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Application Research of Emerging Technologies in Petroleum Geological Exploration

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ABSTRACT. *With the rapid development of society, social production and life require a large amount of petroleum resources, which has aggravated the task of exploration of China's petroleum gas resources. Therefore, it is necessary to strengthen the application of new Chinese technologies in petroleum geological exploration and enhance the exploitation of petroleum resources. Based on the status quo of China's petroleum exploration, this paper analyzes the significance of the application of new technologies in petroleum geological exploration.*

KEYWORDS: *Oil exploration, Emerging technologies, Application elaboration*

1. Introduction

With the gradual advancement of science and technology, people's life and production have become more convenient, and at the same time, the demand for oil in society has increased.At present, oil has been widely used in many fields, and its petroleum products have covered many aspects of our lives, such as asphalt, petroleum fuels, pesticides, etc., which are produced from petroleum.Moreover, oil is a non-renewable resource. Therefore, how to use new technologies to improve the efficiency and quality of oil exploitation and effectively apply it in petroleum geological exploration is of great significance to the development of the country.

2. The significance of emerging technology application

With the development of science and technology, new technologies have emerged in the field of petroleum geological exploration.For example, the 3D seismic simulation method technology is constantly maturing in application, so that the relevant personnel of petroleum exploration can further improve the technology

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when performing basin simulation and underground imaging work.In the petroleum exploration process, through the use of gps and 3g network technology, the staff's research on data organization and engineering design has made significant progress.

China has a lot of complex terrain, which brings many difficulties and challenges to petroleum geological exploration. Therefore, oil explorers have to develop some new technologies to deal with the difficulties encountered in actual work.Through the new technology in the exploration process, the petroleum geological exploration staff has developed oil exploration in both land and ocean, making full use of the country's vast marine resources; through the exploration of oil earthquakes and one-dimensional, two-dimensional, three-dimensional The description is used to develop a more comprehensive exploration plan; in the process of geophysical exploration, seismic exploration technology is continuously applied through three stages of exploration evaluation and development, so that China's oil exploration level can be improved, through continuous use of advanced oil exploration technology. Promoting the efficiency of China's oil exploration and the improvement of oil collection efficiency have further enhanced the development of China's oil industry and the country's economy.

3. Logging and Drilling technology

With the development of computers, information technology, and electronic technology, people's lifestyles and production methods have been greatly changed.The data acquisition and data processing technologies are developing rapidly. The data logging rate of the imaging logging tool is fast, and more data can be transmitted in a certain period of time, which greatly expands the scope of the wellbore search, and can discover the blindness of the drilling accessories through technological innovation. Ore body.In addition, magnetic resonance logging technology, rapid platform logging technology, logging while drilling technology and cased hole logging technology have been further developed.Through these modern information technologies, the geological conditions of the work area can be effectively understood before drilling, so that appropriate exploration techniques can be selected according to the actual situation of the drilling to reduce the cost of petroleum geological exploration.

Drilling technology is a common technique in petroleum geological exploration. It can be said that most of the cost of petroleum geological exploration is spent on this, and the importance of drilling engineering can be seen.Oil drilling technology should minimize the cost while ensuring drilling efficiency and drilling quality.Traditional drilling technology is costly. In recent years, China has continuously improved its original technology and developed new drilling technology in order to reduce drilling costs.For example, underbalanced drilling technology is a relatively new type of oil drilling technology, which not only has lower cost, but also less damage to the surface during drilling. It also solves common drilling problems such as stuck and lost, and greatly improves drilling. speed.This technology is well suited for the exploration of depleted oil layers.However, it also has some shortcomings, such as corrosion, safety risks, etc.,

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so further technical optimization is needed, or other technologies such as deep well drilling technology are combined.All in all, as long as the drilling technology is properly applied to the occasions needed, it can exert its greater utility.

4. Virtual reality and Aerial telemetry

In the development of petroleum geological exploration projects, the development of information technology has also brought about completely new technologies, which are applied in petroleum geological exploration projects.Virtual reality technology refers to the use of a large-screen visualization environment and a computer-aided visualization environment to display all the data obtained in the petroleum geological exploration process by using a graphical model or a three-dimensional simulation of dynamic graphs. A technology.This technology can be used in petroleum geological exploration projects to save manpower and material resources to a certain extent, improve exploration efficiency on the basis of saving exploration costs, and directly view the developed exploration data and conditions on the large screen. The simulation of the actual effect has led to a better development of petroleum geological exploration.

At the same time, air telemetry technology is also used as a new technology in the development of petroleum geological exploration engineering. The air telemetry technology refers to a new technology for telemetry monitoring through seismic sources and petroleum geological exploration instruments and related software. This technology and imaging technology are combined to produce a high-resolution petroleum geological reservoir structure map based on the data obtained, which can expand the scope of oil exploration and greatly improve the quality and efficiency of oil exploration.

5. Conclusion

It is of great significance to explore the application of new technologies in petroleum geological exploration.Strengthening innovation in petroleum geological exploration technology can effectively improve the efficiency of oil exploration and mining, and is closely related to national energy security and social stability.Therefore, relevant departments should pay attention to the application of new technologies in petroleum geological exploration, increase investment in technology and capital, and improve the technical level of petroleum geological exploration, thus effectively ensuring the stable development of the country.

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