

Sektorisasi dan estimasi peningkatan produksi proyek waterflooding studi kasus lapangan "Lengo" = Sectorization and gain production estimation of waterflooding project case study in "Lengo" field

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Abstrak

[ABSTRAK

Reservoir modeling dan estimasi produksi dari proyek waterflooding di lapangan Lengo telah dilakukan. Reservoir modeling merupakan langkah pertama dimana di tahapan ini dihasilkan model reservoir geologi dari lapangan Lengo yang kemudian akan dilakukan pembagian kelas-kelas reservoirnya berdasarkan data porositas. Langkah kedua adalah aplikasi teori Buckley ? Leverett yang digunakan untuk mengestimasi nilai gain produksi dan waktu yang dibutuhkan dari breakthrough hingga sumur monitor memproduksi 100% air.

Berdasarkan reservoir modeling yang dikontrol oleh data core, lapisan L3/4 di lapangan Lengo dapat dibagi menjadi 5 kelas (0-9.5% kelas 1; 9.5-17.04% kelas 2; 17.04-23.91% kelas 3; 23.91-28.53% kelas 4 dan 28.53-33.91 kelas 5). Pada skema waterflooding telah dipilih 9 sumur kandidat injeksi dan 11 sumur produksi dimana karakteristik reservoir sumur-sumur injeksi tersebut masuk dalam kelas 3 dan 4.

Aplikasi teori Buckley ? Leverett menunjukkan bahwa kecepatan waktu breakthrough sangat dipengaruhi oleh sifat permeabilitas relative minyak-air dan Pore volume batuan (Porositas * Ketebalan). Dari perhitungan yang telah dilakukan konfigurasi sumur injector ? produksi 3-3, 7-8 dan 9-9 diprediksi akan menghasilkan penambahan produksi yang bagus.

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ABSTRACT

Reservoir modelling and production estimation of waterflooding project has been conducted on Lengo field. In this project reservoir modeling are the first steps to create the reservoir geology model of the Lengo field and then used to make reservoir class depend on porosity data. The second steps are the Buckley ? Leverett theory that used to estimate the gain production and time from Breakthrough until 100% water produce in monitoring well.

Based on the reservoir model which control by core data, the L3/4 reservoir in Lengo field can be divided into 5 class (0-9.5% as class 1; 9.5-17.04% as class 2; 17.04-23.91% as class 3; 23.91-28.53% as class 4 and 28.53-33.91 as class 5). For the waterflooding project we use 9 wells for injection well and 11 wells for production/monitoring well where the reservoir characteristic for all candidate wells included in class 3 and 4.

Application of Buckley ? Leverett show that Breakthrough time very effected by

oil /water relative permeability and pore volume (Porosity * H) of the reservoir.

Based on the calculation configuration of injector-production wells of 3-3, 7-8 and 9-9 will be produce good gain i.e., 218.3MSTB, 196.8 MSTB and 437.1 MSTB, Reservoir modelling and production estimation of waterflooding project has been

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