



Company: Anadarko Petroleum Corp.  
Well: Donald E. Miller Unit C #1  
API: 05-123-07844  
Rig Name: Production / VES  
State/County: Colorado/Weld  
Latitude: 40.076, Longitude: -104.902  
Directions are relative to True North  
VS-Azi: 0.000 Degrees



FIELD COPY ONLY (NOT DEFINITIVE)

Depth Reference : RKB = Ground Level

DRILLOG HA GYRO SURVEY CALCULATIONS

Filename: ha gyro-de\_01.ut

Minimum Curvature Method

Report Date/Time: 1/13/2014 / 11:32

Vaughn Energy Services  
Henderson, CO  
303-853-4976  
Charles Hines

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	0.447	96.654	99.999	-0.045	0.387	-0.045	0.390	96.654	0.447
200.000	0.428	103.723	199.996	-0.179	1.138	-0.179	1.152	98.941	0.057
300.000	0.334	65.343	299.994	-0.146	1.766	-0.146	1.772	94.725	0.266
400.000	0.312	96.732	399.992	-0.056	2.301	-0.056	2.302	91.400	0.176
500.000	0.323	57.183	499.991	0.065	2.809	0.065	2.810	88.682	0.215
600.000	0.240	108.313	599.990	0.152	3.245	0.152	3.249	87.325	0.254
700.000	0.326	27.574	699.989	0.338	3.576	0.338	3.592	84.604	0.372
800.000	0.195	66.891	799.988	0.657	3.864	0.657	3.919	80.355	0.214
900.000	0.363	353.429	899.987	1.038	3.985	1.038	4.118	75.396	0.360
1000.000	0.286	356.739	999.986	1.602	3.934	1.602	4.248	67.845	0.079
1100.000	0.133	35.100	1099.985	1.946	3.987	1.946	4.436	63.985	0.199
1200.000	0.267	350.693	1199.984	2.271	4.016	2.271	4.613	60.515	0.196
1300.000	0.269	2.294	1299.983	2.735	3.987	2.735	4.835	55.554	0.054
1400.000	0.270	279.510	1399.982	3.008	3.764	3.008	4.819	51.368	0.356
1500.000	0.280	293.715	1499.981	3.146	3.307	3.146	4.564	46.436	0.069
1600.000	0.192	273.495	1599.980	3.254	2.916	3.254	4.370	41.864	0.120
1700.000	0.324	277.507	1699.979	3.301	2.469	3.301	4.122	36.788	0.133
1800.000	0.466	252.368	1799.977	3.215	1.801	3.215	3.685	29.258	0.221
1900.000	0.499	240.833	1899.974	2.880	1.034	2.880	3.060	19.742	0.102
2000.000	0.666	254.591	1999.968	2.513	0.093	2.513	2.515	2.116	0.217
2100.000	0.817	262.168	2099.960	2.262	-1.174	2.262	2.548	332.573	0.179
2200.000	0.935	254.571	2199.948	1.947	-2.666	1.947	3.302	306.142	0.166
2300.000	0.816	248.492	2299.937	1.469	-4.115	1.469	4.370	289.648	0.151
2400.000	1.122	259.341	2399.922	1.027	-5.740	1.027	5.831	280.147	0.355
2500.000	1.010	261.799	2499.905	0.720	-7.574	0.720	7.608	275.433	0.121
2600.000	0.777	280.334	2599.893	0.716	-9.114	0.716	9.142	274.494	0.368
2700.000	0.843	305.135	2699.883	1.261	-10.383	1.261	10.459	276.926	0.354
2800.000	0.560	336.531	2799.876	2.133	-11.179	2.133	11.380	280.802	0.467
2900.000	0.614	355.395	2899.871	3.116	-11.416	3.116	11.834	285.266	0.200
3000.000	0.391	357.984	2999.867	3.991	-11.471	3.991	12.146	289.184	0.225
3100.000	0.425	326.737	3099.865	4.642	-11.687	4.642	12.575	291.664	0.222
3200.000	0.507	263.305	3199.862	4.901	-12.329	4.901	13.268	291.677	0.495
3300.000	0.559	259.325	3299.858	4.759	-13.248	4.759	14.077	289.758	0.064
3400.000	0.613	290.108	3399.853	4.852	-14.230	4.852	15.035	288.829	0.316

