

ABSTRACT

GEOLOGY AND STRATIGRAPHY SEQUENCE ANALYSIS OF FIELD “AY” BALIKPAPAN FORMATION KUTAI CONCAVITY BASED ON WELL DATA

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The focus of this research involves in Balikpapan Formation. It consists of clay rocks and sand rocks interspace with coal insertion. It is precipitated using delta system. Electrophiles form is coarser upper and dominated with interspace clay rocks lithology with sand rocks of coal insertion, indicating that the precipitation is located on delta front area.

Based on the stratigraphy sequence analysis of Balikpapan Formation, it is found that the process of precipitation consists of 3 precipitation sequences packages, such as sequence 1, 2, and 3. Each of them is bordered by sequence boundary (*SB-1*, *SB-2*, *SB-3*, and *SB-4*) showed by erosion field shaped from *HST* as the flux character of sea surface which directly abut on *TST* as the characteristic of sea surface reflux.

The development of tract system is controlled by sea level in delta front precipitation area. Generally in phase *TST* 1, 2, and 4 tidal process occurs, in which the condition of sea base level increases and inundation occurs. Therefore it shapes tidal flat phases. Phase *TST* 3 is channel precipitation environment but has been influenced by the sea flux and reflux. In general, distributory level sand rocks occurs quickly in phase *HST* 1 and 2, it can be seen from electrofacies which is coarser upside with clay rocks on the bottom and sand rocks domination above. Therefore it forms phasies in form of distributory mouth bar. In *HST* 3, electrofacies pattern indicates coarser upper curve shape with clay rocks domination lithology of coal insertion. It indicates that the process of inundation in the downstream which abut on the sea. It characterizes subaqueous levees facies.

Of the depth and thickness structure mapping of each sequence and is strengthened on top and bottom of sand rocks A. it is obtained north-west relative height and south-east relative low. It indicates that the slope direction of observed are northwest-southeast, so that the sedimentation direction is northwest to southeast. It shows the shape of delta system precipitation with sedimentation source is in northwest relative indicated by thicker thickness level compared to southeast.

Of the log analysis, it is obtained that hydrocarbon content in AY field is on sand rocks layer (1221-1241 mdpl and 1260-1275 mdpl) with distributory mouthbar facies. On the sand rocks layer of log *GR* curve reflection has relative low value (32-105 *API*) with high resistivity log (1-50 ohm.m). Density log curve reflection and porosity experience positive separation.