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Deepwater Angola; Stratigraphic and Structural Development of the Pre-Salt, Implications for Source Rock Distribution

The Angolan Pre-salt sequence is comprised of sediments ranging in age from Berriasian to Early Aptian, representing the rift and early drift phase of the Atlantic margin. Organic rich lacustrine shales, deposited in half grabens that developed during the period of active rifting, are the main source for the oil fields in North Angola.

Previous models of the Angolan Pre-salt geological history (Karner; 1999, Henry; 1995) were mainly based on regional 2D data and biased by proximal wells, located in the shallow offshore. The availability of extensive, high quality, 3D seismic coverage over the deep Angolan Offshore has made it possible to revisit these models.

Based on the interpretation of a large sub-regional seismic 3D dataset, new information has emerged on the stratigraphy and structural development of the Pre-salt sequence.

A previously unrecognized stratigraphic unit has been identified within the drift sequence, near the base of the salt. This unit, the extent of which is limited to the deep offshore, is characterized on seismic by well-defined slumps and channel/fan complexes indicating deepwater deposition. Supporting data suggests the presence of mature, lacustrine source rock in this interval.

The implications of this model for the Angolan deep offshore are two fold;

- In areas where conventional, deeper, Pre-salt source rocks are overmature shallower, mature, source rocks might exist.
- The younger Pre-salt sequence might contain substantial deep-water reservoir units.