

Company: Anadarko Petroleum Corp.  
Well/API: Plutt P 1-13/05-123-22155  
Tool Type: North Seeking Rate Gyro  
Rig Name: Production/CoreTech  
County/State: Weld/Colorado  
VS-Azi: 0.000 Degrees  
Latitude: 40.24807, Longitude: -104.84734  
All Azimuths referenced to True North  
No Grid Correction Applied



**FIELD COPY ONLY (NOT DEFINITIVE)**

Depth Reference : RKB = GL Elevation = 4763

**DRILLOG MS GYRO SURVEY CALCULATIONS**

Filename: msgyrosurvey.ut  
Minimum Curvature Method  
Report Date/Time: 8/11/2015 / 15:44

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	0.284	151.198	100.000	-0.217	0.119	-0.217	0.248	151.198	0.284
200.000	0.226	249.892	199.999	-0.502	0.054	-0.502	0.505	173.867	0.388
300.000	0.424	206.023	299.997	-0.902	-0.293	-0.902	0.949	198.009	0.305
400.000	0.162	137.352	399.996	-1.339	-0.360	-1.339	1.386	195.062	0.395
500.000	0.439	233.707	499.995	-1.669	-0.574	-1.669	1.765	198.963	0.484
600.000	0.299	239.287	599.993	-2.029	-1.107	-2.029	2.311	208.606	0.144
700.000	0.120	186.643	699.992	-2.267	-1.343	-2.267	2.635	210.649	0.245
800.000	0.366	242.740	799.992	-2.517	-1.639	-2.517	3.004	213.073	0.315
900.000	0.288	220.982	899.990	-2.853	-2.088	-2.853	3.536	216.198	0.145
1000.000	0.318	266.667	999.989	-3.060	-2.531	-3.060	3.970	219.594	0.237
1100.000	0.320	274.904	1099.987	-3.052	-3.086	-3.052	4.340	225.318	0.046
1200.000	0.654	266.463	1199.983	-3.063	-3.934	-3.063	4.986	232.092	0.341
1300.000	0.711	272.633	1299.976	-3.070	-5.124	-3.070	5.973	239.072	0.093
1400.000	0.789	275.586	1399.968	-2.974	-6.429	-2.974	7.084	245.172	0.086
1500.000	0.981	273.898	1499.956	-2.849	-7.968	-2.849	8.462	250.324	0.194
1600.000	0.941	274.447	1599.942	-2.727	-9.641	-2.727	10.019	254.204	0.041
1700.000	1.013	278.990	1699.927	-2.526	-11.332	-2.526	11.610	257.436	0.105
1800.000	0.921	279.624	1799.913	-2.253	-12.997	-2.253	13.191	260.165	0.092
1900.000	0.896	283.209	1899.900	-1.940	-14.551	-1.940	14.680	262.405	0.062
2000.000	0.851	294.551	1999.889	-1.453	-15.988	-1.453	16.054	264.808	0.178
2100.000	0.900	284.178	2099.877	-0.952	-17.425	-0.952	17.451	266.873	0.166
2200.000	0.939	284.888	2199.864	-0.549	-18.978	-0.549	18.986	268.343	0.040
2300.000	0.685	288.855	2299.854	-0.145	-20.335	-0.145	20.336	269.591	0.260
2400.000	0.599	295.306	2399.848	0.271	-21.374	0.271	21.375	270.727	0.112
2500.000	0.608	289.203	2499.842	0.670	-22.348	0.670	22.358	271.716	0.065
2600.000	0.578	285.643	2599.837	0.980	-23.334	0.980	23.355	272.405	0.048
2700.000	0.554	288.658	2699.832	1.270	-24.277	1.270	24.310	272.996	0.038
2800.000	0.653	289.939	2799.827	1.619	-25.271	1.619	25.322	273.666	0.100
2900.000	0.616	287.692	2899.821	1.977	-26.318	1.977	26.392	274.296	0.044
3000.000	0.750	292.316	2999.813	2.389	-27.436	2.389	27.540	274.976	0.145
3100.000	1.105	285.337	3099.800	2.893	-28.972	2.893	29.116	275.701	0.372
3200.000	1.291	303.175	3199.779	3.764	-30.844	3.764	31.073	276.957	0.414

