

Company: Anadarko Petroleum Corp.
 Well/API: Northmoor Acres 1/05-123-11030
 Tool Type: North Seeking Rate Gyro
 Rig Name: Production/CoreTech
 County/State: Weld/Colorado
 VS-Azi: 0.000 Degrees
 Latitude: 40.29417, Longitude: -104.95486
 No Grid Convergence Applied
 All Azimuths referenced to True North



FIELD COPY ONLY (NOT DEFINITIVE)

Depth Reference : RKB = GL Elevation = 5013

DRILLOG MS GYRO SURVEY CALCULATIONS

Filename: msgyrosurvey.ut
 Minimum Curvature Method
 Report Date/Time: 4/27/2015 / 14:35

Lat/Long Obtained By Handheld GPS At Wellhead
 Handheld GPS Reference: NAD83/Device Error: ±9 Feet
 VES Survey International - 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	0.196	34.955	100.000	0.140	0.098	0.140	0.171	34.955	0.196
200.000	0.090	49.117	199.999	0.332	0.256	0.332	0.419	37.584	0.111
300.000	0.109	353.504	299.999	0.478	0.304	0.478	0.567	32.481	0.094
400.000	0.124	64.270	399.999	0.619	0.391	0.619	0.732	32.262	0.135
500.000	0.136	0.441	499.999	0.784	0.489	0.784	0.925	31.947	0.138
600.000	0.147	59.556	599.999	0.968	0.601	0.968	1.139	31.828	0.140
700.000	0.067	54.308	699.999	1.067	0.759	1.067	1.309	35.415	0.081
800.000	0.157	277.038	799.998	1.117	0.670	1.117	1.303	30.932	0.211
900.000	0.165	314.419	899.998	1.235	0.431	1.235	1.308	19.239	0.103
1000.000	0.189	313.284	999.998	1.448	0.208	1.448	1.463	8.185	0.025
1100.000	0.168	309.559	1099.997	1.654	-0.024	1.654	1.655	359.154	0.024
1200.000	0.401	286.927	1199.996	1.849	-0.472	1.849	1.909	345.694	0.254
1300.000	0.214	285.858	1299.994	2.002	-0.986	2.002	2.232	333.781	0.186
1400.000	0.381	269.967	1399.993	2.053	-1.499	2.053	2.542	323.872	0.185
1500.000	0.305	279.422	1499.991	2.097	-2.094	2.097	2.963	315.039	0.095
1600.000	0.349	291.003	1599.990	2.249	-2.640	2.249	3.468	310.429	0.079
1700.000	0.525	288.128	1699.987	2.501	-3.360	2.501	4.188	306.663	0.177
1800.000	0.519	262.494	1799.983	2.584	-4.244	2.584	4.969	301.334	0.232
1900.000	0.442	290.942	1899.979	2.663	-5.054	2.663	5.713	297.783	0.248
2000.000	0.597	286.726	1999.975	2.951	-5.914	2.951	6.609	296.518	0.159
2100.000	0.513	287.567	2099.970	3.236	-6.840	3.236	7.566	295.319	0.084
2200.000	0.529	257.533	2199.966	3.271	-7.717	3.271	8.382	292.972	0.270
2300.000	0.805	227.354	2299.960	2.696	-8.685	2.696	9.094	287.244	0.438
2400.000	1.107	219.953	2399.946	1.480	-9.822	1.480	9.932	278.567	0.325
2500.000	1.210	221.171	2499.925	-0.056	-11.137	-0.056	11.137	269.713	0.106
2600.000	1.188	227.566	2599.904	-1.550	-12.597	-1.550	12.692	262.986	0.136
2700.000	1.100	238.304	2699.884	-2.753	-14.179	-2.753	14.444	259.010	0.231
2800.000	1.194	241.343	2799.864	-3.758	-15.910	-3.758	16.348	256.712	0.112
2900.000	1.148	242.444	2899.843	-4.721	-17.712	-4.721	18.330	255.077	0.052
3000.000	1.133	237.842	2999.823	-5.710	-19.437	-5.710	20.258	253.629	0.093
3100.000	1.145	233.426	3099.803	-6.832	-21.077	-6.832	22.156	252.040	0.089
3200.000	0.823	244.951	3199.788	-7.731	-22.530	-7.731	23.819	251.060	0.377

