INTISARI

Analisis Petrofisika serta Perbandingan Perhitungan Volumetrik Cadangan Hidrokarbon antara Model Berbasis Sel dan Metode Integrasi Numerik di Lapangan VO, Sub Cekungan Jambi, Jambi

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Lapangan VO merupakan lapangan yang memiliki potensi hidrokarbon. Perhitungan volumetrik pada lapangan ini perlu dilakukan untuk mengetahui besarnya kandungan hidrokarbon didalamnya. Sehingga dilakukan analisis petrofisika dan perhitungan volumetrik cadangan hidrokarbon untuk menghitung volume cadangan hidrokarbon pada Formasi Air Benakat. Analisis petrofisika dilakukan dengan perangkat lunak *Paradigm Geolog 7.0.*. Interpretasi data seismik 3D dilakukan dengan perangkat lunak *Schlumberger Petrel 2021*. Pengolahan data seismik bertujuan untuk mendapatkan volume *bulk* dengan pendekatan model berbasis sel. Pendekatan lain perhitungan volume *bulk* dilakukan berdasarkan metode integrasi numerik dilakukan secara komputasi berbasis *Python's script*. Volume *bulk* yang didapatkan digunakan dalam perhitungan cadangan hidrokarbon. Hasil penelitan menunjukkan rata-rata nilai parameter petrofisika pada zona prospek hidrokarbon Formasi Air Benakat antara lain volume serpih 16,0%, porositas efektif 27,0%, saturasi air 63,0%, dan permeabilitas 215,53 mD. Nilai volume cadangan hidrokarbon berdasarkan perhitungan berbasis sel sebesar 8,55 juta m^3, metode trapezoidal sebesar 8,63 juta m^3, metode piramida sebesar 8,58 juta m^3, dan Aturan Simpson 3/8 sebesar 8,57 juta m^3. Rasio error relatif hasil perhitungan metode trapezoidal, piramida, dan Aturan Simpson 3/8 dengan perhitungan berbasis sel sebesar 0,93% untuk metode trapezoidal, sebesar 0,35% untuk metode piramida, dan sebesar 0,23% untuk Aturan Simpson 3/8. Aturan Simpson 3/8 menunjukkan hasil yang paling mendekati dari perhitungan berbasis sel.

Kata kunci: petrofisika, model berbasis sel, metode trapezoidal, metode piramida, Aturan Simpson 3/8, volume hidrokarbon

ABSTRACT

Petrophysical Analysis and A Comparison of Hydrocarbon Volumetric Calculation Between Cell-Based Model and Numerical Integration Method in VO Field, Jambi Sub-Basin, Jambi

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VO field is one of the potential hydrocarbon field. Volumetric calculations shall be done to determine the amount of hydrocarbon content of this field. Petrophysical analysis and volumetric calculation of hydrocarbon reserves were carried out to calculate the volume of hydrocarbon reserves in the Air Benakat Formation. Petrophysical analysis and hydrocarbon volumetric calculation were carried out to calculate the volume of hydrocarbon reserves in the Air Benakat Formation. Petrophysical analysis was performed by Paradigm Geolog 7.0 software. 3D seismic data interpretation was performed by Schlumberger Petrel 2021 software. Seismic data processing aims to obtain bulk volume using a cell-based model approach. Another approach to calculate the bulk volume is based on numerical integration method. The method calculated computationally based on the Python's script. The bulk volume obtained is used in the calculation of hydrocarbon reserves. The results of the research show that the average petrophysical parameters in the hydrocarbon prospect zone of the Air Benakat Formation include shale volume is 16.0%, effective porosity is 27.0%, water saturation is 63.0%, and permeability is 215.53 mD. The volume of hydrocarbon reserves based on cell-based calculations is 8,55 million m^3, the trapezoidal method is 8,63 million m^3, the pyramid method is 8,58 million m^3, and Simpson's 3/8 rule is 8,57 million m^3. The error ratio percentage between the results of the trapezoidal method, pyramidal method, and Simpson 3/8 rule with cell-based calculations is 0,93% for the trapezoidal method, 0,35% for the pyramid method, and 0,23% for the Simpson's 3/8 rule. The Simpson's 3/8 is showing the closest calculation result to the cell based model.

Keywords: petrophysics, cell-based model, trapezoidal method, pyramid method, Simpson's 3/8 rule, hydrocarbon volume