

Sedimentary Environment , Sequence Stratigraphy and Microbiostratigraphy Study of Kazhdumi Formation in East of Shiraz (Fars province),Iran

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Abstract

In this research, Stratigraphy Section titled as Kuh-e-khanekat section related to Kazhdumi Formation have been Selected. the thickness of the sediments in this Section is 108m. In general , index microfacies of the studied Section are: wackestone and packestone, That these microfacies in environmental groups of lagoon(A) and open marine(B) have been scattered. . Based on microfacies studied, A group includes four sub groups:A1:Pelet Bioclast packestone,A2:Pelet Bioclast wackestone,A3:Pelet Bioclast wackestone-packestone,A4:Pelet Bioclast packestone, and B group includes two sub groups:B1:Pelet Bioclast wackestone,B2:Bioclast wackestone. Allochem and clastic elements of the mentioned microfacies could be Intraclast, Bioclast, Extraclast and Ploeid. Considering the identified index Foraminifers in the studied Section such as the following taxons : Conicorbitolina sp., Mesorbitolina texana, Conicorbitolina cf .conica, Mesorbitolina sp., Pseudotextularia sp ., Orbitolina sp., Trocholina sp., Hemicyclammina sigali, Orbitolina cf. concava, Salpingoporella cf. turgida, Salpingoporella dinarica, Marsonella.sp In genera l , the age of studied sediments is from Early Albian to Late Albian. Also Considering Microbiostratigraphic studies, two Biozones have been recognized for identified Foraminifers in the studied Section, this biozone are: Biozone1: Conicorbitolina – Mesorbitolina texana assemblage- zone Biozone2: Hemicyclammina-Orbitolina assemblage-zone. Considering the identified index pelecypoda in the studied are listed below: Neithea striatocostata, Isocardia neglecta , Inoceramus cuvierii, Exogyra sp., Trigonina sp. Actually, based on the Sequence Stratigraphic studies, the studied Section of (Kuh-e-khanekat) includes a 3rd-order sediment sequence. The age of studied sediment sequence is from Early Albian to late Albian. this Sequence with Sequence lithostratigraphic limit of SB1 type is placed on Daryian Formation and is distinctive with on erosional surface disconformity. upper limit of the aforementioned Sequence is of SB2 type which placed on the Sarvak Formation. most forwarding surface (mfs) observed in the mentioned Section of limes with Wackestone facies .the mentioned Sequence encompasses TST and HST facies sets.

Key words: Sequence Stratigraphy, Microfacies, Biozone, Pelecypoda, Kazhdumi Formation, Shiraz.

1. Introduction

Kazhdumi Formation outcrops are mainly distributed in Fars province. The type section of Kazhdumi Formation is chosen in the Tang-e-gorgda which is located near the Kuh-e-mish. At first, it has been studied by James and Wynd (1965). The lower limit of Kazhdumi

Formation deposits is disconformity with Daryian Formation deposits and the upper limit this Formation is conformably with Sarvak Formation deposits.

2. Geographical situation of the studied stratigraphic section

The studied stratigraphic section are situated in the folded zone (Kuh-e-khanek) of Zagros and their geographical limits are as follow:

Kuh-e-khanek stratigraphic section is located in East of Shiraz city, Fars province (Iran) and we can approach it through the main road of Shiraz-kharam. The geographic coordinates of This section is $x:53^{\circ}31'8''$ $y:29^{\circ}27'16''$

3. Kuh-e-khanek stratigraphic section

The lower Lithostratigraphy limit of this section is erosion surface disconformity with Daryian Formation. and the upper limit this Formation is conformably with Sarvak Formation.

Based on the identified Foraminifers of this section such as: *Conicorbitolina* sp., *Mesorbitolina texana*, *Conicorbitolina* cf. *conica*, *Mesorbitolina* sp., *Pseudotextularia* sp., *Orbitolina* sp., *Trocholina* sp., *Hemicyclammina sigali*, *Orbitolina* cf. *concava*, *Salpingoporella* cf. *turgida*, *Salpingoporella dinarica*, *Marsonella* sp., the age of this section is Early Albian to Late Albian. the total measured thickness is 108m. in Lithostratigraphy point of view, Kazhdumi Formation is divided into two parts as follow:

A: The lower part of is 55.5m. Including limestone and marly limestone from light grey thin to medium-bedded. considering the existence of foraminifers such as: *Conicorbitolina* sp., *Mesorbitolina texana*, *Conicorbitolina* cf. *conica*, *Pseudotextularia* sp., *Orbitolina* sp., *Trocholina* sp. The age of this part has been determined from Early Albian to Middle Albian.

