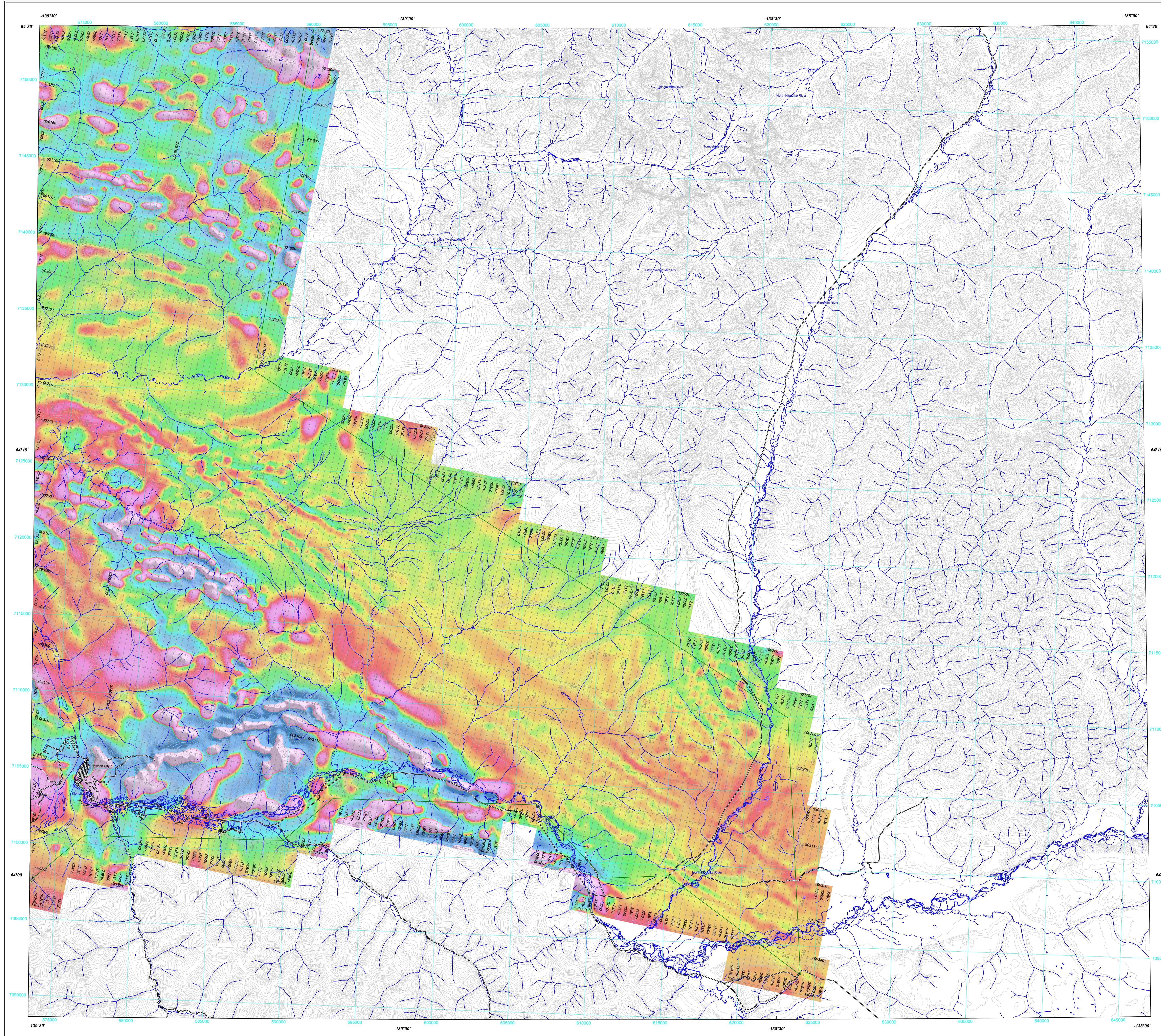


FIRST VERTICAL DERIVATIVE OF THE MAGNETIC FIELD



First Vertical Derivative of the Magnetic Field

This map of the first vertical derivative of the magnetic field was derived from data acquired during an aeromagnetic survey carried out by Goldisk Airborne Surveys from February 17 to March 21, 2014. The data were recorded using split-beam cesium vapour magnetometers (sensitivity = 0.005 nT) mounted in each of the tail booms of two Piper Navajo aircraft (C-GJBB and C-GJBC). The nominal traverse and control line spacings were, respectively, 400 m and 2400 m and the aircraft flew at a nominal terrain clearance of 125 m. Traverse lines were oriented at N10° E with orthogonal control lines. The flight path was recovered following post-flight differential corrections to the raw Global Navigational Satellite System (GNSS) data and inspection of ground images recorded by a vertically-mounted video camera. The survey was flown on a pre-determined flight surface to minimize differences in magnetic values at the intersections of control and traverse lines. These differences were computer-analysed to obtain a mutually levelled set of flight-line magnetic data. The levelled values were then interpolated to a 100 m grid. The International Geomagnetic Reference Field (IGRF) defined at the average GPS altitude of 1152.3 m for the year 2014.17 was then removed. Removal of the IGRF, representing the magnetic field of the Earth's core, produces a residual component related almost entirely to magnetization within the Earth's crust.

