

OTIMIZING THE QUANTITATIVE DISTRIBUTION OF WATER PUMPED THROUGH INJECTION WELLS INTO OIL RESERVOIR

* *DUONG NGOC HAI*, **NGUYEN THE DUC*, ***WARN-GYU PARK*

* *Institute of Mechanics, Hanoi, Vietnam.*

** *Pusan National University, Korea.*

Abstract

Water injection has been being used in oil producing process in White Tiger fields (Vietnam). The quantitative distribution of water (pumped through injection wells into strata) and of the fluid (extracted from production wells) is an important factor, which directly influences on the oil-, water- and gas-phase flow behavior in porous media. Therefore the determination of the conformable quantitative distribution from well to well of flood water and fluid production plays an important role for reducing the water flood situation of production wells and increasing the oil recovery coefficient. The process of calculation and prediction for finding this conformable distribution leads to the optimal problem in multi-dimensional space. In the paper, the regression algorithm for solving this problem is presented. The three-phase flow in the reservoir was forecasted by a so-called "Pseudo Dual Porosity Model". To illustrate the algorithm, the problem of determination of quantitative distribution of flood water for White Tiger oil field to maximize the oil extracted quantities are considered. The obtained distributions were reported in a research contract between Institute of Mechanics and Vietsovpetro Joint Venture.