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The Buritica Gold Deposit, Middle Cauca Metallogenic Belt, Colombia

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The geology of Colombia is dominated by the collision between oceanic island arc systems and the South American craton. During the Miocene, several porphyry and epithermal deposits were formed in the Middle Cauca metallogenic belt associated with subduction-zone magmatism between 6 and 8 Ma, including Buritica, Marmato, Quinchia, and La Colosa.

The Buritica deposit is located west of the Cauca-Romeral fault system, and it may be classified as an intermediate-sulfidation epithermal Au deposit. The regional geology is characterized by volcano-sedimentary units of the Early Cretaceous Barroso Formation intruded by Late Cretaceous Santa Fe tonalite and Buritica Tonalite, and Miocene andesite, diorite, and intrusive/hydrothermal breccias of the Buritica Intrusive Complex, the latter dated at 7.4 Ma. The age of gold mineralization based on hydrothermal white mica is 6 to 8 Ma. Two main vein systems are present at Buritica, Yaragua, and Veta Sur. Overall, twenty-four individual veins cut all lithologies and present alteration halos of varying intensity. Three stages of mineralization are identified at Buritica, Stage 0 is an early porphyry style mineralization characterized by potassic alteration and low-grade gold, recognized in hydrothermal breccia clasts overprinted by white mica alteration. Stage 1 presents the highest gold concentration as is characterized by veins and breccias with sphalerite, galena, chalcopyrite, and pyrite, plus quartz and carbonate gangue. Stage 2 is characterized by carbonate, tetrahedrite, and gold in the form of veins and breccias that cut Stage 1. Low-grade ore shoots with 1-3 g/ton gold are also present. Drill hole geochemistry shows a high relationship between gold and zinc, copper, and silver. The average Au:Ag is 1.60, and boiling is proposed as the main control on gold mineralization, it was probably triggered by the pressure drop from lithostatic to hydrostatic between stages 1 and 2.