Sedimentology, bio-sequence stratigraphy and source rock potential of Early Eocene Nammal Formation, Salt Range, Pakistan

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Abstract

The Eocene Nammal Formation of Salt Range belongs to a carbonate platform sedimentation of Tethyan regime. The Formation is 70 m thick at Nammal Gorge Section and 30 -32 m thick in Tatral section. Detailed Sedimentological studies werecarried out based on data from 3 different stratigraphically important sections in the Salt Range from East to West (Tatral, Bestway Quarry near Katas, Nammal Gorge). Lithologically, the Formation consists of interbedded nodular limestone, Marl and Shale. The microfacies identified are mudstone, wackstone to packstone and grainstone in a fine grained matrix with abundant bioclasts of larger benthic foraminifera. The Nammal Formation presents retrogradational facies suggesting the Transgressive System Tract (TST). The Nammal Formation belongs to Innerneritic environments because it contains larger benthic foraminifera in large quantities as compared to Planktons and Nano-fossils belonging to generaLockhartia, Assilina, Nummulites, Alvolina and Discocylina which are characteristic of shallow carbonate platform environment. It suggests a carbonate platform deposition. Diagenetic features such as Partial to complete Neomorphism, obliteration of tests of foraminfera, secondary cementation, partial dolomitization are observed in thin sections and outcrop studies.

The TOC analysis of 9 samples of shale and limestone was carried out. The TOC values are 0.08. This suggests that no organic matter present in Nammal Formation and has no source rock potential.