

ABSTRACT

FAULT DELINEATION USING VARIANCE AND ANT TRACKING ATTRIBUTES FOR STUCTURAL PATTERN ANALYSIS IN "RANTAU" FIELD OF KUTAI BASIN, EAST KALIMANTAN

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Eastern Indonesia, especially in the Kutai Basin, East Kalimantan is formed geologically in different way from Western Indonesia. The type of reservoir is different, one of which is reservoir rock formed due to faults dan fractures (fractured reservoir). The tectonic process in the Kutai Basin, East Kalimantan has a very complex process of forming faults. Faults can act as a hydrocarbon trap, and can be used as a point for hydrocarbon accumulation to be produced. Analysis of the direction and fracture association is important as a material for identification of the process of forming faults and knowing the possibility of fault sections which can act as a hydrocarbon trap..

This study was conducted using 3D seismic data at "RANTAU" field in the Kutai Basin where there is a major fault line and a fault association at this location. Fault analysis is using seismic attributes, that can be used to highlight the seismic image of the existing fault to facilitate the interpretation of the fault pattern. In this study used a seismic attribute called Variance dan Ant-Tracking. This attribute method is used to identify faults based on 3D seismic data and fractures associated with the fault. This attribute method was developed from a mathematical calculation of the value of variance from seismic data and then processed using an algorithm called Ant Colony Based Routing Algorithm, so as to clarify the fault description of 3D seismic

Results of interpretation are major fault F_SEP is running NW-SE that potentially exist from Eocene- Oligocene as one of transfer faults allowing E-W extension along N-S or NNE- SSW basin forming normal fault. During subsequent Miocene compression in the relative direction of E-W, the F_SEP fault is reactivated as a strike slip fault to accommodate the oblique stress direction acting in the area. Pre-existing normal N-S faults are cut and deformed by F_SEP fault movements and act as complementary structural features important in developing hydrocarbon traps. The variation in the shape of the F_SEP fault surface and the appearance of the fault arch can create a trap structure in the form of potential small size pop-up anticlines..

Keywords : *Seismic attribute, fault, Variance, Ant Tracking*