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	1.482	307.450	3299.749	5.166	-32.813	5.166	33.218	278.948	0.218
3400.000	1.514	306.076	3399.715	6.730	-34.908	6.730	35.551	280.913	0.048
3500.000	1.558	295.014	3499.679	8.083	-37.207	8.083	38.075	282.257	0.299
3600.000	0.997	293.002	3599.654	8.997	-39.239	8.997	40.257	282.915	0.563
3700.000	0.763	258.412	3699.643	9.203	-40.692	9.203	41.720	282.744	0.569
3800.000	1.022	283.953	3799.631	9.285	-42.210	9.285	43.219	282.405	0.469
3900.000	0.806	290.883	3899.618	9.751	-43.734	9.751	44.807	282.569	0.242
4000.000	0.822	281.522	3999.608	10.145	-45.093	10.145	46.220	282.679	0.134
4100.000	0.885	246.846	4099.598	9.984	-46.506	9.984	47.565	282.117	0.512
4200.000	1.126	238.383	4199.583	9.165	-48.052	9.165	48.919	280.799	0.283
4300.000	1.123	225.017	4299.563	7.957	-49.583	7.957	50.217	279.118	0.262
4400.000	1.011	227.396	4399.546	6.667	-50.925	6.667	51.360	277.459	0.120
4500.000	1.001	234.224	4499.531	5.559	-52.284	5.559	52.578	276.069	0.120
4600.000	0.591	255.412	4599.521	4.918	-53.492	4.918	53.718	275.253	0.498
4700.000	0.396	261.032	4699.517	4.735	-54.333	4.735	54.539	274.980	0.201
4800.000	0.398	257.336	4799.515	4.604	-55.014	4.604	55.206	274.784	0.026
4900.000	0.096	241.135	4899.514	4.488	-55.426	4.488	55.607	274.629	0.307
5000.000	0.591	223.655	4999.512	4.075	-55.855	4.075	56.003	274.172	0.500
5100.000	0.555	241.883	5099.507	3.473	-56.638	3.473	56.744	273.509	0.185
5200.000	0.975	249.143	5199.498	2.942	-57.860	2.942	57.935	272.911	0.431
5300.000	0.939	275.934	5299.484	2.724	-59.470	2.724	59.533	272.622	0.445
5400.000	1.008	285.817	5399.470	3.048	-61.131	3.048	61.207	272.855	0.181
5500.000	1.032	321.534	5499.455	3.993	-62.538	3.993	62.665	273.653	0.626
5600.000	0.593	11.232	5599.446	5.205	-62.997	5.205	63.212	274.724	0.791
5700.000	0.683	84.449	5699.441	5.770	-62.303	5.770	62.570	275.291	0.764
5800.000	0.870	112.928	5799.432	5.532	-61.011	5.532	61.261	275.181	0.423
5900.000	0.860	150.889	5899.422	4.581	-59.947	4.581	60.122	274.370	0.563
6000.000	0.315	144.892	5999.416	3.700	-59.424	3.700	59.539	273.563	0.548
6100.000	0.726	148.837	6099.412	2.934	-58.938	2.934	59.011	272.849	0.412
6200.000	0.872	177.816	6199.402	1.631	-58.581	1.631	58.604	271.595	0.424
6300.000	0.867	150.890	6299.391	0.209	-58.184	0.209	58.184	270.206	0.405
6400.000	0.748	161.170	6399.381	-1.070	-57.605	-1.070	57.615	268.936	0.187
6500.000	1.268	149.265	6499.366	-2.638	-56.829	-2.638	56.891	267.342	0.558
6600.000	1.542	136.477	6599.336	-4.565	-55.338	-4.565	55.526	265.285	0.415
6700.000	1.266	116.915	6699.306	-6.040	-53.426	-6.040	53.767	263.550	0.549
6800.000	1.283	121.590	6799.281	-7.127	-51.487	-7.127	51.978	262.119	0.105
6900.000	1.596	136.094	6899.250	-8.716	-49.568	-8.716	50.329	260.027	0.477
7000.000	2.143	122.667	6999.197	-10.728	-47.029	-10.728	48.237	257.149	0.697
7100.000	2.962	124.485	7099.097	-13.200	-43.326	-13.200	45.292	253.056	0.823
7150.000	3.328	126.186	7149.022	-14.788	-41.090	-14.788	43.670	250.206	0.756
<div> <div>HORIZONTAL DISPLACEMENT IS</div> <div>43.670 FEET AT 250.206 DEGREES</div> </div>									