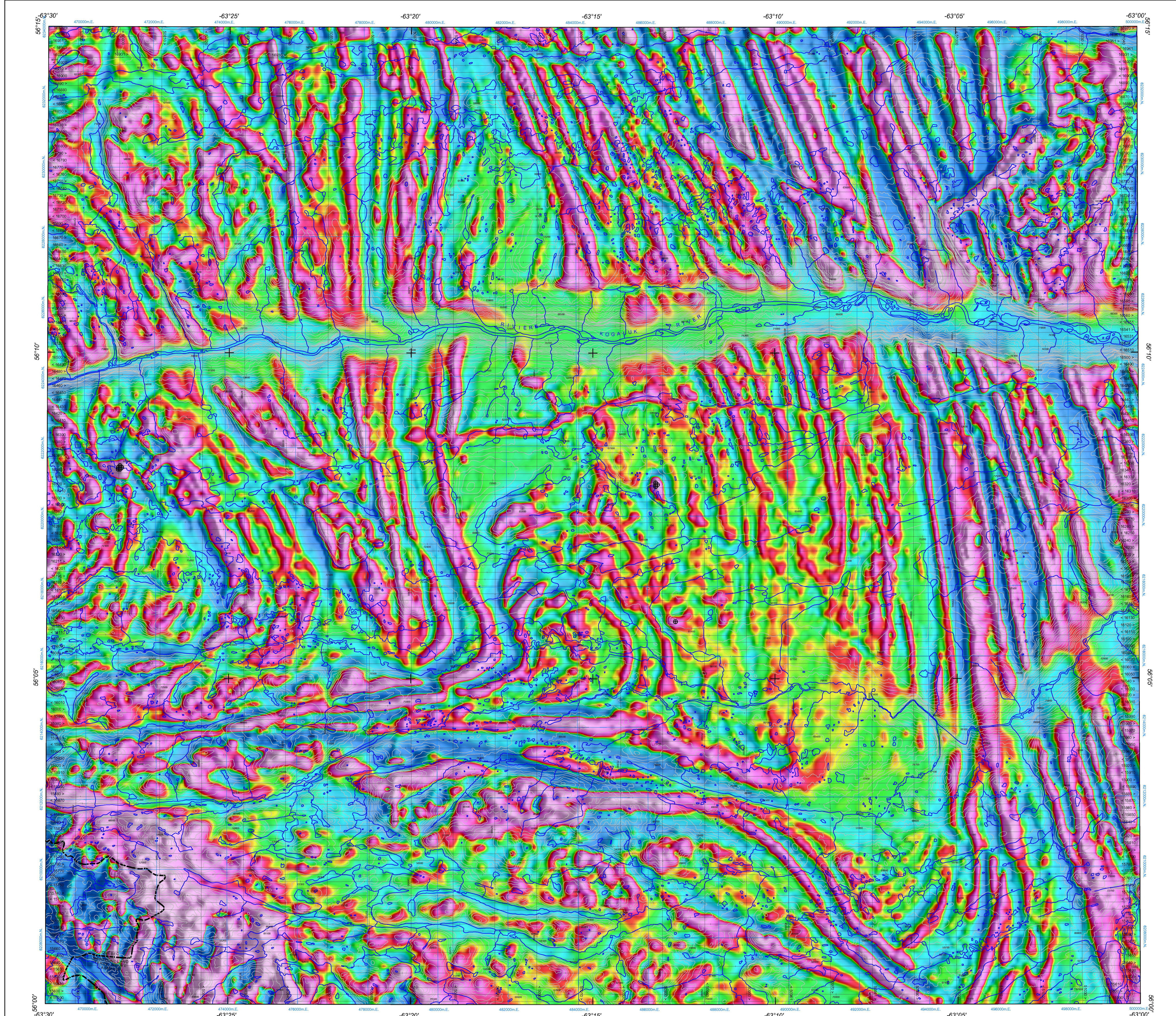


FIRST VERTICAL DERIVATIVE OF THE MAGNETIC FIELD

DÉRIVÉE PREMIÈRE VERTICALE DU CHAMP MAGNÉTIQUE



This aeromagnetic survey and the production of this map were jointly funded by the Geo-mapping for Energy and Minerals (GEM) program and the fourth phase of the Targeted Geoscience Initiative (TGI-4), which are programs of the Earth Sciences Sector, Natural Resources Canada. Ce levé aéromagnétique et la production de cette carte ont été financés conjointement par le programme géo cartographique de l'énergie et des minéraux (GEM) et la quatrième phase de l'initiative géoscientifique ciblée (TGI-4), qui sont des programmes du Secteur des sciences de la Terre, Ressources naturelles Canada.

GSC OPEN FILE 7160 / DOSSIER PUBLIC 7160 DE LA CGC
NEWFOUNDLAND AND LABRADOR DEPARTMENT OF NATURAL RESOURCES, GEOLOGICAL SURVEY OPEN FILE 014D/03/0326
MINISTÈRE DES RESSOURCES NATURELLES ET DE LA FAUNE DU QUÉBEC, DP 2012-05 C012

AEROMAGNETIC SURVEY MISTASTIN BATHOLITH
LEVÉ AÉROMAGNÉTIQUE DE LA RÉGION DU BATHOLITE DE MISTASTIN

NTS 14 D/3 / SNRD 14 D/3
QUEBEC AND NEWFOUNDLAND AND LABRADOR / QUÉBEC ET TERRE-NEUVE-ET-LABRADOR

FIRST VERTICAL DERIVATIVE OF THE MAGNETIC FIELD
DÉRIVÉE PREMIÈRE VERTICALE DU CHAMP MAGNÉTIQUE

Scale 1: 50 000 - Échelle 1/50 000

Authors: R. Dumont et A. Jones
Data acquisition and compilation des données et production des cartes par Geo Data Solutions GDS Inc., Laval, Québec.
Contract and project management by the Geological Survey of Canada, Ottawa, Ontario.

Authors: R. Dumont et A. Jones
Acquisition et compilation des données et production des cartes par Geo Data Solutions GDS Inc., Laval, Québec.
Gestion et supervision du projet par la Commission géologique du Canada, Ottawa (Ontario).



Universal Transverse Mercator Projection
Projection transverse universelle de Mercator
North American Datum 1983
Système de référence géodésique nord-américain 1983
© Her Majesty the Queen in Right of Canada 2012
