



PT.066

GEOCHRONOLOGY (U-PB, AR/AR) AND TECTONIC SETTING OF THE PERALKALINE-SHOSHONITIC MAGMATISM OF THE TEIXEIRA-TERRA NOVA DOMAIN (CENTRAL BORBOREMA PROVINCE, NE BRAZIL)

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Peralkaline and shoshonitic plutons and dikes form a distinct magmatic event intrusive in the Teixeira-Terra Nova structural domain of the Central Borborema Province (NE Brazil). The plutons vary from syenogranite to syenite (Teixeira, Triunfo) and include, in the peralkaline types, aegirine-augite and/or richterite as the main mafic silicates. Quartz-monzonite to monzogranite, sometimes with clinopyroxene (Uri pluton) but usually with biotite and Fe-hastingsite, form the main occurrences of the shoshonitic magmatism. Mafic stocks of gabbro-norite (Taperoá) with Ti-rich biotite occur locally. The dikes show compositions that vary from peralkaline to ultrapotassic. They cut the Proterozoic basement and its metapelitic cover, as well an older granitic magmatism (Tavares, West Salgueiro). The magmatic fabrics investigated by AMS indicate that the peralkaline plutons precede the development of the major shear zones, such as the Patos Lineament, but cut an older regional foliation recorded in the host rocks of the Manaira peralkaline dikes. Fabrics (lineation, foliation) in the Uri pluton display a steep to vertical inclinations in agreement with the upward movement of magma in an extensional setting. The peralkaline and shoshonitic plutons and dikes, including the mafic stock of Taperoá, provide zircon U-Pb (SHRIMP) ages ranging between 590 Ma and 598 Ma. Ar/Ar ages of amphibole from the Manaira dikes yielded plateau-ages in the range of 595-600 Ma in agreement with the zircon U-Pb age of the Triunfo syenite at 595 Ma. The combined structural and geochronological data indicate that relatively shallow plutons and dikes succeeded an earlier magmatism, mostly calc-alkaline in composition between 610-620 Ma, but preceded the development of the regional shear zones that in some places controlled the emplacement of porphyritic K-rich granites, diorites and leucogranites dated between 580 and 530 Ma. The Teixeira-Terra Nova peralkaline-shoshonitic magmatism records therefore a transition in the tectonic regime, from a compressional phase related to convergence and collision of magmatic arcs and cratons to a post-collisional setting dominated by extension and transcurrent movements.