SAPHIRINE-BEARING Al-Mg GNEISSES, ITABUNA BELT, BAHIA, BRAZIL

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Itabuna Belt consists of tonalitic/trondhjemitic granulites, with subordinate basic and saphirine-bearing Al-Mg granulites. In the latter, metamorphic assemblages include garnet (Gt), quartz (Qz),orthopyroxene (Opx1), sillimanite (Sil), indicating the reaction Gt + Qz = Opx1 + Sil, in addition to biotite, mesoperthite and plagioclase. Saphirine (Sf1) is present in minute crystals associated with orthopyroxenes and garnets. A second generation of saphirine (Sf2) occurs in fine-grained symplectitic intergrowths with orthopyroxene (Opx2), sugesting the reaction Gt + Opx1 = Opx2 + Sf2 ± Sil. Cordierite is retrograde and formed by the reaction Opx1 + Sil ± Qz = Cd. However, when present in symplectitic intergrowth with orthopyroxene, the reaction Gt + Qz = Opx2 + Cd is suggested. A second generation of biotite occurs as small symplectitic intergrowth with quartz around orthopyroxenes, garnets and opaque minerals. This biotite (Bi2) results from reactions during cooling, such as: Opx (or Gt, or Opx) + Mp + H2O = Bi2 + Qz. Although saphirine and quartz have not been observed in contact, the primary paragenesis of these these Al-Mg gneisses is typical of formation under high P-T conditions (900oC; 11kbar). Such conditions are supported by thermobarometry, which indicates temperatures in the order of 900-1000oC and pressures between 8-11Kbar. Textural relationships and indicated metamorphic reactions support a clockwise PTt path, typical of collisional settings, and may have been the result of the westward thrusting of the Itabuna belt over the older Jequié block, during the Transamazonian cycle (c.a. 2.0Ga).