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
3300.000	0.468	238.696	3299.782	-8.247	-23.529	-8.247	24.932	250.683	0.361
3400.000	0.289	204.500	3399.780	-8.689	-23.982	-8.689	25.508	250.084	0.280
3500.000	0.336	128.674	3499.779	-9.102	-23.858	-9.102	25.535	249.118	0.386
3600.000	0.315	96.680	3599.777	-9.317	-23.356	-9.317	25.146	248.253	0.180
3700.000	0.144	83.484	3699.776	-9.335	-22.958	-9.335	24.783	247.874	0.178
3800.000	0.215	171.720	3799.776	-9.506	-22.806	-9.506	24.707	247.373	0.255
3900.000	0.188	190.980	3899.775	-9.852	-22.810	-9.852	24.847	246.640	0.072
4000.000	0.424	225.310	3999.774	-10.273	-23.104	-10.273	25.286	246.028	0.289
4100.000	0.576	208.224	4099.770	-10.977	-23.606	-10.977	26.033	245.061	0.212
4200.000	0.713	202.762	4199.764	-11.994	-24.084	-11.994	26.905	243.527	0.150
4300.000	1.005	220.667	4299.753	-13.233	-24.897	-13.233	28.195	242.008	0.393
4400.000	1.064	221.391	4399.736	-14.595	-26.082	-14.595	29.888	240.769	0.060
4500.000	1.175	233.344	4499.717	-15.904	-27.519	-15.904	31.784	239.975	0.258
4600.000	1.225	248.533	4599.696	-16.907	-29.337	-16.907	33.860	240.044	0.321
4700.000	1.210	250.069	4699.673	-17.659	-31.324	-17.659	35.958	240.588	0.036
4800.000	1.117	258.224	4799.653	-18.217	-33.271	-18.217	37.932	241.297	0.189
4900.000	1.012	264.173	4899.635	-18.506	-35.103	-18.506	39.683	242.203	0.153
5000.000	0.878	260.889	4999.622	-18.717	-36.738	-18.717	41.231	243.003	0.144
5100.000	0.730	260.155	5099.612	-18.947	-38.122	-18.947	42.571	243.572	0.148
5200.000	0.517	248.753	5199.606	-19.219	-39.170	-19.219	43.631	243.864	0.246
5300.000	0.680	253.420	5299.600	-19.552	-40.159	-19.552	44.666	244.040	0.171
5400.000	0.540	234.840	5399.595	-19.993	-41.114	-19.993	45.717	244.067	0.241
5500.000	0.451	237.436	5499.591	-20.476	-41.831	-20.476	46.574	243.918	0.092
5600.000	0.382	236.030	5599.588	-20.875	-42.439	-20.875	47.295	243.809	0.070
5700.000	0.336	250.096	5699.587	-21.161	-42.992	-21.161	47.917	243.793	0.099
5800.000	0.228	238.203	5799.585	-21.366	-43.437	-21.366	48.407	243.808	0.122
5900.000	0.216	194.294	5899.585	-21.653	-43.652	-21.653	48.727	243.617	0.166
6000.000	0.197	198.614	5999.584	-21.998	-43.754	-21.998	48.972	243.308	0.024
6100.000	0.371	212.440	6099.583	-22.434	-43.982	-22.434	49.373	242.975	0.185
6200.000	0.352	169.202	6199.581	-23.009	-44.098	-23.009	49.740	242.446	0.267

<div> HORIZONTAL DISPLACEMENT IS 49.740 FEET AT 242.446 DEGREES </div>
