Identifikasi sebaran reservoir menggunakan metode Probalistic Neural Network Pada lapangan 'OZ', cekungan Bonaparte = Identification of reservoir distribution using probabilistic neural method field network 'OZ', Bonaparte

Nabila Prihandina Purwanto, author

Abstrak

Potensi hidrokarbon di Lapangan 'OZ', Cekungan Bonaparte belum dimanfaatkan karena risiko pengeboran yang tinggi yang disebabkan oleh heterogenitas reservoir. Karena sifat reservoir yang heterogen, maka dilakukan identifikasi dan karakterisasi untuk melihat sebaran litologi dan fluida reservoirnya. Metode Probabilistic Neural Network (PNN) adalah metode utama dalam analisis multi-atribut untuk menemukan hubungan nonlinier antara data seismik dan data sumur di Lapangan 'OZ' dan kemudian menghasilkan model untuk distribusi data sinar gamma, porositas, dan saturasi air dengan nilai koefisien korelasi masing-masing pelatihan sebesar 0,8871, 0,9778, 0,9719 dan koefisien korelasi validasi sebesar 0,7836, 0,8554, 0,8187. Integrasi antara model distribusi data sinar gamma, porositas, saturasi air, ditambah dengan hasil inversi impedansi akustik (AI), dapat menjadi sarana untuk mengklasifikasikan dan mengidentifikasi distribusi reservoir hidrokarbon. Lapangan 'OZ' memiliki karakteristik reservoir yang mengandung gas hidrokarbon dan memiliki litologi batupasir bersih dengan sesar normal sebagai traps serta batupasir rapat dan batuan serpih sebagai seal yang tersebar di bagian Selatan dan Tengah lapangan OZ.

The hydrocarbon potential in the 'OZ' Field, Bonaparte Basin has not been exploited due to the high drilling risk caused by reservoir heterogeneity. Due to the heterogeneous nature of the reservoir, identification and characterization were carried out to see the distribution of lithology and reservoir fluids. The Probabilistic Neural Network (PNN) method is the main method in multi-attribute analysis to find a nonlinear relationship between seismic data and well data in the 'OZ' Field and then generate a model for the distribution of gamma ray, porosity, and water saturation data with the respective correlation coefficient values. -each training is 0.8871, 0.9778, 0.9719 and the validation correlation coefficient is 0.7836, 0.8554, 0.8187. The integration between the distribution model of gamma ray data, porosity, water saturation, coupled with the results of acoustic impedance inversion (AI), can be a means to classify and identify the distribution of hydrocarbon reservoirs. The 'OZ' field has reservoir characteristics containing hydrocarbon gas and has a clean sandstone lithology with normal faults as traps as well as dense sandstone and shale rock as seals which are scattered in the Southern and Central parts of the OZ field.