Structural evolution and petroleum habitat of the Precaspian basin

Anatoly M. Nikishin* and Konstantin O. Sobornov**

** Moscow State University, Moscow, Russia, nikishin@geol.msu.ru
*Shell, Moscow, Russia, Konstantin.Sobornov@Shell.com

The Precaspian basin is one of the most prospective basins in Eurasia. Integrated interpretation of regional dataset permit the development of updated, better constrained structural model of the basin.

The following stages of the Precaspian basin development are recognized: (1) Ordovician – rift phase; (2) Silurian to early Devonian – postrift subsidence; (3) Middle Devonian to Frasnian – main rift phase; (4) late Frasnian to Tournasian – postrift subsidence; (5) Carboniferous to Permian – postrift subsidence complicated by foreland basin origination for the Uralian and Scythian orogens; (6) Triassic – regional synrift subsidence; (7) late Triassic to Hettangian – synorogenic sedimentation and regional erosion; (8) Jurassic to Eocene - regional platformal sedimentation; (9) Oligocene to Quaternary – synorogenic sedimentation and erosion.

Ordovician and Devonian rifting took place in a back-arc tectonic environments. Since the Late Devonian the basin was a deep-water trough.

The Carboniferous to Permian history of the basin was a combination of postrift subsidence and foreland basin development. Fold belts were developed along eastern and southern margins of the basin. They were reactivated by transpressional deformations in Triassic.

The bulk of discovered volumes of oil and gas are in subsalt carbonate buildups. New exploration plays may include karstified intervals subcropping major unconformities, including pre-Frasnian and pre-Visean ones. Other potential plays are presalt basin floor funs developed in the inner part of the basin, and thrust related high relief structures developed along eastern and southern margins of the basin.