ANALISIS PETROFISIKA DENGAN METODE MULTIMIN PADA *RESERVOIR* FORMASI TUBAN, LAPANGAN "FN", CEKUNGAN JAWA TIMUR

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Penelitian ini berada pada Lapangan "FN" yang merupakan bagian dari Cekungan Jawa Timur Utara, daerah eksplorasi PT. Pertamina EP Cepu tepatnya pada Formasi Tuban yang tersusun atas batuan karbonat yang diendapkan pada lingkungan *marine*. Terdapat tiga sumur penelitian yaitu FN2, FN9, dan FN20. Tujuan penelitian ini untuk mengetahui variasi litologi, asosiasi fasies dan lingkungan pengendapan, sikuen stratigrafi, nilai parameter petrofisika pada zona *reservoir* target, serta mengetahui zona mana saja yang memiliki hidrokarbon.

Dalam penelitian ini, terdapat dua metode yang digunakan. Secara garis besar metode tersebut antara lain analisis sumuran kualitatif menggunakan data *core*, data *mudlog*, data *wireline log*, dan data petrografi untuk mengetahui variasi litologi, asosiasi fasies dan lingkungan pengendapan, sikuen stratigrafi, kemudian analisis sumur kuantitatif dengan metode multimineral untuk mendapatkan nilai-nilai petrofisika baik volume *shale*, porositas, permeabilitas, dan saturasi air untuk mengetahui suatu kandungan pada *reservoir* lapangan penelitian.

Terdapat empat satuan batuan yang diidentifikasi menggunakan data *mudlog*, data *core*, dan data petrografi yaitu satuan batuan *mudstone*, satuan batuan *wackestone*, satuan batuan *packstone*, dan satuan batuan *grainstone*. Asosiasi fasies berada pada *outer back reef lagoon* dan *inner back reef lagoon*. Terdapat tiga batas marker pada daerah penelitian *yaitu sequence boundary, transgressive surface*, dan *maximum flooding surface*. Berdasarkan hasil interpretasi pada lokasi penelitian arah pengendapan material sedimen berarah barat – timur. Analisis kuantitatif dilakukan dengan melakukan perhitungan petrofisika pada Formasi Tuban yang terdiri dari dua zona berdasarkan zona fasies dimana didapatkan hasil berupa nilai *cut-off* kandungan serpih sebesar 26,9%, porositas efektif sebesar 12%, saturasi air sebesar 69% dan permeabilitas dengan nilai 5 mD.

Kata Kunci : Asosiasi Fasies, Cekungan Jawa Timur Utara, Formasi Tuban, *Inner Back Reef Lagoon, Marine, Outer Back Reef Lagoon*, Petrofisika

ABSTRACT

This research is located in the "FN" Field which is part of the North East Java Basin, the exploration area of PT. Pertamina EP Cepu is precisely in the Tuban Formation which is composed of carbonate rocks deposited in a marine environment. There are three research wells, namely FN2, FN9, and FN20. The aim of this research is to determine variations in lithology, facies associations and depositional environments, stratigraphic sequence, petrophysical parameter values in the target reservoir zone, and find out which zones have hydrocarbons.

In this research, there are two methods used. In general, these methods include qualitative well analysis using core data, mudlog data, wireline log data, and petrographic data to determine lithological variations, facies associations and depositional environments, stratigraphic sequences, then quantitative well analysis using the multimineral method to obtain values petrophysics including shale volume, porosity, permeability and water saturation to determine the content in the research field reservoir.

There are four rock units identified using mudlog data, core data, and petrographic data, namely mudstone rock units, wackestone rock units, packstone rock units, and grainstone rock units. Facies associations are in the outer back reef lagoon and inner back reef lagoon. There are three marker boundaries in the research area, namely sequence boundary, transgressive surface, and maximum flooding surface. Based on the interpretation results at the research location, the direction of deposition of sedimentary material is west - east. Quantitative analysis was carried out by carrying out petrophysical calculations on the Tuban Formation which consists of two zones based on facies zones where the results were obtained in the form of a cut-off value for shale content of 26.9%, effective porosity of 12%, water saturation of 69% and permeability of 5 mD.

***Keywords**: Facies Association, North East Java Basin, Tuban Formation, Inner Back Reef Lagoon, Marine, Outer Back Reef Lagoon, Petrophysics.*