



FIRST VERTICAL DERIVATIVE OF THE RESIDUAL MAGNETIC FIELD

Lomond Map Area

(NTS 12H/05 and parts of 12G/08, 12H/06 and 12H/12)

MAP 2009-43
OPEN FILE NFLD/3058

G.J. Kilfoil and L.A. Cook

First Vertical Derivative of the Residual Magnetic Field

This map was derived from data acquired during an aeromagnetic survey carried out by Geo Data Solutions GDS Inc. The survey was flown during the period November 25, 2008 to March 30, 2009, using a Piper PA-31 Navajo aircraft, C-GCSA. The aircraft was equipped with three Geometrics cesium vapour magnetometers with a sensitivity of 0.005 nT, installed in the tail boom and wing pods. Total field data were sampled at 1 Hz. The nominal traverse and crossline spacings were, respectively, 200 m and 2000 m, and the aircraft flew at a nominal terrain clearance of 30 m. Traverse lines were oriented 145°N with orthogonal control lines. The flight path was recovered following post-flight differential corrections to the raw Global Positioning System 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 50 m grid.

The first vertical derivative of the residual 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 superimposed anomalies. A property of the first vertical derivative maps is the coincidence of the zero-value contour with vertical contacts at high magnetic latitudes (Hood, 1965).

Digital versions of this map can be downloaded, at no charge, from the Newfoundland and Labrador Resource Atlas (<http://gis.gov.nf.ca/>), and from the Geological Survey of Newfoundland and Labrador On-Line Open File page: <http://www.gov.nf.ca/mines/eng/geosurvey/publications/openfiles/>. Corresponding digital profile and gridded data for this survey, as well as for airborne surveys flown over adjacent areas, are also available from the Newfoundland and Labrador Resource Atlas.

Printed copies of this map may be obtained from the Geoscience Publication and Information Section, Geological Survey, Department of Natural Resources, Government of Newfoundland and Labrador, P.O. Box 8700, St. John's, NL, Canada, A1B 4J8.

Department: <http://www.nf.gov.nl.ca/nf/>
Geological Survey: <http://www.nf.gov.nl.ca/mines/eng/geosurvey/>
E-mail: pub@gov.nf.ca

OPEN FILE NFLD/3058
PUBLISHED 2009

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

Recommended Citation
Kilfoil, G.J. and Cook, L.A.
2009. First Vertical Derivative of the Residual Magnetic Field, Lomond Map Area (NTS 12H/05 and parts of 12G/08, 12H/06 and 12H/12), Aeromagnetic Survey - Corner Brook Area. Geological Survey, Department of Natural Resources, Government of Newfoundland and Labrador, Map 2009-43, Open File NFLD/3058, scale 1:50 000.

Maps released as part of Open File NFLD/3058 are (refer to index map below):

Map Area (NTS)	Residual Magnetic Field	First Vertical Derivative of the Resid. Mag. Field
Little Green Lakes (12A/12)	Map 2009-30	Map 2009-31
Corner Brook (12A/13)	Map 2009-32	Map 2009-33
Harry's River (12B/09)	Map 2009-34	Map 2009-35
Serpentine (12B/16)	Map 2009-36	Map 2009-37
Bay of Islands (12C/01)	Map 2009-38	Map 2009-39
Plaisance (12H/14)	Map 2009-40	Map 2009-41
Lomond (12H/05)	Map 2009-42	Map 2009-43

Note
Open File reports and maps issued by the Geological Survey Division of the Newfoundland and Labrador Department of Natural Resources are made available for public use without being formally edited or peer reviewed. They are based upon preliminary data and evaluation. The purchaser agrees not to provide a digital reproduction or copy of this product to a third party. Derivative products should acknowledge the source of the data.

