

Karakterisasi reservoir sandstone menggunakan metode inversi acoustic impedance dan analisis petrofisika studi kasus lapangan "Deju" Formasi Talang Akar, Sub-Cekungan Ciputat, Jawa Barat Utara =
Characterization of sandstone reservoir using inversion acoustic impedance and petrophysical analysis case study of "Deju" Field in Talang Akar Formation, Ciputat Sub-Basin, North West Java

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Abstrak

Penelitian dilakukan pada reservoir batupasir di Lapangan "Deju" Formasi Talang Akar, Sub Cekungan Ciputat, Jawa Barat Utara. Struktur geologi yang berkembang di daerah penelitian adalah setengah graben dengan fasies pengendapan yang berkembang dari endapan fluvio-delta hingga endapan laut dangkal di puncak formasi Talang Akar. Karakterisasi waduk di lapangan sangat penting terutama dalam menentukan zona prospek waduk yang akan dikembangkan. Oleh karena itu, identifikasi sebaran litologi batuan reservoir dilakukan dengan menggunakan metode inversi seismik post stack dan sifat fisik reservoir menggunakan analisis petrofisika dapat memudahkan interpreter dalam mengkarakterisasi suatu reservoir. Metodologi penelitian meliputi pengolahan data seismik dan wireline logging, interpretasi horizon dan sesar, pembuatan peta struktur waktu, inversi seismik, dan analisis parameter petrofisika. Dengan metode inversi impedansi akustik seismik didapatkan bahwa trend sebaran reservoir batupasir hanya terkonsentrasi disekitar cekungan dengan range nilai impedansi akustik berkisar antara $(8600 - 11000) (m / s) * (g / cc)$. Dalam perhitungan petrofisika diketahui bahwa sumur LL1 dan LL3 memiliki prospek hidrokarbon yang relatif baik, sedangkan sumur LL4 merupakan sumur prospek non hidrokarbon (dry hole).

..... The research was conducted at a sandstone reservoir in the "Deju" Field of the Talang Akar Formation, Ciputat Sub Basin, North West Java. The geological structure that develops in the study area is a half graben with depositional facies that develops from fluvio-deltaic deposits to shallow marine deposits at the top of the Talang Akar formation. Reservoir characterization in the field is very important, especially in determining the zone of the reservoir prospect to be developed. Therefore, identification of reservoir rock lithology distribution is carried out using post stack seismic inversion method and reservoir physical properties using petrophysical analysis can facilitate interpreters in characterizing a reservoir. The research methodology includes seismic data processing and wireline logging, interpretation of horizons and faults, creation of time structure maps, seismic inversion, and analysis of petrophysical parameters. With the seismic acoustic impedance inversion method, it is found that the distribution trend of the sandstone reservoir is only concentrated around the basin with a range of acoustic impedance values ranging from $(8600 - 11000) (m / s) * (g / cc)$. In petrophysical calculations, it is known that LL1 and LL3 wells have relatively good hydrocarbon prospects, while LL4 wells are non-hydrocarbon prospects (dry hole).