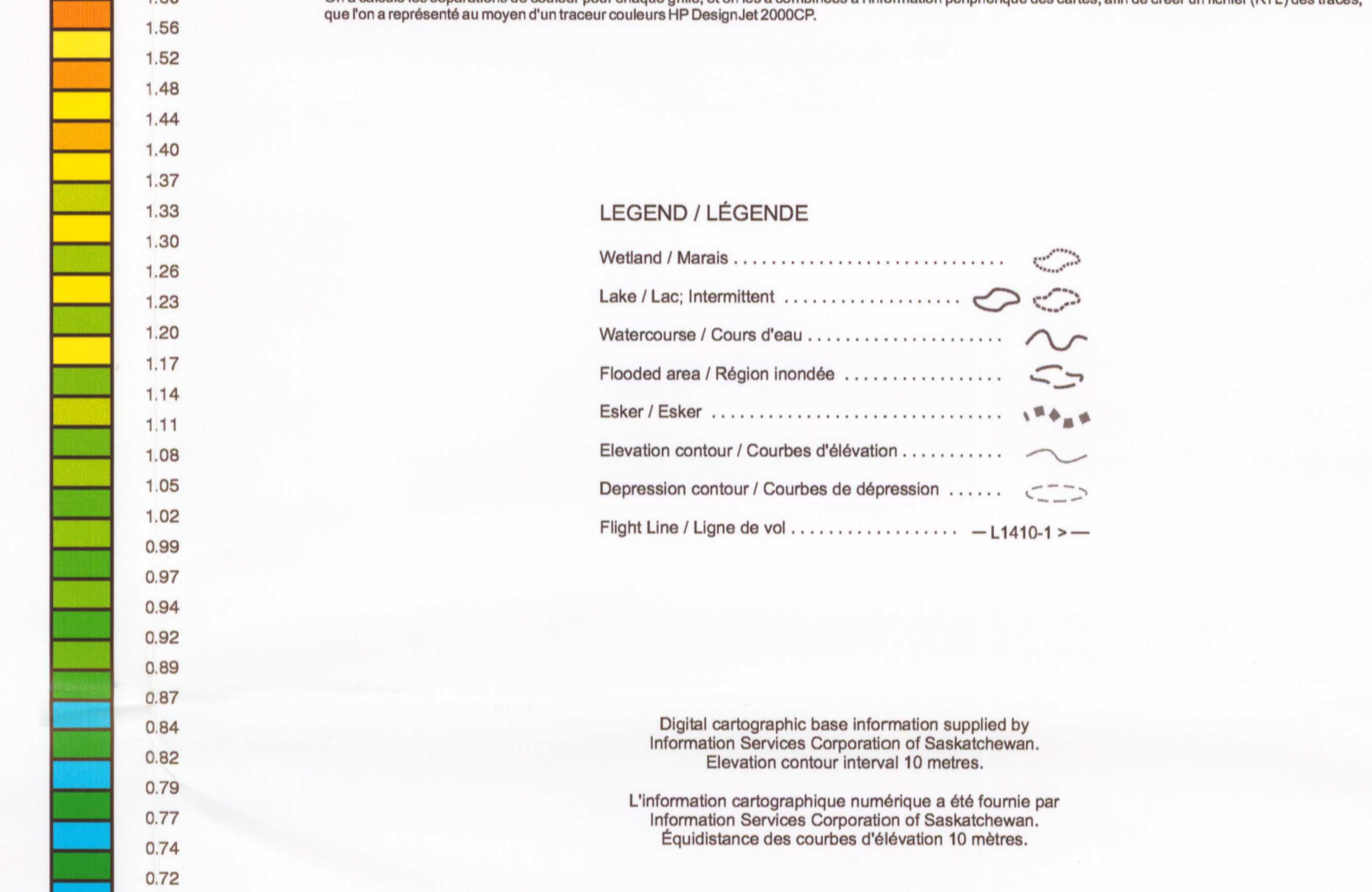


An airborne geophysical survey of the Nunim Lake area, Saskatchewan, was flown by Sander Geophysics Limited (SGL) for the Geological Survey of Canada and Saskatchewan Energy and Mines. The purpose of the survey was to obtain gamma-ray spectrometric, aeromagnetic and VLF-EM data. The survey was flown between August 14 and September 7, 2000 using a Britten-Norman Islander BN2B-21 aircraft flying 120 m above the terrain at a mean speed of 220 km/h. The 1000 m spaced, northwest-southeast oriented survey lines and orthogonal 10 000 m spaced control lines were planned using the SGRDrape system. Inflight positional data were recorded using an Omnistar real-time differential GPS system. GPS ground station data were combined with airborne GPS data to provide positional data with an accuracy of 1 m. Potassium is measured directly from the 1460 keV gamma-ray photons emitted by ⁴⁰K. Uranium and thorium must be measured indirectly from gamma-ray photons emitted by daughter products (²¹⁴Pb for uranium and ²¹⁴Pb for thorium). Although these daughters are far from 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 (eU) and equivalent thorium (eTh). Gamma-ray spectra were recorded with an Explorerium GR20 gamma-ray spectrometer using fourteen 102 x 102 x 406 mm NaI(Tl) crystals. The main detector array consisted of twelve crystals (total volume 8.4 litres). The crystals (total volume 8.4 litres), shielded from the ground by the main array, were used to detect variations caused by atmospheric radon. The GR20 constantly monitored the natural potassium peak for each crystal, using a Gaussian least squares algorithm to adjust the gain for individual crystals. Gamma-ray spectra were recorded at one-second intervals. Noise Adjusted Singular Value Decomposition (NASVD) analysis was carried out on full spectrum 256 channel data to reduce statistical noise. The spectra were energy calibrated, and counts were accumulated in the ground, air and detector. The four standard windows were corrected for deviations of altitude from the planned terrain clearance and for variation of temperature and pressure prior to conversion to standard units. The conversion factors