

Rio das Velhas Greenstone Belt lithofacies associations, Quadrilátero Ferrífero, Minas Gerais State, Brazil

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The Archaean Rio das Velhas Greenstone Belt, of low metamorphic grade, is divided into seven lithofacies associations: (i) Mafic-ultramafic volcanic: tholeiitic basalts, magnesian tholeiites and komatiites with primary textures, and minor banded iron formation, chert, felsic volcanic rocks, carbonaceous pelites and mafic-ultramafic plutonic rocks; the basalts are E-MORB type of submarine mafic plains; (ii) Volcanic-chemical: tholeiitic basalts, banded iron formation, and minor chert, carbonaceous pelites and epiclastic rocks; the basalts display volcanic features well preserved and are differentiated from magnesian tholeiites; (iii) Pelitic-chemical: laminated and carbonaceous pelites, iron formation and chert, characterizing deep-sea environment; (iv) Felsic volcanoclastic: mostly dacitic flows and volcanic breccias, and minor graywacke-argillite, interpreted as probable subaerial eruption in island arc setting; the turbidites associated indicate subaqueous deposition; (v) Resedimented: two distinct graywacke-argillite sequences, both from volcanogenic sources; the one with interbedded calc-silicate rocks and conglomerate, represents continental contribution: shallow to deep-sea turbidites; (vi) Coastal: sandstones with sedimentary structures characterizing tide-influenced shallow-water to coastal environment, and eolian dunes; (vii) Alluvial-fluvial: sandstones, conglomerates, and minor siltstones, mudstones: alluvial fans and braided river systems. These associations clearly show in the Rio das Velhas Greenstone Belt the transition from deep sea to marginal depositional systems; the continental one unconformably overlies the others.