

**AAPG Annual Convention
Salt Lake City, Utah
May 11-14, 2003**

Daniel D. Schelling¹, David A. Wavrek², Dimir Mirzoev³, Zilfikar Dashtiyev⁴, Dimitri Shlygin⁵ (1) Structural Geology International, LLC, Salt Lake City, UT (2) Petroleum Systems International, Inc, Salt Lake City, UT (3) Dagestan Science Center, Russian Academy of Sciences, Makhachkala, Dagestan, Russia (4) Dagneft, Dagestan, Makhachkala, Russia (5) LukOil Oil Company, Moscow, Russia

Structural Geology and Petroleum Systems of the Dagestan Fold-Thrust Belt and Adjacent Terek-Caspian Foredeep

Located along the northeastern flank of the Greater Caucasus and alongside the Central Caspian Sea, the Dagestan fold-thrust belt is characterized by a combination of deep-seated, south-dipping thrust faults, high-level detachment surfaces, and "tectonic wedging", with thrust transferal occurring within the highly incompetent shales and mudstones of the Oligocene-Miocene Maikop Formation. North of the Dagestan fold-thrust belt, the Terek-Caspian foredeep is a southward-deepening, asymmetric structural depression that began developing as a foreland basin during the middle to late Miocene as a result of compressional deformation, uplift and thrust-loading along the Greater Caucasus. Both the Dagestan fold-thrust belt and the Terek-Caspian foredeep have known commercial hydrocarbon accumulations, though hydrocarbon charge and migration pathways differ between the two structural zones. Within the Dagestan fold-belt, hanging wall anticline structural traps are charged with hydrocarbons sourced from the Oligocene-Miocene Maikop Formation, with migration occurring along pathways facilitated by thrust faults and fracture systems. In contrast, hydrocarbon accumulations located within the Terek-Caspian Foredeep are charged from Triassic-Jurassic source rocks located within the Permo-Triassic graben-system of the East Manych Trough; up-section migration into high-level reservoirs is facilitated by the presence of fault and fracture systems which have developed as a result of Tertiary reactivation of Mesozoic extensional faults. Understanding the structural evolution and petroleum systems of the Dagestan fold-belt and the Terek-Caspian Foredeep will be critical to understanding the hydrocarbon potential of the Central Caspian Sea, and may assist in exploration efforts within other actively deforming thrust belts of the world.