

RINGKASAN

PENENTUAN ZONA PROSPEK MELALUI ANALISA PETROFISIKA DENGAN INTERPRETASI LOG PADA SUMUR “EZ-003” LAPANGAN “PAMZ”.

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Sumur “EZ-003” pada Lapangan “PAMZ” terletak di Cekungan Jawa Barat Utara dengan formasi *Upper Cibulakan* sebagai target *reservoir*-nya. Formasi ini memiliki karakteristik *low resistivity reservoir* sehingga perlu dilakukan analisa petrofisik dengan tujuan untuk mengetahui sifat fisik batuan dan fluida formasi. Digunakan analisa kualitatif dan kuantitatif untuk menentukan *top* dan *bottom* zona yang berpotensi prospek serta memperkirakan cadangan mula-mula pada sumur “EZ-003” ini.

Penelitian ini dilakukan dengan analisa kualitatif dan kuantitatif. Analisa kualitatif dilakukan secara *quick look* melalui kombinasi kurva *log lithology tools*, *resistivity tools*, dan *porosity tools* untuk mengetahui letak dari zona prospek. Analisa kuantitatif meliputi perhitungan volume *shale*, porositas, dan saturasi air. Perhitungan volume *shale* menggunakan persamaan perhitungan volume *shale* untuk *unconsolidated sand*. Dari hasil validasi dengan data *core* perhitungan porositas yang digunakan metode porositas density. Dari hasil validasi dengan data *core* perhitungan saturasi air yang digunakan adalah metode *Simandoux*. *Cut off* dilakukan terhadap tiga parameter, yakni porositas, volume *shale*, dan saturasi air. *Cut off* volume *shale* dan porositas menggunakan crossplot data test terhadap volume *shale* dan porositas. *Cut off* saturasi air menggunakan crossplot *fractional flow* dengan saturasi air. Hasil *cut off* berupa ketebalan bersih beserta parameter petrofisik lain seperti volume *shale*, porositas, dan saturasi air dari ketebalan bersih tersebut. Hasil yang telah diperoleh akan digunakan untuk menghitung OOIP secara volumetrik.

Dari analisa secara kualitatif dan kuantitatif pada Sumur “EZ-003” diperoleh empat zona prospek. *Cut off V_{shale}* sebesar 54%, porositas sebesar 8.2%, dan saturasi air sebesar 77.5%. Total kedalaman bersih yang diperoleh dari formasi Upper Cibulakan sebesar 13.5 ft. Perhitungan OOIP secara volumetrik pada sumur “EZ-003” diperoleh sebesar 0.2840 MMSTB.

Kata kunci : Analisa Petrofisik, *Cut off*, *Net pay*, OOIP, Zona Prospek

ABSTRACT

DETERMINATION OF PROSPECT ZONES THROUGH PETROPHYSICAL ANALYSIS WITH LOG INTERPRETATION ON WELL “EZ-003” IN “PAMZ” FIELD

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The Upper Cibulakan formation serves as the target reservoir for the well "EZ-003" in the "PAMZ" field, which is situated in the North West Java Basin. Because of the low resistivity reservoir characteristics of this formation, petrophysical investigation is necessary to ascertain the physical parameters of the rock and formation fluids. To assess the initial reserves in this well (EZ-003) and to establish the top and bottom of the potential zones, both qualitative and quantitative analyses are applied.

The study employs both qualitative and quantitative analyses. Qualitative analysis is conducted through a quick look interpretation, combining lithology, resistivity, and porosity logs to identify prospective zones. Quantitative analysis involves calculating shale volume, porosity, and water saturation. Shale volume is determined using the unconsolidated sand shale volume equation. Neutron-density porosity is utilized for porosity calculation due to shaly sand zones. Water saturation is calculated using the Simandoux method due to the dispersed shale distribution with low resistivity zones or high salinity levels. Cut-offs are applied to three parameters: porosity, shale volume, and water saturation. Cut-offs for shale volume and porosity are determined using a crossplot between shale volume and effective porosity. Water saturation cut-off is determined using a crossplot between effective porosity and water saturation. The resulting clean thickness, along with other petrophysical parameters such as shale volume, porosity, and water saturation from the clean thickness, are obtained from the cut-off results. These results are then used to calculate the Original Oil in Place (OOIP) volumetrically.

From both qualitative and quantitative analyses of the “EZ-003” Well, four prospective zones are identified. The cut-offs for shale volume, porosity, and water saturation are determined to be 54%, 8.2%, and 77.5% respectively. The total clean thickness obtained from the Upper Cibulakan formation is 13.5 ft. Volumetric calculation of OOIP for the “EZ-003” well is 0.2840 MMSTB.

Keywords: Petrophysical Analysis, Cut off, Net pay, OOIP, Prospect Zones