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Ore Paragenesis of Taka Barr Vein, Sangilo Epithermal Deposit, Baguio Mineral District, Philippines

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The Sangilo Epithermal Deposit is a gold deposit adjacent to the Acupan Epithermal Deposit in the Baguio Mineral District, Philippines. The latter is a well-studied gold deposit hosted by the Virac Granodiorite and Balatoc Diatreme. Despite being operational since 1927, the former lacks studies on its mineralization and is hosted by the Lucbuban Gabbro.

The Taka Barr vein is the most productive and the main vein mined in the Sangilo Epithermal Deposit. It has an average width of 1 meter and an average orientation of due East, dipping 62°S. It is hosted by the Early Miocene intrusive units of the Central Cordillera Diorite Complex. The study investigated a section of the vein in mine level 2, which is at approximately 1200 masl. Three stages of mineralization were identified according to the textures and ore-gangue minerals present.

Stage I of the Taka Barr vein is adjacent to the walls. It exhibits brecciated textures with the hornblende quartz diorite host rocks as clasts and calcite as matrix. Cockade textures were observed around selected clasts near the host rock. Pyrite and chalcopyrite are found in the clast and rarely in the matrix. This stage is barren of precious metals.

Stage II, the gold-bearing mineralization stage, is distinguished by alternating gray bands of collo-crustiform texture. The sulphide minerals comprise almost 1% of the whole rock. Pyrite and chalcopyrite dominate as the major sulfide minerals present. Other sulfide minerals identified were sphalerite and galena. Gold minerals such as electrum, with 93-97 wt % Au, appear as isolated grains. Au-Ag tellurides, on the other hand, occur when sulphide minerals are present. Early-formed minerals include pyrite and galena, followed by late-stage precipitation of sphalerite and chalcopyrite.

Stage III is characterized by comb and drusy calcite crystals. Pyrite, chalcopyrite, and sphalerite were observed in this stage. No precious minerals were identified. Late-stage carbonate deposition of rhodochrosite and bladed calcite was also observed in this stage.

It can be inferred from the textures that the deposit first experienced brecciation before vein precipitation occurred. The collo-crustiform and bladed textures also point to boiling as a possible mechanism for ore deposition.