A case study of formation damage mitigation on Duri field, Sumatra/ Septi Anggraeni

Chulaifah

Abstrak

ABSTRACT
Formation damage might cause low oil well productivity, therefore it is very important to handle formation damage. In fact, every operation in the field-drilling, completion, workover, production and stimulation, is a potential source of formation damage. In this case study, the oil company "A" plan to dispose produced water into five formations Baji, Jaga, Kedua, Dalam, and Menggala. Laboratory tests were performed to investigate effect of the injection of water to the resevoir formation. The experiment was conducted by measuring water permeability as a function of fluid volume injection. In addition, XRD analysis was also performed on effluent filtrate to support the results. Prior to investigating the sensivity of resevoir rock to the fluid injection, the samples were injected with fresh water, saline water, produced water collected from Central Injection Facility, and also Filtered CIF Water. The results indicated that all formations were sensitive to frish water produced water. Moreover, the use of a filter will improve the water quality. Therefore, the produced water should be treated by using a filter and increasing the water salinity. The XRD analysis showed that the potential damage is mostly caused by fine migration clay, however, swelling clay is also present in the small part of formation. The test results will be used for water treatment design, so the water injection will not cause formation damage