

Gamma-ray Spectrometric Measurements

The gamma-ray spectrometric measurements were made with an Epradom GR820 gamma-ray spectrometer. The detector was a 15.25-cm-diam by 15.25-cm-thick NaI crystal, which consisted of twelve crystals (total volume 50.4 litres). Two crystals (total volume 8.4 litres) were shielded by the main crystals, were used to detect variations in background radiation caused by the main crystals. The remaining crystals were used to detect variations in the activity of the crystal and were used with a Gaussian least squares algorithm, adjusted the gain for each crystal.

Potassium is measured directly from the 1460 keV gamma-ray photons emitted by ^{40}K whereas uranium and thorium are measured indirectly from gamma-ray photons emitted by their respective decay chains. The gamma-ray photons from ^{238}U and ^{232}Th are far down their respective decay chains; they are assumed to be in equilibrium with their parents. Thus gamma-ray spectrometric measurements of uranium and thorium are referred to as measurements of the activity of the parents, ^{238}U , ^{235}U , ^{232}Th , ^{230}Th , $^{234\text{m}}\text{Pa}$ and $^{234\text{m}}\text{Ac}$. The gamma-ray windows used to measure potassium, uranium and thorium are:

[illegible]

Corrected data were filtered and interpolated to a 100m grid for the 1 250 000 scale maps and a 50m grid for the 1 500 000 scale maps. The results of an airborne gamma-ray spectrometer survey represent the average surface concentrations that are influenced by a variety of factors, outcrops, overburden, vegetation cover, soil moisture and surface water. As a result the measured concentrations are usually lower than the actual bedrock concentration. The total air dose rate in nanograys per hour was produced from measured counts between 400 and 2800 keV.

The Cessna Caravan aircraft was equipped with a Scintrex CS-2 cesium vapour magnetic sensor mounted in a sling at the rear of the aircraft. This system recorded readings every 0.1 seconds with a noise level of less than 0.01 nT. Magnetic interferences caused by aircraft manoeuvres were compensated using a FASDAS Magnetic compensator. Diurnal variations were recorded using a Fugro CF-1 cesium vapour magnetometer.

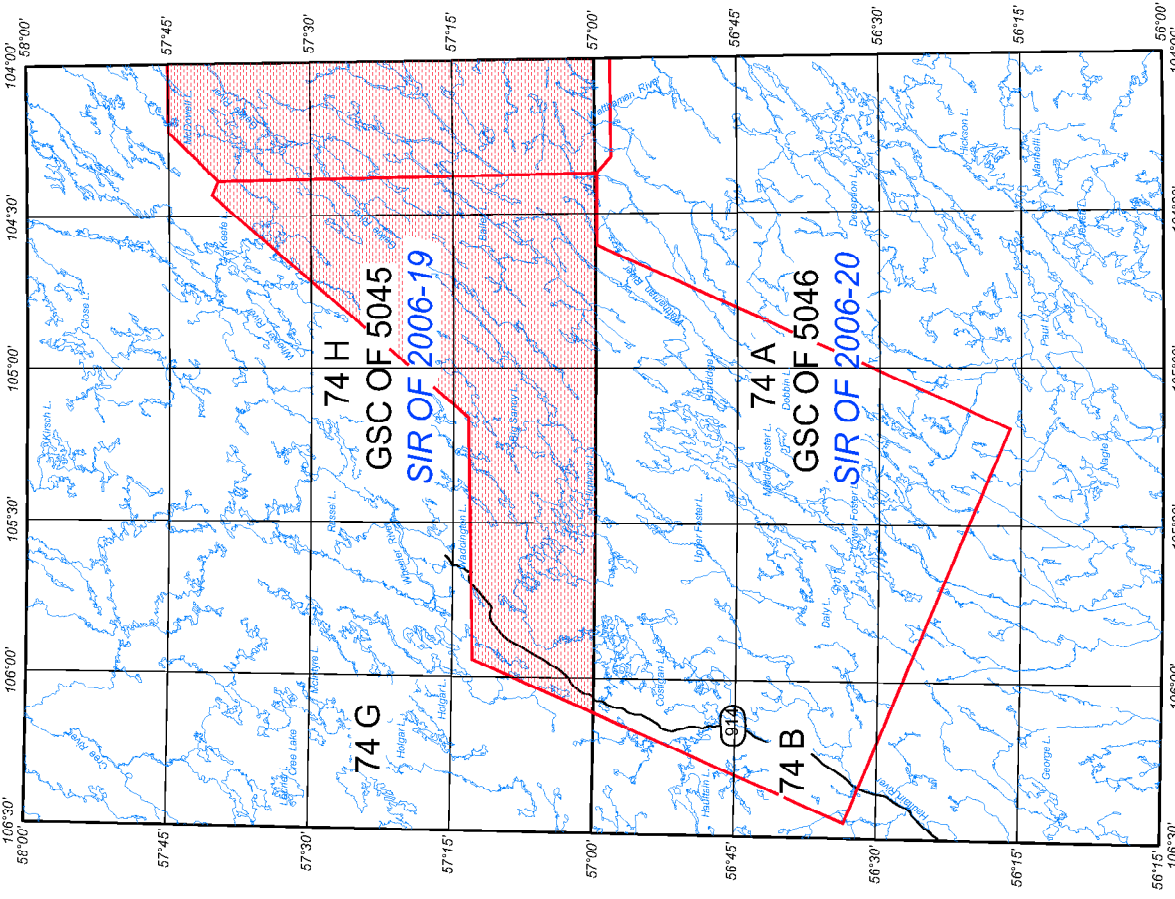
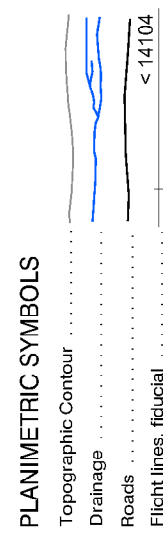
and removed using a fixed date (2005/08/31) and an altitude of 670m for each data point. The corrected magnetic data was interpolated to a 100m grid using a minimum curvature algorithm. The first vertical derivative was calculated from the corrected total magnetic intensity gradient using a FFT based frequency domain filtering algorithm.

