

Case Study: The high clay content sandstone success acidizing is always one of the most challenge problem that oilfield facing. The combination of the deep penetration acid (DPA*) and MGA* technology provide an innovation acidizing solution and enhance the production in Chun6 block in Shenli Oilfield - China.

The sandstone formation reservoir damages can be typically removed by pumping mud acid (a mixtures of hydrochloric acid HCl and hydrofluoric acid HF). However when the clay content increased, the normal matrix acidizing by using mud acid fluid system could not remove the damage effectively due to the second or third reaction between the mud acid and clay. In addition to the acidizing fluid problems, the nature of the formation permeability contrast add more challenges to matrix acidizing. The acidizing fluid pumped into formation tend to entering into the relative high permeability formation zone and leave relative lower zone untouched. This will lead to quite lot of pay zones were un stimulated and the ultimate hydrocarbon recovery were reduced. This case history will demonstrate how the Deep Penetration Acid (DPA*) combined with MGA* fluid to solve the above fluid challenges and the multi-zone permeability contrast challenges, and eventually enhance the productions in the Chun6 block of Shengli Oilfield in China.

Introduction

The damage of Chun6 block is typically removed by pumping mud acid and HCl fluid in the past. However the results of jobs were not satisfied. The fluid compatibility with formation is believed the main reason why the well post acidizing performance was not met the expectation.

The Chun6 block reservoir temperature is around 95 degC and reservoir pressue is around 20.7Mpa. The following table-1 is showed the formation parameters of the zone C2~C5. The table showed the average clay content is 28.4% and maximum clay content is 47.8%. The high BH temperature together with high clay content in the formation make the mud acid fluid spent very fast at the near well bore area. Which also caused the 2nd and 3rd reaction precipitation in near wellbore while the fluid penetrate deeper into formation rock. The damage caused by the acidizing fluid was left the