

MICROFACIES ANALYSIS, DIAGENETIC FABRIC AND DEPOSITIONAL ENVIRONMENT OF MIDDLE JURASSIC SAMANA SUK FORMATION KHWARI KHWAR SECTION, NIZAMPUR BASIN, KHYBER PAKHTUNKHWA, PAKISTAN

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Abstract

A detail geological investigation of the Middle Jurassic Samana Suk Formation in the Khwari Khwar Section, Nizampur Basin was carried out to elaborate its microfacies settings, diagenetic fabric and depositional environment. The outcrop is mainly composed of limestone and dolomitic limestone with some dolomite and intercalations of marl and shale at different level. Twenty six samples were studied from a 104 m thick section and four microfacies with ten sub microfacies were identified. A variety of skeletal allochems, ooids, peloids and intraclasts are found in the formation. The microfacies includes; (1). Mudstone microfacies, (bioclastic mudstone and dolomitic mudstone as submicrofacies), (2). Wackestone microfacies, (planktonic bioclastic wackestone and dolomitic bioclastic wackestone as submicrofacies), (3). Packstone microfacies, (bioclastic peloidal packstone and peloidal siliciclastic dolomitic packstone as submicrofacies), (4). Grainstone microfacies, (peloidal ooidal bioclastic grainstone, foraminiferal bioclastic grainstone, bioclastic dolomitic peloidal grainstone and bioclastic peloidal grainstone submicrofacies). The depositional environment interpreted is restricted inner ramp for mudstone microfacies, middle to outer ramp for wackestone microfacies, inner to middle ramp hypersaline lagoons and its beaches for packstone microfacies and inner ramp for grainstone microfacies. A variety of cements morphologies and diagenetic imprints have been witnessed which are applied in diagenetic setting identification. Diagenetic features like biogenic alteration, bioturbation, stylolites, compaction (including pressure dissolution), neomorphism, micrite envelops, veins, dolomitization, cementation and tectonic fracturing are clearly observed in the formation. Based on microfacies analysis the Samana Suk Formation at Khwari Khwar Section represents (inner, middle and outer) ramp environment with open and restricted marine conditions.