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Sequence Stratigraphy as a tool in understanding Hydrocarbon Distribution in the Santos Basin, Brazil

Sequence stratigraphy is an important tool that has been utilized to help develop a petroleum system analysis of the Santos Basin, Brazil. In 1997 Brazil re-opened upstream activity to foreign operators, since then, Texaco has acquired significant well and 2/3d data in the Santos Basin. These data have been integrated into a sequence stratigraphic framework. Three phases of tectono-stratigraphic deposition have been recognized; the early Cretaceous rift, including deposition of lacustrine source beds, an Aptian transitional phase dominated by evaporite deposition and finally, an Albian to present day drift phase. This third phase initiated as a carbonate platform in the Albian, transitioning to a Late Cretaceous through Recent clastic deltaic system, it includes the deposition of Cretaceous marine source rocks, reservoir quality Albian oolites, and Upper Cretaceous/Tertiary deltaic to deepwater sandstones.

The major sequences have been interpreted for the Santos Basin. The results of seismic mapping identified several geographically distinct tectonic zones related to basement controls and salt movement. Isopach maps illustrate how tectonics, relative sea level change and sediment input influence the shift of depo-centers through time. Identification of these shifting depo-centers, integrated with seismic facies analysis have been used to predict reservoir and seal prone intervals. The sequence stratigraphic framework also provides input to basin models to help explain the present day distribution of hydrocarbons, their phases and quality.