ESTIMATION OF THE SIZE OF THE SKIN LAYER IN THE BOTTOM-HOLE ZONE OF OIL WELLS

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Abstract: The paper presents the estimates for the thermal energy required for cleaning the unprofitable oil well collectors from asphaltenes, resins, and paraffin deposits, so-called ARPDs, and for the effective radius of a cylindrical layer of porous rock with the ARPDs, so-called skin layer. During the intense operation of an oil field, oil cools in the vicinity to the perforations of each well due to the Joule–Thomson effect and heavy hydrocarbons are deposited on the walls of pores and microcracks, reducing the permeability of the rock. As a result, the oil flow rate decreases. One of the effective methods for cleaning the bottom-hole zone is its heating.

Keywords: oil well; profitability; paraffin deposits; skin layer; softening temperature; hot water; steam; ammonium nitrate; binary system

DOI: 10.30826/CE19120213

Acknowledgments

This work was carried out due to a subsidy allocated by the N. N. Semenov Federal Research Center of Chemical Physics of the Russian Academy of Sciences for the performance of the state task (topic 0082-2016-0011, AAA-A17-117040610346-5).

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Received January 18, 2019

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