Biofacaies and lithofacies study of Tirgan Formation in central kopet dagh basin(Shorak area)

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Absract

The Kopet- Dagh sedimentary basin is eastern north of Iran has fult contact with Tooran platform from the north and is bounded to the south by Bindalood mountains. According to Berberian and King (1981), this zone becomes sedimentary basin after early Kimmerian organic event (It happened when the concurrence of Iran and Tooran finished) and thick sediments were gathered with various facies from Jurassic to Miocene without important stratigraphic gap. These sediments were deformed under late Alpine organic events and formed various anticlines and synclines with northwest- southwest strike.

The main aim of this research is to view sedimentary environment of Tirgan formation in central part of Kopet- Deagh basin.

Type section of Tirgan formation in the 40th kilometer of Dargaz is 780 meters thick with the age of Neocomian- Aption.

The thickness of this formation is very different in different regions so that it is equal to 40 meters in the east of Kopet- Deagh basin in Mozdooran. The contact of these two formations (Shoorigeh and Sarcheshmeh) is sharp.

In some part Kopet- Deagh sedimentary basin, Tirgan formation is as reservoir rock of gas resources in the north of Iran. Mozdooran and Tirgan formations are also counted ad kartsic formation in Kopet-Deagh basin and are valuable regarding to water resources. (From the point of water resources).

In this research, Tirgan formation was studied in Shorak in detailed.

95 hard samples and 10 soft samples were taken with average distance of 3.5- 4 meters and thin sections were taken from hard samples. Detailed pictographic studies resulted in distinction of 13 microfacies.

They are as follows: 1- Calimudstone. 2- Biocalstic wackstone 3- Bioclastic packstone 4- Oncolithic packstone 5- Oolitihc< biocalstic> garinstone 6- Oolithic <biocalstic> packstone 7- Mixed gainstone 8- Mixed packstone 9- Peletiod gainstone 10- Aggregate packstone 11- Aggregate grainstone 12- Sandstone 13- Marl.

On the bases of fossils contents and their vertical position in stratiraphic sectionc. I was recognised that Microfacies 1 , 2 and 3 belong to open marine and lagoon and were placed (settled) in facies belt 6 of Wilson which is located between Oolithic bar and open marin.

Microfacies 5 and 6 belonged to facies belt 6 of Wilson show bar and beach.

Microfacies 7 and 8 belong to facies belt 7 and 8 of Wilson (1975).

Microfaceis 9 were formed in facies belt 8 of Wilson.

Microfacies 10 and 11 were seen facies belt 8 of Wilson and showed restricted platform environment.

Geberally, sedimentation of Tirgan formation sere formed in Tidal flat (supradital, intertidal) and subtidal environments. This basin was deepended with the passage of time so that shaley and Marly sediments of sarcheshmeh formation were placed over Tirgan formation conformably and with variation of facies change into open marine environment.
According to these results, horizontal model of depositions of Tirgan formation was drown.
Features, processes and important diageneric environments is Tirgan formation are as follow:
Micritization, Bioturbation, Geopetal fabric, Isopaques fibrous rim cements and early dolomitization were distinguished in marine pheriatic. Early compaction Aragonitic shells winnowing werer formed is under saturated fresh, water pheratic zone.
Filling cavity and fractures by Spry cement, forming syntaxial overgrowth drusy cement, poikilolopic cement and Neomorphism happened in active saturated fresh water phriatic zone.
Meniccus, pendent cement and vadose sitl were formed in fresh wated vadose zone.
Late compaction, Stylolitization, late dolomitztion (Saddle dolomite)
Formation of Authigenic minerals and late fracture filing happened in burial environment.
Cathodolominecence analyses, Electron Microprob analyses were done in some thin sections.
Cathodlominecance analyses demonstrated than cementation was occurred in different phases.
Fibrous cement deposited in environment.
For more detailed studies of diagenes marine and investigation of environment of dolomite formation. Isotopic investigation, Electromaicroprob analysis, SEM and catholol minecance studies and needed. But according to petrographic documents and staining by Alizarine red s and potacium ferrocianore we can conclude that dolomitization in this formation in interidal region lagoon reqion and also bar region which probably was the result of mechanism of reflux and seepage and dolomtization in burial diagenesis.

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