



## **ЎЗБЕКИСТОН** ОЛИМЛАРИ ВА **ЁШЛАРИНИНГ ИННОВАЦИОН** ИЛЛАМА-ЙИМЛИ ТАДКИКОТЛАРИ МАВЗУСИДАГИ КОНФЕРЕНЦИЯ МАТЕРИАЛЛАРИ

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# "ЎЗБЕКИСТОНДА ИЛМИЙ-АМАЛИЙ ТАДҚИҚОТЛАР" МАВЗУСИДАГИ РЕСПУБЛИКА 29-КЎП ТАРМОҚЛИ ИЛМИЙ МАСОФАВИЙ ОНЛАЙН КОНФЕРЕНЦИЯ МАТЕРИАЛЛАРИ 24-ҚИСМ

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#### "Ўзбекистонда илмий-амалий тадқиқотлар" [Тошкент; 2021]

"Ўзбекистонда илмий-амалий тадқиқотлар" мавзусидаги республика 29-кўп тармоқли илмий масофавий онлайн конференция материаллари тўплами, 30 июнь 2021 йил. - Тошкент: «Tadqiqot», 2021. - 12 б.

Ушбу Республика-илмий онлайн конференция 2017-2021 йилларда Ўзбекистон Республикасини ривожлантиришнинг бешта устувор йўналишлари бўйича Харакатлар стратегиясида кўзда тутилган вазифа - илмий изланиш ютукларини амалиётга жорий этиш йўли билан фан соҳаларини ривожлантиришга бағишланган.

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## ГЕОЛОГИЯ-МИНЕРОЛОГИЯ СОХАСИДАГИ ИННОВАЦИЯЛАР

## GEOLOGY OF OIL AND GAS FIELDS AND THE GEOLOGICAL BASIS OF THEIR EXTRACTION

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#### **Annotation**

In the scientific work «Geology of oil and gas fields and the geological basis of their extraction» from determining the location of the exploration well for drilling, its drilling, commissioning of the productive layer in the well, well exploration to determine the optimal flow rate, well The annual operation process, all the repairs that need to be done in the well, the various treatments that affect the bottom of the well and finally all the treatments such as its completion as a result of 98-99% watering of the well are studied. In addition, information on the natural regimes of the strata, pumping water into the strata, the latest methods of influencing the stratum, environmental protection, control of the mining process, its planning are considered in science. At present, the depth of oil and gas fields is increasing. Extraction of products from them takes place in more complex conditions, which, of course, leads to the complication of equipment and technology, and requires consistency and knowledge of the geological service in the field. Moreover, in today's world, a valuable product created by the ingenious power of nature, created over hundreds of millions of years, is being used indiscriminately, and if it continues at its current level, humanity will complete such wonderful products in the near future. For the same reason, it is the sacred duty of every mining geologist to use our mineral resources wisely and to treat them with care. As a result of the independence of our republic, unique opportunities have been created to contribute to the development of the oil and gas industry. In this regard, the policy of achieving the supply of our country with oil and oil products, gasification to the most remote areas of the country is a priority. New opportunities are emerging in our country. But it is important to note that our resources are not unlimited, and we must always be careful not to waste them. Determining, locating and operating oil and gas fields and their location plans is a very complex and multi-stage task. Nevertheless, considerable progress has been made in carrying out this work. Currently, there are 5 oil and gas regions in the country, which include:

- 1) Bukhara-Khiva oil and gas basin;
- 2) Ustyurt basin;
- 3) Surkhandarya basin;
- 4) South-West Gissar oil and gas basin;
- 5) Fergana is an oil and gas basin.

The most promising of these is the Ustyurt Basin, and the oldest is the Fergana Oil and Gas Basin.

One of the most pressing issues today is to extract as much product as possible from the depths of deposits and deposits in oil and gas basins. It is no secret that the extraction of oil from most oil fields is less than half of the total amount of oil in the earth's crust. Improving the oil recovery capacity of the formation is one of the current problems of the present and the future. That is why it is necessary to look at oil and gas fields from the point of view of the national economy.

