

5.5 AVA ANALYSIS OF MULTI-COMPONENT SEISMIC WAVE MODES (P-SV, SV-P)

Saygın İleri¹

¹Senior Geophysicist, Data Processing Center, Turkish Petroleum (TPAO), Ankara, Türkiye

*Corresponding author e-mail: sileri@tpao.gov.tr

ABSTRACT

The amplitude variation with angle (AVA) analysis contributes significantly in quantitative seismic interpretation by delineation of rock properties consisting of lithology, porosity and pore fluids. P-P AVA analysis has become a common practice in the oil and gas industry to reduce the hydrocarbon exploration risks. In this study, rather than using conventional P wave mode, converted wave modes (P-Sv and Sv-P) are examined through the well log measurements from Midland basin and a worldwide collection on adjacent shale, brine and gas sands. With the fact that Sv-P data can be recorded with vertical displacement source and receivers, Sv-P AVA analysis plays a critical role to exploit shear wave information with less cost in comparison with P-Sv wave mode analysis. This work represents a pioneer study to distinguish brine and gas sands on converted mode AVA investigations by leveraging the potential of shear waves with a new cross-plot attribute developed from Sv-P reflectivity.

KEYWORDS: AVA, converted wave modes, P-Sv, Sv-P