Late Proterozoic Iron and Phosphatic Formations in the Brasilia Colisional Belt, South Minas Gerais, Brazil

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A meta-sedimentary belt of chemo-pelitic rocks, called Itau Unit, outcrops for more than twenty-five kilometers at the extreme South of the Brasilia belt, southwest of the São Francisco Craton, Minas Gerais State, near Fortaleza de Minas and Itaú de Minas villages. It is bounded by overthrust faults, within Archean granite-greenstone terrains at the base and meso-neoproterozoic metamorphosed sediments at the top. It comprises marble, chlorite and sericite phylites, quartzite, meta-phosphorite and banded iron formation. The sedimentary deposits are interpreted as product of a platform environment in passive margin during the Neo-Proterozoic.

The association of phosphorite with banded iron formation may be related to climatic changes in a transition from shallow to deep platform. The iron formation is indicative of poor terrigenous supply during an ice age and high-oxygenated waters promoting iron oxidation and precipitation; marine phosphates were formed at the change from ice to greenhouse effect, due to the reduced solubility of phosphates in hot water. Weak metamorphism preserves laminated structures in phosphorites possibly of algalic type. In view of the association, the iron formation is interpreted as of the Rapitan type. The association was submitted to intensive nappe deformation during metamorphism and after that to transcurrent and upthrust faulting and folding. The faults are sinistral E-W and upthrust striking NW-SE. The general fold structure defines an antiform plunging to NW.