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Title **EVALUATION OF THE EFFECT OF THE COMPOSITION OF DRILLING SOLUTION ON THE STORAGE OF THE COLLECTIVE PROPERTY OF THE LAYER**

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EVALUATION OF THE EFFECT OF THE COMPOSITION OF DRILLING SOLUTION ON THE STORAGE OF THE COLLECTIVE PROPERTY OF THE LAYER

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Exploration for oil and gas wells is a complex process. No universal solutions have been developed for drilling wells. Therefore, the main indicator of the quality drilling of the productive layer is the preservation of its natural collector properties.

In order to evaluate the drilling operations in the opening of productive strata, it is important to assess the impact of the drilling fluid on the formation due to changes in the reservoir properties due to the penetration of components into the wellbore zone.

In general, the assessment of the quality of drilling is based on the implementation of the recovery coefficient of permeability in laboratory studies. Therefore, natural cores are obtained during the opening of the productive strata and experimental samples (diameter and length 30 mm) are prepared [1]. Samples are dried from oil and water. Its air permeability is determined. The model is then saturated with oil and water. Kerosene is used as a model oil in the study.

Kerosene and drilling mud are placed in a special container and it is prepared according to the recipe to determine the effectiveness.

To conduct the study, samples are placed in an experimental device that holds the core. The device creates conditions similar to mining conditions for conducting research.

The internal pressure of the hydraulic clamp and core sample corresponds to the

rock and formation pressures. Heating and temperature maintenance are carried out in accordance with the conditions of the mine, which is located between the productive strata. A pressure difference is then created at the edges of the core sample and kerosene is pumped several times through the pressure difference column through the core sample column (not less than 3 samples).

Depending on the consumption of kerosene in the pressure difference, the curve $Q = f(\Delta R)$ is constructed and the permeability coefficient of the kerosene permeability of the core sample is calculated. Hydrostatic or hydrodynamic pressures of the repression pressure are then applied to the surface of the core sample, just as in the process of opening the productive layer into the formation.

For example, the FDES-650Z device acts on the hydrostatic pressure applied to the core sample [2]. The pressure ΔR of the drilling fluid is applied through the edges of the core to the same pressure as the repression in the well, and the filtration volume and velocity of the drilling fluid filtrate flowing from a special tank to the reverse surfaces of the core sample are determined.

by the technological processes of opening the productive strata [3].

It is important to study the effect of technological influences on well construction on the reservoir properties of productive strata in the well bottom zone.

This situation reduces the volume that can be extracted in practice due to the influence of technological fluids in the construction of wells in the bottom zone of the well, in layers with low permeability, ie additional hydrodynamic resistance, and NQOK (oil recovery factor) practical effect.

$$K_a = \frac{P_{пл}}{P_в * q * Z_{пл}}$$

In the application of hydrodynamic action on the core sample, the drilling solution is driven by the pressure difference along the edge surfaces of the core sample. This pressure difference corresponds to the repression applied to the formation during the drilling mud circulation during the opening of the productive formation.

After the core solution is exposed to the drilling mud, paraffin is pumped in several modes of pressure difference in the reverse direction and the residual permeability coefficient of the core sample is determined.

To assess the degree of impact of the drilling fluid on the core samples, the recovery of the permeability coefficient is determined, ie the ratio of the residual permeability of the sample to the initial permeability k_0 after exposure to the drilling mud is determined.

$$v = k_j/k_o\text{-}100\ \%. \qquad (1)$$

Based on laboratory studies, it is shown that the effect of process fluids on the reservoir properties of the formation and the structure of the formation, along with the geological properties of the formation and the coefficient of oil production are affected

The anomaly coefficient is the ratio of the formation pressure (P) to the product of the hydrostatic pressures of fresh water at the depth of Z: (2)

In most cases, K_a = 1, which corresponds to the normal formation pressure, and the formation is carried out with ordinary drilling fluids, ie with a density that meets the requirements of technical safety of the oil and gas industry [2].

At abnormally high formation pressure (AYUQB), the required well bottom pressure is higher than the formation pressure when the density of the drilling fluid is weighted (K_a> 1).

Boron, barite, iron ore concentrates, etc. are used as aggravators. Mud drilling muds are used in the operation of the AYUQB, and barite, iron and other weights are added.

However, the use of this type of solution leads to a decrease in the permeability of the productive layer, especially in the complex geological conditions, which affects the feasibility of construction and commissioning of low-permeability reservoir wells. Based on this, it is advisable to use mud-free drilling fluids, and its density is controlled by the concentration of water-soluble salts and aggravating acid solutions.

These alloys have a fundamental advantage in the removal of sludge material in the presence of silt solutions in the opening of productive strata, and are difficult to remove from the bottom of the well when flow is called from the stratum and in the development of wells. Another advantage of this solution is its stable strength in the well wall [3].

Based on the above data, it is recommended to weigh non-sludge drilling fluids to a density of 1600 kg/m^3 using formation water, solutions of inorganic salts (sodium chloride, potassium, calcium, magnesium) and calcium carbonate. When AYUQB is too high, drilling muds are weighed down to 1600-2200 kg/m^3 on the basis of calcium bromine, zinc or a mixture thereof, resulting in a high quality opening of the productive layer.

The high density of solutions is provided not only by the use of inorganic salts, but also by the use of formats of organic and alkali metals [4]. Formiate-based process fluids are currently used, in which polysaccharide reagents are added to control filtration and rheological properties, and, if necessary, marble blocks are used to temporarily collate the QQTZ [4].

Formation-based drilling muds at 200°C. maintains thermal stability up to. The use of formats allows for multiple and multi-purpose use of drilling fluids because of their high enzymatic strength and resistance to thermal acid destruction.

It is recommended to use the following solutions as process fluids when opening the productive layers in the conditions of AYUQB:

- Solutions based on solid-phase formate sodium, potassium formate and cesium in systems;
- systems in which the formats have been partially converted to acidic carbonate weights;
- solid phase systems without reduced acid solution (r = 2200 kg / m^3). Barite, siderite (iron carbonate) before aggravation.

The main advantage of formates over inorganic salts (bromide and chloride) is their environmental safety. Hydrocarbon-based weighted and invert-emulsion drilling fluids are used in the qualitative opening of productive strata with water-based weighted drilling fluids, which are placed inside the oil shells because of the ability of the oil film to hold them inside. will have [5].

In return for the hydrocarbon content, hydrocarbon-based and invert-emulsion solutions provide a high quality opening of the productive layers by maintaining the collector properties [5]. In many cases, the quality of the formation of productive strata determines the feasibility of commissioning wells and the planned volume of production of industrial fluids.

The type and composition of the drilling mud at the initial opening and penetration of the productive strata with an anomalous coefficient K_a> 1 depends on the geological properties of the formation, the composition and filtration capacity of the reservoir, accident-free and environmental safety. is selected for the purpose of riding.

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