INVESTIGATION OF THE TEMPERATURE EFFECTS ON SUPERFICIAL TENSION IN WATER SOLUTIONS OF NEFTENOLS GF & K

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Surface active agents have a wide use both in drilling processes and in oil and natural gas production. Cation surfactant «Neftenol GF» is used as drill fluid component in primary tailing-in process, it also blocks colmatage. Agent «Neftenol K» has its usage in hydrochlorid-acid treatment of bottomhole formation zone. Practice of these agents require exact knowledge about their superficial tension variation depending on temperature and concentration.

The essence of the work is the debugging a testing procedure of superficial tension measurements. The measurements were surveyed with the procedure of drops count by stalagmometer apparatus. This method is based on the supposition that weight of a drop tearing away from the end of the capillar is in proportion to superficial tension on the border «drop of surfactant - purified petroleum». Purified petroleum was taken as a model of formation oil.

The appararus was thermoisolated and allowed to obtain different temperatures (to 550C). The results obtained at higher temperatures can be doubtful since petroleum starts actively evaporate at these conditions.

The programm of experiments provided superficial tension measurements of different solution concentrations at different temperatures. Average value from the tests was a final meaning that ensured rather authentic results.

According to testing results there were determined the dependences between the superficial tension in water solutions of surfactants and physical-chemical values of temperature and concentration. The acquired dependences let receive exact conditions of agents usage for each oil or gas field (with their own properties).

Practice choice of agents concentration is a complex technical-economical proposition. It is nessesary to obtain the least value of superficial tension but by preparing drill fluids in practice we should discount the propepties of each oil or gas field, the influence of agents over the other fluid properties and company's possibilities.

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