The development of oil and gas fields is aimed at estimating the amount of products in them and the amount of these raw materials needed for the national economy. Such a calculation is mainly based on their statistical estimation. But the process of extracting oil and gas is a process in motion. This is because during the extraction of oil and gas from the reservoir, the initial state of the



reservoir changes over time. For the same reason, the initial parameters related to the geological condition of the deposits are consistent with the technical conditions that occur during its operation and form a coherent process. In addition, all the measures involved in the development of the field must be economically feasible, and this work is of great economic importance.

In short, the discovery and development of oil and gas fields is a complex process of great economic importance, which requires a great deal of responsibility, in the implementation of which the geological, technical and economic conditions are intertwined. As mentioned above, the development of oil, gas and condensate fields, research and development in the process of preparation of these fields for production, as well as the conduct of the production process, its regulation is a matter of national importance and requires a lot of money. Requires It is a very responsible job to organize and manage this work properly. Theoretical and practical study and research of oil and gas and condensate fields on a scientific basis is a direct task of the science of oil and gas field geology. This science is a branch of geology that seeks to ensure the rational extraction of oil and gas condensate deposits, from their initial state to their extraction. For the same reason, the task of science is to collect, organize and analyze all the information about the deposits (and, of course, from the point of view of the national economy). At the same time, the protection of the underground and the environment must come first. Geological relations are expressed in geology in the form of various maps, sections and their comparative results, as well as symbols. Mathematical statistical methods help to express the quantitative relations of different elements. According to the above scheme, geological diversity can be divided into five levels: Gtamikordiversity, microdiversity, mesodiversity, macrodiversity, metaxiliodiversity. It consists of each grain that makes up a layer of heterogeneity, and the study of their properties, regardless of their location in the layer, consists of the study of the composition of their mechanical structure.

The grains of the oil layer are usually between 0.01 and 1 mm thick, and their granulometric composition helps to determine the degree of diversity. Specialists determined the granulometric composition and its coefficients of diversity for each region. Diversification helps to select the filter that will be pumped to the bottom of the well during operation, to organize the extraction process during the extraction process, and to estimate how much oil may remain in the formation. Micro-diversity refers to samples in which the collector property is determined as an element at the level of aggregation. Therefore, the task is to determine the lithology of the sample, its porosity, permeability, the degree of absorption of residual oil. The results of many samples are generalized by the method of probability theory. The study of micro-diversity provides guidance on a number of practical tasks that need to be undertaken during the formation process, including the calculation of reserves and the selection of methods for pumping water into the formation. Meso-diversity studies the structure of the stratum, the presence of collector and non-collector strata in it, and their thickness and importance, on the basis of which low, medium and high productivity zones and intervals are determined. This work is carried out by comparing the cross sections of wells. Such work ends with the creation of various cross-sections and maps. You can use a productivity indicator to separate the elements. The study of mesoxicity allows the separation of the working and non-working part of the formation, the placement of the recipient and the driver in it, the identification of possible and slow-moving parts of the formation, estimating the water driving capacity of the formation and monitoring the water-oil boundary. Macro-diversity is the process of determining which part of a layer is a collector and which is not a collector, and in which case this is the case in the section and in the assembly area. These studies can be expressed in the form of maps and sections.

The study of macro-diversity clearly shows the oil and gas-soaked part of the formation, collectors identify deposits, helps to determine the areas to be removed from the formation and driven during design, the water-oil boundary can be moved rapidly and slowly. It helps to determine the degree to which the formation is involved, as well as the extent to which the layer is involved in the flow from one part to another, and estimates the extent to which the formation is involved in the formation.

Metaxyl diversity in this is taken as an element of the structure of large parts of the assembly that are quite different from each other.

