



Facies Analysis and Depositional environment of the Oligocene-Miocene Qom Formation in the Central Iran (Semnan area)

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The Qom formation was formed in the Oligo-Miocene during the final sea transgression in Central Iran. This Formation in the Central Iran Basin Contains oil and gas. Organic geochemical analysis in previous studies indicated that the hydrocarbons migrated from deeper source rocks, likely of Jurassic age. In the Central Iran Basin, the Qom Formation is 1,200m thick and is abounded by the Oligocene Lower Red Formation and the middle Miocene Upper Red Formation. In previous studies, the Qom Formation was divided into nine members designated from oldest to youngest: a, b, c1 to c4, d, e, and f, of which “e” is 300m thick and constitutes the main reservoir. Our study focused on a Qom Section located in the Arvaneh (Semnan) region of Central Iran that is 498m thick.

The lower part of the formation was not deposited, and only the following four members of early Miocene age (Aquitanian-Burdigalian) was identified between the lower and upper Red Formation.

The studied section mainly consist of limestone, marl, sandy limestone, sandy marl and argillaceous limestone. According to this study (field and laboratory investigations), 9 carbonate microfacies were recognized which are grouped into four facies associations (microfacies group). These facies associations present platform to basin depositional setting and are nominated as: A (Tidal- [U+FB02] at), B (Lagoon), C (Slope) and D (Open marine). Based on paleoecology and Petrographic analysis, it seems the Qom Formation was deposited in a Carbonate shelf setting.

The Qom formation constitutes a regional transgressive-regressive sequence that is bounded by two continental units (Lower and Upper Red Formation).