

**Karakterisasi Reservoir Batu Pasir Menggunakan Inversi Impedansi
Akustik Dan Multiatribut *Multilayer Feed Forward Neural Network* Studi
Kasus Lapangan Poseidon Australia**

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ABSTRAK

Dearah penelitian terletak di barat laut Australia (Poseidon 3D Browse Basin). Cekungan Browse memiliki Potensial *source rock* yang terletak pada sukesi *lower-middle Jurassic* yaitu formasi plover. Penelitian ini ditujukan untuk mengkarakterisasi reservoir batu pasir formasi plover menggunakan metode inversi impedansi akustik (*model-based*) dan *multilayer feed-forward neural network* (MLFN). Inversi *model-based* yang dilakukan adalah untuk mendapatkan sebaran nilai impedansi akustik dari volume seismik dengan konsep mengestimasi tras seismik sintetis berdasarkan model awal yang telah dibuat dengan error yang kecil. Sedangkan metode MLFN adalah untuk mendapatkan sebaran nilai porositas dari volume seismik, dengan konsep menentukan bobot optimal yang dihasilkan dari training data, bobot optimal tersebut digunakan untuk meminimalkan nilai error antara nilai log target yang sebenarnya dan nilai log target hasil prediksi. Setelah dilakukan inversi *model-based* dan multiatribut MLFN hasil menunjukan zona target reservoir batupasir memiliki rentang nilai porositas dari 14.5 % hingga 21.9% dan impedansi akustik dari 10668 ((m/s)*(g/cc)) – 11149 ((m/s)*(g/cc)). Zona reservoir batu pasir tersebut dibagi menjadi dua zona yaitu, zona satu terletak dekat dengan sumur poseidon 1, boreas 1, dan poseidon 2, dan zona dua terletak dekat sumur Proteus 1 ST2. Berdasarkan hasil analisis log untuk mengetahui keberadaan hidrokarbon ditemukan cadangan hidrokarbon pada sumur boreas 1 dan poseidon 1.

Kata kunci : Inversi *Model-Based*, MLFN, Porositas, Batu Pasir

***Characterize Reservoir of Sand Stone Using Model-Based Inversion And
MLFN Multiatribut Study Case Poseidon 3D Field***

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ABSTRACT

*The research area is located in northwest Australia (Poseidon 3D Browse Basin). The Browse Basin has a potential source rock which is located in the succession lower-middle Jurassic is a plover formation. This study aims to characterize the plover formation sandstone reservoir using acoustic impedance inversion (model-based) and multilayer feed-forward neural network (MLFN) methods. inversion Model-based is done to get the distribution of the acoustic impedance value of the seismic volume with the concept of estimating synthetic seismic trace based on the initial model that has been made with small errors. While the MLFN method is to obtain the distribution of the porosity value of the seismic volume, with the concept of determining the optimal weight resulting from training data, the optimal weight is used to minimize the error value between the actual target log value and the predicted target log value. After the inversion was carried model-based MLFN and multi-attribute out, the results showed that the target zone of the sandstone reservoir had a porosity value ranging from 14.5% to 21.9% and acoustic impedance from $10668 ((m/s) * (g/cc)) - 11149 ((m/s) * (g/cc))$. The sandstone reservoir zone is divided into two zones, zone one is located close to wells poseidon 1, boreas 1, and poseidon 2, and zone two is located near wells Proteus 1 ST2. Based on the results of log analysis to determine the presence of hydrocarbons, hydrocarbon reserves were found in boreas 1 and poseidon 1 wells.*

Keywords: *Model-based Inversion, MLFN, Porosity, Sandstone*