

Company: Anadarko Petroleum Corp.

Well: Apollo 1

API: 05-123-08243

Rig Name: Production/Canary

Location: Weld County, Colorado

Latitude: 40.041, Longitude: -104.700

Directions are relative to True North

VS-Azi: 0.000 Degrees



FIELD COPY ONLY (NOT DEFINITIVE)

Depth Reference : RKB = Ground Level

DRILLOG MS GYRO SURVEY CALCULATIONS

Filename: msgyro\_run01-01-de\_01.ut

Minimum Curvature Method

Report Date/Time: 5/6/2014 / 11:33

Vaughn Energy Services

Henderson, CO.

Justin Williams

303-853-4976

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	0.563	240.310	99.998	-0.243	-0.427	-0.243	0.491	240.310	0.563
200.000	0.738	249.569	199.992	-0.712	-1.457	-0.712	1.622	243.973	0.203
300.000	0.430	267.811	299.987	-0.951	-2.436	-0.951	2.615	248.676	0.356
400.000	0.606	323.582	399.983	-0.540	-3.124	-0.540	3.170	260.199	0.509
500.000	0.610	297.734	499.978	0.134	-3.909	0.134	3.911	271.956	0.272
600.000	0.626	286.840	599.972	0.540	-4.903	0.540	4.933	276.280	0.118
700.000	0.623	304.607	699.966	1.006	-5.874	1.006	5.959	279.724	0.193
800.000	0.354	256.067	799.963	1.241	-6.621	1.241	6.736	280.615	0.470
900.000	0.346	263.473	899.961	1.132	-7.220	1.132	7.308	278.911	0.046
1000.000	0.261	347.251	999.960	1.320	-7.570	1.320	7.684	279.889	0.410
1100.000	0.176	87.408	1099.959	1.549	-7.467	1.549	7.626	281.717	0.339
1200.000	0.197	169.967	1199.959	1.386	-7.283	1.386	7.414	280.774	0.247
1300.000	0.144	260.271	1299.959	1.195	-7.377	1.195	7.473	279.202	0.245
1400.000	0.287	227.556	1399.958	1.005	-7.685	1.005	7.750	277.448	0.184
1500.000	0.436	268.810	1499.956	0.828	-8.250	0.828	8.292	275.728	0.290
1600.000	0.700	270.803	1599.951	0.828	-9.241	0.828	9.278	275.122	0.265
1700.000	0.550	274.642	1699.945	0.876	-10.330	0.876	10.367	274.845	0.155
1800.000	0.802	275.801	1799.938	0.985	-11.504	0.985	11.546	274.895	0.252
1900.000	0.598	279.836	1899.931	1.145	-12.714	1.145	12.766	275.146	0.210
2000.000	0.583	275.554	1999.925	1.283	-13.735	1.283	13.795	275.338	0.046
2100.000	0.553	286.397	2099.920	1.469	-14.704	1.469	14.777	275.705	0.111
2200.000	0.525	264.789	2199.916	1.563	-15.623	1.563	15.701	275.715	0.204
2300.000	0.808	280.455	2299.909	1.650	-16.772	1.650	16.853	275.618	0.334
2400.000	0.770	324.255	2399.901	2.323	-17.858	2.323	18.009	277.413	0.590
2500.000	0.334	326.466	2499.896	3.112	-18.412	3.112	18.673	279.594	0.436
2600.000	0.828	309.928	2599.890	3.819	-19.127	3.819	19.505	281.292	0.517
2700.000	0.574	298.012	2699.883	4.518	-20.124	4.518	20.625	282.655	0.291
2800.000	0.763	304.703	2799.876	5.133	-21.114	5.133	21.729	283.664	0.204
2900.000	0.460	323.215	2899.870	5.834	-21.902	5.834	22.666	284.915	0.358
3000.000	1.109	354.372	2999.861	7.119	-22.237	7.119	23.349	287.752	0.754
3100.000	0.954	4.670	3099.845	8.912	-22.265	8.912	23.982	291.815	0.241
3200.000	0.986	7.961	3199.830	10.594	-22.078	10.594	24.488	295.634	0.064
3300.000	1.196	1.827	3299.812	12.489	-21.925	12.489	25.233	299.667	0.239
3400.000	0.978	11.380	3399.794	14.368	-21.724	14.368	26.045	303.481	0.283

