# The Diagenetic Study from Kujung Formation, Indonesia - New Geological Model from Several Carbonate Mound

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## Abstract

We present diagenetic study of carbonate reservoir TP field from Kujung Formation, South East Java Basin, Indonesia. This study yield a new concept and new geological model that “TP” Field has a four different mound, different facies, different growth history and multiple diagenetic event. This geological concept is redefined previous concept and model of TP field that stated TP Field area has been known consist of only one mound carbonate and one type of facies which is called dolomitic limestone.

We conduct thin section analysis to describe carbonate facies based on fossil abundance. We analyze cement type related to diagenetic event we called it cement stratigraphy. For those well whose doesn’t have thin section, we used total porosity curve derived from density neutron and sonic log, mud log data and Image Log derived from FMI.

Petrographic analysis derived from cutting and core at TP-1 and TP 4 well reveal different facies and environmental deposition. TP-1 well actually built as an aggradation phase growth history at Kujung Formation, thus they have large foram packestone as a typical lagoonal facies sequence from the bottom to the top of Kujung Formation. Meanwhile TP-4 well built as retrogradation phase growth history from the top to the bottom of Kujung Formation and has a dolomitic bioclastic packestone as a typical lagoonal facies and coral bioclastic grainstone as a typical reef facies sequence. Cement Stratigraphy analysis from TP-1 well confirm multiple diagenetic events such as vadose zone and fresh water phreatic events characterized by meniscus cement type, leaching matrix and syntaxial overgrowth cement type. Otherwise, cement stratigraphy analysis from TP-4 well resulting vadose zone, fresh water phreatic and mixing zone diagenetic event. TP-4 type of cement are meniscus, equant, syntaxial overgrowth and dolomitic.

Three diagenetic events occurred in this field, first, a vadose zone event characterized by matrix leaching, meniscus cement type, and equant cement type. The second, a fresh water phreatic event, characterized by compression, cementation, and syntaxial overgrowth cement type. The third, mixing zone characterized by bladed crystaline and dolomitic occurrence.