AGE OF THE THERRIA FORMATION, MEGHALAYA, INDIA—A REVIEW

Langpar Formation represents the lowermost Tertiary sediments in Assam Basin which in turn is overlain by a coal measure sequence which is named as Therria Formation along the Um Sohryngkew River, Cherra Formation in Cherrapunji Plateau, Tura Formation in Garo Hills and Mikir Formation in Mikir Hills. Therria Formation exposed in Um Sohryngkew River Section, Meghalaya is dated Middle Palaeocene in age (Pandey, 1972) whereas, this formation exposed along the road between Jowai and Sonapur, Meghalaya has been assigned Middle Palaeocene—Upper Palaeocene age (Tripathi & Singh, 1984; Singh & Tripathi, 1987). Divergent views in regard to the age of Therria Formation warrants a detailed study in Assam Basin so as to clearly understand the stratigraphy and correlation of Lower Tertiary sediments.

Therria Formation, exposed along the road between Jowai and Sonapur, Meghalaya, located in the southeast of Shillong, directly overlies the Pre-Cambrian Shillong Group. This contact is observed near Jowai (64 km away from Shillong on National Highway 44 connecting Shillong, Meghalaya and Badarpur, Assam). The upper contact of Therria Formation with overlying Sylhet Formation is observed near 110 km on the same road. On lithological grounds the Sylhet Formation is divisible into five members (Table 1).

Table 1—Lithostratigraphic sequence of the Tertiary sediments exposed along Jowai-Sonapur Road, Meghalaya (after Saxena & Tripathi, 1982)

Age	Group	Formation	Member	Remarks
			Prang Limestone	
			Nurpuh Sandstone	
			Umlatcdoh Limestone	Exposed between 110 and 128.5 km
		Sylhet Formation	Lakadong Sandstone	
	Jaintia Group		Lakadong Limestone	
Palaeocene to Eocene		Therria Formation	—	Exposed between Jowai (64 km) and 110 km)
		—Unconformity—		
Pre-Cambrian	Shillong Group	—	—	Exposed between Shillong (0 km and Jowai (64km)

Therria Formation is divisible into three palynozones (Tripathi & Singh, 1984; Singh & Tripathi, 1987). The two lower palynozones are rich in spore/pollen assemblage but the upper zone is characterised by very high frequency of dinoflagellate cysts (78%). The first occurrence and dominance of dinoflagellate genus *Apectodinium* Costa &

Downie ex Lentin & Williams in the top part of Therria Formation has been observed by Tripathi and Singh (1984). A predominant monospecific dinoflagellate assemblage of *Apectodinium homomorphum* (Deflandre & Cookson) Lentin & Williams emend. Harland is a characteristic feature in this part of the formation.

The occurrence of *Apectodinium* Costa & Downie ex Lentin & Williams has been considered significant in marking Palaeocene/Eocene boundary (Harland, 1979). Presence of *Apectodinium parvum* (Alberti) Lentin and Williams in Upper Palaeocene-Lower Eocene sediments has been reported from Europe, New Zeland and North Sea (Alberti, 1961; Wilson, 1967; De Coninck, 1969; Gocht, 1969; Gruas-Cavagnetto, 1968; Costa and Downie, 1976). Chateauneuf and Gruas-Cavagnetto (1978) discussed Palaeogene Zones based on *Apectodinium* Costa & Downie ex Lentin and Williams in the Paris Basin and correlated them with other North-West European Zones. They observed that the lowermost-C-1 *Apectodinium homomorphum* Zone extends from the top of Thanetian to the base of Sparnacian. At the base of Sparnacian it is reprented by *Apectodinium parvum* (Alberti) Lentin & Williams (80-90 per cent).

Pandey (1972), based on major foraminiferal breaks, recognised seven informal stages in the succession of Um Sohryngkew River Section, Meghalaya (Late Cretaceous-Palaeogene). He opined that the marine conditions prevailed throughout the Palaeocene-Eocene epochs. Pandey (1972) considered Therria Formation as Middle Palaeocene in age and the overlying Lakadong Formation (probably equal to Lakadong Limestone Member+Lakadong Sandstone Member of Sylhet Formation) as Late Palaeocene to Early Eocene in age as follows :

Group	*Formation*	*Age*
	Prang Formation	Middle and Late Eocene
Sylhet Group	Umlatodoh Formation	Late Eocene
	Lakadong Formation	Late Palaeocene-Early Eocene
	Therria Formation	Middle Palaeocene
	Langpar Formation	Early and Middle Palaeocene
.....	Unconformity.....	
	Mahadeo Formation	Late Cretaceous-Early Palaeocene
Meghalaya Group	Um Sohryngkew Formation	Late Cretaceous
.....	Unconformity.....	
	Jurassic (?) Basalts	

Dutta and Jain (1980) recovered high frequency of *Apectodinium* Costa & Downie ex Lentin & Williams from the Lakadong Sandstone Member of Sylhet Formation recording a monospecific microplankton assemblage represented by *A. parvum* (Alberti) Lentin & Williams in this member. Dutta and Jain (1980) proposed Upper Palaeocene age for the Lakadong Limestone and Lakadong Sandstone members of Sylhet Formation demarcating Palaeocene/Eocene boundary at the top of Lakadong Sandstone Member.

Palynological investigations of Lower Tertiary sediments in Meghalaya indicate the appearance of *Apectodinium* (considered to be Upper Palaeocene marker) in the top part of Therria Formation (Tripathi & Singh, 1984 ; Singh & Tripathi, 1987) and its continued occurrence up to Lakadong Sandstone Member of Sylhet Formation (Dutta & Jain, 1980). Palaeontological evidences suggest that Therria Formation is of Middle

Palaeocene age (Pandey, 1972). Palynological evidences suggest that lower and middle parts of Therria Formation are of Middle Palaeocene age, whereas its upper part is of Upper Palaeocene (Tripathi & Singh, 1984; Singh & Tripathi, 1987).

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