

## **PRE-APTIAN UNCONFORMITY IN THE SERGIPE-ALAGOAS BASIN (NORTHEASTERN BRAZIL): AN IMPORTANT CONTROL ON THE PRE-RIFT RESERVOIR SANDSTONE POROSITY EVOLUTION.**

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Pre-rift reservoir sandstone in the Sergipe-Alagoas Basin, northeastern Brazil, is represented by braided fluvial and eolian deposits of the Serraria Formation (Early Cretaceous). In the beginning of oil exploration, the Serraria Formation was considered a poor reservoir unit, in spite of the fact that some offshore blocks presented a better porosity in deeper levels. The causes of the different reservoir quality in distinct areas was dealt using several different approaches, including paleogeographic, lithofaciologic, provenance, diagenetic and burial history analysis. These sandstone was deposited in a wide cratonic basin, under arid to semi-arid conditions, prior to the Proto-Atlantic Rift rupture. The unit shows a lower and an upper fine-grained intervals composed of interbedded sandstone and lacustrine shale, and a coarse-grained middle interval of fluvial and eolian reworked deposits. Paleocurrent data and provenance signature indicate essentially plutonic source-rocks. Paleoclimatic and paleogeographic controlled composition and distribution of early poikilotopic carbonate cementation, generating a loose packed sandstone in the distal areas. The Serraria Formation, in the southern area of the Sergipe-Alagoas Basin, was submitted to a phase of subaerial exposition related to a pre-Aptian uplifting. Better reservoirs comprise distal sandstone affected by a extensive telodiagenetic dissolution. This dissolution took place in the beginning of the post-rift uplift, when a warm and humid climate prevailed. This conclusion could be applied as a predictive porosity model to similar geologic setting of the pre-rift sandstone in the Coastal Atlantic basins of Africa.