



Mitre Geophysics Pty Ltd

EM34 Follow up of The Mt Ramsay HEM Anomalies

Introduction

A reconnaissance EM34 survey combined with rock chip and soil sampling and panned concentrates has been carried out in the Mt Ramsay area to confirm and better define a series of EM responses recorded by a Hummingbird survey carried out for the MRT (see my note on 'The Mt Ramsay HEM Anomalies, Western Tasmania' dated 25/1/2004).

It was hoped that both the southern and northern group of responses would be investigated, however the lack of any suitable helicopter landing site ruled out the former (which was at least partly investigated by Comstaff following up Input anomalies in the 1970s).

This note presents the survey data and makes recommendations for further work assuming favourable geochemical results.

Survey Details

Two east-west lines, 775m apart, were surveyed with compass, hip chain and inclinometer from starting points determined by GPS. The western point of Line 1 started at the base of a small landslide at 372,500mE / 5,395,900mN and extended for 290m (corrected for slope). The western point of Line 2 was on the ridge track at 372,440mE / 5,395,125mN and extended for 265m (again corrected for slope). Both lines were designed to follow up HEM responses recorded on adjacent flight lines.

The follow up was carried out using an EM34 with a 20m coil spacing and a 10m station interval. Two readings were made at each station: one with the coils horizontal and coplanar (HCP) and the other with the coils vertical and coplanar (VCP)*. The instrument sees deeper in HCP mode, but is much more sensitive to coil misalignment.

The readings were taken with the transmitter on the down-slope side and plotted at the mid-point. For the VCP readings, the coils were held vertically in the hand and pointed along the line and the readings were generally stable. For the HCP, the coils were held head high and pointed towards each other; ie, tilted at the local slope. These readings were generally less reliable, particularly when there was no line of sight between transmitter and receiver. However, the negative readings recorded in HCP mode above the conductors probably provide a more accurate indication of the deeper conductor location than the positive peaks of the VCP readings.

* A dipping tabular conductor gives a simple positive response to VCP and a negative with positive shoulders to HCP.

Results

Definite responses, encompassing and better resolving the HEM anomalies, were recorded on both lines (shown below). On Line 1 a well defined shallow response indicates a conductor below 372,590mE and a broader lower amplitude beneath 372,770mE. Although the HCP response of the former is roughly symmetric, the shoulders are single point anomalies and no reliable dip information is available for either response. The more easterly response overlies the Crimson Ck – Oonah boundary and may reflect a water filled, clayey contact.

Much larger amplitudes were recorded on Line 2, for both modes, but the responses are not as discrete and indicate a series of conductors within the surveyed interval (between ~372,470mE and 372,655mE).

Conclusions and Recommendations

The EM34 survey has confirmed and successfully located some of the northern Mt Ramsay HEM anomalies and suggests that they are, in part, due to a series of closely spaced conductors. Several small escarpments were observed on the slope and some disseminated sulphides in the hornfelsed sediments. And it is suggested that the sources of the EM responses may be massive (ie, electrically connected) sulphides within a number of closely spaced faults.

The sources are shallow and any prospective source should have a geochemical signature from at least one of the sampling techniques. Assuming that this is the case, the next step would be to properly define the conductors prior to drill testing. Further surveying with the EM34 is recommended on 100m spaced lines, again using the 10m station interval but with some 5m detailing. The two or three 'best' lines should also be surveyed with 10m and 40m spaced coils and this data could then be used to provide a quantitative interpretation of the conductors (ie, depth, dip and conductance).

Mt Ramsay EM34 Profiles

