Analisis Persebaran Karbonat Formasi Lower Baturaja di Lapangan "RE" Cekungan Sunda menggunakan Inversi Seismik Simultan dan Pendekatan Bayesian = Analysis of Carbonate Distribution of The Lower Baturaja Formation in The "RE" Field of The Sunda Basin using Simultaneous Seismic Inversion and Bayesian Approach

Ruth Emmanuella Prinscillia, author

Abstrak

Penelitian dilakukan di Cekungan Sunda, satu cekungan produktif penghasil migas di Indonesia. Secara geografis, Cekungan Sunda terletak di antara Sumatera dan Laut Jawa. Target penelitian berada pada Formasi Baturaja bagian bawah (Lower Baturaja) yang terindentifikasi sebagai salah satu zona reservoir yang tersusun atas batuan karbonat. Pada Formasi Lower Baturaja dilakukan penelitian untuk mengidentifikasi probabilitas sebaran karbonat berdasarkan volume elastik hasil inversi simultan dengan data 3D seismik prestack dan pendekatan Probabilitas Bayesian. Metode Probabilitas Bayesian ini digunakan untuk memprediksi litologi atau mengklasifikasikan data sumur berdasarkan hasil inversi pre-stack, yaitu inversi simultan. Berdasarkan hasil inversi simultan, didapatkan nilai impedansi akustik (Zp) dengan rentang nilai 24272 ((ft/s)*(g/cc)) – 34816.5 ((ft/s)*(g/cc)) dan Vp/Vs ratio dengan rentang nilai 2.38 – 2.46 (unitless). Volume elastik ini akan diturunkan kembali ke dalam data log dan dikalkulasikan dengan pendekatan Bayesian untuk mengetahui probabilitas persebaran karbonat dan most probable facies yang terdapat pada Formasi Lower Baturaja. Persebaran karbonat cenderung berada di arah utara – barat laut dan semakin menipis atau berkurang di arah selatan – tenggara Formasi Lower Baturaja.
.....This study conducted in the Sunda Basin, one of Indonesia's productive hydrocarbon-producing basins. Geographically, the Sunda Basin is located between Sumatra and the Java Sea. The research target is in the Lower Baturaja Formation, identified as one of the reservoir zones composed of carbonate rocks. The study aimed to identify the probability distribution of carbonates based on elastic volumes resulting from simultaneous inversion using pre-stack 3D seismic data and the Bayesian Probability approach. This Bayesian Probability method is used to predict lithology or classify well data based on the results of pre-stack inversion, specifically simultaneous inversion. Based on the simultaneous inversion results, the acoustic impedance (Zp) values range from 24,272 ((ft/s)*(g/cc)) to 34,816.5 ((ft/s)*(g/cc)), and the Vp/Vs ratio ranges from 2.38 to 2.46 (unitless). This elastic volume will be converted back into log data and calculated using the Bayesian approach to determine the probability of carbonate distribution and the most probable facies present in the Lower Baturaja Formation. The carbonate distribution tends to be in the north-northwest direction and gradually thins or decreases towards the south-southeast direction of the Lower Baturaja Formation.