

MICROFACIES ANALYSIS AND POROSITY DEVELOPMENT IN WARGAL FORMATION (PERMIAN), CHHIDRU NALA, WESTERN SALT RANGE, PAKISTAN.

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A 123m thick section of the Wargal Formation was measured and sampled in detail along Chhidru Nala, in Western Salt Range. On the basis of lithological and biotic differences, the Wargal Formation can be divided into seven lithologic units, which further can be subdivided into eleven microfacies.

The eleven microfacies are: bioclastic sandstone (MF1), gymnocodiacean rudstone (MF2), sponge-bryozoan-tubiphytes boundstone (MF3), bryozoan, tubiphytes float-to rudstone (MF4), gymnocodiacean wacke-to packstone (MF5), bioclastic wackestone (MF6), laminated, micritic dolomite (MF7), bioclastic, benthic foraminiferal, intraclastic grainstone (MF8), benthic foraminiferal, bioclastic grainstone (MF9), crinoidal, bryozoan rudstone (MF10), brachiopodal, crinoidal grainstone (MF11).

The lower part of the section is dominated by normal marine near shore environments with upward decreasing clastic influx. In this section the matrix-rich algal limestone with chert nodules was deposited in moderate to low energy shallow subtidal environment and the overlying algal laminated, micritic dolomite was deposited probably in an intertidal environment.

The middle part of the section is characterised by crinoids, bryozoans and brachiopods, which indicate shallow, open marine, moderate to high energy conditions. Presence of multiple horizons of facies with sponge-bryozoan-tubiphytes boundstone fabric and colonial corals indicate minor cyclic changes in the energy conditions.

The upper part consists predominantly of crinoids and brachiopods and was deposited in a shallow subtidal environment, probably during a regressive phase, which is also supported by clastic influx in the uppermost part of the section.

Micromoldic and moldic to vuggy porosity is observed in 10m thick micritic dolomite. These porosities could be potentially important, because this unit is extensively developed in the study area.