

ABSTRAK

INTERPRETASI PETROFISIK DAN ANALISA DATA *CORE* UNTUK PENENTUAN ZONA PROSPEK DAN JUMLAH HIDROKARBON MULA-MULA PADA SUMUR “MA-01” LAPANGAN “ALV”

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Sumur “MA-01” pada Lapangan “ALV” berada di Cekungan Sumatra Tengah dengan Formasi *Upper Bekasap* dan *Lower Bekasap* sebagai target *reservoir* utama. Cekungan ini tergolong matang dan dikenal memiliki potensi hidrokarbon yang baik, sehingga diperlukan kajian lanjutan untuk mengidentifikasi zona hidrokarbon yang prospek serta melakukan estimasi awal cadangan hidrokarbon pada sumur tersebut.

Penelitian ini dilakukan melalui dua tahapan analisis, yaitu analisis kualitatif dan analisis kuantitatif. Analisis kualitatif dilakukan dengan memanfaatkan kombinasi log dari *lithology tools*, *resistivity tools*, dan *porosity tools* untuk mengidentifikasi zona prospek. Sementara itu, analisis kuantitatif mencakup perhitungan volume *shale* menggunakan log *gamma ray*, perhitungan porositas dengan metode SSPW, serta penentuan saturasi air menggunakan metode *Simandoux*. Selain itu, dilakukan pula penentuan nilai *cut-off* untuk memisahkan lapisan produktif dan *nonproduktif*, yang kemudian dilanjutkan dengan proses *reservoir lumping*. Tahap akhir penelitian berupa perhitungan cadangan hidrokarbon dengan fokus utama pada Formasi *Upper Bekasap* dan *Lower Bekasap*.

Sumur “MA-01” merupakan sumur dengan *reservoir* gas. Nilai *cut-off* yang digunakan pada penelitian ini meliputi *V_{shale}* sebesar 35%, porositas sebesar 10%, dan saturasi air sebesar 75%. Berdasarkan hasil analisis kualitatif dan kuantitatif, teridentifikasi sebanyak 7 interval prospek pada sumur “MA-01” dengan total *net pay* sebesar 31 feet. Dari hasil perhitungan, diperoleh estimasi cadangan gas mula-mula (OGIP) sebesar 20.77 BSCF.

Kata kunci: Analisa petrofisik, Cekungan Sumatra Tengah, Formasi Bekasap, Zona prospek, *Reservoir lumping*, OGIP.

ABSTRACT

PETROPHYSICAL INTERPRETATION AND CORE DATA ANALYSIS FOR DETERMINING PROSPECT ZONES AND ORIGINAL HYDROCARBON IN PLACE IN WELL “MA-01”, “ALV” FIELD

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The “MA-01” well in “ALV” Field is located in the Central Sumatra Basin, with the Upper Bekasap and Lower Bekasap Formations serving as the main reservoir targets. This basin is considered mature and is known to possess significant hydrocarbon potential; therefore, further study is required to identify prospective hydrocarbon zones and to estimate the initial hydrocarbon reserves in the well.

This study was conducted through two analytical stages, namely qualitative and quantitative analyses. The qualitative analysis was carried out by utilizing a combination of logs from lithology tools, resistivity tools, and porosity tools to identify prospective zones. Meanwhile, the quantitative analysis included the calculation of volume shale using gamma ray logs, porosity estimation using the SSPW method, and water saturation determination using the Simandoux method. In addition, cut-off values were determined to distinguish productive from non-productive layers, followed by a reservoir lumping process. The final stage of the study involved hydrocarbon reserve estimation with a primary focus on the Upper Bekasap and Lower Bekasap Formations.

“MA-01” well is identified as a gas reservoir. The cut-off values applied in this study consist of V_{shale} of 35%, porosity of 10%, and water saturation of 75%. Based on the results of the qualitative and quantitative analyses, a total of seven prospective intervals were identified in Well “MA-01”, with a total net pay thickness of 31 feet. The calculation results indicate an estimated Original Gas in Place (OGIP) of 20.77 BSCF.

Keywords: Petrophysical analysis, Central Sumatra Basin, Bekasap Formation, Prospect zone, Reservoir lumping, OGIP.