Stratigraphy, sedimentology and structural geology of the Betong-Lepang Nenering border area, Pengkalan Hulu (Keroh), Hulu Perak

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The study area which is located at the northernmost part of Peninsular Malaysia along the border with neighbouring Thailand, displays outcrops of a series of rocks that range nearly the entire Paleozoic Era and Cenozoic Era. They are the Early Ordovician-Early Devonian Kroh Formation; the Carbo-Permian Kati Formation and the Tertiary Nenering Tertiary Beds.

The older Kroh Formation which act as the basement rock for the other two younger formations comprises four distinguishing facies, namely:-

i) Argillaceous Facies
ii) Siliceous Facies
iii) Arenaceous Facies
iv) Calcareous Facies

The strata of the Kroh Formation is extremely folded and deformed. Lying above it are the two younger broadly folded formations, they are the Kati Formation which is only limited to the SE portion of the study area and the Nenering Tertiary Beds to the NW portion of the study area. Both of the younger formations lie above clearly exposed basal planes of unconformity which are angular in nature.

The Kati Formation, which is a turbiditic formation consists of two main facies, namely:-

i) Basal Conglomerate Facies
ii) Rhythmite Facies

The succession starts with a thick layer of intraformational chert conglomerate, followed by a layer of finer conglomerate, and massive sandstone beds and beds of argillaceous material. The thick chert conglomerate layer reoccurs giving rise to the total thickness of approximately 70 meters for the Basal Conglomerate Facies. Succeeding this basal facies is the Rhythmite Facies that consists of an alternating beds of sandstone, siltstone, shale and clay. The total thickness of this formation sums up to approximately 700 meters.

Warta Geologi (Newsletter of the Geological Society of Malaysia), Vol. 21, No. 3, May-June 1995

The Nenering Tertiary Beds, which is an alluvial-fluviatile continental deposit comprises of three main units, namely:-

i) The Lower Unit
ii) The Middle Unit
iii) The Upper Unit

The lithology consists of well consolidated to semi-consolidated gravel beds, sandstone and, silt and mud.

Structurally the study area generally, has undergone two periods of tectonic deformation, both of which are subjected to an EW compression force that resulted in the two phases of folding of the strata of the Kroh Formation and the broad folds of the Kati Formation. The area has also gone through an active period of faulting which play an important role in exposing the primary planes of unconformity between the related formations and result in the broad folding of the Tertiary outcrops.