EIKON TECHNOLOGIES LTD

CANADA

Eikon Technologies has been serving the geophysical community for over 30 years through its innovative and leading-edge software products for the processing, mapping and interpretation of geophysical data. We also provide contract survey design, data processing services as well as advanced interpretation of non-seismic data for a wide variety of applications.

Mining

- Data processing and quality control (QC) of survey data for exploration purposes
- Survey planning and design, contract negotiation, data and personnel management
- Delineation of ore deposits through detailed modeling and inversion
- Report writing and map creation
- Software applications for ground, airborne and borehole EM and Potential Fields, surface and borehole IP/Resistivity, Ground Based CSEM

Oil and Gas

- Potential Fields processing and interpretation – ground, airborne and marine
- Borehole gravity and magnetics interpretation
- Software applications for ground, airborne, borehole and marine EM and potential fields

Geothermal

- Advanced processing of CSAMT and CSEM data
- Detailed processing and interpretation of ground gravity data
- Accurate modeling and interpretation through our proprietary software supporting time and frequency domain EM and potential field data

Engineering

- EM subsurface mapping including utility infrastructure mapping
- Location of buried objects such as drums, pipes and other structures
- Shallow gravity and magnetics interpretation
- Borehole interpretation studies for magnetics and EM
- Software for geophysics applications to engineering (EM, Magnetics, Resistivity)

Environmental/Geotechnical

- Archeological site investigations, waste site characterization and mapping
- Groundwater exploration (aquifer and bedrock mapping)
- Software products for EM and Potential Fields

Quality Control for Airborne EM and Magnetics Surveys

While airborne EM surveys are very useful, they are also very expensive. It is in your best interest to have your survey monitored for quality by independent experts, who specialize in time-domain and frequency-domain EM data from various helicopter EM systems as well as fixed wing systems. In addition to daily monitoring of both the EM and magnetic data and ensuring the collection of highest quality data, we offer prompt delivery of compilations and maps with interim results delivered during the survey and final products within a few days of the final flights. We also offer the most accurate magnetic processing results based on detailed analyses of base station and survey data as well as the best aircraft compensation techniques for fixed wing, UAV, helicopter stinger and towed arrays as well as drone aeromagnetics. It should be noted that most survey companies use a smoothing filter for compensation of aircraft effects rather than the properly derived mathematical functions. Proper compensation ensures that the fine features in your aeromagnetic data are properly derived. Additionally, if required, we can provide for the EM data: high-quality inversion sections and precise 3D modeling utilizing our advanced suite of algorithms. For the magnetic data, we can provide 3D modeling or inversion and an array of high-quality gradient products using our sophisticated gridding and Fourier techniques. Also, we can process your gradient data to properly de-rotate the data for aircraft orientations.

Ground TDEM Data QC, Processing and Interpretation

Our years of experience in TEM data interpretation and processing provide us with a unique insight into TEM survey techniques and instrument behavior, which simply means the provision of the best quality data with the highest resolution for our clients. This is combined with our ability to offer highly-accurate and comprehensive interpretation and modeling results for your data. We offer combined interpretation of magnetic and EM. New thin sheet plate inversions offer the best in plate modeling and a new forward algorithm to accurately determine the effects not only of high conductive targets but also conductive targets which are magnetic. We offer these capabilities also for FDEM data.

Magnetics and Gravity Data Processing and Interpretation

We have extensive experience in mining, geothermal, hydrocarbon and engineering applications for ground, underground, and marine surveys as well as airborne magnetic surveys including fixed wing, helicopter stinger and towed systems, UAV and drone surveys. We have developed the most accurate and comprehensive software and techniques for both gravity and magnetic data enhancing accuracy significantly over conventional approaches. We offer the most extensive capabilities for gravity and magnetic modeling as well as large model inversions using our own propriety multi-core apps providing unique interpretation capabilities. We provide map and model sharing formats with a wide range of mapping and CAD software platforms. We offer software tools for ground/borehole/marine gravity and magnetics as well as airborne magnetics.

Resistivity/MMR/IP Surface, Underground and Ground to Surface

After extensive development to provide the very best in 3D modeling for IP and Resistivity and MMR data from complex surveys as well as inversion applications, we now offer high precision data interpretation for surface, underground and surface to borehole surveys. The ability to collect the right data and model accurately is critical in these procedures. We design not only precise data collection procedures, but also precise modeling techniques to include all the effects of the anomalous structure, the source and the background rock. Conventional forward and inversion modeling applications for both resistivity, MMR and IP solutions use only approximate techniques. We can provide you with numerous examples of incongruous interpretation results using physically implausible software.

