Petrology of the Fe-Ti ore and its Metamafic Hostrocks at Barro Vermelho, Custódia-Pe, Northeast Brazil.

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The Fe-Ti ore occurrence of Barro Vermelho, in the municipality of Custódia-PE, Pajeú-Paraíba fold belt, Borborema Province, in Northeast Brazil is included in a complex of orthogneisses ranging randomly from granitic to tonalitic in composition. The field relationships, petromicrographic features, geochemistry and U/Pb data in zircons suggest that the granitic gneisses formed at 2.1 Ga by migmatization of the tonalites formed at 2.4 Ga. Frequent decimetric to metric, rarely hectometric enclaves of anorthosites, gabbros, gabbronorites, banded amphibolites (dioritic to gabroic), trondhjemites and calcsilicate rocks are inserted in the orthogneisses with erratic distribution. One of the hectometric enclaves includes the peneconcordant massive Fe-Ti ore body, 0.8m thick and 60 to 80m long, intercallated in metagabbro-anorthosites and banded amphibolites with subordinated trondjhemites. The ore is formed by martitized Ti-magnetite and ilmenite. Some ore apophises crosscut the mafic wallrocks. Field relationships, Harker diagrams, trace element and REE patterns strongly suggest that the (meta) gabbro-anorthosites, banded amphibolites and metagabbronorites are differentiation products of the same tholeiitic magma of oceanic nature. The anorthosites are supposed to be formed by plagioclase fractionation while the amphibolites are formed by the crystallization of the residual melt. The metagabbronorites represent the most primitive magma of the suite and the ore would represent the last residual melt of the same suite.