

SEDIMENTOLOGY AND BIOSTRATIGRAPHY OF THE CRETACEOUS MUGHAL KOT FORMATION, RAKHI GORGE SECTION, SULAIMAN RANGE, PAKISTAN

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Abstract

This study is focused on sedimentology, palynofacies and biostratigraphy of the pelagic to hemipelagic sediments of the Mughal Kot Formation, Rakhi Gorge Section, Sulaiman Range, Pakistan. The depositional model is described using detail microfacies and palynofacies analyses. The biostratigraphic studies involving planktonic foraminifera is used to assign relative age to the Mughal Kot Formation. The bio-stratigraphic ages and depositional environments are integrated to find out a possible petroleum system within the Mughal Kot Formation. Two microfacies i.e. mudstone and wackestone were identified, suggesting a deep marine to an outer/middle ramp environment. The palynofacies analysis shows a high percentage of amorphous organic matter (AOM), indicating a deep marine to an outer/middle ramp environment under suboxic-anoxic distal basin condition. The palynofacies interpretation coincides with microfacies interpretation in establishing depositional environment. In Mughal Kot Formation one bio-stratigraphic biozone i.e. *Globotruncanita calcarata* of late Campanian age is identified and its age is further extended into early Maastrichtian based on the presence of associated Maastrichtian planktonic and benthic foraminifera within the *Globotruncanita calcarata* biozone. The evolution of the planktonic foraminifera and larger benthic foraminifera in this part of the Tethys Ocean confirmed a shallowing upward sequence on the basis of test coiling and increase in test size. The coexistence of the two species the opportunists and the specialists confirm that the Mughal Kot Formation show the same evolution pattern as evident globally in the late Campanian and early Maastrichtian time. The low species richness in each sample is due to high sedimentation rate in this time span. On the basis of microfacies a sea-level curve is constructed showing pulsation due to local tectonic conditions.

Key words; Mughal Kot Formation, Cretaceous; Rakhi Gorge, Sulaiman Range; Pakistan.