

## **Meskala Gas/Condensate Field: 3D seismic interpretation and attribute analysis**

Asmae Benarchid, Said Ait Brahim, Hakima Jemjami, Abdallah Ait Salem and Mohamed Dakki

ONHYM (Office National des Hydrocarbures et des Mines), Morocco

Meskala gas and condensate field is the biggest discovery so far in Essaouira basin, which is one of the most promising basins in Morocco with a large confirmed hydrocarbon potential. This field is producing gas and condensate from the Upper Triassic sandstones reservoir (TAGI equivalent) which overlies unconformably the Palaeozoic series and sealed by the Triassic-Lower Lias salt. The source rocks are interpreted to be the Silurian black shale. The reservoir is located at a depth of approximately 3500 m from the surface and consists of fluvial sandstone and siltstone red beds, interbedded by shale.

Structurally, Meskala field corresponds to a North-South oriented horst. The latter is subdivided into several smaller blocks which are bounded by North-South trending normal faults with minor throws. These blocks are, occasionally, laterally shifted by East-West strike-slip faults.

Since the discovery by MKL-1 well, ten additional wells were drilled between 1980 and 1985, out of which only four are producers. The dry wells are due to either the absence of sandstone reservoirs or reservoir salt plugging.

Recent studies, based on the newly acquired 3D seismic survey (185 Km<sup>2</sup>, in 2007, by ONHYM) over Meskala and the adjacent Toukimt field, carried by ONHYM and Prism Seismic in 2009, have permitted to corroborate the structural partition of the Meskala horst into several blocks and to image the distribution of reservoir sandstones.

Furthermore, several seismic amplitude and structural attributes were calculated at the Triassic reservoir level. The attribute analysis has helped to characterize the reservoir and to better image its distribution.

Thus, several prospects were developed and ranked by the two studies using the volumetric calculations and the risk analysis. In addition, a new block for exploration, in North of Meskala field, was identified and is awaiting to be investigated.