Pemodelan Distribusi Reservoir Batupasir Formasi Bekasap Menggunakan Atribut Seismik Untuk Identifikasi Perangkap Stratigrafi di Lapangan ‘X’ Cekungan Sumatera Tengah = Sandstone Reservoir Distribution Modeling of Bekasap Formation Using Seismic Attributes for Identification of Stratigraphic Trap in 'X' Field Central Sumatera Basin

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Abstrak

Lapangan 'X' adalah salah satu lapangan penghasil minyak di Cekungan Sumatera Tengah. Cekungan Sumatera Tengah merupakan salah satu cekungan sedimen penghasil minyak terbesar di Indonesia. Lapangan 'X' adalah area dengan Formasi Bekasap onlaping ke Tinggian Basement. Fitur onlapping berpotensi untuk perangkap stratigrafi. Penelitian ini bertujuan untuk mengidentifikasi potensi perangkap stratigrafi, distribusi reservoir batu pasir, tipe fasies, dan lingkungan pengendapan. Data yang digunakan dalam penelitian ini adalah data seismik 3D, log sumur, dan data inti batuan. Metode penelitian yang digunakan adalah analisis elektrofasies berdasarkan log sumur, atribut seismik, dan model geologi konseptual. Hasil penelitian menunjukkan bahwa ada potensi perangkap stratigrafi dalam bentuk perangkap intra-formasi dan regional. Jebakan intra-formasi dibentuk oleh perselingan batupasir dan litologi serpih secara vertikal dan perubahan fasies lateral, sedangkan jebakan regional dibentuk oleh lapisan serpih Formasi Telisa dan Formasi Bekasap dengan onlap di Tinggian Basement. Berdasarkan inversi AI, dekomposisi spektral 20 Hz, atribut envelope, dan atribut rms amplitudo menunjukkan distribusi reservoir batupasir A Formasi Bekasap berarah Timurlaut - Baratdaya pada zona onlapping ke Tinggian Basement. Berdasarkan integrasi analisis data batuan inti, elektrofasies, inversi AI, dekomposisi spektral 20 Hz, dan atribut rms amplitudo lingkungan pengendapan reservoir diinterpretasikan sebagai wave dominated delta yang terdiri dari empat fasies: upper shoreface, lower shoreface, distributary channel, dan offshore.

.....The 'X' field is an oil-producing field in the Central Sumatera Basin. Central Sumatera Basin is one of the largest oil-producing sedimentary basin in Indonesia. The field is an area in the form of onlaping Bekasap Formation to the Basement High. The onlapping feature has potential for stratigraphic traps. This study aims to identify the potential stratigraphic traps, the distribution of sandstone reservoirs, facies types and the depositional environments. The data used in the study are 3D seismic data, well log, and core data. The research methods used including the analysis of electrofacies based on well log, seismic attributes, and conceptual geology model. The research shows that there is a stratigraphic trap in the form of intra-formation and regional traps. Intra-formation traps were formed vertically by the intersection of sandstone and shale lithologies and lateral facies changes, whereas the regional traps are formed by the shale layer of Telisa Formation and Bekasap Formation with onlapping on the Basement High. Based on AI inversion, spectral-decomposition 20 Hz, envelope, and rms amplitude attributes show the distribution sandstone reservoir A of Bekasap Formation is Northeast - Southwest on onlaping zone to the Basement High. Based on integrated of core data, electrofacies, AI inversion, spectral-decomposition 20 Hz and rms amplitude

attributes, the depositional environment of reservoir is interpretated as wave dominated delta which is of four facies: upper shoreface, lower shoreface, distributary channel, and offshore facies.