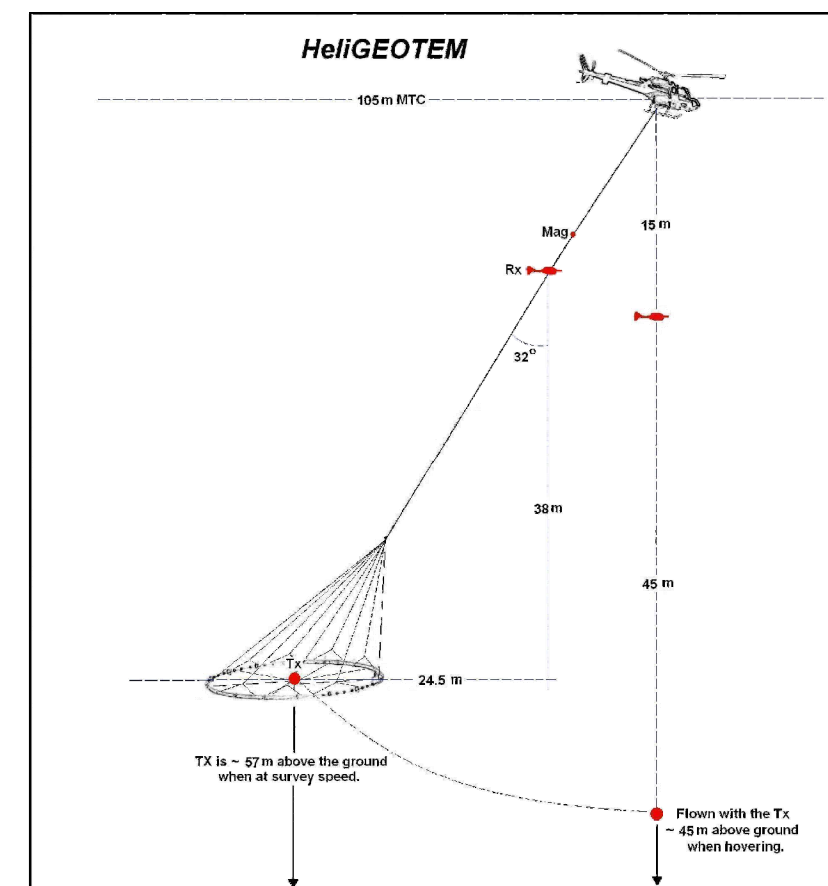
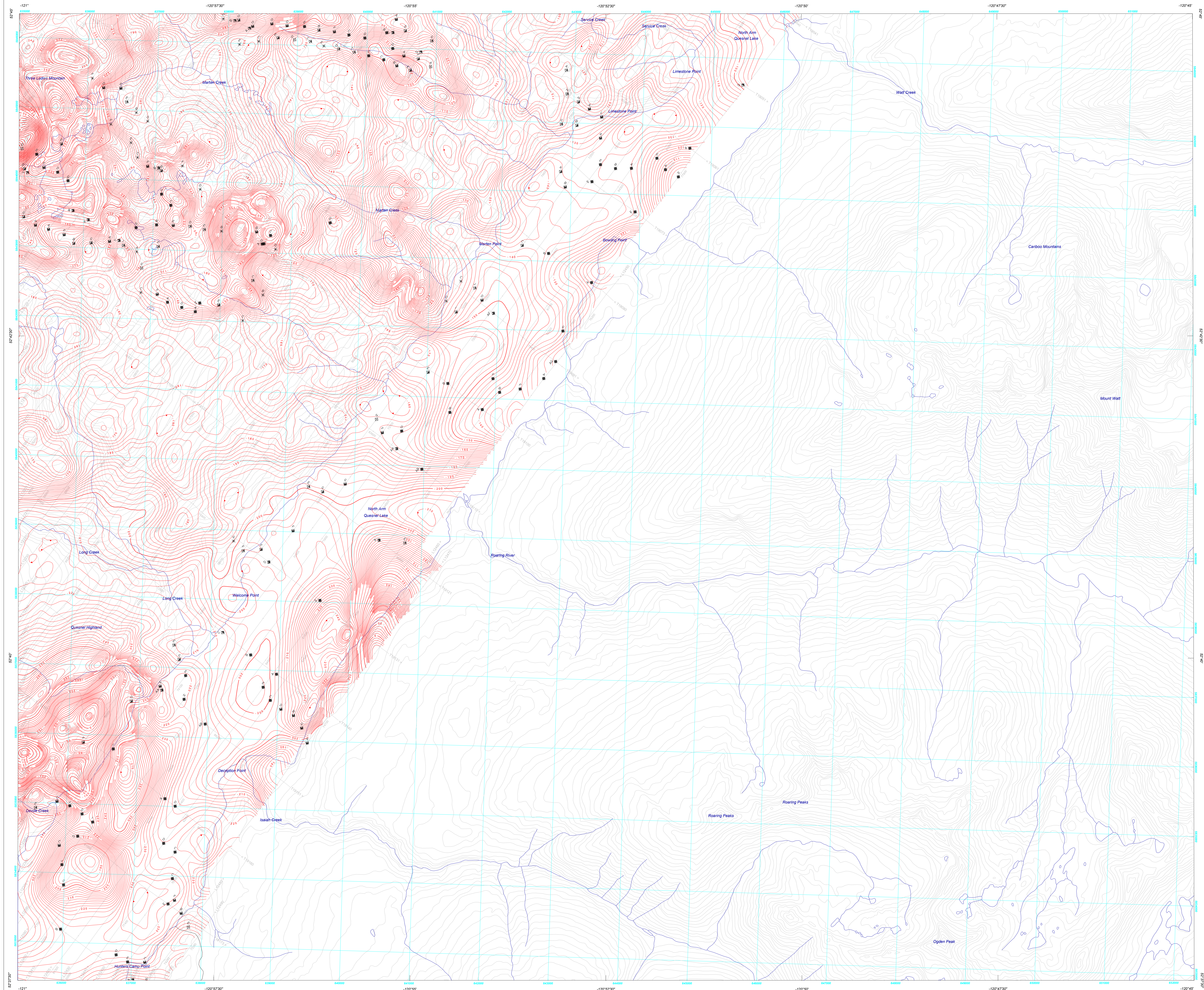


