

**FIRST VERTICAL DERIVATIVE OF THE  
RESIDUAL MAGNETIC FIELD  
Deer Lake Map Area**

12A/13 (east) and 12A/14 (west)

MAP 2009-62  
OPEN FILE NFLD/3075

L.A. Cook and G.J. Kilfoil

**First Vertical Derivative of the Residual Magnetic Field**

This map was derived from data acquired during an aeromagnetic survey carried out by NOVATEM Inc. The survey was flown during the period October 1<sup>st</sup>, 2008 to May 16<sup>th</sup>, 2009, using a Cessna-185 aircraft C-FARU. The aircraft was equipped with two Geometrics cesium vapour magnetometers with a sensitivity of 0.005 nT, installed in wingtip pods. Total field data were sampled at 10 Hz. The nominal traverse and control-line spacing were, respectively, 200 m and 2000 m, and the aircraft flew at a nominal terrain clearance of 90 m. Traverse lines were oriented N50W 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 leveled set of flight-line magnetic data. The leveled 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.geosurv.gov.nl.ca/>), and from the Geological Survey of Newfoundland and Labrador On-Line Open File page: <http://www.nr.gov.nl.ca/mes&en/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.

Nalcor: <http://www.nalcorenergy.com/>  
Department of Natural Resources: <http://www.nr.gov.nl.ca/nr/>  
Energy Branch: <http://www.nr.gov.nl.ca/mes&en/>  
Geological Survey: <http://www.nr.gov.nl.ca/mes&en/geosurvey/>  
E-mail: [pub@nl.ca](mailto:pub@nl.ca)

OPEN FILE NFLD/3075

PUBLISHED 2009

**References**

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

**Recommended Citation**

Cook, L.A. and Kilfoil, G.J.  
2009. Aeromagnetic survey - Deer Lake area. Government of Newfoundland and Labrador, Department of Natural Resources, Open File NFLD/3075. First vertical derivative of the residual magnetic field, NTS areas 12A/13 and 12A/14, Map 2009-62, scale 1:50 000.

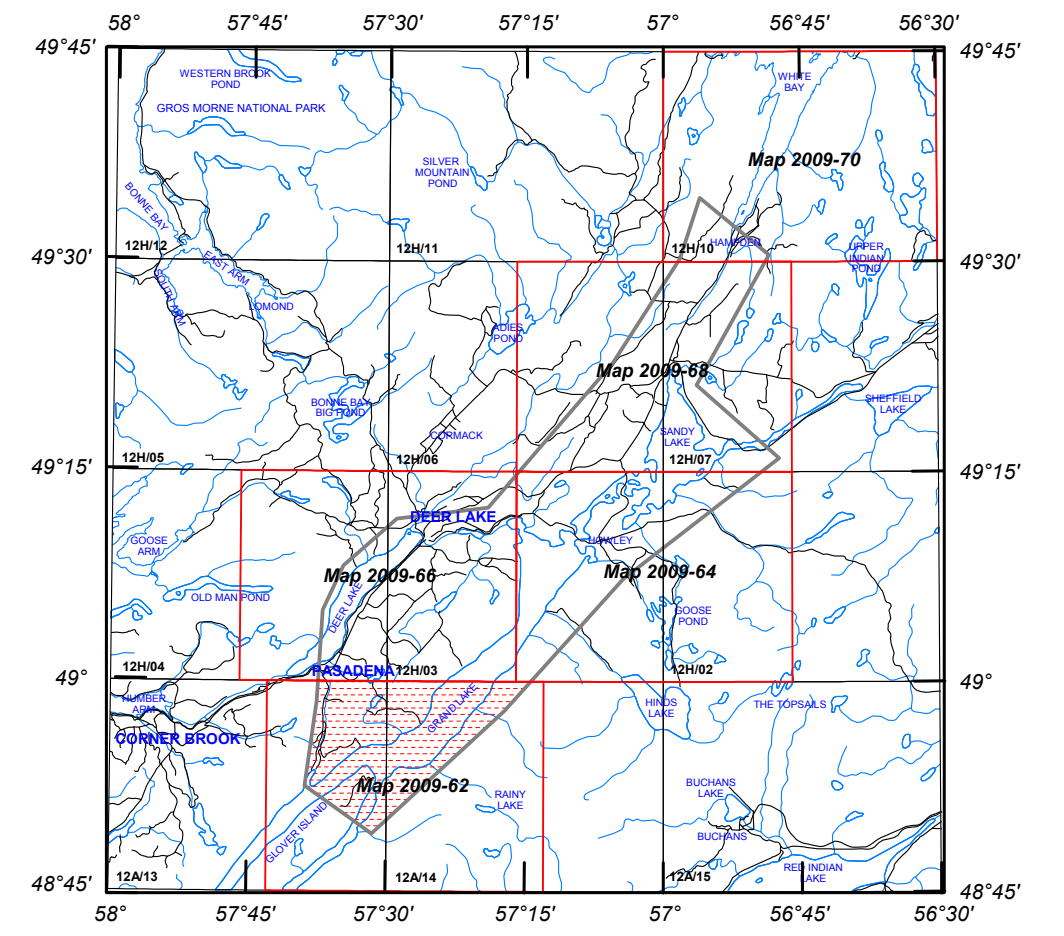
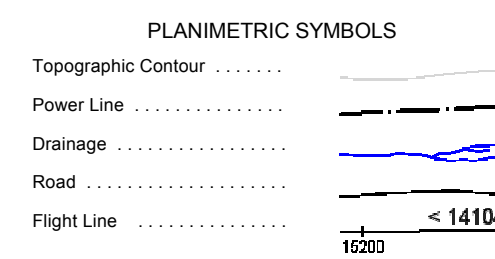
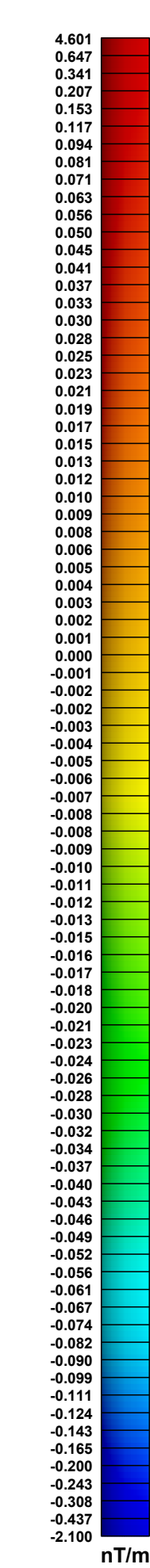
Maps released as part of Open File Open File NFLD/3075 are (refer to index map below):