B: The Upper part is 52.5m. Including limestone and marly limestone from medium to thick-bedded and from light grey. considering the existence of foraminifers such as: *Hemicyclammina sigali*, *Orbitolina* cf. *concava*, *Salpingoporella* cf. *turgida*, *Salpingoporella dinarica*. The age of this part has been determined from Middle Albian to Late Albian.

4. Biozonation of the studied stratigraphic sections:

Actually, in the studied stratigraphic section, two biozone have been determined for benthic foraminifers in the sediments of Early Albian to Late Albian which are as follow:

1. Biozone No.1-*Conicorbitolina* – *Mesorbitolina texana* assemblage- zone: The thickness of this biozone in Kuh-e-khanek Section is 55.5 m and its foraminifers includes: *Conicorbitolina* cf. *conica*, *Mesorbitolina* sp., *Pseudotextularia* sp., *Orbitolina* sp., *Trocholina* sp. Which indicate the age of Early Albian to Middle Albian.

2. Biozone No.2- *Hemicyclammina*-*Orbitolina* assemblage-zone: The thickness of this biozone in Kuh-e-khanek Section is 52.5 m and its foraminifers includes: *Hemicyclammina sigali*, *Orbitolina* sp., *Orbitolina* cf. *concava*, *Salpingoporella* cf. *turgida*, *Salpingoporella dinarica*, *Marsonella* sp. Which indicate the age of Middle Albian to Late Albian. James & Wynd (1965), KH-tehrani (2006), Loeblich & Tappan (1989). (Fig. 1).

5. Description of Sequence Stratigraphy of Kazhdumi Formations in the studied Stratigraphic section:

Actually, based on the sequence stratigraphy studies, the sediments of Kazhdumi Formation include a 3rd order sediment sequence. This Sequence with Sequence lithostratigraphic limit of SB1 type is placed on Daryian Formation and is distinctive with an erosional surface disconformity and the upper lithostratigraphic limit of the aforementioned Sequence is of SB2 type which is placed on the Sarvak Formation. Most forwarding surface (mfs) is observed in the mentioned Section of limes with Wackestone facies. The mentioned Sequence encompasses TST and HST facies sets. Actually, TST facies in the Kazhdumi Formation are of Early Albian to Middle Albian and HST facies is of Middle Albian to Late Albian. (Haq, Hardenbol & Vail, 1988), (Emery, and Myers, 1996), (KH-tehrani, 2007), (Lasemi, 1995). (Fig. 2).

6. Description of Sedimentary Environment of Kazhdumi Formations in the studied Stratigraphic section

In general, index microfacies of the studied section are: Wackestone and packestone. That these microfacies in two environmental groups of lagoon (A) and open marine (B) have been scattered.

Based on microfacies studies, A group includes four sub groups: A1: Pelet Bioclast packestone, A2: Pelet Bioclast wackestone, A3: Pelet Bioclast wackestone-packestone, A4: Pelet Bioclast packestone, and B group includes two sub groups:

B1: Pelet Bioclast wackestone, B2: Bioclast wackestone. Allochem and clastic elements of the mentioned microfacies could be Intraclast, Bioclast, Extraclast and Plocid. (Folk 1974), (Dunham 1962). (Fig. 3).

7. Conclusions

a) Based on the investigation of foraminifers of the studied section, there are two biozones that have been identified which includes:

1. Biozone No.1- Conicorbitolina – Mesorbitolina texana assemblage- zone of the age of Early Albian to Middle Albian.
2. Biozone No.2- Hemicyclammina-Orbitolina assemblage-zone of the age of Middle Albian to Late Albian.

b) Considering the identified index pelecypoda in the studied are listed below: *Neithea striatocostata*, *Isocardia neglecta*, *Inoceramus cuvierii*, *Exogyra* sp., *Trigonia* sp.

c) Actually, sediments of Kazhdumi Formation include a 3rd-order sediment sequence. This Sequence with Sequence lithostratigraphic limit of SB1 type is placed on Daryian Formation and is distinctive with an erosional surface disconformity and the upper lithostratigraphic limit of the aforementioned Sequence is of SB2 type which is placed on the Sarvak Formation. Most forwarding surface (mfs) is observed in the mentioned Section of limes with Wackestone facies.

d) Actually, index microfacies of the studied sections are: Wackestone and packestone. That these microfacies in two environmental groups of lagoon (A) and open marine (B) have been scattered.