© Le Ministre des Ressources Naturelles Canada 2012

Digital Topographic Data provided by Geomatics Canada, Natural Resources Canada
Données topographiques numériques de Géomatique Canada, Ressources naturelles Canada

First Vertical Derivative of the Magnetic Field

This map of the first vertical derivative of the magnetic field was compiled from data acquired during an aeromagnetic survey carried out by Geo Data Solutions GDS Inc. and Oracle Geoscience International during the period from February 16 to April 16, 2012. The data were recorded using a split-beam magnetometer (sensitivity = 0.005 nT) mounted in the tail boom of each of three Piper Navajo aircraft. The nominal traverse and control line spacing were respectively 200 m and 1 200 m, and the aircraft flew at a nominal terrain clearance of 80 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 Positioning System data and inspection of ground magres 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 International Geomagnetic Reference Field (IGRF) defined at an altitude of 116 m for the year 2012 was then removed. The result of the IGRF, representing the magnetic field and Earth's core, produces a residual component related essentially to the 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).

Keating Correlation Coefficients

This pattern recognition technique (Keating, 1965) for identifying roughly circular anomalies consists of computing the correlation coefficient, over a moving window, between a vertical cylinder model anomaly and the gridded magnetic data. Results are correlation coefficient envelopes of 80% were depicted as circular symbols, scaled to reflect the correlation value. The most favourable targets are those that exhibit a cluster of high correlation coefficients. The cylinder model parameters for this survey are as follows: diameter: 200 m; elliptic length: depth, 120 m; magnetic inclination: 76°N; magnetic declination: 23°W; window size: 1000 m x 1000 m.

