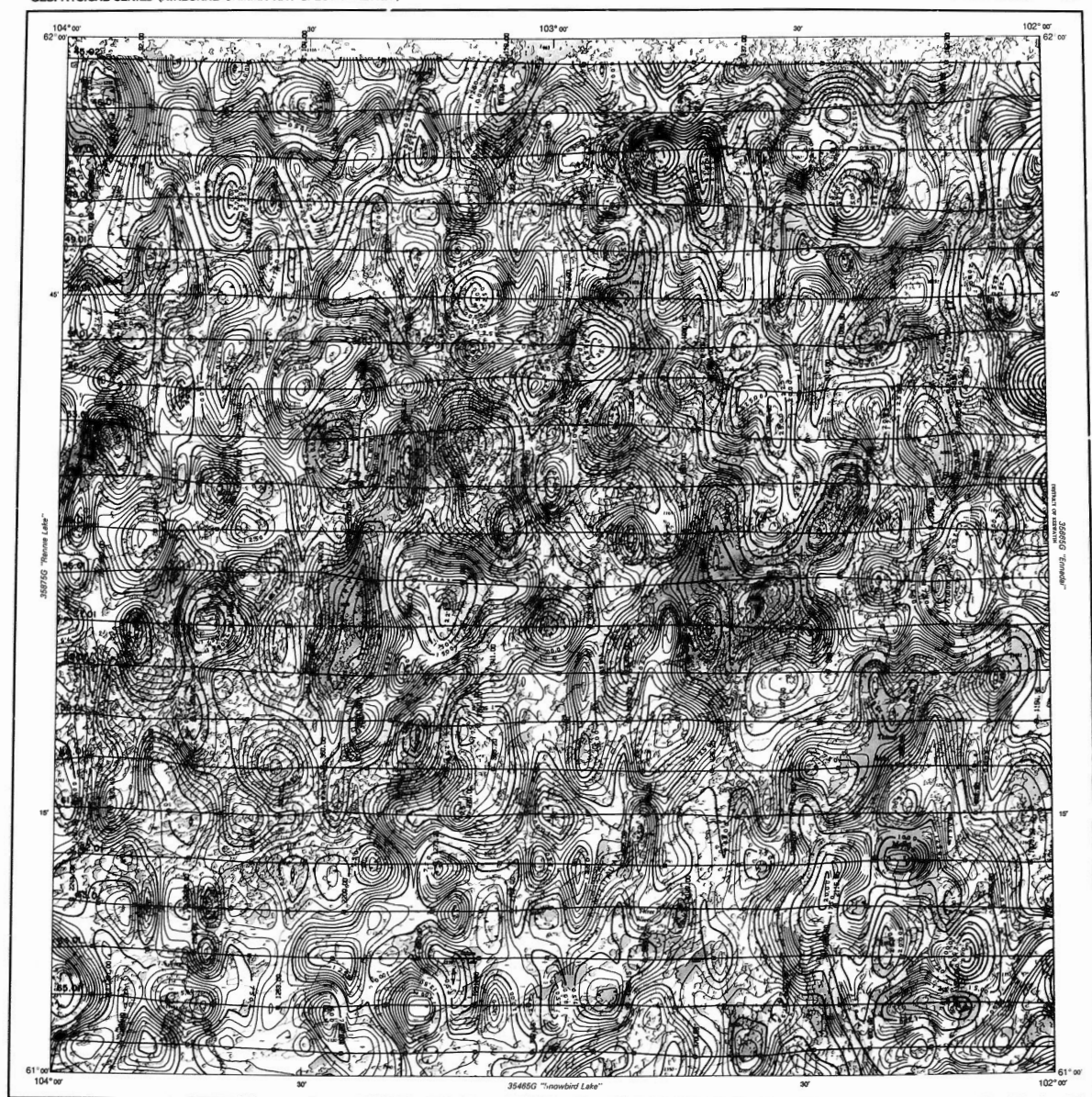




GEOLOGICAL SURVEY OF CANADA  
DEPARTMENT OF ENERGY, MINES AND RESOURCES

GEOPHYSICAL SERIES (AIRBORNE GAMMA-RAY SPECTROMETRIC)

TOTAL COUNT 65E



Published, 1977

TOTAL COUNT  
MAP 35565G

# BOYD LAKE DISTRICT OF MACKENZIE NORTHWEST TERRITORIES

SCALE 1:250,000



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 Survey Ltd., Vancouver, British Columbia, Kerting Earth Sciences Ltd., and Norilway 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.

This map was compiled from airborne gamma-ray spectrometer data recorded digitally along the flight lines shown. The spectrometer, with 30 lines of sodium iodide (NaI(Tl)) detectors, recorded gamma-ray counts in four channels, with the following energy ranges:

Channel 1	240-760 keV
Channel 2	180-240 keV
Channel 3	120-180 keV
Channel 4	60-120 keV

Channels 1, 2 and 3 were converted to the 2048 keV (100%) gamma-ray peak, the 154 keV (80%) gamma-ray peak and on the 146 keV (40%) gamma-ray peak, respectively. Counts were accumulated in these channels and integrated at one second intervals. The detector was thermally stabilized to minimize spectral shifts. The survey aircraft were flown at a planned survey altitude of 400 feet and at a ground speed between 100 knots and 240 knots.

