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New Perspective on Exploration Prospect Analysis

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Abstract

More than 70% of major gas discoveries in Malaysia are found within carbonate reservoirs of the Central Luconia Province, offshore Sarawak. The carbonates occur in the form of platforms and pinnacles of Middle to Late Miocene age encased in a coastal to shallow marine clastic succession. Despite the considerable historic success, current exploration activity in the region is relatively low and 3D seismic coverage is limited to the producing fields. During the 3rd Production Sharing Contract Round in 1995, less than 30% of the identified carbonate structures had been drilled and this situation has only slightly changed over subsequent years.

Many of the remaining carbonate structures (mostly pinnacles and some platforms) were downgraded in the past due to perceived exploration risks such as:

i. Many Pinnacles believed to be too small to contain significant reserves
ii. Structures believed to be severely overpressured, and therefore capable of holding only short gas columns
iii. Structures believed to contain high CO2 and H2S contamination
iv. Structures believed to have thief beds in the overburden rendering leakage very likely

The dramatic upturn of interest in more gas in the region has provided incentives over the past years for some revival of exploration activity, also targeting smaller structures. Recent discoveries of several new gas fields have thrown a different light on some of the historically perceived exploration risks and have stimulated new exploration interest in the area (figure 1).

The most significant of these discoveries is Petronas' PC4-1 which found a 640 metre gas column, at the time (2006) the longest penetrated in Malaysia, of normal (buoyancy) pressure and with minimal H2S and minor CO2 contamination (Figure 2).