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The Effect of DC Electrical Potential on Enhancing Sandstone Reservoir Permeability and Oil Recovery

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Abstract

The merits of using electrokinetic phenomena to improve reservoir permeability on sandstone reservoir core plugs are investigated with detail clay mineralogy studies. Normal and reverse DC configuration is applied along with waterflood and studies are conducted on single-phase and two-phase fluid saturation conditions. The produced brines a
spectros nced 180%
with the n reverse
configur s observed
in nc onal oil is
recover electrolyte
moveme electrode
configur with
produced brine is evident. This has resulted in increased pore passage and core

permeability, whereas in the reverse configuration, clay structures remained unchanged. The given explanations are supported by ICP-MS and X-ray diffraction results.

Keywords: clay migration electrokinetics electromigration permeability enhancement

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