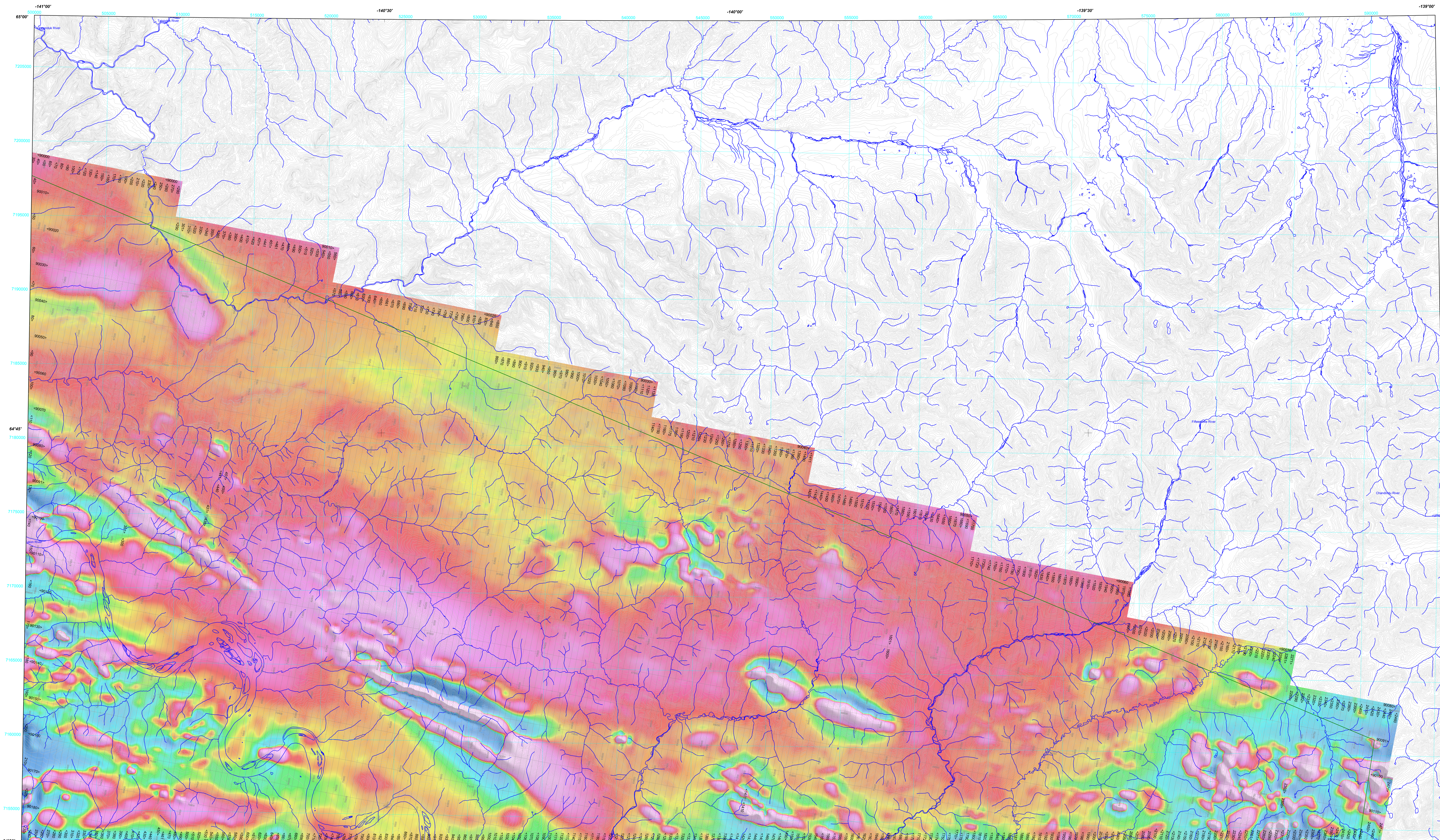
Natural Resources Canada / Ressources naturelles Canada

GEOLOGICAL SURVEY OF CANADA COMMISSION GÉOLOGIQUE DU CANADA

YUKON GEOLOGICAL SURVEY

FIRST VERTICAL DERIVATIVE OF THE MAGNETIC FIELD



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

TOPOGRAPHIC CONTOUR INTERVAL: 30 METRES

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 Goldak 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-GJBG). 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 1192.3 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 magnetizations 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 (Hood, 1965).

