

Karakterisasi Reservoir Migas Melalui Pemodelan Statis 3D Pada Formasi Bekasap, Lapangan L, Cekungan Sumatra Tengah = Oil and Gas Reservoir Characterization Using 3D Static Modelling at Bekasap Formation, Field L, Central Sumatra Basin

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Abstrak

Optimalisasi produksi Lapangan L migas di Cekungan Sumatra Tengah dilakukan melalui pemodelan geologi tiga dimensi (3D) untuk meningkatkan produksi. Pemodelan geostatistika 3D dilakukan untuk mengetahui lingkungan pengendapan dan distribusi sifat fisika batuan dengan menggunakan 26 sumur dan data seismik 3D. Pemodelan geologi 3D dibuat untuk menggambarkan secara sederhana kondisi geologi bawah permukaan pada Formasi Bekasap pada lapangan L melalui analisis elektrofases, analisis atribut seismik, interpretasi seismik, pemodelan struktural, pemodelan fasies dan pemodelan petrofisika berdasarkan metode Sequential Indicator Simulation dan Sequential Gaussian Simulation. Hasil deskripsi, analisis dan interpretasi menunjukkan bahwa Formasi Bekasap pada Lapangan L berada pada lingkungan pengendapan tide dominated estuarine-delta, terdiri atas enam interval reservoir dengan porositas efektif hingga 32% dan permeabilitas hingga 4000 mD, dan struktur mayor berupa 27 sesar normal yang berarah barat laut-tenggara dan timur laut-barat daya. Hasil pemodelan menunjukkan bahwa kemenerusan reservoir sesuai dengan distribusi fasies yang relatif berarah barat laut-tenggara.

Optimizing the oil and gas production of Field L in Central Sumatra Basin was carried out by using 3D geological model. 3D geostatistical modeling are intended to understand the depositional environment and property distribution using 26 wells and 3D seismic cubes. 3D geological modeling is a modeling made as a simple description of geological conditions to provide an understanding of the sub-surface geological conditions of the Bekasap Formation in Field L by analyzing the rock core, electrofacies analysis, seismic attribute analysis, seismic interpretation, structural modeling, facies modeling and petrophysical modeling using the Sequential method. Indicator Simulation and Sequential Gaussian Simulation. The results of analysis and interpretation indicate that the Bekasap Formation in Field L is in a tide dominated estuarine-delta depositional environment, consisting of six reservoir intervals with effective porosity up to 32% and permeability up to 4000 mD, and the major structure is 27 normal faults with direction northeast-southwest and northwest-southeast. The modeling results show that the reservoir continuity is in accordance with the facies distribution which is relatively trending northwest-southeast.