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Alternative Acidizing Fluids and Their Impact on the Southern Algerian Shale Formations

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Abstract : Acidification is a technique used in oil reservoirs to improve annual production, reduce the skin and increase the pressure of an oil well while eliminating the formation damage that occurs during the drilling process, completion and, amongst others, to create new channels allowing the easy circulation of oil around a producing well. This is achieved by injecting an acidizing fluid at a relatively low pressure to prevent fracturing formation. The treatment fluid used depends on the type and nature of the reservoir rock traversed as well as its petrophysical properties. In order to understand the interaction mechanisms between the treatment fluids used for the reservoir rock acidizing, several candidate wells for stimulation were selected in the large Hassi Messaoud deposit in southern Algeria. The stimulation of these wells is completed using different fluids composed mainly of HCl acid with other additives such as corrosion inhibitors, clay stabilizers and iron controllers. These treatment fluids are injected over two phases, namely with clean tube (7.5% HCl) and matrix aidizing with HCl (15%). The stimulation results obtained are variable according to the type of rock traversed and its mineralogical composition. These results show that there has been an increase in production flow and head pressure respectively from 1.99 m3 / h to 3.56 m3 / h and from 13 Kgf / cm2 to 20 kgf / cm2 in the sands formation having good petrophysical properties of (porosity = 16%) and low amount of clay (Vsh = 6%).

Keywords : acidizing, Hassi-Messaoud reservoir, tube clean, matrix stimulation
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