# Thin Reservoir Characterization in Daqing Saertu Oilfield Using OVT Imaging Data

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## Abstract

This study utilizes OVT imaging data to characterize thin sandstone reservoirs of depositional layers from sandstone/shale interbeds in Daqing Saertu Oilfield. Due to the shallow burial depth (800 – 1200m) of the target interval, we only migrate OVT gathers that are not affected by the mutation. These include near-offset gathers and some mid-offset gathers. Then we select migrated OVT gathers that have near-offset and whose azimuth are parallel to the anticline axis to predict reservoirs, since the target interval and its overlaying strata share the same structural characteristic: a long-axis anticline with two smooth wings (dip angle less than 5 degrees). Forward modeling results show that these OVT data have one full coverage over the target interval. We use software solutions to automatically track the reflective marker horizon (S2) within the target interval for all selected OVT data and post-stack data. Then we calculate the time gaps between the S2 of post-stack data and each horizon within the target interval interpreted by post-stack data and well data. We get the horizons of target interval within selected OVT data by adding these time gaps to the S2 of the OVT data. For each set of OVT data, we establish an isochronal stratigraphic framework of depositional layers for the target interval based on horizons from the previous step. The framework is then used to extract stratal slices from the OVT data. Following the principle of “seismic trend guidance, well point microfacies control” and based on the geomorphological characteristics of channels, we use series of stratal slices of a depositional layer to find and describe channel sand bodies. Compared with previous results, using OVT data helps predict and describe more point-bars and narrow channel sand bodies from composite channel sandstones of depositional layers. The consistency rate of seismic data

and well data is also improved. Furthermore, the width of the narrowest channel described decreases from 30 meters to 15 meters which is close to the seismic lateral resolution. The results show that for thin reservoirs, OVT data contains useful information that would otherwise be smoothed out by traditional stacking. The information can be extracted by stratal slices and selected by geomorphological characteristics of channels and characterized by integrating with well data. The methods developed in this study provide a reference for reservoir research of thin sandstone/shale interbeds with 3D seismic data in both exploration and development zones.

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