used were 102.3 cps/µg for potassium, 9.72 cps/ppm for uranium, 6.37 cps/ppm for thorium and 33.26 cps/µg for total activity data. Corrected data were filtered and interpolated to a 200 m grid for the 1:250 000 and 1:50 000 scale maps using a minimum curvature algorithm technique. The results of an airborne gamma-ray spectrometer survey represent the average surface concentrations that are influenced by varying amounts of outcrop, cover, vegetation cover, soil moisture and surface water. As a result the measured concentrations are usually lower than the actual bedrock concentration. The aircraft was equipped with a Geometrics G-822A cesium vapour magnetic sensor mounted in a stinger to the rear of the aircraft, connected to an RMS AADC12 27 term magnetic compensator installed in a microcomputer. The magnetometer data were recorded every 0.1 seconds with a noise level of less than 0.01 nT. Diurnal variations were monitored at 0.2 second intervals using a vantage base station magnetometer. After editing the survey data, low pass filtered diurnal values were subtracted from the unfiltered aeromagnetic data. The International Geomagnetic Reference Field was calculated and removed using the data and altitude for each data point. The intersections of traverse and control lines were determined and the differences in the magnetic values were computer analysed and manually verified to create a leveled network. The leveled network was interpolated to a 200 m grid for the 1:250 000 and 1:50 000 scale maps using a minimum curvature algorithm. The vertical gradient of the magnetic field was calculated from the total magnetic intensity grid using an FFT based algorithm. VLF total field and quadrature components for two frequencies were recorded using a Herz Totem 2A system. The line station was tuned to station NAA at Cutler, MA, transmitting at 24.0 kHz. The ortho station was tuned to the 24.8 kHz station NUK at Seattle, WA. VLF data were recorded 4 times per second. VLF data will only be made available via a CD-ROM. Colour levels were calculated for each grid and combined with map surround information to create an RTI, plot file, which was plotted using an HP DesignJet 2000CP colour plotter.



