

Deformation styles in the Northwest Borneo and North Makassar Basins

PETER BAILLIE¹ AND HERMAN DARMAN²

¹TGS-NOPEC Geophysical Company
Perth, Australia

e-mail: peterb@tgsnopec.com.au

²Brunei Shell Petroleum Co. Sdn. Bhd.
Brunei Darussalam

e-mail: herman.darman@shell.com

Neogene delta systems around Borneo contain numerous world-class hydrocarbon accumulations, with original in-place resources greater than 10 billion barrels of oil and 55 trillion cubic feet of gas.

Exploration over the past ten years has been extended into the deep-water domain with significant discoveries, particularly in distal parts of the Mahakam and Baram Deltas where several active petroleum systems have been recognised within geological settings where there is a complex interplay between tectonics and sedimentation.

In this paper we compare and contrast the structural development of the Mahakam Delta and West Sulawesi Fold Belt in the North Makassar Basin and the Baram delta system in the Northwest Borneo Basin.

In essence, structuring is similar in the Baram and Mahakam delta systems, albeit with a much stronger influence of older basement structures in the Baram system.

Structuring in the Baram system is primarily controlled gravitational and sedimentary loading with strong influence of older basement-related structures. Sand/shale ratios and the degree of undercompaction play a decisive role in the deformation style, together with the degree of decoupling from the underlying basement (Sandal, 1996).

In neither system is there any appreciable structuring directly related to tectonic events external to the delta system.

The West Sulawesi Fold Belt, however, is the direct result of transpression and collision, resulting from movements on the strike-slip fault system, which have (temporarily) created the island of Sulawesi.