عنوان مقاله:

Displacement Mechanism, Oil Recovery and Main Problems during CO2-Foam Flooding: A Review

محل انتشار:

دومین کنفرانس بین المللی نفت، گاز و پتروشیمی (سال: 1393)

تعداد صفحات اصل مقاله: 8

نویسندگان:

,h Nejatian Daraei - *Sahand University of Technology*

m.r Hadidi - *Petroleum University of Technology*

m Ansari - *Petroleum University of Technology*

خلاصه مقاله:

Gas flooding process has relatively poor sweep efficiency due to the high mobility ratio between the gas and crude oils under reservoir conditions. A need for mobility control during gas flooding has led to the study of foam flooding. Foam injection methodologies are consisting of gas and surfactant solution co-injection, surfactant solution alternating gas injection and pre-prepared foam injection.In this paper, the displacement mechanisms, oil recovery and main problems during CO2 and surfactant solution co-injection (CO2-faom flooding) have been investigated.It seems that aqueous phase mobility to be reduced by reducing relative permeability during CO2-foam displacement. However, experimental results show the inverse trend. Also, the experimental investigations show that two foam flow regimes can be generated during CO2-foam flooding: high quality regime or low CO2 fractional zone and low quality regime or high CO2 fractional zone. The CO2 mobility decreases with increasing CO2 fractional flow during high quality regime. The investigations clearly indicate that CO2-foam flooding improves oil recovery by following mechanisms: CO2 mobility reduction Increment of CO2 dissolution in the oil Water in oil or oil in water emulsifications High viscosity of the crude oils and stability of the foam are the main problems during CO2-foam flooding. The results show that use of steam injection before CO2-foam flooding is a logical way to alleviate the problem of high viscosity of the oil. In steam-CO2-foam flooding at first steam is injected to reduce oil viscosity and then CO2-foam flooding is performed. The investigations indicate that stability of the foam is affected by temperature and pressure. The increase of temperature and pressure leads to the decrease of foam stability. However, efficient displacement of oil or a decrease in CO2 mobility during CO2-foam flooding is not depending on foam stability.

کلمات کلیدی:

Oil Recovery, Foam Flooding Problems, Foam Stability, CO2