

Company: Anadarko Petroleum Corp.  
 Well/API: Sarchet 15-33A/05-123-20995  
 Tool Type: North Seeking Rate Gyro  
 Rig Name: Production/CoreTech  
 County/State: Weld/Colorado  
 Latitude: 40.177, Longitude: -104.892  
 Directions are relative to True North  
 VS-Azi: 0.000 Degrees



**FIELD COPY ONLY (NOT DEFINITIVE)**

Depth Reference : RKB=GL Elevation= 4870 Feet

**DRILLOG MS GYRO SURVEY CALCULATIONS**

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

Minimum Curvature Method

Report Date/Time: 11/19/2014 / 17:02

Lat/Long Obtained By Handheld GPS At Wellhead

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

VES Survey International - Henderson CO

Mark Simmons

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	0.492	189.053	99.999	-0.424	-0.068	-0.424	0.430	189.053	0.492
200.000	0.432	261.389	199.996	-0.905	-0.508	-0.905	1.038	209.320	0.548
300.000	0.575	184.566	299.993	-1.461	-0.921	-1.461	1.728	212.230	0.635
400.000	0.820	239.569	399.987	-2.323	-1.578	-2.323	2.809	214.182	0.680
500.000	0.908	267.553	499.976	-2.720	-2.987	-2.720	4.039	227.680	0.427
600.000	1.268	271.037	599.958	-2.733	-4.885	-2.733	5.598	240.773	0.366
700.000	1.405	296.880	699.931	-2.159	-7.085	-2.159	7.407	253.052	0.612
800.000	1.263	293.478	799.904	-1.166	-9.189	-1.166	9.263	262.768	0.163
900.000	1.237	285.199	899.881	-0.444	-11.241	-0.444	11.250	267.737	0.182
1000.000	1.149	269.869	999.859	-0.163	-13.285	-0.163	13.286	269.295	0.330
1100.000	1.183	281.948	1099.839	0.048	-15.298	0.048	15.298	270.180	0.248
1200.000	1.185	280.378	1199.817	0.448	-17.325	0.448	17.330	271.481	0.032
1300.000	1.180	278.777	1299.796	0.791	-19.359	0.791	19.375	272.341	0.033
1400.000	1.164	276.759	1399.775	1.068	-21.385	1.068	21.412	272.859	0.044
1500.000	1.231	277.090	1499.753	1.320	-23.460	1.320	23.497	273.221	0.068
1600.000	1.191	274.281	1599.731	1.530	-25.563	1.530	25.609	273.426	0.072
1700.000	1.198	277.844	1699.709	1.751	-27.635	1.751	27.691	273.625	0.075
1800.000	1.250	288.354	1799.686	2.237	-29.706	2.237	29.790	274.306	0.230
1900.000	1.229	310.456	1899.664	3.276	-31.557	3.276	31.726	275.926	0.475
2000.000	1.347	324.513	1999.639	4.928	-33.055	4.928	33.420	278.480	0.336
2100.000	1.405	331.524	2099.610	6.963	-34.322	6.963	35.021	281.468	0.178
2200.000	1.015	336.212	2199.587	8.851	-35.263	8.851	36.357	284.090	0.402
2300.000	0.879	318.760	2299.574	10.238	-36.126	10.238	37.548	285.822	0.317
2400.000	0.939	283.063	2399.562	10.999	-37.430	10.999	39.012	286.376	0.560
2500.000	1.013	280.461	2499.548	11.345	-39.098	11.345	40.711	286.181	0.086
2600.000	1.082	291.033	2599.531	11.845	-40.849	11.845	42.532	286.170	0.205
2700.000	1.185	277.848	2699.512	12.325	-42.755	12.325	44.496	286.081	0.280
2800.000	0.978	291.964	2799.494	12.785	-44.571	12.785	46.369	286.006	0.336
2900.000	0.821	281.603	2899.482	13.248	-46.064	13.248	47.931	286.046	0.225
3000.000	0.858	276.153	2999.471	13.473	-47.510	13.473	49.383	285.832	0.088
3100.000	0.901	280.398	3099.459	13.695	-49.028	13.695	50.905	285.607	0.078
3200.000	1.733	292.258	3199.432	14.410	-51.200	14.410	53.189	285.718	0.872
3300.000	1.686	291.404	3299.387	15.519	-53.970	15.519	56.157	286.043	0.054

