Case Study: SAGD Steam Flood Project Using Simultaneous Inversion of Pre-Stack Seismic Data

Arcangelo Sena

Veritas Hampson-Russell, 10300 Town Park Dr., Houston, TX 77072

ABSTRACT

We will review a case history illustrating the workflow and technologies applied for a SAGD steam flood project using a new approach to the simultaneous inversion of pre-stack seismic data which produces estimates of P-impedance, S-impedance and density. The method is based on three assumptions: that the linearized approximation for reflectivity holds, that PP and PS reflectivity as a function of angle can be given by the Aki-Richards equations, and that there is a linear relationship between the logarithm of P-impedance and both S-impedance and density. The use of petrophysical constraints together with multi-angle wavelet analysis provides a more robust solution for rock property extraction through a coupling of Vp and Vs, as well as Vp to density.