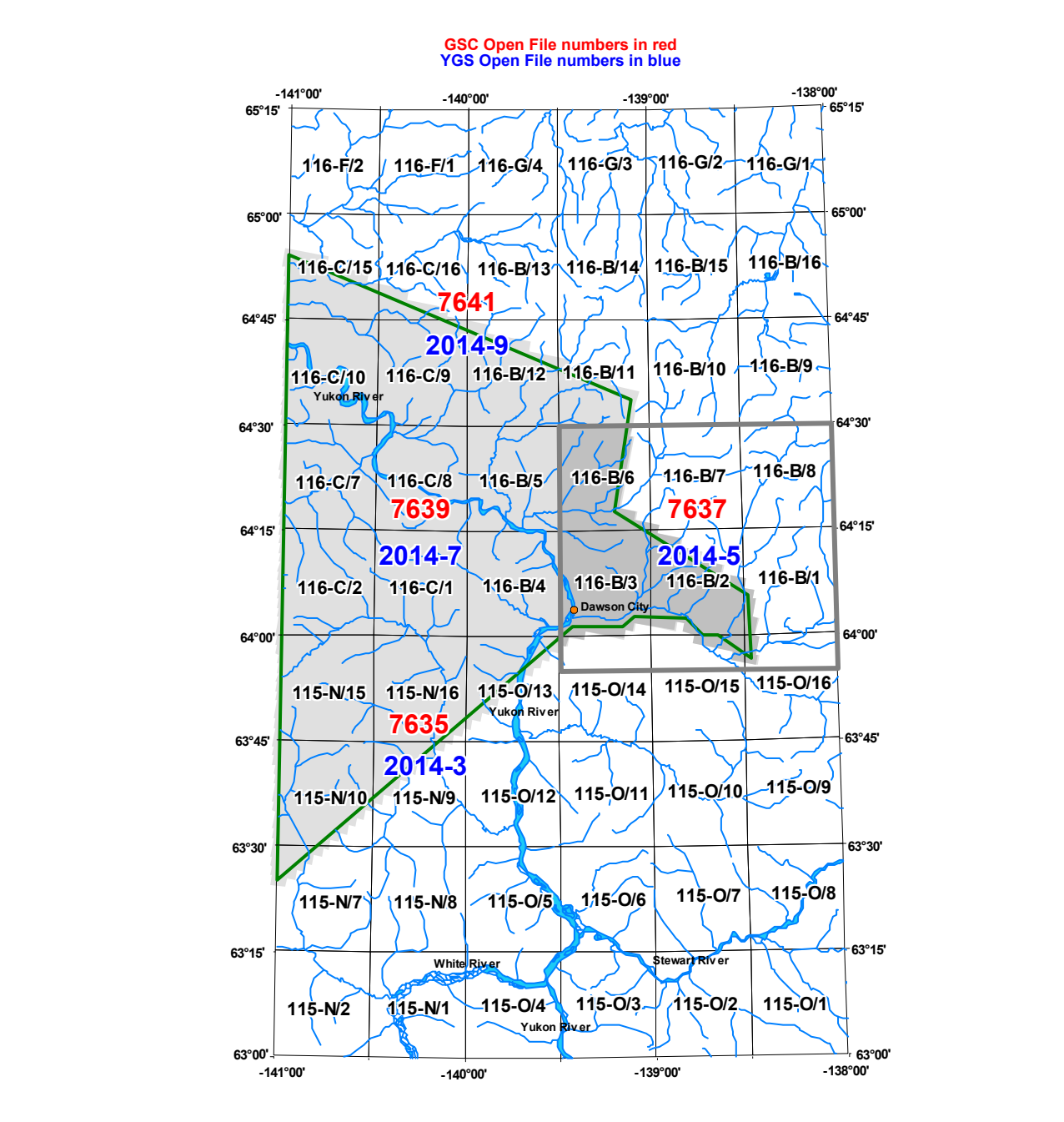
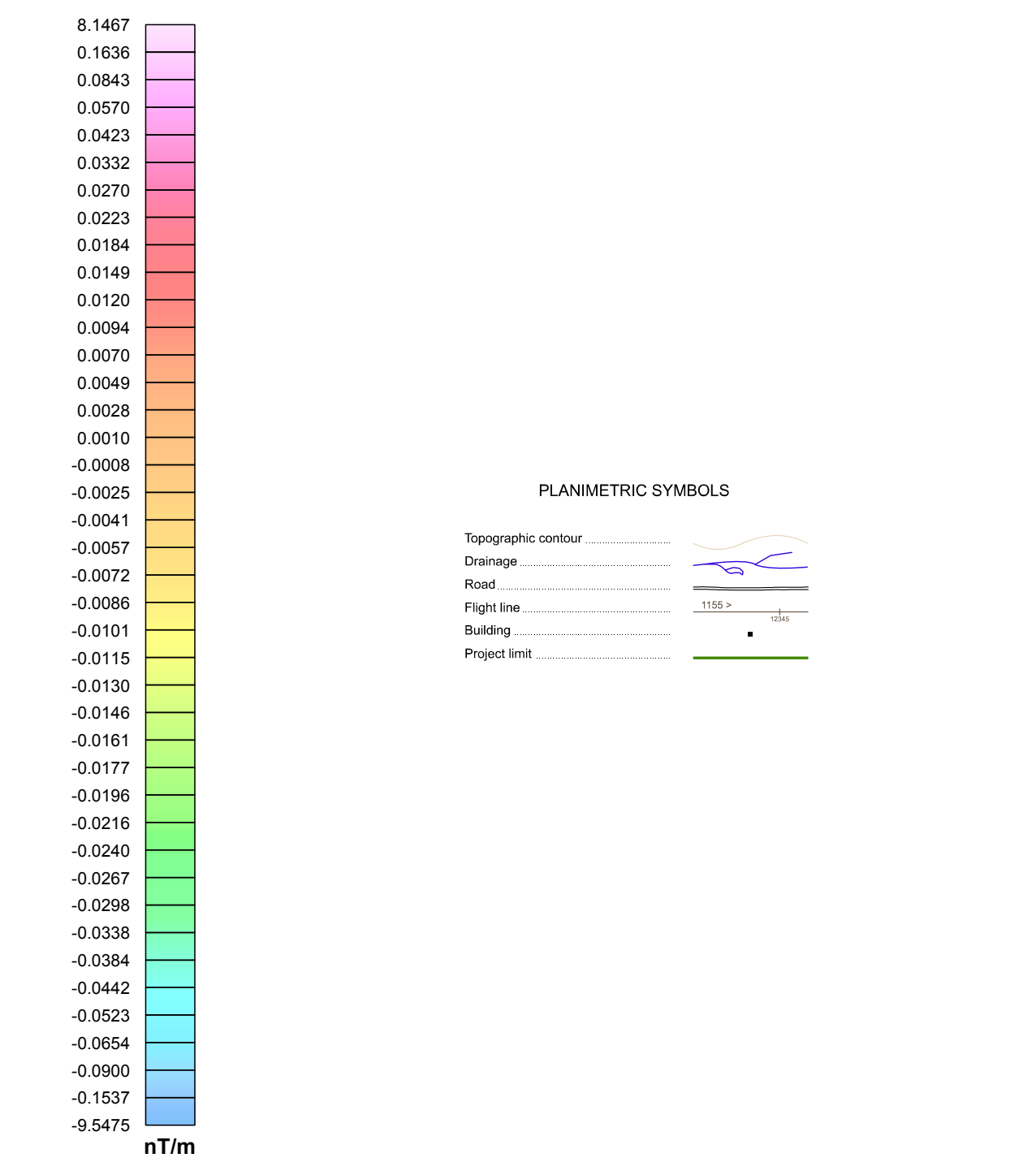
The first vertical derivative of the magnetic field is the rate of change of the magnetic field in the vertical direction. Computation of the first vertical derivative removes long-wavelength features of the magnetic field and significantly improves the resolution of closely spaced and superposed anomalies. A property of first vertical derivative maps is the coincidence of the zero-value contour with vertical contacts at high magnetic latitudes (Good, 1965).

