

Structural evolution of South Eastern Kohat deciphered through 3D geoseismic model using move software, Shakardarra Area, KPK, Pakistan

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Abstract

Geologically Shakardarra is evolved through multiple episodes of deformation. In the current research structural evolution of south eastern Kohat is shown through 3D geoseismic model. It is prepared by integrating surface structural geological data and subsurface seismic reflection data. At surface doubly plunging anticlines and synclines are evolved on evaporites as detachment folds truncated by thrust faults along their limbs. In subsurface stratigraphic packages are marked on seismic sections based on regional stratigraphic studies and dominant reflections. The seismic data shows that thrust faults emanates from basal detachment located at sedimentary crystalline interface cutting up section to surface or lose their displacement to splay or back thrusts. At surface Shakardarra fault, Tolabangi fault, Chorlaki fault and axial trend of fold changes their strike from EW to NS which narrates that thrust and axial trend of folds are rotated along vertical axis by influence of Kalabagh strike slip fault. The current research suggests that Shakardarra is sequentially evolved in three episodes of deformation. In the first phase detachment folds developed on Eocene evaporites which are truncated by thrust faults emanating from basal detachment in second phase. In the third phase early formed folds and faults are rotated along vertical axis by the influence of Kalabagh fault.