



Company: Anadarko Petroleum
 Well: Rademacher Edward Unit #1
 API #: 05-123-07852
 Rig Name: Production/CoreTech
 State/County: Colorado/Weld
 Latitude: 40.194, Longitude: -104.956
 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: survey_7150-de_01.ut

Minimum Curvature Method

Report Date/Time: 12/11/2013 / 20:42

Vaughn Energy Services
 Henderson, Colorado
 866-835-8333
 Randy Holcomb

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	0.467	350.155	99.999	0.402	-0.070	0.402	0.408	350.155	0.467
200.000	0.296	280.348	199.997	0.850	-0.394	0.850	0.937	335.135	0.459
300.000	0.307	2.308	299.996	1.164	-0.638	1.164	1.327	331.295	0.396
400.000	0.316	53.661	399.995	1.596	-0.405	1.596	1.646	345.774	0.270
500.000	0.390	169.333	499.994	1.425	-0.119	1.425	1.430	355.213	0.599
600.000	0.446	187.906	599.991	0.705	-0.110	0.705	0.713	351.150	0.146
700.000	0.412	224.009	699.989	0.061	-0.413	0.061	0.418	278.414	0.268
800.000	0.186	286.287	799.987	-0.152	-0.819	-0.152	0.833	259.492	0.365
900.000	0.117	64.559	899.987	-0.062	-0.883	-0.062	0.886	265.955	0.285
1000.000	0.556	191.878	999.986	-0.493	-0.891	-0.493	1.019	241.024	0.634
1100.000	0.453	232.595	1099.982	-1.208	-1.305	-1.208	1.778	227.199	0.364
1200.000	0.298	187.228	1199.980	-1.706	-1.651	-1.706	2.374	224.061	0.323
1300.000	0.434	201.453	1299.978	-2.316	-1.822	-2.316	2.947	218.191	0.162
1400.000	0.480	213.502	1399.975	-3.018	-2.192	-3.018	3.730	215.990	0.106
1500.000	0.449	228.032	1499.972	-3.629	-2.714	-3.629	4.531	216.794	0.121
1600.000	0.339	202.844	1599.969	-4.163	-3.120	-4.163	5.202	216.851	0.203
1700.000	0.623	226.333	1699.966	-4.811	-3.628	-4.811	6.025	217.022	0.340
1800.000	0.590	246.863	1799.960	-5.388	-4.494	-5.388	7.016	219.833	0.219
1900.000	0.238	264.744	1899.958	-5.609	-5.175	-5.609	7.632	222.692	0.370
2000.000	0.315	247.659	1999.957	-5.733	-5.636	-5.733	8.039	224.511	0.112
2100.000	0.404	292.913	2099.955	-5.700	-6.215	-5.700	8.433	227.472	0.288
2200.000	0.172	253.408	2199.953	-5.606	-6.683	-5.606	8.723	230.008	0.292
2300.000	0.609	271.055	2299.951	-5.639	-7.358	-5.639	9.271	232.534	0.448
2400.000	0.267	291.242	2399.948	-5.545	-8.107	-5.545	9.822	235.628	0.370
2500.000	0.281	287.336	2499.947	-5.388	-8.558	-5.388	10.112	237.807	0.023
2600.000	0.453	220.563	2599.945	-5.615	-9.048	-5.615	10.649	238.180	0.428
2700.000	0.428	286.486	2699.943	-5.809	-9.664	-5.809	11.275	238.991	0.480
2800.000	0.559	283.648	2799.939	-5.587	-10.496	-5.587	11.891	241.972	0.133
2900.000	0.484	233.106	2899.935	-5.726	-11.308	-5.726	12.675	243.144	0.451
3000.000	0.442	229.663	2999.932	-6.229	-11.940	-6.229	13.467	242.448	0.050
3100.000	0.625	259.997	3099.928	-6.574	-12.771	-6.574	14.363	242.764	0.330
3200.000	0.522	221.478	3199.923	-7.009	-13.609	-7.009	15.308	242.750	0.390
3300.000	0.365	221.839	3299.920	-7.588	-14.123	-7.588	16.032	241.753	0.157
3400.000	0.302	193.060	3399.919	-8.082	-14.395	-8.082	16.509	240.690	0.177

