

THE GEOLOGY OF THE GOLD MINERALIZATIONS IN TAPAJÓS MINERAL PROVINCE, AMAZONIAN AREA, BRAZIL

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Abstract: *The geology of the gold mineralizations in Tapajós Mineral Province, Amazonian area, Brazil.* The Precambrian Tapajós Mineral Province (90,000 km²) located on the Amazonian Craton, more specifically on Brazil Central Shield underwent a tectonic evolution at about 2.0 Ga to that of the Guiana Shield (Rogers 1996), which has been important to the gold mineralization (Robert 1996). Gold was first discovered in the province in the early 1950's and the exploitation by *garimpeiros* has continued for 50 years. The cumulative production is estimated to be 159 tonnes of Au from 1958 to 1966. However, no research has been yet attempted to understanding the geology of the gold mineralization. There is thus an urgent need to understand the geology of the these gold deposits, so as to enable an efficient exploration philosophy to be developed.

The province consists of metamorphic complex basement (2.016 Ga and 2.44 Ga; Santos *et al.* 1997), granitic-gneissic migmatitic, cut by NW-SE strike-slip shear zone associated with compressional regime, predominantly ductile (Santos 1996). Supracrustal rocks dated at 2.1 Ga (Santos *et al.* 1997) are mainly schist, metachert, and subordinated amphibolite. Mafic rocks (1.85 Ga; Santos *et al.* 1997) and granitoids (1.90 Ga) cut the basement. A expressive calc-alkaline magmatic event (Gibbs and Baron 1993) consisting of felsic volcanics (1.82 Ga) and subvolcanic rocks (1.77 Ga) is marked by extensional brittle regime (Santos 1996). Sedimentary cover correlated to Roraima Supergroup is intruded by basic dykes and sills (1.69 Ga; Gibbs and Baron 1993). Mafic intrusions dated at 1.2 and 1.0 Ga also occur. Cenozoic sedimentary cover form the alluvial deposits and are gold-rich.

Two type of gold mineralizations occurs: (i) gold-bearing quartz veins (lode-gold deposits) close associated with calc-alkaline magmatism, genetically linked to subduction; and (ii) disseminated/stockwork

mineralizations (porphyry-gold) associated with calc-alkaline to alkaline magmatism during an extensional regime at a high crustal level (Robert 1996; Coutinho *et al.* 1997, 1998).

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