

Accepted Manuscript

Productivity of multiple fractures in a closed rectangular reservoir

Wanjing Luo, Xiaodong Wang, Changfu Tang, Yin Feng, Erxiu Shi



PII: S0920-4105(17)30581-8

DOI: [10.1016/j.petrol.2017.07.023](https://doi.org/10.1016/j.petrol.2017.07.023)

Reference: PETROL 4109

To appear in: *Journal of Petroleum Science and Engineering*

Received Date: 7 February 2017

Revised Date: 4 July 2017

Accepted Date: 10 July 2017

Please cite this article as: Luo, W., Wang, X., Tang, C., Feng, Y., Shi, E., Productivity of multiple fractures in a closed rectangular reservoir, *Journal of Petroleum Science and Engineering* (2017), doi: 10.1016/j.petrol.2017.07.023.

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

Productivity of multiple fractures in a closed rectangular reservoir

Wanjing Luo ^{a*}, Xiaodong Wang ^a, Changfu Tang ^b, Yin Feng ^c, Erxiu Shi ^c

a. School of Energy Resources, China University of Geosciences, Beijing, China, 100083

b. Exploration Research Institute, Anhui Provincial Bureau of Coal Geology, Hefei, Anhui 230088

c. University of Louisiana at Lafayette, Lafayette, LA 70504, USA

Corresponding author: luowanjing@cugb.edu.cn

Abstract

It is found that hydraulic fractures always exhibit complex geometry patterns by direct observation on fractured cores, geological evidence and laboratory experiments. The main objectives of this paper are to propose a new uniform-flux solution and analyze the productivity index of the complex fractures in a closed rectangular reservoir.

Firstly, we present mathematical models of productivity index for single wing and complex fractures with the principle of superposition based on the new uniform-flux solution with angle β in a closed rectangular reservoir, respectively. Secondly, 3 cases have been used to verify uniform-flux solution and productivity index for a finite-conductivity fracture. It is demonstrated that results from our new method match other solutions very well. Thirdly, the new semi-analytical method is employed to obtain the productivity index for other complex fracture patterns, including asymmetric fracture, non-planar fracture and multi-wing fractures connected to a vertical well or a horizontal well. The effects of the asymmetry, the distribution, the rotation, the number, the azimuth, the penetration ratio and the conductivity of the fractures on the productivity index have been discussed in details.

Download English Version:

<https://daneshyari.com/en/article/5483946>

Download Persian Version:

<https://daneshyari.com/article/5483946>

[Daneshyari.com](https://daneshyari.com)