ABSTRAK

OPTIMASI KINERJA *SUCKER ROD PUMP* PADA SUMUR "H-22" LAPANGAN "HKA"

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Sumur kajian H-22 berada pada lapangan HKA di wilayah kerja PT. Pertamina EP Aset 1 Jambi field. Sumur H-22 berproduksi menggunakan pompa *sucker rod* dengan spesifikasi unit C-114D-143-72 dan tipe pompa THBM, dipasang pada kedalaman 2223,13 ft, dengan panjang langkah 72 in dan kecepatan pompa 6 SPM. Berdasarkan analisa produktivitas, sumur H-22 hanya memproduksikan 54,7% dari AOFP (*Absolute Open Flow Potential*) sehingga perlu dilakukan evaluasi terhadap pompa terpasang dan dilakukan optimasi guna meningkatkan laju produksi yang optimum sesuai kondisi sumur kajian.

Penelitian ini diawali dengan pengumpulan data lapangan seperti data sumur, data produksi, data mekanisme pompa, dan hasil pengukuran sonolog. Hasil survei sonolog menunjukkan nilai *Static Fluid Level* (SFL) sebesar 1725,4 ft dan *Dynamic Fluid Level* (DFL) sebesar 1916,01 ft. Dari data kedalaman statis dan dinamis tersebut diperoleh nilai tekanan statis (Ps) sebesar 212 psi dan tekanan dasar alir (Pwf) sebesar 135,06 psi, selanjutnya dilakukan perhitungan potensi produksi dengan metode Vogel dan melakukan analisa nodal kurva *Inflow Peformance Relationship* (IPR) dengan kurva *pump intake* (Pi) untuk panjang langkah (S) dan kecepatan pompa (N), dengan memvariasikan besarnya nilai S dan N.

Hasil evaluasi menunjukkan bahwa efisiensi volumetris pompa dalam kondisi awal hanya sebesar 66,4%, yang berada di bawah standar efisiensi optimum, oleh karena itu, dilakukan optimasi dengan meningkatkan kecepatan pompa menjadi 7 SPM dan panjang langkah 72 in. Konfigurasi baru ini menghasilkan peningkatan laju produksi menjadi 218 BFPD atau 73,7% dari AOFP dengan efisiensi volumetris pompa mencapai 76,46%.

Kata kunci : pompa *sucker rod*, sonolog, optimasi pompa

ABSTRACT

OPTIMIZATION OF SUCKER ROD PUMP PERFORMANCE IN WELL "H-22", "HKA" FIELD

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The studied well, H-22, is located in the HKA field within the working area of PT Pertamina EP Asset 1, Jambi Field. Well H-22 produces using a sucker rod pump with specifications of unit type C-114D-143-72 and pump type THBM, installed at a depth of 2,223.13 ft, with a stroke length of 72 inches and a pump speed of 6 strokes per minute (SPM). Based on productivity analysis, Well H-22 is only producing 54,7% of its Absolute Open Flow Potential (AOFP). Therefore, it is necessary to evaluate the current pump performance and carry out optimization efforts to increase the production rate in accordance with the actual conditions of the well.

This research began with the collection of field data, including well data, production data, pump mechanism data, and sonolog measurement results. The sonolog survey results showed a Static Fluid Level (SFL) of 1,725.4 ft and a Dynamic Fluid Level (DFL) of 1,916.01 ft. From these depth values, the static pressure (Ps) was calculated at 212 psi, and the bottomhole flowing pressure (Pwf) was calculated at 135.06 psi. The production potential was then estimated using the Vogel method, and a nodal analysis was conducted by plotting the inflow performance relationship (IPR) curve against the pump intake (Pi) curve, while varying the stroke length (S) and pump speed (N) values.

The evaluation results indicated that the volumetric efficiency of the pump in its initial configuration was only 66,4%, which is below the optimum efficiency standard. Therefore, optimization was conducted by increasing the pump speed to 7 SPM and stroke length to 72 inches. This new configuration resulted in an increased production rate of 218 BFPD, equivalent to 73,7% of AOFP, with a volumetric efficiency of 76,46%

Keywords: sucker rod pump, sonolog, pump optimization