Penentuan lingkungan pengendapan dan zona potensi reservoar hidrokarbon lapangan "K" pada formasi Talang Akar, Cekungan Sunda berdasarkan analisis petrofisika dan elektrofasies = Determination of depositional environment and potential hydrocarbon reservoir zone of field "K" in Talang Akar Formation, Sunda Basin based on Petrophysical and Electrofacies analysis

Khowash Syarfah Itsnaen, author

Abstrak

Cekungan Sunda merupakan salah satu cekungan sedimen penghasil hidrokarbon terbesar di Indonesia. Reservoar utama berupa batupasir pada cekungan tersebut berada pada Formasi Talang Akar. Formasi ini terendapkan di daerah fluvio-deltaic atau fluvial sampai daerah transisi, sehingga karakter reservoar batupasir formasi ini cukup beragam. Untuk memaksimalkan hal ini dilakukan studi terkait lingkungan pengendapan dan zona potensi reservoar hidrokarbon melalui analisis log sumur, batuan inti, dan laporan biostratigrafi. Berdasarkan hasil analisis pola elektrofasies, daerah penelitian terdiri dari empat pola yaitu cylindrical, bell, symmetrical, dan serrated. Hasil asosiasi fasies daerah penelitian diinterpretasikan sebagai tidal sand bar, tidal point bar, intertidal flat, dan marsh/swamp yang berada pada lingkungan pengendapan tide-dominated estuary. Pada analisis petrofisika didapat nilai rata-rata parameter petrofisika kelima sumur yaitu Volume Shale (Vsh): 15.2% – 26.8%; Porositas Efektif (PHIE): 19.3% – 25.5%; Saturasi Air (Sw): 28% – 53.9%. Nilai ketebalan zona hidrokarbon (net pay) dihitung dengan parameter cut off yaitu Vsh 58%, porositas 8%, dan Sw 88%. Net pay atau total ketebalan zona hidrokarbon pada kelima sumur antara lain yaitu K-1 72.5 ft, K-2 182.5 ft, K-3 249.91 ft, K-4 59.3 ft, dan K-5 11.5 ft.

.....The Sunda Basin is one of the largest hydrocarbon-producing sedimentary basins in Indonesia. The main sandstone reservoir in the basin is the Talang Akar Formation. This formation was deposited in fluvio-deltaic or fluvial to transitional areas, so the character of the sandstone reservoir of this formation is quite diverse. To maximize this, a study was conducted related to the depositional environment and potential hydrocarbon reservoir zones through the analysis of well logs, cores, and biostratigraphic reports. Based on the results of the electrofacies pattern analysis, the research area consists of four patterns, namely cylindrical, bell, symmetrical, and serrated. The results of the facies association of the research area are interpreted as tidal sand bar, tidal point bar, intertidal flat, and marsh/swamp in a tide-dominated estuary depositional environment. In the petrophysical analysis, the average value of the petrophysical parameters of the five wells is obtained, namely Volume Shale (Vsh): 15.2% - 26.8%; Effective Porosity (PHIE): 19.3% - 25.5%; Water Saturation (Sw): 28% - 53.9%. The hydrocarbon zone thickness value (net pay) was calculated with cut off parameters of Vsh 58%, porosity 8%, and Sw 88%. Net pay or total hydrocarbon zone thickness in the five wells are K-1 72.5 ft, K-2 182.5 ft, K-3 249.91 ft, K-4 59.3 ft, and K-5 11.5 ft.