

## RINGKASAN

### **PERENCANAAN REAKTIVASI SUMUR *IDLE* “ANA-008” BERDASARKAN INTEGRASI DATA GEOLOGI, PETROFISIKA, DAN PRODUKSI SERTA ANALISIS KEEKONOMIAN**

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Sumur “ANA-008” merupakan salah satu sumur minyak yang terletak di Lapangan Cepu, Cekungan Jawa Timur. Sumur “ANA-008” merupakan sumur minyak yang sudah mulai memproduksi sejak tahun 1927. Lapisan yang akan dilakukan analisis adalah lapisan VII dengan produksi akhir 5 BOPD, 185 BWPD, 190 BLPD dan WC 97,35% pada tanggal 24 Mei 2011. Kondisi Sumur ANA-008 ini memiliki *water cut* yang tinggi dan perlu dianalisis problem *high water cut*. Sumur ini menunjukkan indikasi adanya *bypassed oil*. Maka dari itu, akan dilakukan perencanaan reaktivasi *idle well* untuk mengoptimasi produksi.

Sumur “ANA-008” memiliki *water cut* yang tinggi. Dimulai dengan menganalisis korelasi struktur sumur, analisis kualitatif petrofisik untuk mengetahui keberadaan *bypassed oil* serta menganalisis *production performance*. Analisis problem produksi penyebab *water cut* tinggi dilakukan dengan metode *Chan’s Diagnostic Plot* dan analisis *Cement Bond Log* (CBL). Selanjutnya melakukan perhitungan *initial rate* dengan perhitungan laju alir awal menggunakan pendekatan Persamaan Darcy dan *Productivity Index* (PI) berdasarkan data analog. Selanjutnya, dilakukan Analisis *Decline Curve* (DCA) dilanjutkan *forecast* untuk memperkirakan *lifetime* sumur. Diakhiri dengan analisis keekonomian.

Hasil analisis menunjukkan *initial rate* oil sebesar 20,143 bbl dengan *lifetime* sumur 52 bulan. Analisis keekonomian menghasilkan NPV didapatkan 79.933 US\$, *Internal Rate of Return* (IRR) sebesar 38%, *Discounted Profit Index* (DPI) sebesar 2,48 dan *Pay Out Time* sebesar 1,78 bulan. Nilai *investment* sebesar 54.010 US\$. sehingga proyek ini layak untuk dikembangkan. Usulan reaktivasi yang akan dilakukan, yaitu *shortening* pada interval yang semula 799 m-805 m menjadi 798 m-800 m

Kata kunci : *Chan’s Diagnostic Plot*, *idle well*, reaktivasi sumur, keekonomian.

## **ABSTRACT**

### ***IDLE WELL “ANA-008” REACTIVATION PLANNING BASED ON INTEGRATED GEOLOGICAL, PETROPHYSICAL, AND PRODUCTION DATA AND ECONOMIC ANALYSIS***

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*Well “ANA-008” is one of oil well located in the Cepu Field, East Java Basin, which has been in production since 1927. The primary focus of this analysis is Layer VII, which recorded a final production rate of 5 BOPD and 185 BWPD (190 BLPD) with a high Water Cut (WC) of 97.35% as of May 24, 2011. The high water cut indicates a production problem, yet petrophysical data suggests the presence of bypassed oil. To address this, a reactivation plan for this idle well is required to optimize production.*

*Well “ANA-008” has a high water cut and will be reactivated using the shortening method. The process begins with analyzing the well's structural correlation, qualitative petrophysical analysis, and is complemented by C/O log analysis to determine the presence of bypassed oil and analyze production performance. Analysis of production problems causing the high water cut is performed using Chan's Diagnostic Plot and Cement Bond Log (CBL) analysis. Furthermore, the initial rate calculation is conducted involving the initial flow rate calculation using the Darcy Equation approach and Productivity Index (PI) based on analog data. Subsequently, a Decline Curve Analysis (DCA) is performed using the Trial Error and  $X^2$  Chi-Square Test methods, followed by forecasting to estimate lifetime remaining. It concludes with an economic analysis.*

*The results show that the estimated initial oil rate is 20.143 bbl/day with a predicted well lifetime of 52 months. The economic analysis yields a Net Present Value (NPV) of USD 79,933, an Internal Rate of Return (IRR) of 38%, a Discounted Profitability Index (DPI) of 2.48, and a Pay Out Time (POT) of 1.78 months. The total investment cost is USD 54,010, indicating that the project is economically feasible. The proposed reactivation method is shortening of the perforated interval from the original depth of 799–805 m to 798–800 m.*

**Keywords:** *Reactivation, Chan's Diagnostic Plot, Economic Analysis.*