

Structural Style of the Eastern Sulaiman Fold-and-Thrust Belt, and Hydrocarbon Exploration

Saif-Ur Rehman K. Jadoon², Muhammad Qasim^{1,2}, Lin Ding^{2,3}, Ishtiaq A. Jadoon⁴

¹Sultan Qaboos University

²Institute of Tibetan Plateau Research, Chinese Academy of Sciences

³University of Chinese Academy of Sciences

⁴Jadoon Manzil

Abstract

Seismic and well data-sets were analyzed to understand the geometry and development along the eastern Sulaiman fold-and-thrust belt (SFTB) located at the western passive margin of the Indian Plate. About 350 km NS oriented monoclinial feature located at the eastern Sulaiman deformation front is interpreted to have a thin- skinned passive roof duplex style of deformation. The decollement with duplication of strata above it is inferred to be located at a depth of 9 km in the Paleozoic pelitic/calcareous strata rather than Eocambrian evaporites near the deformation front. The hinterland propagating passive-roof thrust is located in the thick Cretaceous strata with the presence of pop-ups in the roof sequence. Hydrocarbon prospects are recognized in the roof and floor sequences as pop-ups, duplex sequence as duplexes (Zindapir Anticlinorium), and anticlinal stacks (Fort-Munro) respectively. A 60 km deformed section was restored to an original length of 172 km, giving an overall shortening of 112 km (65%). This 65% shortening in the cover strata from the eastern SFTB is higher than the 50% observed in the SFTB and the Salt Range-Potwar Plateau, but is compatible with the observed stacked duplexes and high structural relief over a narrow zone along the eastern edge of the Sulaiman lobe.