

RINGKASAN

OPTIMASI PENGEMBANGAN LAPANGAN “FT” TERHADAP *RECOVERY PER WELL* MELALUI SKENARIO *CYCLIC WATERFLOODING* MENGGUNAKAN TNAVIGATOR

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Lapangan “FT” merupakan lapangan minyak berlitologi batupasir dengan *top reservoir* pada 2228,14 ft, *bottom reservoir* 2681,76 ft. OOIP Lapangan “FT” sebesar 64,62 MMSTB, produksi dimulai pada Oktober tahun 1963 dengan tekanan awal *reservoir* 1266,3 psi. Pada akhir *history*, *current recovery factor* sekitar 9,29 % dengan *peak production* pada Mei 2023. Pada Lapangan “FT” masih terdapat cadangan minyak yang dapat diproduksi penurunan tekanan terjadi secara signifikan dikarenakan penambahan sumur yang terjadi mulai pada tahun 2014. Diperlukan suatu metode peningkatan *recovery*, mempertahankan tekanan dan meminimalisir produksi air dengan mempertimbangkan *recovery per well* untuk menghasilkan skenario yang paling optimal melalui optimasi pengembangan lapangan “FT”. Lapangan “FT” diidentifikasi bersifat heterogen sehingga direncanakan untuk melakukan skenario *cyclic waterflooding*.

Studi pengembangan Lapangan “FT” dengan menganalisa properti saturasi minyak, permeabilitas dan OPU serta tekanan untuk menentukan batasan polygon lokasi sumur injeksi *cyclic waterflooding*. Melakukan variasi periode injeksi terbaik pada *cyclic waterflooding* agar mendapatkan perbandingan yang valid terhadap *waterflooding* konvensional dan menghasilkan RF, produksi kumulatif minyak dan *recovery per well* yang optimal beserta penurunan produksi air.

Cyclic waterflooding dilakukan dengan menerapkan injeksi dengan *rate* injeksi sebesar 5101 stb/d serta tekanan injeksi sebesar 1700 psia selama 2 bulan lalu *shut-in* selama 5 bulan dari tanggal 01 juni 2023 hingga 2053 skenario ini menghasilkan kumulatif *oil* sebesar 13,46 MMSTB, *recovery factor* sebesar 20,84 % serta *water cut* 97,88 % Pada skenario ini didapatkan penurunan produksi kumulatif air sebesar 2,17 MMSTB, penurunan *water cut* sebesar 0,04 % serta peningkatan RF sebesar 0,43 % dibandingkan dengan skenario *waterflooding* konvensional.

Kata kunci: *Cyclic Waterflooding*, *Recovery per Well*, Optimasi Pengembangan Lapangan

ABSTRACT

“FT” FIELD DEVELOPMENT OPTIMIZATION CONSIDERING PARAMETER RECOVERY PER WELL THROUGH CYCLIC WATERFLOODING SCENARIO USING TNAVIGATOR

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"FT" Field is a sandstone lithological oil field with top reservoir at 2228.14 ft, bottom reservoir 2681.76 ft. OOIP of Field "FT" is 64.62 MMSTB, production was carried out since October 1957 with an initial reservoir pressure of 1266.3 psi. At the end of history, production reached a current recovery factor of around 9.29% with the highest peak production rate reached in May 2023. In the "FT" Field there are still oil reserves that can be produced, pressure drops occur significantly due to the addition of wells that occurred starting in 2014. In this case, a method is needed to improve recovery, maintain pressure and minimize water production by considering recovery per well optimization to produce the most optimal scenario through "FT" field development optimization. The "FT" field was identified as heterogeneous so it was planned to conduct a cyclic waterflooding scenario.

"FT" Field development study by analyzing oil saturation, permeability and OPU properties and pressure to determine polygon limits of cyclic waterflooding injection well locations. Varying the best injection period in cyclic waterflooding to obtain a valid comparison against conventional waterflooding and produce RF, cumulative oil production and optimal recovery per well along with decreased water production.

Cyclic waterflooding is carried out by applying injection rate 5101 stb / d and injection pressure of 1700 psia for 2 months then shut-in for 5 months from June 1, 2023 to 2053 this scenario produces cumulative oil of 13.46 MMSTB, recovery factor of 20.84% and water cut of 97.88% In this scenario there is a decrease in cumulative water production of 2.17 MMSTB also water cut by 0.04% and an increase in RF by 0.43% compared to conventional waterflooding scenarios.

Keywords: Cyclic Waterflooding, Recovery per Well, Field Development Optimization