RINGKASAN

PERENCANAAN OPTIMASI PRODUKSI MINYAK DENGAN REAKTIVASI *IDLE WELL* PADA LAPANGAN "SVR"

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Lapangan "SVR" merupakan salah satu lapangan minyak tua yang terletak di Cekungan Sumatera Selatan. Struktur "RR" merupakan salah satu struktur tua yang mulai berproduksi tahun 1966 dan pada Lapisan G2 tersimpan cadangan *inplace* sebesar 10,10 MMSTB. Pada akhir tahun 2023 tingkat *water cut* struktur "RR" mencapai 92,2% dengan *recovery factor* 47,29%. Dengan kondisi high water cut dan sisa cadangan yang diperkirakan besar maka dilakukan perencanaan optimasi produksi dengan reaktivasi *Idle Well.*

Struktur "RR" memiliki dominasi sumur dengan *water cut* tinggi dan akan dilakukan optimasi produksi dengan reaktivasi sumur. Skenario *reopening* tidak dipilih karena produksi minyak sudah sangat kecil sehingga dilakukan reaktivasi dengan skenario pindah lapisan. Dimulai dengan *screening* sumur *water cut* tinggi (>90%). Kumulatif produksi (Np) tidak melebihi *cut off* lapisan, dan *recovery factor* (RF) sumuran yang lebih kecil dibandingkan dengan *recovery factor* hasil data SCAL. Kandidat sumur yang memenuhi akan dikorelasikan dengan sumur referensi dengan posisi sumur reaktivasi yang lebih *updip.* Analisa *problem* produksi penyebab *high water cut* dengan metode *Chan's Diagnostic Plot* dan analisa *cement bond log* (CBL). Dilakukan analisa *carbon oxygen* (C/O) log untuk penentuan reperforasi, analisa *decline* (DCA) metode *Trial-Error* and X^2 *Chi-Square Test* dilanjutkan *forecast* untuk memperkirakan *oil gain* dan *lifetime*. Analisa *inflow performance rate* (IPR) metode Vogel dilanjutkan *vertical lift performance* (VLP) untuk mengetahui kemampuan sumur mengalir ke permukaan. Pertimbangan *artificial lift* melalui *screening* kriteria. Diakhiri dengan analisa keekonomian.

Screening dari 12 sumur *idle* pada struktur "RR" pada Lapisan G2 diperoleh 4 sumur kandidat reaktivasi. Perencanaan reaktivasi sumur memperoleh total *oil gain* sebesar 340,1 Mbbl dengan perkiraan *lifetime* 11 tahun. Perencanaan mampu meningkatkan RF dari 47,29% menjadi 50,66%. Analisa keekonomian menghasilkan NPV sebesar 2.184,50 MUSD, dengan ROR sebesar 158,91%, dan POT sebesar 1,3 tahun sehingga proyek ini layak untuk dikembangkan.

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Kata kunci: *high water cut*, sumur *idle*, reaktivasi sumur, *carbon oxygen* (c/o) log, lapangan minyak tua.

ABSTRACT

OIL PRODUCTION OPTIMIZATION PLANNING WITH IDLE WELL REACTIVATION IN THE "SVR" FIELD

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"SVR" field is one of old oil fields located in South Sumatra Basin. "RR" structure is one of old structures that started production in 1966, with G2 Layer containing inplace reserves of 10.10 MMSTB. At the end of 2023, water cut of "RR" structure reached 92.2% with recovery factor of 47.29%. Due to high water cut condition and significant remaining reserves, production optimization plan through Idle Well reactivation was carried out.

"RR" structure is dominated by wells with high water cut, and production optimization is planned by well reactivation. Reopening scenario was not chosen because oil production was very low; therefore, reactivation with layer shift scenario was implemented. It started with screening wells having water cut above 90%, cumulative production (Np) below layer cut off, and recovery factor (RF) lower than SCAL data results. Selected candidate wells were correlated with reference wells positioned updip from reactivation wells. Production problems causing high water cut were analyzed using Chan's Diagnostic Plot and cement bond log (CBL). Carbon oxygen (C/O) log analysis was performed for reperforation determination. Decline curve analysis (DCA) using Trial-Error and Chi-Square (X2) test was conducted followed by forecast to estimate oil gain and lifetime. Inflow performance relationship (IPR) was analyzed using Vogel method and vertical lift performance (VLP) to assess well flow capacity to surface. Artificial lift options were considered through screening criteria. Economic analysis was conducted to conclude feasibility.

Screening of 12 idle wells in "RR" structure at G2 layer identified 4 candidate wells for reactivation. Reactivation plan is expected to yield total oil gain of 340.1 Mbbl with estimated lifetime of 11 years. Plan can increase recovery factor from 47.29% to 50.66%. Economic analysis showed net present value (NPV) of 2,184.50 MUSD, rate of return (ROR) of 158.91%, and pay-out time (POT) of 1.3 years, indicating project feasibility for development.

Keywords: *high water cut, idle well, reactivation well, carbon oxygen (c/o) log, mature oil field*