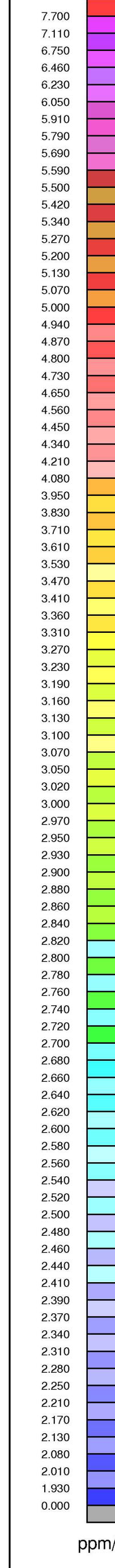
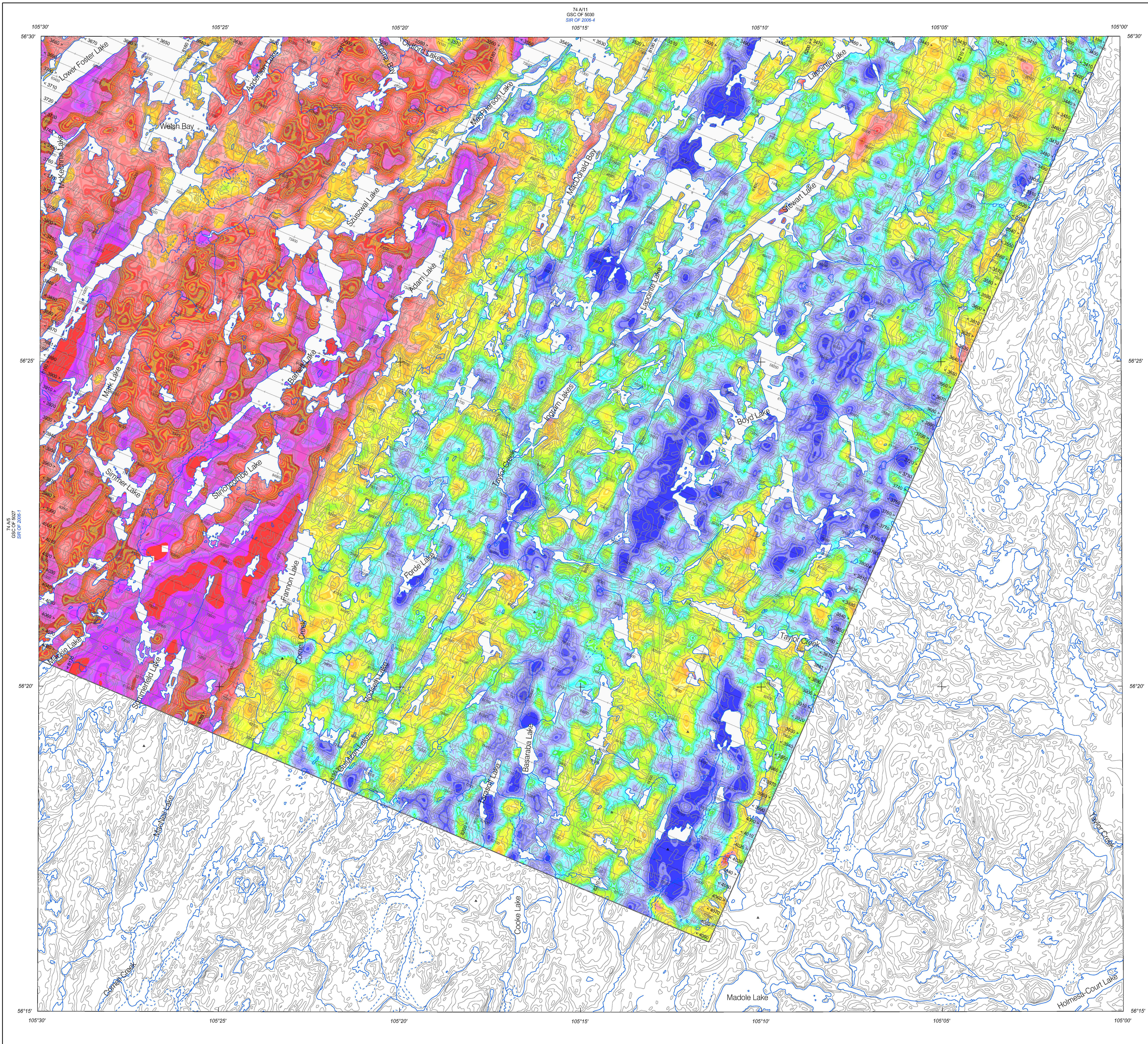




