

Quantitative Seismic Interpretation – An Earth Modeling Perspective

Damien Thenin¹ and Ron Larson¹

¹*RPS, Calgary, AB, Canada*

Abstract

Earth models are routinely used in the oil & gas industry to integrate multidisciplinary data and to predict the subsurface conditions. While most earth models predict reasonably well at the field scale, they often fail to accurately predict the subsurface conditions at a specific location, especially in stratigraphically complex reservoirs. Several advanced 3D seismic interpretation workflows are available to create more reliable earth models: inversions, seismic stratigraphy and geomorphology amongst others. But these workflows are often used as standalone projects. In addition a common pitfall for interpreters is to go from a qualitative to a quantitative interpretation without accounting for the workflows assumptions and limitations. The purpose of this paper is to review the different ways of integrating advanced 3D seismic interpretation results to better constrain an earth model (from pre and post-stack inversions, to seismic stratigraphy and geomorphology). Various examples will be used to discuss pitfalls and practical solutions for a successful quantitative seismic interpretation. Particular attention will be paid to the use of local geostatistics to integrate 3D seismic data into an earth model.