

Company: Anadarko Petroleum
 Well: Camenisch Phillip GU #1
 API: 05-123-08600
 Rig Name: Production/ Frontier
 State/County: Colorado/Weld
 Latitude: 40.076, Longitude: -104.864
 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: 5/15/2013 / 18:09

VAUGHN ENERGY SERVICES

HENDERSON, COLORADO

303-853-4976

SEAN BRATT

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	0.616	155.758	99.998	-0.490	0.221	-0.490	0.538	155.758	0.616
200.000	0.644	150.362	199.992	-1.469	0.719	-1.469	1.636	153.907	0.065
300.000	0.649	119.510	299.986	-2.237	1.490	-2.237	2.688	146.321	0.344
400.000	0.698	114.787	399.979	-2.771	2.536	-2.771	3.757	137.531	0.074
500.000	0.464	134.486	499.974	-3.310	3.378	-3.310	4.729	134.416	0.305
600.000	0.364	135.007	599.971	-3.818	3.891	-3.818	5.452	134.456	0.100
700.000	0.309	160.324	699.970	-4.297	4.207	-4.297	6.013	135.607	0.157
800.000	0.306	166.542	799.968	-4.811	4.360	-4.811	6.493	137.815	0.034
900.000	0.269	151.385	899.967	-5.277	4.534	-5.277	6.957	139.326	0.084
1000.000	0.203	179.640	999.966	-5.660	4.648	-5.660	7.324	140.607	0.132
1100.000	0.267	184.736	1099.965	-6.070	4.630	-6.070	7.634	142.665	0.067
1200.000	0.272	180.843	1199.964	-6.540	4.607	-6.540	7.999	144.836	0.019
1300.000	0.196	148.888	1299.963	-6.924	4.692	-6.924	8.364	145.874	0.148
1400.000	0.218	173.036	1399.963	-7.259	4.804	-7.259	8.704	146.504	0.089
1500.000	0.084	197.546	1499.962	-7.517	4.805	-7.517	8.921	147.414	0.145
1600.000	0.258	208.380	1599.962	-7.784	4.676	-7.784	9.081	149.009	0.176
1700.000	0.344	223.669	1699.961	-8.200	4.361	-8.200	9.287	151.992	0.118

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
1800.000	0.463	253.225	1799.958	-8.534	3.767	-8.534	9.328	156.182	0.236
1900.000	0.511	264.235	1899.955	-8.695	2.937	-8.695	9.178	161.338	0.105
2000.000	0.565	258.446	1999.950	-8.839	2.010	-8.839	9.064	167.189	0.077
2100.000	0.682	271.358	2099.944	-8.923	0.932	-8.923	8.972	174.040	0.182
2200.000	0.782	286.700	2199.936	-8.713	-0.317	-8.713	8.719	182.086	0.219
2300.000	0.697	295.089	2299.928	-8.259	-1.522	-8.259	8.398	190.441	0.138
2400.000	0.787	323.341	2399.920	-7.450	-2.483	-7.450	7.853	198.429	0.373
2500.000	0.727	323.746	2499.911	-6.388	-3.268	-6.388	7.175	207.090	0.061
2600.000	1.066	347.523	2599.899	-4.969	-3.843	-4.969	6.282	217.723	0.496
2700.000	1.083	339.489	2699.882	-3.176	-4.375	-3.176	5.407	234.026	0.151
2800.000	1.075	347.426	2799.864	-1.376	-4.911	-1.376	5.100	254.351	0.149
2900.000	1.158	350.064	2899.845	0.536	-5.289	0.536	5.316	275.782	0.098
3000.000	1.015	339.420	2999.827	2.360	-5.775	2.360	6.239	292.230	0.247
3100.000	0.633	338.754	3099.816	3.704	-6.286	3.704	7.297	300.508	0.382
3200.000	0.606	336.252	3199.811	4.703	-6.700	4.703	8.186	305.070	0.038
3300.000	0.528	322.951	3299.806	5.555	-7.190	5.555	9.086	307.689	0.153
3400.000	0.346	338.484	3399.803	6.204	-7.578	6.204	9.794	309.304	0.215
3500.000	0.359	348.497	3499.801	6.792	-7.752	6.792	10.306	311.224	0.063
3600.000	0.278	346.0	3599.799	7.341	-7.800	7.341	10.711	313.265	0.116
3700.000	0.137	22.403	3699.799	7.694	-7.739	7.694	10.913	314.831	0.155
3800.000	0.148	83.963	3799.798	7.818	-7.565	7.818	10.879	315.943	0.146
3900.000	0.130	108.847	3899.798	7.795	-7.329	7.795	10.700	316.764	0.063
4000.000	0.111	280.595	3999.798	7.777	-7.318	7.777	10.678	316.742	0.240
4100.000	0.225	269.311	4099.798	7.792	-7.609	7.792	10.891	315.680	0.119
4200.000	0.441	233.961	4199.796	7.563	-8.116	7.563	11.094	312.980	0.288
4300.000	0.409	217.581	4299.793	7.054	-8.645	7.054	11.158	309.213	0.125
4400.000	0.490	240.048	4399.790	6.558	-9.233	6.558	11.325	305.384	0.192
4500.000	0.815	215.489	4499.784	5.766	-10.016	5.766	11.557	299.926	0.422
4600.000	1.715	198.775	4599.759	3.770	-10.910	3.770	11.543	289.063	0.963
4700.000	1.760	191.829	4699.713	0.851	-11.707	0.851	11.737	274.157	0.215
4800.000	1.839	194.566	4799.664	-2.205	-12.425	-2.205	12.619	259.936	0.117
4900.000	1.641	193.746	4899.617	-5.150	-13.169	-5.150	14.140	248.642	0.200
5000.000	1.670	195.699	4999.576	-7.943	-13.903	-7.943	16.013	240.259	0.063
5100.000	1.575	209.287	5099.536	-10.545	-14.970	-10.545	18.311	234.838	0.395
5200.000	1.413	224.636	5199.502	-12.622	-16.509	-12.622	20.781	232.601	0.430
5300.000	1.440	230.304	5299.471	-14.301	-18.342	-14.301	23.259	232.056	0.144

