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Recovery of Petroleum Reservoir by Waterflooding Technique

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Abstract : Through many types of research and practical studies, it has been identified that the average oil recovery factor of a petroleum reservoir is about 30 to 35 %. This study is focused on enhanced oil recovery by laboratory experiment and graphical investigation based on Buckley-Leverett theory. Horizontal oil displacement by water, in a petroleum reservoir is analyzed under the Buckley-Leverett frontal displacement theory. The extraction and prerequisite of this theory are based and pursued focusing on the key factors that control displacement. The theory is executable to the waterflooding method, which is generally employed in petroleum engineering reservoirs to sustain oil production recovery, and the techniques for evaluating the average water saturation behind the water front and the oil recovery factors in the reservoirs are presented. In this paper, the Buckley-Leverett theory handled to an experimental model and the amount of recoverable oil are investigated to be over 35%. The irreducible water saturation, viz. connate water saturation, in the reservoir is also a significant inspiration for the recovery.

Keywords : Buckley-Leverett theory, waterflooding technique, petroleum engineering, immiscible displacement
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