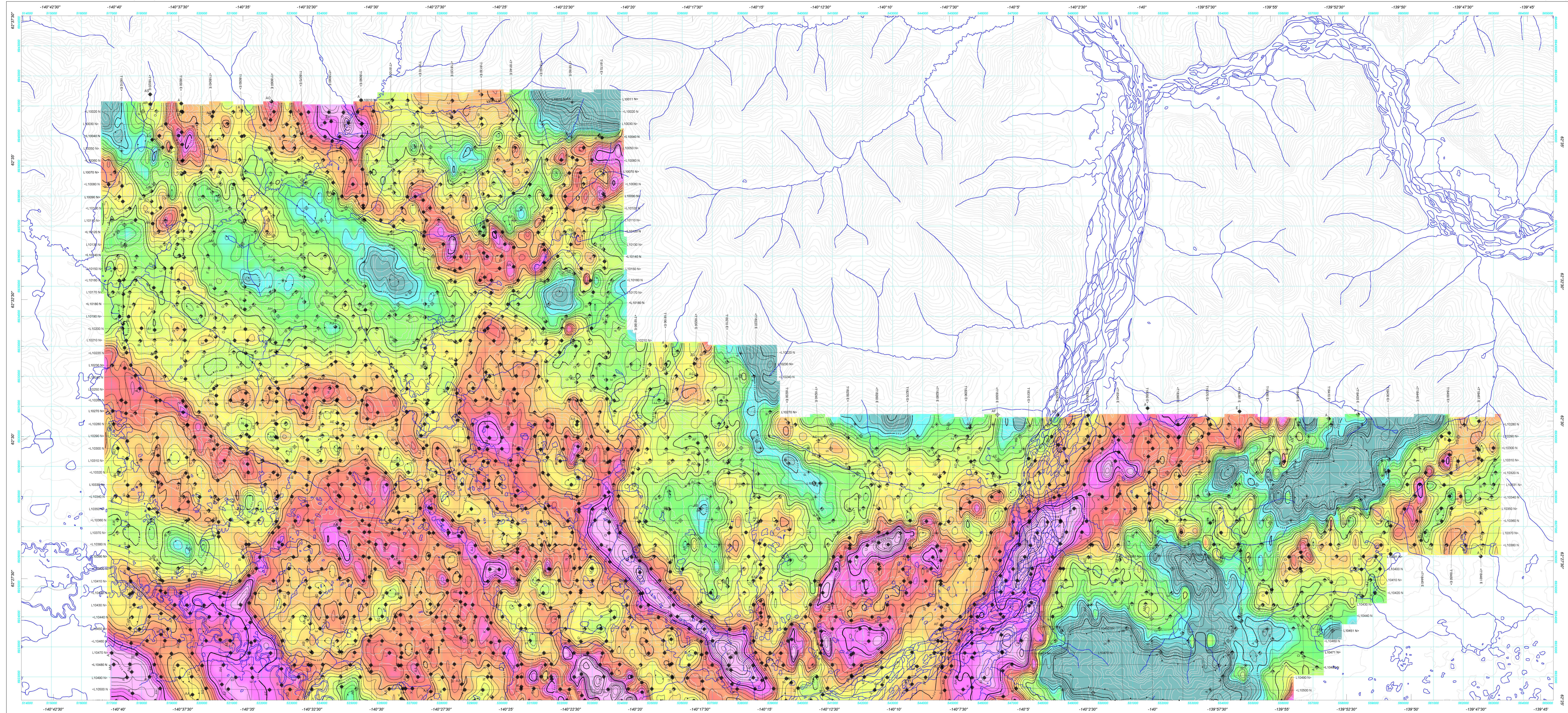


GEOPHYSICAL SERIES / SÉRIE DES CARTES GÉOPHYSIQUES



Funding for this project was provided through the Strategic Investments in Northern Economic Development (SINED) program of Indian and Northern Affairs Canada and the Geomapping for Energy and Minerals (GEM) Program of the Earth Sciences Sector, Natural Resources Canada. Project management and data quality control procedures were carried out by the Geological Survey of Canada (GSC) under the GEM Program.

