

ROBINSON DISTRICT

The porphyry copper deposits of the Robinson or Ely mining district are centered near the towns of Ely and Ruth in the Egan Range, south-central White Pine County. To date, this district is the largest metal producer in the state. Between 1908 and 1963, Consolidated Coppermines Co. and Kennecott Copper Corp. produced more than 255 million tons of ore averaging about one percent copper from these deposits.

The copper mineralization is localized in an altered monzonitic to quartz monzonitic porphyry stock of middle Cretaceous age and associated skarn deposits which, in themselves, have accounted for more than 20 percent of the total production of ore (Einaudi, 1982). The stock and its related dikes and sills are crudely aligned in an east-west direction as a result of their emplacement along a pre-intrusive thrust fault (Bauer, 1966). They intrude Devonian through Permian carbonate and clastic sediments. The principal copper minerals mined in the porphyry were chalcopyrite (hypogene) and chalcocite (supergene). Molybdenum, gold, silver, platinum, and palladium were also recovered from the ore.

The main mines at Ruth are currently inactive. However, exploration activity continues in the peripheral areas of the district.

No attempt was made to visit the main copper workings. Numerous authors have published informative reports on the deposit (see reference list). Instead, keeping with the intended scope of this project, we sampled and described some of the mineralized areas surrounding the main deposit, including a few of the

See also 83-2 for geochemical results.

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early discovery sites within and north of Lane Valley.

Irregular zones of manganese, silver-lead, zinc, and gold-silver mineralization surround the main copper producing body and form high and low-grade replacement and vein deposits in the nearby sediments. Countless prospects explore these zones over an area extending more than two miles north and south of the porphyry. These deposits are mainly hosted by middle Paleozoic carbonate rocks. They show varying effects of hydrothermal alteration and are structurally controlled by faults, fractures, or bedding planes. The limestones are commonly silicified or recrystallized, bleached and veined by calcite and quartz. Most of the deposits contain gossan and oxidized manganese and copper minerals. Tungsten and fluorite have been reported from a few of these deposits.

A gold-silver deposit of this type is located near the Chainman and Revenue shafts on the south side of Lane Valley. At the time of our examination, an open pit operation occupied a small area previously explored by old underground workings. The pit exposed limestones which have been affected by shearing and low-grade hydrothermal alteration. The altered zone contains abundant iron oxides, gossan, and calcite gouge. Oxidized pyrite occurs on fracture surfaces of some silicified fragments. A sample (955) collected from the walls of the pit was found to contain some silver (70 ppm) and anomalous amounts of arsenic, molybdenum, tungsten, and tin.

Analysis of samples taken from the area surrounding the main copper pits has exhibited expected high values in copper, lead, and zinc. Minor tin is present in some samples.

The mineralizing effects of the porphyry decreases rapidly outward from the main body, and many seemingly insignificant prospects south of the porphyry show only minor silicification and calcite and quartz veining. North of the porphyry body, on the east slope of the Egan Range, a few prospected occurrences show jaspery replacement ores containing oxidized copper and zinc minerals. At sample locality 947B-948, samples of altered siltstone breccia show significant chrome and vanadium content. Recent active sampling of the northern prospects may indicate the possibility that there are yet undiscovered precious metal deposits in the area.

Selected References

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