ABSTRACT

This report is a part of the "Programa de Levantamentos Geológicos Básicos do Brasil – PLGB" (Program for Basic Geological Mapping of Brazil) that is being carried out by CPRM – Companhia de Pesquisa de Recursos Minerais, the Geological Survey of Brazil. It comprehends the geological surveying and the evaluation of both mineral and hydrogeological potentials of 15,700 sq.km of the Pedro Osório Sheet (SH.22-Y-C), which is placed in the southern part of the Rio Grande do Sul state. Geological and Metallogenic/Previsional maps at the scale 1:250,000 were produced.

Based on aeromagnetic data this study divided the Sul-Rio-Grandense terrain into three different domains: Western, Central and Eastern. In the sheet the two former domains correspond respectively to the Brasiliano geotectonic units Tijucas Belt and Dom Feliciano Belt, while the Western Domain comprehends the border area between the Vila Nova Belt and the Taquarembó Block. Other tectonic geological units which occur in the area are: sedimentary and volcano-sedimentary coverings ("molasses"); Bacia do Paraná sedimentary Cover and Cenozoic Covers. The lithostructural basement units were ordered in independent stratigraphic columns for each magnetic domain.

The Western Domain is caracterized by the granitic rocks of the Santo Afonso Intrusive Suite. The Central Domain comprehends low and medium-grade metamorphic rocks of the Porongos Metamorphic Complex.

The Eastern Domain corresponds to Dom Feliciano Belt and comprehends a granitoid complex, where are found: tangential deformed rocks (Pinheiro Machado Granite-Gneissic Complex); syntrascurrent rocks associated to the principal zones of transcurrency (Chácara São Jerônimo Granite and Cordilheira Granitic Suite); syn- to late-transcurrent granites (Arroio Moinho Granite); basic intrusions and granitic bodies of post-tectonic emplacement (Dom Feliciano Granitic Suite); as well as dyke swarms of rhyolites (Asperezas Rhyolite) and peralkaline granitic stocks (Arfvedsonite granite).

The sedimentary and volcano-sedimentary covering over the crystalline terrains of the Western and Central domains belong to the Camaquã and Arroio Boici basins which were generated by the end of the Brasiliano cycle. In the Eastern Domain correlative conglomerates and pelites fill up the small Cerro Chato "tectonic trough".

The Paraná Basin Sedimentary Cover includes units from Permian to Triassic of the Itararé (Rio do Sul Formation), Guatá (Rio Bonito and Palermo formations) and Passa Dois (Irati, Estrada Nova and Rio do Rasto formations) groups. The red coarse and fine sandstones, conglomerates and pelites were generically referred to the Rosário do Sul Group. The Cenozoic Covers are formed by alluvial deposits, continental, transitional and marine deposits from the outer coastal plain and by the Santa Tecla Formation. From the structural standpoint the

three magnetic domains may be seen as tectonic domains separated by translithospheric sutures. The rocks in these domains were reworked by transcrustal transcurrent shearing zones of the Dorsal de Canguçu System. The re-activation of these structures during the Phanerozoic was responsible for the deposition, magmatism and deformation recorded in several stratigraphic units of the Pedro Osório Sheet.

The Candiota coal field contains the main mineral resource of the area. Calcitic limestone for cement plants, decoration stone, clay for red pottery and raw materials for building purposes (pebble, dimension stone, gravel and sand) are also economically used. The geochemical surveying through pan concentrates pointed out to several anomalous sites and areas with major prospecting interest which the most important zone indicated the gold presence.

The integration of the geological, geophysical, mineralometric and mineral inventory is displayed in the Metallogenic/Previsional Map showing 8 target areas for mineral prospection/exploration.

There are two main aquifer systems related to the crystalline basement, mainly granites, and to the sediments of the Rio Bonito Formation. The main aquifers are related to sandstones of the Rio Bonito Formation, mainly those in the lower section of the Candiota coal seam. They bear waterwells, many of them surgent, with yelds of more than 10 m^3/h and even up to 100 m^3/h. This groundwater presents bad chemical quality for human intake due to the contamination of the interbedded coal.