
Sequence Stratigraphy of the Asmari Formation in the Zagros Basin (SW Iran), Implication for Reservoir Porosity Prediction

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In this study 3 outcrops and two borehole sections of the Asmari formation studied. According to petrography and field observations the formation is divided into 3 parts and comprises 6 microfacies assemblages as: A (open marine); B (bar/shoal); C (lagoon); E (tidal flat) and F (supratidal). On a sequence stratigraphic framework, lower Asmari deposited in HST stage, wears TST started during the deposition of underlying Pabdeh formation and transgression reached to highest level (mfs) just in the boundary of the Asmari and Pabdeh formations. Succeedingly HST stage is marked by algal boundstones and late HST by lagoon facies (dolomudstone, miliolidae wackstone). Dolomitization increased intercrystalline porosity of the Asmari carbonate reservoir. In Renu surface section only lower Asmari deposited wears in Siahgel surface section only middle Asmari deposited on shale beds of the Pabdeh formation. Middle Asmari is marked as early HST (algal boundstone) and late HST sediments composed of lagoonal facies (miliolidae wackstones and evaporates). This sequence terminated with sandstone facies with hematite cements that imply a type 1 sequence boundary. In brief middle Asmari comprises two stages of HST, one LST, one TST. Upper Asmari exposed only in the Dezful Embayment, comprises two HST, two TST; the later began with echinoderm wackstone microfacies. Early HST sediments are dolomitized lime mudstones but late HST are miliolidae wackstone, algal wackstone, ostracod wackstone and pellet grainstone that suggest a lagoon setting. Dolomitization occurred in the early HST stage and developed porosity of the formation. Sequence boundary is type 2 and no evidence of exposure was observed.
