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APPLICATIONS OF SEQUENCE STRATIGRAPHY TO THE TRIASSIC LIMESTONES IN NORTHWEST PENINSULAR MALAYSIA

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Recent sedimentological study of the Triassic Kodiang Formation in Perlis and North Kedah reveals the presence of several facies representing supratidal, intertidal, subtidal, open shelf, shelf crest and deepwater environments. This facies interpretation differs widely from those put forward by previous workers. Jones (1981) suggested a wholly shelf environment while de Coo and Smit (1973), Ahmad Nazeri (1973) and Abdul Latif (1979) postulated a slowly subsiding basin for the same area.

Planar and wavy micritic-dolomitic laminations are interpreted as algal mat stuctures and suggest an intertidal setting while largely mottled (bioturbated) laminites indicate a subtidal environment. Irregular calcite-filled voids (birds-eye structure) and relict anhydritic pseudomorphs within the algal laminites indicate an upper intertidal to supratidal setting. Bedded grey limestone facies consisting of skeletal-crinoidal packstone-grainstone characterize the shelfal facies while massive mud-encrusted sponges and coral limestone are interpreted as being deposited on the shelf crest. Bedded black micritic to spiculitic limestone was deposited in deeper water setting.

Although outcrops of the Kodiang Formation do not show good lateral continuity, some facies associations can be reconstructed from their vertical relationships. In the Kodiang Formation, seven conformable depositional sequences, bounded by interregional unconformities, have been recognized and related to changes in relative sea-level. Each depositional sequence consists of a lowstand systems tract, a transgressive systems tract and a highstand systems tract. The base of each sequence is characterized by the erosional truncation, including cut and fill, of the underlying highstand strata which are mainly deepwater limestones. In some of the unconformities observed, karstificatlon surfaces and limestone breccia are present, interpreted as results of meteoric leaching associated with eustatic falls in sea-level. Additionally, the presence of widely dolomitized limestones are interpreted to be due to the regional migration of the mixing zone in the basinward direction as a result of eustatic falls in sea-level. Algal laminite, shelf and shelf-crest facies overlie these erosional basal

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contacts (sequence boundaries) and are interpreted as being deposited during the late lowstand to early transgressive systems tracts. Bedded micritic limestone with nodular chert facies which overlie all the other facies are interpreted as deepwater limestones and inferred as being deposited during a relative rise in sea- level (late transgressive to early highstand systems tract).

The application of sequence stratigraphy to the Kodiang Formation is useful since it facilitates the interpretation and prediction of its stratigraphy beyond the scope of accessible outcrops.