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Robert K. Goldhammer¹, Michael J. Cope², Eric Tuitjer¹ (1) University of Texas, Austin, TX
(2) Western Geco, London, United Kingdom

Cretaceous Sequence Stratigraphic and Paleogeographic Evolution of the Southern Kwanza Basin, Angola: Implications for Upper Cretaceous Siliciclastic Reservoirs

The Cretaceous tectono-stratigraphic and paleogeographic evolution of a large region (70,000 sq km) of the Kwanza Basin (offshore Angola, west Africa) has been documented through the interpretation of a regional seismic grid (25,000 line km 2-D data) integrated with biostratigraphic and lithostratigraphic data from 31 wells (both onshore and offshore). The Cretaceous stratigraphy of this region records: (1) a Ryazanian-Early Aptian rifting phase (basement extension and volcanism) accompanied by deposition of lacustrine carbonates and non-marine clastics in grabens (5-20 km in width, >100 km in length; total fill > 2 km); (2) Late Aptian widespread deposition of evaporite (end rift phase; Loeme Salt); (3) early divergent margin deposition of retrogradational Albian carbonates (<2 km thick) marked by intra-Albian updip salt-related extension (rafting) of a low-relief ramp system and downdip intra-Albian contraction of primarily off-ramp facies; (4) early Cenomanian tectonism marked by (a) contractional deformation (principally folding), uplift and subaerial exposure of Albian carbonates, (b) local lowstand deposition of clastics in structural lows located in updip positions, (c) development of downdip salt-withdrawal basins (2-10 km in long dimension) linked to salt mobilization; (4) a Turonian-Maastrichtian divergent margin phase of regional subsidence, erosion of the hinterland and associated clastic progradation, coupled with deep-water sedimentation in salt withdrawal basins developed outboard of the terminal Late Cretaceous shelf edge. Paleogeographic restorations with isopach and facies information have been generated at several stratigraphic levels, including Basement, top Salt, four Albian horizons, Cenomanian, Turonian and Maastrichtian.