

## **Evaluating Sand Body Thickness on Seismically Thin Reservoirs: An Integrated Approach Applied to Kadanwari Field**

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Absolute rock properties like net sand thickness of seismically thin reservoirs cannot be quantified correctly using either amplitude or impedance data only. An original approach developed at Eni combines forward modeling, tuning analysis and rock physics to overcome such limitations. Seismic resolution properties and tuning effects which are usually considered to be constraints for Geophysical work, can be turned to the geophysicist's advantage by using an appropriate workflow combined with an understanding of what reservoir properties can be safely extracted given a certain reservoir body's spatial configuration. We have applied these concepts to the Kadanwari field (Pakistan), where some of the gas bearing reservoirs of Lower Goru sands are below seismic resolution. First a rock physics model is built to relate rock properties to elastic properties; then forward modeling of various rock-property scenarios allows the construction of synthetic seismic wedges that are used to understand the seismic response with decreasing thickness. Finally, tuning charts are built and used to quantify the target reservoir property (net thickness in this case). The net thicknesses output by this workflow are then checked against the results of cluster analysis techniques, and the internal consistency of net maps is checked against the sedimentologists' depositional model; they both proved positive, confirming once more the validity of the approach which has already been tested successfully on several fields in the Egyptian offshore however this technique was first time applied successfully in this part of the world.