Workshop Schedule (Preliminary)

WS07 - Exploration for Skarn Deposits

www.seg2019.org/workshops.html#7

Date: Monday, October 7, 2019

Time: 8:30am - TBD

Location: Solace Hotel

Presenter: Larry Meinert
Consultant

Language: Spoken: English
Slides: English

This workshop will focus on practical field techniques to guide exploration for and evaluation of skarn deposits. Using examples of major skarn deposits around the world, including many from Chile and Peru, the workshop will illustrate how to use mappable skarn mineralogy to identify causative intrusions, major ore zones, and distal alteration features. The workshop will proceed from basic principles, to detailed case studies of major deposits, to general zonation models that can be used to evaluate grass root to brownfields properties.

Skarn deposits have been mined for a variety of metals, including Fe, W, Cu, Pb, Zn, Mo, Ag, Au, U, REE, F, B, and Sn. They are particularly abundant in the circum-Pacific region with large, high-grade examples at Ertsberg, Indonesia (2.8 Gt @ 1.12% cu, 0.78g/t Au), Las Bambas, Peru (2.12 Gt @ 0.6% Cu), and Antamina, Peru (2.0 Gt @0.86% Cu, 0.54% Zn, 0.02% Mo, 10.5 g/t Ag). They are found adjacent to plutons, along faults and major shear zones, in shallow geothermal systems, on the bottom of the sea floor, and at lower crustal depths in deeply buried metamorphic terrains. What links these diverse environments, and what defines a rock as skarn, is the mineralogy which includes a wide variety of calc-silicate and associated minerals but is usually dominated by garnet and pyroxene.

Mineralogy is the key to recognizing and defining skarns, and is important in distinguishing economically significant deposits from interesting but uneconomic mineral localities. Skarn mineralogy is mappable in the field and serves as the broader "alteration envelope" around a potential orebody. Because most skarn deposits are zoned, recognition of distal alteration features can be critically important in the early exploration stages. Details of skarn mineralogy and zonation can be used to construct deposit-specific exploration models as well as more general models useful in developing grass roots exploration programs or regional syntheses. In addition, igneous petrogenesis and tectonic setting provide a framework for regional exploration or classification. This workshop will develop an understanding of skarns in general with particular emphasis on field identifiable characteristics that are useful in exploration.

(continued on next page)

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- 8:30am - 10:00am: Introduction, definitions, processes, and classification
- 10:00am - 11:30am: Evolutionary stages of skarn formation, depth of formation, oxidation state
- 11:30am - 1:00pm: Skarn mineralogy, petrogenesis, and tectonic setting
- 2:00pm - 3:30pm: Characteristics and examples of major Au, Cu, Fe, W, and Zn skarn systems
- 3:30pm - 5:00pm: Skarn zonation - general models and processes
- 5:00pm - 5:30pm: Skarn exploration strategies