Direct Gas Sand Quality Estimation from Seismic Inversion, a Successful Story from Hai Thach Field, Nam Con Son Basin, Vietnam

S. Phan[1], H. M. Hoang[1], and H. N. Tran[1]

[1]Bien Dong Petroleum Operating Company

Abstract

This paper introduces a new approach to predict reservoir quality along a particular deviational well-path to justify the well location optimization process. This employs an inversion algorithm to convert available seismic data at well locations into some petro-physical properties that indicate reservoir quality, such as porosity, water saturation. We show successful results of this approach applied on two wells in gas bearing reservoirs in Hai Thach Field, Nam Con Son Basin, offshore of Vietnam.

The introduced method offers a quick look at the reservoir quality at a proposed well location by directly inverting the seismic data into reservoir properties. It requires a starting model acting as an initial guess, guiding the algorithm to the optimal result that satisfies seismic traces extracted along the well-bore. The starting model can be generated from interpreted petro-physical parameters of a nearby well.

This method is proven to be reliable at well locations where the sand is clean and its thickness is within seismic resolution. Additional steps to calibrate the results with the reservoir conditions are recommended to improve the accuracy of the method.