

ABSTRAK

IDENTIFIKASI FASIES DAN LINGKUNGAN PENGENDAPAN FORMASI BEKASAP, LAPANGAN BTR, CEKUNGAN SUMATRA TENGAH BERDASARKAN DATA LOG SUMUR

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Cekungan Sumatra Tengah merupakan salah satu cekungan sedimen paling produktif di Indonesia, dengan Formasi Bekasap sebagai reservoir utama hidrokarbon. Keterbatasan data inti menjadikan data log sumur sebagai dasar utama untuk menginterpretasikan litologi, fasies, lingkungan pengendapan, dan kerangka sekuen stratigrafi di Lapangan BTR. Penelitian ini bertujuan mengidentifikasi variasi litologi, pola fasies, lingkungan pengendapan berdasarkan data biostratigrafi yang didukung data log sumur, serta pola stacking fasies pada Formasi Bekasap. Analisis dilakukan terhadap 22 sumur menggunakan data log gamma ray, resistivitas, densitas, dan neutron, didukung satu data core dan data biostratigrafi dari tiga sumur, yang diolah menggunakan Aspen SKUA pada interval Top Sand T_PR5 hingga T_PR. Hasil penelitian menunjukkan Formasi Bekasap tersusun atas perselingan batupasir dan serpih dengan dua litofasies utama, yaitu Massive Sandstone dan Sandstone with Mud Drapes, yang membentuk tiga asosiasi fasies: Estuarine Channel Axis, Off-Axis, dan Margin. Data biostratigrafi menunjukkan lingkungan pengendapan intertidal hingga inner neritic berumur Miosen Awal ($\pm 21,0$ – $22,0$ Ma), mengindikasikan sistem estuarin yang didominasi proses pasang surut (tidal-dominated estuary). Kerangka sekuen stratigrafi terdiri atas satu sekuen lengkap yang dibatasi Sequence Boundary, Transgressive Surface, dan Maximum Flooding Surface. Fase Transgressive Systems Tract menunjukkan pola retrogradasi dan pemfokusan saluran pasang surut, sedangkan Highstand Systems Tract memperlihatkan pola progradational yang lebih tipis menuju Maximum Flooding Surface.

Kata kunci: Fasies Estuarin, Formasi Bekasap, Log Sumur, Sekuen Stratigrafi, Tidal-Dominated Estuary

ABSTRACT

IDENTIFICATION OF FACIES AND SEDIMENTATION ENVIRONMENT OF BEKASAP FORMATION, BTR FIELD, CENTRAL SUMATRA BASIN BASED ON WELL LOG DATA

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The Central Sumatra Basin is one of Indonesia's most productive sedimentary basins, with the Bekasap Formation serving as a major hydrocarbon reservoir. Due to limited core data, well logs were used as the primary dataset to interpret lithology, facies, depositional environment, and sequence stratigraphy in the BTR Field. This study aims to identify lithological variations, facies distribution, depositional environment based on biostratigraphic data supported by well logs, and vertical facies stacking patterns within the Bekasap Formation. The study analyzed gamma ray, resistivity, density, and neutron logs from 22 wells, supported by one conventional core and biostratigraphic data from three wells, using Aspen SKUA within the Top Sand T_{PR5} to T_{PR} interval. The results indicate that the Bekasap Formation consists of interbedded sandstone and shale, comprising two main lithofacies: Massive Sandstone and Sandstone with Mud Drapes, which form three facies associations: Estuarine Channel Axis, Off-Axis, and Margin. Biostratigraphic data indicate an intertidal to inner neritic depositional environment of Early Miocene age (approximately 21.0–22.0 Ma), confirming deposition within a tidal-dominated estuary. The sequence stratigraphic framework consists of a single complete sequence bounded by a Sequence Boundary, Transgressive Surface, and Maximum Flooding Surface. The Transgressive Systems Tract exhibits retrogradational stacking and tidal channel focusing, whereas the Highstand Systems Tract displays thinner progradational deposits toward the Maximum Flooding Surface.

Keywords : Bekasap Formation, Estuarine Facies, Sequence Stratigraphy, Tidal-Dominated Estuary, Well Logs.