THE STRATIGRAPHIC AND TECTONIC RELATIONSHIP OF REED BANK, NORTH PALAWAN AND MINDORO TO THE ASIAN MAINLAND AND THEIR SIGNIFICANCE IN THE TECTONIC EVOLUTION OF THE SOUTH CHINA SEA BASIN

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It has been suggested by many authors that the Reed Bank, North Palawan and Mindoro (the North Palawan Block) once occupied a pre-drift position contiguous with the South China mainland. This paper presents additional stratigraphic and tectonic evidence in support of this hypothesis as well as a model for the evolution of the South China Sea Basin since the Triassic.

Four prominent pre-Neogene regional unconformities are recognised both on and offshore the China mainland, in Taiwan and in the North Palawan Block. The synchrony of these unconformities strongly suggests a common pre-Neogene history for all these areas. The events are dated (1) Upper Triassic, (2) Upper Jurassic, (3) Upper-most Cretaceous to

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Palaeocene, and (4) Mid-Oligocene. They are considered to correspond to the following tectonic episodes respectively (1) the Indosinian Orogeny, (2) an early phase of the Yenshanian Orogeny, (3) onset of rifting in the South China Sea (also a late phase of the Yenshanian), and (4) the South China Sea "Breakup" event (rift-drift transition). Throughout the Palawan area, an important regional unconformity occurs at the end of the Middle Miocene which corresponds to cessation of subduction in the Palawan trench and also of sea floor spreading the South China Sea Basin.

These events are broadly compatible with the sea floor magnetic reversal anomalies established by Taylor and Hayes for the South China Sea Basin. These anomalies form the basis of the pre-drift fit proposed in this paper.

The tectonic evolution of the South China Sea Basin since the Triassic is summarised in the following stages:-

1. Suture of Indosinian and South China blocks along the Red River line (Indosinian event).
2. Jurassic to Mid-Cretaceous northwestward subduction from south-eastern Vietnam to Taiwan with the North Palawan Block lying in a trench to forearc position.
3. Upper Cretaceous shift of subduction to the south and the inception of the Philippine island arc system. Commencement of attenuation by block faulting (rift onset unconformity) fo the broad South China continental shelf. Concomitant initiation of southward movement of old oceanic crust and the inception of southward subduction along the Lupar Line in Sarawak and the proto-Palawan trench.
4. Continued crustal attenuation, most significantly at the western end of the basin such that continental material reached and locked the western part of the Sarawak subduction system by the late Eocene. About 85% stretching of the continental crust is believed to have occurred before sea floor spreading became established.
5. Mid-Oligocene initiation of sea floor generation along a zone of weakness coincident with the Jurassic-Cretaceous palaeomagmatic arc. Northeastward migration of subduction cessation in Borneo owning to the progressive locking effect of southward drifting continental material.
6. Early to Mid-Miocene collision of the North Palawan Block with the Palawan Trench and concomitant cessation of sea floor spreading.
7. Further impact between the North Palawan Block and the anticlockwise pivoting Philippine island arc system.

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