

Rock properties for prediction — uses and abuses

TIMOTHY E. JOHNSON

Sarawak Shell Berhad

Locked Bag No. 1

98009 Lutong, Sarawak, Malaysia.

e-mail: Timothy.Johnson@shell.com

Understanding of rock properties is essential to all disciplines in the upstream industry. Rock properties are of direct interest to the explorer, developer or producer in helping to predict the acoustic response expected under different pore-fill conditions with varying lithologies. This prediction is aided and sometimes complicated by natural variation in stress regime, burial history, pressure, temperature, depositional facies, rock type, depth, diagenetic history and hydrocarbon fill history. All of these conditions are interrelated through the plate tectonic setting, climatic conditions and therefore geological history. Without understanding the nature of the inter-relationship and how it is expressed in *in-situ* rock properties there is a large possibility of misinterpreting and misusing rock properties. With an understanding, or at least appreciation, of these high-level controls, rock properties can be used to predict acoustic response in areas of sparse well control for exploration purposes, development well planning and production drilling. The only difference is the scale of the variation in the primary controls and their spatial rate of change. Examples of applications and potential pit-falls are given from the local region.