**Petroleum Systems and Distribution of the Oil and Gas Fields in the Iranian Part of the South Tethyan Domain**

Bordenave, Max [1] (1) Mouvoil SA, 75016-Paris, France.

A shallow-water carbonate barrier between South Tethys and a wide shallow-water intracratonic sea hampered water circulation and caused the accumulation of excellent source rocks in depressions in anoxic conditions. These source rocks formed 5 petroleum systems.

For the older systems, Paleozoic (Llandoverian source rocks), Mid-Jur. (Sargelu), L. Jur. (Hanifa-Tuwaiq Mountains/Diyab), E. Cret. (Garau), oil and gas expulsion occurred before the Zagros Folding. Oil migrated along ramps towards low-relief highs and salt-related structures. Oil and gas later re-migrated to the nearest Zagros anticlines;oil was trapped far away from the kitchen where it formed.

In sharp contrast, oil expulsion occurred almost everywhere in the Dezful Embayment after the onset of the Zagros Folding for the Mid-Cret. to E. Miocene System (Albian Kazhdumi, Mid-Eocene to Oligocene Pabdeh source rocks). Oil migrated vertically towards anticlines through fractures. A comparison was made between the amount of oil expelled from the source rocks, as calculated by modelling, and the initial oil-in-place discovered in fields. Because of short distance migration, oils can be linked to the source rocks which generated them using oil-oil and oil-source rock pyrolysate correlation based upon δ13C and biomarkers.

Three of the Petroleum systems have a limited impact on the Iranian reserves. The Mid-Jur. and E. Cret. systems contain few reservoirs associated with their source rocks, most oil cracked in situ in pyrobitumen and gas. Oil from kitchens in the L. Jur. System migrated to the SW edge of the Gavbendi/Qatar Arch, and accumulated in salt-related structures, prior to the deposition of efficient caprocks, resulting in heavy oil and bitumen. The Paleozoic System caused huge gas accumulations (750+ Tcf in Iran) in the Permo-Triassic carbonates of southern Fars and its contiguous offshore. Oil and gas migrated towards the Gavbendi/Qatar Arch where they formed a single gas field with a peripheral oil leg prior to the Zagros Folding. Oil later cracked into pyrobitumen and light oil or gas. Some gas re-accumulated in Zagros anticlines.

The Mid-Cret. to E. Miocene System caused impressive accumulations of oil that represent ~8% global oil reserves in the Dezful Embayment. Oil migrated into Sarvak (Cenomanian) and Asmari (E. Miocene) carbonates capped by the Gachsaran evaporites. Modelling indicates that 90% of the oil originated from the Kazhdumi source rocks.