Modern Principles of Designing Oil , Gas and Gas Condensate Fields

Mavlanov Zafar Alanazarovich — Senior Lecturer, Karshi Engineering and Economic Institute, Republic of Uzbekistan, Karshi city,

Abdirazakov Akmal Ibrahimovich — Dotsent, Karshi Engineering and Economic Institute, Karshi city, Republic of Uzbekistan
E-mail : akmal/abdirazakov@bk.ru

ABSTRACT

This article describes the stages of designing the development of an oil and gas field, including mining, geological and technical conditions that are mainly taken into account when developing oil, gas and gas condensate fields, and the classification of each stage.

Keywords: Development a , hydrocarbon, deposits , project , stages , deposits , wells , coefficient, object.

Introduction

The oil and gas field development system is a complex production system that involves both geological objects, underground and surface - facilities, and the “human factor”. The entire system is closely interconnected (multifactorial, with many forward, backward and cross connections), which must be maintained in working order.

Main part

The following real properties of this system can be noted :

lack of sufficient statistical information about the development system;

unsteadiness of the hydrocarbon production process (well stock, flow rate and water cut of produced products and etc.);

the emergence of an ambiguous statistical set of wells due to the fact that the properties of a heterogeneous productive formation are not completely determined;

complexity of the hydrocarbon production system with a large number of elements and connections (formation, well, equipment, etc.) - parameters change during the development process, i.e. the system as a whole is dynamic [3].

The development of oil and gas fields is divided into four main stages [], in accordance with which the content of design work changes. Due to the specifics noted above, which determine the close relationship and interaction of underground and surface technological processes, each stage of development has its own specific features and requires a significant amount of scientific research, pilot work and generalization of results. At the initial stage of - field development, much attention is paid to additional exploration of deposits, determination of their geological structure, and calculation (recalculation) of reserves. In the future - the system for drilling deposits, equipment and technology for hydrocarbon production, the choice of drainage modes, and field development . At the late stage of development, issues of additional measures aimed at increasing the coefficient of hydrocarbon extraction from the subsoil and

reconstruction of development facilities are resolved [1].

When drawing up design documents separately for development, drilling, and construction of oil and gas fields, it is necessary to link design decisions directly to production. The difficulties that have arisen can be overcome only with comprehensive design of the development and infrastructure of oil and gas fields [2]. However, the issues of integrated design have not yet been completely resolved, since the issues of linking various design provisions concentrated in one design document, in the absence of a unified methodology that takes into account all types and forms of interconnection of surface and underground technological processes (especially in dynamics), remain open.

Rational development of oil and gas fields is based on compliance with a number of fundamental provisions based on scientific and technical achievements of the industry, analysis and generalization of domestic and foreign development experience, requirements for the protection of subsoil and the environment, taking into account changes in the country's raw material base and objective trends in its development [3] .

Method

The efficiency of field development and the parameters predicted for them are determined by the scientific and technical level and the validity of design decisions for the designed development systems [4]. Therefore, design solutions should:

be aimed at achieving the maximum economic - effect from the fullest and most comprehensive use of all hydrocarbon reserves and the components they contain, subject to restrictions imposed by the conditions of development of the industry or region, technological capabilities , mining rules, requirements for the protection of subsoil and the environment;

ensure the highest possible stable level up to recovery of hydrocarbons with a high, economically justified hydrocarbon recovery factor and the best use of fixed production assets, material and labor resources;

be based on the use of the most effective equipment and technology mastered by industry;

take into account the real production, economic-geographical and natural-climatic conditions of the area, the availability of infrastructure, the existing capacities of drilling and construction organizations, as well as the prospects for their development.

Conclusion

The justification of development systems recommended for implementation is made based on the results of a comparison of technical - economic indicators of design development options , differing in the choice of production facilities, methods of influencing the formation, the placement system and density of the well pattern, the pace and order of drilling the field, methods of well operation, etc. [5]. In this case, one of the design options is recommended that provides the maximum effect within an economically feasible development period.

LIST OF REFERENCES USED

1. Abramowitz M., Strigan I. Handbook of special functions. — M.: Science. — 1979.
2. Babalyan G.A. and others. Issues of the oil recovery mechanism . — Baku: Azneft e - published , 1956.
3. Babalyan G.A. and others. Physico-chemical basis for the use of surface - active substances in the development of oil reservoirs. - M.: Gosto p - Tekhizdat , 1962.
4. Barenblat E.N. Movement of liquids in porous media. - M.:Nedra, 1972.- 214p .
5. Vakhitov G.G. Effective methods for solving problems of developing oil - water reservoirs using the finite difference method. - M.: Gostoptekhizdat , 1963. - 216 p.
6. Choosing a method for operating wells when designing a master plan for the development of an oil field / Belozerov G.I., Tretyakova G.I. — Rus.-Dep. in VNIIOENG 01/17/1974, No. 125-NG.