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	0.378	182.958	3499.917	-8.667	-14.472	-8.667	16.869	239.082	0.096
3600.000	0.444	197.527	3599.914	-9.366	-14.605	-9.366	17.350	237.330	0.123
3700.000	0.446	196.719	3699.911	-10.108	-14.834	-10.108	17.950	235.730	0.007
3800.000	0.492	205.581	3799.908	-10.867	-15.131	-10.867	18.629	234.314	0.086
3900.000	0.410	199.020	3899.905	-11.593	-15.433	-11.593	19.302	233.087	0.096
4000.000	0.135	211.538	3999.904	-12.032	-15.611	-12.032	19.710	232.379	0.281
4100.000	0.222	152.458	4099.903	-12.304	-15.583	-12.304	19.855	231.707	0.192
4200.000	0.221	82.788	4199.903	-12.452	-15.302	-12.452	19.728	230.864	0.253
4300.000	0.366	154.697	4299.902	-12.716	-14.975	-12.716	19.645	229.663	0.364
4400.000	0.215	103.157	4399.900	-13.048	-14.656	-13.048	19.622	228.322	0.287
4500.000	0.550	107.920	4499.898	-13.238	-14.016	-13.238	19.280	226.636	0.336
4600.000	1.345	94.214	4599.884	-13.472	-12.389	-13.472	18.303	222.603	0.821
4700.000	1.380	89.035	4699.855	-13.538	-10.015	-13.538	16.840	216.494	0.128
4800.000	1.261	100.856	4799.829	-13.725	-7.731	-13.725	15.752	209.392	0.296
4900.000	1.202	98.264	4899.806	-14.083	-5.613	-14.083	15.160	201.730	0.081
5000.000	0.994	102.052	4999.788	-14.415	-3.726	-14.415	14.888	194.493	0.220
5100.000	1.066	112.324	5099.771	-14.949	-2.017	-14.949	15.085	187.682	0.198
5200.000	1.073	122.746	5199.754	-15.809	-0.368	-15.809	15.813	181.334	0.194
5300.000	1.086	124.972	5299.736	-16.859	1.196	-16.859	16.901	175.942	0.044
5400.000	0.897	144.083	5399.722	-18.036	2.432	-18.036	18.200	172.320	0.378
5500.000	0.873	152.168	5499.710	-19.345	3.247	-19.345	19.615	170.470	0.127
5600.000	0.581	144.905	5599.702	-20.433	3.894	-20.433	20.801	169.209	0.306
5700.000	0.452	137.674	5699.698	-21.139	4.451	-21.139	21.603	168.108	0.144
5800.000	0.310	116.351	5799.695	-21.551	4.959	-21.551	22.114	167.041	0.199
5900.000	0.243	81.511	5899.694	-21.639	5.411	-21.639	22.306	165.960	0.177
6000.000	0.466	44.151	5999.692	-21.316	5.905	-21.316	22.119	164.517	0.310
6100.000	0.539	35.776	6099.689	-20.643	6.463	-20.643	21.631	162.615	0.104
6200.000	0.591	39.669	6199.684	-19.864	7.067	-19.864	21.084	160.415	0.064
6300.000	0.738	33.765	6299.677	-18.932	7.754	-18.932	20.459	157.727	0.162
6400.000	0.770	32.193	6399.668	-17.828	8.470	-17.828	19.738	154.587	0.039
6500.000	1.123	14.953	6499.655	-16.313	9.081	-16.313	18.670	150.895	0.449
6600.000	1.427	10.781	6599.630	-14.143	9.567	-14.143	17.075	145.925	0.318
6700.000	1.735	15.572	6699.592	-11.462	10.206	-11.462	15.347	138.317	0.336
6800.000	1.768	20.744	6799.545	-8.561	11.159	-8.561	14.064	127.494	0.161
6900.000	1.938	25.862	6899.493	-5.597	12.443	-5.597	13.644	114.218	0.237
7000.000	2.174	31.477	6999.428	-2.458	14.171	-2.458	14.382	99.839	0.310
7100.000	1.826	39.548	7099.368	0.388	16.176	0.388	16.180	88.624	0.447
7150.000	1.669	46.963	7149.344	1.500	17.215	1.500	17.280	85.022	0.550

HORIZONTAL DISPLACEMENT IS
17.280 FEET AT 85.022 DEGREES