

Company: Anadarko Petroleum Corp.

Lease/Well: Bell L / 12-15

API#: 05-123-15717

Rig Name: Production / V.E.S.

State/County: Colorado / Weld County

Latitude: 40.234, Longitude: -104.723

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: 2/13/2014 / 20:00

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	1.134	343.914	99.993	0.951	-0.274	0.951	0.990	343.914	1.134
200.000	0.535	311.583	199.983	2.212	-0.898	2.212	2.387	337.910	0.740
300.000	0.449	244.859	299.980	2.355	-1.602	2.355	2.848	325.784	0.546
400.000	0.233	253.589	399.978	2.131	-2.152	2.131	3.029	314.726	0.221
500.000	0.635	89.356	499.976	2.080	-1.794	2.080	2.747	319.230	0.862
600.000	0.119	222.811	599.975	2.010	-1.311	2.010	2.399	326.891	0.722
700.000	0.682	230.721	699.972	1.556	-1.842	1.556	2.412	310.188	0.564
800.000	0.266	147.963	799.969	0.983	-2.180	0.983	2.392	294.258	0.701
900.000	0.605	167.299	899.966	0.271	-1.941	0.271	1.960	277.933	0.365
1000.000	0.205	153.539	999.963	-0.405	-1.745	-0.405	1.792	256.925	0.409
1100.000	0.049	275.638	1099.963	-0.562	-1.708	-0.562	1.798	251.798	0.235
1200.000	0.774	228.599	1199.960	-1.004	-2.257	-1.004	2.470	246.019	0.741
1300.000	0.668	189.310	1299.953	-2.026	-2.858	-2.026	3.504	234.665	0.495
1400.000	0.832	213.360	1399.944	-3.208	-3.352	-3.208	4.640	226.254	0.351
1500.000	0.448	254.464	1499.938	-3.919	-4.127	-3.919	5.691	226.484	0.575
1600.000	0.791	279.776	1599.932	-3.906	-5.184	-3.906	6.491	233.001	0.431
1700.000	0.765	276.546	1699.923	-3.713	-6.527	-3.713	7.509	240.366	0.051
1800.000	0.700	318.879	1799.916	-3.177	-7.592	-3.177	8.230	247.290	0.532
1900.000	0.394	297.235	1899.911	-2.560	-8.298	-2.560	8.684	252.855	0.364
2000.000	0.685	284.801	1999.907	-2.250	-9.182	-2.250	9.453	256.229	0.312
2100.000	1.184	281.244	2099.893	-1.896	-10.773	-1.896	10.939	260.018	0.503
2200.000	0.786	281.543	2199.878	-1.557	-12.459	-1.557	12.556	262.875	0.399
2300.000	0.591	289.187	2299.871	-1.251	-13.617	-1.251	13.675	264.752	0.215
2400.000	0.758	332.349	2399.864	-0.495	-14.412	-0.495	14.420	268.033	0.520
2500.000	0.709	294.059	2499.857	0.343	-15.284	0.343	15.288	271.287	0.484
2600.000	0.753	316.800	2599.849	1.075	-16.299	1.075	16.334	273.772	0.291
2700.000	0.407	345.337	2699.844	1.897	-16.838	1.897	16.945	276.427	0.441
2800.000	0.832	296.063	2799.838	2.559	-17.580	2.559	17.766	278.282	0.645
2900.000	0.634	291.331	2899.830	3.079	-18.748	3.079	19.000	279.328	0.207
3000.000	0.861	307.900	2999.822	3.742	-19.857	3.742	20.207	280.673	0.311
3100.000	0.998	277.286	3099.809	4.315	-21.314	4.315	21.746	281.444	0.508
3200.000	1.346	306.166	3199.789	5.118	-23.126	5.118	23.686	282.479	0.674
3300.000	1.442	325.129	3299.760	6.843	-24.794	6.843	25.721	285.430	0.469
3400.000	1.571	325.747	3399.725	9.008	-26.284	9.008	27.785	288.918	0.130

