

## **Channel-form Morphologies Revealed in Salt-modified, Intra-slope Basin Settings- Upper Cretaceous North Gabon**

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Industry exploration of the Lower Congo Basin has focused on amplitude supported Oligo-Miocene slope turbidites. High quality 3D seismic reveals an exceptional level of channel-form detail in the deepwater play. The enhancement of flat events and presence of class III AVO anomalies has significantly impacted exploration success. Extrapolation of the play concepts northward into the Upper Cretaceous basins of North Gabon has proven to be a challenge. Despite significant industry drilling, well results indicate the complexity in distribution of turbidite hosted reservoir facies. Amplitude anomalies are equivocal and where hydrocarbons are encountered, calibration to the seismic response has proved non-diagnostic. The Upper Cretaceous play was regarded as non-amplitude supported and risk on reservoir quality and hydrocarbon presence remained high. Technical focus within Shell shifted to the application of process based geological models that might resolve details of the depositional system otherwise overlooked. An acoustic impedance inversion dataset was generated and mapped 'forensically'. The interpretation was guided by concepts developed from a new sequence defined, slope depositional model. Stratigraphically calibrated seismic slices revealed channel morphologies consistent with structural evolution of the basin fill and with facies-types penetrated in offset wells. Subsequent attribute analysis of the revised depositional trends, confirmed the existence of DHI's that corresponded to fluid contacts, as predicted by fluid substitution models. Partial resolution of subtle, deepwater plays is achieved with dedicated attention to depositional process and the application of appropriate seismic attribute response technology. This approach may stimulate exploration for additional slope-turbidite systems in deepwater basins.

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