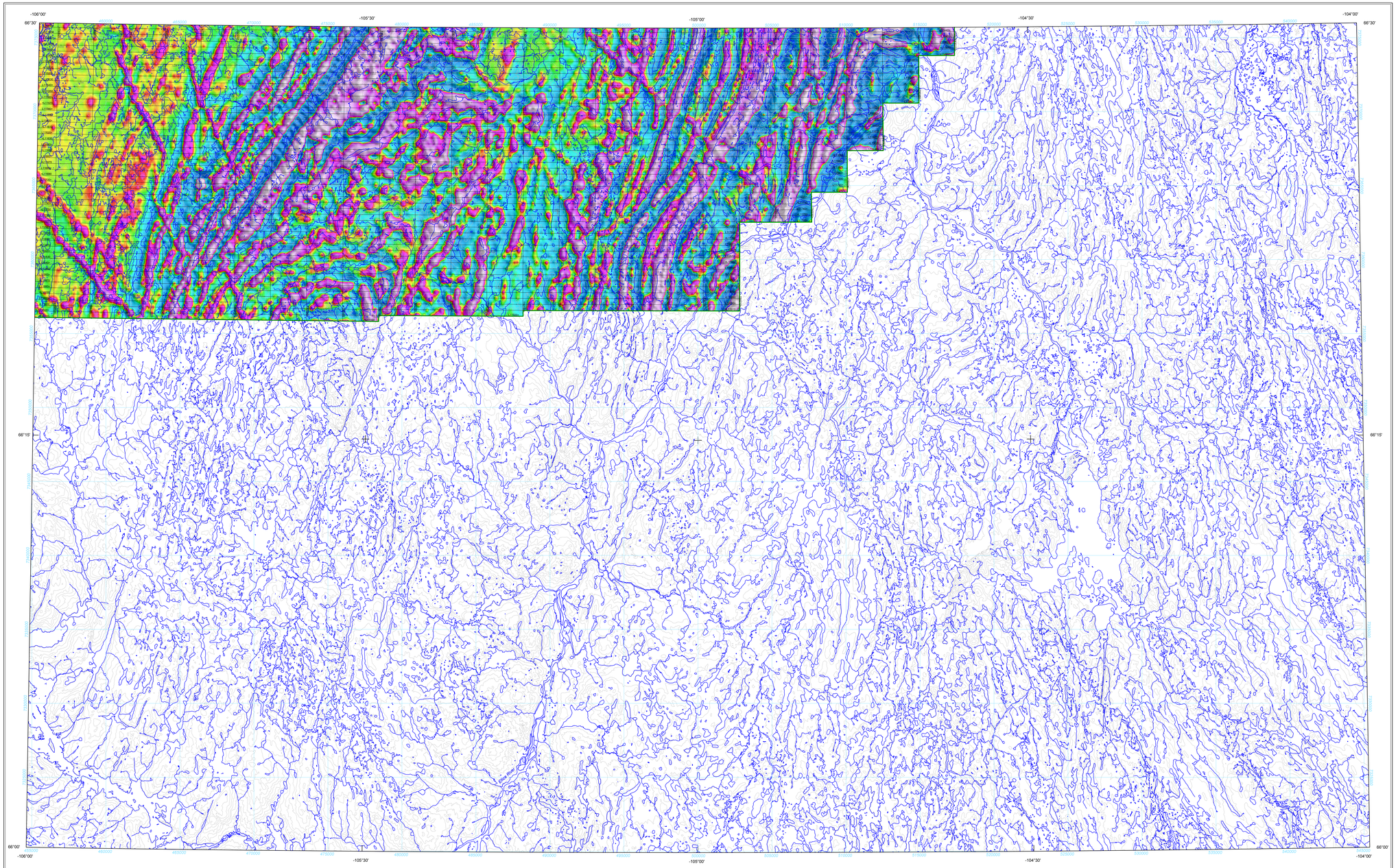
Natural Resources Canada | Ressources naturelles Canada

FIRST VERTICAL DERIVATIVE OF THE MAGNETIC FIELD

Celebrating 175 yrs



11.71
1.41
1.09
0.89
0.75
0.64
0.56
0.49
0.43
0.38
0.33
0.29
0.25
0.22
0.18
0.15
0.11
0.09
0.07
0.05
0.03
0.01
-0.01
-0.03
-0.05
-0.07
-0.09
-0.11
-0.13
-0.15
-0.17
-0.19
-0.21
-0.23
-0.25
-0.27
-0.30
-0.33
-0.36
-0.40
-0.45
-0.51
-0.58
-0.68
-0.80
-1.01
-3.70

nT/m

TOPOGRAPHIC CONTOUR INTERVAL: 30 METRES

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

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Data acquisition, data compilation and map production by
Geo Data Solutions GDS Inc., Laval, Quebec.
Contract and project management by
the Geological Survey of Canada, Ottawa, Ontario.
Cartographic design by A. Sayegh.
https://doi.org/10.4095/304675

Canada

GEOLOGICAL SURVEY OF CANADA OPEN FILE 8283

FIRST VERTICAL DERIVATIVE OF THE MAGNETIC FIELD

AEROMAGNETIC SURVEY OF THE OVERBY-DUGGAN AREA

Part of NTS 76-I South

NUNAVUT
Scale 1:100 000

2000 0 2000 4000 6000 metres

NAD83 / UTM zone 13N

Universal Transverse Mercator Projection
North American Datum 1983

Digital topographic data from Natural Resources Canada

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 Geo Data Solutions GDS Inc. from March 10, 2017 to March 28, 2017. The data were recorded using a split-beam cesium vapour magnetometer (sensitivity = 0.005 nT) mounted in the tail boom of a Beechcraft King Air 100 aircraft (C-FLRB). The nominal traverse and control line spacings were, respectively, 400 m and 2400 m, and the aircraft flew at a nominal terrain clearance of 150 m. Traverse lines were oriented N90°E with orthogonal control lines. The flight path was recovered following post-flight differential corrections to the raw Global Positioning System (GPS) 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 410 m for the year 2017.213 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).

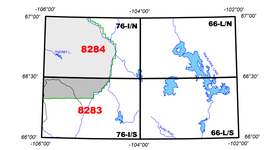
This publication is available for free download through GEOSCAN (http://geoscan.nrcan.gc.ca/). Corresponding digital profile and gridded data as well as similar data for adjacent airborne geophysical surveys are available from Natural Resources Canada's Geoscience Data Repository for Aeromagnetic data 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, 601 Booth Street, Ottawa, Ontario K1A 0E8. Telephone: (613) 995-5326, email: infogdc@agg.nrcan.gc.ca.

References

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

PLANIMETRIC SYMBOLS

Topographic contour .....
Drainage .....
Survey boundary .....
Flight line .....
< L14104
15200



NATIONAL TOPOGRAPHIC SYSTEM REFERENCE AND GEOPHYSICAL MAP INDEX

MAP LOCATION

AEROMAGNETIC SURVEY
OF THE OVERBY-DUGGAN AREA

OPEN FILE
DOSSIER PUBLIC
8283
GEOLOGICAL SURVEY OF CANADA
COMMISSION GEOLOGIQUE DU CANADA
2017

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Les publications de cette série ne sont pas révisées; elles sont publiées telles que soumises par l'auteur.

Recommended citation:
Coyle, M., 2017.
First vertical derivative of the magnetic field, Aeromagnetic Survey of the Overby-Duggan Area, Part of NTS 76-I South, Nunavut; Geological Survey of Canada, Open File 8283, scale 1:100 000. https://doi.org/10.4095/304675