Model 24d

DESCRIPTIVE MODEL OF BLACKBIRD Co-Cu

By Robert L, Earhart

DESCRIPTION Massive and disseminated pyrite, pyrhotite, arsenopyrite, cobaltite, chalcopyrite, and magnetite in stratabound lenses, stringers, and in quartz-tourmaline breccia pipes.

GENERAL REFERENCES Bennett (1977), Hughes (1983).

GEOLOGICAL ENVIRONMENT

Rock Types Fine-grained metasedimentary rocks (argillite, siltite, and quartzite), mafic metatuff, and magnetite-pyrite iron formation. Metasedimentary rocks may have large volcanic rock component.

Textures Fine-grained, thin-bedded turbidite sequences, graded beds, mafic dikes.

Age Range The Blackbird example is Proterozoic, but deposits could be of any age.

Depositional Environment Marine turbidite deposition with basaltic pyroclastic activity and submarine hot springs.

Tectonic Setting(s) Failed rift along continental margin.

Similar or Associated Deposit Types Besshi-type massive sulfide (?).

DEPOSIT DESCRIPTION

Mineralogy Cobaltite, chalcopyrite, pyrite, pyrrhotite, arsenopyrite, and magnetite. Gold and silver are locally present in tourmaline breccia pipes. Breccias contain pyrite-arsenopyrite-pyrhotite and minor chalcopyrite-cobaltite.

Texture/Structure Fine to fairly coarse sulfides and sulfarsenides in lenses and stringers, locally with cataclastic texture along shear zones. Pyrite locally has colloform structure.

Alteration Silicification and intense chloritization.

Ore Controls Ore commonly occupies disrupted beds, regional distribution of ore closely follows distribution of mafic tuff and (or) iron-formation. Lenses may form at several stratigraphic horizons separated by barren metasedimentary rocks. Relationship between stratabound and breccia pipe mineralization is not understood.

Weathering Forms prominent gossans where sulfide and sulfarsenide-rich rocks crop out.

Geochemical Signature Enriched in Fe, As, B, Co, Cu, Au, Ag, Mn. May be depleted in Ca, Na. Rare-earth and trace-element distribution poorly known.

EXAMPLES Blackbird, USID (Bennett, 1977)