



GOLDFIELDS EXPLORATION

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TECHNICAL NOTE

sulphur.doc

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From : Tim Callaghan

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Subject : South Henty and Mt Julia Sulphur Isotopes

INTRODUCTION

During January 1999 thirty samples from the recent Sth Henty Lake Newton Prospect drilling program were submitted to the University of Tasmania CSL for analysis of stable isotopes of sulphur. The aims of the investigation were to identify zonation patterns that may provide useful vectors to aid exploration for high grade parts of the system.

The Lake Newton Prospect is a well zoned, epigenetic, low grade, disseminated copper-gold system with an extensive low grade base metal halo. It is of considerable size and has many similarities with the Mt Lyell and Henty-Mt Julia copper-gold deposits of the district (Callaghan, 1998, Callaghan, 1999). The entire alteration zone extends over a strike length of at least 2kms, varies between 30m to over 400m in width and is open at depth. The alteration is well zoned (Figure 1) from the outer halo moving inwards in the following order:

carbonate-chlorite halo
 carbonate-sericite-(chlorite-sphalerite-galena)
 sericite-pyrite-carbonate (Au-galena-sphalerite)
 sericite-silica-pyrite±chalcopyrite±gold

The top of the alteration system is characterised by either:

sericite-pyrite-barite-jasper-(sphalerite-galena)
 hematite-carbonate-chlorite-jasper-(Ag)

Previous sulphur isotope studies (Callaghan, 1999) have defined a distinct zonation of $\delta^{34}\text{S}$ within the Lake Newton Prospect with the silica-sericite-pyrite Cu-Au mineralised core having lighter $\delta^{34}\text{S}$ (~-6) than the surrounding carbonate-sericite-chlorite Pb-Zn anomalous halo (~12). The zonation is similar to that defined by basemetal geochemistry and alteration mapping (Callaghan, 1998, Callaghan, 1999).