Data from this survey will serve as part of the Yukon Geological Survey and the GSC's contribution to the Edges Project of the GEM Program.

Le projet est financé par le programme des investissements stratégiques dans le développement économique du Nord (SINED) d'Affaires Indiennes et du Nord Canada et le programme Géocartographie de l'énergie et des minéraux (GEM) du Secteur des sciences de la Terre de Ressources naturelles Canada. La Commission géologique du Canada (CGC) a assuré la gestion du projet et le contrôle de la qualité des données dans le cadre du programme GEM.

Les données ainsi produites feront partie de la contribution associée au projet Edges du programme GEM par la Commission géologique du Yukon et la CGC.

GSC OPEN FILE 6082 / DOSSIER PUBLIC 6082 DE LA CGC

YSG OPEN FILE 2009-2 / DOSSIER PUBLIC 2009-2 DE LA CGY

GEOPHYSICAL SERIES / SÉRIE DES CARTES GÉOPHYSIQUES

Parts of NTS / Parties des SNRC  
115 J15, 115 K7, 115 K8, 115 K9, 115 K10

MEGATEM® II SURVEY, CENTRAL STEVENSON RIDGE AREA, YUKON  
LEVÉ MEGATEM® II, RÉGION CENTRALE DE STEVENSON RIDGE, YUKON

ELECTROMAGNETIC DECAY CONSTANT (TAU-Z)  
CONSTANTE DE TEMPS ÉLECTROMAGNÉTIQUE (TAU-Z)

Scale 1:50 000 - Échelle 1/50 000

Projection géométrique universelle de Mercator  
Système de coordonnées géographiques: UTM  
Échelle à la source: 1:50 000  
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Projection géométrique universelle de Mercator  
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Digital versions of this map, corresponding digital profile and gridded data, and similar data for adjacent aeromagnetic surveys can be downloaded, at no charge, from Natural Resources Canada's Geoscience Data Repository for Aeromagnetic Data at <http://open.canada.ca/canadainfo>. 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) 995-5300, email: [info@gsd.nrc.ca](mailto:info@gsd.nrc.ca).

Digital versions of this map, corresponding digital profile and gridded data, may also be purchased from Geoscience Information and Sales, Yukon Geological Survey, Government of Yukon, P.O. Box 2703 (K102), Whitehorse, Yukon, Y1A 2C8. Telephone: (867) 967-5200, courriel: [gesales@gov.yk.ca](mailto:gesales@gov.yk.ca), website: <http://www.geology.gov.yk.ca/publications.html>.

Des versions numériques de cette carte, des données numériques correspondantes en format profil et en format maille sont aussi en vente au Géosciences Information and Sales, Commission géologique du Yukon, Gouvernement du Yukon, C.P. 2703 (K102), Whitehorse (Yukon) Y1A 2C8. Téléphone: (867) 967-5200, courriel: [gesales@gov.yk.ca](mailto:gesales@gov.yk.ca), site Internet: <http://www.geology.gov.yk.ca/publications.html>.

On peut télécharger gratuitement, depuis la section sur les Données aéromagnétiques de l'ENR/NTS de données géocentriques de Ressources naturelles Canada à l'adresse Web <http://open.canada.ca/canadainfo>, des versions numériques de cette carte, des données numériques correspondantes en format profil et en format maille ainsi que des données similaires issues des levés aéromagnétiques adjacents. On peut se procurer les mêmes produits, moyennant des frais, en s'adressant au Centre des données géophysiques de la Commission géologique du Canada, 615, rue Booth, Ottawa (Ontario) K1A 0E9. Téléphone: (613) 995-5300, courriel: [info@gsd.nrc.ca](mailto:info@gsd.nrc.ca).

