FRACTURED BASEMENT PLAYS, PENYU BASIN, MALAYSIA

F. Fanani, B. Boyce, R. Wong, A. Fahrul and Alwyn C.,

PMU Basin Studies,
Petroleum Management Unit,
PETRONAS,
Kuala Lumpur, Malaysia.

The Penyu Basin is located offshore 50 km west of Peninsula Malaysia and 40 km south of the prolific oil and gas fields of the Malay Basin. Located in open Block PM308, it covers 14,200 sq km and has water depths ranging 30 – 100 m. 12 exploration wells were drilled from 14,000 km 2D seismic.

In 2004, PETRONAS Resource Assessment and Marketing (PRAM) acquired 660 square kilometers of 3D seismic over the Rhu structure and surrounding areas. The 3D seismic revealed various fracturing basement highs, presumably analogous to the Anding Utara Malay Basin fractured basement oil discovery made in 2005.

This new play type in the Penyu Basin opens a new frontier of untested basement plays – i.e. multiple basement targets from various structural styles. Crystalline basement in the Penyu are mainly fractured metamorphosed basalts and weathered tuffs. Regionally in SE Asia, basement fracturing is attributed to the Cretaceous tectonism, with possible overprints from Oligocene rifting, and later Miocene inversion. With 3D and 2D seismic, fractured basement leads were identified adjacent to Paleogene syn-rift hydrocarbon source kitchen.