GEOPHYSICAL SERIES / SÉRIE DES CARTES GÉOPHYSIQUES
TIME DOMAIN ELECTROMAGNETIC ANOMALIES / ANOMALIES ÉLECTROMAGNÉTIQUES DANS LE DOMAINE DU TEMPS



DESCRIPTIVE NOTES

INTRODUCTION
This map was compiled from data acquired during an airborne electromagnetic/magnetic survey carried out by FUGRO AIRBORNE SURVEYS using two HeligoTEM® time domain electromagnetic (EM) systems. The system used consisted of two AS350-B3 (registration C-FIDA and C-FQDA) helicopters. The survey was carried out during the period from February 15, 2009 to May 22, 2009.

The traverse lines were spaced 200 m and control lines were 1000 m apart. The traverse line spacing was offset by 100 m over the mineral occurrence (Frank Creek and Asa). The aircraft flight-elevation was controlled by a pre-determined drag surface to maintain an optimum speed in order to keep the transmitter and the receiver above the terrain. Navigation was done by using a 12-channel NovAtel dual frequency GPS receiver and the OmniSTAR differential service to correct position in real time. Post-flight differential corrections were subsequently applied to determine final flight path points. A vertically mounted video camera was used to record images of the ground. The radar altimeter was recorded ten times per second using a Sercos unit, and the apparent altitude was recorded ten times per second using a Rosemount 1241M unit. The magnetic data were recorded 10 times per second using a Scripps CS-2 deltam-vapor magnetometer.

