

Company: Anadarko Petroleum Corp.
 Well/API: D K Norgren Unit C True 1/05-123-11638
 Tool Type: North Seeking Rate Gyro
 Rig Name: Production/CoreTech
 County/State: Weld/Colorado
 Latitude: 40.222, Longitude: -104.852
 Directions are relative to True North
 VS-Azi: 0.000 Degrees



FIELD COPY ONLY (NOT DEFINITIVE)

Depth Reference : RKB = GL Elevation = 4780

DRILLOG MS GYRO SURVEY CALCULATIONS

Filename: msgyro.ut

Minimum Curvature Method

Report Date/Time: 12/18/2014 / 16:12

Lat/Long Obtained By Handheld GPS At Wellhead
 Handheld GPS Reference: NAD83/Device Error: ±9 Feet
 VES Survey International - Henderson CO
 Justin Williams
 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	0.319	269.805	99.999	-0.001	-0.278	-0.001	0.278	269.805	0.319
200.000	0.314	266.862	199.998	-0.017	-0.830	-0.017	0.830	268.835	0.017
300.000	0.303	260.209	299.997	-0.077	-1.363	-0.077	1.365	266.777	0.037
400.000	0.288	267.441	399.995	-0.133	-1.874	-0.133	1.879	265.945	0.040
500.000	0.351	270.120	499.994	-0.143	-2.432	-0.143	2.436	266.624	0.065
600.000	0.435	279.257	599.991	-0.082	-3.113	-0.082	3.114	268.496	0.105
700.000	0.620	312.584	699.987	0.346	-3.886	0.346	3.902	275.084	0.351
800.000	0.759	328.627	799.980	1.277	-4.630	1.277	4.802	285.424	0.236
900.000	0.785	328.073	899.971	2.424	-5.336	2.424	5.861	294.429	0.028
1000.000	0.805	320.673	999.961	3.549	-6.144	3.549	7.095	300.011	0.104
1100.000	0.803	310.589	1099.952	4.548	-7.121	4.548	8.449	302.564	0.141
1200.000	0.739	298.180	1199.943	5.308	-8.221	5.308	9.786	302.848	0.178
1300.000	0.905	298.595	1299.932	5.990	-9.483	5.990	11.217	302.281	0.167
1400.000	0.841	300.346	1399.921	6.739	-10.810	6.739	12.739	301.941	0.070
1500.000	0.705	297.709	1499.912	7.396	-11.988	7.396	14.086	301.673	0.141
1600.000	0.751	285.230	1599.904	7.854	-13.165	7.854	15.330	300.821	0.165
1700.000	0.854	273.204	1699.894	8.068	-14.541	8.068	16.630	299.023	0.197
1800.000	0.882	263.932	1799.882	8.028	-16.051	8.028	17.947	296.573	0.143
1900.000	1.127	267.786	1899.867	7.909	-17.799	7.909	19.477	293.959	0.254
2000.000	1.195	279.742	1999.847	8.048	-19.808	8.048	21.381	292.110	0.251
2100.000	1.391	277.597	2099.821	8.384	-22.039	8.384	23.580	290.829	0.202
2200.000	1.329	277.345	2199.793	8.693	-24.392	8.693	25.895	289.615	0.062
2300.000	1.210	283.334	2299.768	9.085	-26.570	9.085	28.080	288.877	0.178
2400.000	1.033	274.271	2399.749	9.396	-28.496	9.396	30.005	288.248	0.250
2500.000	0.972	271.773	2499.734	9.489	-30.243	9.489	31.696	287.420	0.075
2600.000	0.898	266.253	2599.721	9.464	-31.873	9.464	33.248	286.538	0.116
2700.000	0.847	267.432	2699.709	9.380	-33.394	9.380	34.686	285.689	0.054
2800.000	0.799	266.503	2799.699	9.304	-34.828	9.304	36.049	284.957	0.050
2900.000	0.480	273.067	2899.692	9.284	-35.942	9.284	37.122	284.483	0.326
3000.000	0.515	270.233	2999.689	9.308	-36.810	9.308	37.969	284.191	0.043
3100.000	0.530	280.155	3099.684	9.391	-37.715	9.391	38.867	283.983	0.092
3200.000	0.603	265.856	3199.680	9.435	-38.695	9.435	39.829	283.703	0.158
3300.000	0.634	260.385	3299.674	9.305	-39.766	9.305	40.840	283.169	0.067

