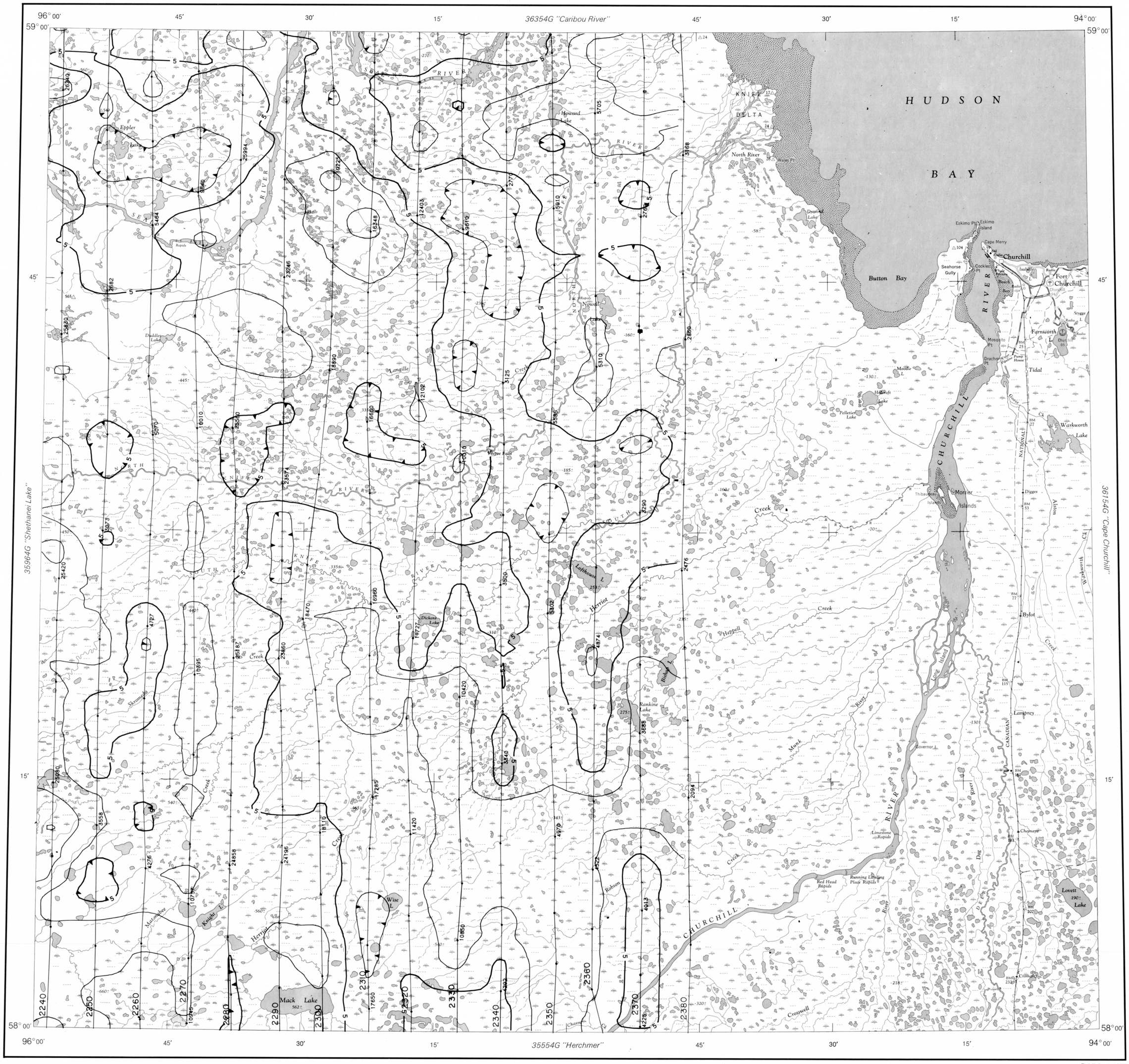
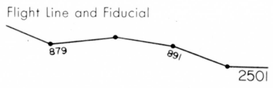


Published, 1977

Contour Interval..... 1.0 x 10^4

Flight Line and Fiducial



eTh/K RATIO
MAP 36254G

CHURCHILL

MANITOBA

SCALE 1:250,000

5 MILES 2.5 0 5 10 15
5 2.5 0 5 10 15 20 KILOMETERS

COPIES OF THIS MAP MAY BE OBTAINED FROM THE DIRECTOR GENERAL, GEOLOGICAL SURVEY OF CANADA, OTTAWA.

Uranium Reconnaissance Program Airborne Gamma-Ray Spectrometer Survey, 1976, flown and compiled by the consortium of Terra Surveys Ltd., (consortium directors), Kenting Earth Sciences Ltd., and Northway Survey Corporation Ltd.

The topography for this series of maps was reproduced from (1:250,000) topographical map sheets published by the Department of Energy, Mines and Resources, Ottawa.

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This map was compiled from airborne gamma-ray spectrometer data recorded digitally along the flight lines shown. The spectrometer, with 50 litres of sodium iodide (NaI(Tl)) detectors, recorded gamma radiation in four channels, with the following energy ranges:

Channel 1	2.42 – 2.82 MeV
Channel 2	1.66 – 1.86 MeV
Channel 3	1.36 – 1.56 MeV
Channel 4	0.40 – 2.82 MeV

Channels 1, 2 and 3 were centered on the 2.62 MeV Tl^{208} photo peak, the 1.76 MeV Bi^{214} photo peak and on the 1.46 MeV K^{40} photo peak, respectively. Counts were accumulated in these channels and recorded at one second intervals. The terrain clearance was averaged and recorded at one second intervals. The detectors were thermally stabilized to minimize spectrum shift. The survey aircraft were flown at a planned survey altitude of 400 feet and at a ground speed between 190 km/hr and 240 km/hr.

The data were corrected for dead time, atmospheric changes in temperature, background radiation, spectral scattering and deviations of terrain clearance from the planned survey altitude. Corrected count rates from channels 1, 2 and 3 were converted to concentrations of equivalent thorium, equivalent uranium, and potassium, using conversion factors determined for each gamma-ray spectrometer used in the survey. The total count rates from channel 4 were converted to units of radioelement concentration. The conversion factors which differed among the 3 aircraft used, are approximately those listed below:

Channel 1	1 ppm eTh	≃ 6 cps
Channel 2	1 ppm eU	≃ 8 to 10 cps
Channel 3	1 %K	≃ 70 to 80 cps
Channel 4	1 ur	≃ 140 to 160 cps

Data were smoothed using 40 data points along the flight lines (rejecting values over water), gridded at 2.2 kilometer intervals along track and 5 kilometer intervals across track, and contoured.

The contoured values are surface radioelement concentrations averaged over areas of approximately 700,000 square meters. These areas generally include some outcrop, overburden, swamps and small bodies of water. Consequently the concentrations indicated by the contour map are generally lower than the concentration in bedrock.