



Company: Anadarko Petroleum
 Well: Brethawer Jake B 1
 API #: 05-123-07803
 Rig Name: Production/Core-Tech
 State/County: Colorado/Weld
 Latitude: 40.228, Longitude: -104.741
 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_run02-01-de_01.ut

Minimum Curvature Method

Report Date/Time: 6/23/2014 / 02:48

VES Survey International

Henderson, Colorado

303-853-4976

Mark Simmons

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	0.320	67.734	99.999	0.106	0.259	0.106	0.279	67.734	0.320
200.000	0.152	103.771	199.999	0.180	0.646	0.180	0.670	74.405	0.217
300.000	0.184	206.924	299.998	0.006	0.702	0.006	0.702	89.543	0.264
400.000	0.206	231.206	399.998	-0.250	0.489	-0.250	0.549	117.130	0.085
500.000	0.633	246.140	499.995	-0.587	-0.157	-0.587	0.607	194.987	0.437
600.000	0.569	238.544	599.989	-1.069	-1.086	-1.069	1.524	225.441	0.102
700.000	0.498	239.902	699.985	-1.546	-1.885	-1.546	2.438	230.642	0.072
800.000	0.683	247.900	799.980	-1.988	-2.813	-1.988	3.445	234.748	0.202
900.000	0.549	232.360	899.974	-2.505	-3.744	-2.505	4.505	236.218	0.213
1000.000	0.562	243.352	999.969	-3.018	-4.562	-3.018	5.470	236.518	0.107
1100.000	0.508	219.094	1099.965	-3.581	-5.280	-3.581	6.380	235.851	0.231
1200.000	0.407	213.287	1199.962	-4.222	-5.754	-4.222	7.137	233.732	0.111
1300.000	0.461	206.304	1299.959	-4.879	-6.127	-4.879	7.832	231.470	0.076
1400.000	0.629	230.923	1399.955	-5.586	-6.731	-5.586	8.747	230.315	0.285
1500.000	0.536	223.789	1499.949	-6.269	-7.481	-6.269	9.761	230.037	0.118
1600.000	0.712	219.799	1599.944	-7.084	-8.203	-7.084	10.838	229.184	0.181
1700.000	0.631	216.176	1699.937	-8.006	-8.926	-8.006	11.990	228.107	0.091
1800.000	0.791	219.405	1799.929	-8.985	-9.689	-8.985	13.214	227.160	0.165
1900.000	0.630	217.328	1899.921	-9.955	-10.461	-9.955	14.441	226.418	0.163
2000.000	0.527	225.568	1999.916	-10.715	-11.123	-10.715	15.444	226.070	0.132
2100.000	0.285	228.201	2099.914	-11.202	-11.637	-11.202	16.153	226.089	0.243
2200.000	0.295	209.572	2199.912	-11.592	-11.949	-11.592	16.648	225.868	0.094
2300.000	0.327	192.483	2299.911	-12.095	-12.138	-12.095	17.135	225.102	0.097
2400.000	0.320	170.145	2399.909	-12.649	-12.152	-12.649	17.540	223.852	0.126
2500.000	0.449	168.372	2499.907	-13.308	-12.025	-13.308	17.936	222.100	0.129
2600.000	0.409	159.523	2599.904	-14.027	-11.821	-14.027	18.343	220.122	0.077
2700.000	0.547	167.988	2699.901	-14.828	-11.597	-14.828	18.824	218.028	0.154
2800.000	0.549	169.728	2799.896	-15.766	-11.412	-15.766	19.463	215.897	0.017
2900.000	0.628	167.359	2899.891	-16.773	-11.206	-16.773	20.172	213.747	0.083
3000.000	0.591	158.281	2999.885	-17.787	-10.896	-17.787	20.859	211.490	0.103
3100.000	0.621	182.983	3099.880	-18.807	-10.733	-18.807	21.654	209.713	0.261
3200.000	0.755	191.886	3199.873	-19.993	-10.897	-19.993	22.770	208.592	0.171
3300.000	0.768	195.913	3299.864	-21.282	-11.216	-21.282	24.057	207.790	0.055
3400.000	1.262	232.531	3399.849	-22.596	-12.274	-22.596	25.714	208.510	0.791

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	1.091	214.631	3499.828	-24.049	-13.688	-24.049	27.672	209.648	0.403
3600.000	1.553	216.373	3599.801	-25.923	-15.033	-25.923	29.966	210.110	0.464
3700.000	1.636	211.518	3699.762	-28.230	-16.582	-28.230	32.740	210.430	0.158
3800.000	1.810	220.007	3799.717	-30.657	-18.344	-30.657	35.726	210.895	0.309
3900.000	1.538	211.095	3899.675	-33.015	-20.052	-33.015	38.628	211.273	0.376

HORIZONTAL DISPLACEMENT IS
38.628 FEET AT 211.273 DEGREES