

Company: Anadarko Petroleum Corp.
 Well/API: Butterball H 30-27/5-123-26199
 Tool Type: North Seeking Rate Gyro
 Rig Name: Production/Core-Tech
 County/State: Weld/Colorado
 Latitude: 40.204, Longitude: -104.702
 Directions are relative to True North
 VS-Azi: 0.000 Degrees



FIELD COPY ONLY (NOT DEFINITIVE)

Depth Reference : RKB = GL Relevation = 4937'

DRILLOG MS GYRO SURVEY CALCULATIONS

Filename: msgyro_run02-01-de_01.ut

Minimum Curvature Method

Report Date/Time: 8/27/2014 / 09:12

Lat/Long & Elevation Obtained By Handheld GPS At Wellhead

Handheld GPS Reference: NAD83/Device Error: ±9 Feet

VES Survey International - Henderson CO

Nick Kula

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	0.323	249.605	99.999	-0.098	-0.264	-0.098	0.282	249.605	0.323
200.000	0.348	238.310	199.998	-0.356	-0.787	-0.356	0.864	245.653	0.071
300.000	0.291	335.777	299.997	-0.284	-1.150	-0.284	1.184	256.138	0.482
400.000	0.365	267.829	399.995	-0.064	-1.572	-0.064	1.574	267.675	0.372
500.000	0.347	258.947	499.994	-0.134	-2.188	-0.134	2.192	266.496	0.058
600.000	0.414	266.008	599.991	-0.217	-2.845	-0.217	2.853	265.635	0.081
700.000	0.310	330.142	699.990	-0.008	-3.340	-0.008	3.340	269.862	0.394
800.000	0.297	327.411	799.988	0.445	-3.614	0.445	3.641	277.015	0.019
900.000	0.187	265.686	899.988	0.651	-3.916	0.651	3.970	279.436	0.266
1000.000	0.218	100.996	999.987	0.602	-3.893	0.602	3.939	278.796	0.401
1100.000	0.293	281.380	1099.987	0.616	-3.956	0.616	4.004	278.856	0.510
1200.000	0.121	206.261	1199.986	0.572	-4.254	0.572	4.292	277.658	0.287
1300.000	0.388	224.662	1299.985	0.236	-4.539	0.236	4.545	272.977	0.276
1400.000	0.380	222.315	1399.983	-0.250	-5.000	-0.250	5.006	267.139	0.018
1500.000	0.330	235.865	1499.981	-0.656	-5.461	-0.656	5.500	263.146	0.097
1600.000	0.498	259.077	1599.979	-0.900	-6.126	-0.900	6.192	261.640	0.234
1700.000	0.819	219.946	1699.972	-1.531	-7.012	-1.531	7.177	257.685	0.535
1800.000	1.300	224.939	1799.955	-2.881	-8.272	-2.881	8.759	250.794	0.489
1900.000	1.312	237.601	1899.929	-4.298	-10.039	-4.298	10.920	246.825	0.288
2000.000	1.099	262.978	1999.908	-5.028	-11.958	-5.028	12.972	247.192	0.569
2100.000	1.280	302.724	2099.888	-4.542	-13.849	-4.542	14.574	251.843	0.826
2200.000	1.223	340.871	2199.866	-2.930	-15.138	-2.930	15.419	259.046	0.820
2300.000	1.817	355.138	2299.830	-0.343	-15.622	-0.343	15.626	268.744	0.700
2400.000	1.900	1.316	2399.778	2.894	-15.718	2.894	15.982	280.433	0.217
2500.000	1.920	10.804	2499.723	6.197	-15.366	6.197	16.569	291.964	0.317
2600.000	1.613	8.675	2599.675	9.234	-14.840	9.234	17.478	301.892	0.314
2700.000	1.355	359.578	2699.641	11.808	-14.636	11.808	18.805	308.896	0.348
2800.000	1.245	10.787	2799.616	14.058	-14.442	14.058	20.154	314.229	0.277
2900.000	1.453	10.868	2899.588	16.371	-13.999	16.371	21.540	319.465	0.208
3000.000	1.535	356.344	2999.554	18.952	-13.845	18.952	23.471	323.851	0.386
3100.000	1.306	352.320	3099.524	21.418	-14.083	21.418	25.634	326.674	0.249
3200.000	1.399	1.640	3199.496	23.768	-14.200	23.768	27.687	329.144	0.238
3300.000	1.314	10.376	3299.468	26.116	-13.959	26.116	29.613	331.876	0.223

