Microfacies, sedimentary environment and diagenesis of the Ilam Formation in an Oil field of the Abadan plain

E. Asadi Mehmandosti[1*], S. Abdolmaleki[2] and H. Ghalavand[3]

1, 2- Faculty of Earth Sciences, Kharazmi University, Tehran
3- Ministry of Petroleum, Rodsar Streets, Centeral building of ministry, Consultant section

*e.asadi@khu.ac.ir

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Abstract

The Ilam Formation with Coniacian- Santonian ages is one of the petroleum reservoir in the Zagros basin and wide area of Khoozestan Plain, Khoozestan mainly consist of carbonate rocks. In this study, the Ilam Formation in 3 subsurface sections with total thickness of 274 m was studied in one of the southwest Iranian oilfields. The lithology of this formation in studied wells is limestone with interbedded shale and clayey limestone. Sedimentological studies and facies analysis of 230 thinsections of drilling cutting lead to recognition of 11 microfacies and one shale petrofacies in 3 facies belts. These microfacies were deposited in lagoon, shoal and open marine facies belts. According to recognised microfacies and comparing them with same carbonate deposits in other places, absent of reef structures, sliding and slumping facies, the sedimentary envirnment of this carbonate sequence was recognised as a homocline ramp which consist outer, middle and inner ramps. The main diagenetic features of the Ilam Formation in studied oilfield are bioturbation, micritization, cementation, dissolution and porosity, dolomitization, stylolitization, pyritization and fractures. The main cement types in this formation are equant, drusy, blocky, syntaxial and vein filling cements which were formed in marine, meteoric and burial diagenetic environments.

Keywords: Zagros, Ilam Formation, Upper Cretaceous, Sedimentary environment, Diagenesis