

Reservoir Geophysics Characterization and Monitoring of Brazilian Oilfield Reservoirs Incorporating New and Revised Seismic Technology: Petrobras Examples

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ABSTRACT

In 2005, Petrobras and its partners began exploratory drilling in pre-salt reservoirs, culminating in the discovery of the Lula field-Iracema (2006) and other fields. In 2008-2009, high density seismic was registered on the fields, and state-of-the-art seismic processing technology was applied. In 2010-2011, there was a full-azimuth acquisition project in the east of Iara area, as well as some seismic projects (walkaway, and 3D walkaround VSP). The flow of seismic processing has evolved from building velocity models for isotropic anisotropic models, with in-depth imaging techniques like applying TTI PSDM. Another important challenge is the search for better multiple attenuation interbeds. The flow of processing seismic data and full-azimuth 3D VSP been enhanced by focusing improved imaging and characterization of Brazil's pre-salt reservoirs. Seismic characterization of reservoirs includes techniques of seismic inversion, seismic facies and attribute extraction from data inverted with very good results. An major challenge will be the implementation of 4D seismic technology for monitoring the behavior of fluid motion and pressure variation in the pre-salt Brazil. This presentation will show how Petrobras incorporated those seismic technologies in Campos and Santos sedimentary offshore basins to characterize and monitor the reservoirs' geology and the dynamic behavior.