

Cretaceous Carbonate Clinof orm Stratigraphic Trap Potential in the Partitioned Zone, Saudi Arabia and Kuwait

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Abstract

The lower Cretaceous carbonate is one of the primary reservoirs in the Partitioned Zone (PZ) between Saudi Arabia and Kuwait. PZ has been producing from this interval since the 1950s. The main producing reservoir unit is deposited in a low-angle ramp setting. This depositional setting results in widespread high-quality reservoir fairways that make ideal hydrocarbon traps within the main known structural anticlines that have been extensively drilled. Saudi Arabian Chevron (SAC) has recently shifted exploration focus to stratigraphic traps along the flanks of the structural highs. Extensive characterization work leveraging the latest acquired (2017) 3D seismic data, which covers the entire PZ onshore area, led to the development of new potential exploration concepts. This prospect is a new stratigraphic play that consists of northwest (basinward) prograding oolitic shoal systems. These inclined geobodies are identified and mapped using an acoustic impedance seismic volume that highlights stacked reservoir and non-reservoir packages throughout this formation. The non-reservoir units are considered as barrier zones that pinch-out towards structural highs and are interpreted to have developed an updip seal. This stratigraphic framework has the potential to create basinward compartments that are isolated from the main field, preventing any lateral fluid migrations between geobodies. An upcoming exploration campaign will evaluate the effectiveness of this stratigraphic trap concept and, if successful, could expand exploration opportunities to similar plays within the PZ.