

Subsurface Learnings: Angola Deepwater Developments

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ExxonMobil's and Sonangol's subsurface learnings from deepwater developments in Angola will be reviewed in the presentation. Specifically, evolution of deepwater depositional models, depletion and well planning, and integration of subsurface scenarios into concept selection will be discussed.

Knowledge of deepwater depositional systems has rapidly evolved due to heightened industry focus and advancements in data quality and quantity. Models of the 1970's and 1980's have been enhanced with dramatically different reservoir implications that call for innovative development strategies. We now recognize a spectrum of channel complexes as primary architectural elements in most deepwater reservoirs and each has unique characteristics that must be understood to optimize depletion plans.

Depletion planning has benefited from advances in the utilization of 3D visualization technologies. Reservoir models today are generally seismically-conditioned and thus better place sands spatially. Real time 3D visualization-based well planning to test alternative scenarios, coupled with rapid testing in reservoir models has resulted in optimized well count, placement, and timing. Finally, the visualization centers have facilitated improved integration across geosciences, reservoir engineering and drilling.

As the price tag is very high for deepwater developments, it is critical to properly align depletion plans, reserves range and development concepts. Subsurface teams must identify critical uncertainties and plausible scenarios that drive reserve ranges. Development concepts are then identified that are robust--minimize risk across the range while achieving acceptable returns in the expected outcome.
