Contribution ID: **523** Type: **Poster Presentation**

Study on Reservoir Time-Varying Patterns and Remaining Oil Distribution in Sandstone Reservoirs during Long-Term Water Flooding Process

Wednesday, 15 May 2024 16:10 (1h 30m)

The medium-high permeability sandstone reservoir has the advantages of high permeability and porosity, low cementation degree, and strong oil and gas migration ability. The reservoir rocks are mainly composed of clay minerals and fine silty particles. In the long-term water flooding development process, the scouring effect of water will cause clay minerals to fall off and migrate, and the reservoir structure and properties will change, thus altering the oil displacement mechanism.

To improve the understanding of the change in rock physical properties and the capture and migration mechanism of internal multiphase flow during long-term water flooding, experiments on sandstone cores with different permeability and porosity were carried out. Based on CT scanning technology, the pore network model is constructed to study the change in rock pore throat structure during high-speed and long-term water flooding. Combined with X-ray diffraction, SEM images, and core flow experiments, the evolution mechanism of reservoir physical properties is discussed. On this basis, the occurrence types, distribution characteristics, and formation mechanism of microscopic remaining oil are studied, and the distribution characteristics of remaining oil in long-term water flooding and short-term water flooding are compared.

The results indicate that the heterogeneity of the core pore structure affects the location and morphology of residual oil, resulting in different dominant types of residual oil within sandstone cores with varying permeability. In addition, the improvement of pore throat structure and the transformation of wettability are inherent reasons for long-term water flooding to improve oil recovery efficiency.

Acceptance of the Terms & Conditions

Click here to agree

Student Awards

Country

China

Porous Media & Biology Focused Abstracts

References

Conference Proceedings

I am not interested in having my paper published in the proceedings

Primary author: Mr LIU, Tonghui (China University of Petroleum (East China))

Co-author: Prof. YANG, Yongfei (China University of Petroleum (East China))

Presenter: Mr LIU, Tonghui (China University of Petroleum (East China))

Session Classification: Poster

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