

Correlating lithologic properties such as porosity and density derived from logs with seismically derived porosity, density and stiffness volumes of a channel reservoir

John R. Fernando

Southern Alberta Institute of Technology

Summary

In an ongoing effort to extract more meaningful information from seismic 3D volumes, multi-attribute analysis and probabilistic neural network (PNN) methods are an effective means of generating 3D volumes of lithologic properties such as porosity, density and rock stiffness. These volumes can be correlated with porosity and density measurements derived from well logs. Any mathematical relationship that can be derived from cross-plotting porosity and p-impedance logs can be applied to an p-impedance volume derived from pre-stack inversion to derive a porosity volume. The stiffness attribute can also be generated from p-impedance and s-impedance volumes derived from pre-stack inversion.