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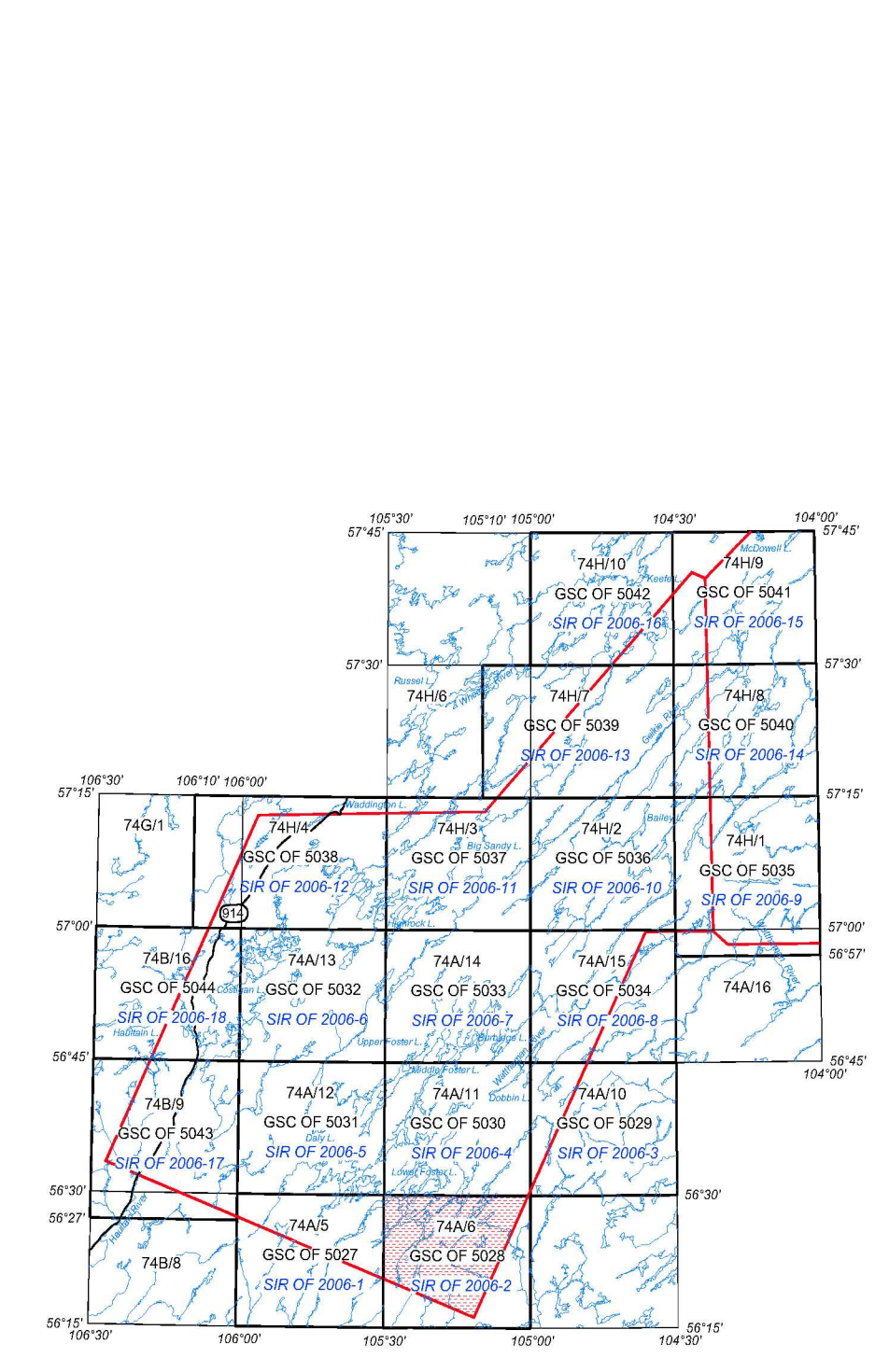
**HIGHROCK LAKE AND UPPER FOSTER LAKE AREAS, SASKATCHEWAN**  
In 2005, Fugro Airborne Surveys completed a multi-sensor airborne geophysical survey of the Highrock Lake and Upper Foster Lake areas, Saskatchewan, for the Geological Survey of Canada and Saskatchewan Industry and Resources. The purpose of the survey was to obtain quantitative gamma-ray spectrometric and aeromagnetic data. The survey was flown from August 14 to September 20, 2005 using Cessna Caravan aircraft C-GFAV.

