MobileMT: Mount Read Cobalt project in Western Tasmania

SUMMARY

Mobile MagnetoTellurics (**MobileMT**) is the latest innovation in airborne electromagnetics and is the most advanced generation of airborne AFMAG technologies. Early in 2019 Expert Geophysics Limited (EGL) flew a MobileMT survey for Accelerate Resources Limited over the areas of the Mt Read Cobalt Project located on the Sorrell Peninsular in western Tasmania (**Figure 1**, **Figure 2**). Inside of the flown area there is a known Co-Cu-Au occurrence/prospect (Thomas Creek) previously investigated by Induced Polarization (IP) and Downhole EM. The MobileMT system successfully defined the central Thomas Creek sulphide target proving the ability of the system not only in deep mineral exploration but also in detecting near-surface and discrete targets.

MOBILEMT TECHNOLOGY

MobileMT technology utilizes both an airborne system and a ground system together to produce its results. An airborne bird, towed by a helicopter, measures variations of the magnetic field with three orthogonal induction coils, while a ground station measures variation in electric field with four pairs of electrodes. The ratio of the magnetic field and electric field magnitudes is used for calculating analytic parameters in selected bands of frequencies within the ` range of 25 – 20,000 Hz. This provides a wide depth of investigation from near the surface to greater than 1 km deep. The advanced noise-suppression techniques used on mechanical, analogue electronic, and digital signal processing levels ensures high data quality even in cases of low natural electromagnetic fields. Auxilliary equipment includes the Geometrics caesium magnetometer G-822A, GPS navigation system, radar altimeter, and a custom PC/104 data acquisition system.

THE CASE STUDY

This case study is focused only on the known mineralization occurrence on the surveyed area without analysis of the whole survey results. The Thomas Creek cobalt copper and gold mineralization was identified as a result of follow-up soil sampling. The sulphide mineralization is coincident with a ~400x600 m IP anomaly identified subsequent to the prospect discovery (**Figure 3**, **Figure 4**), and the depth to the anomaly source is estimated at ~100 m below the surface (Accelerate Resources Limited Annual Report for 2018).

Figure 1: MobileMT on the site

Figure 2: Survey area location (http://www.ax8.com.au)

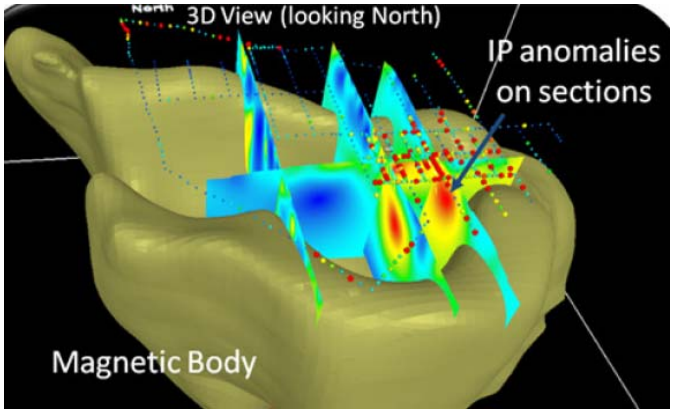

Figure 3: IP sections and magnetic intrusive (http://www.ax8.com.au)

Figure 5 Represents a 3-dimensional inversion of Mobile MT data (product by Computational Geosciences Inc.) as a 3D view of conductivity depth-slices (higher conductivity with warmer colours). The conductivity sections along two lines crossing the Thomas Creek prospect zone and the IP anomaly are presented in **Figure 6.** The discrete conductive zone in the survey block centre with two extrema corresponds to the prospect site and correlates with a magnetic anomaly interpreted as an oval-shaped dioritic intrusive complex. Similar to the IP anomaly, the MobileMT data shows that the conductive zone position is in the magnetic field depression (see magnetic field profile in **Figure 6)**.

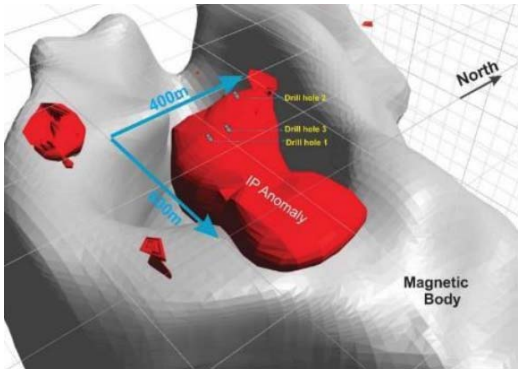

Figure 4: Thomas Creek – 3D Chargeable IP Anomalies with Drill Holes (Accelerate Resources Limited Annual Report for 2018).

