

## ABSTRAK

### PERENCANAAN JUMLAH SUMUR YANG OPTIMUM DAN PRIORITAS URUTAN PEMBORAN DENGAN MENGUNAKAN SIMULASI RESERVOIR

Oleh  
DARMA JAYA MANURUNG  
NIM: 113220200  
(Program Studi Sarjana Teknik Perminyakan)

Lapangan “DJM” telah mulai berproduksi sejak April 2015 hingga Oktober 2025. Lapangan ini terdiri atas 12 sumur produksi minyak, dengan 10 sumur dalam kondisi shut-in dan 1 sumur berfungsi sebagai sumur injeksi. Berdasarkan hasil evaluasi volumetrik, nilai *Original Oil in Place* (OOIP) pada Lapisan “DJM” tercatat sebesar 30,32 MMSTB. Hingga Oktober 2025, kumulatif produksi minyak mencapai 5,3 MMSTB, yang merepresentasikan *recovery factor* sebesar 17,48% dari total cadangan awal.

Pada Lapangan “DJM”, direncanakan penerapan skenario pengeboran sumur *infill* untuk meningkatkan nilai *recovery factor*. Tahapan pengerjaan diawali dengan melakukan persiapan data berupa model statis reservoir, data karakteristik reservoir, data produksi, data *routine core analysis* (RCAL), *special core analysis* (SCAL), dan data PVT fluida reservoir. Kemudian, melakukan proses inialisasi, *history matching*, dan *PI matching* untuk memvalidasi model simulasi. Lalu, melakukan skenario penambahan sumur *infill* dengan memperhatikan peletakan titik dan jarak antar sumur *infill* yang akan ditambahkan berdasarkan peta *Oil Producing Potential* (OPP) yang merupakan peta gabungan dari parameter peta *Oil per Unit Area* (OPU) dan peta *Flowrate Capability* dan menganalisis dan menentukan jumlah sumur paling bagus dengan memperhatikan *recovery factor* dan kumulatif produksi yang optimum.

Skenario yang paling optimum dalam perencanaan pengembangan Lapangan “DJM” yaitu skenario dengan penambahan 4 sumur *infill*. Skenario ini menghasilkan kumulatif produksi minyak sebesar 7,79 MMSTB, *recovery factor* sebesar 25,69%, yang mengalami peningkatan *recovery factor* sebesar 7,95%.

Kata Kunci : *Recovery Factor*, Sumur *Infill*, OPU, OPP

## ABSTRACT

### ***Optimal Well Count Planning and Drilling Sequence Prioritization Using Reservoir Simulation***

By

DARMA JAYA MANURUNG

NIM: 113220200

*(Petroleum Engineering Undergraduated Program)*

*The “DJM” Field has been on production from April 2015 until October 2025. The field comprises 12 oil production wells, of which 10 wells are currently in shut-in condition and 1 well functions as an injection well. Based on volumetric evaluation, the Original Oil in Place (OOIP) of the “DJM” reservoir layer is estimated at 30.32 MMSTB. As of October 2025, the cumulative oil production has reached 5.3 MMSTB, corresponding to a recovery factor of 17.48% of the initial oil in place.*

*To enhance the recovery factor, a field development scenario involving the drilling of infill wells is proposed for the “DJM” Field. The workflow of this study commenced with data preparation, including the static reservoir model, reservoir characteristics data, production data, routine core analysis (RCAL), special core analysis (SCAL), and reservoir fluid PVT data. Subsequently, model initialization, history matching, and productivity index (PI) matching were performed to validate the simulation model. The infill well scenarios were then designed by determining the optimal well locations and spacing based on the Oil Producing Potential (OPP) map, which integrates the Oil per Unit Area (OPU) map and the Flowrate Capability map. The number of infill wells was evaluated to determine the most optimal development scenario by considering both recovery factor and cumulative oil production.*

*The results indicate that the optimal development scenario for the “DJM” Field involves the addition of four infill wells. This scenario yields a cumulative oil production of 7,79 MMSTB and achieves a recovery factor of 25,69%, representing an incremental recovery factor of 7,95% compared to the existing condition.*

*Keywords : Recovery Factor, Infill well, OPU, OPP*