

## **Orthorhombic Imaging for Orthogonal Wide Azimuth Surveys in Mississippi Canyon, Gulf of Mexico**

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### **Abstract**

In areas of complex geology, especially where fractures are present, azimuthal anisotropy needs to be seriously considered. Tilted Transverse Isotropy (TTI), which only considers polar anisotropy, is not sufficient for explaining moveout fluctuations detected in different azimuthal sectors. Orthorhombic anisotropy (ORT), which describes both azimuthal and polar anisotropy, provides a more comprehensive model than allowed by the simpler Transversely Isotropic (TI) model. In this paper we present a methodology for ORT model building and imaging. The effectiveness of ORT imaging is demonstrated through application to Orthogonal Wide Azimuth (OWAZ) data from the Gulf of Mexico (GoM). The process of orthorhombic model building is introduced and orthorhombic tomography is applied to invert for azimuth-dependent anisotropic parameters. By resolving the inconsistencies in residual moveout for different azimuths, it is demonstrated that ORT imaging improves gather flatness in all azimuths and produces better image focusing.