2500.000	0.755	203.586	2499.844	-7.306	-7.092	-7.306	10.182	224.150	0.370
2600.000	0.831	193.032	2599.834	-8.616	-7.519	-8.616	11.435	221.112	0.164
2700.000	0.784	167.664	2699.825	-9.990	-7.536	-9.990	12.514	217.030	0.357
2800.000	0.637	171.410	2799.817	-11.208	-7.307	-11.208	13.380	213.101	0.154
2900.000	0.846	176.662	2899.809	-12.495	-7.181	-12.495	14.411	209.887	0.219
3000.000	0.551	157.991	2999.801	-13.677	-6.958	-13.677	15.345	206.964	0.369
3100.000	0.393	217.658	3099.798	-14.394	-6.988	-14.394	16.001	205.894	0.489
3200.000	0.554	218.330	3199.795	-15.045	-7.497	-15.045	16.809	206.487	0.161
3300.000	0.331	229.857	3299.792	-15.610	-8.017	-15.610	17.549	207.185	0.239
3400.000	0.546	265.848	3399.789	-15.831	-8.714	-15.831	18.071	208.829	0.339
3500.000	0.651	224.826	3499.784	-16.269	-9.589	-16.269	18.885	210.517	0.431
3600.000	0.594	211.877	3599.778	-17.112	-10.264	-17.112	19.954	210.955	0.152
3700.000	0.568	236.335	3699.773	-17.826	-10.950	-17.826	20.920	211.560	0.247
3800.000	0.615	182.751	3799.769	-18.637	-11.388	-18.637	21.840	211.427	0.535
3900.000	0.629	205.428	3899.763	-19.668	-11.649	-19.668	22.859	210.638	0.245
4000.000	1.232	209.475	3999.749	-21.100	-12.414	-21.100	24.481	210.470	0.607
4100.000	1.207	227.280	4099.727	-22.750	-13.717	-22.750	26.566	211.087	0.378
4200.000	1.390	238.976	4199.701	-24.090	-15.530	-24.090	28.662	212.808	0.321
4300.000	1.309	225.818	4299.674	-25.511	-17.388	-25.511	30.873	214.278	0.319
4400.000	1.301	236.673	4399.648	-26.931	-19.156	-26.931	33.049	215.424	0.247
4500.000	1.487	263.774	4499.620	-27.695	-21.394	-27.695	34.996	217.686	0.678
4600.000	2.101	272.797	4599.570	-27.747	-24.515	-27.747	37.025	221.462	0.674
4700.000	1.396	276.211	4699.523	-27.525	-27.557	-27.525	38.949	225.032	0.712
4800.000	0.875	254.349	4799.504	-27.600	-29.503	-27.600	40.400	226.909	0.668
4900.000	0.971	245.807	4899.491	-28.153	-31.011	-28.153	41.884	227.766	0.168
5000.000	0.846	262.323	4999.478	-28.599	-32.516	-28.599	43.303	228.667	0.289
5100.000	0.101	298.405	5099.474	-28.656	-33.325	-28.656	43.951	229.308	0.766
5200.000	0.149	341.779	5199.474	-28.490	-33.443	-28.490	43.933	229.573	0.103
5300.000	0.079	28.865	5299.474	-28.305	-33.451	-28.305	43.819	229.763	0.112
5400.000	1.002	19.549	5399.468	-27.420	-33.125	-27.420	43.001	230.382	0.924
5500.000	1.412	21.226	5499.446	-25.448	-32.386	-25.448	41.188	231.841	0.411
5600.000	0.453	20.777	5599.431	-23.929	-31.799	-23.929	39.797	233.038	0.959
5700.000	0.356	39.177	5699.429	-23.318	-31.463	-23.318	39.162	233.456	0.161
5800.000	0.970	60.638	5799.422	-22.662	-30.529	-22.662	38.021	233.412	0.651

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	0.375	54.279	5899.415	-22.056	-29.525	-22.056	36.854	233.239	0.598
6000.000	0.315	69.211	5999.413	-21.767	-29.002	-21.767	36.262	233.110	0.108
6100.000	0.525	95.193	6099.410	-21.711	-28.289	-21.711	35.660	232.495	0.278
6200.000	0.830	74.942	6199.403	-21.564	-27.134	-21.564	34.659	231.524	0.384
6300.000	1.257	83.157	6299.386	-21.246	-25.346	-21.246	33.072	230.029	0.451
6400.000	0.816	110.581	6399.370	-21.365	-23.591	-21.365	31.827	227.834	0.652
6500.000	0.972	84.317	6499.359	-21.531	-22.080	-21.531	30.841	225.721	0.434
6600.000	0.562	106.072	6599.350	-21.583	-20.765	-21.583	29.950	223.894	0.496
6700.000	0.113	128.716	6699.348	-21.781	-20.217	-21.781	29.717	222.867	0.460
6800.000	0.294	328.208	6799.347	-21.624	-20.275	-21.624	29.643	223.156	0.403