
双重介质油藏单相流试井解释

摘要

石油资源是全球经济的能源保障，随着经济好社会科技的进步和不断发展，全球对石油的需求越来越大。但是由于国内外油田的不断开采，许多老油田纷纷进入了高含水、特高含水期，产量非常低。

双重介质致密油藏的开发主要依赖水平井分段压裂技术，当前对压裂水平井试井的研究通常会不考虑应力敏感和启动压力梯度。因此，关于油水两相渗流的理论研究成果较少。本文旨在文献调研的基础上，对单相不稳定渗流规律进行研究，针对双重介质致密油藏利用数值模拟方法，建立渗流模型，并将启动压力梯度和应力敏感的影响计入模型，通过拉普拉斯变换、镜像映射法以及叠加原理计算井底压力及产能状况，并对其影响因素进行全面分析，从而指导双重介质致密油藏合理开发。

关键词：致密油藏；单相流；试井分析；产能评价

Abstract

Oil resources are the energy guarantee of the global economy. With the progress and development of economic and social science and technology, the global demand for oil is increasing. However, due to the continuous exploitation of oil fields at home and abroad, many old oil fields have entered the period of high water cut and ultra high water content, and the output is very low.

The development of dual-medium dense reservoir mainly depends on the horizontal well section fracturing technology. The current research on fracturing horizontal well test usually does not consider stress sensitivity and start-up pressure gradient. therefore, the theoretical research results on oil-water two-phase seepage are less. Based on the literature research, this paper studies the law of single-phase unstable seepage, establishes the seepage model for double medium dense reservoir by numerical simulation method, and counts the influence of starting pressure gradient and stress sensitivity into the model. The bottom hole pressure and productivity are calculated by Laplace transform, mirror mapping method and superposition principle. and guide the rational development of double medium dense reservoir.

Keywords : Dense reservoir; single-phase flow; well test analysis; productivity evaluation

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