A digital version of this map can be downloaded, at no charge, from Natural Resources Canada's Geoscience Data Repository (MIRAGE) at http://apps1.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://gdr.agg.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) 995-5326, email: infogdc@agg.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 2703 (K102), Whitehorse, Yukon, Y1A 2C6. Telephone: (867) 667-3201, email: geology@gov.yk.ca, Web site: http://data.geology.gov.yk.ca/.

References

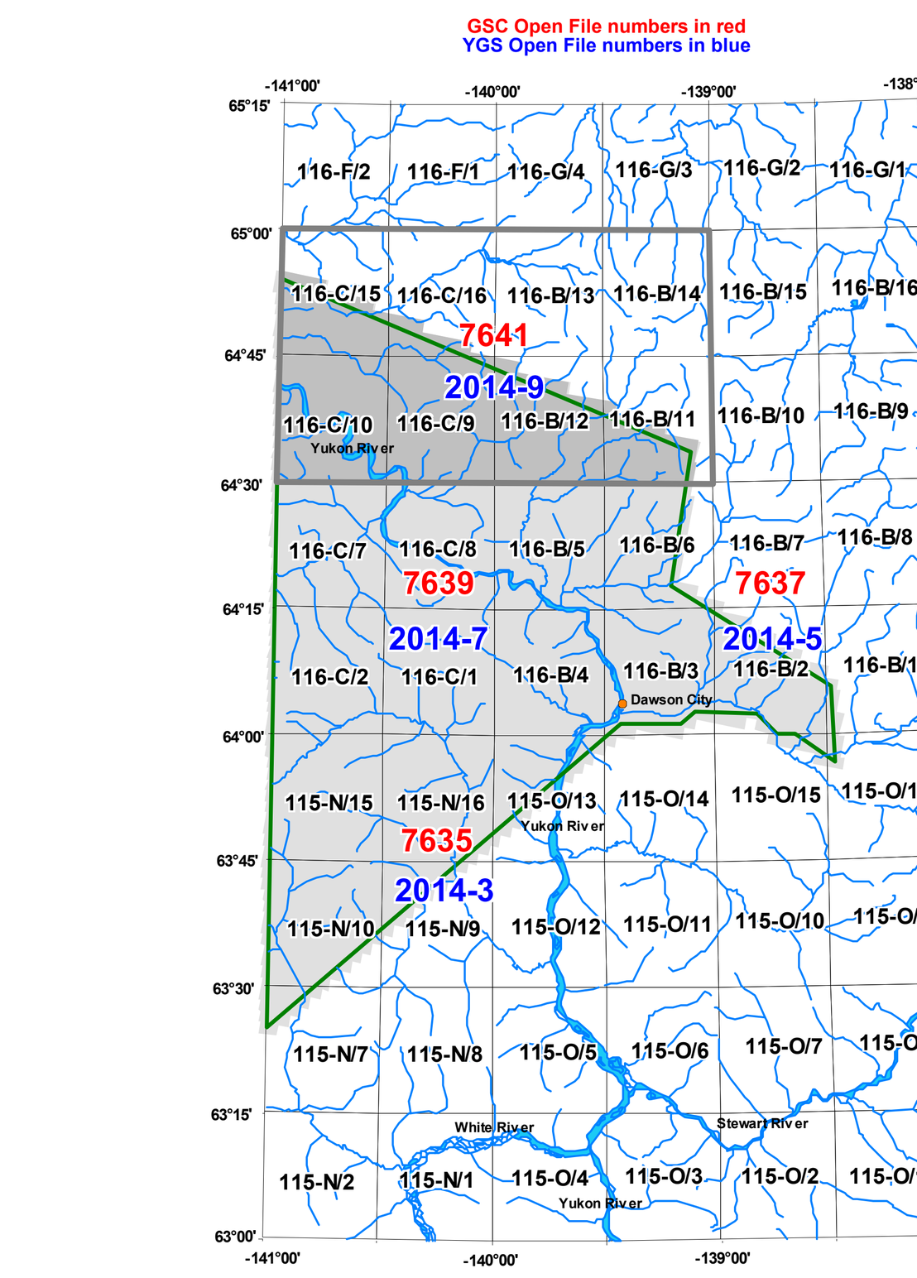
Hood, P.J., 1965. Gradient measurements in aeromagnetic surveying; Geophysics, v. 30, p. 891-902.

