INTISARI

PENERAPAN ATRIBUT SEISMIK *COHERENCE CUBE, VARIANCE,* DAN *ANT-TRACKING* UNTUK KARAKTERISASI REKAHAN DAN PENENTUAN ZONA POTENSIAL HIDROKARBON DALAM RESERVOAR *BASEMENT* TEREKAHKAN DI "LAPANGAN CASTERLY ROCK"

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Telah dilakukan penelitian pada *basement* "Lapangan Casterley Rock" yang terletak di Sub-Cekungan Ciputat yang merupakan bagian dari Cekungan Jawa Barat Utara dengan tujuan untuk mengidentifikasi rekahan, penentuan zona potensial hidrokarbon, dan rekomendasi pengembangan lapangan ke depan. Data seismik 3D PSTM, *electrical image log*, dan data produksi dikombinasikan bersama dalam penelitian ini untuk mencapai tujuan tersebut. Data seismik 3D PSTM, melalui perhitungan atribut seismik *coherence cube*, *variance volume*, dan *ant-tracking*, digunakan untuk mengidentifikasi rekahan secara lateral di daerah penelitian. Analisis *borehole image log* memberikan seperangkat data orientasi rekahan pada daerah penelitian untuk memvalidasi hasil perhitungan atribut sesismik sekaligus menyediakan informasi untuk analisis kinematika regional daerah penelitian. Sementara itu, data produksi menjadi data pendukung dalam penentuan zona terekahkan yang berpotensi mengandung hidrokarbon di *basement* daerah penelitian.

Hasil dari perhitungan atribut-atribut seismik menunjukan orientasi dominan rekahan di *basement* daerah penelitian berarah NNW-SSE. Hal tersebut berkorelasi baik dengan orientasi dominan rekahan terbuka hasil dari analisis *electrical image log* yang berarah NNW-SSE (dominan), N-S, dan NNE-SSW. Sementara itu, orientasi *drilling induced fractures* (DIFs) dan *borehole breakout* yang didapatkan dari analisis *electrical image log* menunjukan tegasan horizontal maksimum (SH_{max}) yang bekerja pada daerah penelitian relatif berarah N-S. Melalui serangkaian analisis yang meliputi analisis sistem petroleum *basement* daerah penelitian, analisis kinematika regional, dan analisis peta atribut seismik serta didukung dengan data produksi, didapatkan tiga zona terekahkan yang berpotensi mengandung hidrokarbon di *basement* daerah penelitian.

Kata kunci : Rekahan, *Coherence Cube*, *Variance*, *Ant-Tracking.*

ABSTRACT

APPLICATION OF COHERENCE CUBE, VARIANCE, AND ANT-TRACKING SEISMIC ATTRIBUTE FOR CHARACTERIZING FRACTURES AND DETERMINING HIDROCARBON POTENTIAL ZONE IN FRACTURED BASEMENT RESERVOIR AT "CASTERLY ROCK FIELD"

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A research has been conducted in the basement of "Casterly Rock Field" located in Ciputat Sub-Basin which is part of the North West Java Basin with the aim of identifying fractures, determining potential hydrocarbon zones, and recommending future field development. PSTM 3D seismic data, electrical image log, and production data are combined together in this study to achieve those goals. PSTM 3D seismic data, through the calculation of coherence cube, variance volume, and ant-tracking seismic attribute, was used to identify fractures lateraly in the study area. Borehole image log analysis provided a set of fracture orientation data to validate the results of the seismic attributes calculations and gave information about regional kinematic of the study area as well. Meanwhile, the production data became supporting data to determine fractured zone in the basement that potentially containing hydrocarbons.

The results of the seismic attribute calculations showed the dominant fracture orientations in the basement area, that is NNW-SSE. Those orientations correlated well with the dominant orientations of open fractures identified from electrical image log, that is NNW-SSE (dominant), N-S, and NNE-SSW. Meanwhile, the orientation of drilling induced fractures (DIFs) and borehole breakouts obtained from electrical image log showed the maximum horizontal stress (SHmax) of the study area is working on the N-S direction. Through a series of analyzes encompassing petroleum system, regional kinematics, and seismic attribute map analysis and supported by production data as well, three fractured zones that potentially containng hydrocarbon in the basement area were obtained.

Key Words : *Basement, Fracture, Seismic Attribute, Potential Zone*