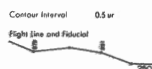
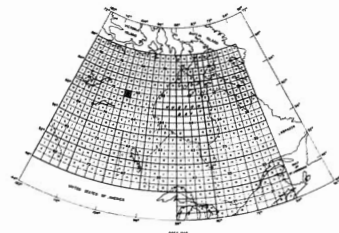
The data were converted for dead time, atmospheric changes in temperature, back-ground radiation, spectral scattering and deviations of terrain clearance from the planned survey altitude. Corrected count rates from channels 1, 2 and 3 were converted to concentrations of equivalent thorium, equivalent 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 radon concentration. The conversion factors which are listed among the 1:250,000 scale maps are approximately those listed below:

Channel 1	1 ppm = 4 cps
Channel 2	1 ppm = 8 cps
Channel 3	1 ppm = 16 cps
Channel 4	1 ppm = 140 cps

Data were interpreted using 40 data points along the flight lines representing values over water, gridded at 2.5 kilometer intervals along track and 5 kilometer intervals across track, and contoured.

The contour values are surface radon concentrations averaged over areas of approximately 700,000 square meters. These areas generally exclude some outcrop, over-burden, swamps and small bodies of water. Consequently the concentrations indicated by the contour map are generally lower than the concentrations in bedrock.

TOTAL COUNT  
BOYD LAKE  
MAP 35565G



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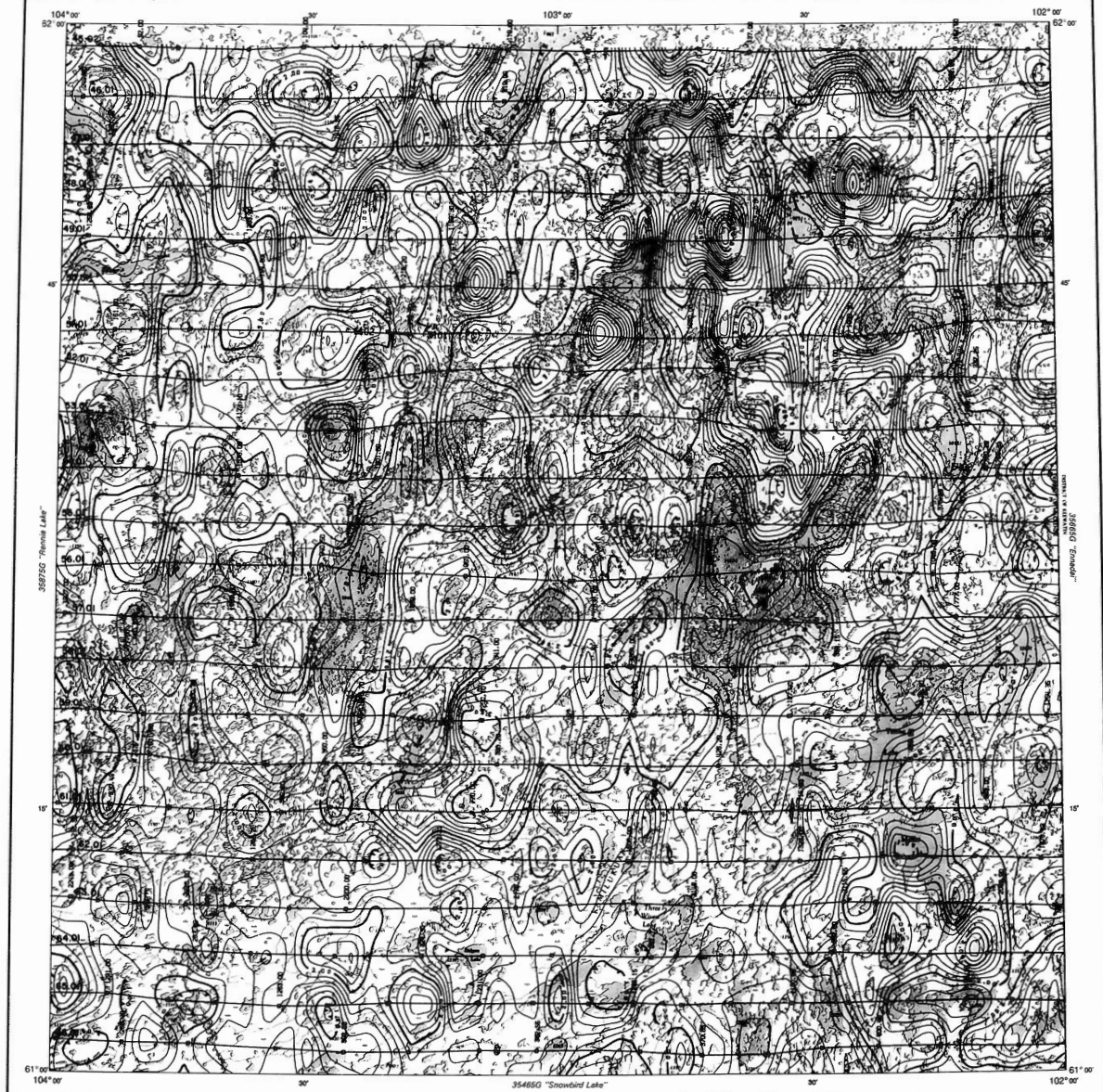
Ce document est le produit d'une  
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de la publication originale.



