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IMPROVEMENT OF TECHNICAL MEANS OF PREPARATION AND PROCESSING OF DRILLING MUD

Drilling mud play an important role in drilling wells. Drilling mud have always been and are given a lot of attention. Many scientific institutions and laboratories are working on the problem of improving solutions and creating new ones. Almost every drilling company has its own laboratory to control and timely regulate the parameters of the solution. The importance, variety of recipes, physicochemical parameters, the possibility of regulating the latter are covered in many scientific papers. The main parameters of drilling mud [1, 2] are density, rheological and filtration characteristics, lubricating and cooling properties. Due to the density, a hydrostatic pressure is created, and this parameter is regulated by the amount of solid phase in the solution, which is represented by clays or clay-like substances. Most solutions are prepared on a water basis, so the interaction of these components is an important characteristic both during preparation and during operation of the solution. The process of interaction of components (swelling) is accompanied by an increase in the volume and mass of the solid phase and begins with wetting the surface. The process is accompanied by the release of heat and a decrease in the total volume of water-clay.

Swelling humidity ω is defined as the ratio of the mass difference between the swollen G_n and the original G_o breakdown to the mass of the original G_o [3].

$\omega = (G_n – G_o) / G_o$

and a more important parameter is the degree of swelling, which is the ratio of the difference between the volumes of swollen V_n and the original V_o samples to the volume of the original sample.

$p = (V_n - V_o) / V_o$

The duration of the wetting process for each composition is determined experimentally, but in any case, its reduction makes it possible to reduce the total drilling time. Therefore, the idea arose that the dismember, which is intended for grinding, can be used as an accelerator of the process of preparation and processing of drilling mud.

The staff of «Horizont-Invest» under the leadership of the author of this article designed and manufactured a fundamentally new unit for preparation and processing of drilling fluids (fig. 1). The unit consists of a tank 1 over which a collapsible frame 2 is mounted. A crusher 3 can be installed above the loading hatch if necessary. The use of dispersant allowed to reduce the time, improve the quality of preparation and processing of drilling mud. Circulation in the BPD is created by a horizontal slurry seal pump (HSSP) 5. Two low-speed mixers 6 allow to treat the solution with easily soluble reagents and maintain its parameters. The

ejector funnel 7 quite effectively treats the solution with dry bulk components. The principle of its operation is that in the path of the liquid jet there is a sharp expansion of the channel. Due to this, a decrease in pressure is formed, which absorbs the bulk component, while their intensive mixing takes place. Control is carried out from the panel 8.

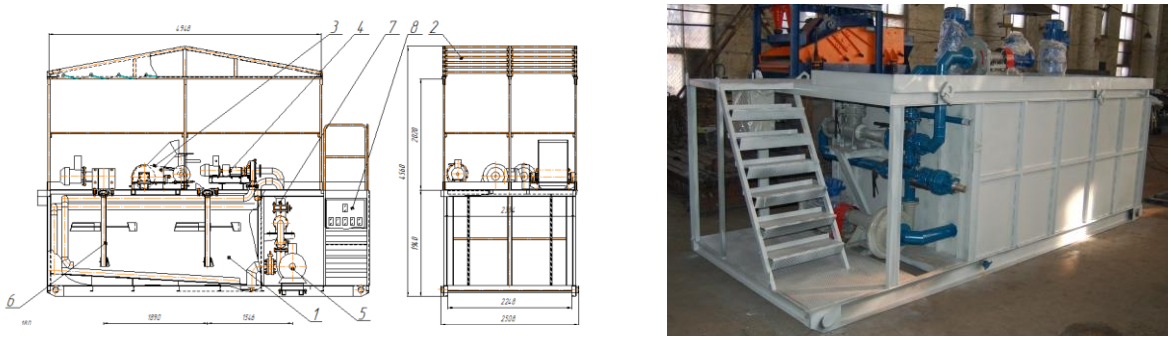

Fig. 1 – **Block of preparation and processing of drilling solution**

Used information sources:

1. Kotskulich JS, Kochkodan JM Drilling of oil and gas wells. Kolomyia, VPT «Age», 1999.

2. Myslyuk MA, Rybchich IY, Yaremiychuk RS Drilling of wells. Handbook in five volumes. Kyiv, 2002.

3. https://www.chem21.info/