There is a need to better develop indicators for the separation of meso-diversity and metaxyldiversity. This indicator can support multiple layers when combined as a single object. When this issue is considered, it helps to solve the following tasks: when combining several strata into one



#### ЎЗБЕКИСТОНДА ИЛМИЙ-АМАЛИЙ ТАДҚИҚОТЛАР" МАВЗУСИДАГИ РЕСПУБЛИКА 29-КУП ТАРМОҚЛИ ИЛМИЙ МАСОФАВИЙ ОНЛАЙН КОНФЕРЕНЦИЯ МАТЕРИАЛЛАРИ

object, in which part of the stratum the production and drive wells are located, to justify the work done to increase the profitability of production, to control the extraction process, etc. Including.

Admittedly, the initial levels of diversity are well understood, with less emphasis on the next two elements. Improving the methods of studying geological diversity is one of the most important tasks in the science of oil field geology.

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## ORGANIZATION OF OPERATION OF OIL AND GAS FIELDS IN DIFFERENT GEOLOGICAL AND PHYSICAL CONDITIONS

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#### Annotation

Regulation of oil and gas production consists of controlling the movement of hydrocarbons in the formation by technical and technological measures. The regulation of the product from the formation is aimed at the proper filtration of the liquids in it and the determination of their optimal velocities, as a result of which we have created the optimal conditions for the extraction of reserves. This should be done from the beginning to the end of the extraction process.

The following circumstances necessitate the constant regulation of production.

The mining process is carried out primarily through the sparse wells, based on the data obtained for the first layer. Therefore, such a situation does not reflect the actual performance of the layer, and the additional information obtained in the process of searching the assembly requires additional changes, clarifications to the previously adopted project – hence the regulation of this process. Arises from the need.

In addition, the mining process is a complex dynamic process that is constantly changing, and it is natural that such changes will take place over time.

Over time, some of the reserves will be pumped up, the state of the reservoir will change, the oil part will begin to shrink, and the rest will need to take extra precautions to extract as much as possible (some wells will be drilled). , new ones will be put into operation, the activity of the drive wells in the formation will be focused on the extraction of the remaining oil, etc.) and the implementation of this work will require the use of a set of works to regulate production.

The regulation of layer extraction serves to extract it rationally. To do this, first of all, it is necessary to ensure the amount of product that should be obtained from the layer specified in the project. While the measures taken in the early stages of production are aimed at maximizing the amount to be taken, in the later stages (mainly in Phases II and III) the maximum amount is expected to be achieved as soon as possible. Should be focused on continuing.

One of the most important tasks of stratum production regulation is to ensure that the amount of product that can be extracted from it reaches the project specifications. From the very first days of its production, all measures are taken to ensure that as much as possible is extracted from the ground. As a result, we will be able to increase the oil production capacity of the reservoir, and another important task of production regulation is to bring the economic performance of the production process as smooth as possible. This is to ensure that the drilled wells are used efficiently and effectively, minimizing additional costs and minimizing the amount of water leaving the formation.

In the case of production from the formation by the method of impact on the formation, the regulation of production is carried out through the drive and receiving wells. While the regulation of the drive wells is aimed at ensuring that the formation is covered with as much pumped water as possible, the regulation of the receiving wells should be aimed at extracting as much oil as possible and using all corners of the formation. Regulation of natural facilities is carried out only with receiving wells.

There are many ways to regulate production while performing a specific task. They can be divided into two main groups.

The production process is managed in the order of wells drilled at the site (without major changes) and the regulatory process is carried out by changing the existing production schedule. This can be done by digging additional wells, laying new dividing lines, changing the driving pressure, changing the method of opening the formation, and so on.

The rationale for the regulation of stratification and the choice of method are selected depending on the geological and physical conditions of the particular case.

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## "ЎЗБЕКИСТОНДА ИЛМИЙ-АМАЛИЙ ТАДҚИҚОТЛАР" МАВЗУСИДАГИ РЕСПУБЛИКА 29-КЎП ТАРМОҚЛИ ИЛМИЙ МАСОФАВИЙ ОНЛАЙН КОНФЕРЕНЦИЯ МАТЕРИАЛЛАРИ

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