Please fill in the name of the event you are preparing this abstract for.	International Petroleum Technology Conference
Please fill in your 5-digit IPTC manuscript number and IPTC Control number.	IPTC-19270-MS 19IPTC-P-1358-IPTC
Please fill in your abstract title.	Estimating anisotropic parameters via Joint Migration Inversion.

Please fill in your author name(s) and company affiliation.

Given Name	Surname	Company
Abdulrahman	Alshuhail	Sauid Aramco

Abstract

Anisotropic kinematics in seismic-data are rarely taken into account in imaging for conventional seismic exploration. The difficulty lies in that anisotropic parameters are notoriously difficult to estimate for surface seismic data. This paper aims at incorporating anisotropic kinematics in the Joint Migration Inversion (JMI) scheme. The method will estimate the reflectivities, velocities and anisotropic parameters for a surface seismic data-set. Internal multiples are included in the inversion process. Hence, they are not treated as noise and attenuated. Rather they are signal that will contribute towards inversion. The method we present is a data-domain inversion-based imaging and anisotropic velocity analysis approach. It is primarily based on the Joint Migration Inversion (JMI) method. However, we incorporate anisotropy in modeling and inversion. In this method the scattering and propagation are orthogonal. The scattering operator will generate the reflectivities while the propagation operator will generate the anisotropic velocity models. This strict separation between the operators allows the method to be flexible in that inaccurate starting models can be handled. The method is relatively hands off in terms of user interference once the initial setup is defined. Multiples along with the primaries are utilized in the imaging process. Anisotropic kinematics are significant in the data and if not taken into account will obscure the inversion results. On the same note internal multiples clearly are significant in the data and if not taken into account they will obscure the inversion results. We demonstrate the effectiveness of the method to estimate the anisotropic velocities and the limitations associated with trade-off between the estimated anisotropic parameters. We also demonstrate the methods ability to image the internal multiples. The method is novel in that it is a new way of updating seismic reflectivities, velocities, and anisotropic parameters all at the same time. This is because modeling and inversion are separated into orthogonal operators (scattering and propagation). Moreover internal multiples are considered as signal rather than noise in this inversion process. Hence they will contribute towards estimating the subsurface parameters.