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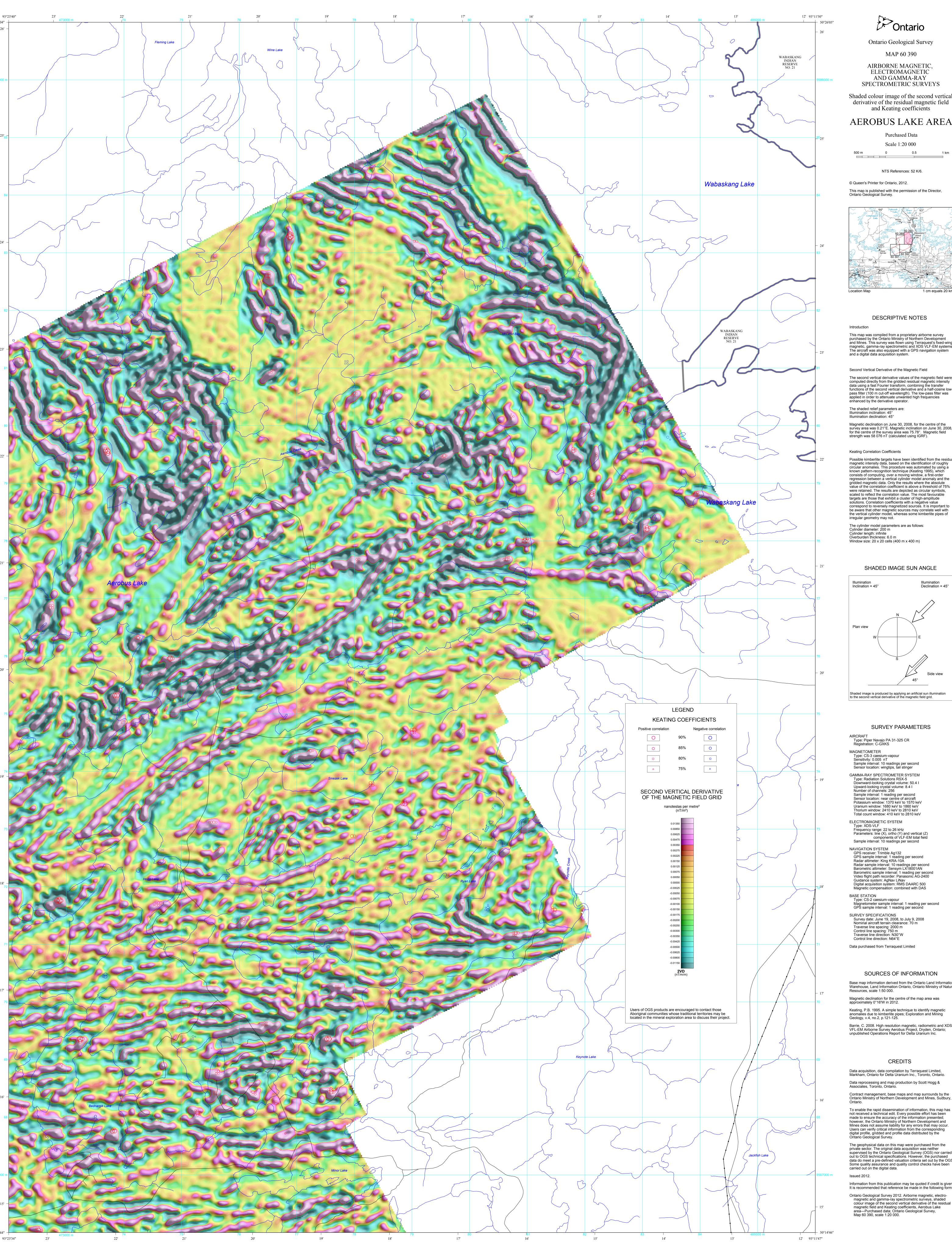
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Ontario Geological Survey 2012. Airborne magnetic, electromagnetic and gamma-ray spectrometric surveys, shaded colour image of the second vertical derivative of the residual magnetic field and Keating coefficients, Aerobus Lake area—Purchased data; Ontario Geological Survey, Map 60 390, scale 1:20 000.

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# Ontario

Ontario Geological Survey MAP 60 390

AIRBORNE MAGNETIC, ELECTROMAGNETIC AND GAMMA-RAY SPECTROMETRIC SURVEYS

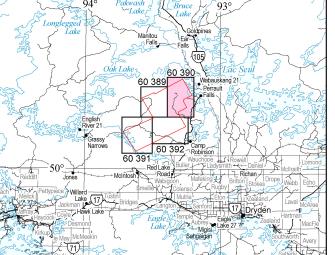
Shaded colour image of the second vertical derivative of the residual magnetic field and Keating coefficients

# AEROBUS LAKE AREA

Purchased Data Scale 1:20 000

NTS References: 52 K/6.

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### DESCRIPTIVE NOTES

1 cm equals 20 km

This map was compiled from a proprietary airborne survey purchased by the Ontario Ministry of Northern Development and Mines. This survey was flown using Terraquest's fixed-wing magnetic, gamma-ray spectrometric and XDS VLF-EM systems. The aircraft was also equipped with a GPS navigation system and a digital data acquisition system.

