

عنوان مقاله:

Investigation of Barium Sulfate Precipitation and Prevention Using Different Scale Inhibitors under Reservoir Conditions

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خلاصه مقاله:

In this work, scaling tendency and amount of precipitation of barium sulfate (BaSO_4) were determined; the process is depending on temperature, pressure and mixing ratio of injection and formation of waters. Results showed that BaSO_4 precipitation is largely dependent on mixing ratio. Temperature and pressure had no influence on BaSO_4 precipitation. Different scale inhibitors, including a new inhibitor package, were used for preventing BaSO_4 precipitation. The new scale inhibitor consists of three different acids such as phosphonate acid, hydrochloric acid solution, isopropyl alcohol, ammonium chloride and water. In addition, the lowest interfacial tension on the boundary of oil and new inhibitor occurred at 10% of hydrochloric acid. Furthermore, effect of temperature, mixing ratio of waters and barium concentration on the inhibition efficiency of BaSO_4 formation was studied. Results showed that the new inhibitor has the highest efficiency for preventing BaSO_4 precipitation at any temperature, mixing ratio and barium concentration. Moreover, formation damage due to BaSO_4 formation with and without scale inhibitors was determined by core flood tests. In the presence of new inhibitor, the damaged rock permeability ratio was improved from 0.59 to 0.924.

کلمات کلیدی:

barium sulfate, Formation Damage, Scale Inhibition, Scale Prediction

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