

ABSTRACT

INVERSION STRUCTURE AND ITS IMPLICATION FOR HYDROCARBON TRAPPING MECHANISM; STUDY OF KAKAP PSC WEST NATUNA BASIN INDONESIA

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The early evolution of the West Natuna Basin has been formed since the Early Cenozoic. The basin has had complex structural history starting with Eocene-Oligocene collision and extension followed by Miocene to present day compression and inversion. Eocene-Oligocene extensional events created two dominant rift trends that associated with graben and half graben; NW-SE and NE-SW. Miocene to present day compressional events inverted graben and half graben with reversed sense of movements into faulted anticline.

In the Kakap PSC, the clear and presences inversion can be seen on the upper part of Pasir Formation. Stratigraphic thinning of the upper part of Pasir Formation while onlap surface to the base of Lower Arang Formations, conforming the event of inversion. However, the beginning of inversion event has even been started earlier than the Pasir Formations itself. It was indicated by a series of minor uplift of late syn-rift sequences (Keras? and Upper Gabus Formations).

Initiation of the main phase of inversion occurred in lower to middle Miocene, reflected by dramatic stratigraphic thinning of the Middle to Upper Arang Formations. The second phase of inversion occurred in middle to late Miocene. It was showed by the base of Muda unconformity, which truncates almost the entire crest of the inverted Upper Arang Formations.

Although very weak, stratigraphic thinning of the middle part of Late Muda Formations while on lap surface to the base of upper part of Muda Formations indicate the last phase of inversion within Kakap PSC.