GEOLOGY AND PRELIMINARY GEOCHEMISTRY OF THE MIDDLE PROTEROZOIC SERRA DA PROVIDÊNCIA RAPAKIVI GRANITE-RONDÔNIA, BRAZIL

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The Serra da Providência Rapakivi Granite (SPRG) occupies a small portion of the southweastern part of Rio Negro-Juruena Province (RNJP), southwestern Amazonian Craton. The studied area corresponds to the southern part of the granitic batholith which intrudes granitic orthognaisses, migmatites and amphibolites of Jamari Complex.

Four granitic facies showing gradational contacts to each other have been recognized: pyterlites with subordinate wiborgites (PR), pink-gray porphyritic granites (PGPG), porphyry granites (PG), and even-grained pink granophyric syenogranites (EGS).

The eastern portion of the batholith is preferentially occupied by PR-hornblende-biotite monzogranites, which crop out as boulders in eroded terrains. They show porphyritic and rapakivi textures, ovoid K-feldspars phenocrysts attaining 5 cm of diameter. They were affected by an incipient brittle deformation and show, occasionally, dark gray microgranular enclaves (autoliths) of granitic to quartz-dioritic composition. In the extreme southern portion of the batholith, rocks locally grade to wiborgites.

PGPG commonly occur as boulder fields in the center of the body. They are biotite monzogranites with euedral and ovoid K-feldspar phenocrysts, locally with rapakivi texture. This facies shows gradational contact with PR. Varietal mafic minerals are brown biotite and, sporadically, hornblende. Quartz-dioritic microgranular autoliths are widespread. Leucocratic aplitic facies, and rarely pegmatites, occur as centimetric late intrusive dykes.

PG occurs in the western border of the batholith, and occasionally in its inner portion, as stocks and isolated bodies which constitute important topographic highs in the area. Brittle shear, with associated grain cataclasis, is marked, particularly in the western flank. This allowed hydrothermal fluid percolation, generating epidote, green biotite, carbonates and chlorite. Monzogranites are predominant, but in the transition to EGS, syenogranites also occur. They are texturally homogeneous, with red-gray color, ovoids and subeuhedral phenocrysts of K-feldspar and plagioclase in a fine matrix, occasionally with rapakivi texture. Granophyric texture is frequent.

EGS are topographically expressed as small ridges. They are pink, leucocratic (biotite < 3%), with medium grain size and granophyric texture. They frequently show miarolithic cavities filled with quartz and fluorite. Brittle deformation is observed in restrict portions of the body resulting in metric zones of granitic breccia. Basic rocks (gabbros and diabases) form small intrusive bodies in the granites, cropping out as boulders. Gabbros are restricted to south-central portion of the area. They display dark-gray to green color, porphyritic texture and incipient magmatic flow foliation. They are intensely altered with primary minerals being replaced by amphiboles, epidote, quartz, biotite, carbonates and chlorite, generally preserving the ophytic texture. Diabases occur as dykes, tens of meters long, associated to NNE lineaments.

Preliminary geochemical data show that silica contents vary between 68 and 72 weight % in PR facies, as well as in the PG, while in EGS they are generally higher than 72.5 weight %. The PGPG are not an homogeneous group. Some of them approach geochemically the PR, others the EGS. All facies are metaluminous grading to slightly peraluminous. The PR are distinguished

from PG by their lower K/Rb ratios and comparatively higher Rb, Sr and CaO content. The EGS crystallized from a more evolved liquid than those generating the PR and PG, which are similar, but not necessarily derived from the same source. The SPRG has strong affinity with intraplate and A-type granites. Its relatively high CaO, K/Rb (100 to 300), and Rb/Sr (1 to 10), as well as Rb-Ba-Sr plot indicate that the studied facies are not tin-specialized. Preliminary geochronological analyses (U/Pb method) performed in two samples of PR facies gave a 1.57 Ga age (Bettencourt, oral comm.), which is interpreted as crystallization time of the granitic pluton, related to final stage of the evolution, or to the beginning of cratonization, of RNJP. Brittle to locally brittle-ductile shear in the western border of the batholith could have been originated during the Rondonian or Sunsas events.