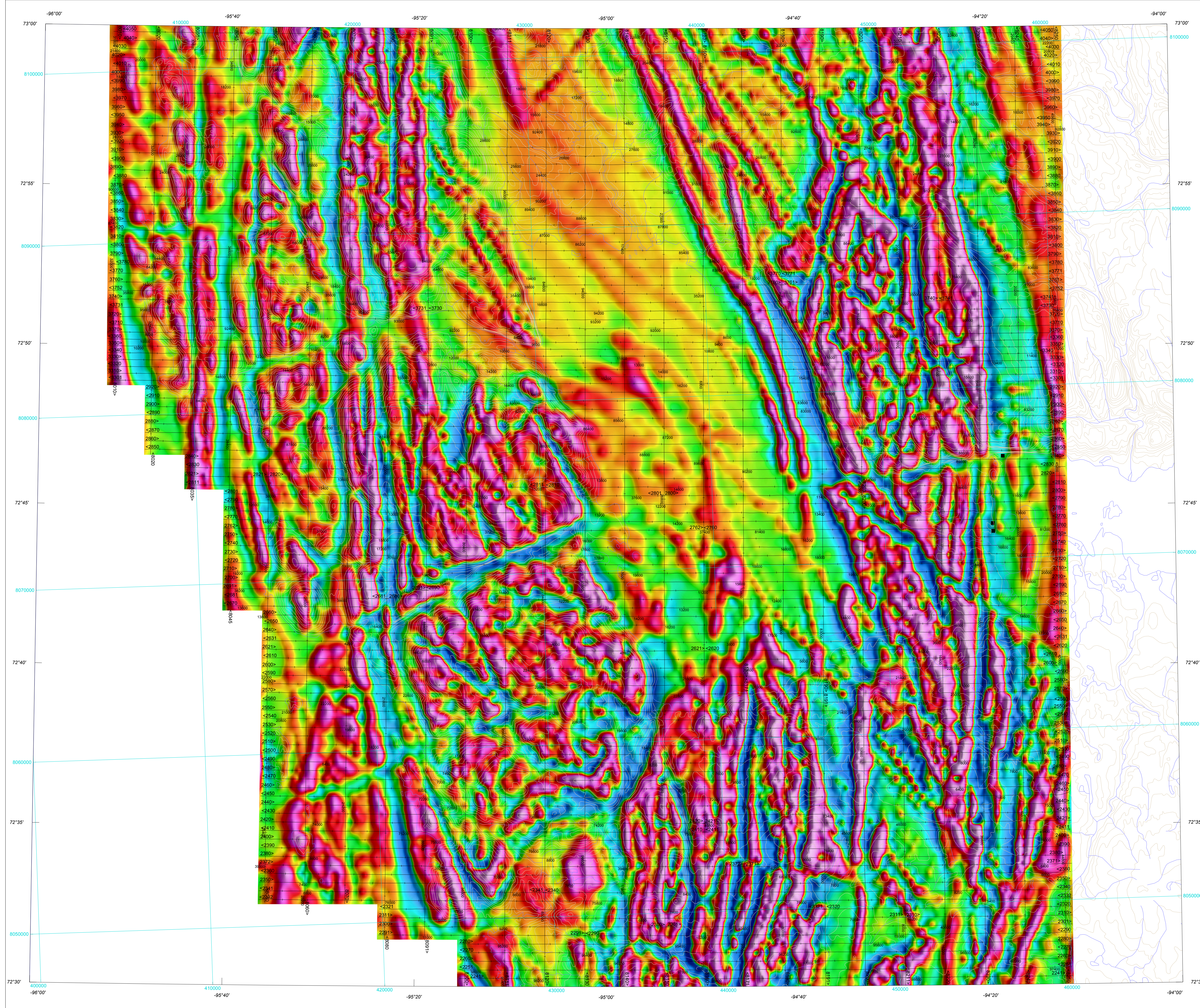


FIRST VERTICAL DERIVATIVE OF THE MAGNETIC FIELD



**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 EON Geosciences Inc. from May 20 to July 8, 2014. The data were recorded using split-beam cesium vapour magnetometers (sensitivity = 0.005 nT) mounted in each of the tail booms of a Piper Cheyenne II aircraft (C-GFON) and a Cessna 208 aircraft (C-FTPA). The nominal traverse line spacing was 400 m and 500 m. The nominal control line spacing was 2400 m. The aircraft flew at a nominal terrain clearance of 150 m. Traverse lines were oriented E-W with orthogonal control lines. The flight path was recovered following post-flight differential corrections to the raw Global Navigation 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-analyzed 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 399.88 m for the year 2014.465 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 GeoGratis portal at <http://geogratis.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://adp.gdp.nrcan.gc.ca/ndp/ndp\\_e.html](http://adp.gdp.nrcan.gc.ca/ndp/ndp_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: [gdpc@geogov.nrcan.gc.ca](mailto:gdpc@geogov.nrcan.gc.ca)

**Reference**

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 Geo-Mapping for Energy and Minerals program (GEM-2) of the Earth Sciences Sector, Natural Resources Canada.

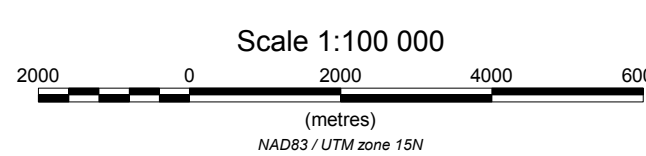
GEOLOGICAL SURVEY OF CANADA OPEN FILE 7671

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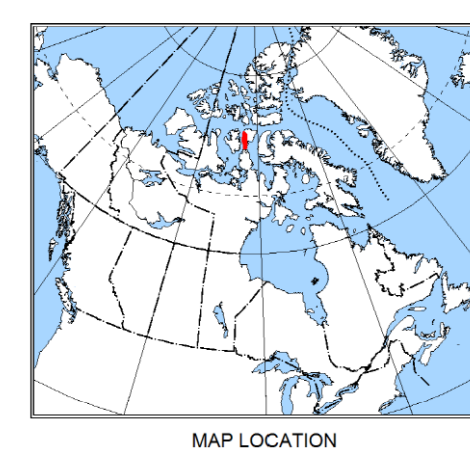
AEROMAGNETIC SURVEY OF SOMERSET ISLAND AREA

Parts of NTS 58-B/11, 12, 13 and 14 NUNAVUT

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Data acquisition and data compilation by EON Geosciences Inc., Montreal, Quebec. Contract and project management and map production by the Geological Survey of Canada, Ottawa, Ontario.



Universal Transverse Mercator Projection  
North American Datum 1983  
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