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MEG LUNCHEON TALK
GEOLOGY OF THE BLACKDOME GOLD-SILVER DEPOSITS
SPEAKER: PER LUNDER

The Blackdome Mine, located 250 kilometres north of Vancouver, BC, began operation in May of 1986, and to the end of October 1989, has produced 174,720 ounces of gold and 478,483 ounces of silver from 274,190 tons of ore.

The property is underlain by Eocene to Oligocene age volcanic rocks, which vary in composition from basic to felsic. Gently dipping, Eocene andesitic to rhyolitic flows and tuffs host the ore, and these rocks are disconformably overlain by Oligocene basalt flows. Andesite and basalt dikes intrude the Eocene strata and are believed to be feeders to the uppermost flows.

The ore bodies are small, high-grade shoots of quartz breccias and veins emplaced along northeasterly-striking, steeply dipping faults. Electrum, acanthite, argentite, aguilarite and silver sulphosalts occur as fine- to medium-grained disseminations within these breccias and veins, along with pyrite, chalcopyrite, arsenopyrite, marcasite, galena, sphalerite and covellite. Quartz and clays are, by far, the dominant gangue minerals but there are also significant amounts of calcite and adularia. The environment for one formation was clearly epithermal, and this is reflected in the fine- to coarse-grained, open-space filling textures of the mineralization.

Alteration is also characteristic of epithermal systems. Weak propylitic alteration in the form of fracture-filling and disseminated pyrite, epidote, chlorite and quartz is very widespread throughout the host rocks. Near the veins, there is strong silicification which occurs as quartz stringers, replacements and chalcedony breccia-filling. This becomes progressively stronger with proximity to the ore-bodies and gives way to veins and quartz-filled breccias. Also, within the fault zones which host the ore, there is an abundance of clay minerals which were derived from supergene weathering, hydrothermal alteration and comminution of wall rocks along the fault planes.

Structural controls of the mineralization are just now beginning to be understood. The main faults that host the ore are predominantly northwesterly-dipping at angles of 45 to 70 degrees, although many have vertical or steep southeasterly dips. They are complexly branched, sometimes braided, and often display cymoid loop structures. It is evident that the most favourable zones for ore formation occur at junctions of faults, near the ends of cymoid loops, and in steeper portions of the fault structures. These steeper sections would have been dilatent zones at the time of ore-formation due to the sense of movement of the faults. It is likely that the permeability of the host rock at these dilatent zones and fault branches would be greater than surrounding sheared material and, hence, been channels for ore fluids.

DATE: Wednesday, January 10, 1989
TIME: 12:00 Noon
PLACE: Regal Ballroom, Hotel Georgia
COST: $15 at the door, Non-Members welcome