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Three dimensional modeling of enhanced oil recovery with surfactants and displacement by polymers based on streamline si

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Abstract

Main objective of present work was three dimensional simulation of the techniques of enhanced oil recovery with streamline approach. In order to demonstrate high efficiency of oil displacement with the use of polymers and thermal effects, distribution of the saturation of the aqueous phase, the concentration of the polymer and the thermal effects were determined along the streamline. Streamline simulation approach was further evaluated to determine its limitations and advantages when applied to enhanced oil recovery. Model can be applied to determine efficiency of various approaches of enhanced oil recovery, based on the sequence of injection of polymers and surfactants. Additionally, the model accounts for pore clogging by polymers, temperature effects and influence of salt concentration. Computational speed as well as calculation accuracy are increased with the application of streamline simulation and parallel technologies such as GPU based computing. © 2018 European Association of Geoscientists and Engineers EAGE. All rights reserved.

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