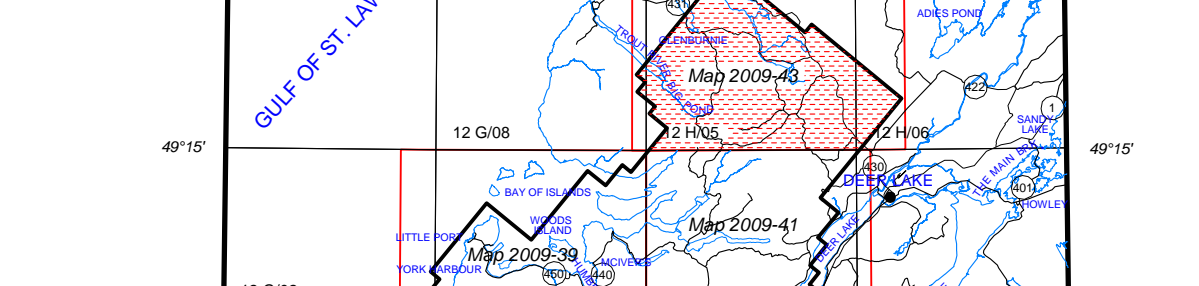
Disclaimer
The Geological Survey, a division of the Department of Natural Resources (the "authors and publishers"), retains the sole right to the original data and information found in any product produced. The authors and publishers assume no legal liability or responsibility for any alterations, changes or misrepresentations made by third parties with respect to these products or the original data. Furthermore, the Geological Survey assumes no liability with respect to digital reproductions or copies of original products or for derivative products made by third parties. Please consult with the Geological Survey in order to ensure originality and correctness of data and/or products.

PLANIMETRIC SYMBOLS

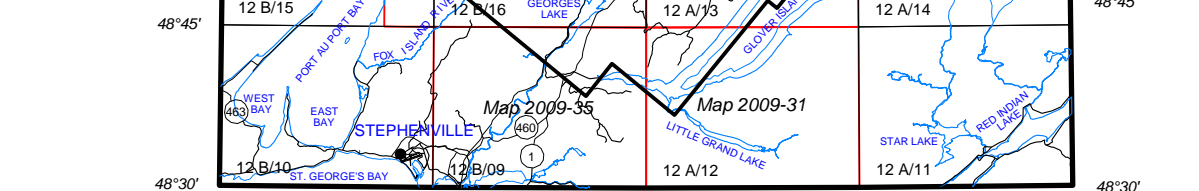
Topographic Contour	—
Power Line	—
Drainage	—
Road	—
Flight Line	—

Scale 1:50 000
NAD83 / UTM zone 21N

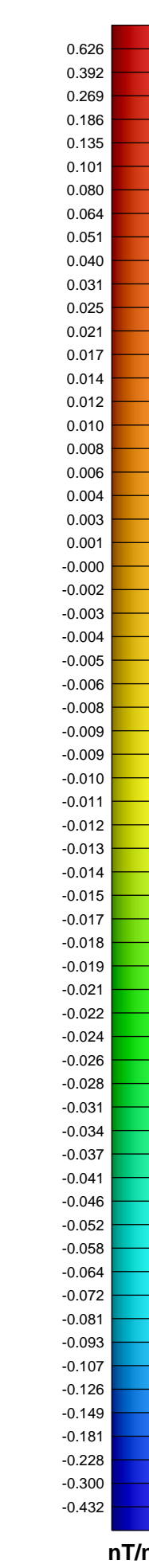
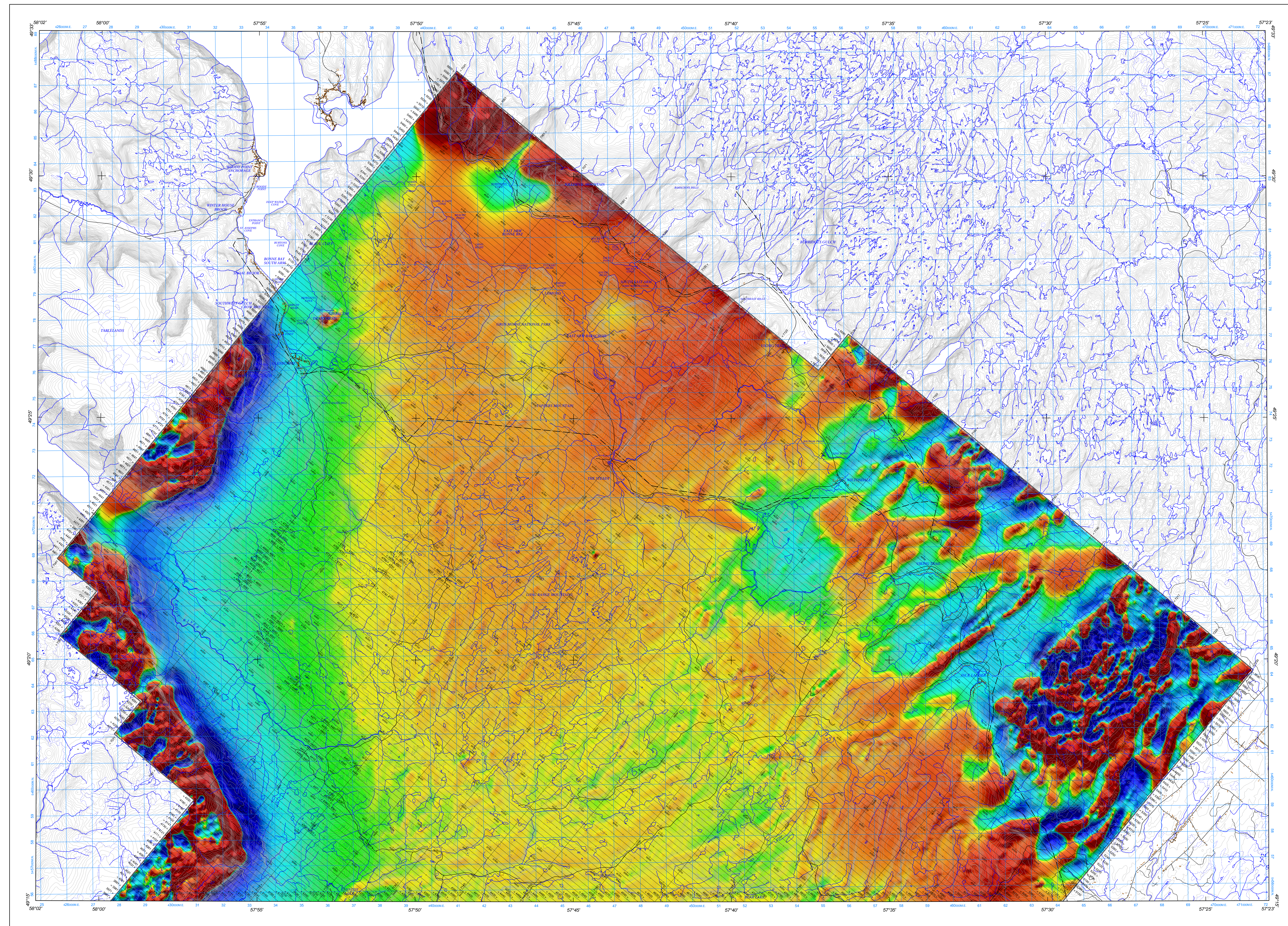
Digital Topographic Data provided by Geomatics Canada, Natural Resources Canada



