

Penentuan Zona Hidrokarbon pada Formasi Arang Blok "X" Cekungan Natuna Barat, Provinsi Kepulauan Riau = Hydrocarbon Zone Determination in Arang Formation, "X" Field, West Natuna Basin, Kepulauan Riau Province

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Abstrak

Formasi Arang merupakan salah satu reservoir penghasil gas pada Blok "X", Cekungan Natuna Barat. Formasi ini diendapkan pada lingkungan pengendapan delta yang cukup fluktuatif, sehingga dapat memengaruhi persebaran fasies yang berhubungan dengan zona prospek hidrokarbon. Untuk memaksimalkan kegiatan eksplorasi maupun eksploitasi lapangan penelitian dilakukan studi pada Formasi Middle Arang dan Upper Arang melalui analisis log yang ditunjang oleh data report core, report biostratigrafi, dan depth structure map. Berdasarkan analisis log secara kualitatif yaitu elektrofases yang divalidasi dengan data geologi, daerah penelitian terbagi menjadi 3 pola elektrofases, yaitu cylindrical, cylindrical (boxy), funnel dan diinterpretasikan 5 fasies pengendapan, yaitu distributary mouth bar, distributary channel, proximal delta front, distal delta front, dan prodelta. Pada analisis log kuantitatif (petrofisika), didapat rata-rata parameter petrofisika zona hidrokarbon pada sumur penelitian adalah Volume Shale (Vsh): 0.128 – 0.493 V/V, Porositas Efektif (PHIE): 16.8 % s.d. 24.5 %, Saturasi Air (Sw): 0.467 s.d. 0.701 V/V. Nilai ketebalan zona hidrokarbon (net pay) dihitung dengan menggunakan nilai cut off sebesar 1) Vsh 0.6 V/V, 2) PHIE 7%, 3) Sw 0.75 V/V dengan ketebalan hidrokarbon pada masing-masing sumur adalah A-1: 52 ft, I-1: 29 ft, B-1: 1 ft, P-1: 108 ft, P-2: 195 ft, N-1: 137 ft, dan P-2: 151 ft

.....Arang Formation is one of the gas-producing reservoirs in Block "X", West Natuna Basin. This formation was deposited in delta with fluctuating depositional facies, which can affect the facies distribution along with the hydrocarbon prospect zone. To maximize exploration and exploitation activities in the research field, a study was conducted on the Middle Arang and Upper Arang Formations through log analysis supported by core report data, biostratigraphic reports, and depth structure maps. Based on qualitative log analysis, electrofacies study which was validated with geological data, the study area is divided into 3 electrofacies patterns, such as cylindrical, cylindrical (boxy), funnel and interpreted into 5 depositional facies, namely distributary mouth bar, distributary channel, proximal delta front, distal delta front, and prodelta. Through quantitative log analysis (petrophysics), the average petrophysical parameters of the hydrocarbon zone in the study wells were: Shale Volume (Vsh): 0.128 – 0.493 V/V, Effective Porosity (PHIE): 16.8 % s.d. 24.5 %, Water Saturation (Sw): 0.467 to 0.701V/V. The value of the thickness of the hydrocarbon zone (net pay) is calculated using a cut off value of 1) Vsh 0.6 V/V, 2) PHIE 7%, 3) Sw 0.75 V/V with the thickness of the hydrocarbon in each well being A-1: 52 ft, I-1: 29 ft, B-1: 1 ft, P-1: 108 ft, P-2: 19 5 ft, N-1: 137 ft, and P-2: 151 ft