

## INTISARI

Indonesia terus mengalami penurunan cadangan minyak dan gas (migas) konvensional, dimana cadangan minyak bumi mengalami penurunan dari 7.25 MMSTB pada tahun 2016 menjadi 4.17 MMSTB pada tahun 2022, dan cadangan gas bumi dari 144.06 TSCF menjadi 54.83 TSCF (Statistik KESDM, 2022). Ditengah semakin menipisnya cadangan migas nasional, cadangan migas non-konvensional (MNK) menunjukkan angka yang sangat menjanjikan untuk dikembangkan. Blok *Offshore North West Java* (ONWJ) memiliki *source rock* potensial pada Formasi Talang Akar. Suatu penelitian mengenai parameter apa saja yang cocok untuk penelitian migas non-konvensional pada Cekungan Jawa Barat Utara diperlukan. Adapun parameter yang diteliti meliputi analisis litofasies, volume serpih, porositas, Total Organic Carbon (TOC), dan Brittleness Index (BI). Hasil studi ini, diharapkan dapat berkontribusi terhadap penemuan interval reservoir non-konvensional.

Analisis litofasies dan elektrofisies menunjukkan pada daerah penelitian terdapat enam fasies yakni serpih, batulanau sisipan serpih, batulanau, batupasir sisipan batulanau, batupasir, dan batubara. Pada *Deltaic* Talang Akar terdapat reservoir *shale hydrocarbon* sebanyak 4 interval pada sumur Akasia, 2 interval pada sumur Cattleya, 4 interval pada sumur Dahlia, 5 interval pada sumur Edelweiss, dan 6 interval pada sumur Flamboyan, sedangkan untuk reservoir *tight sand hydrocarbon* sebanyak 1 interval pada sumur Akasia, 1 interval pada sumur Cattleya, dan 4 interval pada sumur Edelweiss, dimana tidak ditemukan interval reservoir pada sumur Bougenville. Properti petrofisika pada *shale hydrocarbon* yakni memiliki rata-rata volume serpih 0.58 – 0.87, porositas 3 – 7%, TOC 1.83 – 3.02 wt%, dan BI 0.6 – 0.68, sedangkan *tight sand hydrocarbon* memiliki rata-rata volume serpih 0.24 – 0.27, porositas 7 – 9%, dan BI 0.64 – 0.84. Berdasarkan hasil analisis petrofisika yang telah dilakukan, interval yang dapat dilakukan pengembangan MNK lebih lanjut yakni *middle – lower Deltaic* Talang Akar dengan arah timur – tenggara.

**Katakunci:** petrofisika, migas non-konvensional, TOC, BI

## **ABSTRACT**

*Indonesia continues to experience a decline in conventional oil and gas reserves where oil reserves have decreased from 7.25 MMSTB in 2016 to 4.17 MMSTB in 2022, and natural gas reserves from 144.06 TSCF to 54.83 TSCF (KESDM Statistics, 2022). Amidst the dwindling national oil and gas reserves, unconventional oil and gas reserves show very promising figures for development. The Offshore North West Java (ONWJ) Block has a potential source rock in the Talang Akar Formation. A study on what parameters that are suitable for unconventional oil and gas research in the North West Java Basin is needed. The parameters studied include lithofacies analysis, shale volume, porosity, Total Organic Carbon (TOC), and Brittleness Index (BI). The results of this study are expected to contribute to the discovery of unconventional reservoir intervals.*

*Lithofacies and electrofacies analysis showed that there are six facies in the research area, namely shale, shale intercalated siltstone, siltstone, siltstone intercalated sandstone, sandstone, and coal. In Deltaic Talang Akar there are shale hydrocarbon reservoirs of 4 intervals in the Akasia well, 2 intervals in the Cattleya well, 4 intervals in the Dahlia well, 5 intervals in the Edelweiss well, and 6 intervals in the Flamboyan well, while for tight sand hydrocarbon reservoirs there are 1 interval in the Akasia well, 1 interval in the Cattleya well, and 4 intervals in the Edelweiss well, where no reservoir intervals were found in the Bougenville well. Petrophysical properties of shale hydrocarbons have an average shale volume of 0.58 - 0.87, porosity of 3 - 7%, TOC of 1.83 - 3.02 wt%, and BI of 0.6 - 0.68, while tight sand hydrocarbons have an average shale volume of 0.24 - 0.27, porosity of 7 - 9%, and BI of 0.64 - 0.84. Based on the results of the petrophysical analysis that has been carried out, the unconventional hydrocarbon reservoir interval that can be further developed is the middle - lower Deltaic Talang Akar with an east - southeast direction.*

**Keywords:** *petrophysics, unconventional hydrocarbon, TOC, BI*