

Company: Anadarko Petroleum Corp.
Lease/Well: State L / 16-16
API#: 05-123-14843
Rig Name: Production / V.E.S.
State/County: Colorado / Weld County
Latitude: 40.219, Longitude: -104.774
Directions are relative to True North
VS-Azi: 0.000 Degrees



FIELD COPY ONLY (NOT DEFINITIVE)

Depth Reference : RKB = Ground Level

DRILLOG GYRO SURVEY CALCULATIONS

Filename: survey.ut
Minimum Curvature Method
Report Date/Time: 3/13/2014 / 21:31

Vaughn Energy Services
Henderson CO.
303-853-4976
Norman Cowan

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	0.067	264.617	100.000	-0.006	-0.058	-0.006	0.059	264.617	0.067
200.000	0.208	283.743	200.000	0.032	-0.293	0.032	0.294	276.243	0.146
300.000	0.146	278.262	299.999	0.093	-0.595	0.093	0.602	278.921	0.063
400.000	0.260	293.088	399.999	0.201	-0.930	0.201	0.952	282.181	0.125
500.000	0.142	213.168	499.998	0.186	-1.207	0.186	1.221	278.771	0.274
600.000	0.112	207.897	599.998	-0.004	-1.321	-0.004	1.321	269.833	0.032
700.000	0.122	231.249	699.998	-0.157	-1.449	-0.157	1.458	263.822	0.048
800.000	0.176	299.960	799.997	-0.147	-1.665	-0.147	1.672	264.959	0.174
900.000	0.068	241.983	899.997	-0.098	-1.850	-0.098	1.853	266.967	0.151
1000.000	0.039	259.176	999.997	-0.132	-1.936	-0.132	1.941	266.092	0.033
1100.000	0.066	303.332	1099.997	-0.107	-2.018	-0.107	2.021	266.966	0.047
1200.000	0.169	301.448	1199.997	0.001	-2.192	0.001	2.192	270.039	0.102
1300.000	0.217	263.216	1299.996	0.056	-2.505	0.056	2.506	271.278	0.134
1400.000	0.204	277.146	1399.996	0.056	-2.870	0.056	2.870	271.111	0.053
1500.000	0.048	237.614	1499.995	0.055	-3.082	0.055	3.082	271.032	0.170
1600.000	0.244	212.881	1599.995	-0.145	-3.232	-0.145	3.235	267.426	0.201
1700.000	0.175	210.318	1699.994	-0.455	-3.424	-0.455	3.455	262.425	0.069
1800.000	0.139	253.254	1799.994	-0.622	-3.617	-0.622	3.671	260.245	0.120
1900.000	0.479	236.602	1899.992	-0.887	-4.082	-0.887	4.178	257.743	0.348
2000.000	0.494	210.269	1999.989	-1.489	-4.649	-1.489	4.881	252.238	0.222
2100.000	0.564	219.541	2099.985	-2.241	-5.179	-2.241	5.643	246.604	0.110
2200.000	0.638	211.882	2199.979	-3.093	-5.786	-3.093	6.561	241.873	0.109
2300.000	0.988	219.192	2299.969	-4.234	-6.625	-4.234	7.863	237.417	0.364
2400.000	1.071	207.477	2399.953	-5.732	-7.602	-5.732	9.520	232.982	0.226
2500.000	1.293	196.810	2499.932	-7.641	-8.359	-7.641	11.325	227.570	0.312
2600.000	1.203	195.360	2599.908	-9.733	-8.963	-9.733	13.232	222.641	0.095
2700.000	1.187	185.653	2699.886	-11.777	-9.344	-11.777	15.033	218.428	0.203
2800.000	1.009	174.090	2799.868	-13.683	-9.355	-13.683	16.575	214.360	0.283
2900.000	0.689	180.468	2899.857	-15.160	-9.269	-15.160	17.770	211.442	0.333
3000.000	0.678	94.020	2999.852	-15.803	-8.684	-15.803	18.032	208.790	0.936
3100.000	0.330	137.223	3099.848	-16.056	-7.899	-16.056	17.894	206.195	0.492
3200.000	0.280	156.423	3199.847	-16.492	-7.605	-16.492	18.161	204.756	0.113
3300.000	0.590	51.159	3299.845	-16.394	-7.106	-16.394	17.868	203.436	0.717
3400.000	0.503	69.988	3399.841	-15.921	-6.293	-15.921	17.120	201.569	0.198

