

Selecting fit-to-purpose RPM in seismic Reservoir characterization

Lev Vernik, 2018

Abstract

Seismic reservoir characterization can be successfully used in both conventional and unconventional settings. One of the key links in the characterization chain is rock physics, which must explain relationships between seismic attributes and reservoir parameters. Rock physics models (RPMs) are designed to provide insight into reservoir properties, such as shale content, porosity, and saturation, causing specific seismic attribute signatures, e.g., velocities of P- and S-waves, acoustic and shear impedances, and their ratio.

In this presentation I discuss some popular RPMs and demonstrate their performance in a variety of conventional and unconventional environments. Special emphasis is given to categorization of the RPMs as theoretical, hybrid, and empirical, as well as additional model parameters, such as pore geometry, crack density, and effective stress, that may be inverted for during seismic petrophysics analysis of well data and impedance inversion of 3D seismic data.