Services for CSEM, CSAMT and Magnetotellurics

In many situations, the natural field sources are not strong enough or regular enough to provide the ability to collect high-quality data. In these cases, CSAMT is sometimes utilized. However, the user of such data should realize that a 3D source is used and this 3D source is not the plane wave of MT. Traditionally, this has led to the use of the data in the so-called far field. There is no need to make this assumption in our products or services, as CSAMT is treated like any other controlled source technique (CSEM) and the source characteristics are utilized accurately in both forward and inverse techniques. Thus, the source can be brought close to or even over the survey area. Our ability to use such interpretation capabilities provides you with accurate structural models and allows for all your data to be used, no matter the distance, the frequency or the azimuth. We have developed techniques to utilize both the electric and magnetic fields as well as multiple source arrays.

We also offer interpretation services for surface and airborne natural field data (e.g. MT/AMT, ZTEM, AFMAG).

Data processing and Data Deliverables

We can perform all the basic plus advanced processing and quality control for your data and deliver the required data products as well as the final processed data and maps.

Airborne, Ground, Marine and Borehole

Processing Products

Magnetic and Gravity Corrections*:* With the use of our precise and unique algorithms, we can provide accurate and sophisticated data corrections including all of the basic data corrections as well as enhanced magnetic corrections for Ground, Airborne and Borehole surveys. For gravity data, we provide the basic corrections, plus advanced techniques for topographic, bathymetric and isostatic corrections.

Magnetic and Gravity Gradients: With the use of our specifically-designed and accurate algorithms, we derive processed derivatives from total field data that are virtually indistinguishable from measured gradients and often considerably more accurate.

Gridding: Extremely accurate, high resolution, local gridding techniques originally designed for satellite data, but now available for airborne geophysics. Gridding techniques preserve the high spatial accuracy of your data along survey or flight lines. *Why spend millions on a modern survey and use ancient tools for producing your maps?*

Airborne Magnetic Correction Processing: The most versatile and adjustable aeromagnetic compensation software with a simplified de-rotation for your measured gradients. Our approach utilizes a robust algorithm with appropriate filtering, which ensures sensitivity to small-scale features, not usually possible using conventional compensation software. We are the first to develop compensation for UAV and drone data.

Airborne TDEM Processing: Accurate decay analysis maps for all airborne TDEM systems, accurate The most accurate inversion techniques for your airborne TEM surveys. 3D thin sheet inversions for airborne TDEM. QC to correct elevations, waveforms and responses.

Inversion Products

Gravity and Magnetics: Three dimensional, detailed inversions including inversion of your gradient and vector data from either airborne, marine or ground surveys or any combination. A range of rock property constraints including use of properties derived from borehole or ground samples. For situations where data does not allow 3D, strike length defined 2D inversion.

Airborne Time-Domain: Extremely accurate, stacked, one-dimensional inversions for VTEM, Genesis, Xcite, SkyTEM and well as archived MegaTEM, GeoTEM, HeliTEM, TEMPEST and AeroTEM systems. Three dimensional inversions for high conductive targets.

Airborne and Ground Frequency-Domain: Accurate, stacked, one-dimensional inversions or fast approximate conductivity-depth images. Our software is designed ground FEM systems including Max-Min, PROMIS, Geonics' EM-31/34/34R/38, CMD Explorer, GSSI and as well as archived GEM2/GEM3 data. We are able to handle order data from towed helicopter systems such as DIGHEM, Resolve or Impulse, as well fixed-wing systems including GTK and SGFEM. Three dimensional 3D thin-sheet inversions can also be provided.

Ground Time-Domain EM: Accurate one-dimensional inversions for either fixed or moving loop surveys. Ability to use both in-loop and out-of-loop data. Joint inversion of multiple offsets or multiple receiver orientations. As well, we can provide 3D thin-sheet inversions applied to full surveys, survey portions allowing for single and multiple component data. We can work with all TDEM systems.

Resistivity and IP: Detailed 1D and 3D constrained Resistivity Inversions using accurate electrode geometries. Remember, you cannot treat IP data as potential field data! We provide extremely accurate 3D IP models that take into account current interactions between structures as well as all IP interactions and EM effects.

Let our expertise and experience give you the INSIGHT you need!

CSEM/CSAMT: Accurate and detailed 1D and 3D inversions utilizing true 3D source geometry. Utilizes a novel approach that accurately handles data not just in the *far-field*, but also in the *near- field* and the intermediate zone (between the *near* and *far* fields).

Natural Fields: 3D MT, ZTEM and AFMAG inversions.
Ability to invert the tipper vector data along with impedance data for MT inversions.

3D Geophysical Models

Models are exportable to various formats including 3D .dxf (AutoCAD), .asc (Vulcan) and .str (Surpac) for easy integration with other modeling software.