THE OCCURRENCE OF A–B–D VEIN SYSTEM IN JURUENA PROVINCE, GENESIS AND, METALOGENETIC IMPLICATIONS.

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RESUMO: The Juruena Province constitutes a WNW–ESE belt at northern Mato Grosso State, south of the Amazonian craton, between the Ventuari–Tapajós (1.95 – 1.80 Ga) and Rio Negro–Juruena (1.80 – 1.55 Ga) geochronological provinces. This belt hosts several gold and polymetallic mineralization in plutonic–volcanic rocks developed in a Paleoproterozoic continental magmatic arc. This research was developed in the surroundings of Papagaio artisanal gold mining, located near Paranaita city. The auriferous mineralization occurs as quartz-sulfide veins and disseminated in dacite to rhyolite and volcaniclastic rocks, usually with Cu + Zn ± Pb sulfides associated. The gold ore veins occur mainly in widespread zones of potassic (K-feldspar and minor biotite and magnetite), sericitic (QSP) and propylitic hydrothermal alteration. Six types of veins were distinguished, usually subparallel with preferred direction ~N40°E and thickness between 1 to 2 cm: (I) barren quartz veins, emplaced in ductile structures associated to potassic alteration zones; (II) gold mineralized quartz veins, commonly associated to sericitic alteration; (III) sulfide veins in brittle structures related to well–developed sericitic halo in salbands; (IV) and (V) late quartz and carbonate veins, with eventual crustiform texture; (VI) post-mineralization barren quartz veins. In this context, venular ore occurs mainly in type II and III veins and is generally represented by pyrite (5–90%), chalcopyrite (10–30%), sphalerite (2–30%), galena (2–5%), magnetite (1–20%) and arsenopyrite (0–5%), as well covellite and chalcocite which partially replaces chalcopyrite, and hematite replacing magnetite. Disseminated fine-grained pyrite ± chalcopyrite occurs only associate to potassic and sericitic hydrothermal alteration zones. Also, dispersed sulfides in rhyolite and volcaniclastic rocks occurs through the primary structures, apparently not related to fissure-controlled hydrothermalism. The first three types of veins are similar to the A–B–D system veins described in porphyry deposits, whereas the newer ones have characteristics of a shallower epithermal environment. Aquocarbonic and biphasic aqueous fluid inclusions were identified in mineralized veins and corresponded respectively to high-temperature fluids (> 325 °C) with moderate to low salinity (< 7% eq. NaCl) and moderate temperature fluids (~ 190 °C) with high to low salinity (< 25% NaCl eq.). Stable isotope data were obtained in minerals associated with mineralization through δD in sericite (–60.6 to –47.8‰), $\delta^{18}O$ in sericite (+7.16‰) and quartz (+8.26 to + 10.31‰). $\delta^{34}S$ in pyrite (+1.76 to + 2.73‰), which indicated 349 °C for hydrothermal fluid temperature. These results indicate that deep magmatic and meteoric fluids mixed in the ore genesis. The mixing process is interpreted as a result of telescoping of hot magmatic derived to shallow crustal levels along with tectonic structures. These signatures suggest potential to the occurrence of gold and base metals associated with subvolcanic bodies in the Juruena Province through a process of the epithermal system overlapping a porphyry deposit.

KEY WORDS: Juruena Province, Porphyry Deposit, A–B–D Veins, Fluid Inclusion, Stable Isotope.

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