

عنوان مقاله:

A Laboratory Study of Hot WAG Injection Into Fractured and Conventional Sand Packs

محل انتشار:

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خلاصه مقاله:

Gas injection is the second largest enhanced oil recovery process, next only to thermal processes used in heavy oil fields. To increase the extent of the reservoir contacted by the injected gas, the gas is generally injected intermittently with water. This mode of injection called water-alternating-gas (WAG). This study deals with a new Immiscible Water Alternating Gas (IWAG) EOR technique, HOT IWAG which includes combination of thermal and solvent and sweep techniques where miscibility and viscosities reduction, interfacial tension reduction and oil swelling are primary concern. In the proposed method CO₂ will be superheated above the reservoir temperature and instead of water, hot water will be used and hot CO₂ and hot water alternatively injected into the sand packs. Laboratory test were conducted on the fractured and conventional sand packs. Slugs of water and CO₂ with low and constant rate injected into the sand packs alternatively; slug size was 5 %PV. Recovery from each sand pack was monitored and after that hot water and hot CO₂ were injected alternatively at the same condition and increased oil recovery from each sand pack and break through were measured. The results showed that injection of hot WAG could significantly recover residual oil after WAG injection in conventional and fractured sand pack. Use of hot WAG method in comparison with WAG method increased oil recovery 15.61 %PV in conventional sand pack and 10.2 %PV in fractured sand pack. Results showed that hot WAG increased method was a feasible enhanced oil recovery method in conventional and fractured sand pack and increased oil recovery significantly.

کلمات کلیدی:

Hot WAG, EOR, Fractured sand pack, Conventional sand pack, Immiscible

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