MAP 2009-43
LOMOND - NTS 12H/05 and parts of 12G/08, 12H/06 and 12H/12



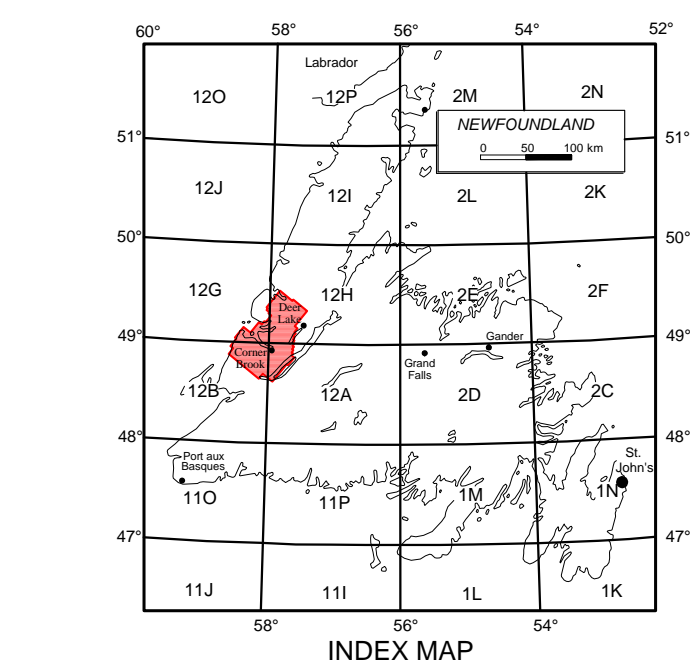
NATIONAL TOPOGRAPHICAL SYSTEM REFERENCE AND GEOPHYSICAL MAP INDEX



Compilation and map production by
Geo Data Solutions GDS Inc., Laval, Quebec.
Contract and project management by the
Newfoundland and Labrador Department of Natural Resources.

Scale 1:50 000
NAD83 / UTM zone 21N

Digital Topographic Data provided by Geomatics Canada, Natural Resources Canada



AEROMAGNETIC SURVEY - CORNER BROOK AREA