

Company: Anadarko Petroleum Corp.

Well: HSR-Elliot Farms 7-18

API: 05-123-17972

Rig Name: Production/Canary

State/County: Colorado/Weld

Latitude: 40.227, Longitude: -104.930

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_run03-01-de_01.ut

Minimum Curvature Method

Report Date/Time: 2/28/2014 / 17:45

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	0.109	317.558	100.000	0.070	-0.064	0.070	0.095	317.558	0.109
200.000	0.207	305.892	200.000	0.246	-0.275	0.246	0.369	311.885	0.102
300.000	0.134	340.768	299.999	0.463	-0.459	0.463	0.652	315.212	0.123
400.000	0.234	63.468	399.999	0.665	-0.316	0.665	0.736	334.594	0.254
500.000	0.265	78.134	499.998	0.803	0.093	0.803	0.809	6.608	0.071
600.000	0.308	186.688	599.997	0.584	0.288	0.584	0.651	26.257	0.466
700.000	0.414	170.410	699.995	-0.038	0.317	-0.038	0.319	96.896	0.146
800.000	0.654	185.438	799.991	-0.962	0.323	-0.962	1.015	161.438	0.276
900.000	0.585	198.432	899.985	-2.014	0.108	-2.014	2.017	176.938	0.156
1000.000	0.534	191.334	999.980	-2.955	-0.145	-2.955	2.959	182.812	0.086
1100.000	0.501	196.672	1099.976	-3.831	-0.362	-3.831	3.848	185.401	0.058
1200.000	0.480	207.525	1199.972	-4.622	-0.681	-4.622	4.672	188.386	0.095
1300.000	0.541	239.969	1299.969	-5.230	-1.284	-5.230	5.385	193.794	0.291
1400.000	0.621	273.747	1399.964	-5.431	-2.233	-5.431	5.872	202.355	0.346
1500.000	0.556	274.035	1499.959	-5.361	-3.258	-5.361	6.273	211.285	0.065
1600.000	0.428	286.457	1599.955	-5.221	-4.100	-5.221	6.639	218.141	0.166
1700.000	0.222	277.855	1699.953	-5.089	-4.651	-5.089	6.894	222.423	0.211
1800.000	0.269	268.157	1799.952	-5.070	-5.077	-5.070	7.175	225.041	0.062
1900.000	0.248	295.978	1899.951	-4.983	-5.506	-4.983	7.426	227.855	0.126
2000.000	0.239	288.955	1999.950	-4.820	-5.898	-4.820	7.617	230.740	0.031
2100.000	0.239	252.377	2099.950	-4.815	-6.293	-4.815	7.924	232.578	0.150
2200.000	0.378	238.121	2199.948	-5.053	-6.772	-5.053	8.449	233.272	0.158
2300.000	0.347	247.026	2299.946	-5.345	-7.331	-5.345	9.072	233.903	0.065
2400.000	0.589	228.797	2399.943	-5.802	-7.996	-5.802	9.879	234.035	0.282
2500.000	0.648	241.437	2499.937	-6.411	-8.880	-6.411	10.952	234.171	0.148
2600.000	0.608	242.899	2599.931	-6.923	-9.849	-6.923	12.039	234.895	0.043
2700.000	0.670	252.705	2699.925	-7.339	-10.879	-7.339	13.123	235.998	0.125
2800.000	0.653	260.487	2799.918	-7.607	-12.000	-7.607	14.208	237.629	0.091
2900.000	0.508	268.186	2899.913	-7.715	-13.005	-7.715	15.121	239.321	0.165
3000.000	0.426	248.273	2999.910	-7.867	-13.793	-7.867	15.879	240.302	0.180
3100.000	0.632	209.547	3099.906	-8.484	-14.410	-8.484	16.722	239.513	0.401
3200.000	0.533	191.001	3199.901	-9.420	-14.771	-9.420	17.519	237.472	0.211
3300.000	0.553	180.827	3299.896	-10.360	-14.867	-10.360	18.120	235.130	0.098
3400.000	1.038	182.694	3399.886	-11.746	-14.916	-11.746	18.986	231.780	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	1.369	193.583	3499.864	-13.813	-15.240	-13.813	20.568	227.812	0.401
