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**THE TECTONIC CONTROLS
ON COAL BED METHANE POTENTIAL
IN BERAU BASIN, NE KALIMANTAN
INDONESIA**

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A.H. Hamdani, D. P. Hamdiana, A. Sadzali



**FACULTY OF ENGINEERING GEOLOGY
UNIVERSITY PADJADJARAN, BANDUNG, INDONESIA**

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FACULTY OF ENGINEERING GEOLOGY UNIVERSITY PADJADJARAN, BANDUNG, INDONESIA

ABSTRACT

The Berau Basin is one of several major coal basins in Northeast Kalimantan. Tectonically, this basin was controlled by regionally NW trending transform system and was initiated with the formation of the Sulawesi Sea rifting of the north and west Sulawesi from East Kalimantan which work from Middle Eocene to Recent. Tectonic development in the basin occurred during three periods: i.e., Middle Eocene to Early Miocene rift tectonics, Middle –Late Miocene basin subsidence and gravity induced listric faulting, and Pliocene to Recent are reactivation transform movement along the wrench fault crossing the Makasar Straits. The small-displacement strike-slip tectonic zones are boundary of some of the Coal mines in the Berau Basin. Special attention needs to be given to analysis of local tectonic-and-structural regimes affecting coalbed methane resource assessments. Permeability and patterns and, more specifically, lateral variations of methane content in coal beds are very important for the CBM reservoir which are critically depend upon present stress-state state and spatial distribution of local extension - compression domains. It looks that the CBM compartments, which tend to occur at relatively high permeability compartments, are typically structurally controlled by releasing bends or dilation jog located along strike-slip tectonic zones.

Keyword: Berau basin, coalbed methane, strike-slip fault, permeability, dilation zone

1. INTRODUCTION

According to the collaboration study of the ARI (Advanced Resources International) with the ADB (Asian Development Bank) and the Directorate General of Oil and Gas, the Ministry of Energy and Mineral Resources revealed that there are 11 (eleven) GMB basins in Indonesia, which have prospects for production. One of them is located in the Berau basin, Northeast Kalimantan. The potential of GBM resources in the Berau basin reaches 8.4 Tcf (ARI, 2003).

Geologically, the Berau Basin is a sedimentary basin that undergoes various tectonic activities since the Middle Eocene to the present day. The faults formed in the Berau Basin according to Hidayati et al (2007) are controlled by two main faults of Mangkalihat and Maratua due to the extrusion of the Palu Koro fault. The accumulation of Coalbed methane accumulation in the Berau basin takes place in several different phases; the first phase occurs simultaneously with the deposition of the syn-rift at the Eocene with the discovery of coal deposits on the 7th sequence which equivalent to the Sembakung Formation (Noon et al, 2003). The second phase is a post-rift sedimentation phase that develops in coal of 4th sequence which equivalent to the Latih Formation (Noon et al., 2003; Nana Suwarna and Bambang Hermanto, 2006); the third phase occurs in the Pliocene-Pleistocene tectonic phase inversion on coal of 2nd sequence which equivalent to Sajau Formation (Noon et al., 2003). Therefore, the sedimentation processes and tectonic both locally and regionally not only controlling the process of coal deposition also have a