Map Area (NTS)	Residual Magnetic Field	First Vertical Derivative of the Resid. Mag. Field
Corner Brook - Rainy Lake (12A/13 east, 12A/14 west)	Map 2009-61	Map 2009-62
The Topsails - Deer Lake (12H/02 west, 12H/03 east)	Map 2009-63	Map 2009-64
Deer Lake - Pasadena (12H/03 west, 12H/04 east)	Map 2009-65	Map 2009-66
Cormack - Sheffield Lake (12H/06 east, 12H/07 west)	Map 2009-67	Map 2009-68
Hampden (12H/10)	Map 2009-69	Map 2009-70

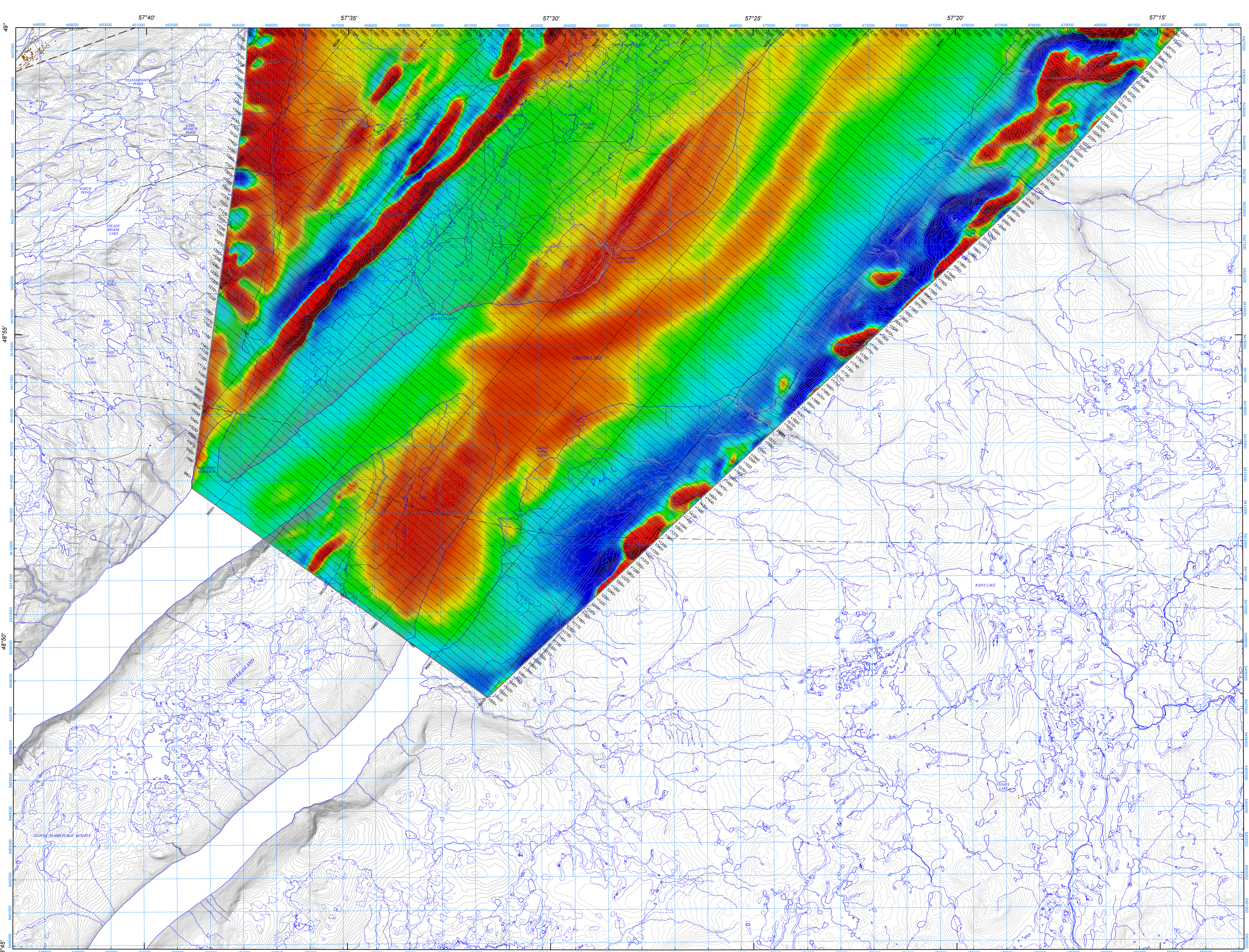
**Note**  
Open File reports and maps issued by the Petroleum Geoscience and the Geological Survey divisions of the Newfoundland and Labrador Department of Natural Resources, are made available for public use without being formally edited or peer reviewed. They are based upon preliminary data and evaluation. 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 Petroleum Geoscience and the Geological Survey divisions of the Department of Natural Resources (the "authors and publishers"), retain the right to the original data and information found in any product. 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 Petroleum Geoscience and Geological Survey divisions assume no liability with respect to digital reproductions or copies of original products or for derivative products made by third parties. Please consult with the Petroleum Geoscience and/or the Geological Survey divisions to ensure originality and correctness of data and/or products.