Digital versions of this map can be downloaded, at no charge, from Natural Resources Canada's Geoscience Data Repository (MIRAGE) at <http://data.mnrc.gc.ca/mirage/>. 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 Aerogeophysics at <http://data.mnrc.gc.ca/aeromag/>. The same products are also available, for a fee, from the Geophysical Data Centre, Geological Survey of Canada, 615 Booth Street, Ottawa, Ontario K1A 0E8. Telephone: (613) 995-5326, email: info@dsagg.mnrc.gc.ca.

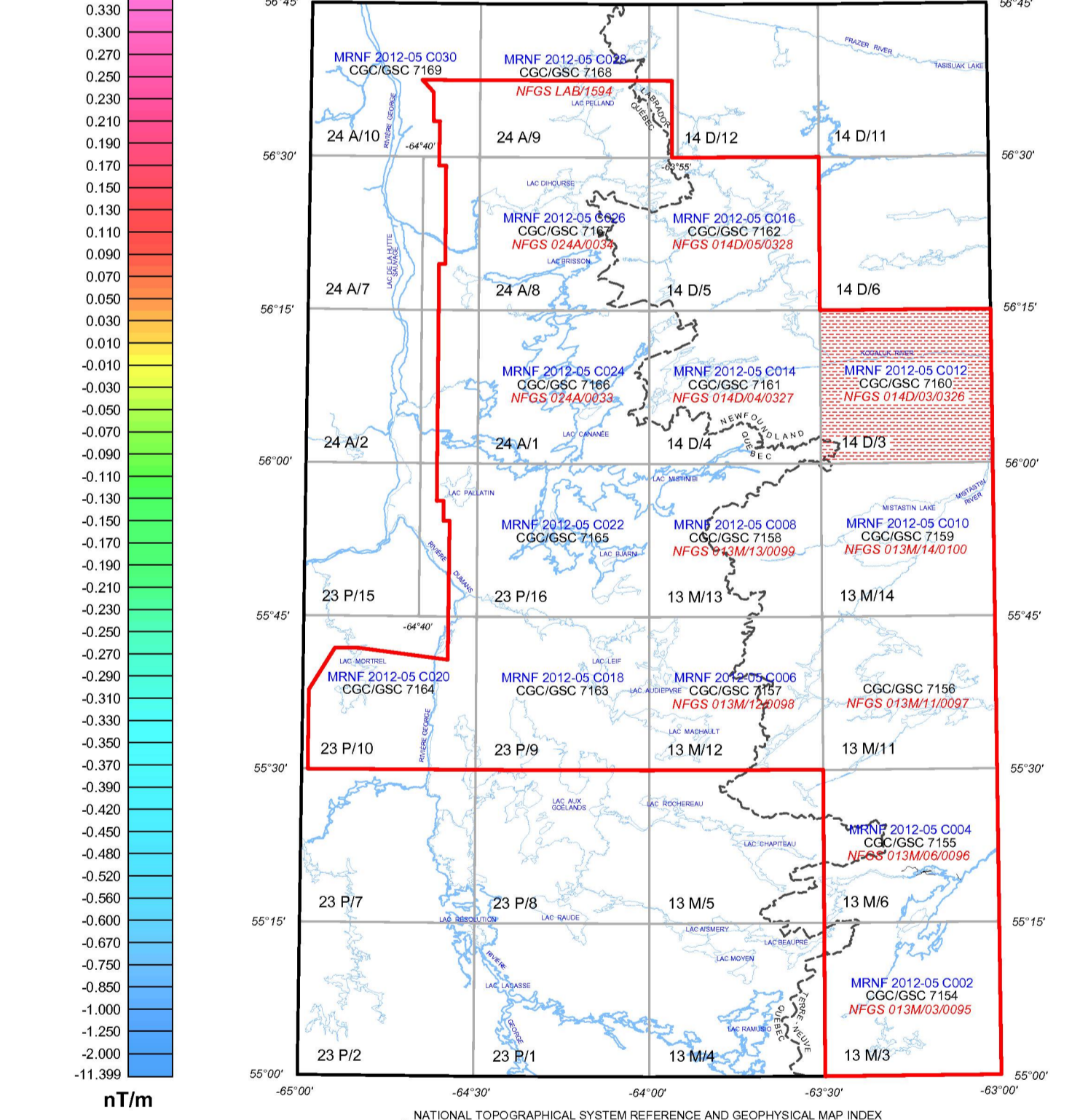
This map and the corresponding digital geophysical data may also be obtained from the Ministère des Ressources naturelles et de la Faune du Québec Web site's "Online Products and Services" page at <http://www.mnrl.gov.qc.ca/anglais/products-services/mnrc.jsp>.