**Gamma-ray Spectrometric Data**  
The airborne gamma-ray measurements were made with an ESRAMON GR820 gamma-ray spectrometer using barium 102 x 102 x 400 mm NaI (Tl) crystals. The main detector array consisted of twelve crystals (total volume 20.4 litres). The main detector array was shielded by the main array, were used to detect variations in background radiation caused by atmospheric radon. The system constantly monitored the natural thorium peak for each crystal, and using a Gaussian least squares algorithm, adjusted the gain for each crystal. Potassium is measured directly from the 1460 keV gamma-ray photons emitted by <sup>40</sup>K, whereas uranium and thorium are measured indirectly from gamma-ray photons emitted by daughter products (Bi<sup>214</sup> for uranium and Th<sup>232</sup> for thorium). Although these daughters 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 equivalent uranium and equivalent thorium, i.e. eU and eTh. The energy windows used to measure potassium, uranium and thorium, using factors determined from flights over a calibration range near Ottawa.

**Magnetic Data**  
The Cessna Caravan aircraft was equipped with a Sinterex CS-2 cesium vapour magnetic sensor mounted to a single to the rear of the aircraft. The system recorded readings every 0.1 seconds with a noise level of less than 0.01 nT. Magnetic interferences caused by aircraft maneuvers were compensated using a FASDAS Magnetic compensator. Diurnal variations were recorded using a Fugro CF-1 cesium vapour magnetometer. After editing the survey data, the intersections of traverse and control lines were determined and the differences in the magnetic values were compiled, analyzed and manually verified to obtain the leveling network. The International Geomagnetic Reference Field was calculated and removed using a fixed date (20050831) 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 grid was calculated from the corrected total magnetic intensity grid using a FFT based frequency domain filtering algorithm.

**Positional Data**  
The 400 m spaced survey lines were oriented NNE - SSW and 4000 m spaced control lines were oriented NNE - SSW. Survey and control line positions and elevations were pre-planned using Fugro Airborne Surveys Smooth Drop software. Positional data were recorded using a Novatel Propak NR6010. GPS ground station data were combined with airborne GPS data to produce differentially corrected positional data with an accuracy of Z 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.



NATIONAL TOPOGRAPHICAL SYSTEM REFERENCE AND GEOLOGICAL MAP INDEX

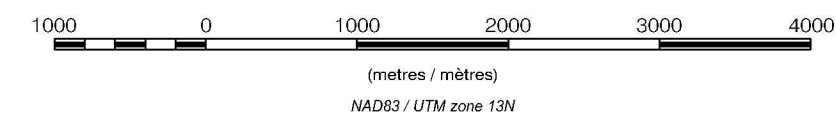
Recommended citation:  
Ford, K.L., Carson, J.M., Coyle, M., Delaney, G., and Shives, R.B.K.  
2006. Geophysical Series - NTS 74A/6 - Barnett Lake, Saskatchewan.  
Geological Survey of Canada, Open File 5028.  
Saskatchewan Industry and Resources, Open File 2006-2,  
scale 1:50 000.

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 74A/6 - BARNETT LAKE  
SASKATCHEWAN**

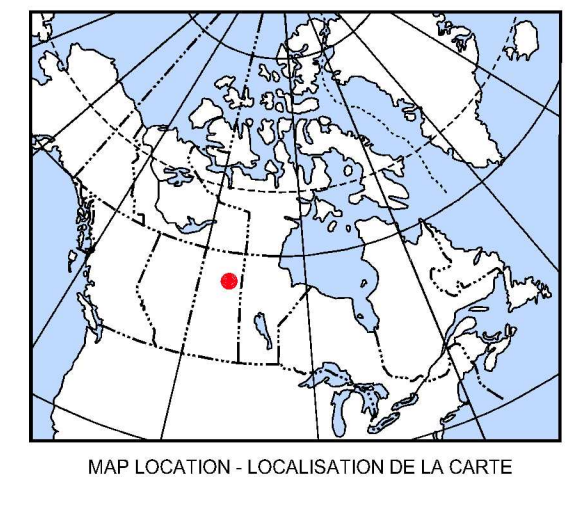
**THORIUM/POTASSIUM MAP**

Scale 1:50 000 - Échelle 1/50 000



Universal Transverse Mercator Projection  
North American Datum 1983  
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Projection transverse universelle de Mercator  
Système de référence géodésique nord-américain 1983  
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