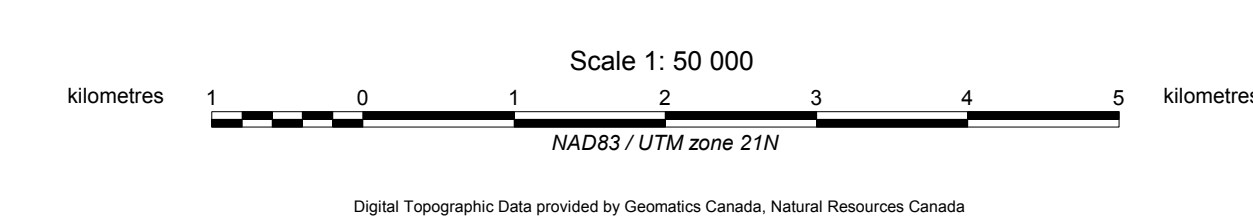
NATIONAL TOPOGRAPHICAL SYSTEM REFERENCE AND GEOPHYSICAL MAP INDEX  
AEROMAGNETIC SURVEY - DEER LAKE AREA



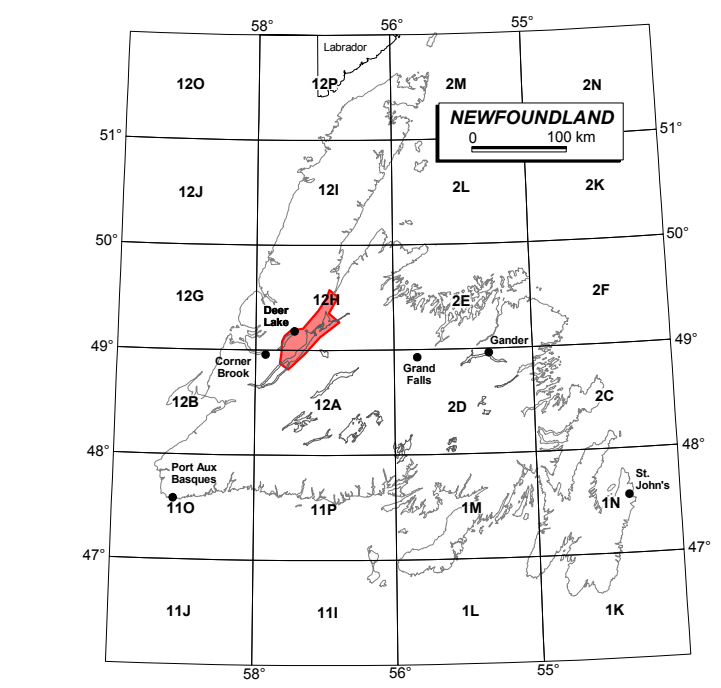
Compilation and map production by  
Novatem Inc., Mont-St-Hilaire, Quebec.  
Contract and project management by the  
Newfoundland and Labrador Department of Natural Resources.  
Funding for the aeromagnetic program was provided by  
Nalcor and the Newfoundland and Labrador  
Department of Natural Resources Energy Branch, through the  
Petroleum Exploration Enhancement Program (PEEP).



MAP 2009-62  
CORNER BROOK / RAINY LAKE - NTS 12A/13 (east) & 12A/14 (west)



Digital Topographic Data provided by Geomatics Canada, Natural Resources Canada



INDEX MAP