

Prestack Seismic Data Inversion for Shale Gas Reservoir Characterization in China

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Abstract

An integrated study of the well Zhao-104 and surrounding wide-azimuth 3D seismic volume within the shale gas reservoir in South China has been conducted with the objective of generating shale formation properties related to fracture orientation and intensity in the area and deriving such reservoir rock properties as data quality allows.

The inversion for P and S impedance and derivative attributes produced volumes that relate to rock properties such as brittleness and rigidity that are likely to impact fracturing. Seismic attribute analysis of anisotropy from elliptical velocity inversion indicates that anisotropy varies horizontally and vertically, and that it is dominantly controlled by stress azimuth, which conforms to the current day stress field as independently determined from borehole break-outs.