

Depositional Environments of the Lower Miocene evaporites of the Kalhur Member in the Zagros fold-thrust-belt, SW Iran

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The Oligocene-Miocene deposits of the Asmari Formation are one of the most important oil reservoirs in the Zagros fold-thrust-belt of Iran. This formation is composed of evaporitic Kalhur and Ahwaz sandstone members. In the southwest parts of Zagros fold-thrust-belt that the Kalhur Member was deposited, the Asmari Formation is Lower Miocene in age. The Kalhur member (Aquitainian) is composed mainly of gypsum and / or anhydrite. Its lower contact with deep water carbonate of the Pabdeh Formation (Eocene-Oligocene) and the upper contact with the Asmari carbonates (Burdigalian) are conformable.

Detailed field surveys and facies analyses of the Asmari Formation at outcrop sections and drilled wells of Balarud Fault Zone and Mountain Front Fault, resulted in recognition of deep basin, fore-shelf margin, shelf margin, lagoonal and tidal flat facies belts which, deposited in a rimmed shelf that evolve to a carbonate ramp from Aquitainian to Burdigalian respectively. Progradation of the pure limestone towards places here Kalhur evaporites were deposited along with slump folding, widespread black-colored laminations and graded bedding in the evaporitic succession assign deposition in a slope to basinal setting. Presence of pelagic facies containing of planktonic foraminifers in the lower and middle parts of the evaporites confirm this interpretation. Different facies and thickness variations along with various geometries were formed as the result of overthrust loading event related to the Zagros deformation during Rupelian-Chatian. As the result of this tectonic event, depocenters shifted laterally and isolated grabens were filled by evaporites during sea-level falls. This crisis is accompanied with Mississian event and drying of Mediterranean Sea.

Existence of oil springs in the lower parts of the Kalhur evaporites and the presence of the patch-reefs and reservoir facies, which formed on the paleohighs during sea-level fall, reflects lateral facies changes and possibility of stratigraphic traps creation.

Key words: *Zagros, Lower Miocene, Asmari Formation, deep evaporites, Kalhur member, Iran*