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An Example of a Tertiary Basin in a Transition from an Open to a Closed or Restricted Platform System: Karabük-Ovacık Basin developed over the Intra Pontid Suture Zone, Turkey

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Karabük-Ovacık Tertiary basin is located in the Intra–Pontide Belt of the North of İzmir-Ankara-Erzincan Suture Zone and it also placed between Sakarya and İstanbul Zones. In the study area, the oldest unit is Ulus Formation represented by flysh type sediments (Lower Cretaceous). The basal unit is unconformably overlain by Kışlaköy Formation consisting of terrestrial red beds, and pelagic carbonates that is upward followed by reefal limestones (Safranbolu Formation), shelf sands and turbidites (Karabük Formation). The first depositional interval is ended by ichno fossil bearing sandstones and red mudstone (Çerçen Formation). Soğanlı Formation which is main subject in this study, shows a transitional boundary with this basal red mudstone. The limestones contain very abundant neritic fossils indicating Middle Eocene (Lutetian) in age. However, the upper parts of the formation is poor or sterile for neritic fossils or printed by a bioturbated limestone zone. The upper part of the Soğanlı Formation locally makes up a transition to gypsum (Pürçükören Formation) and clayey limestone (Akçapınar Formation; Middle Eocene). The Akçapınar Formation is also devoid of neritic foraminifera, only containing a few amount thin bivalve pelecypod fossils, characterized by mud crack with infilling material (vadose silts). In the some locations, the gypsum formation is disappear, where minor erosional surface was developed between Soğanlı and Akçapınar formations.

The superimposed formations Soğanlı and Akçapınar indicate that a platform evolution took place from open marine to restricted marine. The open platform divided into back platform, shallow and deeper platform represented by Miliolidae bearing (Nurdanella boluensis ÖZGEN) grainstone-packstone, algal, Nummulites, Alveolina, Orbitolites and Globigerinoides bearing wackestone-grainstone–packestone. Closed platform locally starts with evaporite and upward translates into clayey limestones with dolomite interbeds and marl alteration.

The closed platform and /or inner basin was developed at the end of Middle Eocene (Lutetian), presumably constrained by compressional regional tectonic. This was caused by establishment of basin margin tectonic barrier that involved evaporite formation along with sterile limestone contrasting to underlying fossil -rich open platform limestone.

KEY WORDS: Soğanlı Formation, Akçapınar Formation, Closed Carbonate Platform, Karabük-Ovacık

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