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Quantitative Evaluation of the Interlayer Interference of Multilayer Commingled Production in Offshore Heavy Oil Reservoir

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In the development of multi-layer reservoirs, the phenomenon of interlayer interference definitely exists. With the process of water injection and oil production, the interlayer interference has become increasingly seriously, which causes huge damage to the formation. The physical experiment of visualized multi-tube water flooding and the actual oil field production data were used to establish a quantitative characterization of interlayer interference occurred in the process of multilayer commingled production of ordinary offshore heavy oil reservoir. Both results of experiments and productivity evaluation with DSTs showed that degree of interlayer interference are mostly related to water-cut, vertical permeability ratio and viscosity ratio. A dynamic characterization relationship of interference coefficient between fluid and oil production index during multilayer commingled production of ordinary heavy oil reservoir was established. In the process of multilayer commingled production, effect of interlayer interference on commingling productivity at different water cut stages is different, the restrain for oil production caused by the inter-layer interference will be intensified at high water cut stage and adjustment measures need to be taken.

References

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