

# **Tectonic Characteristics of Foreland Fold-and-Thrust Belts in the Southern Junggar Basin, West China**

He, Dengfa, Shuwei Guan, Geng Yang, and Chaojun Zhang, Research Institute of Petroleum Exploration and Development, PetroChina, Beijing, China

The foreland fold-and-thrust belts in the southern Junggar Basin are located between the northern Tianshan Mountains and the Junggar Basin in the western China. They consist of a series of fault-related folding structural belts formed by the large-scale thrusting of the northern Tianshan Mountains into the Junggar Basin since the Miocene. It is characterized by several segments along the east-west trend and several north-south oriented structural belts. On the southern Junggar Boundary Fault, the Carboniferous strata thrust over the Quaternary, exhibiting a distinct fault scarp. The southern Junggar Basin is generally under a trans-pressure setting. Deformation in the southern Junggar Basin occurred from the Permian through to the Quaternary strata and can be subdivided into the upper, middle, and lower deformation layers according to the regional detachment layer of the Paleogene mudstones and the lower and middle Jurassic coal measures.

Under the trans-pressure tectonic setting, the southern Junggar Basin is characterized by multiple detachment deformation and multi-stage superimposed deformation, exhibiting rapid variations in the structural styles both laterally and vertically. The transverse fault has a function of partitioning oil and gas pools. The study on the condition of oil and gas geology has shown that the southern Junggar Basin is rich in oil and gas resources. However, the petroleum exploration in the area is much more difficult owing to its complex structures and the rapid facies change in reservoir sandbodies.