

Company: Anadarko Petroleum Corp.  
 Well/API: Fehr W #28-13/05-123-18799  
 Tool Type: North Seeking Rate Gyro  
 Rig Name: Production / VESSI  
 County/State: Weld/Colorado  
 Latitude: 40.104, Longitude: -104.790  
 Directions are relative to True North  
 VS-Azi: 0.000 Degrees



**FIELD COPY ONLY (NOT DEFINITIVE)**

Depth Reference : RKB = GL Elevation = 4961 Feet

**DRILLOG GYRO SURVEY CALCULATIONS**

Filename: strapdown-de\_01\_mrg.ut

Minimum Curvature Method

Report Date/Time: 12/12/2014 / 14:12

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	0.400	45.323	99.999	0.246	0.248	0.246	0.349	45.323	0.400
200.000	0.309	45.839	199.997	0.679	0.690	0.679	0.968	45.466	0.092
300.000	0.115	56.354	299.997	0.922	0.967	0.922	1.336	46.357	0.196
400.000	0.057	250.031	399.996	0.961	1.004	0.961	1.389	46.251	0.171
500.000	0.117	180.348	499.996	0.842	0.956	0.842	1.274	48.641	0.111
600.000	0.100	225.008	599.996	0.678	0.894	0.678	1.122	52.813	0.084
700.000	0.044	217.438	699.996	0.587	0.809	0.587	1.000	54.069	0.057
800.000	0.203	136.480	799.996	0.428	0.908	0.428	1.004	64.767	0.201
900.000	0.118	213.133	899.996	0.213	0.974	0.213	0.997	77.641	0.210
1000.000	0.292	291.050	999.995	0.219	0.680	0.219	0.714	72.176	0.291
1100.000	0.307	318.148	1099.994	0.509	0.263	0.509	0.574	27.338	0.141
1200.000	0.487	268.053	1199.992	0.695	-0.340	0.695	0.773	333.928	0.373
1300.000	0.605	246.174	1299.987	0.467	-1.247	0.467	1.332	290.514	0.238
1400.000	0.736	239.861	1399.980	-0.069	-2.286	-0.069	2.287	268.269	0.150
1500.000	0.572	257.597	1499.974	-0.499	-3.329	-0.499	3.366	261.478	0.259
1600.000	0.697	263.711	1599.968	-0.673	-4.421	-0.673	4.472	261.349	0.142
1700.000	1.036	263.491	1699.956	-0.842	-5.924	-0.842	5.983	261.912	0.339
1800.000	1.002	273.212	1799.940	-0.895	-7.695	-0.895	7.747	263.364	0.176
1900.000	1.117	265.849	1899.923	-0.917	-9.540	-0.917	9.584	264.511	0.178
2000.000	1.133	278.467	1999.904	-0.842	-11.489	-0.842	11.520	265.810	0.248
2100.000	1.076	259.638	2099.886	-0.865	-13.390	-0.865	13.418	266.304	0.366
2200.000	0.948	254.386	2199.870	-1.257	-15.110	-1.257	15.162	265.246	0.158
2300.000	0.728	254.647	2299.860	-1.647	-16.520	-1.647	16.602	264.305	0.220
2400.000	0.515	223.120	2399.854	-2.144	-17.440	-2.144	17.571	262.991	0.395
2500.000	0.703	249.456	2499.848	-2.688	-18.322	-2.688	18.518	261.654	0.333
2600.000	0.545	219.321	2599.843	-3.271	-19.199	-3.271	19.475	260.330	0.359
2700.000	0.969	175.054	2699.835	-4.482	-19.427	-4.482	19.938	257.009	0.693
2800.000	0.736	181.078	2799.823	-5.967	-19.367	-5.967	20.265	252.877	0.250
2900.000	0.754	148.632	2899.815	-7.170	-19.036	-7.170	20.342	249.360	0.417
3000.000	0.449	136.944	2999.810	-8.018	-18.426	-8.018	20.095	246.483	0.327
3100.000	0.171	189.380	3099.808	-8.452	-18.183	-8.452	20.051	245.070	0.371
3200.000	0.810	230.611	3199.804	-9.047	-18.753	-9.047	20.822	244.245	0.690
3300.000	1.135	185.997	3299.791	-10.481	-19.403	-10.481	22.052	241.624	0.797
3400.000	1.351	229.651	3399.770	-12.229	-20.405	-12.229	23.789	239.065	0.946

