



## MESOZOIC LITHOSTRATIGRAPHY OF THE JAISALMER BASIN, RAJASTHAN

N. P. SINGH

"SURYANSH", A-5, SAKET HOUSING COLONY, TARSALI RING ROAD, BARODA-390 010

### ABSTRACT

The Jaisalmer Basin is an integral part of a major tectonic province known as "West Rajasthan Shelf" which is located to the west of Aravalli ranges and represents the eastern shelf part of the Indus Basin. The shelf hosts a number of sedimentary basins, viz. Jaisalmer, Bikaner-Nagaur and Barmer. The present study is confined to the detailed Mesozoic lithostratigraphy of the Jaisalmer Basin which has well documented history for Mesozoic and Cenozoic rock sequences. An exhaustive study of the surface and subsurface sedimentary sequences has been possible in this basin due to availability of voluminous subsurface data generated through drilling in course of oil exploration by ONGC. This basin represents more or less central part of West Rajasthan Shelf and occupies an area of 42,000 sq.km. Tectonically, this entire basin is divisible into four geotectonic blocks which, from north to south, are Kishangarh sub-basin, Jaisalmer-Mari High, Shahgarh sub-basin and Miajlar sub-basin.

The Jaisalmer Basin has a thick sedimentary column of the order of 10,000 meters or so involving alternating sequences of clastics and carbonates. The Mesozoic and Cenozoic formations are exposed in the south-eastern part of the basin. Lithostratigraphic development in all geotectonic blocks of the basin shows slight variance at different stratigraphic levels. Three major unconformities have been mapped in the basin, which differentiate four main sequences belonging to Proterozoic-Early Cambrian, Palaeozoic-Mesozoic, Tertiary and Quaternary. The basin experienced first sedimentation on igneous/metamorphic basement during Palaeozoic Era. The sedimentation continued up till Recent. However, in the southern outskirts of Miajlar sub-basin, Proterozoic-Early Cambrian sediments belonging to Randha and Birmania formations are exposed; the extensions of these formations are expected in the Miajlar sub-basin only. In all, nine Mesozoic formations have been mapped in the basin, out of which three formations, namely Bhuana, Goru and Parh do not extend to the surface. Similarly, the Habur Formation is restricted to the outcropping area except in the subsurface of the Bhuana area. Facies changes in basinward areas and thinning of certain formations in shoreward areas have been observed.

The surface and subsurface sedimentary sequences could be tied up precisely based on adequate biostratigraphic control and lithostratigraphy has been standardised. Magnitude of hiatuses, unconformities and disconformities/paraconformities have been recognised. Stratotypes of all formations have been established and their depositional characters alongwith faunal and floral elements and their stratigraphic relationship with succeeding formation have been discussed.

**Keywords:** Jaisalmer Basin, Mesozoic Lithostratigraphy, stratotypes, Formaminifera