



COMMISSION GEOLOGIQUE DU CANADA
MINISTÈRE DE L'ÉNERGIE DES MINES ET DES RESSOURCES

AIRBORNE RADIOACTIVITY MAP

ST. GEORGE'S BASIN
NEWFOUNDLAND
Part of 12 B

Airborne gamma-ray spectrometry data collected in mid October, 1974, are presented (1) as contour maps of the integral count, the potassium, uranium, and thorium concentrations, and the U/Th, U/K and Th/K ratios; and (2) as stacked profiles of the seven radiometric parameters plotted for each of the 16 flight lines.

The airborne measurements were made using a four window spectrometer, with twelve 22.86 cm x 10.16 cm NaI(Tl) detectors, flown at a mean terrain clearance of 120 meters and 190 km/hr. East-West flight lines were at 2 km line spacing, and the numbered flight lines are plotted on each of the contour maps.

Uranium, thorium and potassium counts were measured over 2.5-second intervals, integral counts over 0.5-second intervals. The data have been corrected for background, height variation and Compton scattering. The computer programs used to produce the contour maps and profiles are described by R. L. Grasty, 1972 "Airborne Gamma Spectrometry Data Processing Manual", GSC Open File No. 109. Values shown on the profiles represent counts per 0.5-seconds for the integral, and counts per 2.5-seconds for uranium, thorium and potassium. The maps are contoured in units of counts per 0.5-seconds for the integral, parts per million uranium and thorium, percent potassium, the concentration ratio for U/Th, and the concentration ratio $\times 10^4$ for U/K and Th/K.

The values for the radioelement concentrations shown on the contour maps are "average surface concentrations" over the area sampled or analysed by the airborne spectrometer. This area generally includes some outcrop, overburden and water in small ponds, streams and swamps. Consequently, the average surface concentrations as shown on the contoured maps are usually considerably lower than the concentrations in the bedrock. This survey was flown after a period of some rainfall, and as a result the measured average surface concentration of the radioelements may be further reduced by absorption of gamma radiation by moisture contained in the overburden.

Factors for converting airborne measurements to element concentrations were determined by relating the corrected airborne count rates over test strips in the Ottawa area to the known ground radioelement concentrations (R. L. Grasty, and B. W. Charbonneau, 1974, Gamma-ray Spectrometer Calibration Facilities, GSC Paper 74-1B, pp. 69-71).

In order to produce the contour maps of integral count and radioelement distributions, data along the flight lines were averaged over eleven 2.5-second counting intervals (approximately 1.4 km) and smoothing of the data for the ratio maps was accomplished by summing a minimum of 100 counts for both elements before calculating the value of the ratio. Ratio values are not given for all of the northern part of the survey area, because count rates are extremely low along flight lines 11 through 16.

