Paragenesis and evolution of the Thengkham skarn, Sepon district, Laos

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Background:

The Sepon Au-Cu deposit is located in Savannakhet province, southern Laos, approximately 40 kilometres north of the town of Sepon.

The deposit has combined resources and reserves of 1.5 million tonnes of Cu, 4.6 Moz Au, and 22.1 Moz Ag as at 30 June 2011 (http://www.mmg.com/en/Our-Operations/Mining-operations/Sepon.aspx). In addition to the large amount of resources, Sepon is also one of the world’s best examples showing deposit style zonation, from Mo-rich central porphyries to peripheral Cu-Au skarns and then distal Carlin-style mineralisation.

The Thengkham skarns are part of the Sepon system. The Thengkham supergene deposits consist of numerous pods of mineralisation totalling ~ 34Mt @ 1.9% Cu, containing ~0.65Mt of metal. Underlying the supergene deposits are primary skarns, which drilling to date has identified approximately ~44Mt of resources averaging 0.54% Cu (+Au, Ag and Mo). There have been many reports including petrographic reports on the skarn but there have not been detailed paragenetic studies.

Aims:

This project will carry out detailed paragenesis study to understand the evolution of the skarns. Of note, most of the Cu appears to be late in the paragenesis - is this just retrograde mineralisation, or a later structurally controlled overprint? The study will also try to document spatial zonation in the skarns. The improved understanding and the zoning patterns will be helpful to further exploration in this district.

Research methods:

The aims will be achieved through:

1. Surface investigation and particularly logging of ~1500 to 2000 m of drill core along a cross section
2. Transmitted light and reflected light microscopy
3. SEM-BSE/EDS imaging and analysis to examine the textures and cross-cutting relationships
4. Electron microprobe analysis of skarn minerals to obtain the major element compositions

Company Support:

In order to support the project the company will provide:

- Return economy class airfares for student and supervisor
- Accommodation, meals and OH&S while on site
- Sundry expenses associated with travel to site, including visas, transit accommodation,
travel insurance

- Sample shipping from Sepon to JCU
- Financial support to cover the analytical cost
- Potentially some vocational work over the summer