

## ABSTRAK

# ANALISA DAN PENGOLAHAN DATA *PRA* *MODELLING* UNTUK SIMULASI RESERVOIR LAPANGAN “ABS”

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Lapangan “ABS” mulai berproduksi pada Januari 1998 menggunakan metode *natural flow* dengan produksi awal 5.000 bopd dan kadar air 0%. Produksi tertinggi terjadi pada Oktober–November 1998 sebesar 21.000 bopd, kemudian menurun sejak Oktober 1999 hingga hanya menghasilkan 0,25 MMSTB pada tahun 2022. Dari 26 sumur, 11 masih aktif dan 4 digunakan sebagai sumur injeksi. Dengan OOIP sebesar 157 MMSTB dan *recovery factor* 25,8% per Desember 2023.

Penelitian ini berfokus pada analisis dan pengolahan data numerik seperti data tekanan, permeabilitas, tekanan kapiler, dan produksi. Pengolahan data RCAL menggunakan metode sortasi permeabilitas dan *Flow Zone Indicator*, disertai proses normalisasi dan denormalisasi pada data SCAL. Tekanan kapiler dianalisis menggunakan persamaan Leverett J-Function. Proses PVT *Matching* dilakukan dengan *software* PVTi. *Drive mechanism* Lapangan “ABS” diidentifikasi berdasarkan interpretasi Ganesh Thakur.

Penelitian ini mengklasifikasikan *rock type* di Lapangan "ABS" menggunakan metode *Flow Zone Indicator* (FZI) dan sortasi permeabilitas. *Rock Type* 1 menunjukkan kualitas terbaik dengan porositas dan permeabilitas tinggi, tekanan kapiler rendah, serta konektivitas pori yang baik. Seluruh *rock type* menunjukkan sifat kebasahan *oil-wet* dengan *crossover point* 0,35. Metode FZI lebih akurat untuk reservoir heterogen karena mempertimbangkan karakteristik fluida dan geologi secara numerik. Analisis PVT menunjukkan fluida bersifat minyak ringan, dengan dominasi komponen C7+. *Drive mechanism* Lapangan “ABS” adalah *water influx*. Estimasi tekanan reservoir tahun 2023 sebesar 851.8 psi dihitung melalui proyeksi *trendline* dari data historis. Hasil ini berguna untuk *history matching*, simulasi reservoir, dan perencanaan pengembangan berbasis data.

Kata kunci: *drive mechanism, oil-wet, rock type, water-wet*

## ABSTRACT

### ***PRE-MODELLING DATA ANALYSIS AND PROCESSING FOR RESERVOIR SIMULATION OF THE "ABS" FIELD***

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*The “ABS” Field began production in January 1998 using natural flow, with an initial rate of 5,000 BOPD and 0% water cut. Peak production occurred in October–November 1998, reaching 21,000 BOPD, but declined steadily from October 1999, producing only 0.25 MMSTB by 2022. Out of 26 wells, 11 remain active, and 4 are used for injection. As of December 2023, the field has an OOIP of 157 MMSTB and a recovery factor of 25.8%.*

*This study focuses on the analysis and processing of numerical data such as pressure, permeability, capillary pressure, and production data. RCAL data processing uses permeability sorting and the Flow Zone Indicator method, accompanied by normalization and denormalization processes in SCAL data. Capillary pressure is analyzed using the Leverett J-Function equation. The PVT matching process is conducted using PVTi software. The drive mechanism of the “ABS” field is identified based on the interpretation by Ganesh Thakur.*

*This study classifies rock types in the “ABS” Field using the Flow Zone Indicator (FZI) method and permeability sorting. Rock Type 1 exhibits the best quality, with high porosity and permeability, low capillary pressure, and good pore connectivity. All rock types exhibit oil-wet characteristics, with a crossover point of 0.35. The FZI method is more accurate for heterogeneous reservoirs, as it considers fluid and geological properties numerically. PVT analysis indicates the fluid is light oil, dominated by C7+ components. The drive mechanism in the ABS Field is water influx. Reservoir pressure in 2023 is estimated at 851.8 psi, calculated through trendline projection of historical data. These results are valuable for history matching, reservoir simulation, and data-driven development planning.*

*Keywords: drive mechanism, oil-wet, rock type, water-wet*