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Seismic Sedimentology Approach for Interpretation and Prediction of Thin Bedded-Sandstone Reservoirs in the Dongying Depression, Eastern China

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Seismic sedimentology has become a powerful approach for the interpretation of seismic data in any geological setting. It has resulted from its application of 3D seismic data in delineating and characterizing thin-bedded reservoirs, which are often below seismic resolution. The strength of the common traditional methods is limited to thick succession strata and offers a limited application for thin beds analysis. The objective of the study is to apply seismic sedimentology in predicting and understanding the lateral distribution of thin-bedded sandstone reservoirs deposited in the semi-deep lacustrine environment in the Dongying depression. The Formation interval is characterized by thickness variation and complex geology in which the stratal slicing offers the best interpretation approach for the study. A global optimization seismic interpretation approach that allows interpretation of a full dimension large number of horizons was adopted to facilitate and enhance the interpretation. These horizons were used to produce a high-resolution 3D relative time geological Model (RGT). The geomodel and the seismic volume served as the main inputs during the extraction of stratal slices. The results of this work have provided opportunities for improvement in reservoir understanding, distribution and development. Interpretation of seismic amplitude dispersal pattern displayed in a horizontal view provided an improved understanding of the spatial distribution of thinly sandstone reservoirs in the formation interval and the possible controlling factors for their distribution. The results reveal that the sandstone reservoirs are well developed with the prevalent spatial distribution with the faults appear to be important factors for reservoir distribution.

Biography

Marco Shaban Lutome is a PhD research student in the School of Geosciences at China University of Petroleum (East China). His interests are Seismic Sedimentology and Reservoir characterization. His current project is focused on seismic sedimentology and depositional systems of deep lacustrine delta-fed turbidites in the Dongying depression (Eastern China).