**IMPROVING THE QUALITY OF PRODUCTIVE LAYER DISCLOSURE**

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**Introduction.** Preservation of the natural permeability of productive formations is the most important requirement for well completion technologies. The productivity of wells depends on its effective solution. The quality of the initial discovery of productive horizons during drilling of oil wells determines the success of further development of fields.

**One of the methods to improve the disclosure of productive strata.** One of the methods of improving the quality of the opening of productive formations is the treatment of drilling fluids (surfactants) of surfactants. The use of this method does not require large additional investments and unique or scarce equipment. To prevent the influence of surface effects on the contamination of productive formations, it is necessary to reduce the value of the interfacial tension at the interface between the filtrate and oil phases. For this purpose, before opening the layers to the drilling fluids add surfactants. The addition of surfactants to the drilling fluid affects the parameters of the penetration zone, changes the physicochemical properties of fluids, the nature of the distribution of oil and water in the pore space of the reservoir and affects the filtration parameters of the penetration zone. The choice of surfactants for drilling fluids during the initial opening of productive strata requires studies of their influence on the nature of oil displacement from the rock core, as well as on the parameters of drilling mud. It should be noted that the question of the quality of the opening of productive layers during drilling is given insufficient attention. In some cases, surfactants are generally absent in the drilling fluid. Formulations of drilling fluids are chosen without taking into account the requirements of preserving the natural properties of reservoirs.

Amiyan gave a clear explanation of the mechanism of formation of different types of emulsions. When mixing in a layer of water and oil, the formation of emulsions of two types is possible: hydrophobic (water in oil) and hydrophilic (oil in water) [1]. In the first moment of mutual dispersion, the formation of emulsions of both types. However, only the hydrophobic emulsion, i.e., the water-in-oil emulsion, "survives" and can exist for almost a long time. The need to mix oil and water, their mutual dispersion is one of the conditions...
for the formation of emulsions. Thus, long-term contact of oil and water, on the one hand, pulsating pressure - on the other contribute to the dispersion in the bottomhole zone of water in oil and oil in water. For the preparation of emulsions in the laboratory used ultrasonic dispersant UZDN. Emulsions with a volume of 50 ml. were prepared in identical vessels with a capacity of 100 ml. while maintaining constant parameters of the emitter for volume concentrations of filtrate 0,10, 20, ..., 100%.

**Study of the structure of emulsions.** The control of the emulsion state was evaluated using a digital microscope Webbers G50S DeepViewer. The figure shows the structure of the emulsions of the filtrate and oil of the Milkdske field.

Visually visible particles of the dispersed phase (filtrate) have a size of 10 to 80 μm with a tendency to aggregation, but the particles of the filtrate do not cause the phenomenon of coalescence. For the content of 40% of the filtrate of the biopolymer solution (Fig. 1 a), the structure of the emulsion is characterized by high dispersion, which explains its increased viscosity properties. When stored in an airtight vessel, the emulsion is practically not stratified, and when it is at rest for a long time, thixotropic properties are manifested. The addition of surfactants to the drilling fluid prevents the formation of highly dispersed stable emulsions (Fig. 1 b) and reduces its viscosity properties. Therefore, the formation of emulsions of filtrates of drilling fluids and oil significantly increases its viscosity properties and reduces the reservoir properties of productive formations, and optimal surfactant additives to drilling mud to improve surface properties at the interface between filtrate and oil reduce the viscosity properties of emulsions.

![Figure 1](image1.png)

**Figure 1.** The structure of the emulsion of the filtrate of the biopolymer solution – oil

Analysis of micrographs of dispersed systems is to determine the particle size, dispersion, as well as to solve a number of statistical problems, such as the construction of statistical and empirical distribution.

The properties of dispersed systems depend on the particle size, so the definition of dispersion and the construction of the function of statistical distribution of particle sizes is mandatory in the study of any dispersed system. To solve these problems, the language of technical and engineering calculations MATLAB was used, namely the graphical user interface in MATLAB in the array Graphical user interface (GUI) Toolbox, which is shown in Figure 2.
Figure 2. MATLAB program interface and micrograph analysis of a two-phase dispersed system: the maximum size of a bubble; the minimum size of the bubble; average bubble size $5.134105e+01$

Conclusions. The structure of emulsions was studied using a Webbers G50S DeepViewer digital microscope. The sizes are defined, the empirical distribution of bubbles on the sizes is constructed. For a filtrate content of 40-60%, the structure of the emulsion is characterized by high dispersion and practically does not delaminate, and when it is at rest for a long time, thixotropic properties are manifested.

References: