

Company: Anadarko Petroleum Corp.
 Well: George W Stieber Unit 1
 API: 05-123-07935
 Rig Name: Production/Priority
 Location: Weld County, Colorado
 Latitude: 40.032, Longitude: -104.842
 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: 10/23/2013 / 12:25

Vaughn Energy Services
 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	0.981	108.137	99.995	-0.267	0.814	-0.267	0.856	108.137	0.981
200.000	1.491	116.927	199.972	-1.122	2.787	-1.122	3.005	111.931	0.543
300.000	1.698	131.295	299.933	-2.689	5.060	-2.689	5.731	117.986	0.448
400.000	1.531	131.594	399.893	-4.554	7.173	-4.554	8.496	122.410	0.167
500.000	1.715	133.027	499.853	-6.462	9.266	-6.462	11.296	124.891	0.188
600.000	1.715	134.571	599.809	-8.533	11.425	-8.533	14.260	126.753	0.046
700.000	1.835	136.510	699.761	-10.744	13.593	-10.744	17.327	128.323	0.135
800.000	1.692	118.452	799.714	-12.609	15.993	-12.609	20.366	128.253	0.571
900.000	1.632	131.357	899.672	-14.253	18.360	-14.253	23.243	127.823	0.378
1000.000	1.667	139.127	999.631	-16.295	20.381	-16.295	26.094	128.642	0.226
1100.000	1.570	146.155	1099.591	-18.532	22.096	-18.532	28.839	129.987	0.221
1200.000	1.508	150.711	1199.555	-20.818	23.503	-20.818	31.397	131.533	0.137
1300.000	1.390	153.082	1299.523	-23.047	24.696	-23.047	33.779	133.022	0.133
1400.000	1.404	158.068	1399.493	-25.265	25.702	-25.265	36.040	134.508	0.122
1500.000	1.212	163.886	1499.467	-27.417	26.453	-27.417	38.099	136.025	0.233
1600.000	1.070	170.439	1599.447	-29.355	26.902	-29.355	39.817	137.496	0.193
1700.000	0.862	183.233	1699.433	-31.027	27.015	-31.027	41.140	138.954	0.298
1800.000	0.744	195.227	1799.424	-32.405	26.802	-32.405	42.053	140.406	0.205
1900.000	0.680	197.248	1899.416	-33.599	26.455	-33.599	42.764	141.784	0.069
2000.000	0.645	209.295	1999.409	-34.657	26.004	-34.657	43.328	143.118	0.144
2100.000	0.615	239.661	2099.403	-35.419	25.265	-35.419	43.506	144.498	0.331
2200.000	0.458	261.624	2199.399	-35.748	24.407	-35.748	43.285	145.677	0.256
2300.000	0.421	253.956	2299.396	-35.908	23.659	-35.908	43.001	146.620	0.069
2400.000	0.443	318.447	2399.394	-35.720	23.049	-35.720	42.510	147.167	0.462
2500.000	0.291	0.020	2499.392	-35.176	22.792	-35.176	41.915	147.059	0.297
2600.000	0.180	22.650	2599.391	-34.777	22.853	-34.777	41.614	146.691	0.143
2700.000	0.431	340.225	2699.390	-34.279	22.786	-34.279	41.161	146.387	0.322
2800.000	0.327	27.796	2799.388	-33.672	22.792	-33.672	40.660	145.907	0.320
2900.000	0.577	3.459	2899.385	-32.917	22.955	-32.917	40.131	145.109	0.310
3000.000	0.526	28.795	2999.380	-32.012	23.207	-32.012	39.539	144.061	0.247
3100.000	0.460	29.770	3099.376	-31.262	23.627	-31.262	39.186	142.919	0.066
3200.000	0.534	0.840	3199.373	-30.448	23.833	-30.448	38.666	141.948	0.258

