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Porphyry Cu-Mo mineralization at Resolution is spatially associated with andesitic to rhyodacitic dikes of Laramide age in the southwestern North America porphyry copper province (SNAPCP). The deposit is hosted by Precambrian sediments intruded by Precambrian diabase sills, Paleozoic quartzite and limestone, as well as Cretaceous-Tertiary volcanics and volcaniclastics of andesitic to rhyodacitic composition. East-northeast trending, pre- to early-mineral hydrothermal breccias are preserved mainly in Precambrian units. Oligo-Miocene cover rocks were deposited during basin and range extension which tilted the deposit about 25 degrees to the east-northeast.

Within the >1% Cu grade shell, the predominant copper mineralization is chalcopyrite occurring as both A- and D-type type veins and as disseminations. However, at mid to upper elevations chalcocite and bornite contribute economically significant amounts of copper. The chalcocite and bornite represent hypogene enrichment and partially to completely replace earlier pyrite and chalcopyrite. Highest Cu grades are developed in chalcocite-bornite mineralized hydrothermal breccia. Molybdenum mineralization occurs as molybdenite B-type type veins with an upper surface defined by >100ppm Mo that is approximately co-spatial with the top of the >1% Cu grade shell. A strong pyrite halo is present towards the top of and above the >1% Cu grade shell, and includes modest volumes of >15% pyrite mineralization.

Phyllic alteration is volumetrically the main alteration type present. It overprints potassic alteration at depth and, at mid to upper elevations, is itself overprinted by advanced argillic alteration. Potassic alteration represented by secondary biotite and orthoclase tends to be preserved in mafic host rocks. Phyllic assemblages are characterized by white mica at all elevations with the local addition of kaolinite. Dickite is the most prevalent and diagnostic advanced argillic silicate mineral, along with topaz and lesser alunite. Chlorite and lesser epidote characterize outermost propylitic assemblages that are locally cut by pyrite D-type veins.

A hematite dominated leached capping up to 800 ft thick is preserved over the deposit. Despite an apparently prolonged weathering history, no economically significant accumulations of secondary copper have been identified.

Resolution represents an unusually high-grade hypogene porphyry copper system where diabase, hydrothermal breccia and limestone host nearly two-thirds of the deposit. Late chalcopyrite D-type veining as well as chalcocite and bornite-related hypogene enrichment have added substantial amounts of copper to the earlier potassic system. No late or post-mineral dikes or breccias dilute the orebody. Significant post-mineral displacement during basin and range extension, a common feature of the SNAPCP, has not been recognized in drilling.
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