

Petrography, geochemistry and dolomitization model of the Taleh Zang Formation (Upper Paleocene- Lower Eocene) in South and Southwest of Kermanshah

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Received: 2019/6/30 Accepted: 2019/10/8

Abstract

The Paleocene- Eocene Taleh Zang Formation is a sequence of shallow water carbonates in the Lorestan Basin which crops out in a few areas in west of Iran. For determination of dolomitization model of the Taleh Zang Formation, two suitable outcrops have been studied in south and southwest of Kermanshah. The Barikheh section in southwest of Kermanshah city, with a thickness of 282 m which conformably overlies the Amiran Formation and is overlain by the Kashkan Formation. The thickness of the dolomites in this section reaches to 40 m which are present in the lower part of the Taleh Zang Formation. The Kaboutar Bala section in south of Kermanshah with a thickness of 65 m, like the Barikheh section, conformably overlies the Amiran Formation and is overlain by the Kashkan Formation with a disconformity surface. The dolomites in this section are only occur in the upper part of the Taleh Zang Formation which has 12 m thickness. Based on the fieldwork observations, petrographic studies (polarizan microscope, SEM and CL) and geochemical analysis (AAS), four different types of dolomite have been recognized in the Taleh Zang Formation which include dolomicrite, dolomicrosparite, dolosparite and pore-filling dolomite cement. Based on Energy Dispersive X-ray (EDX) analysis, the smectite clay mineral was identified among the upper dolomites sequence in the Kaboutar Bala section. The differences in crystal size and trace elements data can be related to time differences, environmental conditions and finally dolomitization model in two sections. Low Fe and Mn values in the Barikheh section, indicate oxic to sub-oxic conditions and high amounts of Sr and Na in the Kaboutar Bala section, indicate higher salinity in supratidal environment. Based on the presence of dolomicrite, silt size quartz grain and higher amounts of Sr and Na, dolomitization model of the Taleh Zang Formation in the upper part of the sequence (in Kaboutar Bala section) was determined as a sabkha type evaporation model. Also the higher amounts of Fe and Mn in theses dolomites, can be related to higher amounts of clay minerals (smectite), which releases Fe and Mn during diagenesis. Whereas, in the lower part of the sequence (in Barikheh section) some evidences such as coarse crystalline dolomites, dark luminescence and low Fe and Mn values, confirm shallow burial model.

Keywords: *Taleh Zang Formation, Dolomitization molde, Sabkha model, Shallow burial model, Kermanshah*