A digital version of this map can also be downloaded, at no charge, from the Web site of the Department of Natural Resources, Newfoundland and Labrador, either on its Open File page at <http://www.gov.nl.ca/nr/mnrc/geosciencepublications/index.html> or on its Geoscience Online page at <http://gis.geosurvey.gov.ca/>.

References / Références

- Hood, P. J., 1965, Gradient measurements in aeromagnetic surveying: *Geophysics*, v. 30, p. 891-892.
- Keating, P., 1965, A simple technique to identify magnetic anomalies due to kimberlite pipes: *Exploration and Mining Geology*, v. 4, no. 2, p. 121-125.

<p>COEFFICIENTS KEATING</p> <p>Positive Correlation ⊕</p> <p>Negative Correlation ⊖</p>	<p>KEATING COEFFICIENTS</p> <p>⊕ Corrélation positive</p> <p>⊖ Corrélation négative</p>
<p>PLANIMETRIC SYMBOLS</p> <p>Topographic Contour ———</p> <p>Territory Boundary ———</p> <p>Drainage ———</p> <p>Road ———</p> <p>Flight Line ———</p>	<p>SYMBOLES PLANIMÉTRIQUES</p> <p>Contour de niveau ———</p> <p>Limite de territoire ———</p> <p>Drainage ———</p> <p>Road ———</p> <p>Line of flight ———</p>



AEROMAGNETIC SURVEY MISTASTIN BATHOLITH
LEVÉ AÉROMAGNÉTIQUE DE LA RÉGION DU BATHOLITE DE MISTASTIN

OPEN FILE
DOSSIER PUBLIC
7160
GEOLOGICAL SURVEY OF CANADA
COMMISSION GÉOLOGIQUE DU CANADA
2012

Newfoundland and Labrador Department of Natural Resources, Geological Survey Open File 014D/03/0326
Ministère des Ressources naturelles et de la Faune du Québec DP 2012-05 C012

Recommended citation:
Dumont, R. and Jones, A., 2012, Aeromagnetic Survey Mistastin Batholith, Geological Survey of Canada, Open File 7160, Newfoundland and Labrador Department of Natural Resources, Geological Survey Open File 014D/03/0326, Ministère des Ressources naturelles et de la Faune du Québec, DP 2012-05 C012, scale 1:50 000.

Notation bibliographique conseillée:
Dumont, R. et Jones, A., 2012, Levé aéromagnétique de la région du Batholite de Mistastin, SNRC 14 D/3, Québec et Terre-Neuve-et-Labrador, Commission géologique du Canada, Dossier public 7160, Newfoundland and Labrador Department of Natural Resources, Geological Survey Open File 014D/03/0326, Ministère des Ressources naturelles et de la Faune du Québec, DP 2012-05 C012, échelle 1:50 000.

MAP SHEET SUMMARY / SOMMAIRE DES FEUILLETS

Sheet / Feuille	MAP / CARTE
1-	Residual Total Magnetic Field Composante résiduelle du champ magnétique total
2-	First Vertical Derivative of the Magnetic Field Dérivée première verticale du champ magnétique