

Company: Anadarko Petroleum Corp.
 Well/API: Moser 28-4/05-123-16010
 Tool Type: North Seeking Rate Gyro
 Rig Name: Production/Summit
 County/State: Weld/Colorado
 Latitude: 40.202, Longitude: -104.676
 Directions are relative to True North
 VS-Azi: 0.000 Degrees



FIELD COPY ONLY (NOT DEFINITIVE)

Depth Reference : RKB=GL Elevation=4842

DRILLOG MS GYRO SURVEY CALCULATIONS

Filename: msgyro_run01-02-de_01.ut

Minimum Curvature Method

Report Date/Time: 8/11/2014 / 13:17

Lat/Long & Elevation Obtained By Handheld GPS At Wellhead

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

VES Survey International - Henderson CO

Levi Sheldon

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	0.243	279.470	100.000	0.035	-0.210	0.035	0.212	279.470	0.243
200.000	0.238	261.778	199.999	0.040	-0.624	0.040	0.626	273.688	0.074
300.000	0.172	284.066	299.998	0.047	-0.975	0.047	0.976	272.761	0.102
400.000	0.166	293.065	399.998	0.140	-1.254	0.140	1.262	276.385	0.027
500.000	0.167	297.771	499.997	0.265	-1.517	0.265	1.540	279.915	0.014
600.000	0.061	194.574	599.997	0.282	-1.659	0.282	1.683	279.640	0.190
700.000	0.035	142.034	699.997	0.206	-1.653	0.206	1.666	277.118	0.048
800.000	0.182	228.716	799.997	0.078	-1.754	0.078	1.756	272.540	0.183
900.000	0.163	145.688	899.997	-0.144	-1.793	-0.144	1.799	265.407	0.229
1000.000	0.207	195.065	999.996	-0.436	-1.760	-0.436	1.813	256.093	0.160
1100.000	0.193	192.086	1099.996	-0.775	-1.842	-0.775	1.998	247.190	0.018
1200.000	0.311	195.909	1199.995	-1.200	-1.952	-1.200	2.291	238.417	0.119
1300.000	0.329	268.285	1299.993	-1.469	-2.313	-1.469	2.740	237.580	0.378
1400.000	0.298	208.466	1399.992	-1.706	-2.724	-1.706	3.214	237.941	0.314
1500.000	0.387	298.125	1499.991	-1.776	-3.146	-1.776	3.612	240.559	0.487
1600.000	0.388	295.743	1599.989	-1.469	-3.749	-1.469	4.027	248.599	0.016
1700.000	0.484	260.230	1699.986	-1.394	-4.471	-1.394	4.683	252.684	0.281
1800.000	0.417	252.995	1799.983	-1.572	-5.235	-1.572	5.466	253.287	0.088
1900.000	0.471	245.225	1899.980	-1.850	-5.956	-1.850	6.237	252.741	0.080
2000.000	0.290	286.688	1999.978	-1.950	-6.571	-1.950	6.854	253.472	0.318
2100.000	0.316	237.610	2099.977	-2.025	-7.046	-2.025	7.332	253.964	0.253
2200.000	0.745	166.186	2199.973	-2.805	-7.124	-2.805	7.656	248.510	0.711
2300.000	1.265	142.676	2299.957	-4.314	-6.299	-4.314	7.635	235.593	0.653
2400.000	2.079	124.426	2399.915	-6.218	-4.134	-6.218	7.467	213.616	0.963
2500.000	2.424	101.046	2499.839	-7.649	-0.562	-7.649	7.669	184.203	0.973
2600.000	2.131	98.692	2599.760	-8.335	3.351	-8.335	8.983	158.098	0.308
2700.000	1.491	101.370	2699.710	-8.872	6.464	-8.872	10.977	143.923	0.645
2800.000	1.290	114.959	2799.681	-9.603	8.760	-9.603	12.999	137.630	0.385
2900.000	1.113	114.402	2899.659	-10.480	10.665	-10.480	14.952	134.499	0.177
3000.000	0.697	113.465	2999.646	-11.123	12.107	-11.123	16.441	132.575	0.416
3100.000	0.517	129.104	3099.640	-11.650	13.015	-11.650	17.468	131.831	0.243
3200.000	0.518	142.710	3199.636	-12.294	13.639	-12.294	18.362	132.030	0.123
3300.000	0.570	127.943	3299.632	-12.959	14.305	-12.959	19.302	132.174	0.149
3400.000	0.824	163.154	3399.625	-13.952	14.905	-13.952	20.416	133.109	0.486

