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Anatomy of an Isolated Carbonate Platform: Subis Limestone Outcrop, Early Miocene, Niah, Sarawak, Malaysia

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Carbonate outcrops in Sarawak, Malaysia provide invaluable information about the architecture of Neogene carbonate platforms. The Subis Platform, composed of the Subis Limestone is one of the very few outcrops in Malaysia that is large enough to reveal vertical and lateral facies relationships. The Subis Platform is a conspicuous hill that extends about 6000 m x 4000 m x 400 m. The Subis Limestone is composed of branching and massive corals, red coralline algae, benthic foraminifera, bivalves, gastropods, echinoderms and occasionally bryozoans, ostracods and serpulid worm tubes. Nine genera of foraminiferan have been interpreted confirming an Early Miocene age of the succession. Six facies from Dedeche (2012) and three facies associations have been distinguished. All these facies are all grain-dominated. FA1 is a dipping bioclastic floatstone, FA2 is a massive coral rudstone –framestone and FA3 is a is horizontally bedded mollusk packstone. These have been interpreted as reef talus (FA1), reef crest (FA2) and lagoon (FA3) forming part of an isolated platform. The lower 40 m of the outcrop are dominated by branching and massive coral rudsstone – framestone (FA2). This passes laterally into dipping bioclastic floatstone (FA1). Vertically coral framestone (FA2) is overlain by horizontally bedded mollusk packstone (FA3) and covered by a sharp 30 cm thick reddish exposure surface. The surface is covered by dipping bioclastic floatstone across the entire outcrop. This subversion is interpreted as a nearly complete transgressive-regressive sequence throughout the Debbestone Quarry. The outcrop is Early Miocene in age (Cycle II) based on benthic foraminifera. These are grain-dominated isolated platforms potentially favorable for reservoir properties.

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