

## **Petroleum Exploration in the Tarim Basin, Northwest China**

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Tarim Basin, located in the northwestern China, is the largest composite basin with an area of  $56 \times 10^4 \text{ km}^2$ . It comprises a Palaeozoic marine cratonic basin and Mesozoic-Cenozoic terrestrial foreland basins. Hydrocarbons have been found in both the Palaeozoic and the Mesozoic intervals with four large fields and 26 small to medium discoveries. Two petroleum-enriched provinces have been identified: (1) the platform area in the central part of the basin, and (2) the foreland basin area near the margin. Tarim Basin has estimated resources of  $229.41 \times 10^8$  tonnes oil and  $113 \times 10^{12} \text{ m}^3$  natural gas.

The oil and gas reservoirs in the platform area are mainly distributed in the Ordovician carbonate, Silurian sandstone and Carboniferous sandstone. Three main accumulation periods occurred in 400 Ma, 115 Ma and 40 Ma, respectively. Oil and gas reservoirs appear to be well developed under the regional seal, associated with unconformities, near fault belts in the platform. The major exploration targets are the Lower Paleozoic carbonate buried hills, the Carboniferous, Silurian, and Triassic siliciclastic reservoirs.

In the foreland basin area, there are multiple sets of source rocks, reservoir rocks and seals. The main gas accumulation periods occurred in 17~10 Ma, 10~3 Ma and 3~1 Ma. Most of the large to middle natural gas discoveries in the foreland basin are “secondary” reservoirs, which are controlled by faults and unconformity. The lower blocks of the foreland thrust belts and the stable slope regions are the favorable belts for the discovery of large-medium size gas fields.