The time domain EM system transmits a pulse from a horizontal loop towed below and behind the aircraft, and measures the response of buried conductors (Frank Creek and Asa). The receiver is a magnetometer towed below the aircraft ahead and above the transmitter. 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 B 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 50 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 2009.25 and computed for a constant altitude of 1561 metres.

APPARENT CONDUCTANCE
The apparent conductance values were derived from the full 20 channels (on-line and off-line) of the Z coil data, fitted to a thin sheet model. The algorithm first converts the response in every measurement window (on- or off-line) into an apparent conductance. This is performed using a look-up table that contains the response over a range of thin sheet conductances and altimeter heights. The individual channel results are then averaged proportionally to their coiled scan depth.

EM DECAY CONSTANT
The decay constant values were obtained by fitting the amplitude data from the Z-coil channels 08 to 20 (approximately 100 m above the ground) to an exponential function. In so doing, the slope of this function will reflect the decay rate of the transmitted 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 50 metre grid using an Akima spline algorithm. The grid was corrected for system asymmetry by reference to the north-south hemisphere pattern common to towed-bird, 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 50 metres.

EM ANOMALIES
The EM anomalies identified on the map correspond to the peak of the measured response measured from the dB/dt Z component. The coding of the symbols reflects the number of channels deflected above the background (based on the last 12 channels of the off-line record) and the amplitude of a reference channel is also shown. The reader should be aware that, depending on the altitude of the conductive source, the peak of the anomaly as shown, does not necessarily correspond to the axis of the conductor.

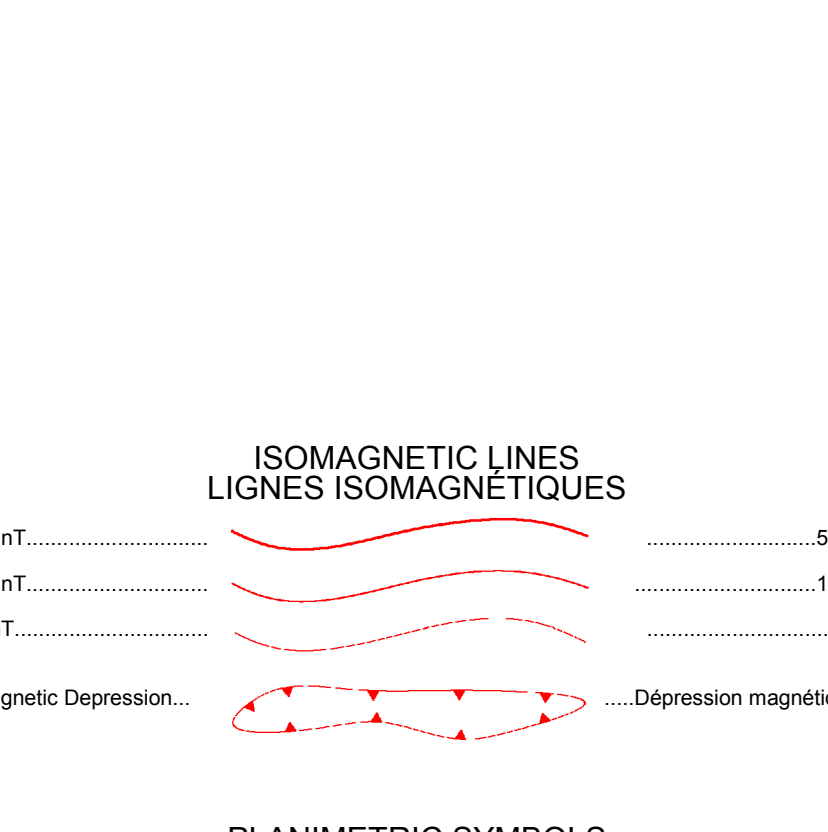
The HeligoTEM® system responds to conductive overburden, near-surface horizontal conductive layers, man-made sources and bedrock conductors. Identification of natural conductors is based on the relative decay, magnetic correlation and response shape, together with the response pattern and topography.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

