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Experimental study on production law of fault-controlled type fractured-cavity reservoir

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Due to multi-stage tectonic movement and dissolution, many fractures and caves are dispersed in the fracture-cavity reservoir. According to reservoir characteristics and formation reasons, fracture-cavity reservoirs can be divided into weathering crust, fault-controlled, and underground river types. The fault-controlled type is the most difficult reservoir to develop, divided into the karst cave and large fracture-cavity system. This paper constructs and manufactures two physical experiment models according to the geological models and sections through CAD design and 3D printing technology. Aiming at low recovery in fault-controlled type fractured-cavity reservoirs, the production law experiments under various production modes were carried out to study the oil displacement effect in different production stages. The results showed that cyclic water injection and gas huff and puff could effectively relieve but not eliminate bottom water coning. In addition, in the karst cave system, the effect of gas huff and puff is better than cyclic water injection. However, in the large fracture-cavity system, the increase in recovery is low if only gas puff and huff were carried out; it must be combined with water flooding. The crude oil close to the production well is the easiest to be displaced, and it is easy to form a dominant flow channel, so it is necessary to control profile plugging and increase well control reserves. This study provides support and guidance for the development of fault-controlled type fractured-cavity reservoirs.

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References

Time Block Preference

Time Block C (18:00-21:00 CET)

Participation

Online

Primary authors: Mr GUO, Wanjiang; Prof. LI, Aifen

Presenter: Mr GUO, Wanjiang

Session Classification: Poster

Track Classification: (MS06-A) Physics of multiphase flow in diverse porous media