



Sequence Stratigraphic Framework in Offshore Mexico: Integration of Detailed Well and Seismic Interpretation to Support Exploration in Deep Water

E. Royce-Rogers, A. Fick, and D. Little

ABSTRACT

Regional mapping of key petroleum system elements is an important step in the exploration workflow. With each basin in Mexican Gulf of Mexico (MGoM) having a differing post-rift tectono-stratigraphic history, the structural variability across the MGoM makes extrapolation of a regional geological model from sparse calibration points difficult. A regionally consistent sequence stratigraphic framework for the entire of MGoM is critical to constrain fairways and provision of a robust sequence stratigraphic model enables more confident prediction of environment and facies in the deeper basins.

This study will present learnings from a new comprehensive stratigraphic study for all basins Offshore Mexico and will showcase the value of integrating detailed well interpretation with seismic to build a consistent geological model that can be correlated between basins to better understand the complex basin history.

The study is based on a database of 201 wells and 186,435 km of 2D seismic data, to derive a reliable chronostratigraphic and lithostratigraphic framework from the Quaternary to Jurassic for all offshore basins. Detailed interpretation of wireline calibrated with biostratigraphy and core data has allowed the lithological interpretation, correlation of sequences, formations, and environments and facies. Seismic interpretation was used to ensure robust correlation between wells, and seismic amplitude extractions were used to define depositional geometries away from the wells to derive a stratigraphic model and create basin-wide depositional environment maps. The presentation will expand on the datasets used, methodology and the challenges of interpreting such datasets across the Superbasin that is MGoM. It will discuss the challenges that were overcome to establish a consistent interpretation and highlight how this unified interpretation may be used to delineate source, seal, and reservoir, which is critical for identification of play fairways and development of new exploration targets.

NOTES