A digital version of this map can be downloaded, at no charge, from Natural Resources Canada's Geoscience Data Repository (MIRAGE) at http://open1.gdr.nrcan.gc.ca/mirage/mirage_index_e.php. Corresponding digital profile and gridded data as well as similar data for adjacent airborne geophysical surveys are available from Natural Resources Canada's Geoscience Data Repository for Aeromagnetic data at http://open1.gdr.nrcan.gc.ca/index_e.html. The same products are also available, for a fee, from the Geophysical Data Centre, Geological Survey of Canada, 615 Booth Street, Ottawa, Ontario K1A 0E9. Telephone: (613) 995-5226, email: info-gd@gsgg.nrcan.gc.ca.

Copies of this map may also be obtained from the Yukon Geological Survey, Energy, Mines and Resources, Government of Yukon, P.O. Box 2753 (6102), Whitehorse, Yukon, Y1A 2C6. Telephone: (867) 667-3001, email: geology@gov.yk.ca. Web site: <http://data.geology.gov.yk.ca/>.

References

Hood, P.J., 1965. Gradient measurements in aeromagnetic surveying. *Geophysics*, v. 30, p. 891-902.



This aeromagnetic survey and the production of this map were funded by phase 2 of the GeoMapping for Energy and Minerals program (GEM-2) of the Earth Sciences Sector, Natural Resources Canada.

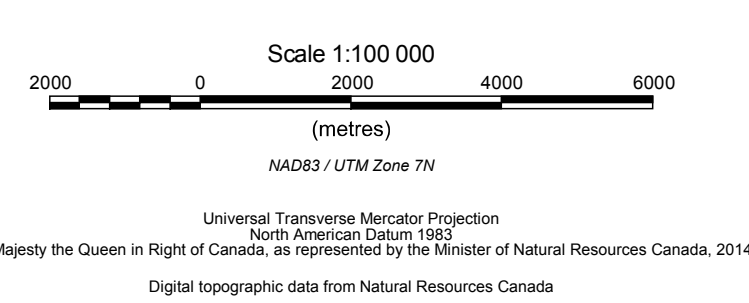
GEOLOGICAL SURVEY OF CANADA OPEN FILE 7637
YUKON GEOLOGICAL SURVEY OPEN FILE 2014-5

FIRST VERTICAL DERIVATIVE OF THE MAGNETIC FIELD

AEROMAGNETIC SURVEY OF THE DAWSON AREA

Authors: F. Kiss and M. Coyle
Data acquisition, data compilation and map production by Goldisk Airborne Surveys, Saskatoon, Saskatchewan. Contract and project management by the Geological Survey of Canada, Ottawa, Ontario.

NTS parts of 115-O/14, 115-O/15, 115-O/16, 116-B/1, 116-B/2, 116-B/3, 116-B/6 and 116-B/7
YUKON



OPEN FILE DOSSIER PUBLIC

7637

GEOLOGICAL SURVEY OF CANADA
COMMISSION GÉOLOGIQUE DU CANADA

2014

Publication of this series has not been edited. They are released as submitted by the author.

Les publications de cette série ont été publiées telles qu'elles ont été reçues par l'auteur.

Recommended citation:
Kiss, F. and Coyle, M., 2014. First Vertical Derivative of the Magnetic Field. Aeromagnetic Survey of the Dawson Area. NTS parts of 115-O/14, 115-O/15, 115-O/16, 116-B/1, 116-B/2, 116-B/3, 116-B/6 and 116-B/7, Yukon. Geological Survey of Canada, Open File 7637. Yukon Geological Survey, Open File 2014-5. Scale 1:100 000.