Carbonate Reservoir Characterization Using Simultaneous Inversion, Batumerah area, South Papua, Indonesia

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ABSTRACT
Batumerah area is located in the Aru Basin, offshore South Papua. One well has already been drilled in this area and gave inconclusive gas discovery. The well indicates that there may have good potential reservoir zone, but no definite information was gathered from the well to confirm the statement. A comprehensive evaluation like reservoir characterization study by integrating well data, seismic data and geological interpretation is required to resolve this uncertainty and predict the hydrocarbon potential of the Batumerah area. Due to limited well data, the most applicable reservoir characterization study in Batumerah Area is Seismic Simultaneous Inversion. Simultaneous inversion is a relatively new and extremely powerful form of inversion. The detailed technique essentially takes several seismic angle stacks and inverts them simultaneously. The result is two primary volumes of absolute rock properties tightly calibrated to the well log data: P-Impedance and S-Impedance. Additional outputs include: Vp/Vs, porosity and Lambda Rho volumes. Having these extra datasets take the explorationist into a new world of possibilities. The application of a simultaneous inversion algorithm to the seismic angle stacks in Batumerah area has demonstrated the ability to minimize uncertainty and addressing some issues regarding the lithology and reservoir properties due to data limitation.
Even though most of well log data are derived from model and only one well exists on the inversion area, nevertheless, the simultaneous inversion results that are interpretative results provide best estimation and prediction for reservoir characterization on the Batumerah area.