Onshore Kwanza Basin

Introduction
Regional and Petroleum Geology

The Kwanza Basin is one of the classic passive margin basins on the West African margin that developed as a result of the rifting of Gondwanaland during the Mesozoic.

This rift-to-drift margin formed as a product of the separation of South America and Africa and the formation of the South Atlantic. Traditionally four megasequences are recognised in the tectono-stratigraphy corresponding to pre-rift, rift, transitional and drift phases of development, with a defining Aptian salt horizon formed at the end of the transitional phase.

Jurassic continental clastics were deposited on basement, which was later faulted during rifting. Rift related sediments were deposited over these, topped by thick Aptian salt. Post-salt Cretaceous ‘rafts’, predominantly composed of carbonate, have slid down dip, opening elongated troughs filled with Cenozoic sediments.

Working petroleum systems have been identified throughout the basin, in both pre-salt and post-salt sediments. Prolific working reservoir intervals occur in the Albian, Late Cretaceous and Cenozoic.

Exploration history

Hydrocarbon indications in the form of oil seeps and asphalt deposits have been known for at least 200 years. The first systematic exploration of the basin began in the early 1900s with a major drilling campaign from 1915 to the mid-1930s when 26 wells were drilled.

With the advent of reflection seismic a second exploration drilling phase began between 1952 and 1978, when about 11500 line Km of seismic and 133 wells were drilled. This campaign resulted in the discovery of 11 oilfields and two small gas accumulations with a combined STOIIP of about 400 MMBOE. Of these reserves, almost 90 MMBOE were produced from 150 development wells up to 1998 when the last fields were shut-in.