Summary of Remaining Oil Saturation Study at the Development Stage

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Abstract:

Average water cut of some main oil fields of Sudan had reached 70%. Remaining oil saturation study and different well logging methods for water flooded reservoirs had been conducted by more and more oil fields.

Oil reservoir development is actually the course of water driving. If oil reservoirs are water flooded, not only the dynamic properties but also the static ones are changed. All these changes make the identification of water flooded oil reservoirs complicated. Information from logging in both open hole and cased hole, and also the progress on study of water flooded oil reservoirs provide reliable foundation for spotting them.

In some oil fields of Sudan, about 40% of recoverable reserves has to be produced with 80-90% water cut. This indicates that even the oil fields with high water cut still have great potential to enhance oil recovery, but which requires accurate evaluation of water flooded reservoirs. Accordingly, remaining oil saturation should be determined accurately as the key of interpretation parameters of water flooded reservoirs. Studying remaining oil and water distribution in vertical and horizontal directions provide basic data and geological foundation for oil field development plan.

In this paper, present status of remaining oil saturation study at the development stage in Chinese oil fields is summarized, which involves different aspects of water flooded reservoirs, such as geological feature, effective logging techniques, logging response characteristics, logging evaluation methods and the development trend of them. The objective is to provide a reference for logging evaluation of water flooded reservoirs in oil field development stage in Sudan, and make it an important item of oil field production management.