

Company: Anadarko Petroleum Corp.
 Well/API: Fort Saint Vrain #19/05-123-15645
 Tool Type: North Seeking Rate Gyro
 Rig Name: Production / VESSI
 County/State: Weld/Colorado
 Latitude: 40.239, Longitude: -104.903
 Directions are relative to True North
 VS-Azi: 0.000 Degrees



FIELD COPY ONLY (NOT DEFINITIVE)

Depth Reference : RKB = GL Elevation = 4780 Feet

DRILLOG GYRO SURVEY CALCULATIONS

Filename: strapdown-de_01.ut

Minimum Curvature Method

Report Date/Time: 12/2/2014 / 12:25

Lat/Long Obtained By Handheld GPS At Wellhead

Handheld GPS Reference: NAD83/Device Error: +/- 9 Feet

VES Survey International - Henderson, CO

Kevin McDowell

303-853-4976

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	0.535	227.395	99.999	-0.316	-0.344	-0.316	0.467	227.395	0.535
200.000	0.492	215.592	199.995	-0.982	-0.937	-0.982	1.357	223.682	0.114
300.000	0.364	202.386	299.992	-1.625	-1.308	-1.625	2.086	218.848	0.161
400.000	0.268	214.062	399.990	-2.112	-1.560	-2.112	2.626	216.459	0.115
500.000	0.249	239.564	499.989	-2.416	-1.878	-2.416	3.060	217.869	0.116
600.000	0.246	253.191	599.988	-2.588	-2.271	-2.588	3.443	221.273	0.059
700.000	0.449	233.729	699.986	-2.882	-2.793	-2.882	4.013	224.103	0.232
800.000	0.719	246.022	799.981	-3.369	-3.682	-3.369	4.991	227.547	0.296
900.000	1.123	255.162	899.968	-3.874	-5.203	-3.874	6.487	233.324	0.428
1000.000	1.464	258.830	999.943	-4.373	-7.403	-4.373	8.598	239.430	0.351
1100.000	1.903	260.189	1099.899	-4.903	-10.292	-4.903	11.400	244.527	0.441
1200.000	2.405	259.017	1199.828	-5.586	-13.987	-5.586	15.061	248.231	0.504
1300.000	2.928	271.696	1299.720	-5.910	-18.600	-5.910	19.516	252.373	0.785
1400.000	3.567	265.481	1399.560	-6.079	-24.253	-6.079	25.003	255.928	0.728
1500.000	3.828	267.193	1499.352	-6.488	-30.688	-6.488	31.366	258.063	0.284
1600.000	4.054	278.369	1599.116	-6.137	-37.519	-6.137	38.018	260.711	0.799
1700.000	3.983	267.083	1698.872	-5.799	-44.485	-5.799	44.862	262.573	0.793
1800.000	3.911	262.433	1798.635	-6.425	-51.335	-6.425	51.736	262.866	0.328
1900.000	3.952	260.920	1898.400	-7.418	-58.119	-7.418	58.591	262.726	0.111
2000.000	3.742	264.658	1998.175	-8.266	-64.772	-8.266	65.297	262.728	0.327
2100.000	3.531	261.695	2097.973	-9.014	-71.068	-9.014	71.638	262.771	0.283
2200.000	3.330	270.771	2197.795	-9.420	-77.020	-9.420	77.594	263.027	0.578
2300.000	3.470	272.429	2297.619	-9.253	-82.948	-9.253	83.462	263.635	0.171
2400.000	3.486	275.391	2397.435	-8.839	-88.999	-8.839	89.436	264.328	0.180
2500.000	3.568	262.609	2497.247	-8.953	-95.112	-8.953	95.532	264.622	0.789
2600.000	3.009	274.994	2597.083	-9.125	-100.812	-9.125	101.224	264.828	0.901
2700.000	2.708	290.464	2696.960	-8.071	-105.639	-8.071	105.947	265.631	0.825
2800.000	2.590	307.343	2796.855	-5.874	-109.649	-5.874	109.806	266.933	0.786
2900.000	2.258	314.388	2896.765	-3.126	-112.853	-3.126	112.896	268.414	0.445
3000.000	1.679	335.999	2996.707	-0.409	-114.857	-0.409	114.858	269.796	0.932
3100.000	1.081	311.296	3096.678	1.552	-116.162	1.552	116.172	270.766	0.831
3200.000	0.706	302.228	3196.666	2.503	-117.392	2.503	117.418	271.222	0.400
3300.000	1.146	0.183	3296.655	3.832	-117.909	3.832	117.972	271.861	0.976
3400.000	1.516	339.917	3396.628	6.074	-118.360	6.074	118.516	272.938	0.593

