AAPG International Conference
Barcelona, Spain
September 21-24, 2003

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Seismic Characterisation of Deepwater Turbidite Slope Systems - Examples from Angola Block 18

Turbidite slope systems contain complex successions of reservoir and non-reservoir facies arranged in an array of different stacking patterns. Recognising recurring aspects of system development provides a process for evaluating problems that may need to be resolved during field appraisal and development.

Definition of these turbidite systems has been achieved using conventional and high-resolution seismic volumes, in addition to range limited seismic data to differentiate between fluid and lithology. Mapped horizons are then used to extract amplitude information from the attribute volume for each reservoir interval.

Using a combination of seismic volumes and attributes, an improved definition of the distribution and architecture of the reservoir has been possible. In essence, two types of systems are observed: erosional sandy channel complexes and low relief channel levees. Although the two systems often contain similar facies, the stacking patterns and net:gross are very different.

Erosional sandy channel systems commonly comprise a succession of high net:gross facies confined within a large scour. In contrast, low relief channels are generally thin and wide, occasionally muddy and appear to have no obvious confinement. In both cases, the stacking patterns are frequently complex resulting in challenges in development planning. The lack of confinement in the low relief channels, in particular, presents challenges in development well design. Breaking out the systems into their key components has resulted in the generation of conceptual models that have been used for development planning.