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
3400.000	1.781	21.013	3399.431	28.695	-13.195	28.695	31.583	335.305	0.547
3500.000	1.902	33.511	3499.380	31.529	-11.722	31.529	33.638	339.607	0.419
3600.000	1.820	38.792	3599.327	34.151	-9.811	34.151	35.532	343.972	0.190
3700.000	1.543	34.157	3699.284	36.502	-8.060	36.502	37.382	347.548	0.308
3800.000	1.347	34.258	3799.253	38.588	-6.643	38.588	39.155	350.233	0.196
3900.000	0.613	18.516	3899.237	40.066	-5.811	40.066	40.485	351.747	0.775
4000.000	0.530	353.958	3999.233	41.033	-5.690	41.033	41.426	352.105	0.256
4100.000	0.426	12.593	4099.229	41.856	-5.658	41.856	42.237	352.302	0.186
4200.000	0.936	337.485	4199.222	42.974	-5.890	42.974	43.375	352.196	0.637
4300.000	1.704	343.764	4299.195	45.156	-6.618	45.156	45.639	351.662	0.780
4400.000	1.832	352.811	4399.147	48.170	-7.234	48.170	48.710	351.459	0.307
4500.000	1.810	358.741	4499.097	51.335	-7.469	51.335	51.875	351.722	0.190
4600.000	1.745	1.514	4599.049	54.436	-7.463	54.436	54.945	352.193	0.108
4700.000	1.249	357.215	4699.014	57.047	-7.476	57.047	57.535	352.534	0.508
4800.000	0.874	3.282	4798.997	58.897	-7.485	58.897	59.371	352.757	0.392
4900.000	1.049	44.762	4898.984	60.308	-6.797	60.308	60.690	353.569	0.700
5000.000	1.888	63.778	4998.951	61.685	-4.676	61.685	61.862	355.665	0.959
5100.000	2.853	68.280	5098.864	63.334	-0.886	63.334	63.340	359.199	0.983
5200.000	2.782	84.905	5198.745	64.471	3.844	64.471	64.585	3.412	0.818
5300.000	1.986	87.162	5298.658	64.772	7.992	64.772	65.263	7.034	0.801
5400.000	1.606	81.151	5398.609	65.073	11.107	65.073	66.014	9.686	0.423
5500.000	0.906	80.211	5498.584	65.423	13.271	65.423	66.756	11.467	0.700
5600.000	0.432	53.587	5598.577	65.782	14.354	65.782	67.330	12.309	0.555
5700.000	0.225	20.256	5698.575	66.190	14.726	66.190	67.808	12.543	0.274
5800.000	0.346	5.794	5798.574	66.674	14.824	66.674	68.302	12.535	0.140
5900.000	0.417	243.594	5898.573	66.812	14.528	66.812	68.373	12.268	0.669
6000.000	1.326	235.412	5998.560	65.993	13.250	65.993	67.310	11.353	0.915
6100.000	1.268	203.819	6098.536	64.324	11.850	64.324	65.407	10.439	0.708
6200.000	1.559	215.521	6198.506	62.205	10.613	62.205	63.103	9.682	0.409
6300.000	1.930	217.508	6298.459	59.761	8.797	59.761	60.406	8.374	0.375
6400.000	2.117	240.559	6398.399	57.518	6.164	57.518	57.847	6.117	0.829
6500.000	2.247	245.167	6498.326	55.787	2.776	55.787	55.856	2.849	0.218
6600.000	2.153	235.788	6598.253	53.907	-0.556	53.907	53.910	359.409	0.372
6700.000	1.164	237.044	6698.210	52.299	-2.962	52.299	52.382	356.758	0.989
6800.000	0.385	200.595	6798.200	51.432	-3.933	51.432	51.582	355.628	0.885
6900.000	0.325	133.130	6898.199	50.924	-3.844	50.924	51.069	355.683	0.397
7000.000	0.535	228.700	6998.197	50.422	-3.988	50.422	50.579	355.478	0.653
7100.000	0.983	249.618	7098.188	49.815	-5.143	49.815	50.080	354.105	0.520
7200.000	1.225	253.071	7198.169	49.204	-6.971	49.204	49.696	351.937	0.251
HORIZONTAL DISPLACEMENT IS 49.696 FEET AT 351.937 DEGREES									