

Stratigraphy of deformed Permian
carbonate reefs in the
Saraburi Province, Thailand

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TITLE

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RUNNING TITLE

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ABSTRACT

The Indosinian Orogeny brought together a number of continental blocks and volcanic arcs during the Permian and Triassic periods. Prior to the orogeny, carbonate platforms and minor clastic sediments were deposited on the margins of these continental blocks. The Khao Khwang Platform formed along the southern margin of one continental fragment of the Indochina Block and was deformed in the early Triassic creating the Khao Khwang Fold-Thrust Belt.

The palaeogeography of the Indochina Block margin prior to this deformation is incompletely known, yet is significant in assisting with structural reconstructions of the area and in assisting with our understanding of the ecology of Permian fusulinid-dominated habitats. The sedimentology and stratigraphy of the Permian platform carbonates and basin complexes require further analysis. Three main carbonate platform dominated facies have been identified previously as the Phu Phe, Khao Khad and Khao Khwang formations. These platform facies are divided by clastic, mixed siliciclastic and carbonate sequences known as the Sap Bon, Pang Asok and Nong Pong formations.

Here, I present a stratigraphic model for the carbonate reefs and intervening clastic sedimentary rocks using the exposed well-developed sections in central Thailand. The model integrates fossil identification, biostratigraphic correlation and palaeoenvironmental analysis, in accordance with structural controls and fieldwork in the Saraburi Province, Thailand. Eleven sections were logged, encompassing units from three thrust sheets. The stratigraphic logs suggest five depositional environments for the middle Permian sequences, dated using foraminifera and algae. Characteristics of mass transport were identified indicating basinal facies receiving turbid debris flows. Furthermore, depositional texture variations indicated energy changes from peritidal, lagoonal through to reef environments. The palaeoenvironmental inferences and fossil identification allow section correlation and assist in unravelling the structure of this fold-thrust belt.

KEYWORDS

Permian biostratigraphy, carbonate stratigraphy, Khao Khwang Fold-Thrust Belt, Khao Khad Formation, carbonate platform, fusulinid.

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