

Company: Anadarko Petroleum Corp.
 Well/API: Vawter Estate 1/05-123-09625
 Tool Type: North Seeking Rate Gyro
 Rig Name: Production/CoreTech
 County/State: Weld/Colorado
 VS-Azi: 0.000 Degrees
 Latitude: 40.07498, Longitude: -104.75134
 No Grid Convergence Applied
 All Azimuths referenced to True North



FIELD COPY ONLY (NOT DEFINITIVE)

Depth Reference : RKB = GL Elevation = 5102

DRILLOG MS GYRO SURVEY CALCULATIONS

Filename: msgyrosurvey.ut
 Minimum Curvature Method
 Report Date/Time: 6/2/2015 / 18:32

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	0.059	225.034	100.000	-0.036	-0.036	-0.036	0.051	225.034	0.059
200.000	0.220	72.410	200.000	-0.014	0.111	-0.014	0.112	97.347	0.274
300.000	0.681	29.739	299.997	0.560	0.589	0.560	0.812	46.439	0.540
400.000	0.779	9.753	399.989	1.746	0.999	1.746	2.011	29.770	0.271
500.000	1.165	37.354	499.975	3.224	1.731	3.224	3.659	28.226	0.596
600.000	1.361	314.219	599.957	4.860	1.496	4.860	5.085	17.106	1.682
700.000	1.309	332.266	699.931	6.700	0.113	6.700	6.701	0.965	0.422
800.000	1.060	320.671	799.909	8.426	-1.005	8.426	8.486	353.199	0.345
900.000	0.843	337.136	899.896	9.819	-1.877	9.819	9.997	349.180	0.347
1000.000	0.625	351.408	999.887	11.036	-2.244	11.036	11.262	348.507	0.282
1100.000	0.570	337.193	1099.882	12.034	-2.518	12.034	12.295	348.181	0.158
1200.000	0.791	348.241	1199.875	13.168	-2.852	13.168	13.473	347.781	0.256
1300.000	0.793	39.379	1299.867	14.378	-2.553	14.378	14.603	349.930	0.683
1400.000	0.388	24.448	1399.861	15.221	-1.974	15.221	15.348	352.610	0.430
1500.000	0.533	35.246	1499.858	15.909	-1.566	15.909	15.986	354.380	0.169
1600.000	0.203	17.004	1599.856	16.459	-1.245	16.459	16.506	355.674	0.346
1700.000	0.436	358.103	1699.854	17.009	-1.206	17.009	17.051	355.945	0.252
1800.000	0.334	357.651	1799.852	17.680	-1.230	17.680	17.723	356.019	0.102
1900.000	0.164	324.225	1899.851	18.087	-1.326	18.087	18.136	355.808	0.217
2000.000	0.468	338.791	1999.849	18.584	-1.557	18.584	18.649	355.210	0.313
2100.000	0.352	346.731	2099.847	19.264	-1.776	19.264	19.346	354.734	0.130
2200.000	0.228	19.955	2199.846	19.750	-1.778	19.750	19.830	354.855	0.204
2300.000	0.099	302.795	2299.845	19.984	-1.783	19.984	20.063	354.902	0.227
2400.000	0.469	267.063	2399.844	20.010	-2.264	20.010	20.137	353.545	0.393
2500.000	0.589	240.395	2499.840	19.735	-3.119	19.735	19.980	351.018	0.271
2600.000	0.881	235.840	2599.831	19.049	-4.202	19.049	19.507	347.560	0.297
2700.000	1.025	229.870	2699.818	18.041	-5.522	18.041	18.867	342.981	0.175
2800.000	1.157	264.080	2799.800	17.360	-7.211	17.360	18.798	337.444	0.654
2900.000	1.492	296.238	2899.775	17.832	-9.383	17.832	20.150	332.246	0.801
3000.000	1.370	320.446	2999.745	19.329	-11.313	19.329	22.397	329.661	0.612
3100.000	1.389	323.950	3099.716	21.231	-12.787	21.231	24.784	328.940	0.086
3200.000	1.407	325.245	3199.686	23.219	-14.200	23.219	27.217	328.551	0.037

HORIZONTAL DISPLACEMENT IS
45.901 FEET AT 327.954 DEGREES