

SARI

Lapangan “RTB” terletak di Cekungan Kutai, yang dikenal memiliki sistem *petroleum* aktif dan kompleksitas geologi tinggi. Interval penelitian berada pada Grup Balikpapan, yang diketahui memiliki potensi akumulasi hidrokarbon signifikan akibat adanya tekanan pori anomali (*overpressure*). Penelitian ini bertujuan untuk mengidentifikasi karakteristik tekanan pori, mekanisme pembentukan tekanan anomali, dan penyebaran tekanan anomali guna mendukung kegiatan eksplorasi dan optimasi desain pengeboran. Data yang digunakan meliputi log sumur (*gamma ray*, densitas, sonik, resistivitas) dan data uji tekanan (FIT, LOT, MDT, RDT) dari beberapa sumur. Analisis dilakukan menggunakan metode Eaton berbasis *Normal Compaction Trend* (NCT) untuk menentukan variasi tekanan pori vertikal. Hasil penelitian menunjukkan adanya tiga rezim tekanan, yaitu hidrostatik, *underpressure*, dan *overpressure*, dengan mekanisme dominan berupa kombinasi *loading mechanism* dan *unloading mechanism centroid effect*, serta kontribusi minor dari diagenesis mineral lempung akibat transformasi smektit–illit. Keberadaan *unconsolidated sandstone* turut memperkuat anomali tekanan pada interval produktif. Pemahaman distribusi tekanan pori ini penting dalam mitigasi risiko *kick*, *loss circulation*, dan *stuck pipe*, serta menjadi dasar strategis dalam evaluasi kelayakan pengeboran dan pengembangan lapangan di wilayah penelitian.

Kata kunci: tekanan pori, *overpressure*, *underpressure*, mekanisme *loading–unloading*, *centroid effect*, diagenesis lempung, Grup Balikpapan, Cekungan Kutai.

ABSTRACT

The “RTB” Field is located in the Kutei Basin, which is known for its active petroleum system and complex geological setting. The study interval lies within the Balikpapan Group, which has significant hydrocarbon accumulation potential due to the presence of abnormal pore pressure (overpressure). This study aims to identify the characteristics of pore pressure, the mechanisms of abnormal pressure, and distribution of abnormal pressure formation to support exploration activities and optimize drilling design. The data used include well logs (gamma ray, density, sonic, resistivity) and pressure test data (FIT, LOT, MDT, RDT) from several wells. Analysis was carried out using the Eaton method based on the Normal Compaction Trend (NCT) to determine vertical pore pressure variation. The results indicate three pressure regimes: hydrostatic, underpressure, and overpressure, mainly controlled by a combination of loading and unloading mechanisms such as centroid effect, with a minor contribution from clay mineral diagenesis due to the smectite–illite transformation. The presence of unconsolidated sandstone further enhance the pressure anomaly within productive intervals. Understanding the pore pressure distribution is crucial for mitigating risks such as kick, loss circulation, and stuck pipe, as well as providing a strategic basis for drilling feasibility evaluation and field development in the study area.

Keyword: pore pressure, overpressure, loading–unloading mechanism, centroid effect, clay diagenesis, Balikpapan Group, Kutei Basin.