

Company: Anadarko Petroleum Corp.

Well: Schlagel 14-4

API: 05-123-17873

Rig Name: Production/Canary

State/County: Colorado/Weld

Latitude: 40.249, Longitude: -104.903

Directions are relative to True North

VS-Azi: 0.000 Degrees



FIELD COPY ONLY (NOT DEFINITIVE)

Depth Reference : RKB=Ground Level

DRILLOG MS GYRO SURVEY CALCULATIONS

Filename: msgyro_run01-01-de_01.ut

Minimum Curvature Method

Report Date/Time: 11/14/2013 / 14:01

Vaughn Energy Services

Henderson, CO

303-853-4976

Levi Sheldon

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	0.169	306.551	100.000	0.088	-0.118	0.088	0.147	306.551	0.169
200.000	0.243	239.313	199.999	0.067	-0.419	0.067	0.425	279.119	0.236
300.000	0.293	145.257	299.999	-0.251	-0.456	-0.251	0.521	241.180	0.394
400.000	0.362	186.505	399.997	-0.775	-0.346	-0.775	0.849	204.080	0.240
500.000	0.726	213.000	499.993	-1.620	-0.727	-1.620	1.775	204.169	0.433
600.000	0.717	211.162	599.985	-2.686	-1.395	-2.686	3.027	207.452	0.025
700.000	0.853	233.141	699.975	-3.668	-2.315	-3.668	4.337	212.255	0.328
800.000	0.731	222.813	799.966	-4.583	-3.344	-4.583	5.673	216.119	0.187
900.000	0.858	244.321	899.957	-5.375	-4.452	-5.375	6.980	219.636	0.321
1000.000	0.760	221.406	999.947	-6.197	-5.566	-6.197	8.329	221.927	0.335
1100.000	1.006	240.228	1099.935	-7.131	-6.766	-7.131	9.830	223.499	0.377
1200.000	0.964	215.926	1199.921	-8.247	-8.022	-8.247	11.505	224.205	0.417
1300.000	0.935	217.277	1299.907	-9.578	-9.009	-9.578	13.149	223.248	0.036
1400.000	1.005	221.882	1399.893	-10.880	-10.089	-10.880	14.838	222.840	0.105
1500.000	0.951	218.399	1499.878	-12.183	-11.190	-12.183	16.543	222.566	0.081
1600.000	1.031	217.886	1599.863	-13.544	-12.258	-13.544	18.267	222.147	0.081
1700.000	1.063	219.697	1699.846	-14.967	-13.402	-14.967	20.091	221.843	0.046
1800.000	1.066	219.363	1799.829	-16.399	-14.584	-16.399	21.946	221.648	0.007
1900.000	1.104	225.584	1899.811	-17.792	-15.862	-17.792	23.836	221.718	0.124
2000.000	1.380	219.779	1999.788	-19.392	-17.321	-19.392	26.001	221.771	0.303
2100.000	1.379	219.781	2099.759	-21.242	-18.861	-21.242	28.407	221.602	0.001
2200.000	1.303	210.803	2199.732	-23.143	-20.213	-23.143	30.727	221.134	0.223
2300.000	1.489	203.349	2299.702	-25.313	-21.310	-25.313	33.089	220.093	0.259
2400.000	1.693	206.709	2399.663	-27.825	-22.489	-27.825	35.777	218.946	0.224
2500.000	1.848	206.710	2499.616	-30.585	-23.878	-30.585	38.802	217.979	0.155
2600.000	2.101	217.627	2599.556	-33.477	-25.721	-33.477	42.217	217.536	0.452
2700.000	2.507	223.303	2699.476	-36.520	-28.340	-36.520	46.227	217.812	0.465
2800.000	3.067	231.914	2799.357	-39.762	-31.946	-39.762	51.006	218.780	0.698
2900.000	3.381	233.102	2899.199	-43.183	-36.410	-43.183	56.484	220.136	0.320
3000.000	3.774	241.052	2999.004	-46.546	-41.649	-46.546	62.459	221.821	0.632
3100.000	4.106	252.834	3098.770	-49.196	-47.949	-49.196	68.698	224.265	0.873
3200.000	4.640	260.917	3198.479	-50.891	-55.363	-50.891	75.200	227.410	0.814
3300.000	4.885	257.504	3298.134	-52.451	-63.514	-52.451	82.372	230.449	0.375
3400.000	5.240	264.406	3397.745	-53.817	-72.216	-53.817	90.063	233.305	0.705

