

Subsalt Exploration Potential of the Moroccan Salt Basin

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The central segment of the Moroccan offshore salt basin between Agadir and Safi is characterized by numerous very advanced allochthonous salt structures such as tongues, sheets and canopies. Whereas there are no examples of subsalt well penetrations offshore Morocco to date, the observed salt tectonic features highlight the possibility of subsalt exploration as known in the mature northern Gulf of Mexico salt basin.

The most promising subsalt traps are located in the Ras Tafelney area, offshore Essaouira Basin, defined by 2D reflection seismic data. Some of the modern seismic profiles in this area were pre-stack depth migrated specifically to better image subsalt traps. Using the latest subsalt archetype classification scheme developed in the northern Gulf of Mexico, most of the Moroccan subsalt traps are classified as having a singular salt cover in a single-tiered allochthonous salt terrane. As to the root type, all the traps are related to autochthonous roots and therefore offer several common trap geometries, such as a) anticlinal folds, b) downward flexing sigmoid folds, c) low-relief ribbon truncations and d) truncated upward flexures.

The classification of the subsalt traps defined in the offshore Essaouira Basin as autochthon rooted subsalt traps has important implications for future hydrocarbon exploration in the area. This particular subsalt play family is considered as the most promising one based on Gulf of Mexico exploration experience. Therefore a qualitative ranking of the subsalt traps in the Ras Tafelney area is proposed based on the systematic interpretation of the currently available 2D reflection seismic data. Most of these subsalt leads could be matured to prospects by acquiring 3D seismic data over the most promising areas.