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MAP LOCATION / LOCALISATION DE LA CARTE

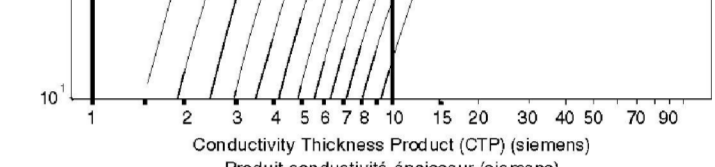
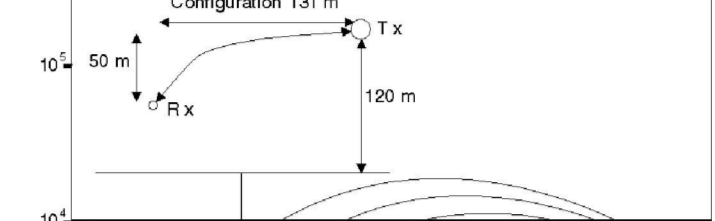
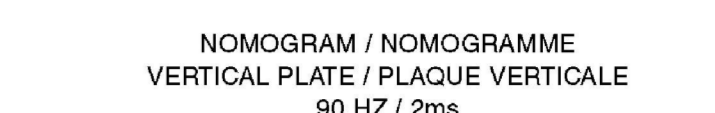
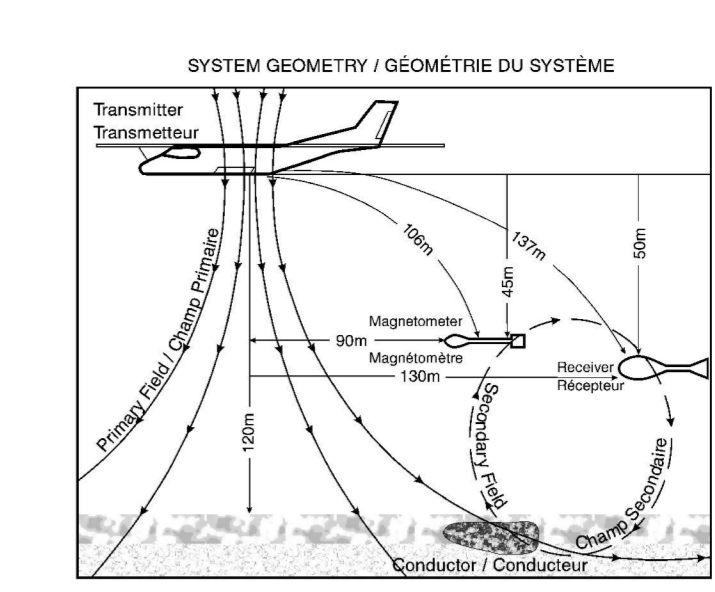


Table with 2 columns: Anomaly / Anomalie, Channels / Canaux. Lists symbols for cultural and anthropic anomalies.

Table with 2 columns: Isodecay Lines / Lignes isodécroissance. Shows symbols for 100, 50, and 25 microsecond contours.

Table with 2 columns: Planimetric Symbols / Symboles planimétriques. Lists symbols for roads, rivers, power lines, and drainage.

Table with 2 columns: Electromagnetic Anomaly Symbols / Symboles des anomalies électromagnétiques. Lists symbols for various types of anomalies.

Table with 2 columns: MEGATEM II Frequency (Hz), Peak Dipole Moment (Am²), Pulse Width (µs), Off Time (µs), Pulse Repetition (s⁻¹).

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DESCRIPTIVE NOTES

INTRODUCTION  
This map was compiled from data acquired during an airborne electromagnetic survey carried out by FUGRO AIRBORNE SURVEYS using a MEGATEM II time domain electromagnetic (EM) system. The system was mounted on a four engine De Havilland DASH 7 registration C-GJPI aircraft. The survey was carried out during the period from 23 September to 3 October 2008.

The traverse-lines were spaced 400 m and control-lines were 100 m apart. The aircraft flight-elevation was maintained at a nominal ground clearance of 100 m. Navigation was made possible by utilizing a 12-channel NovAtel dual frequency GPS receiver and the ChemSTAR differential service to correct position in real-time. Post-flight differential corrections were subsequently applied to determine final flight path position. A vertically mounted video camera was used to record images of the ground. The radar altitude was recorded ten times per second using a Sparco unit, and barometric altitude was recorded ten times per second using a Rosemount 1241H unit. The magnetic data were recorded 10 times per second using a Sotorex CS-2 cesium-vapor magnetometer.

