

Microfacies, Depositional Environments and Diagenesis of the Qom Formation in the East of Tehran

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A Lower Miocene carbonate-Marl Sequence of the Qom Formation, at about 60 km east of Tehran, north of Evanaki city was studied. Studies of 170 thin sections and some SEM Micrographs of rocks and clay minerals revealed 7 distinctive microfacies belong to ramp environment. Limestone production via biogenic activities has been taken place in the inner ramp environment. The inner ramp environment is massive and thicker bedded, whereas outer ramp deposits is thinner and somewhat marly. Terrigenous sediments in sand and gravel size usually are of an epiclastic origin, and commonly occur in the higher energy environments. In this study the clasticity and frequency of rock elements along the stratigraphy column have been measured and drawn. These measurements indicate that clasticity and frequency of elements increases towards top of cycles. The studied rocks exhibits 15 small sedimentary cycles, each cycle showing intense cementation in the middle and the end rather than the beginning. The sequence exhibited several diagenetic events occurred in marine phreatic, meteoric and burial diagenetic environments. The important diagenetic events of the marine phreatic environments are bioerosion, micritization and sub-sea cementation. Two generations of cementation as well as dissolution and neomorphism occur in the meteoric environment. The two prominent diagenetic features of the burial diagenetic environment are pressure solution and stylolitization. SEM Studies show that the clay minerals are mostly consists of illite and expandable types. The latter consist of smectite and mixed layered –smectite-illite, showing diagenetic texture. The occurrence of diagenetic illite implies that the sequence was subjected to deep burial diagenesis. This conclusion is confirmed by other diagenetic features such as stylolitization.

Key words: *depositional environment, cycles, Qom Formation, cement steps*