

<<油田非均质对策论>>

图书基本信息

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内容概要

This book is written from the point of view of theoretical depth as well as the summary of practical experiences, some basic problems are dealt with typical of oil field heterogeneities of fluid and flow field from six levels. Besides, the author improves the formula of oil recovery efficient utilization factor. In this book, the geologic characteristics, reservoir behaviours and countermeasures during oil field development have been dealt with respectively. This decides the structure feature of the whole work and marks a great distinction from other works.

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(4) The time-lapse well test This is a kind of method that we test in onewell or a pair of wells with the same method andwith the same accurate apparatus in different devel-opment phases and at different time. Because thecondition of the formations , the well spacings , andthe producing layers are all constant , the change of test data should reflect the change of the water satu-ration basically.

(5) To inject indicator (tracer) The indicator is used for the research about theflow direction of the underground water. If the iso-tope indicator was adopted and the downhole mea-surement was done , the indicator benefits not onlythe finding of water source direction but also theclarifying of layer location basically. Though the above-mentioned 5 methods relatedto the research about the plane-contradiction , weshould know that the comprehensive analysis andthe reservoir simulation are the most basic ways todeal with data9 and the basic methods to researchplane-contradiction as well. The other ways are themeans for clarifying the key problem , and are nec-essary. But we must apply them based on the differ-ent situations of an oilfield.

2.2.2 The Water Injection Response The water injection response is also a kind ofinterference phenomenon , which is an interferencefrom the water injection well to the oil productionwell. It is adequately used , and is the most essen-tial , the widest and the most basic relationship be-tween the water injection well and the oil productionwell in the same layer. Without this relationship , it is impossible to make the water (gas) injection de-velopment. Here we discuss the problem only fromthe characteristic of the response . As to the prob-lem of the balanced offtake and the pressure equal-ization , and the basic characteristic of the oil-waterdisplacement , we will make special discussion later.

1.what kind of oil-bearing formation can re-sponse According to theory and practice , the forma-tion can be recognized as responsive as long as theformation is connected with oil production well andthe water can be injected into the formation. Howev-er , whether it can satisfy the need of the balancedofftake , how much pressure the oil well can main-tain , whether it can response in a short period , arethe questions worthy to research. This involves sev-eral effect factors such as whether the formation isgood or not , the condition of the well pattern andthe pressure difference of the injection and produc-tion , and so on. Such as in the centre area of theDaqing Oilfield , the high permeable layer can re-sponse obviously from half a month to a month , while the low permeable layer needs three months , even longer. Generally speaking , if the formationis good and connected , the viscosity of crude oil islow , the well spacing from the water injection wellto the oil production well is short , the injection pres-sure is high , and the injection and production is bal-anced , the response is quick , on the contrary , it is slow. In some ranges there is not response , such asthe well spacing is too big , the water injected is toosmall and the injection to production ratio is toolow. Thus , we must make all condicions be suit-able in order to get the good water injection re-sponse.

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