

## GRAVITY EFFECT UNDER STEADY-STATE AND UNSTEADY-STATE CORE FLOODING AND CRITERIA TO AVOID IT

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**Abstract** Unsteady- or steady-state coreflooding in horizontal direction can be affected by gravity forces. Gravity segregation of the fluids will occur when the gravity force due to the density difference between the fluids used is comparable with the viscous forces under core flooding. When this happens the assumptions usually used for interpretation of the results will not be satisfied. This paper consists of a numerical simulation study based on the experimental data measured on a sample from the North Sea. The gravity segregated flow is confirmed by imaging using CT-scanning. A number of numerical simulations in 2-dim. mode have then been conducted with various flooding conditions in order to define a criterion for onset of gravity affected flow.