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	0.991	290.833	3399.360	16.364	-56.147	16.364	58.483	286.248	0.695
3500.000	0.518	261.369	3499.351	16.603	-57.403	16.603	59.756	286.132	0.597
3600.000	0.360	278.796	3599.348	16.584	-58.160	16.584	60.478	285.915	0.205
3700.000	0.416	254.306	3699.346	16.533	-58.820	16.533	61.099	285.700	0.174
3800.000	0.312	261.228	3799.344	16.394	-59.438	16.394	61.658	285.419	0.113
3900.000	0.433	255.853	3899.342	16.260	-60.074	16.260	62.235	285.145	0.126
4000.000	0.937	268.151	3999.334	16.141	-61.257	16.141	63.348	284.762	0.522
4100.000	1.667	261.518	4099.308	15.900	-63.513	15.900	65.473	284.055	0.744
4200.000	2.478	268.855	4199.242	15.642	-67.113	15.642	68.912	283.120	0.852
4300.000	2.727	272.979	4299.139	15.723	-71.650	15.723	73.355	282.377	0.312
4400.000	2.755	267.218	4399.024	15.730	-76.427	15.730	78.029	281.630	0.277
4500.000	2.646	264.434	4498.913	15.389	-81.125	15.389	82.571	280.741	0.170
4600.000	2.422	272.338	4598.816	15.252	-85.533	15.252	86.883	280.110	0.415
4700.000	2.208	291.052	4698.736	16.030	-89.442	16.030	90.867	280.161	0.782
4800.000	1.820	310.233	4798.675	17.747	-92.452	17.747	94.140	280.866	0.772
4900.000	1.874	310.782	4898.623	19.841	-94.903	19.841	96.954	281.809	0.057
5000.000	1.817	313.556	4998.571	22.002	-97.290	22.002	99.747	282.743	0.106
5100.000	1.493	312.017	5098.529	23.966	-99.407	23.966	102.255	283.555	0.328
5200.000	1.343	302.599	5198.499	25.469	-101.362	25.469	104.512	284.105	0.277
5300.000	1.241	304.841	5298.473	26.720	-103.238	26.720	106.639	284.511	0.113
5400.000	1.194	316.200	5398.451	28.090	-104.848	28.090	108.545	284.998	0.246
5500.000	1.038	308.064	5498.432	29.400	-106.282	29.400	110.273	285.463	0.222
5600.000	0.821	330.216	5598.419	30.580	-107.350	30.580	111.621	285.900	0.416
5700.000	0.791	355.319	5698.409	31.889	-107.762	31.889	112.382	286.485	0.351
5800.000	0.838	2.981	5798.399	33.307	-107.780	33.307	112.810	287.172	0.118
5900.000	1.080	357.209	5898.385	34.978	-107.788	34.978	113.322	287.979	0.261
6000.000	1.275	347.411	5998.364	37.005	-108.077	37.005	114.236	288.901	0.280
6100.000	1.406	344.682	6098.337	39.275	-108.643	39.275	115.524	289.875	0.146
6200.000	1.742	7.966	6198.300	41.963	-108.757	41.963	116.572	291.099	0.715
6300.000	2.577	21.393	6298.229	45.562	-107.726	45.562	116.965	292.926	0.971
6400.000	1.827	33.393	6398.155	48.987	-106.029	48.987	116.798	294.798	0.876
6500.000	1.081	32.245	6498.122	51.115	-104.648	51.115	116.464	296.033	0.747
6600.000	0.818	31.981	6598.108	52.518	-103.767	52.518	116.300	296.845	0.263
6700.000	0.596	22.470	6698.100	53.604	-103.190	53.604	116.282	297.451	0.251
6800.000	0.445	14.533	6798.096	54.461	-102.894	54.461	116.418	297.892	0.167
6900.000	0.505	319.109	6898.093	55.170	-103.085	55.170	116.920	298.155	0.445
7000.000	0.836	321.962	6998.086	56.078	-103.823	56.078	118.000	298.375	0.333
7100.000	0.795	330.288	7098.076	57.255	-104.617	57.255	119.260	298.691	0.125
7200.000	0.714	339.062	7198.067	58.439	-105.183	58.439	120.327	299.056	0.141
7300.000	0.858	12.777	7298.058	59.751	-105.240	59.751	121.019	299.586	0.476
7400.000	0.978	18.457	7398.046	61.291	-104.805	61.291	121.411	300.320	0.150
7500.000	0.835	355.892	7498.033	62.827	-104.587	62.827	122.006	300.994	0.381
7600.000	1.059	359.500	7598.020	64.478	-104.647	64.478	122.916	301.639	0.232
7700.000	1.051	348.672	7698.003	66.301	-104.835	66.301	124.041	302.310	0.199

<div> HORIZONTAL DISPLACEMENT IS  124.041 FEET AT 302.310 DEGREES </div>
--