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	0.651	244.126	3499.619	-14.888	14.602	-14.888	20.854	135.556	0.966
3600.000	1.107	271.047	3599.607	-15.119	13.125	-15.119	20.021	139.037	0.603
3700.000	1.366	261.540	3699.584	-15.276	10.981	-15.276	18.813	144.291	0.330
3800.000	0.997	255.582	3799.563	-15.668	8.959	-15.668	18.049	150.239	0.388
3900.000	1.075	273.333	3899.547	-15.830	7.180	-15.830	17.383	155.603	0.329
4000.000	1.263	279.930	3999.526	-15.586	5.158	-15.586	16.417	161.688	0.231
4100.000	0.985	279.311	4099.506	-15.257	3.224	-15.257	15.594	168.067	0.278
4200.000	0.935	275.131	4199.492	-15.045	1.564	-15.045	15.126	174.066	0.086
4300.000	0.743	301.538	4299.482	-14.632	0.198	-14.632	14.634	179.223	0.426
4400.000	0.767	278.155	4399.474	-14.198	-1.017	-14.198	14.235	184.095	0.307
4500.000	0.692	228.875	4499.466	-14.500	-2.133	-14.500	14.656	188.370	0.612
4600.000	0.797	266.281	4599.458	-14.942	-3.283	-14.942	15.299	192.390	0.488
4700.000	0.932	211.034	4699.449	-15.685	-4.396	-15.685	16.289	195.658	0.811
4800.000	1.137	264.440	4799.434	-16.478	-5.803	-16.478	17.470	199.402	0.948
4900.000	1.282	269.371	4899.412	-16.586	-7.909	-16.586	18.375	205.495	0.178
5000.000	1.528	275.804	4999.382	-16.464	-10.354	-16.464	19.449	212.166	0.292
5100.000	0.983	283.343	5099.358	-16.131	-12.515	-16.131	20.416	217.805	0.568
5200.000	0.897	297.514	5199.344	-15.571	-14.043	-15.571	20.969	222.046	0.247
5300.000	0.594	299.525	5299.336	-14.954	-15.189	-14.954	21.315	225.446	0.304
5400.000	1.246	298.694	5399.322	-14.177	-16.594	-14.177	21.825	229.492	0.652
5500.000	1.273	328.583	5499.299	-12.707	-18.127	-12.707	22.137	234.970	0.650
5600.000	0.731	357.491	5599.284	-11.121	-18.734	-11.121	21.786	239.304	0.725
5700.000	1.153	40.699	5699.272	-9.721	-18.105	-9.721	20.550	241.768	0.797
5800.000	0.684	326.716	5799.261	-8.459	-17.777	-8.459	19.687	244.553	1.167
5900.000	0.734	347.311	5899.254	-7.335	-18.245	-7.335	19.664	248.099	0.258
6000.000	0.317	336.009	5999.250	-6.457	-18.498	-6.457	19.593	250.758	0.428
6100.000	0.390	295.421	6099.248	-6.058	-18.919	-6.058	19.865	252.244	0.255
6200.000	0.561	298.809	6199.244	-5.676	-19.655	-5.676	20.459	253.893	0.173
6300.000	0.435	290.022	6299.241	-5.310	-20.442	-5.310	21.120	255.439	0.147
6400.000	1.171	302.057	6399.230	-4.637	-21.665	-4.637	22.156	257.919	0.751
6500.000	2.969	297.939	6499.161	-2.881	-24.820	-2.881	24.986	263.379	1.803
6600.000	4.474	316.244	6598.950	1.150	-29.805	1.150	29.827	272.209	1.899
6700.000	3.848	321.371	6698.687	6.588	-34.597	6.588	35.219	280.781	0.727
6800.000	3.166	320.004	6798.499	11.325	-38.467	11.325	40.099	286.405	0.687
6900.000	2.895	306.978	6898.360	14.959	-42.259	14.959	44.829	289.493	0.738
7000.000	2.615	318.921	6998.245	18.198	-45.776	18.198	49.260	291.680	0.637
7100.000	2.331	331.819	7098.153	21.710	-48.235	21.710	52.895	294.232	0.623
7200.000	2.087	337.291	7198.079	25.182	-49.898	25.182	55.893	296.779	0.322

HORIZONTAL DISPLACEMENT IS
55.893 FEET AT 296.779 DEGREES