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	0.629	21.548	3499.836	-15.260	-5.680	-15.260	16.283	200.415	0.478
3600.000	1.115	10.558	3599.824	-13.793	-5.300	-13.793	14.776	201.019	0.512
3700.000	1.182	37.455	3699.805	-12.018	-4.494	-12.018	12.831	200.505	0.538
3800.000	1.487	23.864	3799.778	-10.013	-3.342	-10.013	10.556	198.460	0.438
3900.000	1.352	14.218	3899.747	-7.682	-2.528	-7.682	8.087	198.212	0.274
4000.000	1.199	30.493	3999.723	-5.637	-1.707	-5.637	5.890	196.847	0.392
4100.000	1.064	28.041	4099.703	-3.916	-0.740	-3.916	3.986	190.697	0.143
4200.000	0.962	32.033	4199.688	-2.385	0.142	-2.385	2.389	176.595	0.124
4300.000	1.181	30.596	4299.670	-0.787	1.112	-0.787	1.362	125.296	0.221
4400.000	1.464	12.802	4399.644	1.346	1.919	1.346	2.344	54.958	0.496
4500.000	0.877	353.570	4499.623	3.352	2.116	3.352	3.965	32.264	0.698
4600.000	0.911	338.009	4599.611	4.850	1.733	4.850	5.150	19.662	0.244
4700.000	0.753	359.366	4699.601	6.244	1.428	6.244	6.405	12.884	0.345
4800.000	1.139	49.265	4799.588	7.549	2.174	7.549	7.856	16.066	0.872
4900.000	1.288	67.658	4899.566	8.625	3.967	8.625	9.494	24.700	0.415
5000.000	1.232	60.064	4999.542	9.589	5.939	9.589	11.279	31.770	0.176
5100.000	1.301	69.127	5099.518	10.530	7.931	10.530	13.183	36.986	0.211
5200.000	1.387	61.500	5199.490	11.512	10.055	11.512	15.285	41.134	0.198
5300.000	0.866	84.114	5299.471	12.167	11.870	12.167	16.998	44.292	0.675
5400.000	0.528	62.400	5399.464	12.458	13.030	12.458	18.027	46.286	0.423
5500.000	0.897	66.249	5499.456	12.987	14.156	12.987	19.210	47.465	0.372
5600.000	0.892	72.039	5599.444	13.542	15.613	13.542	20.668	49.062	0.091
5700.000	0.983	89.895	5699.431	13.784	17.212	13.784	22.051	51.311	0.305
5800.000	0.450	42.986	5799.423	14.073	18.338	14.073	23.116	52.496	0.751
5900.000	0.797	301.669	5899.419	14.726	18.014	14.726	23.267	50.735	0.989
6000.000	0.751	291.391	5999.410	15.330	16.812	15.330	22.752	47.640	0.146
6100.000	1.246	342.054	6099.396	16.604	15.866	16.604	22.966	43.699	0.964
6200.000	1.069	22.754	6199.378	18.498	15.892	18.498	24.387	40.667	0.822
6300.000	1.646	354.447	6299.350	20.787	16.114	20.787	26.301	37.782	0.868
6400.000	2.410	7.099	6399.287	24.303	16.235	24.303	29.227	33.743	0.882
6500.000	1.521	8.038	6499.227	27.704	16.680	27.704	32.338	31.051	0.890
6600.000	1.411	11.962	6599.195	30.223	17.121	30.223	34.736	29.531	0.149
6700.000	1.177	1.950	6699.169	32.455	17.411	32.455	36.830	28.213	0.325
6800.000	0.917	9.244	6799.153	34.270	17.575	34.270	38.514	27.150	0.292
6900.000	1.107	22.081	6899.137	35.955	18.066	35.955	40.238	26.678	0.295
7000.000	1.101	347.734	6999.120	37.789	18.225	37.789	41.954	25.747	0.652
7100.000	1.143	340.553	7099.100	39.669	17.689	39.669	43.434	24.032	0.147
7200.000	1.145	21.922	7199.082	41.536	17.729	41.536	45.162	23.115	0.808

HORIZONTAL DISPLACEMENT IS
45.162 FEET AT 23.115 DEGREES