

عنوان مقاله:

Enhanced Oil Recovery (EOR) by Low Salinity Water and Surfactant/Alkaline Improved Low Salinity Waterflooding

محل انتشار:

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خلاصه مقاله:

Extensive laboratory studies have now indicated that oil recovery in water flooding is dependent on the chemistry of the injected water. In this work, core flood experiments were performed to investigate the effect of injected water and crude oil chemistry on the oil recovery to further understand the low salinity waterflooding process. Two types of test oils were used to saturate the cores: a) Oil-A with acid number (AN) of 0.842 mgKOH/g, and b) Oil-B acid number of 1.683 mgKOH/g. The flooding experiments were performed by successive injection of formation brine, low salinity water, and surfactant/alkaline improved low salinity water. The results showed that low salinity water injection improved the oil recovery by 4-22 % of OOIP in a tertiary mode. Adding small amount of surfactant to low salinity water (dFW0.01+ 1 wt% SDS) increased the recovery by 22% of OOIP. The effect of surfactant was discussed in terms of reduced surfactant adsorption on the rock surface, improved wetting condition, and lowered interfacial tension (IFT). Alkaline solution also improved the promising effect of low salinity water about 12.3% of OOIP. The increased recovery by alkaline was attributed to the in-situ saopification and wettability modification. It was concluded that combination of low salinity water with surfactant or alkaline had significant effect on boosting the effect of low salinity water flooding. The observations emphasize the potential of low salinity water as the make-up water for the chemical enhanced oil recovery (EOR) processes.

کلمات کلیدی:

Low salinity, Oil recovery, Surfactant, Alkaline, Water flooding, E.O.R

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