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Methodologies for Reservoir Prediction in South Angola

Reservoir presence and quality were considered major risks in the Benguela/Kwanza Basins at the time the blocks were tendered in South Angola. No Cretaceous well penetrations existed within the basin. Several tools and methodologies were utilized to define sedimentary pathways. The methodologies consisted of detailed regional mapping followed by the use of amplitude extractions and horizon/proportional sculpting. This led to the delineation of sand fairways, which were then incorporated with present day structure maps to identify key traps.

The success of these methodologies will be demonstrated in more detail using the results of the first three wells. One of the first wells targeted a stacked sequence of Confined Channel Complexes and found excellent quality sand. The other two wells drilled into Distributary Channel Complexes with only one of the two finding reservoir quality sands.

Results from these wells suggest the identification of feeder channels are critical in de-risking reservoir presence in basins where little to no well control exists. Where feeder channels could be identified, significant amounts of sand were found; where they were difficult to identify or absent, sands were not found. Other learnings include

Cretaceous reservoir quality risk lowered; reservoir presence risk confirmed Generally higher N/G decreased likelihood of intraformational seals Some 'seismic dim' intervals contain high N/G sands