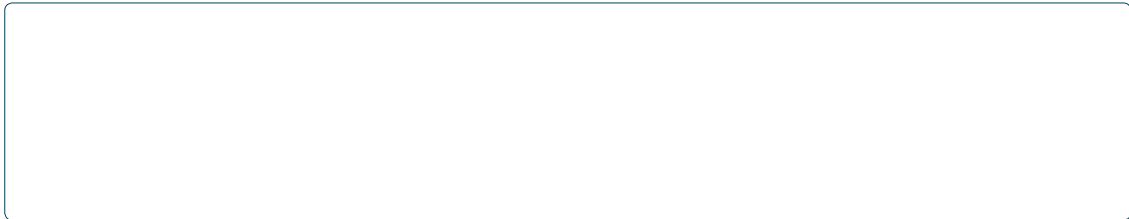


Counter-Current Imbibition Distance in Tight Oil Reservoirs: Experimental and Numerical Simulation



Keywords: Counter-current imbibition; Tight oil reservoirs; Experimental; Numerical simulation; Imbibition distance.

Introduction: Counter-current imbibition is a critical process in tight oil reservoirs, influencing the recovery of oil. This study aims to investigate the imbibition distance in tight oil reservoirs through experimental and numerical simulation.

The experimental setup involves a core sample of tight oil reservoir rock, which is subjected to counter-current imbibition. The imbibition distance is measured as the distance from the inlet to the point where the imbibition front reaches the outlet.

The numerical simulation is performed using a reservoir simulator, which models the counter-current imbibition process. The imbibition distance is calculated based on the simulation results.

The results of the experimental and numerical simulation show that the imbibition distance in tight oil reservoirs is significantly affected by the reservoir properties, such as permeability and porosity. The imbibition distance increases with increasing permeability and porosity.

The experimental and numerical simulation results are compared, and it is found that the numerical simulation results are in good agreement with the experimental results. This indicates that the numerical simulation is a reliable tool for studying counter-current imbibition in tight oil reservoirs.

The study concludes that counter-current imbibition is a complex process in tight oil reservoirs, and the imbibition distance is a key parameter for evaluating the recovery of oil. The experimental and numerical simulation results provide valuable insights into the imbibition process in tight oil reservoirs.

Conclusion: Counter-current imbibition is a critical process in tight oil reservoirs, influencing the recovery of oil. This study aims to investigate the imbibition distance in tight oil reservoirs through experimental and numerical simulation.

The experimental setup involves a core sample of tight oil reservoir rock, which is subjected to counter-current imbibition. The imbibition distance is measured as the distance from the inlet to the point where the imbibition front reaches the outlet.

The numerical simulation is performed using a reservoir simulator, which models the counter-current imbibition process. The imbibition distance is calculated based on the simulation results.

The results of the experimental and numerical simulation show that the imbibition distance in tight oil reservoirs is significantly affected by the reservoir properties, such as permeability and porosity. The imbibition distance increases with increasing permeability and porosity.

The experimental and numerical simulation results are compared, and it is found that the numerical simulation results are in good agreement with the experimental results. This indicates that the numerical simulation is a reliable tool for studying counter-current imbibition in tight oil reservoirs.

The study concludes that counter-current imbibition is a complex process in tight oil reservoirs, and the imbibition distance is a key parameter for evaluating the recovery of oil. The experimental and numerical simulation results provide valuable insights into the imbibition process in tight oil reservoirs.

