

PROCEEDINGS, INDONESIAN PETROLEUM ASSOCIATION  
Twenty-Sixth Annual Convention, May 1998

**EOCENE EXTENSIONAL BASIN FORMATION, EASTERN BORNEO**

**Gary J. Nichols\***

**Ian R. Cloke\***

**Robert Hall\***

**ABSTRACT**

Recent studies by the University of London SE Asia Group have established a link between the tectonic development of eastern Borneo from the northern part of the Makassar Straits through to the Celebes Sea. Gravity surveys integrated with onshore and offshore structural studies in eastern Kalimantan indicate that the northern Makassar Straits Basin is of extensional origin. It is interpreted as a region of highly attenuated continental crust or oceanic crust in the basin axis at the present day. Gravity modeling suggests that the extension occurred in early middle Eocene times. This timing of extension is consistent with the age of the formation of the Celebes Sea to the north: sea-floor

magnetic anomalies and dating of pelagic sedimentary rocks drilled by the Ocean Drilling Program demonstrate that the Celebes Sea formed by sea-floor spreading which commenced in early middle Miocene times. The spreading axis in the Celebes Sea aligns with the axis of the northern Makassar Straits basin. Comparison of the age and stratigraphic history of the Celebes Sea Basin with West Philippine Basin strongly suggests that these basins had a common history in Eocene times and probably formed by back-arc extension. Plate tectonic models for SE Asia based on a synthesis of structural, stratigraphic and palaeomagnetic data from the region show an evolving spreading centre which stretched from the Northern Makassar Straits, through the Celebes Sea Basin to the West Philippine Basin in mid to late Eocene times. Eocene extensional basin formation, eastern Borneo.

---

\* University of London SE Asia Group