The second vertical derivative values of the magnetic field were

computed directly from the gridded residual magnetic field were computed directly from the gridded residual magnetic intensity data using a fast Fourier transform, combining the transfer functions of the second vertical derivative and a half-cosine low-pass filter (100 m cut-off wavelength). The low-pass filter was applied in order to attenuate unwanted high frequencies enhanced by the derivative operator.

Magnetic declination on June 30, 2008, for the centre of the survey area was 0.21°E. Magnetic inclination on June 30, 2008,

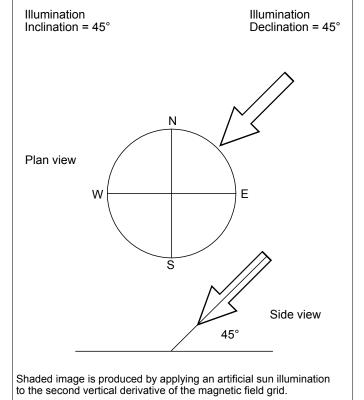
for the centre of the survey area was 75.78°. Magnetic field strength was 58 076 nT (calculated using IGRF).

Possible kimberlite targets have been identified from the residual

magnetic intensity data, based on the identification of roughly circular anomalies. This procedure was automated by using a known pattern-recognition technique (Keating 1995), which consists of computing, over a moving window, a first-order regression between a vertical cylinder model anomaly and the gridded magnetic data. Only the results where the absolute of 7500. value of the correlation coefficient is above a threshold of 75% were retained. The results are depicted as circular symbols, scaled to reflect the correlation value. The most favourable targets are those that exhibit a cluster of high-amplitude solutions. Correlation coefficients with a negative value correspond to reversely magnetized sources. It is important to be aware that other magnetic sources may correlate well with the vertical cylinder model, whereas some kimberlite pipes of irregular geometry may not.

The cylinder model parameters are as follows: Cylinder diameter: 200 m Cylinder length: infinite Overburden thickness: 6.0 m Window size: 20 x 20 cells (400 m x 400 m)

## SHADED IMAGE SUN ANGLE



# **SURVEY PARAMETERS**

AIRCRAFT Type: Piper Navajo PA 31-325 CR Registration: C-GXKS

MAGNETOMETER
Type: CS-3 caesium-vapour
Sensitivity: 0.005 nT
Sample interval: 10 readings per second
Sensor location: wingtips, tail stinger GAMMA-RAY SPECTROMETER SYSTEM Type: Radiation Solutions RSX-5 Downward-looking crystal volume: 50.4 I

Upward-looking crystal volume: 30.41
Upward-looking crystal volume: 8.41
Number of channels: 256
Sample interval: 1 reading per second
Sensor location: near centre of aircraft
Potassium window: 1370 keV to 1570 keV Uranium window: 1680 keV to 1860 keV Thorium window: 2410 keV to 2810 keV Total count window: 410 keV to 2810 keV ELECTROMAGNETIC SYSTEM Type: XDS-VLF

Frequency range: 22 to 26 kHz
Parameters: line (X), ortho (Y) and vertical (Z)
components of VLF-EM total field
Sample interval: 10 readings per second NAVIGATION SYSTEM

GPS receiver: Trimble Ag132
GPS sample interval: 1 reading per second
Radar altimeter: King KRA-10A
Radar sample interval: 10 readings per second
Barometric altimeter: Sensym LX18001AN
Barometric sample interval: 1 reading per second
Video flight path recorder: Panasonic AG-2400
Guidance system: AgNav LiNav
Digital acquisition system: RMS DAARC 500
Magnetic compensation: combined with DAS

BASE STATION
Type: CS-2 caesium-vapour
Magnetometer sample interval: 1 reading per second
GPS sample interval: 1 reading per second

SURVEY SPECIFICATIONS
Survey date: June 19, 2008, to July 9, 2008
Nominal aircraft terrain clearance: 70 m
Traverse line spacing: 2000 m
Control line spacing: 750 m
Traverse line direction: N30°W
Control line direction: N64°E

# SOURCES OF INFORMATION

Base map information derived from the Ontario Land Information Warehouse, Land Information Ontario, Ontario Ministry of Natural Resources, scale 1:50 000. Magnetic declination for the centre of the map area was approximately 0°16'W in 2012. Keating, P.B. 1995. A simple technique to identify magnetic anomalies due to kimberlite pipes; Exploration and Mining Geology, v.4, no.2, p.121-125.

Barrie, C. 2008. High resolution magnetic, radiometric and XDS VFL-EM Airborne Survey Aerobus Project, Dryden, Ontario; unpublished Operations Report for Delta Uranium Inc.

## CREDITS

Data acquisition, data compilation by Terraquest Limited, Markham, Ontario for Delta Uranium Inc., Toronto, Ontario. Data reprocessing and map production by Scott Hogg & Associates, Toronto, Ontario. Contract management, base maps and map surrounds by the

To enable the rapid dissemination of information, this map has not received a technical edit. Every possible effort has been made to ensure the accuracy of the information presented; however, the Ontario Ministry of Northern Development and Mines does not assume liability for any errors that may occur. Users can verify critical information from the corresponding digital profile, gridded and profile data distributed by the

The geophysical data on this map were purchased from the private sector. The original data acquisition was neither supervised by the Ontario Geological Survey (OGS) nor carried out to OGS technical specifications. However, the purchased data do meet a pre-defined valuation criteria set out by the OGS. Some quality assurance and quality control checks have been carried out on the digital data.

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