ELECTROMAGNETIC ANOMALY SYMBOLS / SYMBOLES DES ANOMALIES ÉLECTROMAGNÉTIQUES

Anomaly / Anomalie	Channels / Canaux
Surficial / Superficielle	1-2
Cultural / Anthropique	3-4
	5-6
	7-8
	9-10
	11-12

Anomaly details / Détails de l'anomalie

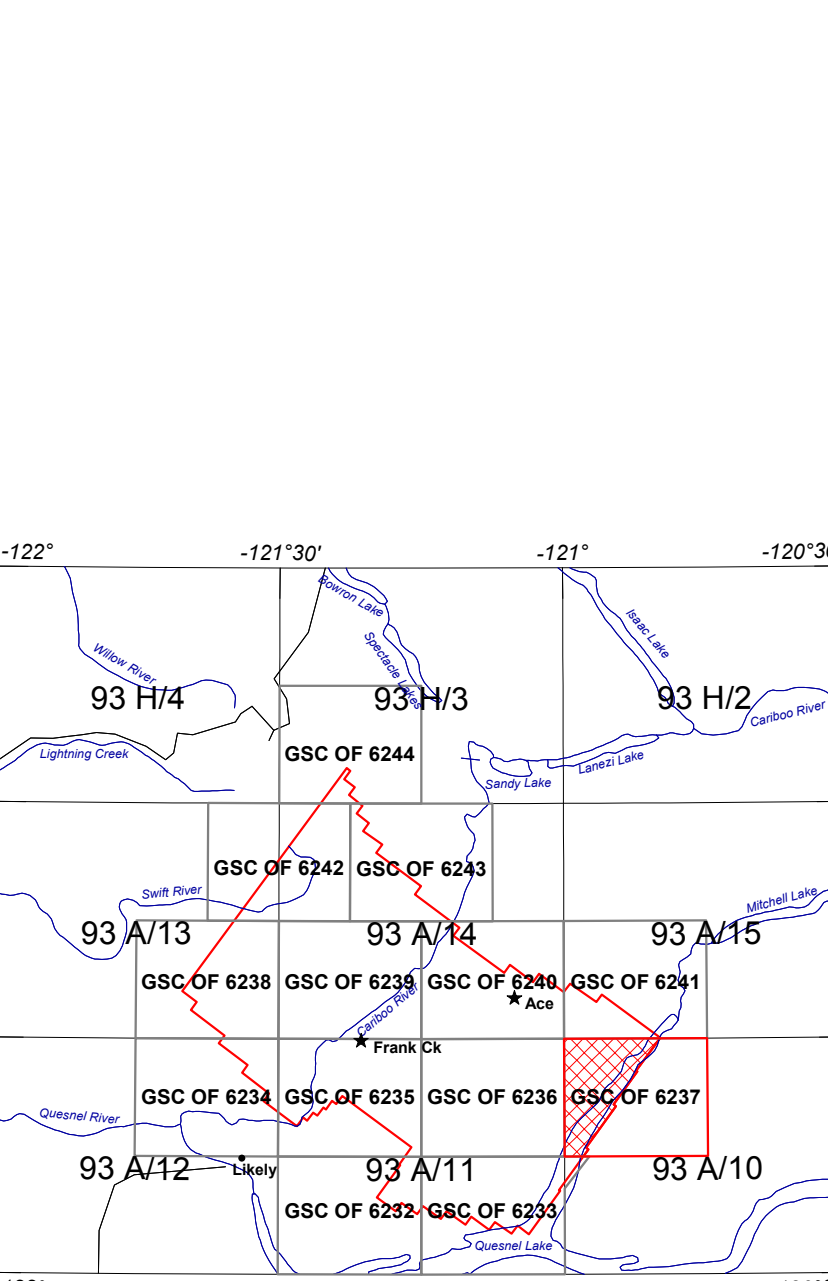
Culture response / Réponse anthropique



DERIVÉE PREMIÈRE VERTICALE DU CHAMP MAGNÉTIQUE
La dérivée première verticale du champ magnétique a été calculée par transformée rapide de Fourier sur une grille du champ magnétique total dont la maille était de 50 m de côté.

