Depositional environment and sequence stratigraphy of a deep sea fan system (Paleocene), Northern Alborz (Suchelma area)

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Abstract

The Palaeocene siliciclastic sediments with 318m thick in the southern Neka of Northern Alborz (Suchelma section) consist of thick marl and thin-thick bedded sandstone. Integrated petrography and field studies allow recognition three facies associations consisting of shallow mobile channels (FA), fan fringe-basin floor transition (FB) and basin floor (FC) of a deep sea fan depositional system. Generally, sediment sequence displays coarsening-thickening upward cycles of the FB-FA and FB-FC associations. Zoophycus, Palaeodiction and Halopa in association with coccolith, planktonic foraminifers and abundant framboidal and chamber filling pyrite, phosphate and organic material in these sediments display a deep see environment with low sedimentation rate and anoxic condition in the sedimentary substrate. Paleocene succession in the studied section consists of four 3rd order sequences, which include LST, TST and HST. The Late Cretaceous-Palaeocene uplift in a compressional tectonic regime tends to formation of the Alborz range. This element along with Eustatic sea level changes are the main controlling factors for depositional condition (including deep sea fan in this study) and relative sea level changes in the South Caspian Basin.

Keywords*: Northern Alborz, Palaeocene, deep sea fan, South Caspian Basin*