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	5.513	269.442	3497.305	-54.309	-81.564	-54.309	97.991	236.342	0.545
3600.000	5.563	270.752	3596.838	-54.292	-91.214	-54.292	106.149	239.238	0.136
3700.000	4.999	269.610	3696.414	-54.258	-100.417	-54.258	114.138	241.616	0.573
3800.000	4.364	270.392	3796.080	-54.262	-108.578	-54.262	121.382	243.446	0.638
3900.000	4.027	267.964	3895.811	-54.361	-115.893	-54.361	128.009	244.871	0.381
4000.000	4.162	270.280	3995.556	-54.468	-123.031	-54.468	134.549	246.120	0.213
4100.000	3.543	266.738	4095.330	-54.626	-129.744	-54.626	140.775	247.168	0.663
4200.000	3.528	267.379	4195.140	-54.942	-135.902	-54.942	146.588	247.988	0.042
4300.000	3.577	269.984	4294.948	-55.084	-142.094	-55.084	152.398	248.811	0.169
4400.000	3.186	279.537	4394.774	-54.624	-147.954	-54.624	157.716	249.736	0.685
4500.000	2.788	270.444	4494.639	-54.145	-153.127	-54.145	162.418	250.527	0.617
4600.000	2.442	263.327	4594.535	-54.374	-157.675	-54.374	166.787	250.973	0.474
4700.000	2.389	268.966	4694.446	-54.659	-161.875	-54.659	170.855	251.342	0.243
4800.000	2.370	271.177	4794.360	-54.654	-166.027	-54.654	174.791	251.779	0.094
4900.000	1.943	262.788	4894.289	-54.825	-169.776	-54.825	178.408	252.104	0.531
5000.000	1.655	276.941	4994.240	-54.863	-172.891	-54.863	181.387	252.394	0.527
5100.000	1.572	258.903	5094.201	-54.952	-175.671	-54.952	184.066	252.630	0.513
5200.000	1.895	286.971	5194.157	-54.734	-178.599	-54.734	186.797	252.962	0.897
5300.000	1.245	270.999	5294.119	-54.232	-181.266	-54.232	189.205	253.344	0.778
5400.000	1.207	283.669	5394.096	-53.964	-183.376	-53.964	191.152	253.602	0.273
5500.000	1.882	307.239	5494.061	-52.722	-185.707	-52.722	193.046	254.151	0.913
5600.000	2.101	286.483	5594.001	-51.208	-188.773	-51.208	195.595	254.823	0.749
5700.000	1.356	300.515	5693.956	-50.087	-191.550	-50.087	197.990	255.346	0.852
5800.000	1.904	305.563	5793.915	-48.520	-193.920	-48.520	199.898	255.953	0.566
5900.000	1.440	277.735	5893.874	-47.385	-196.517	-47.385	202.149	256.443	0.922
6000.000	1.024	249.889	5993.851	-47.523	-198.601	-47.523	204.208	256.543	0.717
6100.000	0.428	261.997	6093.843	-47.882	-199.810	-47.882	205.467	256.524	0.612
6200.000	1.382	275.881	6193.829	-47.811	-201.380	-47.811	206.978	256.644	0.972
6300.000	0.532	301.055	6293.815	-47.448	-202.978	-47.448	208.450	256.843	0.929
6400.000	0.954	290.824	6393.806	-46.912	-204.155	-46.912	209.475	257.059	0.441
6500.000	1.357	297.217	6493.785	-46.074	-205.986	-46.074	211.076	257.392	0.422
6600.000	1.161	341.306	6593.764	-44.573	-207.364	-44.573	212.100	257.869	0.962
6700.000	1.107	327.110	6693.744	-42.802	-208.213	-42.802	212.567	258.384	0.285
6800.000	1.156	311.426	6793.725	-41.323	-209.494	-41.323	213.531	258.842	0.312
HORIZONTAL DISPLACEMENT IS 213.531 FEET AT 258.842 DEGREES									