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	1.644	255.329	3499.737	-13.356	-22.691	-13.356	26.330	239.520	0.724
3600.000	1.544	228.736	3599.699	-14.607	-25.092	-14.607	29.034	239.794	0.740
3700.000	1.378	259.485	3699.668	-15.715	-27.286	-15.715	31.488	240.060	0.791
3800.000	1.701	254.973	3799.632	-16.320	-29.902	-16.320	34.065	241.375	0.345
3900.000	1.356	232.916	3899.597	-17.418	-32.279	-17.418	36.679	241.649	0.676
4000.000	1.302	258.341	3999.571	-18.361	-34.336	-18.361	38.937	241.865	0.587
4100.000	1.008	295.922	4099.552	-18.206	-36.240	-18.206	40.556	243.326	0.795
4200.000	1.023	283.956	4199.536	-17.606	-37.897	-17.606	41.787	245.081	0.212
4300.000	1.748	285.568	4299.507	-16.982	-40.233	-16.982	43.670	247.116	0.726
4400.000	1.746	268.767	4399.461	-16.605	-43.225	-16.605	46.304	248.985	0.510
4500.000	2.056	289.560	4499.407	-16.038	-46.438	-16.038	49.129	250.947	0.750
4600.000	2.141	287.522	4599.340	-14.875	-49.909	-14.875	52.079	253.404	0.114
4700.000	2.107	276.045	4699.272	-14.119	-53.519	-14.119	55.350	255.222	0.426
4800.000	2.139	270.312	4799.203	-13.915	-57.214	-13.915	58.882	256.331	0.215
4900.000	1.763	265.280	4899.145	-14.031	-60.614	-14.031	62.217	256.966	0.413
5000.000	1.409	232.456	4999.108	-14.907	-63.122	-14.907	64.859	256.712	0.959
5100.000	1.527	265.085	5099.077	-15.771	-65.425	-15.771	67.299	256.447	0.833
5200.000	0.933	226.417	5199.055	-16.447	-67.343	-16.447	69.322	256.276	0.989
5300.000	1.541	264.169	5299.033	-17.145	-69.271	-17.145	71.361	256.098	0.986
5400.000	1.743	275.825	5398.992	-17.127	-72.121	-17.127	74.127	256.641	0.389
5500.000	1.646	303.920	5498.950	-16.171	-74.826	-16.171	76.553	257.805	0.828
5600.000	1.801	300.298	5598.905	-14.577	-77.374	-14.577	78.736	259.331	0.190
5700.000	1.514	290.070	5698.863	-13.331	-79.972	-13.331	81.076	260.536	0.411
5800.000	0.850	282.762	5798.841	-12.714	-81.937	-12.714	82.917	261.180	0.680
5900.000	0.571	258.322	5898.834	-12.651	-83.149	-12.651	84.105	261.349	0.406
6000.000	0.544	325.948	5998.830	-12.358	-83.903	-12.358	84.808	261.621	0.621
6100.000	0.657	306.127	6098.825	-11.627	-84.631	-11.627	85.426	262.178	0.235
6200.000	0.276	324.014	6198.821	-11.094	-85.236	-11.094	85.955	262.584	0.403
6300.000	0.074	275.201	6298.821	-10.893	-85.442	-10.893	86.133	262.735	0.234
6400.000	0.149	119.148	6398.821	-10.950	-85.392	-10.950	86.092	262.693	0.218
6500.000	0.738	2.016	6498.818	-10.370	-85.256	-10.370	85.885	263.065	0.817
6600.000	0.936	330.134	6598.808	-9.018	-85.641	-9.018	86.114	263.989	0.498
6700.000	0.944	317.623	6698.795	-7.701	-86.603	-7.701	86.944	264.919	0.205
6800.000	0.774	27.444	6798.786	-6.493	-86.846	-6.493	87.089	265.725	0.993
6900.000	0.891	14.156	6898.775	-5.139	-86.345	-5.139	86.497	266.594	0.225
7000.000	0.735	132.142	6998.770	-4.815	-85.679	-4.815	85.814	266.784	1.396
7100.000	1.830	99.011	7098.745	-5.495	-83.626	-5.495	83.807	266.240	1.279
7200.000	3.409	106.920	7198.637	-6.610	-79.205	-6.610	79.480	265.229	1.616
7300.000	3.577	145.671	7298.465	-10.052	-74.601	-10.052	75.275	262.326	2.322
7400.000	1.675	142.443	7398.355	-13.788	-71.950	-13.788	73.259	259.152	1.907

HORIZONTAL DISPLACEMENT IS  
73.259 FEET AT 259.152 DEGREES