Airborne Radioactivity Survey 1975

K. A. Richardson

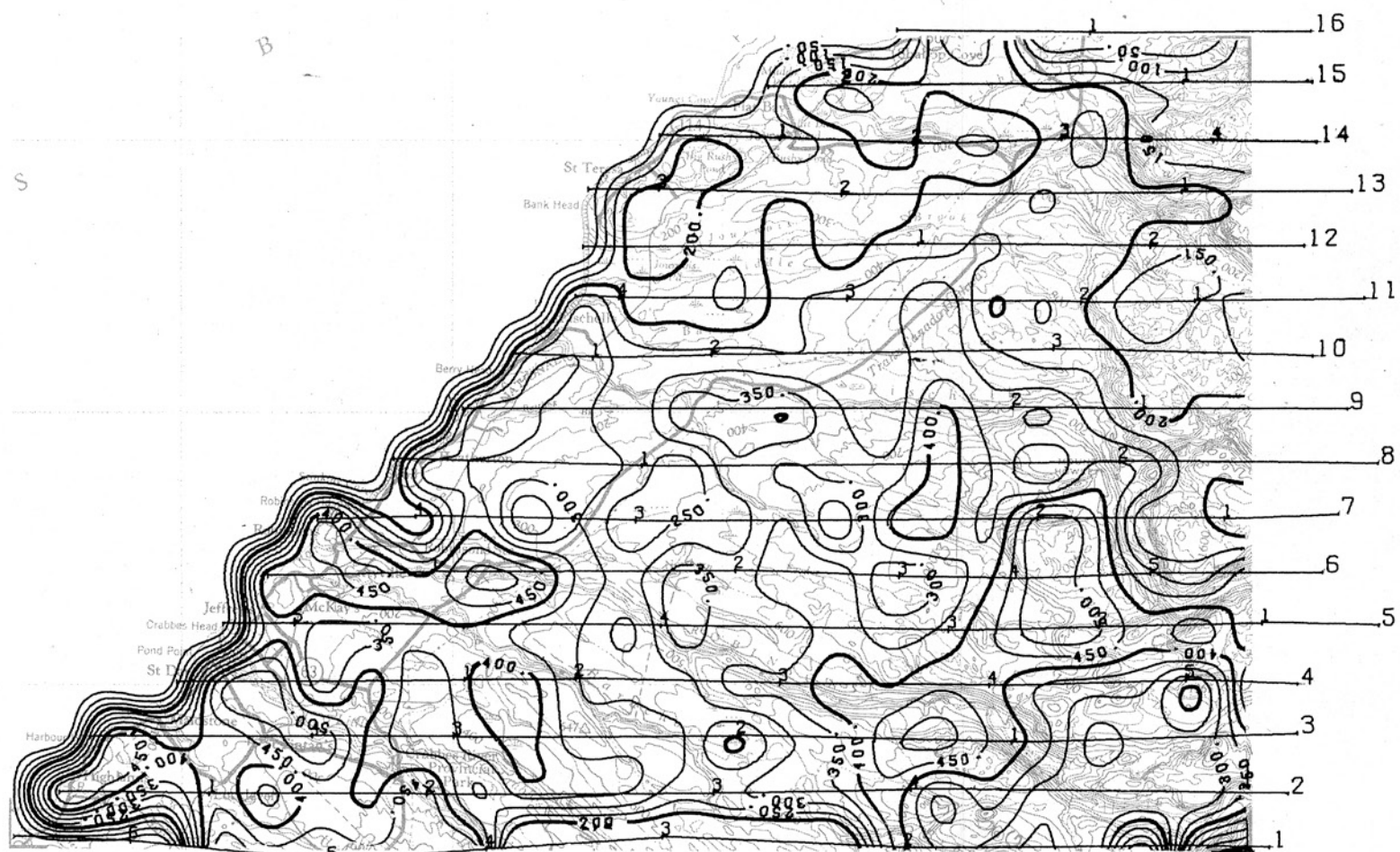
P. B. Holman

Resource Geophysics & Geochemistry Division

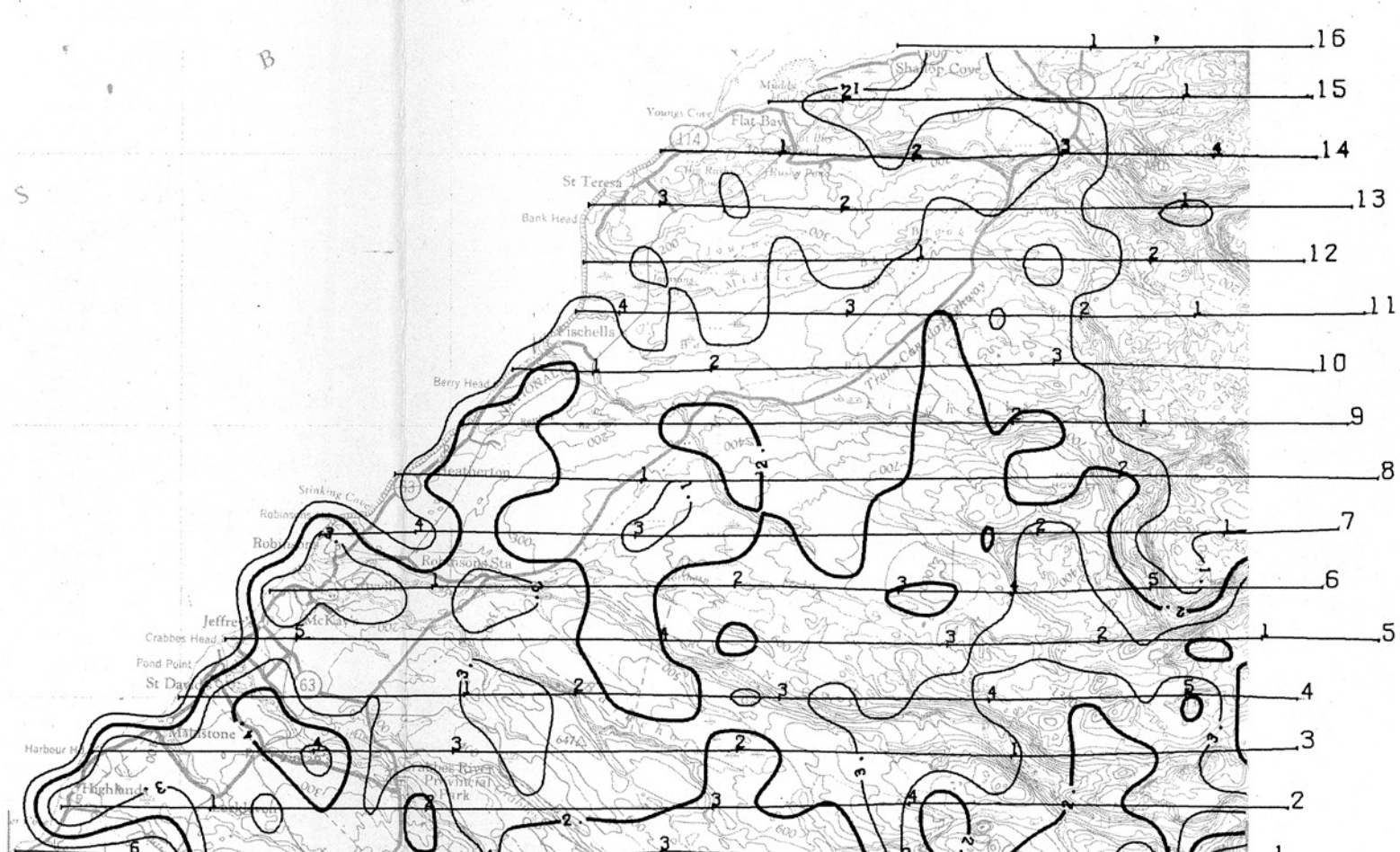
Geological Survey of Canada

Base Map material supplied by Surveys and Mapping Branch.

Cartography by Geological Survey of Canada.



