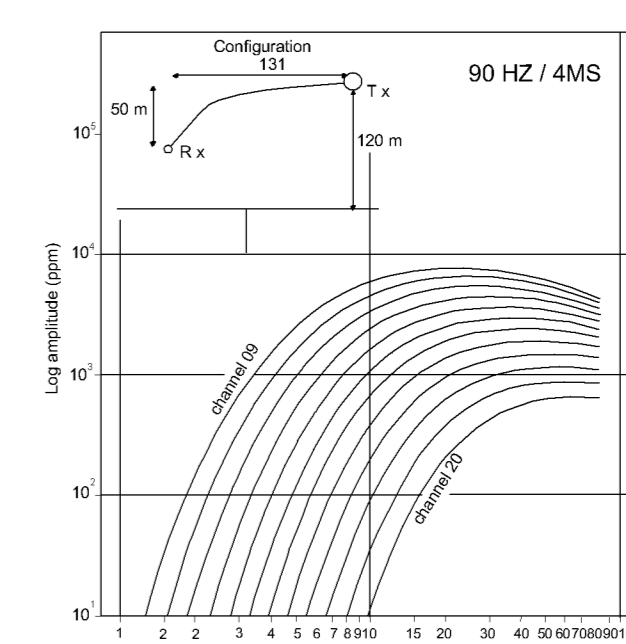


LEGEND
ELECTROMAGNETIC ANOMALY SYMBOLS

Anomaly	Conductance Classification
●	> 50 siemens
●	30 - 50 siemens
●	20 - 30 siemens
●	10 - 20 siemens
●	5 - 10 siemens
●	1 - 5 siemens
○	surficial conductor
□	cultural response

VERTICAL PLATE NOMOGRAM



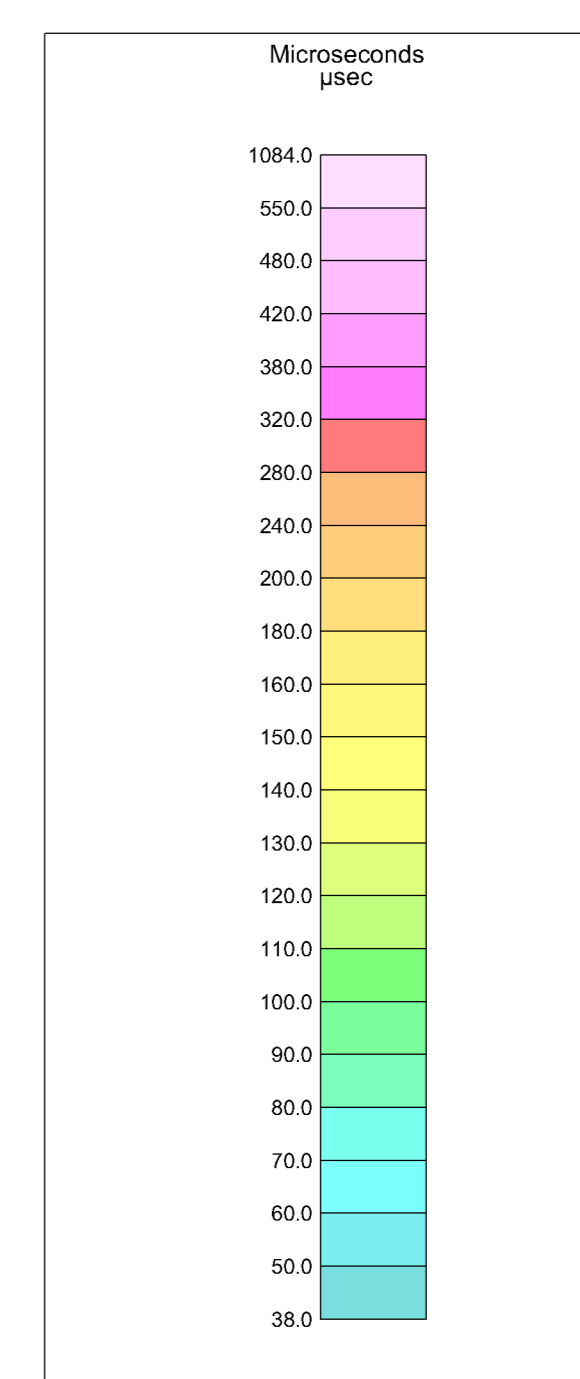
DECAY CONSTANT (TAU)

□	5 µsec
□	20 µsec
□	100 µsec
□	500 µsec
□	Decay constant low

OTHER SYMBOLS

—	Drainage
—	Hydroelectric power line
—	Railway line
—	Highway or main road
—	Trail
—	Township or Provincial Park boundary
—	Cultural features

DECAY CONSTANT GRID



DESCRIPTIVE NOTES

Introduction

The aircraft is equipped with the Fugro Airborne Surveys (formerly Geometrics) GEOTEM® airborne EM system, a cesium-vapour magnetometer, a GPS navigation system and a GeODAS digital data acquisition system. GEOTEM® is a high-power, time-domain EM system with a vertical-axis transmitter loop centred on the airplane. A three-axis (X, Y and Z) electromagnetic receiver and the magnetometer trail the aircraft in separate towed birds.

