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Eocene -Miocene Calcareous Turbiditic Play in a Dinaric Foredeep: the Dugi Otok Basin, Offshore Croatia

Exploration activity in the Adriatic offshore of Croatia, carried out mainly by INA since Sixties, investigated different plays, pursuing both oil reservoirs in structured Mesozoic carbonates and biogenic gas bearing targets in the Plio-Pleistocene turbiditic succession. The Eocene-Miocene turbidites, deposited within Dinaric small foredeep basins, constituted a relatively novel play in the Croatian offshore. Results up to now have been rather disappointing, with only non commercial discoveries. Anyway the exploration efforts threw light on a poorly known succession in the Adriatic domain. The Eocene-Miocene Dugi Otok succession is represented by the infilling of a narrow foredeep basin, facing the Dinaric structures. The seismo-stratigraphic interpretation outlined eight main sequences. The basal one is represented by carbonate platform facies on structural highs and marly pelagic sediments in deeper areas, over a regional Cretaceous/Tertiary unconformity. Following six sequences (Oligocene-Miocene) are composed by deep-water mainly calcareous turbidites, deposited by relatively large volume fluxes. Subsequent tectonic pulses have been inferred as the main triggering mechanism for the deposition of the stacked fining upward turbiditic sequences. Small volume SW-NE turbiditic fluxes produced small channel-lobe systems at the foot of the most external Dinaric structures, enucleating within the Dugi Otok Basin. The sequence marking the definitive filling of the basin (Tortonian), is bounded at its base by an erosional unconformity related to a major relative sea level drop, leading to the deposition of shelfal silty-marly sediments. The seismo-stratigraphic interpretation was strongly supported by 3D visualisation tools (VoxelGeo) that allowed to detect the geometrical-depositional features partially highlighted during the conventional seismic interpretation.