

**CORRELATION OF THE SUBIS LIMESTONES WITH EQUIVALENT LIMESTONE BODIES IN OFFSHORE BALINGIAN PROVINCE, SARAWAK, AND PRUPUH LIMESTONES IN JAVA**

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Detailed micropalaeontological studies of the foraminiferal assemblages were carried out to resolve the biostratigraphy correlation and depositional environment of the Subis limestone, the limestone from offshore Balingian Province and the Prupuh limestone.

Most of the foraminifera examined in the samples is consisted of larger benthic foraminifera. Larger benthic foraminifera are important contributors to modern and ancient tropical, shallow-marine sediments. The modern ecological studies of larger benthic foraminifera such as their environmentally sensitive depth distribution, reproductive strategy and morphology and the symbiotic relationship between many larger foraminifera and photosynthetic algae is a powerful tool to develop palaeoecological models of the studied areas.

The Balingian Province lays mainly offshore central

Sarawak and is bounded by the west Balingian Line to the west, the Central Luconia Province to the north, and the Tinjar Province to the South. Samples from wells offshore Balingian such as Sompotan-1, Rebab-1, Serunai-1 were studied and can be tied to the Subis location. (Mazlan, 1999).

Subis limestone is a member of the Tangap Formation at Niah. The Tangap formation is composed of calcareous shale, marl, calcareous sandstone and limestone. Limestone is either interbedded with calcareous shale or forms a massive sequence (Haile, 1962).

Prupuh limestone is a member of the Kujung formation. It is located in north-east Java. The Kujung formation is the oldest formation exposed in the East Java area. The age of Kujung Formation has been established as latest Early Oligocene to Early Miocene. (Duyfjes 1941; Najoan 1972; cited in Lunt et al. 2000).

The foraminifera observed in the Subis area and offshore Balingian are free living taxa which are indicative of high energy environment. *Miogypsina* sp., *Nephrolepidina* sp. and *Amphistegina* sp. are mostly confined to shallow warm waters of normal oceanic salinities. *Amphistegina* in particular are more abundant in shallow, warm, clear waters of high carbonate contents. The calcareous algal assemblage is mostly composed of encrusting forms. Such forms are known to be found in shallow turbulent water, of normal marine salinity and penetrated by sunlight. Thus the foraminiferal and algal assemblages found in the studied area indicate that the Subis limestone and offshore Balingian limestone was formed in a shallow water turbulent environment. The study of the seismic data of the offshore Balingian also indicates that the clastic sediments likely to vary over small distances reflecting changes in depositional energy that occur around coastal to shallow marine settings.

The Subis limestone, limestone bodies from offshore Balingian Province and the Prupuh limestone, Java were developed on various parts of the Sunda plate. The Prupuh limestone is similar in age to the Subis limestone. The limestone from offshore Balingian was the extension of the Subis limestone. The ages of the Java samples have determined by strontium dating.

#### REFERENCES

- HAILE, N.S., 1962. The geology and mineral resources of the Suai-Baram area, north Sarawak. Mem. Geol. Surv. Dept. Br. Terr. Borneo, V.13, pp. 41-52.
- LUNT, P., NORTHERWOOD, R. AND BURGON, G., 2000. AAPG/IAP field trip to Central Java, October, 2000.
- MAZLAN B.HJ. MADON, 1999. Basin types, tectono-stratigraphic provinces, and structural styles. The petroleum geology and resources of Malaysia. Petronas, p. 79-111.