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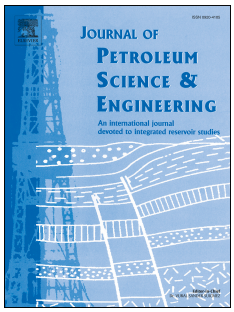

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Yongchao Zhang, Jianhui Zeng, Zhenxue Dai, Hari Viswanathan, Ting Xiao, Yong Ma, Xiao Feng

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Experimental Investigation on oil Migration and Accumulation in Tight Sandstones

Yongchao Zhang[#, †, ‡] Jianhui Zeng[#, †, *] Zhenxue Dai[‡] Hari Viswanathan[‡] Ting Xiao[‡, §] Yong Ma[#, †] and Xiao Feng[#, †]

[#] State Key Laboratory of Petroleum Resources and Engineering, China University of Petroleum, Beijing 102249, PR China

[†] College of Geosciences, China University of Petroleum, Beijing 102249, PR China

[‡] Los Alamos National Laboratory, Los Alamos, NM 87545, United Sates

[§] Department of Civil and Environmental Engineering, University of Utah, Utah 84108, United Sates

ABSTRACT: This study presents an experimental investigation to simulate and analyze the physical processes of oil migration and accumulation with 19 tight sandstone cores. Characteristic curves of oil migration were obtained by using the experimental results. It shows that the curve variations were mainly influenced by two factors: the permeability of the core and the viscosity of the injected oil. Based on the experimental results, we introduced three important parameters to quantitatively characterize and determine the processes of oil migration and accumulation in tight sandstones. The apparent permeability was introduced to describe the level of oil migration during experiments. The minimum migration pressure gradient (MMPG) and the terminal oil saturation were proposed to evaluate the features of the beginning and final stages of the migration, respectively. The relationships between MMPG, terminal oil saturation and mobility were analyzed, all showed strong linear relationships in the double logarithmic coordinate system. Furthermore, a prediction map of tight oil accumulation was plotted according to the measured oil saturation data, which could be used for estimating the scale and size of oil accumulation in tight reservoirs. The concepts and results in this study provide valuable insight for understanding and quantitatively analyzing the processes of oil migration and accumulation in tight sandstones.