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
3500.000	1.061	359.675	3499.779	16.130	-21.561	16.130	26.926	306.801	0.224
3600.000	1.141	4.238	3599.760	18.048	-21.492	18.048	28.065	310.022	0.118
3700.000	0.923	337.156	3699.744	19.783	-21.731	19.783	29.388	312.313	0.527
3800.000	0.868	339.201	3799.732	21.234	-22.313	21.234	30.802	313.580	0.064
3900.000	0.576	359.247	3899.724	22.445	-22.589	22.445	31.844	314.816	0.382
4000.000	0.620	10.874	3999.719	23.478	-22.494	23.478	32.514	316.227	0.129
4100.000	0.332	42.214	4099.715	24.224	-22.197	24.224	32.856	317.500	0.378
4200.000	0.643	8.054	4199.712	24.994	-21.923	24.994	33.246	318.744	0.412
4300.000	0.659	38.280	4299.706	26.001	-21.488	26.001	33.731	320.428	0.340
4400.000	0.765	39.770	4399.698	26.966	-20.705	26.966	33.998	322.482	0.107
4500.000	0.894	29.603	4499.688	28.157	-19.892	28.157	34.475	324.760	0.195
4600.000	0.901	28.426	4599.675	29.527	-19.132	29.527	35.184	327.058	0.020
4700.000	0.889	26.913	4699.663	30.910	-18.407	30.910	35.976	329.226	0.026
4800.000	0.783	21.568	4799.652	32.238	-17.805	32.238	36.828	331.089	0.132
4900.000	0.313	45.355	4899.648	33.065	-17.359	33.065	37.345	332.301	0.513
5000.000	0.557	359.684	4999.645	33.743	-17.167	33.743	37.860	333.035	0.406
5100.000	0.441	325.234	5099.641	34.546	-17.389	34.546	38.675	333.281	0.316
5200.000	0.617	339.829	5199.637	35.367	-17.794	35.367	39.591	333.291	0.220
5300.000	0.344	305.432	5299.634	36.046	-18.225	36.046	40.391	333.179	0.385
5400.000	0.151	299.101	5399.633	36.285	-18.585	36.285	40.767	332.879	0.195
5500.000	0.475	22.154	5499.631	36.733	-18.543	36.733	41.148	333.215	0.481
5600.000	0.760	332.845	5599.626	37.707	-18.690	37.707	42.085	333.635	0.577
5700.000	0.768	342.158	5699.617	38.935	-19.198	38.935	43.411	333.754	0.124
5800.000	0.756	6.166	5799.609	40.229	-19.332	40.229	44.633	334.333	0.317
5900.000	0.110	168.421	5899.606	40.790	-19.242	40.790	45.101	334.746	0.862
6000.000	0.605	326.059	5999.605	41.133	-19.517	41.133	45.529	334.617	0.708
6100.000	0.714	354.270	6099.598	42.191	-19.874	42.191	46.637	334.778	0.338
6200.000	1.135	327.341	6199.585	43.645	-20.470	43.645	48.207	334.872	0.594
6300.000	0.914	358.391	6299.570	45.276	-21.027	45.276	49.921	335.089	0.588
6400.000	0.440	359.783	6399.563	46.458	-21.051	46.458	51.005	335.624	0.474
6500.000	0.767	352.979	6499.557	47.506	-21.134	47.506	51.995	336.017	0.334
6600.000	0.975	327.525	6599.546	48.888	-21.673	48.888	53.477	336.092	0.434
6700.000	0.940	343.686	6699.532	50.393	-22.360	50.393	55.131	336.073	0.271
6800.000	1.318	348.630	6799.513	52.308	-22.817	52.308	57.068	336.433	0.390
6875.000	1.546	324.676	6874.490	53.980	-23.572	53.980	58.902	336.410	0.846

<div> HORIZONTAL DISPLACEMENT IS  58.902 FEET AT 336.410 DEGREES </div>
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