

Company: Anadarko Petroleum Corp.

Well: Graham E D #1

API: 05-123-09697

Rig Name: Production/Cable Inc.

State/County: Colorado/ Weld

Latitude: 40.063, Longitude: -104.958

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: 1/7/2013 / 16:59

Vaughn Energy Services

Henderson, Colorado

866-835-8333

Jason Kinchelow

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	0.494	11.933	99.999	0.422	0.089	0.422	0.431	11.933	0.494
200.000	0.200	24.898	199.997	1.002	0.252	1.002	1.033	14.103	0.303
300.000	0.115	179.963	299.997	1.060	0.325	1.060	1.109	17.063	0.308
400.000	0.322	73.795	399.996	1.038	0.595	1.038	1.196	29.839	0.371
500.000	0.259	52.219	499.995	1.255	1.044	1.255	1.632	39.760	0.125
600.000	0.251	50.121	599.994	1.534	1.390	1.534	2.070	42.199	0.013
700.000	0.195	77.570	699.993	1.710	1.725	1.710	2.429	45.240	0.119
800.000	0.177	154.564	799.993	1.608	1.958	1.608	2.533	50.604	0.232
900.000	0.104	357.870	899.993	1.559	2.021	1.559	2.552	52.348	0.275
1000.000	0.132	167.422	999.993	1.537	2.042	1.537	2.556	53.038	0.235
1100.000	0.064	96.977	1099.992	1.417	2.123	1.417	2.553	56.276	0.126
1200.000	0.091	277.573	1199.992	1.421	2.100	1.421	2.536	55.921	0.155
1300.000	0.326	267.591	1299.992	1.419	1.737	1.419	2.243	50.750	0.237
1400.000	0.355	292.270	1399.990	1.525	1.166	1.525	1.920	37.414	0.148
1500.000	0.311	292.362	1499.988	1.745	0.629	1.745	1.855	19.825	0.044
1600.000	0.383	241.375	1599.987	1.688	0.085	1.688	1.691	2.894	0.305
1700.000	0.401	231.567	1699.984	1.311	-0.482	1.311	1.397	339.828	0.069
1800.000	0.435	240.313	1799.982	0.906	-1.085	0.906	1.413	309.863	0.072
1900.000	0.410	261.174	1899.979	0.663	-1.768	0.663	1.888	290.569	0.155
2000.000	0.497	276.079	1999.976	0.654	-2.552	0.654	2.635	284.382	0.146
2100.000	0.630	257.145	2099.971	0.578	-3.520	0.578	3.567	279.326	0.227
2200.000	0.668	290.106	2199.965	0.656	-4.603	0.656	4.650	278.111	0.370
2300.000	0.649	290.861	2299.958	1.058	-5.679	1.058	5.777	280.553	0.021
2400.000	0.867	298.588	2399.950	1.622	-6.873	1.622	7.062	283.277	0.241
2500.000	1.000	315.710	2499.937	2.608	-8.147	2.608	8.554	287.753	0.307
2600.000	1.072	314.740	2599.920	3.891	-9.421	3.891	10.193	292.444	0.075
2700.000	1.184	316.941	2699.901	5.305	-10.790	5.305	12.024	296.179	0.119
2800.000	1.347	336.448	2799.877	7.136	-11.965	7.136	13.932	300.814	0.458
2900.000	1.178	10.834	2899.854	9.224	-12.241	9.224	15.327	306.998	0.764
3000.000	0.804	25.511	2999.839	10.867	-11.746	10.867	16.002	312.774	0.450
3100.000	0.892	16.358	3099.828	12.247	-11.225	12.247	16.613	317.493	0.161
3200.000	0.242	33.895	3199.823	13.169	-10.888	13.169	17.087	320.416	0.665
3300.000	0.502	30.645	3299.821	13.720	-10.547	13.720	17.306	322.450	0.261
3400.000	0.466	12.192	3399.817	14.495	-10.238	14.495	17.746	324.765	0.159

