

## LITHOFACIES, SAND-BODIES GEOMETRY AND DEPOSITIONAL SETTING OF THE DATTA FORMATION IN SURGHAR RANGE, NORTH PAKISTAN

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Thick Mesozoic sedimentary rocks are exposed over a wide area in the Lower and Upper Indus Basin of Pakistan, particularly along the western margin of the Indian Plate. The Mesozoic sequence is generally comprised of clastic facies in the lower part, carbonate facies dominate in the upper part. In the Surghar Range the Datta Formation represents the lower part of the early Jurassic sequence. The formation is comprised dominantly of clastic facies with carbonate interbeds at places. The Datta Formation of early Jurassic was measured and described in the Chichali and Pannu gorge, Surghar Range. The total thickness of Datta sediments at Chichali section is 161m while thickness of the Pannu section is 225m. Sections were measured for sedimentological studies and sand bodies were classified accordingly. On the basis of lithological variation and sedimentary structures eight lithofacies have been recognized. These lithofacies are; LF 8: Clay lithofacies, LF 7: Cross bedded sandstone lithofacies, LF 6: Siltstone lithofacies, LF 5: Interbedded limestone and shale lithofacies, LF 4: Sandstone with intercalations of clay lithofacies, LF 3: Carbonaceous shale lithofacies, LF 2: Channelized sandstone lithofacies, LF 1: Interbedded sandstone and shale lithofacies.

Three kinds of sand bodies were identified, these are mostly multistorey channels but some simple ribbons as well as sheets are also present. Fossils identified are gastropods and pelecypodes.

After collecting and interpreting the data acquired from the measured sections and sandstone bodies' geometry analysis, it is interpreted that the Datta Formation was deposited along the delta plain and delta front setting by a fluvial-wave dominated delta. Continental, transitional to oceanic conditions prevailed at the time of deposition of the Datta Formation and all the facies show prograding deltaic setting. Cross beds interpretation indicates east to west flowing channels.