

Abstract ID: 176

Title: LAS BAMBAS - A DEVELOPING PORPHYRY/SKARN DISTRICT, PERU

Student: No

Topic: Economic Geology

Medium: Invited Oral Presentation

Author 1 (CONTACT AUTHOR)

Name: Ronald Luethe

Org: Xstrata Peru

Country: PERU

Author 2

Name: Artemio Chirre

Org: Xstrata Peru

Country: PERU

Keywords: Las Bambas, porphyry, skarn

Abstract: The Las Bambas district, located 72 kilometres SW of Cuzco, Peru, is a major evolving porphyry/skarn cluster related to evolution and intrusion of the Yauri-Andahuaylas batholith. Three principal copper deposits have been defined to date - Ferrobamba, Chalcobamba and Sulfobamba - with a combined resource of 508Mt of 1.14% Cu, 220 ppm Mo and 0.11 g/t Au (at a 0.5% Cu cut-off). All three systems are associated with multiple intrusive events that are broadly grouped into five stages corresponding to the evolution of the batholith. Based on mapping, age dating and whole-rock chemistry, there is a progression from 1) Pre-Main Stage Gabbro Sills through, 2) Early Main Stage Batholith, 3) Late Main Stage Batholith, 4) Monzonite stocks and 5) Post-Main Stage Dykes, Stocks and Sills. Except for the post-main stage intrusions, each stage is associated with skarn-mineralizing events that vary with maturity of the intrusive phases. Wall-rock composition (host rocks), bedding orientation and the number of mineralizing events are important factors in determining total metal content. Only skarns associated with gabbro sills were found to be uneconomic unless overprinted with later stage mineralization. All of the skarns are associated with porphyry copper style mineralization derived from stepped igneous differentiation (dated at 40 and 42 Ma. for Ferrobamba and 36 to 38 Ma for Chalcobamba); however none of the deposits is a "classic", Cu-Mo porphyry system in that all lack late-stage hydrous epithermal events. Because of recent glaciation, secondary enrichment, if it existed, has been removed from all three deposits and only thin zones of oxidation are present.