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Granite Related Uranium Deposits - Copper Mountain, Wyoming

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Granite Related Uranium Deposits are a primary source of metallic uranium in countries like China (and previously Europe). The deposits are associated with hydrothermal activity in fault systems. They are genetically linked peraluminous U-fertile granites and the presence of certain minerals and hydrothermal alteration play a role in the formation and enrichment of these deposits.

The Copper Mountain Uranium Project is located near the base of Copper Mountain in the Owl Creek Mountain Range of north central Wyoming. The Owl Creek Mountains were formed north of the Wind River Basin during the Laramide Orogeny along the Owl Creek Uplift. Precambrian granitic and metasedimentary rocks form the northern upthrust block of the Owl Creek fault. The Wind River Basin south of the upthrust contains a thick section of Tertiary sediments with abundant volcanic material. Numerous uranium deposits occur in the Precambrian and Tertiary rocks on Copper Mountain. The sources of uranium are likely to be primarily from the fractured Archean granitic rock along fault zones but may have derived from overlying volcanic rich Tertiary sediments as well.

Shrier and Parry (1982) recognized two stages of hydrothermal alteration at Copper Mountain. Stage I involved pervasive alteration of the granite with minerals such as sericite, epidote, hematite and chlorite being prevalent. Stage II involved alteration in fractures and breccias of the structurally prepared granite along with uranium deposition. The ages of stage I alteration and stage II alteration and mineralization are not known. Stage II alteration and mineralization postdate the Stage I event. There is no evidence directly linking the two events and they may be significantly separated in time. New evidence from high-resolution geophysics over the project area suggests that previously unrecognized structures could be largely responsible for the influx of hydrothermal mineralizing fluids during Stage II alteration.