Determining the structural geometry of Asmari Formation and examining the process of its changes in the Zagros sedimentary basin using stratigraphy forward modeling method

E. Asadi Mehmandosti[1], S. A. Moallemi[2], J. Daneshian[3] and S. Lashgari[4*]

1- Assist. Prof., Dept., of Geology, Faculty of Earth Sciences, Kharazmi University, Tehran
2- Exploration Management of National Iranian Oil Company
3- Assoc. Prof., Dept., of Geology, Faculty of Earth Sciences, Kharazmi University, Tehran
4- M. Sc., student., Faculty of Earth Sciences, Kharazmi University, Tehran

** S.lashgari00@gmail.com*

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Abstract

The Asmari Formation (Oligocene – Miocene), as one of the most important oil reservoirs, consists of a thick sequence of carbonate – terrigenous rocks in southwestern Iran. In order to determine the structural geometry of this formation, the stratigraphic forward modelling method has been used in this study. So, 8 oilfields, including Yadanaran, Omid, Jufeyr, Sunsangerd, Khorramshahr, Mansuri, Dorquain and Azadegan have been selected in the Zagros sedimentary basin. Dionisos Flow Software has been used to determine the structural geometry of the sedimentary basin of the Asmari Formation in the studied fields. The studied wells in the oilfields are composed of three to five sedimentary sequences. Identifying each of the sequences that make up the wells per unit of time is the basis of the work. The results of sequence stratigraphic, gamma log and sedimentary environment data are the most important input parameters to the software for modelling. The present study shows that the geometric structure of the sedimentary basin of Asmari Formation in the studied fields has been controlled by parameters such as bathymetry, tectonic processes (rising and falling of the basin floor), global changes in sea level and accommodation space. The geometric structure of the sedimentary basin of Asmari Formation during the Oligocene – Miocene in the studied area was predicted as a progressive geometric structure with a gradual and cumulative nature towards the basin.

Keywords*: Asmari Formation, Subsidence, Geometric Structure, Dionisos Flow Software, Modeling, Zagros*