

Identifikasi rock type menggunakan metode pore geometry structure pada reservoir karbonat formasi Tuban = Identification of rock type using pore geometry structure method on carbonate reservoir Tuban formation

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Abstrak

ABSTRAK

Cekungan Jawa Timur Utara memiliki banyak lapangan minyak yang telah di eksplorasi dan terbukti menghasilkan hidrokarbon, salah satunya lapangan Cloud. Lapangan ini telah memproduksi minyak mentah rata-rata 2500 hingga 5000 BOPD per sumurnya. Dalam penelitian ini, dilakukan identifikasi rock type menggunakan pendekatan metode pore geometry structure (PGS) yang diharapkan dapat menjadi salah satu metode yang handal dalam meningkatkan kualitas karakterisasi reservoir karbonat Formasi Tuban.

Lapangan Cloud memiliki data core berupa pengukuran porositas dan permeabilitas sebanyak 113 core plug dan 13 diantaranya memiliki data mercury injection capillary pressure (MICP). Selain itu digunakan data sumur sebanyak 5 buah. Analisis petrofisika dilakukan untuk mengetahui nilai parameter petrofisika pada masing-masing sumur. Selanjutnya dilakukan analisis PGS yang merupakan kunci utama dalam mengidentifikasi rock type. Terdapat 4 rock type pada lapangan ini yang diklasifikasi berdasarkan trend gradien kemiringan kurva PGS yaitu RRT1 memiliki gradien sebesar 0.4448; RRT2 memiliki gradien sebesar 0.4124; RRT3 memiliki gradien sebesar 0.3149; dan RRT4 memiliki gradien sebesar 0.2379.

Identifikasi rock type menggunakan metode PGS dapat disebar pada interval sumur reservoir karbonat Formasi Tuban. Prediksi permeabilitas berdasarkan metode PGS dianggap sebagai quality control dalam persebaran rock type. Persebaran rock type dilakukan menggunakan pendekatan multi resolution graph based on clustering sehingga didapatkan rock type pada interval sumur reservoir karbonat Formasi Tuban.

ABSTRACT

North East Java Basin has many oil fields that have been proven to produce hydrocarbons. Cloud Field which is located in the North East Java Basin has been producing crude oil around 2500 to 5000 BOPD. This study has been focused on identifying rock types of carbonate reservoir in the Tuban Formation using Pore Geometry Structure (PGS) method. Cloud Field has core data and well-logging data. The core data are in the form of core porosity and permeability measurements of 113 core plug and 13 of them have data mercury injection capillary pressure (MICP), while well-logging data come from 5 wells. Petrophysical analysis has been conducted to determine the value of petrophysical parameters on each well. The analysis result shows that there are four rock types in Cloud Field which are classified based on the trend slope of the curve are RRT1 PGS had a gradient of 0.4448; RRT2 had a gradient of 0.4124; RRT3 had a gradient of 0.3149; and RRT4 had a gradient of 0.2379. Identification of rock type using PGS method can be deployed in Tuban Formation carbonate reservoir zone. Permeability prediction based on PGS method has been considered as quality control in the distribution of rock types. Rock type distribution is determined using an approach based on multi-resolution graph clusterin.