PALEOENVIRONMENTAL EVOLUTION AND STRATIGRAPHIC FRAMEWORK OF THE RIO BONITO FORMATION (PERMIAN), PARANÁ BASIN, EASTERN SANTA CATARINA, BRAZIL

Manna, M.O.[12]; Nascimento, M.S.[123]

[1]Federal University of Santa Catarina; [2]Basin Analysis and Reservoir Characterization Research Group (ANBA)/PFRH-240-PB; [3]Nucleous for Geological Research (NPG)

ABSTRACT: The Rio Bonito Formation records high-frequency cycles of regression and transgression occurred during the Early Permian in the Paraná Basin, which have great relevance to understanding of regional genetic stratigraphic surfaces. The stratigraphic unity composes the lowermost sedimentary succession of the Guatá Group and is considered one of the most important units of the Supersequence Gondwana I due to the occurrence of coal deposits, as well as because it's high-potential for hydrocarbon reservoirs. The Rio Bonito Formation records the development of an extensive fluvial-coastal-marine system during a transgressive context related to the postglacial sedimentation. High-frequency transgression-regression cycles normally generate a variety of stratigraphic surfaces and a distinct stratigraphic framework associated to different systems tracts. In the eastern border of the Paraná Basin, State of Santa Catarina, there are mega expositions of the Rio Bonito Formation that present favorable conditions to stratigraphic and architectural analyses. This work presents facies, architectural and stratigraphic data from outcrops of the Rio Bonito Formation, in the Ituporanga region. Seventeen fine- to coarse-grained sandstones, siltstones and mudstones lithofacies were defined, with a great variety of sedimentary structures. Sedimentary logs (at the 1:100 scale) and photomosaic were performed including sedimentary facies descriptions in order to recognition of bed geometry, facies stacking patterns and stratigraphic surfaces. Nine facies associations that represent four depositional units (DU) were defined: Meandering fluvial system (DU1), Tide-dominated estuarine system (DU2), Lagoon-barrier system (DU3) and Beach system (DU4). Three Systems Tracts were defined: Lowstand Systems Tract (LST), Transgressive Systems Tract (TST), and Highstand Systems Tract (HST). The Lowstand Systems Tract (LST) is composed of a meandering fluvial system, characterized by channels and floodplain deposits (Triunfo Member). The Transgressive Systems Tract (TST) includes, at the base, a Sequence Boundary surface (SB) developed at the top of the Itararé Group (with paleosol), which coincides with the Transgressive Surface (with lateritic conglomerate levels) and the Maximum Regression Surface. The TST is composed of a tide-dominated estuarine system, which includes tidal channels and tidal flats deposits (initial stage of the transgression), and a lagoon-barrier system (at an intermediate to final stage of the transgression), correlated to the Paraguaçu Member. The Highstand Systems Tract (HST) includes beach depositional system with the development of regressive strandplains in high-sea level stage (Siderópolis Member).

KEYWORDS: SYSTEM TRACTS, RIO BONITO FORMATION; PARANÁ BASIN.