

Tectonic map of the central Sulaiman fold belt and its structural implications

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The Sulaiman lobe represents about 400 km wide and as much long zone of foreland deformation along the western terminus of the Indian subcontinent. The fold-and-thrust belt has a curved, convex to the south, expression, in part due to oblique to the plate convergence vector plate geometry, and undergoes through an early stage of foreland thrusting. It is considered as the most prolific hydrocarbon province of Pakistan. However, it is not yet fully mapped/understood, as a seismically active and economically significant zone of hydrocarbon exploration, in the central and southern parts of the fold belt, in-part due to political instability in the Mari-Bugti districts. Mainly, Tertiary and Mesozoic strata comprising marine platform sequence and Neogene Molasse sediments are exposed in this region. These strata are gently folded and gradually uplifted, towards north, along blind thrusts, in the southern Sulaiman fold belt. Further north, the central Sulaiman fold belt is characterized by relatively complex deformation with the presence of folds and faults. Reconnaissance mapping based mainly on Landsat interpretation (Bannert et al., 1992) interprets nappe style of deformation with consideration of large offset thrust faults in this region. I have mapped the area with combined Satellite Image interpretation, surface geology, and subsurface borehole and seismic reflection data (Jadoon, 2010). This data suggests absence of emergent thrusts with offset exceeding 10 km and allow to recognize reverse fault of limited displacement and offset in the central Sulaiman fold belt. The emergent faults are generally of 10-50 km length with offset of 1-2 km. Many of them are foreland and hinterland verging, bounding tight anticlines of Cretaceous and younger strata as pop-ups. They are interpreted to be related to the seismically active deformation of a roof-sequence and evolution of a passive-roof duplex, in the central Sulaiman fold belt. Some of these faults are observed to show a dominant component of dextral strike-slip displacement, suggesting imprints of transpression and rotation along the western edge of the Indian plate. The map, so produced is hereby introduced to the academician and geoscientists engaged in exploration alike, as a contribution for our understanding of the evolving Sulaiman fold belt in Pakistan and for its significance in Hydrocarbon exploration.

References

Bannert, D., A. Ahmed., A. Cheema, and U. Schäffer, 1992. The structural development of western fold belt, Pakistan. Federal Institute of Geo-sciences and natural resources, Hanover, Germany.

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