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Application of 3-D Interpretation and Visualization Technologies to Low Net:Gross Fluvial Reservoirs—Experiences in Greenfield Exploration and Development Settings

Exploring and developing hydrocarbons in low net:gross fluvial reservoirs creates special challenges for petroleum geoscientists and engineers. Key issues to be addressed include establishing net:gross, identifying and targeting sands, and determining reservoir sand connectivity. Recent greenfield exploration in the Gulf of Thailand and development work in the NorthWest Shelf of Australia have highlighted how 3-D interpretation technologies may be applied with significant success to address these issues. Greenfield exploration techniques included : image processing of 3-D seismic data, structural modeling, coherency volume interpretation, body checking, optical stacking, automated flat-spot detection, and neural network imaging. Tools used in the development setting have included : near and far offset 3-D seismic volumes, coherency volume interpretation, body checking, optical stacking, seismic attribute extraction and interpretation, and seismic inversion. 3-D Visualization has facilitated all of these techniques, and in addition, has enabled the planning of inclined, extended reach, platform development wells, which will have multiple sand body objectives. Without these tools, it would not be feasible to plan and execute such challenging wells.