

**WETTABILITY OF ASAB RESERVOIR ROCK :
COMPARISON OF VARIOUS EVALUATION METHODS
ROLE OF LITHOLOGY**

by
Louis Cuiec
Institut Français du Pétrole
Rueil-Malmaison, France

and
Fathi A. Yahya
ABU DHABI NATIONAL OIL COMPANY
Abu Dhabi, United Arab Emirates

ABSTRACT

Wettability of carbonate reservoirs has long been recognized to be quite often not strongly affirmed for water.

In the present paper, the wettability of the Asab Thamama Zone B reservoir is broadly investigated. First, various evaluation methods have been compared. They are based on contact angle, n-heptanol adsorption, and spontaneous and forced displacement measurements. Secondly, the wettability of samples from various facies of the reservoir considered has been evaluated upon reception (preserved), after cleaning and after restoration.

The results have shown that the wettability evaluation does not depend on the method.

The wettability was found to have a heterogeneous nature (mixed wettability), and to be, on the whole, neutral to strongly preferential to oil from bottom to top. In spite of a quite complex cleaning procedure, it was impossible to bring the rock from some facies to strong water wetness. Finally, it was established that it is possible to restore the original surface properties by cleaning, saturation with reservoir fluids and aging.