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	1.744	330.314	3499.683	11.463	-27.809	11.463	30.079	292.402	0.218
3600.000	1.697	332.693	3599.638	14.101	-29.242	14.101	32.465	295.744	0.086
3700.000	1.141	355.697	3699.608	16.410	-29.997	16.410	34.192	298.682	0.786
3800.000	1.622	21.785	3799.580	18.718	-29.546	18.718	34.976	302.355	0.780
3900.000	0.752	10.474	3899.557	20.677	-28.901	20.677	35.537	305.582	0.897
4000.000	0.351	292.279	3999.554	21.439	-29.065	21.439	36.117	306.413	0.762
4100.000	0.195	317.009	4099.552	21.679	-29.464	21.679	36.580	306.344	0.192
4200.000	0.724	13.019	4199.549	22.419	-29.438	22.419	37.003	307.292	0.636
4300.000	0.792	349.252	4299.541	23.714	-29.424	23.714	37.790	308.866	0.319
4400.000	1.660	330.092	4399.517	25.648	-30.275	25.648	39.679	310.270	0.949
4500.000	2.089	328.421	4499.463	28.457	-31.952	28.457	42.787	311.688	0.432
4600.000	2.011	332.656	4599.399	31.568	-33.712	31.568	46.185	313.119	0.170
4700.000	1.994	336.616	4699.338	34.724	-35.209	34.724	49.451	314.602	0.139
4800.000	1.180	342.580	4799.299	37.303	-36.208	37.303	51.986	315.854	0.830
4900.000	1.376	324.979	4899.275	39.269	-37.205	39.269	54.095	316.546	0.436
5000.000	0.727	311.305	4999.258	40.671	-38.370	40.671	55.914	316.667	0.691
5100.000	0.822	311.568	5099.248	41.566	-39.384	41.566	57.261	316.544	0.095
5200.000	0.444	310.611	5199.242	42.294	-40.215	42.294	58.361	316.444	0.378
5300.000	0.253	320.238	5299.240	42.716	-40.650	42.716	58.967	316.419	0.200
5400.000	0.087	305.585	5399.240	42.929	-40.853	42.929	59.261	316.420	0.170
5500.000	0.311	344.467	5499.239	43.235	-40.987	43.235	59.575	316.529	0.249
5600.000	0.080	336.210	5599.238	43.560	-41.088	43.560	59.880	316.673	0.232
5700.000	0.277	349.720	5699.238	43.861	-41.159	43.861	60.149	316.820	0.200
5800.000	0.917	320.796	5799.232	44.718	-41.708	44.718	61.149	316.995	0.688
5900.000	0.454	347.891	5899.225	45.725	-42.296	45.725	62.288	317.231	0.552
6000.000	0.365	332.022	5999.222	46.394	-42.529	46.394	62.938	317.489	0.143
6100.000	0.468	354.931	6099.220	47.083	-42.715	47.083	63.571	317.785	0.194
6200.000	0.924	324.496	6199.212	48.146	-43.219	48.146	64.698	318.087	0.572
6300.000	1.164	315.458	6299.196	49.526	-44.399	49.526	66.514	318.124	0.290
6400.000	1.917	314.770	6399.159	51.428	-46.299	51.428	69.198	318.004	0.753
6500.000	1.949	336.649	6499.103	54.167	-48.161	54.167	72.481	318.359	0.734
6600.000	1.933	325.707	6599.046	57.122	-49.785	57.122	75.772	318.926	0.370
6700.000	2.872	321.794	6698.957	60.484	-52.285	60.484	79.950	319.158	0.953
6800.000	2.304	320.428	6798.855	64.002	-55.115	64.002	84.463	319.267	0.571
6900.000	2.923	319.809	6898.751	67.500	-58.041	67.500	89.022	319.308	0.619
7000.000	3.126	306.333	6998.613	71.063	-61.883	71.063	94.231	318.950	0.737
7100.000	3.649	292.952	7098.439	73.919	-67.010	73.919	99.771	317.807	0.944
7200.000	3.913	281.675	7198.223	75.850	-73.282	75.850	105.468	315.987	0.788
7250.000	4.153	276.372	7248.099	76.397	-76.752	76.397	108.293	314.867	0.887
HORIZONTAL DISPLACEMENT IS 108.293 FEET AT 314.867 DEGREES									