

Pre-Salt Carbonate Reservoirs in the South Atlantic and World-wide Analogs

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Abstract

This work focuses on the geological, geophysical and petro-physical challenges for interpretation of presalt carbonate rocks that constitute the main reservoirs in the recently discovered giant field accumulations in the South Atlantic, particularly in the Santos Basin. These rocks constitute one of the main exploratory plays in several basins worldwide, and have yielded large petroleum discoveries in the southeastern Brazilian continental margin. The presalt microbialite reservoirs have been recognized in several other sedimentary basins worldwide, as for example, in the northern Caspian Sea and in the Kwanza Basin, offshore Angola. These carbonate rocks are sealed by evaporites and their origin is still controversial, with one current of interpretation assuming they are associated with reefs and carbonate buildups formed during periods of sea-level rises in a desiccating basin. Other currents of interpretation assume that these rocks might be related to chemical precipitation of carbonates in a basin affected by volcanic or hydrothermal episodes, resulting in travertine deposits with secondary biogenic growth. We discuss possible microbialite analogs in the sedimentary basins of Brazil dating from Neo-proterozoic to Recent, and their similarities and differences in terms of depositional setting and petrophysical parameters from the presalt carbonate rocks observed in Santos Basin.