

## STRUCTURAL GEOMETRIES OF COMPRESSIONAL TRAPS IN PAKISTAN

**Ishtiaq A. K. Jadoon**

*Schlumberger Middle East S.A., P.O. Box 4754, Abu Dhabi, U.A.E.*

*Tel.: 971-2-6333600/Fax: 971-2-6334575 Email: [jadoon@abu-dhabi.oilfield.slb.com](mailto:jadoon@abu-dhabi.oilfield.slb.com)*

Many of the discovered and undiscovered oil fields in Pakistan have compressional structural styles. These structures have variable geometry with particular relationship of folds, faults, and fractures. It is critical to understand the geometry and evolution of these structures considering exploration and reservoir evaluation. Kinematically viable and admissible balanced cross-sections provide solutions to many of the questions encountered by the explorationists and geoscientists. These sections involve integration of all available geological (surface geology, Landsat) and geophysical (seismic reflection, borehole images) data to resolve subsurface oilfield structures. Regional balanced crosssections across the Himalayan foreland in north and west Pakistan show a thin-skinned mechanism of deformation with a weak decollement over the basement. The crosssection across central Salt Range/Potwar Plateau in north Pakistan shows an exposed thrust with about 20 km of shortening at the mountain front. The trailing edge of 90-km long thrust sheet is imbricated to form oil-field structures as fault-related folds, triangle zones, and pop-up structures. The cross-section across central Sulaiman fold belt does not show the presence of exposed thrust at the mountain front. Structural features along the balanced crosssection across the Sulaiman fold belt include: (i) low-amplitude, broad concentric (detachment) folds (Sui and Loti gas fields) at the tip of the decollement, (ii) development of ramp and duplex (Pirkoh, Giandari) structures, (iii) out of sequence thrusting, and (iv) tear faults and extensional normal faults in the overthrust wedge. Recently, more oil/gas fields have been discovered from Kohat, Sulaiman, and Kirthar Mountains of complex structural styles. Balanced cross-sections, similar to those discussed through this paper would be useful to resolve oil/gas field structures and their evolution for reservoir evaluation and management in Pakistan.