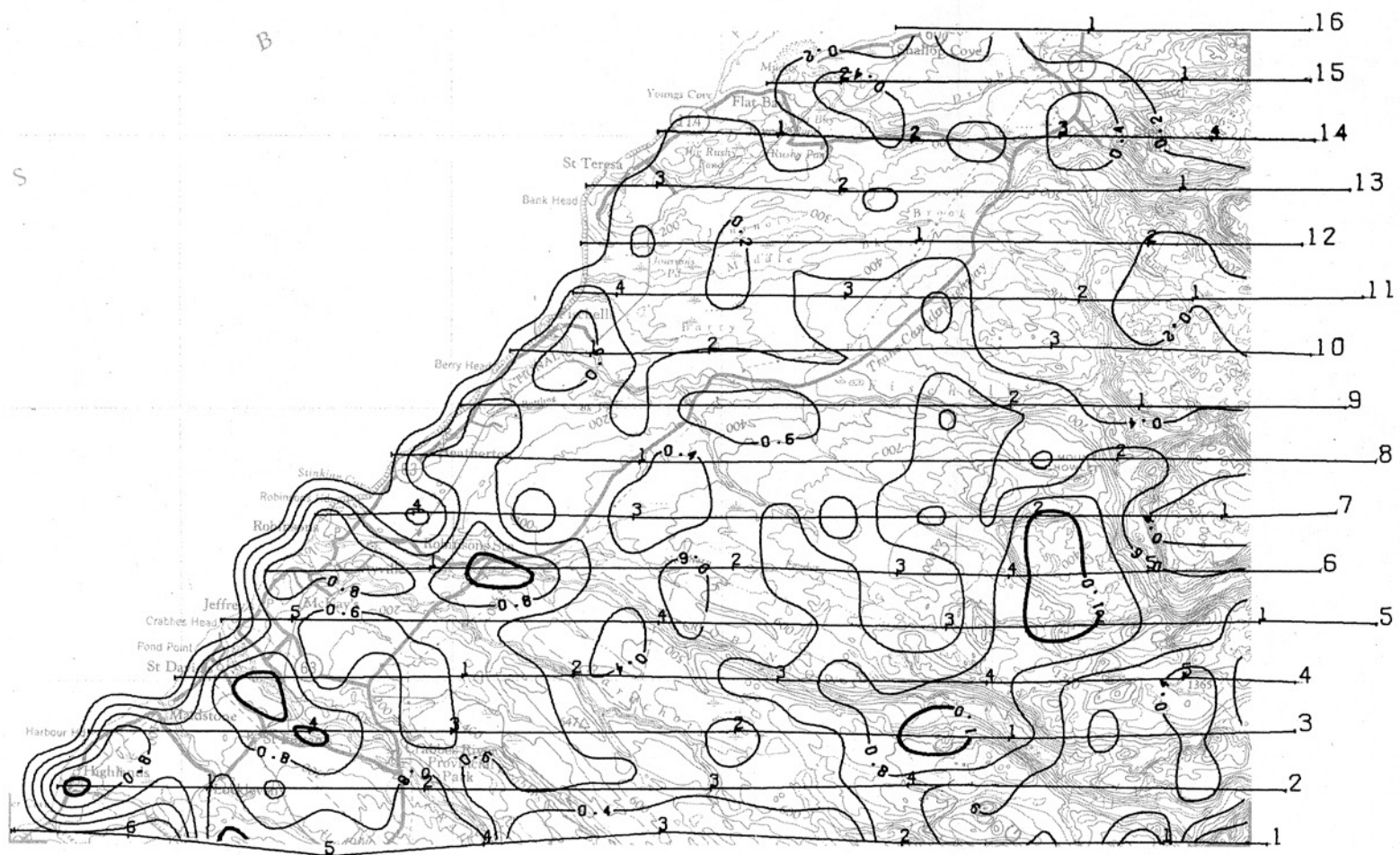
INTEGRAL



THORIUM PPM



URANIUM/THORIUM



POTASSIUM %



Scale 1:250,000

Kilometres 6 0 6 12 18 Kilometres

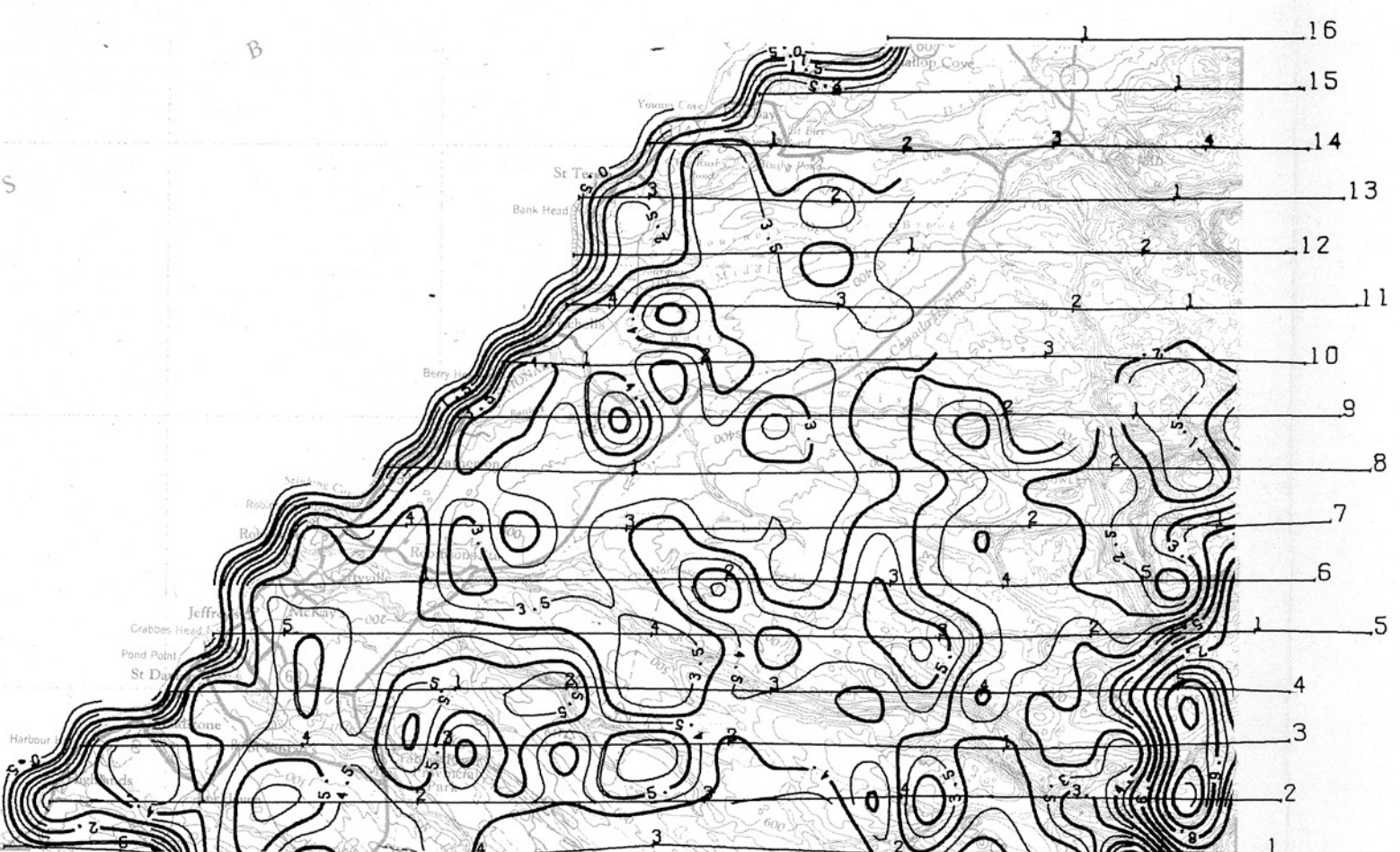
Miles 4 0 4 8 Miles

Universal Transverse Mercator Projection

© Crown Copyrights reserved



URANIUM/POTASSIUM $\times 10^4$



THORIUM/POTASSIUM $\times 10^4$