ANOMALIES EM
Les anomalies EM identifiées sur la carte correspondent à l'apex de la réponse mesurée par la bobine en Z de la composante dB/dt. Le codage des symboles reflète le nombre de canaux défectifs (basé sur les 12 derniers canaux de la période du temps-mort). L'altitude d'un canal de référence est aussi indiquée. Le lecteur est avisé que, dépendant de l'altitude de la source conductrice, le sommet de la réponse tel qu'indiqué ne représente pas nécessairement la position de l'axe du conducteur.

The HeligoTEM® system responds to conductive overburden, near-surface horizontal conductive layers, man-made sources and bedrock conductors. Identification of natural conductors is based on the relative 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.



This airborne geophysical survey and the production of this map were funded by the Geoscience for Mountain Pine Beetle Program of the Earth Sciences Sector.

Digital versions of this map can be downloaded, at no charge, from Natural Resources Canada's Geoscience Data Repository (GDR/GDC) at <http://drift.dr.gc.ca/gdr/gdr.asp>. 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://drift.dr.gc.ca/gdr/gdr.asp>. 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) 995-5320, email: info@gdc.nrcan.gc.ca.

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L'acquisition, la compilation des données ainsi que la production des cartes furent effectuées par Fugro Airborne Surveys, Ottawa, Ontario.
La gestion et la supervision du projet furent effectuées par la Commission géologique du Canada, Ottawa, Ontario.

GSC OPEN FILE 6237 / DOSSIER PUBLIC 6237 DE LA CGC

TIME DOMAIN ELECTROMAGNETIC ANOMALIES / ANOMALIES ÉLECTROMAGNÉTIQUES DANS LE DOMAINE DU TEMPS

HELIOTE™ SURVEY OF CARIBOO LAKE / LEVÉ HELIOTE™ DE CARIBOO LAKE

NTS 93 A/10 NW
SNRC 93 A/10 NW
BRITISH COLUMBIA / COLOMBIE-BRITANNIQUE

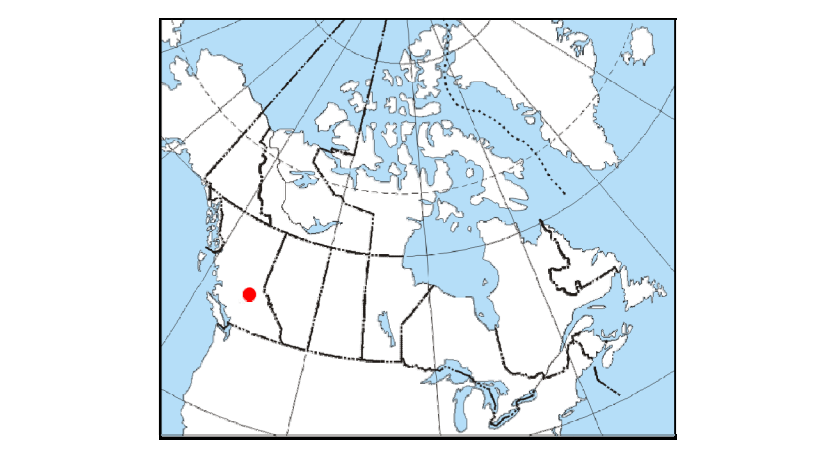
Scale 1:20 000 - Échelle 1/20 000

HELIOTE™ Survey of Cariboo Lake / Levé Heliote™ de Cariboo Lake

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Geological Survey of Canada / Commission géologique du Canada

2009



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Scale 1:20 000.