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PURPOSE OF DRILLING MIXTURE IN THE PROCESS OF DRILLING COUPLING AND STUDY OF ITS OBTAINING FROM LOCAL RAW MATERIALS

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Abstract: Research on drilling compound components in the field of oil and gas and their recovery process from local raw materials.

In the oil and gas industry, drilling fluids are used to cool the drilling equipment at the bottom of the well, facilitate rock crushing, bring crushed rocks to the surface, provide particle preservation when the circulation of the mud stops, prevent the manifestation of water, oil, gas in the well, We all know that they are used to create impressive pressure, prevention, preservation and physicochemical effects on the well wall.

Today, drilling fluids are divided into two classes: water-based and hydrocarbon-based muds. Water-based muds are used in many conditions. And those made on the basis of oil are valuable and complicated, so only water is justified

The following chemical reagents are used in the drilling process:

Bentonite, Graphite, K-4/ liquid polymer, Caustic soda (NaOH), Sodium carbonate (Na2CO3), Sodium chloride (NaCl), Marble powder (CaSO3), Barite (VaSO4), Potassium chloride (KCl), Sulfonol, Oil/ UDS, Asda-PAC (HV/LV), FXLS/AF, POLY-ANS reagent, PAA, Green -PAC (HV/LV) are the following chemical reagents.

Inhibitory drilling fluids are characterized by the presence of conditions in the solution that prevent clays from compacting and crushing. If inhibitory drilling fluids are not used, coagulation and coagulation of the clay rock in the well wall is prevented. Limestone and gypsum drilling fluids are widely used in drilling loose clay rocks.

Inhibitor is aluminum salts and white powder, which serve as suppliers of mono- and trivalent cations. Aluminum salts are combined with all polymer reagents. Treatment is carried out in the form of a 10% aqueous inhibitor solution. When adding a given drilling mixture to kvass, its viscosity, SNS and filtration indicators should not be high. The inhibitor is biologically harmless, does not form toxic compounds and is fire resistant.

Bentonite is the main component of all mud drilling fluids. It is used to increase the viscosity of the solution, give it thixotropic properties, and form a filter shell. For better dispersion of bentonite in the solution, it is recommended to pre-hydrate it in water with low Ca++ and Mg++ polyvalent metals at pH-8.5-10. When using bentonite as the main component of clay solutions, it is recommended to thoroughly mix the solution for 5-10 hours.

Graphite-silver colored crystalline powder, hydrophobic, insoluble in water, does not form direct contact with water. The reagent is designed to reduce the rotation state of the drill pipe string, increase the friction resistance of the metal pairs, prevent jamming and prevent the casing from falling without an accident.

Soda ash (Na2CO3) is a fine white crystalline powder with a density of 2.5 g/cm3. It easily dissolves

in water, absorbs moisture and dries. It is used to prepare clay solutions, reduce the hardness of mixing water, reduce cement settling and soft pH control. It is a hardness softener and stone dispersant. It is not recommended to overtreat the solution with soda ash, because the high content of carbonates in the solution leads to the formation of highly progressive SNS and flocculation of the solution. Standard concentrations vary from 0.7 to 5.7 kg/m3 depending on the chemical composition of the water and the recommended parameters of the drilling mud.

Sodium chloride (NaCl) is a white crystalline, highly hygroscopic powder with r= 2.165 g/cm3, well soluble in water, a neutral electrolyte that does not significantly change the alkalinity of the medium. It is used for the preparation of highly mineralized mud solutions before the opening of saline deposits, as a structuring agent (0.5-1.0% addition) of new mud solutions made from sodium and sodium-calcium clays, as an anti-fermenter of food starch and partially as an inhibitor of mud swelling.

Potassium chloride (KCl) - density r=1.98g/cm3 (powder, granules, crystals). A neutral electrolyte that slightly changes the alkalinity of the medium and forms cubic crystals that dissolve well in water. It is used as a source of K+ ions and as an inorganic inhibitor of hydration, swelling and decomposition of unstable clay rocks. Gingering the solution with KCl makes it possible to increase the stability of clay-free polymer solutions and their resistance to contamination by fine drilling mud. In order to maximize the effect of inhibiting the drilling fluid system, it is recommended to use it in combination with encapsulants and other mud inhibitors. Optimum additions are up to 7% and depend on the moisture content of the clay rocks and the type of washing fluid.

Sulfonol is a synthetic surfactant, a mixture of sodium salts of alkylbenzenesulfonic acids with an alkyl residue, belongs to the anion class, and rN=7.5-8.5. It is made in the form of powder, granules, paste of yellow or light brown color, it dissolves well in water. Sulfonol additives significantly improve the lubricating properties of solutions and reduce the coefficient of friction, especially in combination with other lubricating additives. Powdered sulfonol is pre-dissolved in water to a concentration of 30-40%. When using it as an emulsifier of oil-based solutions, additives in dry form up to 3%.

Barite (VaSO4) - is used as a weighting agent for washing liquids with a density of up to 2.4 g/cm3. It is a fine-grained white powder. Its molecular weight is 233.4. Specific gravity, depending on the quality, is 3.8-4.25 g/cm3. Bulk density is 2160 kg/m3. Insoluble in water and oil. Barite is soft and non-abrasive, does not interact with other components of the solution.