8.1467
0.1636
0.0843
0.0570
0.0423
0.0332
0.0270
0.0223
0.0184
0.0149
0.0120
0.0094
0.0070
0.0049
0.0028
0.0010
-0.0008
-0.0025
-0.0041
-0.0057
-0.0072
-0.0086
-0.0101
-0.0115
-0.0130
-0.0146
-0.0161
-0.0177
-0.0196
-0.0216
-0.0240
-0.0267
-0.0298
-0.0338
-0.0384
-0.0442
-0.0523
-0.0654
-0.0900
-0.1537
-9.5475
nT/m

PLANIMETRIC SYMBOLS

Topographic contour
Drainage
Road
Flight line
Building
Project limit

GSC Open File numbers in red
YGS Open File numbers in blue



NATIONAL TOPOGRAPHIC SYSTEM REFERENCE AND GEOPHYSICAL MAP INDEX

GEOLOGICAL SURVEY OF CANADA OPEN FILE 7641
YUKON GEOLOGICAL SURVEY OPEN FILE 2014-9

FIRST VERTICAL DERIVATIVE OF THE MAGNETIC FIELD

AEROMAGNETIC SURVEY OF THE DAWSON AREA

NTS 116-C/9, 116-C/10 and parts of 116-B/11, 116-B/12, 116-C/15 and 116-C/16
YUKON

Authors: F. Kiss and M. Coyle

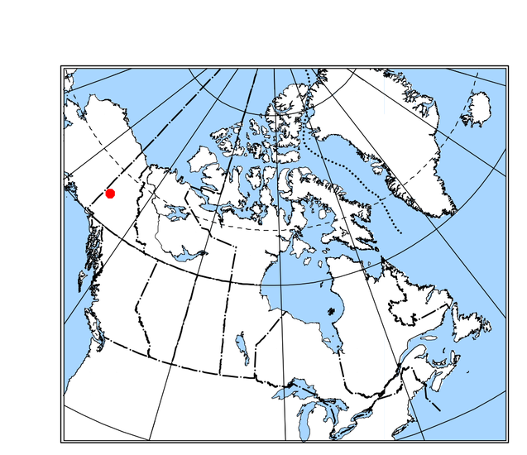
Data acquisition, data compilation and map production by Goldak Airborne Surveys, Saskatoon, Saskatchewan. Contract and project management by the Geological Survey of Canada, Ottawa, Ontario.

Scale 1:100 000
2000 0 2000 4000 6000
(metres)

NAD83 / UTM Zone 7N

Universal Transverse Mercator Projection
North American Datum 1983

Digital topographic data from Natural Resources Canada



LOCATION MAP

GEM-2

Canada

Yukon Energy, Mines and Resources

AEROMAGNETIC SURVEY OF THE DAWSON AREA

OPEN FILE
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2014

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2014-9
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116-C/15 and 116-C/16, Yukon;
Geological Survey of Canada, Open File 7641;
Yukon Geological Survey, Open File 2014-9,
Scale 1:100 000.