

ZTEMTM

Z-AXIS TIPPER
ELECTROMAGNETIC SYSTEM

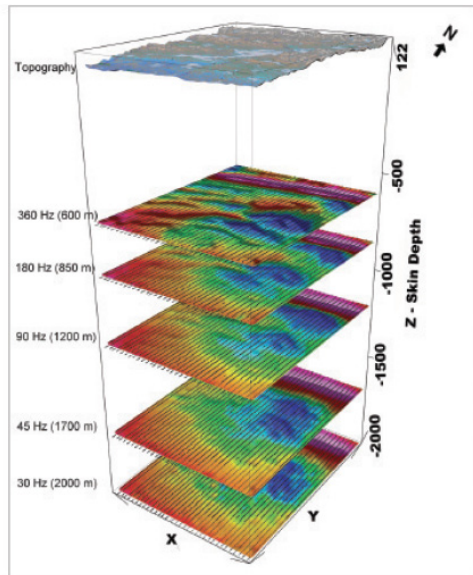
Unique in the geophysical exploration industry, Geotech's exclusive ZTEMTM (Z-Tipper Axis Electromagnetic) system leverages the earth's natural fields from global thunderstorm activity as a source of transmitted energy. ZTEMTM is ideal for mapping deeply buried, porphyry hosted and structurally controlled targets.



FEATURES & BENEFITS

Helicopter flown ZTEM™ (Z-axis Tipper Electromagnetic) system is operated in a similar method as the well known VTEM™ (Versatile Time-Domain Electromagnetic) system, but rather than inducing a secondary field the way the VTEM™ transmitter does, the ZTEM™ uses the natural or passive fields of the Earth's worldwide thunderstorm activity as the source of transmitted energy. These natural fields are planar and due to the manner in which they propagate, are horizontal. Any vertical field response is caused by the lateral conductivity contrasts in the Earth and is measured by the ZTEM™.

The vertical EM field is remotely referenced to the horizontal base station coils positioned within the survey area. The proprietary receiver design, along with new advances made in modern digital electronics and signal processing, allows the ZTEM™ to acquire data at exceptionally low-noise levels. This makes the ZTEM™ an effective deep resistivity mapping solution, unique among airborne EM methods.



- ZTEM™ data is closely related to resistivity/conductivity mapping of the subsurface
- Passive EM technique — source of the primary field signal is naturally occurring audio frequency magnetic fields from worldwide thunderstorm activity
- Frequency range — “audio range” Geotech’s airborne AFMAG can operate from 30 to 720 Hz (depending on signal strength)
- Superior exploration depth — often exceeds 2000 m from numerical simulation
- Low frequency 30 Hz for penetration through conductive cover
- Excellent resistivity discrimination and detection of weak anomalies due to the nature of the natural EM fields
- System is easily transportable — can be disassembled for packaging in relatively small units for shipping to surveys around the world
- More than 8 systems available worldwide

AIRBORNE RECEIVER

The airborne loop is isolated from most vibrations by a patented suspension system and is encased in a fiberglass shell. It is towed from the helicopter using a 90 m long cable. The cable is also used to transmit the measured EM signals back to the data acquisition system.

Coil dimensions	7.4 m diameter
Coil orientation	Horizontal (vertical magnetic dipole)

BASE STATION RECEIVER

The two base station receiver coils are set up perpendicular to each other. The orientation of both units is not critical as the horizontal field can be re-projected onto the two orientations of the survey flight.

Coil dimensions	3.5 m each side
Coil orientation	Vertical (horizontal dipole)

ATTITUDE MEASUREMENT SENSORS

The attitude of the airborne coil must be monitored in order to remove the cross coupling between the horizontal and vertical EM field. Three GPS receivers are placed on the ZTEM airborne coil. The data is processed using one of the GPS receivers as a moving base station and calculates the relative positions of the other two receivers to yield a very accurate attitude measurement.

L1100 - ZTEM Test Survey - Geoscience BC/Terrane Metals Corp. - Mt Milligan Property