Marble powder (CaSO3) is micro powder marble, that is, marble powder of a certain fraction and high purity. Carbonate weighting agent fractions are different. A weighting agent for drilling fluids increases the density of water-based drilling fluids. The recommended average weight density of the solution is 1.3-1.5 g/cm3. It is advisable to use it when opening effective layers. Solubility during acid treatment is 98%. It has slump stability and does not slump even at low shear stresses. In addition, it is used as an adjunct to kolam. It guarantees a high percentage of restoration of the initial conductivity of the collector after acid treatment.

PAA is derived from polyacrylic acid and is produced as a powder or granules with an 8% gel of 1020-1030 kg/m3, an actual density of 1123 kg/m3 and a bulk weight of 570-750 kg/m3. PAA with a concentration of 0.1% is mainly used as a solid phase flocculant when washed with clean water. In fresh water, an average of 30% hydrolyzed PAA or 10-15% slightly mineralized NaCl solution is used as a filtration and stabilization reducing agent for fresh, slightly mineralized, low-sludge, non-sludge-free solutions. PAA can also be used to regulate the rheological properties of drilling fluids, allowing them to maintain their structure. PAA also helps to strengthen clay rocks due to the formation of a polymer film.

Caustic soda (NaOH) is used in water-based solutions as a source of hydroxyl ions for pH hydrogen indicator. Caustic soda is very soluble in water and releases sodium (Na+) and hydroxide (ON-) ions.

Standard concentrations range from 0.7 to 11.4 kg/m3, depending on the chemical composition of the water and the recommended parameters of the drilling mud. High concentrations of NaOH are required in seawater and waters containing buffer salts. The advantages of the reagent include: the availability and economic efficiency of a source of hydroxyl ions to control the pH of hydrogen; chemical in low concentrations and very high efficiency concentrations; an increase in the hydrogen indicator rN, which reduces steel corrosion; used in most drilling fluids.

Oil/UDS is a black to light brown oily liquid with a specific odor and a density of up to 0.9 g/cm3. It

is added to the washing liquid in the amount of 5-10%, usually together with graphite and emulsifiers. With the addition of oil, the coefficient of friction between the pipes and the filter shell is reduced, the risk of sticking is reduced, the efficiency of the filter is increased, and the hydraulic resistance is reduced. Lubricity of oil is improved by adding 1% graphite. Oil/UDS is compatible with all washer fluids.

K-4 liquid polymer is a product of hydrolysis of polyacrylonitrile with hydroxide in a ratio of 2.5:1, it is a liquid with a pH of 12 and a density of 1.05-1.07 g/cm3. The reagent is available as a 10% aqueous solution. The product is enzymatically stable and has increased heat resistance, which allows it to be used in all types of water-based drilling fluids, including mineralized ones, at relatively high bottom hole temperatures. K-4 helps to stabilize the solution, filter, reduce the thickness of the mud crust, increase the viscosity, while keeping the SNS within acceptable limits, fights with the absorption of washing liquid, and also has lubricating properties.

Asda-PAC (HV/LV) is a white or cream-colored substance, soluble in water, with a density of 1.5-1.7 g/cm3. Bulk density 600-800 kg/m3. The main purpose of Asda-PAC (HV/LV) is to reduce the filtration of fresh and mineralized solutions with a high solid phase content and high density to 0.5-2% at a temperature of up to 180 0C. At the same time, the rheological properties of solutions change slightly. Asda-PAC (HV/LV) hydrogen index rN=8-10 is the most effective and is unstable to the aggressive effects of polyvalent salts.

FXLS/AF - (ferrochrome lignosulfonate) is a brown powder, soluble in water, with a hydrogen index of rN = 4–4.5. Designed to reduce viscosity, partially filter new and medium mineralized solutions, as well as solutions contaminated with cement, anhydride and polyvalent salts. The temperature resistance of FXLS/AF in fresh solutions is 160 0C. The additive FXLS is available in powder form at 0.5-2.0% or as a solution with a concentration of 10-40%.

Green -PAC (HV/LV) - used for viscosity control and filtration of sludge-free solutions and low solid phase solutions. Green -PAC (HV/LV) was developed in response to the increasing demands on polymers, as a result of which the use of KMTs is impossible in some cases. Green -PAC (HV/LV) has been developed considering the requirements of reducing solid particles content, stabilization of unstable muds, breaking operational qualities of formation and thermal stability. They are used as stabilizing reagents in all types of water-based drilling fluids. Green -PAC (HV/LV) provides wellbore stabilization during drilling in shale and helps to reduce the solid phase in the drilling fluid.

POLY-ANS reagent is produced in the form of a 10-15% aqueous solution, yellow in color, well soluble in water, satisfactorily retains its properties over time, is non-toxic and is a polyacrylonitrile hydrolysis product, renewed with special cross-linking agents. It is used to reduce the water loss of fresh, saline, SaSl2 and unsaturated solutions. It contributes to the formation of a thin, dense, elastic and low permeability filtration shell, reduces the formation zone of the filtrate, prevents the penetration of the solid phase of the solution, and reduces the risk of differential adhesion. The reagent has significant advantages over its analogues in terms of stabilizing activity.

Treatment with POLY-ANS drilling mix polymer reagent helps to:

- Reduces elasticity and thickness of mud layer:
- Obtaining the minimum value of static shear resistance:
- Good reinforcement of the soft layer:
- High temperature resistant:
- Keeping the well bore clean.

Some of our chemical reagents mentioned above are imported products. Therefore, for the purpose of localization of chemical reagents, obtaining a secondary product from cellulose lumps extracted from local raw materials gives a positive result. Extracting lignin from the pulp residue from pulp extraction and using it as a chemical reagent to replace improt is very effective.

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