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	2.084	352.615	3496.579	9.119	-119.048	9.119	119.397	274.380	0.691
3600.000	2.059	337.989	3596.514	12.588	-119.956	12.588	120.614	275.991	0.528
3700.000	1.950	332.063	3696.453	15.757	-121.426	15.757	122.444	277.394	0.234
3800.000	1.235	324.142	3796.414	18.134	-122.855	18.134	124.186	278.397	0.747
3900.000	0.965	292.184	3896.396	19.326	-124.266	19.326	125.760	278.840	0.659
4000.000	0.968	268.193	3996.382	19.617	-125.890	19.617	127.409	278.857	0.402
4100.000	0.800	284.392	4096.371	19.764	-127.409	19.764	128.933	278.818	0.299
4200.000	0.684	272.483	4196.362	19.963	-128.682	19.963	130.221	278.818	0.192
4300.000	0.079	191.795	4296.360	19.922	-129.293	19.922	130.818	278.759	0.676
4400.000	0.070	24.730	4396.360	19.910	-129.281	19.910	130.805	278.755	0.148
4500.000	0.473	80.186	4496.359	20.035	-128.849	20.035	130.397	278.838	0.437
4600.000	0.414	81.644	4596.356	20.158	-128.084	20.158	129.661	278.944	0.060
4700.000	0.260	138.178	4696.354	20.042	-127.576	20.042	129.140	278.928	0.347
4800.000	0.115	152.663	4796.354	19.784	-127.378	19.784	128.906	278.828	0.151
4900.000	0.414	258.430	4896.353	19.622	-127.686	19.622	129.185	278.737	0.459
5000.000	0.537	210.658	4996.350	19.147	-128.279	19.147	129.700	278.489	0.401
5100.000	0.784	211.671	5096.343	18.162	-128.877	18.162	130.151	278.021	0.248
5200.000	1.132	224.909	5196.329	16.879	-129.934	16.879	131.026	277.402	0.410
5300.000	1.340	187.784	5296.307	15.021	-130.790	15.021	131.650	276.551	0.811
5400.000	1.052	120.437	5396.290	13.397	-130.157	13.397	130.844	275.877	1.348
5500.000	0.458	72.607	5496.281	13.051	-128.984	13.051	129.643	275.778	0.819
5600.000	0.564	38.334	5596.277	13.556	-128.298	13.556	129.012	276.031	0.317
5700.000	0.391	52.103	5696.274	14.151	-127.724	14.151	128.506	276.322	0.206
5800.000	0.589	353.183	5796.271	14.871	-127.516	14.871	128.380	276.652	0.512
5900.000	0.187	35.087	5896.268	15.515	-127.483	15.515	128.424	276.939	0.467
6000.000	0.481	258.361	5996.267	15.564	-127.801	15.564	128.745	276.943	0.631
6100.000	0.372	90.251	6096.266	15.478	-127.888	15.478	128.821	276.901	0.849
6200.000	0.299	53.750	6196.265	15.630	-127.353	15.630	128.308	276.997	0.221
6300.000	1.014	20.024	6296.258	16.616	-126.839	16.616	127.923	277.463	0.783
6400.000	0.608	83.889	6396.249	17.504	-126.009	17.504	127.219	277.908	0.924
6500.000	0.705	152.811	6496.244	17.013	-125.200	17.013	126.351	277.738	0.747
6600.000	0.988	172.032	6596.233	15.611	-124.799	15.611	125.772	277.130	0.397
6700.000	1.061	202.970	6696.218	13.905	-125.041	13.905	125.812	276.346	0.551
6800.000	1.027	235.265	6796.202	12.542	-126.139	12.542	126.761	275.678	0.581
6900.000	1.473	263.632	6896.179	11.889	-128.152	11.889	128.703	275.300	0.750
6950.000	1.258	257.678	6946.165	11.701	-129.327	11.701	129.855	275.170	0.515
HORIZONTAL DISPLACEMENT IS 129.855 FEET AT 275.170 DEGREES									