ABSTRAK

PERENCANAAN PENAMBAHAN SUMUR *INFILL* UNTUK MENINGKATKAN *RECOVERY FACTOR* LAPANGAN ”HFS” PADA LAPISAN A

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Pada Lapisan A Lapangan “HFS” memiliki cadangan awal (*Original oil in place*) sebesar 45,885 MMSTB. Nilai *Recovery Factor* sebesar 54,84%, *ultimate recovery* sebesar 25163,41Mstb, dan *remaining reserve* sebesar 10437,44 Mstb. Lapangan “HFS” Lapisan A diproduksikan pada Mei 2006 sampai Desember 2024 dengan 20 sumur didapatkan kumulatif produksi minyak mencapai 14725,98 MSTB dan *current Recovery Factor* sebesar 32%. Dengan perolehan tersebut dan masih adanya cadangan sisa yang masih dapat diproduksikan maka pada Lapisan A ini perlu dilakukannya skenario pengembangan, yaitu penambahan sumur *infill.*

Metodologi penelitian ini diawali dengan tahap persiapan data, yang mencakup data geologi, reservoir, dan produksi. Data geologi digunakan untuk membangun model statis, sedangkan data PVT, SCAL, dan RCAL. Setelah dilakukan inisialisasi model, dilanjutkan dengan proses *history matching* untuk mencocokkan hasil simulasi dengan data produksi aktual. Setelah tercapai kecocokan (*matching*), dilakukan prediksi performa *reservoir* berdasarkan skenario *basecase* dan penambahan sumur *infill*. Penentuan lokasi dan jumlah sumur *infill* dilakukan dengan bantuan peta *oil production potential* untuk mengidentifikasi potensi produksi minyak baru. Skema creaming digunakan untuk mengevaluasi kelayakan penambahan sumur *infill*. Hasil dari skenario terbaik kemudian dianalisis dan dibahas.

Penambahan sumur *Infill* berjumlah 4 sumur *Infill* selama 20 tahun. Pada *Basecase* tanpa adanya penambahan sumur *Infill*, didapatkan nilai kumulatif produksi minyak sebesar 19439,362 Mstb dan nilai *Recovery Factor* sebesar 42%. Untuk Skenario I (*Basecase* + 4 sumur *Infill*) didapatkan kumulatif produksi minyak sebesar 20356,192 Mstb dan meningkatnya nilai *Recovery Factor* sebesar 44%.

Kata kunci:1, *Infill* 2, Lapangan “HFS” 3, *Recovery Factor* 4, simulasi *reservoir* 5, *Oil Production Potential*

ABSTRACT

PLANNING OF INFILL WELL ADDITION TO IMPROVE THE RECOVERY FACTOR OF THE 'HFS' FIELD IN LAYER A"

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Layer A of the "HFS" Field has an initial oil reserve (Original Oil in Place) of 45.885 MMSTB. The recovery factor is 54.84%, with an ultimate recovery of 25163.41 MSTB and remaining reserves of 10,437.44 MSTB. The "HFS" Field Layer A has been in production since May 2006 until December 2024 with 20 wells, resulting in a cumulative oil production of 14725.98 MSTB and a current recovery factor of 32%. Given this production level and the remaining recoverable reserves, a development scenario involving the addition of infill wells is necessary.

The research methodology begins with data preparation, including geological, reservoir, and production data. Geological data is used to build the static model, while PVT, SCAL, and RCAL. After model initialization, a history matching process is conducted to align the simulation results with actual production data. Once a satisfactory match is achieved, reservoir performance is predicted based on the base case scenario and infill well addition. The location and number of infill wells are determined using oil per unit area calculations to identify new oil production potential. A creaming curve analysis is used to evaluate the feasibility of adding infill wells. The best scenario results are then analyzed and discussed.

The proposed development involves the addition of four infill wells over a period of 20 years. In the base case without infill wells, the cumulative oil production is 19439.362 MSTB with a recovery factor of 42%. For Scenario I (Base Case + 4 Infill Wells), the cumulative oil production increases to 20356.192 MSTB, with an improved recovery factor of 44%.

Keywords: Infill,"HFS" Field, Recovery Factor, Reservoir Simulation, Oil Production Potential.