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Assessment of the Effectiveness of the Implemented Operating System And Geological-Technical Activities in Oil and Oil-Gas Fields Analysis Methods.

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Annotation

The effectiveness of the operational system implemented in oil and oil and gas fields and the geological and technical activities carried out is determined by the difference between the actual and the base version of oil production.Methods of calculating technological indicators in the basic version are divided into two main groups:

The first group includes descriptions of oil displacement with water and simulation models obtained from multifactorial analysis;

The second group includes mathematical models that shed light on the physical nature of the process of oil extraction from different layers. These models are used to a limited extent due to their complexity and inability to fully cover the process of oil field operation in practice.Descriptions of oil displacement with water used in practice can be divided into two types - integral and differential.

The main part

Integral oil-water displacement descriptions are generally less sensitive to random short-term changes in field performance, changing their patterns only when there are significant changes in the bulk of the formation being used for oil production. Therefore, integral descriptions of oil displacement with water are widely used in the evaluation of the effectiveness of methods of influencing the formation.

Differential descriptions of current oil recovery, the amount of oil contained in the recovered product, and the displacement of oil by water, represented by the water-oil factor, are relatively unstable and require careful data processing and the removal of random indicators.For this reason, it is recommended to use differential methods of oil displacement with water during the initial operation of deposits, that is, in cases where it is not possible to use integral method. A reliable quantitative assessment of the efficiency of the working system and the methods of influencing the layer introduced in the field through the descriptions of oil and water displacement in many ways improves the completeness of our perception of the geological structure of the formation or its studied part, the size of the oil reserves, the degree of their extraction and their characteristics, the stability of the working system, the field and It depends on the order and pace of putting its parts

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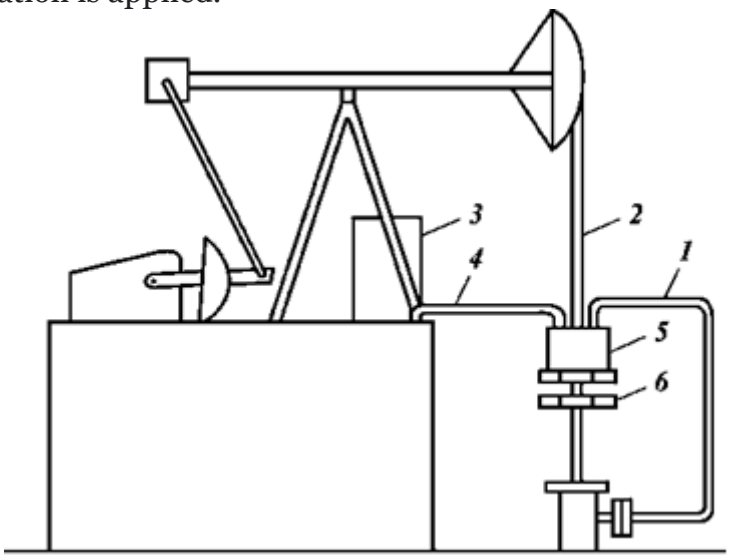
into operation, the size of previously conducted geological and technical activities. The combination of these factors in different ways can have a significant impact on the characteristics of oil displacement during oil production. The main indication that the description of oil displacement with water can be applied is that the object in question has a straight line at the end until the method of exposure to the formation is applied.



1 pictures. A device for transferring liquid reagents to the well.
1-driver pipe; 2-suspension wing; 3-vessel; 4-suction pipe; 5-dosing pump; 6-suspension rope traverse

For this reason, many descriptions of oil-water displacement have been proposed by various researchers, and only some of them can be used in certain geological conditions and specific characteristics of oil production.The main disadvantage of these methods is that they do not allow to evaluate their effectiveness when several exposure methods are used in the field, and they do not take into account the interaction of wells.Water suppression is the most complex and difficult problem in the oil industry because of its impact on oil recovery. A lot of research (theoretical, experimental and mining) has been devoted to finding a solution to this problem in various fields.The first experts believe that the use of a small indicator increases the oil yield, while the others say that the reverse, i.e., high extraction and fluid leakage increases the level of oil extraction from the formation, and the third confidently say that the optimal compression of oil in the field increases the oil yield the most.Experts, who are involved in the design of the use of mines, came to this conclusion after analyzing. It was agreed that the effective indicator of the oil yield of the formation does not depend on the rate of use.From the above conflicting opinions, let's consider the stages and problems that are convenient in the operation of oil fields in real conditions.Low idle increases fuel efficiency. The American M. Leveret expressed an opinion about the increase of oil yield in 1941, according to the results of the experimental data of capillary absorption in hydrophilic porous media.On the basis of such data, it is suggested that when oil is compressed by water in real impure formations, it is possible to accelerate the compression of oil in formations with low permeability and achieve high oil yield. Later, this opinion was supported by other researchers and scientists of the former Soviet state after qualitative analysis of capillary forces and the data of compression of

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oil with water in the cracked-porous stratified layers. Many published reports also suggest that slow-rate oil-water compression results in higher final oil yields.

Based on the research data, it was suggested that when oil is produced in the high index, high permeability, high speed water intrusion occurs in the formations, the size of the water suppression is small and the oil yield is reduced as a result.

In practice, from a theoretical point of view, the effect of capillary suction in impure oil-aqueous formations is that under certain conditions in impure formations, capillary forces squeeze out oil in low-permeability formations, balance the water front, and capture water trapped in the formation.In order to put this efficiency into practice, the rate of movement of oil field contacts during field operations is measured by the rate of capillary absorption.Capillary forces in hydrophilic layers are shown to change the hydration properties of non-solid multilayer layers, and it is suggested that the dependence of the pressure change between the driving system and the extraction zone is measured by capillary pressures at pressures not greater than 0.3 MPa.In such a depression, only one (Anastasiev-Trontsky) deposit has been developed in the gas reservoir and in the groundwater.Short-season operation of conventional fields is not practical, so it is safe to conclude that short-season operation increases oil productivity, but it is not practical.The peak season increases oil production.Such a conclusion was reached by F.I. Kotyakhov in his scientific work entitled "The speed of movement of contour waters and oil yield" on secondary oil production.Similar points were made by many researchers.Several scientists have come to the same conclusions about increased oil yield in high-speed compression.

Optimum field operation ensures the highest oil yield.There are data on oil field performance in porous media with optimal rate of compression of oil with water.

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