E.M. Veliev (Institute of Energy Resources Transportation GUP, Ufa, Russian Federation)

EFFICIENCY OF NON-STATIONARY FLOODING AS A FUNCTION OF INJECTION WELLS IDLE TIME FOR THE HIGHLY PRODUCTIVE LIGHT OIL RESERVOIRS

Background
Efficiency of non-stationary flooding depends on the unknown half-cycle period / idle time as it was obtained on the operating facilities of the Kumkol field. Is it critical to use the exact value of work / idle time of injection wells instead the average time? How can the work / idle time influence the oil recovery factor?

Aims and Objectives
To establish the best operating periods of non-stationary water flooding in order to obtain the maximum efficiency for the reservoir with light oil.

Methods
Hydrodynamic modelling.

Results
1. Increase of the half-cycle period increases the operating parameters as well, such as watercut or oil production rate in a range from 25% for relatively high permeable layers (0.1 µm²) up to 170% for low-permeable layers (0.001 µm²). The watercut decreases in a range from 2.7% up to 13% for the same layers correspondently.
2. It was noticed, that the technology has the period of negative effect (when the oil production rate decreases) in the initial operating time for the low-permeable reservoirs. Increasing the half-cycle period the negative effect could be increased as well.
3. Oil recovery factor has the positive value for all the half-cycle periods, but for the maximal efficiency it is necessary to obtain the specific operating / idle time depending on the permeability ratio of high and low permeable layers. Despite this, the raise of the efficiency is not so big, as a result the operating / idle time could be chosen in wide range of values.

Key words: deposit, reservoir, permeability, injection well, non-stationary water flooding, oil recovery

References


The author

Veliev Elshad M.
Institute of Energy Resources Transportation GUP
1st Category Engineer of Corrosion Monitoring and Anti-Corrosive and Bioprotective Chemical Treatment Department
144/3, October ave., Ufa, 450055, Russian Federation
tel: (347) 284-36-47
e-mail: _elshad_@mail.ru
Post-graduate Student of Institute of Energy Resources Transportation GUP (Correspondence Form of Education)