



Biostratigraphy and depositional environments of the Maastrichtian rocks near the collisional boundary of the western margin of the Indian Plate

R. Ahmed Sheikh (1), **K. Mirza (2)**

(1,2) Institute of Geology, Punjab University, Lahore, Pakistan

The Maastrichtian rocks near the collisional boundary of the western margin of the Indian plate exposed in the Rakhi Nala section, eastern Sulaiman Range (Fort Monro Formation) and in the environs of Quetta, western Sulaiman Range (Murree Brewery Limestone) have been discussed. The biostratigraphic studies and the environments of deposition of these formations and their comparison with each other are given here.

The end of Cretaceous period is marked by some spectacular events in the Pakistan stratigraphy with the absence of Maastrichtian period throughout northern Pakistan and the deposition of Fort Monro Formation in the eastern Sulaiman Range and Murree Brewery Limestone in the western Sulaiman Range. Both formations show shallow marine environments of deposition with abundant age diagnostic larger benthic foraminifera known as Orbitoides.

The study of this diverse group on the basis of their embryonic apparatus and morphology revealed that the age of the Fort Monro Formation is Maastrichtian. The formation in the Rakhi Nala section shows shallowing upward sequences, which are quite prominent. Each cycle is terminated by hard ground surfaces on grainstones. This sequence towards its upper part shows the deposition in the supratidal environments. This alternating carbonate and marl sequence is overlapped by siliciclastic Pab Sandstone (Maastrichtian) as a result of forced regression.

Presence of *Ompahlocyclus macroporus*, *Siderolites calcitrapoides* and *Orbitoides tissoi* confirms the Maastrichtian age of the Fort Monro Formation, which underlies the Pab Sandstone.

The Murree Brewery Limestone is also assigned Maastrichtian age due the presence of

Siderolites calcitrapoides and Omphalocyclus macroporus throughout the formation. This fauna reflects shallow marine environment of deposition with open sea circulation. In the Murree- Brewery Gorge, the Murree Brewery Limestone is disconformably overlain by the Dungan Limestone of upper Paleocene to early Eocene. This break in deposition is marked by a lateritic encrustation on the carbonates of Murree Brewery Limestone.

The same K-T boundary in Rakhi Nala section is between Pab Sandstone and Khadro Formation of Lower Paleocene age