

4. EASTOE ALTERATION PROJECT (R.M.D. Meares)

4.1. Introduction

A study of the alteration and mineralisation of the Mt. Read Volcanics in Western Tasmania was conducted by Dr. C.J. Eastoe of the University of Tasmania and jointly funded by Mount Lyell, E.Z. and Getty Oil.

The objectives of the study were to:

- (i) recognise and identify the characteristic hydrothermal alteration styles associated with the Western Tasmania volcanogenic deposits - in particular to identify characteristic hangingwall and footwall styles of alteration so that favourable host horizons can be located and explored
- (ii) prepare a map of the Mt. Read Volcanics in the Mount Lyell and E.Z. licence areas, showing alteration types and their trends in the vicinity of known deposits.

The study involved detailed mapping and rock sampling both around the major and minor deposits, and along regularly-spaced traverses across the volcanic belt. Subsequent laboratory investigation of rock samples has included detailed petrography and mineragraphy, determination of MnO and Mg/Mg+Fe contents of chlorites, and determination of $\delta^{34}\text{S}$ for many pyrite samples from various occurrences.

4.2 Results

Results from orientation studies around the Hercules and Rosebery deposits suggest that footwall alteration consists of intense sericitic alteration associated with a sheared texture, while hangingwall alteration is limited to the calcic alteration of plagioclase to calcite, epidote or sphene, and the abundance of massive, glassy textures.

K-feldspar replacing phenocrysts in an aureole has been recorded in both hangingwall and footwall and along strike from four known massive sulphide deposits.

A study of MnO and Mg/Mg+Fe contents of chlorites over a 2.6km strike length in the footwall of the Hercules deposit suggests that increasing MnO and decreasing Mg/Mg+Fe are indicators of proximity to mineralisation. However, neither Mn nor Mg is enriched at Red Hills, so that these criteria may be regarded as a positive indication but their absence may not be regarded as a negative indication.

In the sulphur isotope section of the study, $\delta^{34}\text{S}$ has been determined for pyrite samples from both small barren pyrite and large massive sulphide deposits. The data suggests quite clearly that sulphur from pyrite samples from the major Pb-Zn-Cu deposits lies in the range +5 to +15% $\delta^{34}\text{S}$, while values from barren pyritic occurrences lie in the range -9 to +6% $\delta^{34}\text{S}$. This indicates that sulphur isotope determinations for pyrite samples in rocks or drill core may be a useful exploration technique to determine the possible significance of the occurrence.