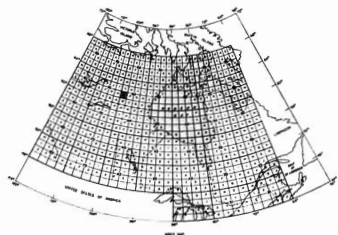
GEOLOGICAL SURVEY OF CANADA  
DEPARTMENT OF ENERGY, MINES AND RESOURCES

GEOPHYSICAL SERIES (AIRBORNE GAMMA-RAY SPECTROMETRIC)

POTASSIUM (K) 65E



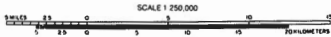
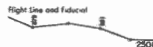
Published, 1977



POTASSIUM (K)  
MAP 35565G

### BOYD LAKE DISTRICT OF MACKENZIE NORTHWEST TERRITORIES

Contour Interval 0.2 per cent



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GEOLOGICAL SURVEY OF CANADA, OTTAWA.

Uranium Reconnaissance Program Airborne Gamma-Ray  
Spectrometer Survey, 1976. Survey and compiled by  
the consortium of Terra Survey Ltd., Geospectrum  
directed, Kellogg Earth Sciences Ltd., and Northway  
Survey Corporation Ltd.

The topography for this series of maps was reproduced  
from 1:125,000 topographical maps sheets  
published by the Department of Energy, Mines and  
Resources, Ottawa.

This map was compiled from airborne gamma-ray spectrometer data recorded digitally  
along the right line shown. The spectrometer, with 30 lines of sodium iodide (NaI) de-  
tecting, recorded gamma-ray counts in four channels with the following energy ranges:

Channel 1 2.01 - 2.84 MeV

Channel 2 1.86 - 1.88 MeV

Channel 3 1.50 - 1.54 MeV

Channel 4 0.40 - 2.82 MeV

Channels 1, 2 and 3 were calibrated on the 262 May 1976 photo peak, the 1.76 MeV <sup>40</sup>K  
photo peak and on the 1.46 MeV <sup>214</sup>Pb photo peak, respectively. Counts were accumulated in  
these channels and recorded at one second intervals. The channel 4 data was averaged  
and recorded at the second intervals. The detector was thermally stabilized to minimize  
drift in the channel 4 data.

The data were corrected for dead time, atmospheric changes in temperature, back-  
ground radiation, scattered radiation and detector gain variations from the planned  
survey altitude. Count rates were converted to concentrations of 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 potassium concentration. The conversion factors  
which are listed in the 3rd column, are approximately those listed below:

Channel 1 1 ppm K<sub>2</sub>O = 1.0 cps

Channel 2 1 ppm K<sub>2</sub>O = 1.0 cps

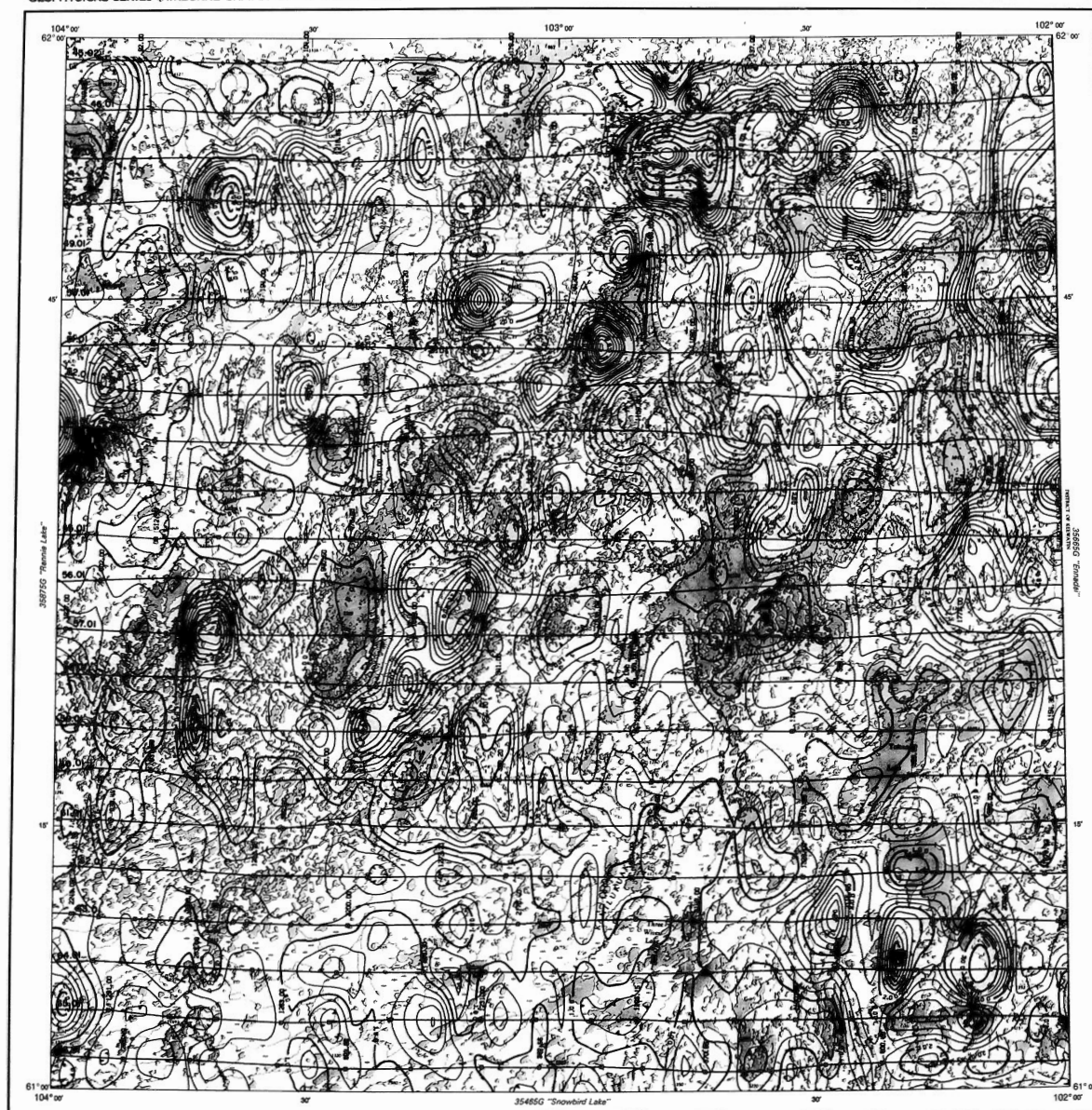
Channel 3 1 ppm K<sub>2</sub>O = 1.0 cps

Channel 4 1 ppm K<sub>2</sub>O = 1.0 cps

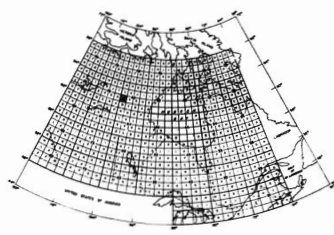
Data were smoothed using 40 data points along the right line (spacing values over  
water) gridded at 2.2 kilometer intervals along track and 5 kilometer intervals across track  
and contoured.

The contour values are in units of percent potassium concentration averaged over areas of  
approximately 700,000 square meters. These areas generally include some outliers, over-  
buried, weathered and other types of features. Consequently the concentrations indicated by  
the contour map are generally lower than the concentrations in bedrock.

POTASSIUM (K)  
BOYD LAKE  
MAP 35565G



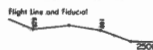
Published: 1977



EQUIVALENT URANIUM (eU)  
MAP 35565G

### BOYD LAKE DISTRICT OF MACKENZIE NORTHWEST TERRITORIES

Contour Interval 0.2 ppm



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GEOLOGICAL SURVEY OF CANADA, OTTAWA

