

WATERFLOODINGS ON INTERMEDIATE WET POROUS MEDIA : NEW CONSIDERATIONS ON TWO PHASE FLOW PROPERTIES DETERMINATION.

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Abstract : A reliable residual oil saturation (SOR) determination is essential for an accurate forecast of recovery by water drive in oil reservoirs. Two phase flow properties (SOR, relative permeabilities and capillary pressure) are usually determined from waterflooding experiments. However, the remaining oil saturation (ROS) obtained from experimental waterflooding often over estimates the SOR value in the case of intermediate wettability (or oil wet media), especially for permeable media.

The aim of this study is to outline the relationship between experimental ROS obtained by various methods. Waterflooding experiments under gamma-ray monitoring and centrifugation experiments have been carried out on homogeneous core samples. Cores wettabilities have been previously determined by adapted techniques.

The ROS value determined by centrifuge techniques can be considered as representative of SOR, and centrifuge capillary pressure should be taken into account for the numerical interpretation of waterflooding. Consequently, the relative permeabilities values have to be determined between the waterflood ROS and the centrifuge one. This new approach

using both coreflood and centrifuge measurements allows a better two phase flow properties determination.