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Physical simulation experimental study on water invasion rules of fractured carbonate gas reservoirs

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Fractured carbonate gas reservoir with strong heterogeneity, difficult development, the edge and bottom water invasion increases the complexity of gas reservoir development. Therefore, in order to recognize water invasion rules of fractured carbonate gas reservoir with edge and bottom water and provide the theoretical basis for this type of gas reservoir development, according to the gas reservoir development and reservoir characteristics, establishing a high pressure fractured carbonate gas reservoir water influx experiment simulation system with natural fracture type cores. Different gas production rate, different water ratio, different formation pressure conditions for physical simulation experiments, analysis its water invasion regularity and recovery rules. The results show that edge and bottom water invasion fractured carbonate gas reservoir, the gas reservoirs formed in a large number of closed gas, the gas reservoir recovery decreased 20% ~ 40%; the gas production rate is low, water invasion velocity is slow, but there is a best gas production rate to make the recovery percent is highest; water ratio is higher, the edge and bottom water energy is more enough, the recovery degree is lower, but when the water multiples exceeds the critical value, the edge and bottom water has little effect on the degree of recovery; formation pressure is higher, is lower, water influx of gas reservoir effect is more obvious.

References

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Primary author: Mr FANG, Feifei

Presenter: Mr FANG, Feifei

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