

Abstract

Beryllium Deposits Associated with the Redskin Stock and China Wall Cupola

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World class beryllium deposits are hosted in the Redskin stock, Park County, Colorado. The beryllium mineralization in these deposits occurs in fine-grained granite-aplite within the outer walls of cupolas at the Boomer Mine (south of Map 3) and China Wall, in medium-grained seriate porphyritic granite along the outer margins of the Red Skin stock (See Map 3), and are found along dikes within the stock. Several mines found in the Redskin Granite were explored and exploited for small tonnages of beryllium in the late 1950s.

The best documented deposits include the A & C Claims Mine, the Hazel Marie Group, the Minerva J, the Red Skin Mine, and the Black Prince (MRDS database). The paragenetic sequence of mineralization at these mines begins with beryl crystallizing early, followed by quartz, topaz, siderite, bertrandite, muscovite, to galena/sphalerite (Hawley, 1969). This sequence is extremely important as a guide to finding ore. For example, one type of beryllium ore which occurs in Redskin Gulch and at China Wall consists of pink bertrandite associated with yellow-green muscovite. The yellow-green cast of the abundant muscovite crystals obscures the smaller bertrandite crystals. However, the yellow-green muscovite is easy to identify, and serves as an indicator mineral for bertrandite mineralization. The yellow-green ore forms pipe-like bodies, with outer selvages of barren gray mica, grading into country rock.

Mineralization in greisen pipes is disseminated irregularly. Fractures commonly cut the pipes and extend into the country rock. The diameter of the pipes range from 1 to greater than 10 feet in diameter, and extend laterally along distances greater than 160 feet (Hawley, 1969). The shape is oval to cylindrical normal to the axis of a pipe. Pipe zonation is characterized by a muscovitic greisen core, bounded by quartz greisen that is transitional into granite country rock.

Mineralization at existing mines in the Red Skin Granite suggests good potential for finding undiscovered deposits. Exploration criteria for targets is based upon lithologic and structural control of ore. Within cupolas, the mineralization occurs along contacts of the granite-aplite and Silver Plume Granite at China Wall. To the south of the China Wall cupola, further exploration should be done along beryl-bearing dikes which were intruded along pre-Red Skin Granite faults related to the Badger Flats fault (Hawley and Wobus, 1977). Within the porphyritic phase of the Red Skin Granite, mineralization occurs within greisen pipes associated with northwest trending fluorite veins, and along northwest trending shear zones. Satellite imagery and aerial photos are useful for identifying unmapped fault zones. Lineament mapping from Digital Elevation Models (DEM) shaded relief maps and Triangulated Network Models (TIN) may provide additional data helpful in locating exploration targets.