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	0.750	273.945	3499.846	5.081	-15.386	5.081	16.203	288.277	0.234
3600.000	0.748	296.910	3599.837	5.422	-16.620	5.422	17.482	288.067	0.298
3700.000	0.561	273.175	3699.831	5.744	-17.691	5.744	18.600	287.989	0.326
3800.000	0.810	290.470	3799.824	6.019	-18.841	6.019	19.779	287.715	0.321
3900.000	0.767	285.752	3899.814	6.447	-20.147	6.447	21.154	287.745	0.078
4000.000	0.879	265.461	3999.804	6.568	-21.555	6.568	22.534	286.947	0.310
4100.000	0.964	262.994	4099.791	6.405	-23.154	6.405	24.024	285.462	0.094
4200.000	1.018	258.453	4199.776	6.125	-24.860	6.125	25.603	283.840	0.095
4300.000	1.239	254.180	4299.757	5.652	-26.771	5.652	27.361	281.921	0.236
4400.000	0.795	259.016	4399.741	5.225	-28.492	5.225	28.968	280.391	0.452
4500.000	0.965	255.891	4499.729	4.887	-29.990	4.887	30.386	279.256	0.176
4600.000	0.866	263.888	4599.716	4.602	-31.558	4.602	31.892	278.296	0.161
4700.000	0.850	266.673	4699.705	4.478	-33.051	4.478	33.353	277.716	0.045
4800.000	0.876	241.795	4799.694	4.074	-34.465	4.074	34.705	276.741	0.373
4900.000	1.108	253.913	4899.679	3.444	-36.069	3.444	36.233	275.454	0.312
5000.000	1.540	254.205	4999.652	2.810	-38.291	2.810	38.394	274.198	0.431
5100.000	1.450	259.927	5099.618	2.223	-40.829	2.223	40.890	273.117	0.174
5200.000	1.563	233.996	5199.585	1.200	-43.178	1.200	43.195	271.592	0.685
5300.000	1.444	266.126	5299.552	0.313	-45.539	0.313	45.540	270.394	0.840
5400.000	1.161	268.575	5399.526	0.203	-47.809	0.203	47.810	270.243	0.288
5500.000	1.465	266.982	5499.500	0.111	-50.099	0.111	50.099	270.127	0.305
5600.000	1.332	276.682	5599.470	0.179	-52.529	0.179	52.529	270.195	0.271
5700.000	1.172	278.935	5699.446	0.473	-54.694	0.473	54.696	270.495	0.167
5800.000	1.161	267.082	5799.426	0.580	-56.716	0.580	56.719	270.586	0.241
5900.000	1.434	255.876	5899.400	0.223	-58.942	0.223	58.942	270.217	0.372
6000.000	1.282	286.214	5999.373	0.230	-61.229	0.230	61.230	270.215	0.726
6100.000	1.392	292.806	6099.346	1.013	-63.422	1.013	63.430	270.915	0.189
6200.000	1.739	309.871	6199.309	2.457	-65.706	2.457	65.752	272.141	0.578
6300.000	1.758	316.546	6299.263	4.543	-67.926	4.543	68.078	273.826	0.204
6400.000	2.053	325.902	6399.207	7.140	-69.985	7.140	70.348	275.825	0.428
6500.000	2.100	337.348	6499.142	10.314	-71.695	10.314	72.433	278.186	0.417
6600.000	1.704	350.813	6599.087	13.473	-72.638	13.473	73.877	280.508	0.595
6700.000	1.000	348.553	6699.059	15.796	-73.049	15.796	74.737	282.202	0.706
6800.000	0.984	5.170	6799.044	17.507	-73.145	17.507	75.211	283.460	0.287
6900.000	0.861	1.575	6899.031	19.113	-73.047	19.113	75.506	284.663	0.136
7000.000	0.566	3.378	6999.023	20.357	-72.997	20.357	75.782	285.582	0.296
7100.000	0.262	36.130	7099.021	21.034	-72.833	21.034	75.810	286.109	0.374
7200.000	0.277	45.631	7199.020	21.387	-72.526	21.387	75.614	286.430	0.047
7300.000	0.084	199.910	7299.019	21.487	-72.379	21.487	75.501	286.534	0.355
7400.000	0.088	95.413	7399.019	21.410	-72.327	21.410	75.429	286.490	0.137
7500.000	0.080	308.919	7499.019	21.447	-72.304	21.447	75.418	286.521	0.161
7600.000	0.156	18.857	7599.019	21.619	-72.315	21.619	75.477	286.645	0.149
7700.000	0.419	0.941	7699.018	22.114	-72.265	22.114	75.572	287.015	0.275
7800.000	0.263	35.494	7799.016	22.666	-72.125	22.666	75.603	287.446	0.251
7900.000	0.442	359.702	7899.014	23.239	-71.994	23.239	75.651	287.890	0.275
7950.000	0.377	10.475	7949.013	23.594	-71.965	23.594	75.734	288.152	0.201
HORIZONTAL DISPLACEMENT IS 75.734 FEET AT 288.152 DEGREES									