



Company: Anadarko Petroleum Corp.  
 Well/API: Rusch 34-15 / 05-123-21234  
 Tool Type: North Seeking Rate Gyro  
 Rig Name: Production/ CoreTech  
 County/State: Weld County / Colorado  
 Latitude: 40.220, Longitude: -104.875  
 Directions are relative to True North  
 VS-Azi: 0.000 Degrees



**FIELD COPY ONLY (NOT DEFINITIVE)**

Depth Reference : RKB = GL Elevation = 4795 Feet

**DRILLOG MS GYRO SURVEY CALCULATIONS**

Filename: msgyro\_run01-01-de\_01.ut

Minimum Curvature Method

Report Date/Time: 11/11/2014 / 15:57

Lat/Long Obtained By Handheld GPS At Wellhead  
 Handheld GPS Reference: NAD83/Device Error: ±9 Feet  
 VES Survey International - Henderson CO  
 Norman Cowan  
 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	0.315	274.825	99.999	0.023	-0.274	0.023	0.275	274.825	0.315
200.000	0.218	332.376	199.999	0.215	-0.635	0.215	0.671	288.667	0.270
300.000	0.253	284.318	299.998	0.438	-0.937	0.438	1.034	295.029	0.194
400.000	0.283	40.358	399.997	0.681	-0.991	0.681	1.202	304.476	0.455
500.000	0.547	100.259	499.995	0.784	-0.362	0.784	0.863	335.232	0.473
600.000	1.035	151.624	599.986	-0.096	0.537	-0.096	0.546	100.134	0.815
700.000	1.070	166.177	699.969	-1.798	1.190	-1.798	2.156	146.508	0.269
800.000	1.395	176.891	799.946	-3.920	1.479	-3.920	4.189	159.331	0.397
900.000	1.609	186.842	899.912	-6.529	1.377	-6.529	6.672	168.086	0.337
1000.000	1.884	187.281	999.866	-9.553	1.002	-9.553	9.605	174.012	0.275
1100.000	2.262	192.878	1099.800	-13.107	0.354	-13.107	13.112	178.454	0.429
1200.000	2.527	195.264	1199.713	-17.158	-0.666	-17.158	17.171	182.225	0.282
1300.000	2.571	198.098	1299.614	-21.416	-1.943	-21.416	21.504	185.185	0.133
1400.000	2.503	205.440	1399.516	-25.519	-3.578	-25.519	25.769	187.981	0.332
1500.000	2.429	211.713	1499.424	-29.294	-5.630	-29.294	29.830	190.879	0.280
1600.000	2.375	216.523	1599.336	-32.762	-7.977	-32.762	33.719	193.685	0.209
1700.000	2.046	223.281	1699.261	-35.726	-10.434	-35.726	37.219	196.281	0.419
1800.000	1.992	228.896	1799.199	-38.169	-12.968	-38.169	40.311	198.765	0.205
1900.000	1.899	234.620	1899.142	-40.271	-15.628	-40.271	43.197	201.210	0.216
2000.000	1.964	247.040	1999.086	-41.898	-18.557	-41.898	45.824	203.889	0.423
2100.000	2.173	264.477	2099.021	-42.749	-22.021	-42.749	48.088	207.254	0.660
2200.000	2.456	275.154	2198.940	-42.739	-26.042	-42.739	50.048	211.355	0.515
2300.000	2.685	277.591	2298.840	-42.237	-30.497	-42.237	52.097	215.831	0.254
2400.000	2.902	273.932	2398.721	-41.754	-35.344	-41.754	54.705	220.247	0.281
2500.000	2.965	272.743	2498.590	-41.457	-40.453	-41.457	57.923	224.297	0.087
2600.000	3.142	275.188	2598.448	-41.085	-45.765	-41.085	61.502	228.084	0.220
2700.000	3.213	272.964	2698.294	-40.693	-51.293	-40.693	65.474	231.574	0.142
2800.000	3.284	276.993	2798.133	-40.199	-56.934	-40.199	69.695	234.775	0.239
2900.000	3.423	277.941	2897.962	-39.438	-62.734	-39.438	74.100	237.844	0.150
3000.000	3.541	273.887	2997.778	-38.816	-68.771	-38.816	78.970	240.559	0.273
3100.000	3.654	277.002	3097.581	-38.218	-75.015	-38.218	84.190	243.002	0.226
3200.000	3.937	277.062	3197.361	-37.408	-81.586	-37.408	89.753	245.368	0.283
3300.000	3.883	278.967	3297.129	-36.458	-88.337	-36.458	95.565	247.573	0.141

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
3400.000	3.916	277.439	3396.897	-35.488	-95.067	-35.488	101.475	249.530	0.109
3500.000	3.978	276.795	3496.660	-34.636	-101.898	-34.636	107.623	251.227	0.077
3600.000	3.957	279.528	3596.420	-33.654	-108.745	-33.654	113.833	252.804	0.190
3700.000	3.807	279.519	3696.191	-32.534	-115.422	-32.534	119.919	254.259	0.149
3800.000	3.924	271.307	3795.964	-31.907	-122.117	-31.907	126.217	255.357	0.565
3900.000	4.031	276.195	3895.724	-31.449	-129.032	-31.449	132.810	256.302	0.356
4000.000	3.957	278.440	3995.481	-30.564	-135.940	-30.564	139.333	257.329	0.173
4100.000	3.736	274.270	4095.256	-29.815	-142.602	-29.815	145.685	258.191	0.356
4200.000	3.790	277.252	4195.040	-29.155	-149.129	-29.155	151.952	258.938	0.203
4300.000	3.817	271.175	4294.820	-28.669	-155.735	-28.669	158.352	259.569	0.404
4400.000	3.963	273.290	4394.590	-28.403	-162.514	-28.403	164.977	260.086	0.205
4500.000	3.757	272.662	4494.363	-28.052	-169.237	-28.052	171.546	260.588	0.211
4600.000	3.262	275.491	4594.175	-27.628	-175.341	-27.628	177.505	261.046	0.524
4700.000	2.724	271.889	4694.038	-27.277	-180.548	-27.277	182.597	261.409	0.570
4750.000	2.715	271.174	4743.982	-27.214	-182.919	-27.214	184.933	261.538	0.070
<div> <div>HORIZONTAL DISPLACEMENT IS</div> <div>184.933 FEET AT 261.538 DEGREES</div> </div>									