3600.000	1.031	205.709	3599.842	-15.784	-15.910	-15.784	22.412	225.228	0.422
3700.000	1.418	199.025	3699.819	-17.765	-16.704	-17.765	24.385	223.237	0.413
3800.000	1.086	203.183	3799.795	-19.806	-17.480	-19.806	26.417	221.431	0.345
3900.000	1.117	183.194	3899.777	-21.650	-17.908	-21.650	28.097	219.595	0.384
4000.000	0.702	205.058	3999.765	-23.179	-18.222	-23.179	29.484	218.172	0.534
4100.000	0.808	176.559	4099.756	-24.438	-18.439	-24.438	30.614	217.036	0.385
4200.000	0.935	176.346	4199.745	-25.956	-18.345	-25.956	31.784	215.251	0.128
4300.000	0.897	175.431	4299.732	-27.550	-18.230	-27.550	33.036	213.493	0.041
4400.000	0.647	148.681	4399.723	-28.812	-17.875	-28.812	33.906	211.815	0.432
4500.000	1.166	125.460	4499.711	-29.885	-16.752	-29.885	34.260	209.274	0.626
4600.000	0.872	136.864	4599.695	-31.030	-15.403	-31.030	34.643	206.399	0.356
4700.000	0.901	101.864	4699.683	-31.747	-14.113	-31.747	34.743	203.968	0.534
4800.000	0.954	116.289	4799.671	-32.277	-12.598	-32.277	34.649	201.321	0.239
4900.000	0.854	118.412	4899.658	-33.001	-11.196	-33.001	34.848	198.741	0.105
5000.000	0.638	125.877	4999.650	-33.682	-10.089	-33.682	35.160	196.676	0.236
5100.000	0.390	134.640	5099.645	-34.248	-9.396	-34.248	35.513	195.341	0.259
5200.000	0.636	98.655	5199.642	-34.570	-8.604	-34.570	35.625	193.977	0.394
5300.000	0.545	97.944	5299.636	-34.720	-7.585	-34.720	35.539	192.323	0.091
5400.000	0.566	86.864	5399.632	-34.758	-6.620	-34.758	35.383	190.784	0.109
5500.000	0.926	73.622	5499.623	-34.503	-5.351	-34.503	34.916	188.816	0.397
5600.000	0.720	55.373	5599.613	-33.918	-4.059	-33.918	34.160	186.823	0.331
5700.000	0.589	12.111	5699.607	-33.059	-3.433	-33.059	33.236	185.929	0.498
5800.000	0.718	52.753	5799.601	-32.177	-2.827	-32.177	32.301	185.021	0.470
5900.000	0.373	84.399	5899.596	-31.766	-2.004	-31.766	31.829	183.610	0.446
6000.000	0.605	36.524	5999.593	-31.310	-1.366	-31.310	31.340	182.499	0.450
6100.000	0.593	2.963	6099.588	-30.369	-1.026	-30.369	30.387	181.934	0.346
6200.000	0.366	67.576	6199.585	-29.731	-0.704	-29.731	29.739	181.356	0.547
6300.000	0.283	257.402	6299.584	-29.663	-0.650	-29.663	29.670	181.255	0.647
6400.000	0.537	337.728	6399.582	-29.284	-1.069	-29.284	29.303	182.090	0.563
6500.000	0.344	48.095	6499.580	-28.650	-1.023	-28.650	28.668	182.045	0.531
6600.000	0.185	215.261	6599.580	-28.581	-0.892	-28.581	28.595	181.788	0.526
6700.000	0.689	247.851	6699.576	-28.939	-1.542	-28.939	28.980	183.051	0.543
6800.000	0.834	292.186	6799.568	-28.891	-2.773	-28.891	29.024	185.482	0.590
6900.000	0.823	356.727	6899.560	-27.900	-3.487	-27.900	28.117	187.124	0.884
7000.000	0.443	50.350	6999.554	-26.936	-3.231	-26.936	27.129	186.839	0.664
7100.000	0.681	18.349	7099.550	-26.126	-2.746	-26.126	26.270	186.000	0.385
7200.000	0.795	91.446	7199.543	-25.579	-1.866	-25.579	25.647	184.172	0.883

HORIZONTAL DISPLACEMENT IS
25.647 FEET AT 184.172 DEGREES