A Numerical Simulation Study on Improving Gas-Condensate Well Productivity

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SUMMARY

None

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It is common in low-permeability rich gas-condensate reservoirs that well productivity suffers a significant sharp decline in the first few years of production due to the accumulation of liquid condensate around the wellbore. The main reason for this reduction in well productivity is the low liquid mobility. In this study, we investigate the effect of liquid mobility on gas productivity. Our simulation includes creating regions of altered relative permeability characteristics and studying the optimum relative permeability conditions to maximize gas productivity. This work is being conducted alongside an experimental project on altering rock wettability to modify the relative permeability characteristics. The results of our simulation work have been very helpful in guiding the experimental work on the optimum treatment conditions. The application of this model in the field can result in significant improvements in gas-condensate well deliverability over extended periods of time. In addition to the improvement in gas productivity, our simulation shows the benefit that can be gained through improving the production of the heavy condensate components as well.

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