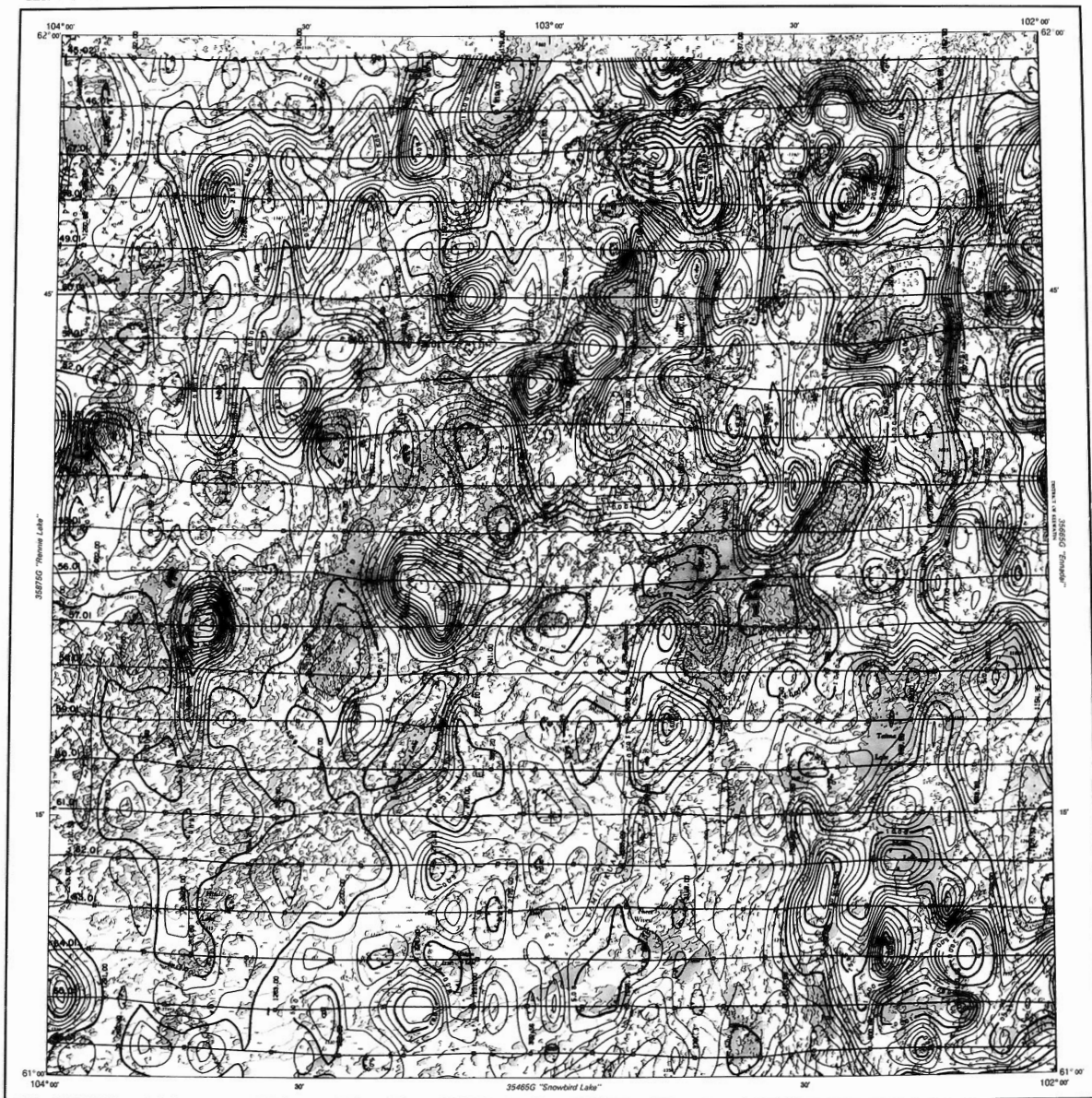
Uranium Reconnaissance Program Airborne Gamma-Ray Spectrometer Survey, 1974, flown and compiled by the consortium of Terra Surveys Ltd., Icomarion (Canada), Kestring Earth Sciences Ltd., and Northway Survey Corporation Ltd.

The topography for this series of maps was reproduced from 1:50,000 topographical map sheets published by the Department of Energy, Mines and Resources, Ottawa.

This map was compiled from airborne gamma-ray spectrometer data recorded digitally along the flight lines shown. The spectrometer, with 50 lines of sodium-iodide NaI(Tl) detectors, recorded gamma-ray counts in four channels, with the following energy ranges:  
Channel 1 2.42 - 2.82 MeV  
Channel 2 1.86 - 2.06 MeV  
Channel 3 1.38 - 1.58 MeV  
Channel 4 0.40 - 2.82 MeV  
Channels 1, 2 and 3 were corrected on the 2.02 MeV  $^{232}\text{Th}$  photo-peak, the 1.76 MeV  $^{235}\text{U}$  photo-peak, and on the 1.46 MeV  $^{238}\text{U}$  photo-peak. Counts were accumulated in these channels and recorded at one second intervals. The channel 4 counts were averaged and recorded at one second intervals. The channel 4 counts were then converted to concentration (ppm) using the conversion factors listed below. The conversion factors were determined for each gamma-ray spectrometer used in the survey. The total count rates from channel 4 were converted to units of equivalent concentration. The conversion factors which differed among the 3 aircraft used are approximately those listed below:  
Channel 1 1 ppm eU = 8 cps  
Channel 2 1 ppm eU = 12.4 cps  
Channel 3 1 ppm eU = 14.0 cps  
Channel 4 1 ppm eU = 14.0 cps  
Data were accumulated using 40 data points along the flight lines, resulting in values over a grid of 2.5 kilometer intervals along track and 5 kilometer intervals across track. The contour interval is 0.2 ppm. These areas generally include some outside contour boundary, and some holes of water. Consequently the concentrations indicated by the contour map are generally lower than the concentration in bedrock.

EQUIVALENT URANIUM (eU)  
BOYD LAKE  
MAP 35565G





Published, 1977

EQUIVALENT THORIUM (eTh)  
MAP 35555G

BOYD LAKE  
DISTRICT OF MACKENZIE  
NORTHWEST TERRITORIES

Uranium Reconnaissance Program Airborne Gamma-Ray Spectrometer Survey, 1974, flown and compiled by the Corporation of Terra Survey Ltd., (Corporation of Terra Survey Ltd., and Northway Survey Corporation Ltd.)

