

AAPG HEDBERG CONFERENCE
“Paleozoic and Triassic Petroleum Systems in North Africa”
February 18-20, 2003, Algiers, Algeria

“Structural analysis and evolution of the Rhourde Nouss area during Mesozoic and Cenozoic times”

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The Rhourde Nouss area is characterized by the presence of two main structural directions (NS and NESW) and successive deformations associated with the different tectonic episodes which occurred during Mesozoic and Cenozoic times.

The present-day structural configuration appears to be closely related to the Mesozoic and Cenozoic structural history even if subtle pre-Hercynian traps are likely to exist, but cannot be inferred from the available seismic data.

The high-amplitude structures observed in the area show a deep erosion of the pre-Aptian section and originate mainly from the East-West compressive Austrian phase. This event reactivated the inherited fault pattern with inversion of North-South Palaeozoic faults and dextral strike-slip movements along NE-SW Liassic normal faults. A secondary order extensional episode also occurred during Cretaceous times, producing East-West normal faults. During the Tertiary compressive tectonic events, significant deformations occurred and led to the remodelling of the Cretaceous structures along the NE-SW trends.

Structural trap types and fluid distribution in this area are believed to be controlled by the timing of trap generation, i.e. the influence of the Mesozoic and Cenozoic numerous phases on the inherited complex fault pattern.

Three structural trends can be defined in the area displaying a high structural complexity with reverse and normal faults, and a wide variety of structural styles. To the west, a NE-SW structural trend (Dra Allal, Rhourde Nouss SW, Rhourde Nouss NE) is composed of several drag folds and is associated to a regional fault which acted as a dextral strike –slip fault during Cretaceous times and was slightly reactivated during the Tertiary episode. In the central area, the North-South structural trend (Rhourde Adra S, Rhourde Nouss SE, Central Rhourde Nouss) consists of high-amplitude folds associated with reverse faults. The third structural trend, orientated NE-SW and composed of Rhourde Adra, Rhourde Nouss SE-South, and Meksem fields was strongly remodelled during the Cenozoic tectonic events.