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	0.427	16.012	3499.814	15.250	-10.049	15.250	18.264	326.616	0.049
3600.000	0.567	2.514	3599.810	16.102	-9.925	16.102	18.915	328.352	0.182
3700.000	0.266	352.136	3699.807	16.827	-9.935	16.827	19.541	329.441	0.309
3800.000	0.198	287.526	3799.807	17.109	-10.132	17.109	19.884	329.367	0.255
3900.000	0.286	301.956	3899.806	17.294	-10.509	17.294	20.236	328.714	0.106
4000.000	0.260	305.889	3999.805	17.559	-10.905	17.559	20.670	328.158	0.032
4100.000	0.450	301.146	4099.803	17.895	-11.425	17.895	21.231	327.444	0.192
4200.000	0.704	305.546	4199.798	18.456	-12.261	18.456	22.157	326.402	0.258
4300.000	0.741	333.644	4299.790	19.392	-13.048	19.392	23.373	326.065	0.353
4400.000	0.454	16.691	4399.785	20.351	-13.221	20.351	24.269	326.990	0.513
4500.000	0.437	46.453	4499.782	20.993	-12.831	20.993	24.604	328.567	0.229
4600.000	0.399	46.288	4599.779	21.497	-12.303	21.497	24.768	330.216	0.038
4700.000	0.404	38.270	4699.777	22.014	-11.833	22.014	24.993	331.740	0.056
4800.000	0.471	354.243	4799.774	22.699	-11.656	22.699	25.517	332.819	0.334
4900.000	0.377	35.352	4899.772	23.376	-11.507	23.376	26.055	333.791	0.310
5000.000	0.789	344.533	4999.767	24.308	-11.501	24.308	26.891	334.680	0.624
5100.000	0.809	5.886	5099.757	25.673	-11.612	25.673	28.177	335.663	0.297
5200.000	0.758	355.037	5199.748	27.035	-11.597	27.035	29.417	336.783	0.157
5300.000	0.605	0.490	5299.741	28.222	-11.650	28.222	30.532	337.570	0.166
5400.000	0.557	354.278	5399.736	29.234	-11.694	29.234	31.486	338.199	0.079
5500.000	0.609	359.551	5499.731	30.249	-11.746	30.249	32.450	338.778	0.075
5600.000	0.528	358.339	5599.726	31.241	-11.764	31.241	33.382	339.366	0.082
5700.000	0.301	356.743	5699.723	31.964	-11.792	31.964	34.070	339.750	0.227
5800.000	0.381	349.438	5799.721	32.554	-11.868	32.554	34.649	339.970	0.091
5900.000	0.452	335.013	5899.719	33.238	-12.095	33.238	35.370	340.003	0.126
6000.000	0.393	348.234	5999.716	33.931	-12.332	33.931	36.102	340.027	0.113
6100.000	0.499	342.697	6099.713	34.682	-12.531	34.682	36.877	340.134	0.115
6200.000	0.723	323.774	6199.707	35.607	-13.034	35.607	37.917	339.895	0.298
6300.000	0.633	19.792	6299.701	36.636	-13.219	36.636	38.948	340.159	0.642
6400.000	0.532	356.025	6399.696	37.619	-13.064	37.619	39.823	340.849	0.259
6500.000	0.201	354.741	6499.694	38.257	-13.113	38.257	40.442	341.081	0.331
6600.000	0.315	223.693	6599.694	38.233	-13.319	38.233	40.486	340.794	0.472
6700.000	0.370	132.394	6699.692	37.816	-13.271	37.816	40.077	340.663	0.491
6800.000	0.213	15.746	6799.692	37.778	-12.982	37.778	39.947	341.035	0.503
6900.000	0.091	187.104	6899.692	37.879	-12.941	37.879	40.029	341.137	0.303
7000.000	0.308	12.594	6999.691	38.063	-12.892	38.063	40.187	341.288	0.398
7100.000	0.816	9.360	7099.686	39.028	-12.718	39.028	41.048	341.951	0.509
7200.000	0.650	353.855	7199.678	40.295	-12.663	40.295	42.238	342.555	0.257
7300.000	1.439	17.092	7299.661	42.060	-12.355	42.060	43.837	343.630	0.880
7400.000	4.165	40.622	7399.534	46.017	-9.620	46.017	47.012	348.192	2.903
7500.000	4.212	45.192	7499.268	51.362	-4.651	51.362	51.572	354.826	0.337
7600.000	4.388	57.311	7598.988	56.016	1.174	56.016	56.028	1.201	0.924
7700.000	3.645	58.692	7698.742	59.733	7.110	59.733	60.155	6.788	0.749
7800.000	3.482	63.294	7798.549	62.750	12.539	62.750	63.991	11.300	0.329
7900.000	2.578	70.648	7898.408	64.860	17.373	64.860	67.147	14.995	0.983
8000.000	2.253	69.222	7998.319	66.303	21.332	66.303	69.650	17.835	0.330
8100.000	1.631	71.529	8098.261	67.451	24.520	67.451	71.769	19.977	0.627
8200.000	1.518	93.975	8198.225	67.810	27.191	67.810	73.058	21.850	0.623
HORIZONTAL DISPLACEMENT IS 73.058 FEET AT 21.850 DEGREES									