The topography for this series of maps was reproduced from 1:50,000 topographical map sheets published by the Department of Energy, Mines and Resources, Ottawa.

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

Channel 1 2.42 - 2.82 MeV  
Channel 2 1.86 - 2.42 MeV  
Channel 3 1.46 - 1.86 MeV  
Channel 4 0.42 - 1.46 MeV

Channels 1, 2 and 3 were corrected on the 2.42 MeV 1.1 m photo peak, the 1.76 MeV 80% photo peak, and on the 1.46 MeV 80% photo peak, respectively. Counts were distributed in these channels and recorded at one second intervals. The terrain clearance was averaged and recorded at one second intervals. The detectors were formerly shielded to minimize spectrum shift. The survey aircraft were flown at a planned survey altitude of 400 feet and at a ground speed between 180 knots and 240 knots.

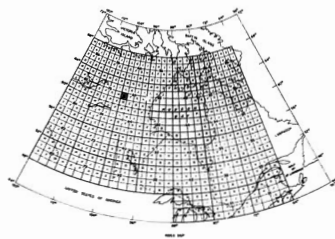
The data were corrected for dead time, atmospheric changes in temperature, background radiation, spectral scattering and absorption of terrain clearance from the planned survey altitude. Corrected count rates from channels 1, 2 and 3 were converted to concentrations of equivalent thorium, equivalent 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 radiometric concentration. The conversion factors which differed among the 3 aircraft used are approximately those listed below:

Channel 1 1 ppm eTh = 8.0 cps  
Channel 2 1 ppm eTh = 7.0 to 8.0 cps  
Channel 3 1 ppm eTh = 10.0 to 12.0 cps

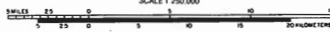
Data were smoothed using 40 data points along the flight lines (impacting values over an area of 2.5 km x 2.5 km), except along track and 5 kilometer intervals across track, and contoured.

