Natural Resources Ressources naturelles Canada Index of Airborne Gamma Ray Spectrometry Coverage of Canada Flight Line Spacing This index shows the distribution of airborne gamma ray spectrometry coverage for Canada.

Data was acquired at a variety of flight line
spacing as indicated by the legend. All data is
available in digital format, both line and grid, DESCRIPTIVE NOTES This Radioactivity Map of Canada is one of eight 1:5 000 000 national scale thematic maps which depict the surface concentrations of three measured radioactive elements (potassium, equivalent uranium, and equivalent thorium) and five derived products (natural air absorbed dose rate calculated from a linear combination of potassium, equivalent uranium, and equivalent thorium; the ratios eU/eTh, eU/K, and eTh/K; the ternary map which uses false colour to illustrate the co-variation of the three measured elements (Broome et al., 1987)).

The data is maintained in the NATGAM (NATional GAMma ray spectrometry) digital archives of the Radiation Geophysics Section. Most of the data portrayed in this series of maps has been released as larger scale maps described in the table to the right of these notes. This new series of national scale maps supercedes GSC Map 1600A (Darnley et al., 1986).

This map was compiled using data acquired from surveys flown by the GSC and Canadian geophysical AIRBORNE GAMMA RAY SPECTROMETRY COMPILATION SERIES 1:1 000 000 Scale (5000 metre line spaced data only)
 4005
 2001
 Quoich River

 4010
 2001
 Murchison River

 4113
 2001
 Great Bear River

 4119
 2001
 Thelon River
 This map was compiled using data acquired from surveys flown by the GSC and Canadian geophysical contractors between 1969 and 2003. Most of this data was acquired with a flight line spacing of 5000 metres. However, substantial portions were acquired with other flight line spacings as indicated on the Index Map. substantial portions were acquired with other flight line spacings as indicated on the Index Map.

Most of the data depicted was acquired using 50 litres of Nal detectors flown at a planned terrain clearance of 120 m. A portion was obtained using smaller detector volumes flown at terrain clearances more suitable to local conditions. All airborne spectrometric systems used were calibrated by the GSC to ensure data quality and intercomparability. Data from the earlier surveys were flown and compiled to standards required for the Canadian Federal-Provincial Uranium Reconnaissance Program (URP). More recent surveys were flown to international standards described in IAEA 323 (1991) and Grasty and Minty (1995). Minor post-survey levelling of some of the data has been carried out to improve the quality of the final database.
 4162
 2001
 Slave River

 4170
 2002
 Lockhart River

 4197
 2002
 Dubawnt River

 4198
 2002
 Maguse River

 4252
 2002
 Lake Athabasca
 Potassium is measured directly from the 11460 keV gamma ray photons emitted by ⁴⁰K. Uranium and thorium, however, are determined indirectly from gamma ray photons emitted by daughter products ²¹⁴Bi and ²⁰⁸Tl, respectively, assuming equilibrium between daughter and parent isotopes. For this reason, gamma ray spectrometric measurements of uranium and thorium are referred to as equivalent uranium (eU) and equivalent thorium (eTh).
 4253
 2002
 Wollaston Lake

 4258
 2002
 Southern Indian Lake - Churchill

 4291
 2002
 Prince Albert

 4292
 2002
 The Pas
 Standard energy windows were used to record the gamma ray counts. These are 1370–1570 keV for potassium, 1660–1860 keV for uranium, 2410–2810 keV for thorium and 400–2810 keV for total radioactivity. Several corrections are applied to the raw window counts prior to conversion to standard concentration units, including: system dead time; background activity from cosmic radiation, the aircraft and atmospheric radon decay products; spectral scattering in the ground, air and detectors; deviations of altitude from the planned terrain clearance; and temperature and pressure variations 4293 2002 Gods Lake - Winisk Lake
 4323
 2002
 Lake of the Woods - Winnipeg

 4325
 2002
 Lake Nipigon
 variations.

This map depicts radioactivity emanating from the upper 30 cm of the earth's surface. The data represent average surface concentrations, influenced by varying amounts of outcrop, overburden, vegetation cover, soil moisture, and surface water. As a result, measured concentrations are usually lower than underlying bedrock concentrations. At the scale presented, the variations shown on these colour interval maps support regional interpretations. More detailed application is possible through the use of the original line data, and as presented in the previously released, larger scale map products, available from the Geological Survey of Canada.

The Radiation Geophysics Section acknowledges Drs. A.G. Darnley, K.A. Richardson, Q. Bristow, and R.L. Grasty for their contributions to program development and technical leadership. 4363 2002 Sudbury - Lake Superior

4364 2002 Timmins

4460 2003 Ottawa

4461 2003 Quebec

4462 2003 Halifax Broome, J., Carson, J.M., Grant, J.A., and Ford, K.L. AIRBORNE GAMMA RAY SPECTROMETRY COMPILATION - PROVINCIAL SERIES 1987: A modified ternary radioelement mapping technique and its application to the South Coast of Newfoundland; Geological Survey of Canada, Paper 87-14. Darnley, A.G., Richardson, K.A., Grasty, R.L., Carson, J.M., Holman, P.B., and Charbonneau, B.W. 4463 2003 Island of Newfoundland 4464 - 4471 2003 Nova Scotia 4494 - 4501 2004 New Brunswick 4549 - 4556 2004 Ontario 1986: Radioactivity Map of Canada, Geological Survey of Canada, Map 1600A, scale 1:5 000 000. International Atomic Energy Agency 1991: Airborne Gamma-ray spectrometer surveying, Technical Report Series 323, Vienna, 97p. Grasty, R.L. and Minty, B.R.S. 1995: A Guide to the Technical Specifications for Airborne Gamma-Ray Surveys; Australian Geological Survey; Organisation Record 1995/60, 89p.

A Guide to the Technical Specifications for Airborne Gamma-Ray Surveys; Australian Geological These compilation maps are available for viewing as PDF files on the Radiation Geophysics Web site - http://gsc.nrcan.gc.ca/gamma/ GEOLOGICAL SURVEY OF CANADA AIRBORNE GAMMA RAY SPECTROMETRY COMPILATION RADIOACTIVITY MAP OF CANADA Système de référence géodésique nord-américain, 1927 North American Datum 1927 115° 110° 105° 95°