ABSTRACT

The Jurassic rocks of Khadir, Bela and Chorar Islands are investigated using sedimentology, ichnology and sequence stratigraphy approach to understand the basinal history. These rocks range in age from Aalenian? /Bajocian to Early Oxfordian and lithostratigraphically classified into Khadir Formation and Gadhada Formation where the former is subdivided into Cheriya Bet Conglomerate, Hadibhadang Shale and Hadibhadang Sandstone and later is divided into Ratanpur Sandstone and Bambhanka members. These units are variably exposed in Khadir, Bela and Chorar Islands, the maximum development is observed in Khadir Island, but the oldest and youngest units are not observed in Bela and Chorar Islands.

The Jurassic sequences of these three islands are further analyzed sedimentologically and revealed variations in textural parameters and clastic and non-clastic components. The sequence is characterized by a variable number of lithofacies, where the sequence is comprised of eight, five and nine lithofacies in Khadir, Bela and Chorar Islands respectively. These successions are bioturbated in nature, the Khadir Island has 36 ichnospecies of 19 ichnogenera forming six recurring associations including *Diplocraterion, Hillichnus, Lockeia, Planolites-Palaeophycus, Rhizocorallium* and *Protovirgularia*; Bela Island has 23 ichnospecies of 17 ichnogenera forming three assemblages including *Monocratereon, Thalassinoides,* and *Hillichnus* and Chorar Island have 20 ichnospecies of 16 ichnogenera forming five assemblages *Hillichnus, Rhizocorallium, Gyrochorte, Thalassinoides* and *Skolithos.* Further palaeoecological analysis of the assemblages revealed *Skolithos, Cruziania*, and *Skolithos-Cruziania* Ichnofacies.

The sedimentological and ichnological data are used for the sequence stratigraphic analysis of the Jurassic succession showing two genetic cycles which include LST-I, TST-I and HST-II systems tracts in Khadir Island and TST-I and HST-II in Bela and Chorar Islands with MFS as the sequence boundary at the top of the Hadibhadang Sandstone Member. These systems tracts were developed in fan delta and shallow marine environments. The basinal history is explored further by comparing the sea-level curves of the studied area with eustacy sea-level curves revealing the creation of the accommodation place in the basins is due to global sea-level changes and local tectonics. The comparison of the lithostratigraphic units of the Jurassic rocks of the Khadir, Bela and Chorar Island revealed the decreases in thickness of the Hadibhadang Shale Member, Hadibhadang Sandstone Member and Ratanpur Sandstone Member from west to east reflecting the condensation of the stratigraphic units towards the basin margins.