World Academy of Science, Engineering and Technology
International Journal of Mathematical and Computational Sciences
Vol:14, No:12, 2020

Laboratory Investigation of Alkali-Surfactant-Alternate Gas (ASAG) Injection – a Novel EOR Process for a Light Oil Sandstone Reservoir

Authors : Vidit Mohan, Ashwin P. Ramesh, Anirudh Toshniwal

Abstract : Alkali-Surfactant-Alternate-Gas(ASAG) injection, a novel EOR process has the potential to improve displacement efficiency over Surfactant-Alternate-Gas(SAG) by addressing the problem of surfactant adsorption by clay minerals in rock matrix. A detailed laboratory investigation on ASAG injection process was carried out with encouraging results. To further enhance recovery over WAG injection process, SAG injection was investigated at laboratory scale. SAG injection yielded marginal incremental displacement efficiency over WAG process. On investigation, it was found that, clay minerals in rock matrix adsorbed the surfactants and were detrimental for SAG process. Hence, ASAG injection was conceptualized using alkali as a clay stabilizer. The experiment of ASAG injection with surfactant concentration of 5000 ppm and alkali concentration of 0.5 weight% yields incremental displacement efficiency of 5.42% over WAG process. The ASAG injection is a new process and has potential to enhance efficiency of WAG/SAG injection process.

Keywords : alkali surfactant alternate gas (ASAG), surfactant alternate gas (SAG), laboratory investigation, EOR process
Conference Title : ICSRD 2020 : International Conference on Scientific Research and Development
Conference Location : Chicago, United States
Conference Dates : December 12-13, 2020