CONCLUSION

The MobileMT survey results performed over a known Co-Cu-Au prospect in Western Tasmania illustrate the system's high resolution near-surface conductivity mapping, as well as the deep investigational capabilities of this modern AFMAG technology. The MobileMT 3D inversion results correlate very well with the IP dipole-dipole anomalism related to sulphide mineralisation.

EGL would like to thank Accelerate Resources Limited for pleasantly giving permission to present these results.

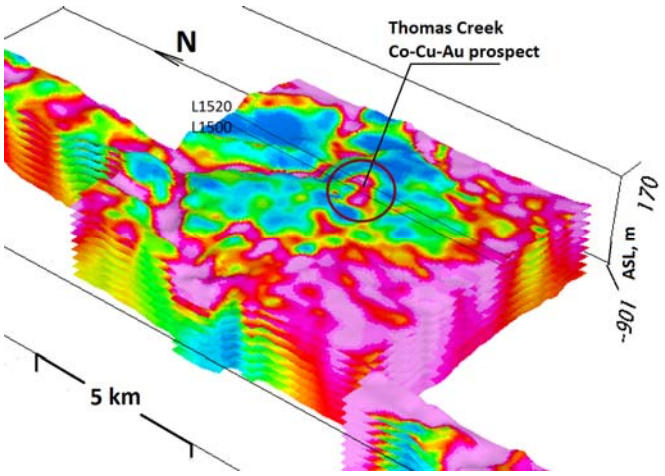

Figure 5: Conductivity Depth Slices from the surface up to 1000 m depth (MobileMT data 3D inversion, Computational Geosciences Inc.).

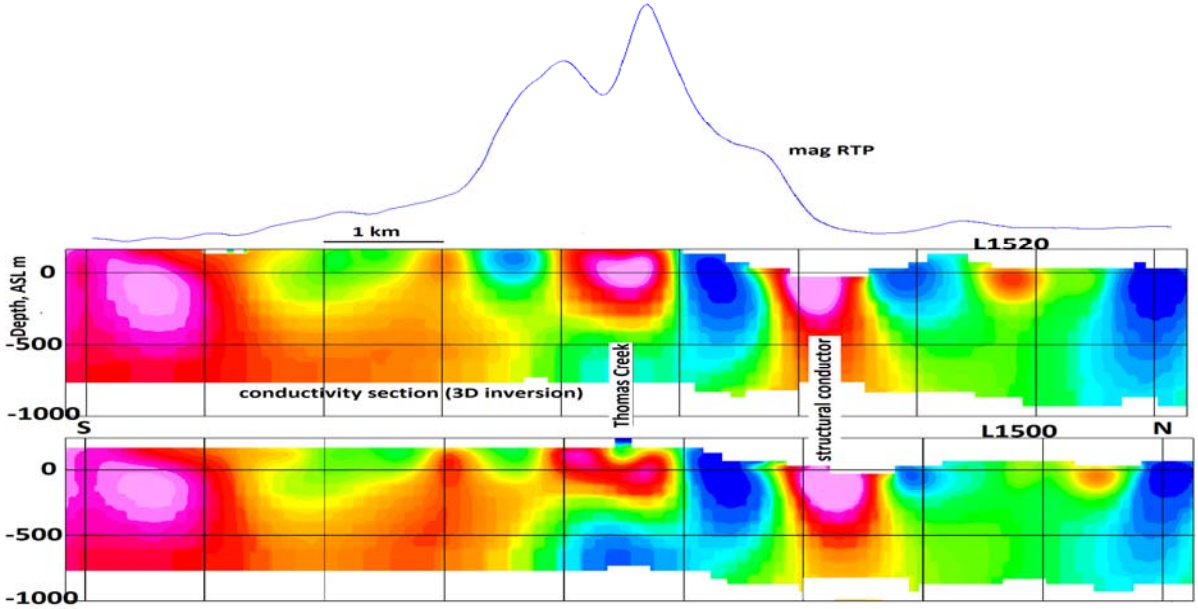

Figure 6: Conductivity sections along two lines crossing the Thomas Creek prospect (3D inversion by Computational Geosciences Inc.).