# Pemodelan numerik reservoar dikonstrain oleh analisis avo studi kasus zona dangkal lapangan Brian, Kalimantan Timur = Numerical reservoir modeling constrained by avo analysis case studies of shallow zone Brian field East Kalimantan

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Abstrak

[Lapangan Brian terletak pada bagian selatan Delta Mahakam dengan struktur geologi antiklin dengan sesar. Setelah 40 tahun diproduksi, lapangan ini memerlukan strategi pengembangan lapangan yang baru untuk meningkatkan produksi. Zona dangkal merupakan kandidat kuat untuk target produksi selanjutnya. Untuk merencanakan strategi pengembangan lapangan selanjutnya, diperlukan pemahaman karakterisasi reservoir & cadangan estimasi yang baik, penelitian ini
mengusulkan metode yang mengintegrasikan geofisika, petrofisika dan
pemodelan reservoar. Langkah-langkah penelitian yang telah dilakukan antara lain; 1) rekonstruksi struktur geologi bawah permukaan sebagai referensi pemodelan struktur 3 dimensi, 2) rekonstruksi distribusi facies dan zona prospek hidrokarbon menggunakan atribut RMS dan Analisis AVO, (3) perhitungan volume hidrokarbon. Hasil dari analisis AVO dapat menunjukkan respon gas yang cukup jelas pada reservoar E10-3, selanjutnya peta penyebaran facies batupasir channel di
interpretasi dengan menggunakan atribut RMS seismik. Dengan pemodelan numerik reservoar pada reservoar E10-3 didapatkan cadangan gas yang ekonomis. Berdasarkan analisis AVO & pemodelan numerik reservoar, optimalisasi target sumur baru dapat dilakukan pada reservoar E10-3 di kedalaman -1000 mdpl agar dapat meningkatkan produksi hidrokarbon Lapangan Brian khususnya zona
dangkal.;Brian Field is located in the southern part of the Mahakam Delta with geological structure of anticline with fault. After 40 years of production, this field requires field development of new strategies to improve production. Shallow Zone is a strong candidate for the next production targets. To plan a strategy of further field development, reservoir characterization and understanding required reserve estimates are good, this study proposes a method that integrates geophysical, petrophysical and reservoir modeling. The steps of research that has been conducted, among others; 1) reconstruction of the subsurface geological structure as the reference for the 3-dimensional modelling, 2) reconstruction of the facies distribution and hydrocarbon prospects Zone using RMS attributes and RMS AVO analysis, (3) calculation of hydrocarbon volumes. The results of the AVO analysis can show quite clearly that the gas response on the E10-3 reservoir, and then channel sandstone facies map distribution interpreted by using RMS seismic attributes. With reservoir numerical modeling in reservoir E10-3, resulting an economical gas reserves.
Based on AVO analysis and numerical reservoir modeling, optimization targets new well can be done on Reservoir E10-3 in depth -1000mTVDSS in order to increase the production of hydrocarbons, especially Shallow Zone Brian Fields, Brian Field is located in the southern part of the Mahakam Delta with geological structure of anticline with fault. After 40 years of production, this field requires
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