Geodynamic and Thermal Evolution of the Organic Matter: Example of the Qasbat-Tadla Basin (Central Morocco)

Hassan Er-Raioui[1], Mohammed Bouabdelli[2], Habib Bélayouni[3], and Hassan Chellai[2]
[1] Faculté des Sciences et Techniques de Tanger, laboratoire de Géochimie organique, B.P. 416, Maroc
[2] Faculté des Sciences Semlalia-Marrakech, laboratoire de Géodynamique, U.F.R . « Dynamique de la lithosphère Structure et géoressources », B.P. S.15, Maroc
[3] Faculté des Sciences de Tunis, département de Géologie, laboratoire de Géochimie organique, 1060 Belvédère, Tunisie

The exam of the analysis' results and interpretation of the lithological logs, seismic profiles and isochron maps of the Qasbat-Tadla basin reveals the stratigraphic hiatuses and the lateral variations of thickness. It's a result of a block toppled system having taken birth in a transtension regime. The depocenters, so created, present some oblique directions in relation to the major structural lineaments and correspond to a strike-slips basins. These depocenters, probably of pull-apart type, are affected by a weak subsidence rate. They corresponded to the sheltered zones characterized by an important degree of preservation and permited the accumulation of important quantities of organic matter, which is typically marine plankton.

From the upper Visean to the final Paleozoïc, the basin is affected by a compressive tectonic that is going to generate an orogenic basin in convergence " forland basin ", characterized by the imbricate structures, schistosées and chopped by a very dense fault bundle.

The global tectono-sedimentary system is constituted by the uplifted anticline, gutter syncline and gutter « piggy back » representing the three compartments of the basin which distinct by their geodynamic characters.

The compressive strain, associated to the hot circulations, took place in the thermal conditions corresponding to an anchizonal to épizonal métamorphism. The complementary effects of these parameters let to defer in source rock maturity levels, from the oil production to graphitisation domain.

These differences in the organic matter thermal evolution correspond also to a diachronisme in the generation of hydrocarbons. The reconstitution of the basin thermal burial history established by Genex model confirms this hypothesis and indicates that the generation of hydrocarbons occurs in two phases.

Key words : Hercynian geodynamic, foreland basin, thermic evolution, organic matter, hydrocarbons.