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	0.279	335.530	3299.370	-29.760	23.739	-29.760	38.069	141.421	0.306
3400.000	0.289	309.135	3399.369	-29.380	23.443	-29.380	37.587	141.413	0.130
3500.000	0.308	275.513	3499.368	-29.195	22.980	-29.195	37.154	141.793	0.173
3600.000	0.391	252.856	3599.366	-29.270	22.387	-29.270	36.849	142.590	0.160
3700.000	0.471	241.136	3699.363	-29.569	21.701	-29.569	36.677	143.725	0.119
3800.000	0.630	246.718	3799.359	-29.984	20.836	-29.984	36.513	145.205	0.168
3900.000	0.681	251.799	3899.352	-30.387	19.766	-30.387	36.250	146.957	0.078
4000.000	0.885	242.620	3999.343	-30.928	18.515	-30.928	36.047	149.093	0.238
4100.000	0.949	246.697	4099.330	-31.611	17.069	-31.611	35.925	151.632	0.091
4200.000	1.445	257.736	4199.308	-32.206	15.077	-32.206	35.561	154.914	0.545
4300.000	1.526	265.577	4299.274	-32.577	12.517	-32.577	34.899	158.981	0.219
4400.000	1.537	258.232	4399.239	-32.953	9.877	-32.953	34.401	163.315	0.197
4500.000	1.473	262.279	4499.204	-33.399	7.290	-33.399	34.186	167.688	0.124
4600.000	1.232	256.373	4599.176	-33.825	4.971	-33.825	34.189	171.639	0.278
4700.000	1.359	253.875	4699.151	-34.408	2.787	-34.408	34.521	175.369	0.139
4800.000	1.144	262.772	4799.127	-34.863	0.658	-34.863	34.869	178.919	0.289
4900.000	0.814	260.997	4899.112	-35.100	-1.034	-35.100	35.115	181.687	0.331
5000.000	0.647	247.837	4999.104	-35.424	-2.258	-35.424	35.496	183.648	0.236
5100.000	0.586	265.893	5099.098	-35.673	-3.291	-35.673	35.825	185.271	0.203
5200.000	0.177	274.702	5199.096	-35.697	-3.955	-35.697	35.916	186.323	0.411
5300.000	0.222	256.192	5299.095	-35.731	-4.298	-35.731	35.988	186.859	0.078
5400.000	0.310	271.655	5399.094	-35.769	-4.756	-35.769	36.084	187.574	0.113
5500.000	0.203	315.032	5499.093	-35.636	-5.152	-35.636	36.007	188.226	0.214
5600.000	0.367	315.087	5599.092	-35.284	-5.503	-35.284	35.710	188.865	0.164
5700.000	0.584	287.256	5699.089	-34.906	-6.216	-34.906	35.455	190.097	0.310
5800.000	0.479	298.174	5799.084	-34.558	-7.070	-34.558	35.274	191.563	0.145
5900.000	0.606	295.367	5899.080	-34.134	-7.916	-34.134	35.040	193.057	0.130
6000.000	0.621	253.739	5999.075	-34.059	-8.914	-34.059	35.207	194.667	0.436
6100.000	0.634	272.186	6099.069	-34.190	-9.988	-34.190	35.619	196.284	0.202
6200.000	0.555	257.559	6199.064	-34.273	-11.014	-34.273	35.999	197.815	0.170
6300.000	0.694	254.109	6299.058	-34.543	-12.069	-34.543	36.591	199.259	0.144
6400.000	0.818	254.584	6399.049	-34.899	-13.339	-34.899	37.361	200.918	0.124
6500.000	0.825	260.392	6499.039	-35.209	-14.736	-35.209	38.168	202.712	0.083
6600.000	0.641	266.591	6599.030	-35.362	-16.004	-35.362	38.815	204.350	0.200
6700.000	0.690	269.684	6699.024	-35.398	-17.164	-35.398	39.340	205.868	0.061
6800.000	0.564	297.702	6799.018	-35.173	-18.202	-35.173	39.604	207.362	0.327
6900.000	0.478	304.102	6899.014	-34.710	-18.984	-34.710	39.562	208.675	0.104
7000.000	0.511	316.948	6999.010	-34.151	-19.633	-34.151	39.392	209.895	0.115
7100.000	0.491	327.177	7099.006	-33.465	-20.170	-33.465	39.073	211.079	0.091
7200.000	0.516	323.612	7199.002	-32.742	-20.670	-32.742	38.720	212.264	0.040
7300.000	0.370	6.661	7299.000	-32.058	-20.899	-32.058	38.269	213.101	0.352
7400.000	0.366	28.750	7398.998	-31.457	-20.708	-31.457	37.661	213.357	0.141
7500.000	0.533	53.887	7498.995	-30.903	-20.179	-30.903	36.907	213.144	0.254
7600.000	0.443	45.087	7598.991	-30.355	-19.529	-30.355	36.095	212.755	0.116
7700.000	0.444	27.923	7698.988	-29.740	-19.074	-29.740	35.331	212.674	0.132
7800.000	0.539	38.791	7798.984	-29.031	-18.597	-29.031	34.477	212.644	0.133
7900.000	0.789	46.827	7898.978	-28.193	-17.800	-28.193	33.342	212.268	0.266
7950.000	0.801	45.948	7948.973	-27.714	-17.298	-27.714	32.669	211.971	0.033
HORIZONTAL DISPLACEMENT IS 32.669 FEET AT 211.971 DEGREES									