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

EQUIVALENT THORIUM (eTh)  
BOYD LAKE  
MAP 35555G



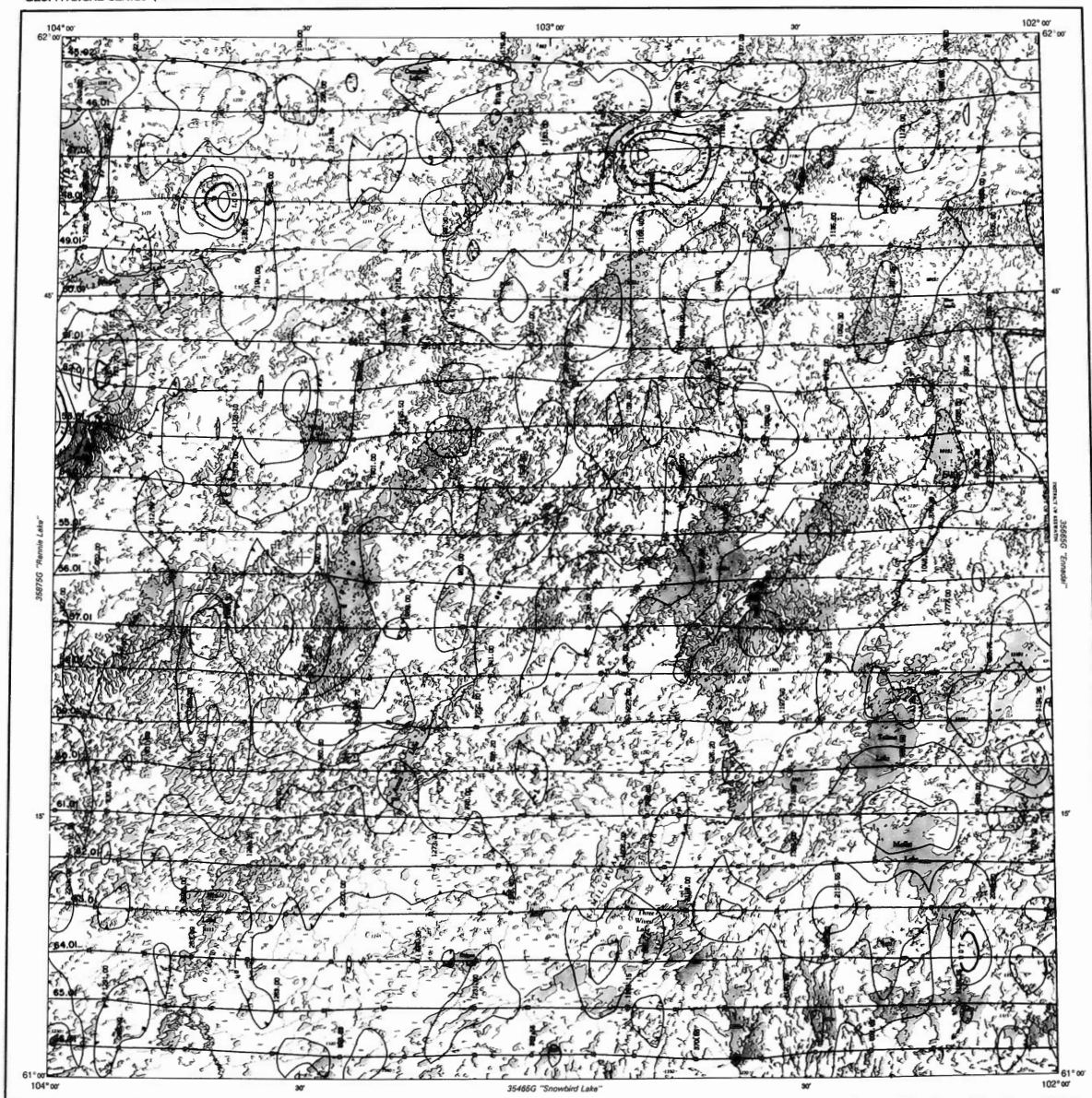
Contour Interval 1.0 ppm



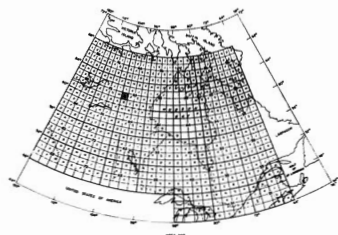
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Published, 1977



u/K RATIO  
MAP 35565G

# BOYD LAKE DISTRICT OF MACKENZIE NORTHWEST TERRITORIES

SCALE 1:250,000



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., Spectroscopic direction, Kensing 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.

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

- Channel 1: 2.12 - 2.82 MeV
- Channel 2: 1.86 - 1.88 MeV
- Channel 3: 1.52 - 1.54 MeV
- Channel 4: 0.42 - 2.82 MeV

Channels 1, 2 and 3 were covered on the 2.62 May 1976 photo pass. The 1.54 MeV (2nd photo pass) and on the 1.48 May 1976 photo pass, respectively. Counts were accumulated in three channels and recorded as net counts. The fourth channel was averaged and recorded as one second channel. The detectors were thermally stabilized to  $\pm 0.1^\circ\text{C}$  and the survey aircraft was flown at a planned survey altitude of 400 feet and at a ground speed between 180 knots and 240 knots.

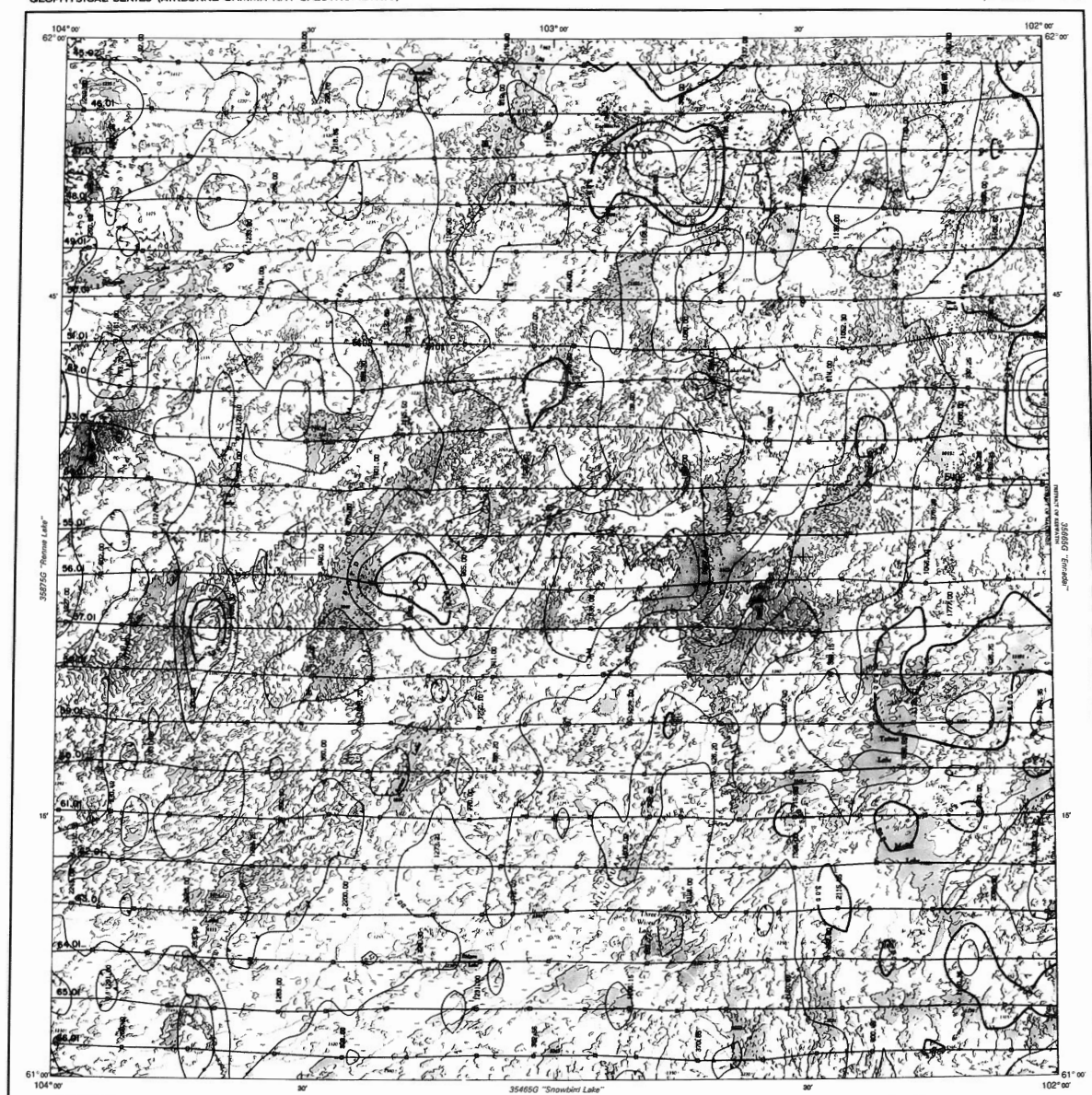
The data were corrected for dead time, atmospheric changes in temperature, backscattered radiation, spectral scattering and absorption of gamma rays from the ground surface. Corrected count rates from channels 1, 2 and 3 were converted to concentration ratios of potassium, uranium and thorium, and then to u/K ratio, using conversion factors determined from the 3 second channel. The total count rates from the 3 second channel were used to correct for background. The u/K ratio values which are shown on the map are approximately those listed below:

- Channel 1: 1 ppm u/K = 0.05
- Channel 2: 1 ppm u/K = 0.10
- Channel 3: 1 ppm u/K = 0.20
- Channel 4: 1 ppm u/K = 0.40

Data were recorded using 40 data points along the flight lines, resulting in values over water, gridded at 2.2 kilometer intervals along track, and 5 kilometer intervals across track, and contoured.

The contour values are surface measurement concentrations averaged over areas of approximately 10,000 square meters. These areas generally include open water, outcrops, boulder fields, and small areas of vegetation. Consequently, the concentrations indicated by the contour map are generally lower than the concentrations in bedrock.

u/K RATIO  
BOYD LAKE  
MAP 35565G

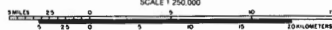


Published, 1977

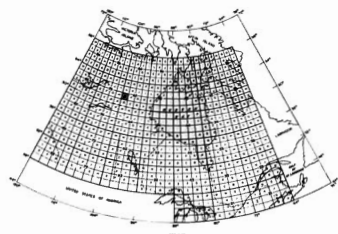
$\theta$ H/K RATIO  
MAP 3565G

**BOYD LAKE**  
DISTRICT OF MACKENZIE  
NORTHWEST TERRITORIES

SCALE 1:250,000



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GEOLOGICAL SURVEY OF CANADA, OTTAWA.



Uranium Reconnaissance Program Airborne Gamma-Ray Spectrometer Survey, 1976, flown and compiled by the consortium of Terra Survey Ltd., Consortium director, Kensing Earth Sciences Ltd., and Northwest 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.

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

- Channel 1: 2.0 - 2.8 MeV
- Channel 2: 1.86 - 1.86 MeV
- Channel 3: 2.8 - 1.86 MeV
- Channel 4: 0.4 - 2.8 MeV

Channels 1, 2 and 3 were summed on the 2.8 MeV (1.86 MeV) peak, and 1.86 MeV (0.4 MeV) peak and on the 1.86 MeV (1.86 MeV) peak, respectively. Counts were accumulated in these channels and recorded at one second intervals. The lowest channel was averaged and recorded at one second intervals. The detectors were thermally stabilized to minimize spectrum shift. The survey aircraft flew at a planned survey altitude of 400 feet and at a ground speed between 180 mph and 240 mph.

The data were corrected for dead time, atmospheric changes in temperature, background radiation, spectral scattering and deviations of sensor clearance from the planned survey altitude. Corrected count rates in channels 1, 2 and 3 were converted to concentrations of equivalent thorium, potassium, and uranium, using conversion factors determined for each gamma-ray spectrum, and used in the survey. The total count rates from channels 1, 2 and 3 were converted to uranium concentration. The conversion factors which related the 3 counts/second, are approximately those listed below:

- Channel 1: 1.0 cps = 0.05 ppm
- Channel 2: 1.0 cps = 0.05 ppm
- Channel 3: 1.0 cps = 0.05 ppm
- Channel 4: 1.0 cps = 0.05 ppm

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

The contour values are surface subsurface concentrations averaged over areas of approximately 100,000 square meters. These areas generally include some out-crops, overburden, swamps and small bodies of water. Consequently the concentrations indicated by the contour map are generally lower than the concentrations in bedrock.

$\theta$ H/K RATIO  
BOYD LAKE  
N.W.T.