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	0.471	247.947	3399.669	9.058	-40.692	9.058	41.688	282.549	0.202
3500.000	0.068	162.627	3499.668	8.847	-41.055	8.847	41.998	282.160	0.470
3600.000	0.170	63.735	3599.668	8.856	-40.904	8.856	41.852	282.216	0.193
3700.000	0.186	43.380	3699.667	9.040	-40.659	9.040	41.652	282.534	0.065
3800.000	0.191	50.286	3799.667	9.264	-40.420	9.264	41.468	282.909	0.023
3900.000	0.261	315.995	3899.666	9.534	-40.450	9.534	41.558	283.263	0.335
4000.000	0.276	344.484	3999.665	9.930	-40.672	9.930	41.867	283.721	0.133
4100.000	0.329	318.989	4099.664	10.379	-40.925	10.379	42.221	284.231	0.143
4200.000	0.495	311.305	4199.661	10.881	-41.438	10.881	42.843	284.713	0.175
4300.000	0.525	317.852	4299.657	11.505	-42.070	11.505	43.614	285.295	0.065
4400.000	0.519	307.288	4399.653	12.119	-42.737	12.119	44.422	285.832	0.096
4500.000	0.508	314.946	4499.649	12.707	-43.412	12.707	45.233	286.315	0.070
4600.000	0.482	308.111	4599.645	13.280	-44.056	13.280	46.014	286.774	0.065
4700.000	0.387	326.905	4699.643	13.822	-44.571	13.822	46.665	287.229	0.170
4800.000	0.475	319.975	4799.640	14.422	-45.022	14.422	47.276	287.762	0.102
4900.000	0.428	332.635	4899.637	15.072	-45.461	15.072	47.894	288.342	0.110
5000.000	0.418	314.834	4999.634	15.660	-45.891	15.660	48.490	288.842	0.131
5100.000	0.434	309.713	5099.631	16.160	-46.441	16.160	49.172	289.186	0.041
5200.000	0.289	299.143	5199.629	16.525	-46.953	16.525	49.776	289.389	0.159
5300.000	0.349	260.255	5299.628	16.596	-47.473	16.596	50.290	289.269	0.220
5400.000	0.365	256.896	5399.626	16.472	-48.083	16.472	50.826	288.910	0.026
5500.000	0.581	246.246	5499.622	16.196	-48.856	16.196	51.471	288.340	0.232
5600.000	0.724	218.369	5599.616	15.496	-49.712	15.496	52.072	287.313	0.344
5700.000	0.733	214.820	5699.608	14.475	-50.470	14.475	52.505	286.003	0.046
5800.000	0.756	225.497	5799.600	13.488	-51.306	13.488	53.049	284.729	0.140
5900.000	0.591	264.166	5899.593	12.973	-52.289	12.973	53.875	283.934	0.472
6000.000	0.847	283.487	5999.585	13.093	-53.522	13.093	55.100	283.746	0.349
6100.000	0.999	296.203	6099.573	13.650	-55.022	13.650	56.690	283.933	0.254
6200.000	1.025	305.505	6199.557	14.554	-56.532	14.554	58.375	284.437	0.166
6300.000	1.234	312.125	6299.538	15.796	-58.059	15.796	60.169	285.220	0.247
6400.000	1.356	314.080	6399.512	17.342	-59.708	17.342	62.175	286.196	0.129
6500.000	1.439	313.560	6499.482	19.030	-61.468	19.030	64.346	287.202	0.083
6600.000	1.401	311.101	6599.452	20.699	-63.299	20.699	66.597	288.108	0.071
6700.000	1.450	311.912	6699.421	22.348	-65.162	22.348	68.888	288.930	0.053
6800.000	1.381	306.232	6799.390	23.906	-67.075	23.906	71.208	289.616	0.156
6900.000	1.284	315.204	6899.363	25.413	-68.836	25.413	73.378	290.263	0.230
7000.000	1.168	326.738	6999.340	27.060	-70.185	27.060	75.221	291.084	0.272
7100.000	1.036	332.577	7099.322	28.715	-71.160	28.715	76.735	291.975	0.173
7200.000	0.767	335.003	7199.309	30.124	-71.860	30.124	77.919	292.744	0.272
7300.000	0.817	352.389	7299.300	31.438	-72.237	31.438	78.781	293.519	0.244
7400.000	0.745	351.459	7399.291	32.787	-72.428	32.787	79.503	294.356	0.073
7500.000	0.485	346.346	7499.285	33.841	-72.624	33.841	80.122	294.984	0.265
7600.000	0.262	27.737	7599.283	34.455	-72.618	34.455	80.377	295.383	0.337
7650.000	0.321	21.852	7649.282	34.686	-72.513	34.686	80.382	295.564	0.134

<div> HORIZONTAL DISPLACEMENT IS 80.382 FEET AT 295.564 DEGREES </div>
