The University of New England

AIRBORNE RADIOMETRIC MAPPING IN THE MOLE TABLELAND NORTHERN NEW SOUTH WALES

By

S a r d j o n o .

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ABSTRACT

Airborne radiometric mapping was undertaken in The Mole Tableland Area in Northern New South Wales. This work comprised the production of coloured maps of radiometric parameters such as total radiation count (TC), potassium concentration (K), equivalent uranium concentration (eU), and equivalent thorium concentration (eTh). Maps of ratio parameters namely eU/K, eU/eTh, and eTh/K were also created.

Two types of maps were produced from the airborne radiometric survey: maps of corrected data and of corrected-and-deconvoluted data. In general, maps of corrected data resemble the geological map whereas maps of corrected-and-deconvoluted data enhance patterns of local anomalies which represent an abundance of radioelements K, U, and Th. In a number of cases these may be correlated with areas of mineralization.

An experimental ground radiometric investigation was also conducted. Over 70 kilometres was traversed on foot with a portable γ-ray spectrometer, imitating the time-and-distance integration of the radiometric data. This was undertaken to provide correlation to the airborne data. The correlation coefficients obtained from the investigation were used for converting the normalized airborne radiometric counts to radioelement concentrations.

Attenuation of radiometric signal due to soil cover or alluvial sediments was also studied. High eTh/K ratio values were found to be diagnostic of soil cover on a granite with high U and Th.

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