



AIRBORNE GAMMA-RAY SPECTROMETRY MAP

airborne gamma-ray spectrometry data collected in Nova Scotia during the summer of 1970, are presented:

- (1) as contour maps of the total count, the potassium, radiocesium and uranium thorium concentrations, and the activity, both and effective ratios; and
- (2) as stacked profiles of the same radiometric parameters plotted for each of the 20 flight lines.

The airborne measurements were made using a four window spectrometer, with a lead 20 cm x 10 cm NaI(Tl) detector fixed at a mean distance of 400 feet and 100 feet. Selected flight lines with a 100 foot window, and the resulting flight lines are plotted on each of the contour maps.

Activities are measured directly from the 140 KeV gamma-ray photon emitted by potassium, whereas uranium and thorium are measured indirectly from gamma-ray photons emitted by daughter products in their respective chains. Uranium is measured in terms of gross activity, whereas thorium is measured by 214Pb-214Bi. The energy windows used are as follows:

Total Count	4-40	1.34-3.50 MeV
Potassium	6-40	1.34-3.50 MeV
Uranium	20-120	1.68-6.00 MeV
Thorium	11-200	2.41-6.00 MeV

General, terrain and geological reports were reviewed upon completion. Special counts were also obtained periodically. The data 200-foot window for total count, with a 100-foot window for potassium, were selected for plotting and distribution of contour maps. The contour maps were prepared by the computer using the software program used to display the contour maps. The contour maps were prepared by the computer using the software program used to display the contour maps. The contour maps were prepared by the computer using the software program used to display the contour maps.

The values for the radiometric concentrations shown on the contour maps are based on the assumption that the activity of the area on the ground used to calibrate the instrument, at one mile per minute surveying speed is directly proportional to the concentration. It is noted that the concentration in the sample. However, the calibration procedure may vary due to the surface area and the distribution of the elements in the sample.

Factors for converting airborne measurements to element concentrations were determined as follows: the same ground calibration measurements were used as for the calibration of the ground calibration measurements. The calibration factors are: Potassium, 1.00; Uranium, 1.00; Thorium, 1.00. The calibration factors are: Potassium, 1.00; Uranium, 1.00; Thorium, 1.00.

The conversion factors used are approximately those listed below:

Flight Count	1 µCi	100 c.p.m.
1 µCi	100 c.p.m.	100 c.p.m.
1000 µCi	100 c.p.m.	100 c.p.m.
1 µm Rn	100 c.p.m.	100 c.p.m.

Total count measurements are presented on maps of radiometric concentration (cpm) at 400 feet in International Atomic Energy Agency Technical Report Series No. 170.

In order to produce the contour maps, data along the flight lines were averaged over a distance of 100 feet. The contour maps were produced by a computer program which calculates the contour maps. The contour maps were produced by a computer program which calculates the contour maps.

- (1) are the smoothed results of the original unsmoothed data, and
- (2) are the smoothed results of the original unsmoothed data, and

Contour maps (1) and (2) are plotted on a rectangular grid approximately 100 feet x 100 feet. The contour maps were produced by a computer program which calculates the contour maps. The contour maps were produced by a computer program which calculates the contour maps.

This project was carried out according to the standard specifications of the International Atomic Energy Agency Technical Report Series No. 170.

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