

ABSTRAK

PEMODELAN FASIES *TIDAL SAND BAR* PADA INTERVAL “ALUNA”, FORMASI CIBULAKAN BAGIAN ATAS, CEKUNGAN JAWA BARAT UTARA

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Penelitian mengenai analisis fasies sangat penting dalam studi geologi karena dapat memberikan pemahaman tentang geometri, distribusi, dan kontinuitas tubuh pasir yang berperan sebagai batuan reservoir. Penelitian ini difokuskan pada interval “Aluna” pada Formasi Cibulakan Bagian Atas untuk mengetahui variasi litologi, sikuen stratigrafi, distribusi fasies, serta pemodelan fasies *tidal sand bar* di daerah penelitian.

Metode penelitian dilakukan dengan mengintegrasikan data bawah permukaan yang meliputi data *wireline log*, *mudlog*, *batuan inti*, *FMI (Formation Micro Imager)*, dan data seismik. Analisis litologi dilakukan berdasarkan interpretasi log *gamma ray* yang dikalibrasi dengan data *mudlog* dan batuan inti. Analisis fasies dilakukan melalui interpretasi pola elektrofases pada log *gamma ray* dengan validasi data batuan inti. Analisis sikuen stratigrafi dilakukan untuk menentukan batas serta mengidentifikasi *system tract* yang berkembang. Distribusi fasies kemudian dianalisis melalui pembuatan peta fasies dan peta bawah permukaan untuk mengetahui perkembangan lateral tubuh *sand bar*.

Hasil penelitian menunjukkan bahwa interval Aluna tersusun atas litologi batupasir *sublitharenite – feldspathic litharenite*, serpih, dan batugamping dengan struktur sedimen berupa *flaser bedding*, *wavy bedding*, serta keberadaan *sandy streak* dan *shale drape* yang mencerminkan pengaruh arus pasang surut. Analisis sikuen stratigrafi menunjukkan keberadaan dua *flooding surface* yang membagi interval penelitian menjadi fase regresif dan transgresif dengan *system tract* berupa *highstand system tract (HST)* serta *transgressive system tract (TST)*. Pemodelan fasies menunjukkan bahwa lapisan paling berpotensi menjadi reservoir merupakan lapisan Aluna 1 dikarenakan fasies *tidal sand bar* yang lebih berkembang dan dominan serta memiliki kontinuitas lateral yang lebih baik.

Kata kunci: Cibulakan Atas, Fasies, Sikuen Stratigrafi, *Tidal Sand Bar*.

ABSTRACT

FACIES MODELING OF TIDAL SAND BAR FACIES IN THE “ALUNA” INTERVAL, UPPER CIBULAKAN FORMATION, NORTHWEST JAVA BASIN

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Facies analysis plays an important role in geological studies, providing an understanding of the geometry, distribution, and continuity of sand bodies that serve as reservoir rocks. This research focuses on the “Aluna” interval in the Upper Cibulakan Formation to determine lithological variations, sequence stratigraphy, facies distribution, and facies modeling of tidal sand bar deposits within the study area.

The research method integrated subsurface data, including wireline logs, mud logs, core data, FMI (Formation Micro Imager), and seismic data. Lithological analysis was conducted based on gamma-ray log interpretation, calibrated with mud logs and core data. Facies analysis was performed by interpreting electrofacies patterns from gamma-ray logs, validated by core observations. Sequence stratigraphic analysis was conducted to determine sequence boundaries and identify the developed system tracts. Facies distribution was then analyzed through facies and subsurface mapping to determine the lateral development of sand bar bodies.

The results indicate that the Aluna interval is composed of sublitharenite to feldspathic litharenite sandstone, shale, and limestone, with sedimentary structures such as flaser and wavy bedding, sandy streaks, and shale drapes reflecting tidal-current influence. Sequence stratigraphic analysis identifies two flooding surfaces that divide the study interval into regressive and transgressive phases, with system tracts consisting of a highstand systems tract (HST) and a transgressive systems tract (TST). Facies modeling indicates that the most prospective reservoir layer is Aluna 1, characterized by more dominantly developed tidal sand bar facies and better lateral continuity.

Keywords: Upper Cibulakan Formation, Facies, Sequence Stratigraphy, Tidal Sand Bar.