LEGEND / LÉGENDE

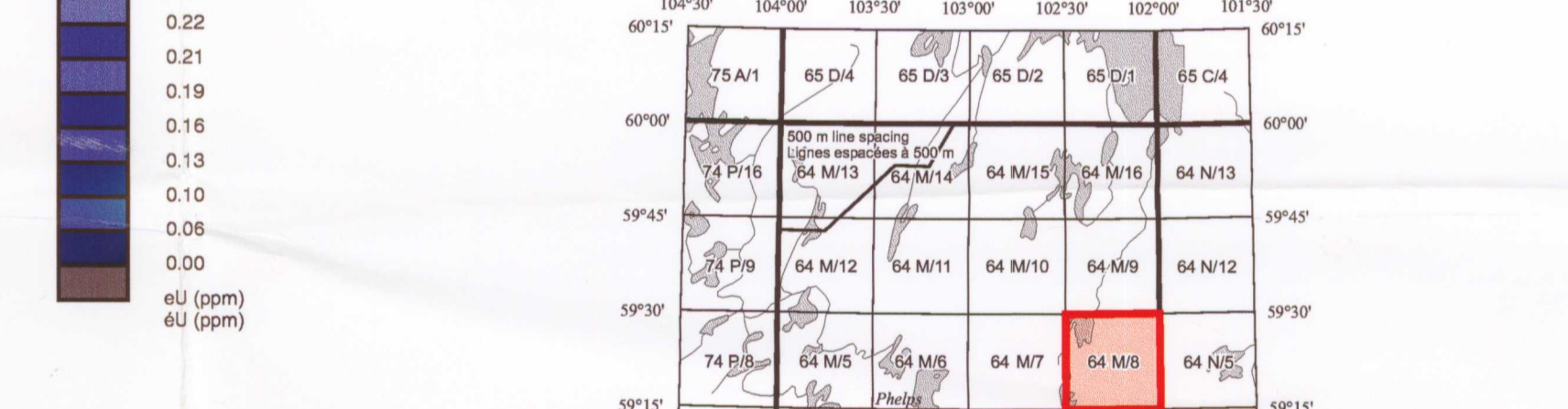
Wetland / Marais
Lake / Lac; Intermittent
Watercourse / Cours d'eau
Flooded area / Région inondée
Esker / Esker
Elevation contour / Courbes d'élévation
Depression contour / Courbes de dépression
Flight Line / Ligne de vol L1410

Digital cartographic base information supplied by Information Services Corporation of Saskatchewan. Elevation contour interval 10 metres.

L'information cartographique numérique a été fournie par Information Services Corporation of Saskatchewan. Équidistance des courbes d'élévation 10 mètres.

Recommended citation:
Carson J.M., Holman P.B., Shives R.B.K., Ford K.L., Harper C.T., Sillman W., 2001. Uranium Map (eU), Nunim Lake, Saskatchewan, NTS / SNRC 64M/8, Geological Survey of Canada, Open File 3951_73, Scale 1:50 000

Notation bibliographique conseillée:
Carson J.M., Holman P.B., Shives R.B.K., Ford K.L., Harper C.T., Sillman W., 2001. Carte de l'uranium (éU), Nunim Lake, Saskatchewan, NTS / SNRC 64M/8, Commission géologique du Canada, Dossier Public 3951_73, Echelle 1:50 000



Project funded by Geological Survey of Canada through the Targeted Geoscience Initiative and by Saskatchewan Northern Affairs. Ce projet a été financé par la Commission géologique du Canada par l'entremise de l'Initiative géoscientifique ciblée et aussi financé par Saskatchewan Northern Affairs.

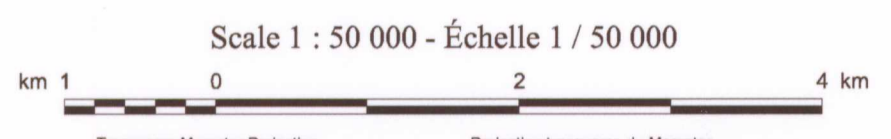


URANIUM MAP (eU)

CARTE DE L'URANIUM (éU)

NUNIM LAKE
SASKATCHEWAN

NTS / SNRC 64M/8



Open File
Dossier Public
3951_73
Geological Survey of Canada
Commission géologique du Canada
Ottawa
2001

SEM Open File 2001-2
Map 73 of 160

This map has been reprinted from a scanned version of the original map. Reproduction par numérisation d'une carte sur papier.

NATIONAL TOPOGRAPHICAL SYSTEM REFERENCE AND GEOPHYSICAL MAP INDEX
SYSTÈME NATIONAL DE RÉFÉRENCE CARTOGRAPHIQUE ET INDEX DES CARTES GÉOPHYSIQUES

URANIUM MAP (eU)
CARTE DE L'URANIUM (éU)

NUNIM LAKE
SASKATCHEWAN
NTS / SNRC 64M/8