The time domain EM system transmits a signal from a horizontal loop centered on the aircraft, and measures the response of buried conductors using a three axis (X, Y and Z) electromagnetic receiver towed below the aircraft. The EM system records 20 channels of data four times per second for each of the three components. The EM receiver measures dB/dt directly, from which the secondary total magnetic field is numerically integrated. The system was operated at 90 Hz.

RESIDUAL MAGNETIC FIELD MAP  
The magnetic data were corrected for diurnal variations, levelled to the control lines and interpolated onto a regular 100 metre grid, using the minimum curvature algorithm. The International Geomagnetic Reference Field (IGRF) was removed from the total magnetic field data using the model for the year 2005 extrapolated to 2008.7 and computed for a constant altitude of 819 metres.

APPARENT CONDUCTIVITY  
The apparent conductivity values were derived from the full 20 channels (on-time and off-time) of the Z coil data, fitted to a homogeneous half-space model. The algorithm first converts the response in every measurement window (on- or off-time) into an apparent conductivity. This is performed using a lookup table that contains the response over a range of half-space conductivities and apparent heights. The individual channel results are then averaged proportionally to their calculated skin depth.

EM DECAY CONSTANT  
The decay constant values were obtained by fitting the amplitude data from the Z coil channels 9 to 20 (approximately 231 to 2884 µs after turn-off) to an exponential function. In semi-log space, the slope of this function will reflect the decay rate of the transient field and therefore the strength of the conductivity. A slow rate of decay, reflecting a high conductivity, will be represented by a high decay constant value.

The computed decay constant values were then interpolated onto a regular 100 metre grid using an Akima spline algorithm. The grid was corrected for system asymmetry by attenuating the in-line hemisphere pattern common to towed, time-domain EM systems flown over flat-lying conductors.

FIRST VERTICAL DERIVATIVE OF THE MAGNETIC FIELD  
The first vertical derivative of the magnetic field was calculated by fast Fourier transform on the gridded total magnetic field with a grid cell size of 100 metres.

EM ANOMALIES  
The quantitative interpretation of the MEGATEM® II data was accomplished by comparing the resultant EM responses with type-curves obtained from mathematical models. The channel amplitude ratios of a given response were mainly a function of the conductivity of its source. The response magnitude varies with conductor depth and geometry. The reference nomogram for the survey is based on the response of a vertical plate, represented by a thin sheet having a 600 metre length and 300 metre depth extent, and with its upper edge located at ground surface. If the shape of a geological conductor differs significantly from a vertical plate, estimates will be inaccurate or, in extreme situations, meaningless. Therefore, caution should be exercised when making recommendations for drilling or other follow-up activities based on quantitative interpretation of airborne EM data. Different results will be obtained using other models for quantitative interpretation.

The MEGATEM® II system responds to conductive overburden, near-surface horizontal conductive layers, man-made sources and bedrock conductors. Identification of natural sources is based on the rate of transient decay, magnetic correlation and response shape, together with the response pattern and topography. Man-made responses are identifiable by examining the power line monitor and the flight track video.

MEGATEM® II SURVEY, CENTRAL STEVENSON RIDGE AREA, YUKON  
LEVÉ MEGATEM® II, RÉGION CENTRALE DE STEVENSON RIDGE, YUKON

MAP SHEET SUMMARY / SOMMAIRE DES FEUILLETS

Table with 2 columns: GSC / CGC Sheet / Feuille, MAP / CARTE. Lists sheet numbers and titles.

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Recommended Citation:  
Dumont, R., 2009.  
Geophysical Series, parts of NTS 115 J15, 115 K7, 115 K8, 115 K9, 115 K10.  
MEGATEM® II Survey, Central Stevenson Ridge Area, Yukon.  
Geological Survey of Canada, Open File 6082.  
Yukon Geological Survey, Open File 2009-2.

Notation bibliographique conseillée:  
Dumont, R., 2009.  
Série des cartes géophysiques, parties des SNRC 115 J15, 115 K7, 115 K8, 115 K9, 115 K10.  
Levé MEGATEM® II, région centrale de Stevenson Ridge, Yukon.  
Commission géologique du Canada, Dossier public 6082.  
Commission géologique du Yukon, Dossier public 2009-2.  
Échelle 1:50 000.

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