Contribution ID: **536** Type: **Poster (+) Presentation**

Investigation on multi-scale pore seepage model of shale gas reservoir considering diffusion and slippage effect

Friday, 4 June 2021 09:40 (1 hour)

Shale gas reservoirs which are usually heterogeneous ones have a multiplicity mode of occurrence. A comprehensive understanding of the complex migration mechanism is prerequisite to fully comprehend the reservoir seepage. In this paper, the gas flow types are classified based on Knudsen number; the aperture distribution is introduced as the weight coefficient of the comprehensive constitutive equation. Then, the multi-scale pore time fractional order seepage model considering the influence of real gas effect, diffusion effect and slippage effect, is established. The reliability of the new model is verified using the existing experimental data presented in previous literature. Our results show that the new model can accurately capture all the mechanisms of gas migration, and well characterize the influence of structure heterogeneity and real gas effect. Moreover, analysis results also indicate the diffusion effect and slippage effect play a critical role in the multi-scale seepage happened in shale gas reservoir. In conclusion, the new model which considers the real gas effect, diffusion effect and slippage effect, can accurately calculate the apparent permeability, which is a key issue in the production dynamic analysis and productivity prediction of shale gas.

Time Block Preference

Time Block A (09:00-12:00 CET)

References

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