

ABSTRAK

ANALISIS FASIES DAN LINGKUNGAN PENGENDAPAN PADA ZONA PROSPEK HIDROKARBON PADA KELOMPOK BALIKPAPAN LAPANGAN “RF” CEKUNGAN KUTAI BERDASARKAN DATA LOG SUMUR DAN SEISMIK

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Cekungan Kutai merupakan salah satu cekungan terbesar dan terdalam di Indonesia yang memiliki potensi hidrokarbon signifikan. Kelompok Balikpapan merupakan salah satu Kelompok yang berada di Cekungan Kutai, Kelompok ini dibagi menjadi dua Formasi yaitu Formasi Mentawir dengan litologi batupasir massif dengan perselingan lempung, lanau, serta lignit dan Formasi Gelingsih dengan litologi perselingan batulempung dan batupasir dengan sisipan batugamping. Formasi Balikpapan diendapkan pada lingkungan pengendapan delta. Penelitian ini dilakukan di Lapangan “RF” yang terletak di bagian timur Cekungan Kutai. Penelitian dilakukan dengan tujuan untuk mengidentifikasi fasies dan lingkungan pengendapan. Data yang digunakan berupa *wireline log*, seismik 3D (PSDM), *mud log*, dan *sidewall core*. Dari data tersebut dilakukan analisis litologi, analisis siklus stratigrafi analisis fasies serta lingkungan pengendapan, dan analisis 3D seismik. Kemudian menghasilkan korelasi struktur, korelasi stratigrafi, peta struktur kedalaman, peta *isopach*, dan model fasies. Dari hasil analisis pada delapan belas sumur Lapangan “RF” menunjukkan bahwa litologi yang terdapat pada daerah penelitian yaitu batupasir, serpih, batugamping, dan Batubara yang termasuk kedalam Formasi Gelingsih. Fasies yang berkembang pada daerah penelitian yaitu *distributary channel*, *mouth bar*, *tidal mud flat*, *shale delta front*, dan *reef build up* serta masuk kedalam lingkungan pengendapan *delta front*. Pada analisis siklus stratigrafi didapatkan marker *boundary 1* (SB 1), *sequence boundary 2* (SB 2), *transgressive surface 1* (TS 2), *sequence*, dan *maximum flooding surface 1* (MFS 1) yang dibatasi dengan *system tract* berupa *highstand system tract* (HST), *lowstand system tract* (LST), dan *transgressive system tract* (TST). Hasil dari pemodelan fasies didapatkan fasies yang berkembang pada zona prospek hidrokarbon yaitu *distributary channel* dan *shale delta front*.

Kata kunci: Cekungan Kutai, Fasies, Kelompok Balikpapan, Lingkungan Pengendapan, Model Fasies

ABSTRACT

FACIES AND DEPOSITIONAL ENVIRONMENT ANALYSIS OF HYDROCARBON PROSPECT ZONE IN THE BALIKPAPAN GROUP “RF” FIELD, KUTAI BASIN BASED ON WELL LOG AND SEISMIC DATA

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The Kutai Basin is one of the largest and deepest basins in Indonesia with significant hydrocarbon potential. The Balikpapan Group is one of the groups located within the Kutai Basin and is divided into two formations: the Mentawir Formation, which consists of massive sandstone interbedded with clay, silt, and lignite; and the Gelingsih Formation, characterized by interbedded claystone and sandstone with limestone inserts. The Balikpapan Formation was deposited in a deltaic depositional environment. This study was conducted in the "RF" Field, located in the eastern part of the Kutai Basin. The objective of the research is to identify facies and depositional environments. The data used includes wireline logs, 3D seismic (PSDM), mud logs, and sidewall cores. These data were used to perform lithology analysis, sequence stratigraphy analysis, facies and depositional environment analysis, and 3D seismic interpretation. The results include structural correlation, stratigraphic correlation, depth structure maps, isopach maps, and facies models. Analysis of eighteen wells in the "RF" Field indicates the presence of lithologies such as sandstone, shale, limestone, and coal, which are part of the Gelingsih Formation. The facies developed in the study area include distributary channel, mouth bar, tidal mud flat, shale delta front, and reef build-up, which belong to a delta front depositional environment. Sequence stratigraphy analysis identified marker boundary 1 (SB 1), sequence boundary 2 (SB 2), transgressive surface 1 (TS 2), sequence, and maximum flooding surface 1 (MFS 1), which are bounded by system tracts: highstand system tract (HST), lowstand system tract (LST), and transgressive system tract (TST). The facies modeling results show that the facies developed in the hydrocarbon prospect zone are distributary channel and shale delta front.

Keywords: *Kutai Basin, Facies, Balikpapan Group, Depositional Environment, Facies Model*