Depocenters with Potential Preservation of Pre-Carboniferous Rocks in Norte Basin (Uruguay)

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Abstract

An area in the West part of the Norte Basin was selected with the objective of characterizing the preservation of potential pre-Carboniferous sequences in depocenters. As a main result, a NW trending corridor named Salto-Tambores was defined. This corridor, which develops between the Daymán and Arapey faults, can be divided in two segments with different morphology, structural setting and volcano-sedimentary fill. The Eastern segment topography is represented by hills with strong slopes with elevation of 270m above sea level. Sub-surface data for this segment indicates that basement depth reaches 800m and that the Devonian sequence is preserved (confirmed by several wells), covered by Late Permian units that crop out or are covered by Eo-Cretaceous basaltic flows. The Western segment is represented by a plane topography with gentles slopes (< 4°) and elevations of 140m above sea level. From the central to the West segment of the corridor, the basement deepens from 1000 to 3000m as a result of NE trending lystric and normal faults that rotated the basement blocks to Southwest direction. In this area the Itapebí fault was defined, which controls the deepest depocenter showed in seismic sections (>3700m). Near and parallel to the Uruguay River, surface and subsurface analysis allowed to identify N-S trending fault. There, the magnetotelluric (MT) section shows that the basin reaches more than 3500m in thickness. The deepest depocenters identified in this work have not been drilled yet, therefore the sedimentary fill for these areas is unknown. Well data indicates the pinch out of the Carboniferous units towards the Southwest. Also Devonian thickness of more than 300m is improbable for this section. Regarding these, the preservation of Paleozoic units older than the currently known for the Norte Basin is highly probable.