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

Bruce Mitchell[1], Elizabeth Harvey[2], Fred Keller[2], Charlie Lee[2], Dave Robertson[2], Mario Wannier[2] (1) Shell International Exploration and Production Inc, Houston, TX (2) Shell International Exploration and Production Inc,

Quantitative 3D Interpretation and Visualization Tools Help to Reduce Reservoir Risk in the Deepwater Tarfaya-Agadir Basin, Offshore Morocco

Shell E&P Morocco has undertaken an exploration evaluation of a 3D seismic dataset in the Cap Draa concession of the Tarfaya-Agadir Basin, Offshore Morocco. The 3D covers about 1700 km^2, and near-, far-, and full-offset volumes of a prestack time migration are available. The deepwater portion of the Agadir Basin has never been drilled. Petrophysical data from wells on the shelf suggest that sands in the basin may be acoustically invisible or even slightly hard on the near offsets. Soft amplitude (AVO) anomalies on the far-offset volume may, therefore, indicate good-quality reservoir, but the range of uncertainties in both sand and shale properties is very great and the presence of carbonate in the section complicates the acoustic response. Regional 3D mapping had already identified several prospective structural closures in the Cretaceous interval, and the challenge for the Morocco evaluation team was to apply the best 3D interpretation tools to delineate these prospects in an uncalibrated frontier setting and quantify the potential for turbidite reservoirs.

Shell used a series of gated amplitude extractions on the near- and far-offset volumes to search for far-offset anomalies. The extracted results were compared with a normalized far-squared minus near-squared technique to highlight potential far-offset anomalies in structurally favorable positions. Additionally, seismic visualization techniques such as spectral decomposition and volume rendering were used to delineate channels and other depositional features relating to the anomalies.