

Application of Post-Stack and Pre-Stack Seismic Inversion for Prediction of Hydrocarbon Reservoirs in a Persian Gulf Gas Field

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Abstract : Seismic inversion is a technique which has been in use for years and its main goal is to estimate and to model physical characteristics of rocks and fluids. Generally, it is a combination of seismic and well-log data. Seismic inversion can be carried out through different methods; we have conducted and compared post-stack and pre-stack seismic inversion methods on real data in one of the fields in the Persian Gulf. Pre-stack seismic inversion can transform seismic data to rock physics such as P-impedance, S-impedance and density. While post-stack seismic inversion can just estimate P-impedance. Then these parameters can be used in reservoir identification. Based on the results of inverting seismic data, a gas reservoir was detected in one of Hydrocarbon oil fields in south of Iran (Persian Gulf). By comparing post stack and pre-stack seismic inversion it can be concluded that the pre-stack seismic inversion provides a more reliable and detailed information for identification and prediction of hydrocarbon reservoirs.

Keywords : density, p-impedance, s-impedance, post-stack seismic inversion, pre-stack seismic inversion

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