Klasifikasi facies litoseismik berdasarkan inversi deterministik untuk memprediksi sebaran batupasir pada zona utama Lapangan Coki cekungan Kutai = Lithoseismic facies classification based on deterministic inversion to predict sand extension in main zone Coki Field Kutai basin

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Abstrak

[Inversi seismik deterministik telah dilakukan dengan menggunakan data PSTM di Lapangan Coki, Cekungan Kutai. Konsentrasi dari studi ini adalah zona Utama dengan kedalaman kurang lebih 3 km yang merupakan zona dengan akumulasi gas terbanyak. Tujuan utama dari penelitian ini adalah untuk mengidentifikasi ekstensi
dari batupasir di Zona Utama dengan menggunakan metode klasifikasi lithoseismic berdasarkan input dari hasil inversi seismik deterministik mengingat kontribusi seismik untuk pengembangan zona Utama sangat kecil sebelumnya dikarenakan
resolusi yang terbatas. Studi kelayakan fisika batuan menunjukkan bahwa untuk Zona Utama, kandungan fluida gas dan air sudah tidak bisa dipisahkan lagi di crossplot P-Impedance vs
Poisson’s Ratio.Sedangkan untuk pemisahan litologi batupasir dan batulempung secara umum masih bisa dipisahkan terutama untuk batupasir dengan kualitas bagus. Dengan menggunakan cube P-Impedance dan Poisson’s Ratio hasil seismik inversi sebagai input, klasifikasi lithoseismic dilakukan untuk memisahkan batupasir dan batulempung. Hasil akhir dari proses ini adalah sand probability cube. Sand probability cube ini selanjutnya diinterpretasi dan digunakan untuk memprediksi ekstensi dari sand di zona Utama. Hasil interpretasi menemukan beberapa target baru di daerah dimana tidak ada kontrol dari sumur dan amplitudo seismic tidak menunjukkan karakteristik khusus. Berdasarkan hasil interpretasi ini optimalisasi trayektori dan desain beberapa sumur dilakukan.
.....Deterministic seismic inversions were performed using PSTM (Pre-stack time migration) data in the Coki field, Kutai Basin. The study concentrated on the Peciko Main Zone (~3 km burial depth) which is the main gas producing interval of the field.
The main objectives of this project were to identify and map sand and possibly to define new targets for future development wells. Until 2012, seismic data had little contribution to well planning for this interval since their resolutions are poor and the seismic images only show the thick packages of stacked reservoirs. A rock physics feasibility study on P-impedancevs. Poisson’s Ratio crossplot showed that water and gas sands overlap each other significantly, meanwhile sand are discriminated from shale in particular for good quality sand. Lithoseismic classification is done using inverted P-impedance and Poisson’s Ratio to discriminate sand from shale. The final result is sand probability cube. Sand probability cube is then interpreted and used to define possible extension of sand limit for Main Zone.The final interpretation discovered several new targets where there is no well control and the seismic amplitudes didn’t show any distinctive characteristics. Then well trajectories are optimized using defined sand extension in
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