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WASHING FLUIDS USED TO COMBAT GEOLOGICAL COMPLICATIONS IN WELLS

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ABSTRACT

The article examined the procedure for applying washing liquids to unfavorable conditions, which are used today in the fight against Geological complications that may occur in Wells. As well as the functions of washing fluids acting and their composition used to eliminate Geological complications arising in wells due to the most common adverse conditions have been studied. Currently, comprehensive and targeted measures aimed at identifying and absorbing hydrocarbon deposits further prove the relevance of the article.

The development of the industry of our republic is inextricably linked to the search for underground resources and the creation of its reserves, and various natural and synthetic polymers, various man-made solutions are used in the process of drilling to determine these underground resources. Drilling tools like this do not exhibit most of the technological properties of drilling solutions. For example, in terms of high solubility, constant cleaning of the drilling mixture from the slurry during the well drilling process, does not meet the current demand in terms of lubrication, hydrophoby, and environmental harmlessness. In many cases, wells have to be drilled in shallow, cracked, crushed, lightly crushed when opened, aqueous, oil or gaseous layers whose geological Ridge is not stationary. In Wells, Geological complications can arise under these conditions. The most common of these are the following:

- loss of washing-up fluid (absorption);
- radiance of rocks from the walls of the well (crumbling);
- the discharge of water, oil or gas with high pressure into the well, resulting in leaks from the well and the firing of the fountains.

If the necessary measures are not taken to prevent complications in time, this can lead to severe long-term stretching accidents.

Fight against ingestion of washing-up liquid. Ingestion of washing-up liquid is one of the most common complications when drilling search Wells. It is possible to determine the technical progress of search wells with the solution of problems to prevent and eliminate the absorption of washing fluid.

To successfully combat absorption, it is necessary to know the location of the absorption horizon, permeability, the nature of the change in the permeability of the layer, the tightness, gaps, layer pressure.

The occurrence of absorption of the washing fluid is explained by the ratio of pressure in the well and in the layer. The pressure on the layer by the well is affected. Its size depends on the technological processes performed in the well. This pressure is equal to the hydrostatic pressure of the washing fluid column when the well is at rest. Increased hydrostatic pressure can cause fluid absorption in cracked rocks.

The absorption of washing-up liquid can be partial and complete. If the liquid is absorbable, it is necessary to use clay solutions with the lowest density (1060-1100 kg/m3), a viscosity of 35-40 seconds and a good structure in the drilling of porous and cracked rocks, which are crossed by a well. To obtain such a solution, it is necessary to add up to 25-30% of bentonite clay powders to a normal clay solution or treat it with reagents that increase its viscosity (calcined soda, caustic, liquid glass, unsalted lime, etc.).

In the fight against ingestion in the well, the use of aerated (aerated) clay solutions with high viscosity and low density (700-800 kg/m3) gives a good result. In the process of drilling, the aeration of such clay solutions is carried out by adding air in compressor assistance to the rotary system of washing. For this, a special device aerator is used. The second method is carried out by treating the solution with surfactants (PAV).

If the absorption zone is known in advance 20-25 m before the absorption zone, the washing liquid is replaced with a special washing liquid.

Full absorption occurs when crossing rocks, caverns, layers of flowing water with gravel, gravi, large cracked areas. To eliminate the full absorption of various fillers of well washing with clay solutions or methods of driving gelcement mixtures into the well are used.

Crushed asbestos, mica or leather, sawdust, fibers and other fillers are used to seal the rocks.

Gelcement is a mixture of tamponage cement with a clay solution, the ratio of which is selected in the laboratory, taking into account certain conditions. Approximately 800-1000 kg of portlandsement is added to a solution of 1 m^3 clay with a density of 1100-1200 kg/m^3.

Having good thixotropic properties, the gelcement is lightly driven by drilling pipes along the well to the absorption site. It turns into a solid gel if left alone for 2-3 minutes. As a result, large cracks in the walls of the well are reliably closed, and the circulation of washing-up liquid is restored.

When closing the layers through which the waters flow, the gelement does not give results. In such cases, quick-hardening mixtures are sent to the well.

In Wells, irradiation occurs when drilling rocks that are fissured, porous, as well as stratified and crushed.

Fight against the radiation of the walls of the well. In very many cases, the main reason for the irradiation of rocks from the walls of the well is the loss of circulation of washing-up liquid. The rocks, as a result of which are crossed by a well, swell and stratify after saturation. As a result of the loss of circulation, the level of the washing fluid decreases, the hydrostatic pressure exerted on the walls of the well decreases and cannot prevent them from irradiating.

The main measure in the fight against nurashes is the use of clay solutions with low water separation and high density for washing Wells.

Reduction of water separation of clay solutions is carried out by treatment with the necessary chemical reagents.

To increase the density (1500-1600 kg/m^3) of the clay solution, it will be necessary to increase its concentration. To obtain solutions of greater density, the powder of the aggravating reagent can be added to them.

Fight against fountains and eruptions in Wells. When water horizons are crossed by a well the layer water falls into the well when the layer pressure is greater than the hydrostatic pressure of the washing liquid column. If the layer pressure is greater than the pressure of the washing fluid in the well, there are cases when water flows out of the well and even erupts fountains.

Dangerous Geological complications when the pressure of the oil and gas layers is high for similar reasons lead to oil-gas firing and the origin of fountains, fires in the well and failure of equipment and the loss of the well.

It will be necessary to generate hydrostatic pressure greater than the layer pressure in order to get water, gas and oil into the well, before it can be fired and fontanalized.

The addition of weighting powders to the clay solution increases its viscosity and water separation, and in turn forms a thick clay shell. Increasing the thickness of the clay shell causes the diameter of the well to narrow and cause various accidents. Therefore, high-quality solutions with a high structure are weighted. They have a roughness of 23-25 seconds and a water separation of no more than 10 cm^3.

Conclusion

When passing clay rocks, the use of thinned clay solutions to eliminate complications associated with swelling of them, irradiation of well walls will pay off (lime, gypsum and chlorocaltic). When adding inhibitors to such solutions, it will definitely be necessary to treat them with chemical reagents.

Because, the self-use of inhibitors reduces some of the beneficial properties of the clay solution.

In conclusion, the article gave detailed information about the composition and procedure for applying washing liquids, which are used to combat the complications that arise when drilling in aqueous, oil or gaseous layers, in which the unfavorable geological conditions i.e. the geological Ridge is not stagnant, cracked, crushed, slightly stratified when opened. This flushing may allow technical progress of exploration wells to be determined by solving problems to prevent and eliminate Geological complications through the use of liquids in practice.

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