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# Evaluation of waterflooding performance utilizing core analysis data for carbonate reservoir, offshore Abu Dhabi

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**Abstract:** The field of interest is a heterogeneous carbonate reservoir, offshore Abu Dhabi. A pore system in the field is classified into three categories based on the pore throat size, i.e. macropore, mesopore and micropore. Such pore size variation is a key parameter that controls oil/water displacement, especially when imbibition/drainage processes can frequently take place in a reservoir in conjunction with subsequent wettability alteration. This study evaluates the cross-correlation between the pore system, imbibition/drainage processes, wettability alteration and oil recovery by integrative core analyses.
Two core waterflooding tests were conducted under different wettability conditions, such as water wet and oil wet. The oil recoveries were both high while there were some differences in the irreducible water saturation (Swir). The similarity and differences can be explained by the proposed pore system, which can control fluid flow based on the pore size.

**Key words:** pore system, pore size distribution, wettability, carbonate, waterflooding, irreducible water saturation, recovery factor

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