Positional Data

The 400 m spaced survey lines were oriented VNW – ESE and 4000 m spaced control lines were oriented NNE – SSW. Survey and control line positions and elevations were pre-planned using Fugro Airborne Survey Smooth Drape software. Positional data were recorded using a Novatel ProPak N980101. GPS ground station data were combined with airborne GPS data to produce differentially corrected positional data with an accuracy of 2 to 5 m.

Data Presentation

Colour levels and contours were calculated for each grid and combined with map surround information to create a postscript plot files, which were plotted using Fugro's HP DesignJet colour plotters.



INTERNATIONAL TOPOGRAPHICAL SYSTEM REFERENCE AND GEOPHYSICAL MAP INDEX

Recommended citation:
Ford K.L., Carlson J.M., Dumont R., Patvin J., Shives, R.B.K., Delaney G., and Slinnmon, W.
2006 : Geophysical Series - NTS 74H - Gekkie River, Saskatchewan;
Geological Survey of Canada, Open File 5045,
Saskatchewan Industry and Resources, Open File 2006-19,
scale 1:250 000.

This airborne geophysical survey and the production of this map were funded by the Government of Saskatchewan's Mineral Exploration Incentive Program



**GEOPHYSICAL SERIES - NTS 74H - GEIKIE RIVER
SASKATCHEWAN**

POTASSIUM MAP

Scale 1:250 000 - Échelle 1/250 000

UD08 / UTM zone 18N

Digital Topographic Data provided by Geomatics Canada, Natural Resources Canada.

<p>OPEN FILE</p> <p>DOSSIER PUBLIC</p> <p>5045</p> <p> <small> GÉNÉRALISTE, SERVICE DE L'AMNISTIE COMMISSION REGULARISE DE L'AMNISTIE </small> </p> <p>2006</p>	<p> <small> Ces deux produits sont disponibles en français through the CSC formal publication process. </small> </p> <p> <small> Les produits publics sont des documents qui n'ont pas été soumis au processus de classification et de publication de la CSC </small> </p>	<p>SASKATCHEWAN</p> <p>INDUSTRY and</p> <p>RESOURCES</p>	<p>OPEN FILE</p> <p>2006-19</p>	<p>SHEET 2 OF 10</p>
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SHEET 2 OF 10

POTASSIUM MAP
GEIKIE RIVER
SASKATCHEWAN
NTS 74H