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Channel Formation and Distribution in the Northwestern Niger Delta

This paper focuses on the Miocene channel systems of the northwestern axis of the Niger Delta in an attempt to illustrate and propound explanations for the modes of formation and fill emplacement that characterize this part of the petroleum province.

An integration of seismic stratigraphy, well log, biostratigraphic and geochemical data was employed in the interpretation of a 3-D seismic supercube over all of Chevron's western concessions (OMLs 49, 89, 90, 91 and 95). Examples of these large-scale incisions will be shown and visualization techniques will highlight the intricacies observed.

Several play types are associated with the channels and the distribution of hydrocarbons in these areas, specifically in the Inner Trend over Kito, Tapa, Oloye and Delta fields have been analyzed in an attempt to establish a link, if any, between axes of orientation and trends of hydrocarbon emplacement. The possibility of hydrocarbon-rich sand fill and intra-channel reservoir sands has generated great interest in the Industry. The northwestern Niger Delta is replete with such possibilities.

The distribution of submarine channel systems has far-reaching influences on the prospective intervals in the northwestern Niger Delta. They have been identified as stratigraphic traps (erosional truncations) as well as possible catchment zones for reservoir-quality sands.