EM Decay Constant

The decay constant values were obtained by fitting the amplitude data from the X-coil channels 8 to 18 (89 to 2539 µsec after turn-off) to an exponential function. In semi-log space, the slope of this function will reflect the decay rate of the transient 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 40 m grid using an Akima spline algorithm. The grid was corrected for system asymmetry to attenuate the line-to-line herringbone pattern common to towed-bird, time-domain EM systems flown over flat-lying conductors.

EM Anomalies

The quantitative interpretation of the GEOTEM® data is accomplished by comparing the resultant EM responses with type-curves obtained from mathematical model studies. The channel amplitude ratios of a given response are mainly a function of the conductance of its source. The response magnitude varies with conductor depth and geometry. The reference nomogram for the survey is a vertical plate, produced from a thin sheet model with 600 m strike length and 300 m depth extent, located at ground surface. If the shape of a geological conductor significantly differs from a vertical plate, all estimates become 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 electromagnetic data. Different results will be obtained using other models for quantitative interpretation.

The GEOTEM® system will respond to conductive overburden, near-surface horizontal conducting layers, man-made sources and bedrock conductors. Identification of natural conductors 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.

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SURVEY PARAMETERS

AIRCRAFT
Type: CASA 212-200
Registration: C-FDMM

MAGNETOMETER
Type: Scintrex CS-2 cesium-vapour
Sensitivity: 0.01 nT
Noise level: 0.20 nT
Sample interval: 10 readings/second
Bird location: 45 m below and 80 m behind centre of aircraft

ELECTROMAGNETIC SYSTEM
Type: GEOTEM® III
Base frequency: 90 Hz
Current waveform: half-sine
Peak dipole moment: $4.85 \times 10^7 \text{ Am}^2$
Pulse width: 2.083 µsec
Off-time: 3.305 µsec
Pulse repetition: 180 per second
Measured parameters: X, Y and Z-components of the B-field and dB/dT
Noise levels: X-coil - 3500 pT/s, Z-coil - 2000 pT/s
Sample interval: 4 readings/second (128 per pulse for half-wave data)
Bird location: 51 m below and 131 m behind centre of aircraft

NAVIGATION SYSTEM
GPS receiver: Sercel NR 103
GPS sample interval: 1 reading/second
Radar altimeter: King KRA405
Radar sample interval: 2 readings/second
Barometric altimeter: Rosemount 1241M
Barometric sample interval: 1 reading/second
Video flight path recorder: Panasonic WV-C3302
Digital acquisition system: GeoDAS
Analog chart recorder: RMS GR32

BASE STATION
Magnetometer: Scintrex CS-2 cesium-vapour
Magnetometer sample interval: 2 readings/second
GPS receiver: Sercel NR 103
GPS sample interval: 1 reading/second

SURVEY SPECIFICATIONS

Survey date: January 8 to 18, 2000
Nominal aircraft terrain clearance: 120 m
Transverse line spacing: 200 m
Control line spacing: 1500 m
Transverse line direction: 0°
Control line direction: 190°

COORDINATE SYSTEM

Projection: Universal Transverse Mercator
Datum: NAD27 (NAD 27)
Central meridian: 81°00' W (UTM zone 17N)
Central scale factor: 0.9996
False easting: 500 000 m
False northing: 0 m
*The geographical data was collected using the UTM NAD83 datum (WGS84 ellipsoid), then reprojected to the NAD27 datum (NAD83, Ontario mean) and finally shifted 0.8 m east and 5.5 m south to best approximate the OSM topographic base.

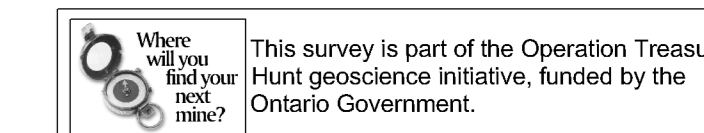
CREDITS

Data acquisition, data compilation and map production by Fugro Airborne Surveys, Ottawa, Ontario.

Contract management, base maps and map surrounds by the Ministry of Northern Development and Mines, Sudbury, Ontario.

Project management and quality assurance by Paterson, Grant & Watson Limited, Toronto, Ontario.

To enable the rapid dissemination of information, this map has been made available in a technical pdf. Every possible effort has been made to ensure the accuracy of the information presented; however, the Ontario Ministry of Northern Development and Mines does not assume liability for any errors that may occur. Users can verify critical information from the corresponding digital profile, grid and EM anomaly data distributed by the Ontario Geological Survey.



Magnetic declination in 2000 for the centre of the map area is 12°4' W, with an annual variation of 1" E. Magnetic inclination in 2000 for the centre of the map area is 74°3' N.

Issued 2000.

Information from this publication may be quoted if credit is given. It is recommended that reference be made in the following form:

Ontario Geological Survey 2000. Airborne magnetic and electromagnetic surveys, EM decay constant and electromagnetic anomalies, Temagami area, Ontario Geological Survey, Map 82 072, scale 1:50 000.

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1 cm equals 10 km