

SEDIMENTOLOGY OF LUMSHIWAL FORMATION IN KAH I SECTION NIZAMPUR BASIN PAKISTAN

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Abstract

The Cretaceous Lumshiwai Formation, exposed in the vicinity of Kahi Village, Nizampur Basin, has been studied using 27 surface rock samples. The formation is mainly composed of sandstone with minor intercalations of shales and about 2m limestone bed at the top. The sandstones are classified as texturally sub mature and mineralogically mature quartz arenites and generally represent as first cycle of deposition. The grains are dominated by monocrystalline non-undulose quartz, minor polycrystalline quartz, less orthoclase feldspar, some rock fragments, micas and a suit of heavy minerals. The rock fragments are well rounded and are of sedimentary origin. The heavy minerals include garnet, tourmaline, rutile, monazite, glauconite and mica (biotite). The grains characteristics reveal that the source rock was acidic plutonic igneous, present in the craton interior, having semi humid to humid climate condition. The sandstones are poorly to moderate sorted and exhibit sub angular to sub rounded grains, cemented by silica. Silica as quartz overgrowth, close packing of grains with planar to suture and sometimes concave to convex contacts, presence of stylolites and alteration of feldspar into clay suggest final phase (phyllomorphic) of diagenesis. Total absence of matrix and abundance frame work grains and presence of glauconite suggest high energy marine environmental conditions. The limestone is categorized as glauconitic bioclastic limestone and represents middle shelf environmental conditions.