

**First Vertical Derivative of the Magnetic Field**

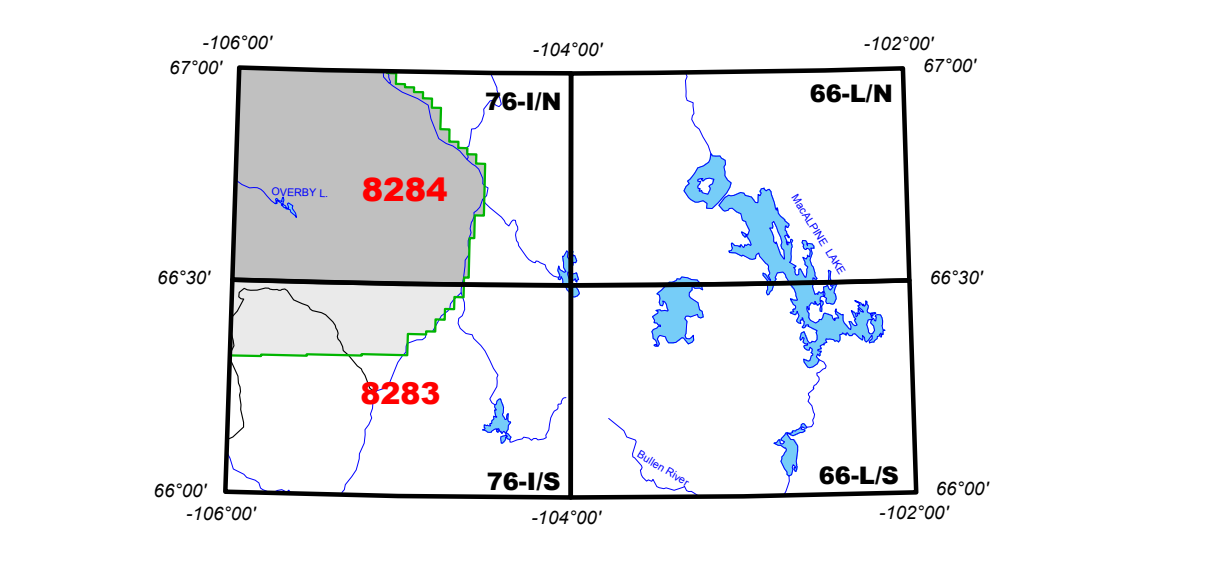
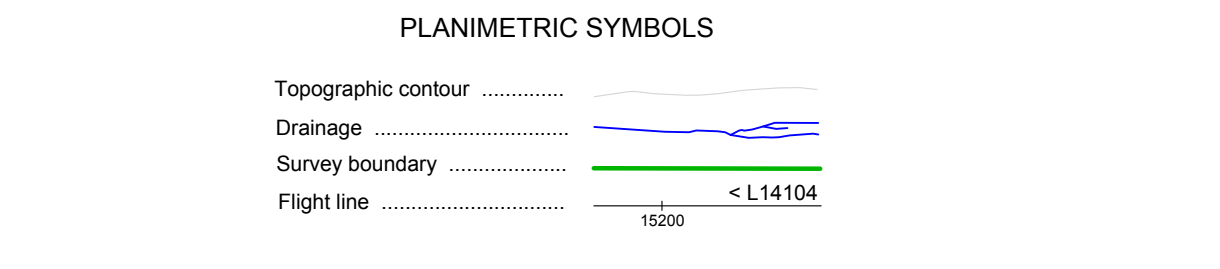
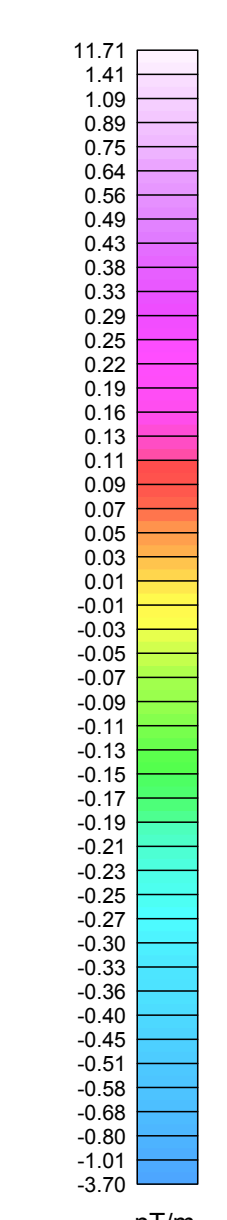
This map of the first vertical derivative of the magnetic field was derived from data acquired during an aeromagnetic survey carried out by Geo Data Solutions GDS Inc. from March 10, 2017 to March 23, 2017. The data were recorded using a split-beam cesium vapour magnetometer (sensitivity = 0.005 nT) mounted in the tail boom of a Beechcraft KingAir 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 N80°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://ftp.geoscan.nrcan.gc.ca/>. 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: [info@geoscan.gc.ca](mailto:info@geoscan.gc.ca).

**References**

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



TOPOGRAPHIC CONTOUR INTERVAL: 30 METRES

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GEOLOGICAL SURVEY OF CANADA OPEN FILE 8284

**FIRST VERTICAL DERIVATIVE OF THE MAGNETIC FIELD**

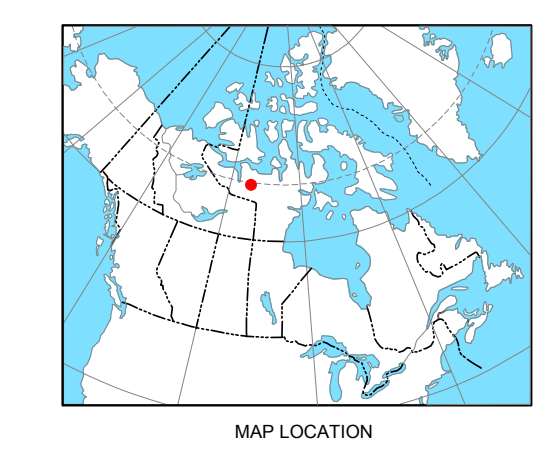
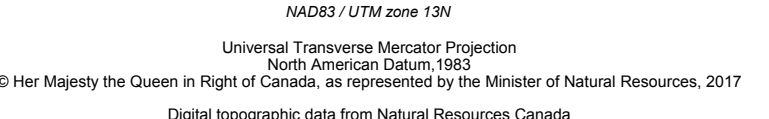
**AEROMAGNETIC SURVEY OF THE OVERBY-DUGGAN AREA**

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