

Structural interpretation, diagenesis and depositional environment of the Gachsaran formation with emphasised on member 1 in Gachsaran oilfield, south Dezful embayment

M. Liaght^{1*}, M. R. Nuraei Nejad^{1,3}, M. H. Adabi² and E. Eghbalpour³

1- Ph. D. student sedimentology and sedimentary petrology, Faculty of Earth Sciences, Shahid Beheshti University, Tehran

2- Professor, Faculty of Earth Sciences, Shahid Beheshti University, Tehran

3- National Iranian south oil company

* Liaghat.mohsen@yahoo.com

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Abstract

The Gaschsaran Formation, is one of the major and important stratigraphic units in Iran, and is regarded as substantial Asmari cap rock thuse, is significant economically. Generally, the Gaschsaran Formation with a thickness of 1200 to 1600 m, is present in South of Dezful embayment. The studied area is located in the Gachsaran oilfield, which consists of the Gachsaran member 1 with a thickness of 40 m. This research is focused on lithological variations, depositional fabrics together with the depositional environment in the well No. x in the Gachsaran oil field. The main sedimentary fabrics, as a result of gypsum to anhydrite transformation, occurred in this formation during diagenetic processes and lath fabrics, as well as flow fabrics, present in this formation. Based on the field investigation along with well logging data, the studied area involved reversed anticline, and variations in units indicate member 4 as anticline core as a result of other strata shortening. Three carbonates, evaporite, and shale facies are recognized based on their allochems, fabrics, texture, and lithology in the studied section. The studied facies represent a carbonate-evaporite platform involving sabkha and salt pan, tidal flat and lagoonal depositional environments during Miocene. Geochemical analysis, X-Ray-EDX, and SEM data revealed freshwater flooding, evaporative concentration, and desiccation stages during evaporite deposition. The Br element variation along the stratigraphic column indicated water entrance and evaporation occurred during evaporite deposition in this formation.

Keywords: Gachsaran formation, Dezful embayment, Miocene, Diagenesis