

## Deepwater Northern Argentina- A New Frontier

Offshore northern Argentina has attracted very little oil and gas industry interest over the years. A lack of success in exploration campaigns in the late 1960's and again in the mid 1990's can now be attributed in large part to a limited understanding of rift basins and rifted volcanic margins and to inadequate technology at the time. Recent billion-barrel discoveries in analogous basins elsewhere on the Atlantic margin utilizing state-of-the-art seismic and drilling technology with latest geological concepts on source rock and reservoir development point to this underexplored region as one of the last frontiers for both shallow and deepwater oil and gas exploration.

The continental margin of northern Argentina is a volcanic rifted margin segmented by major transfer zones which reflect the pre-existing Gondwanan structural fabric. The individual basins along this margin, the Salado, Colorado, Valdes and Rawson basins, formed initially from intracratonic rifting within the paleocontinent of Gondwana during the middle Mesozoic, and evolved into true passive margins following the separation of the South American plate from the African plate in the Early Cretaceous.

The adjacent, deepwater, Argentina Basin formed with the opening of the South Atlantic in the Early Cretaceous. It has all the elements of a true rifted volcanic margin, with Seaward Dipping Reflectors (SDRs) on transitional crust, the formation of new oceanic crust, and the prototypical syn-rift, sag and drift sequences deposited on thinned and continental crust. It trends NE-SW, parallel to the present-day coastline and shelf edge, and extends more than 1,200 km from Uruguay to the North Falkland/Malvinas Basin. No wells have been drilled in this truly frontier basin. Based on regional seismic, gravity, and magnetics data it appears to have much in common with the deepwater Orange and Namibe basins on the African conjugate margin. .

Recent long-offset regional 2D seismic enables a better understanding of the Argentina Basin architecture and helps delineate the critical elements of a successful hydrocarbon exploration program in a frontier basin, including evidence of source rocks, reservoirs, structural and stratigraphic traps, and seals. The application of modern technology may well prove to be the key to unlocking the potential of this vast, underexplored region.