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
5400.000	1.309	229.762	5399.443	-15.842	-20.181	-15.842	25.656	231.868	0.131
5500.000	1.023	236.139	5499.422	-17.077	-21.794	-17.077	27.688	231.919	0.313
5600.000	0.926	241.228	5599.407	-17.964	-23.244	-17.964	29.376	232.302	0.130
5700.000	0.662	245.237	5699.398	-18.594	-24.476	-18.594	30.738	232.777	0.270
5800.000	0.565	276.712	5799.392	-18.779	-25.490	-18.779	31.661	233.621	0.345
5900.000	0.754	282.218	5899.386	-18.582	-26.623	-18.582	32.466	235.087	0.199
6000.000	0.805	277.533	5999.376	-18.350	-27.963	-18.350	33.446	236.726	0.082
6100.000	0.822	293.432	6099.366	-17.973	-29.318	-17.973	34.388	238.490	0.226
6200.000	0.692	285.139	6199.358	-17.530	-30.559	-17.530	35.230	240.160	0.170
6300.000	0.719	289.817	6299.350	-17.160	-31.731	-17.160	36.074	241.596	0.064
6400.000	0.823	301.227	6399.341	-16.575	-32.935	-16.575	36.871	243.286	0.185
6500.000	0.720	307.221	6499.332	-15.822	-34.050	-15.822	37.547	245.077	0.131
6600.000	0.759	308.298	6599.324	-15.032	-35.070	-15.032	38.156	246.800	0.042
6700.000	1.004	333.143	6699.312	-13.840	-35.986	-13.840	38.556	248.964	0.448
6800.000	1.422	348.958	6799.290	-11.840	-36.619	-11.840	38.486	252.082	0.532
6900.000	0.613	24.606	6899.274	-10.136	-36.634	-10.136	38.011	254.534	0.991
7000.000	0.310	26.565	6999.271	-9.408	-36.291	-9.408	37.490	255.467	0.303
7100.000	0.262	119.505	7099.270	-9.278	-35.971	-9.278	37.148	255.536	0.416
7200.000	0.511	153.294	7199.268	-9.789	-35.572	-9.789	36.894	254.613	0.327
7300.000	0.517	123.809	7299.264	-10.438	-34.996	-10.438	36.520	253.392	0.262
7400.000	0.261	109.667	7399.261	-10.766	-34.407	-10.766	36.052	252.624	0.272
7500.000	0.271	73.602	7499.260	-10.776	-33.965	-10.776	35.633	252.397	0.165
7600.000	0.530	114.970	7599.258	-10.905	-33.318	-10.905	35.057	251.877	0.373
7700.000	0.651	116.622	7699.253	-11.355	-32.391	-11.355	34.324	250.682	0.121
7800.000	0.626	111.637	7799.246	-11.810	-31.376	-11.810	33.525	249.373	0.061
7900.000	0.573	81.730	7899.241	-11.940	-30.373	-11.940	32.636	248.540	0.314
8000.000	0.686	64.285	7999.235	-11.608	-29.340	-11.608	31.553	248.413	0.221
<div> <div>HORIZONTAL DISPLACEMENT IS</div> <div>31.553 FEET AT 248.413 DEGREES</div> </div>									