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APPLICATION OF RADIO MONITORING SYSTEMS IN DEVELOPMENT REGIONS OF DANGEROUS NATURAL GEOLOGICAL PROCESSES CAUSED BY EARTHQUAKE

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ABSTRACT

This article is devoted to the development of a method of monitoring and monitoring the state of mountain layers in areas where landslides can occur - a dangerous natural geological process based on integrated sensors of optical fiber communication. The main cause of landslides in the territory of the Republic of Uzbekistan is also related to hydrometeorological conditions. Therefore, this process is seasonal, ie the higher the atmospheric precipitation, the higher the risk of landslides. Landslides in Uzbekistan are most common in Surkhandarya, Kashkadarya, Tashkent, Fergana, Samarkand and Namangan regions.

KEYWORDS: *Avalanche, Security, Optical fiber, Technological process, Optical fiber sensor.*

INTRODUCTION

Landslides are one of the emergencies that pose a serious threat to the population and the economy of the Republic of Uzbekistan living in mountainous, foothill and riverine areas. So, in such conditions, how to protect the population and the territory from emergencies and take measures to prevent it?

Although landslides are included in the category of separate processes that occur on the earth's surface, they develop in close connection with the internal movements of the earth, in particular earthquakes.

By analyzing large landslides and studying their causes, we can be sure that most of them are formed after an earthquake or in parallel with an earthquake [2].

The main cause of landslides in the territory of the Republic of Uzbekistan is also related to hydrometeorological conditions. Therefore, this process is seasonal, ie the higher the atmospheric precipitation, the higher the risk of landslides.

Landslides in Uzbekistan are most common in Surkhandarya, Kashkadarya, Tashkent, Fergana, Samarkand and Namangan regions.

MATERIALS

Today, the Ministry of Emergency Situations of the Republic of Uzbekistan, ministries, departments and other organizations that are part of the state system for the prevention and elimination of emergencies have created a unified system for monitoring, information exchange and forecasting of natural, man-made and environmental emergencies. That is, the identification of zones (zones) of the development of dangerous natural geological processes, the study and prevention of their activation, anti-landslide and other preventive measures to maintain the natural stability of slopes, healthcare facilities and other settlements. The State Committee for Geology and Mineral Resources of the Republic of Uzbekistan for Geological Processes is engaged in organizing and monitoring hazardous geological processes in the territories where facilities are located, and there is a mechanism for exchanging information with the Ministry of Emergencies [1].

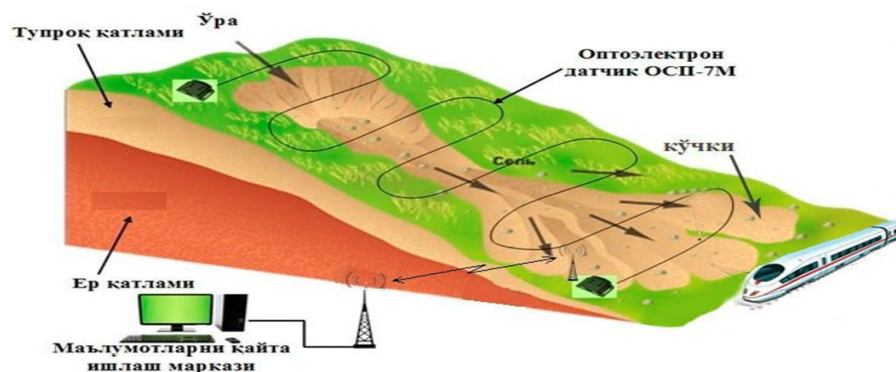
The Problem in Studying Landslides: First, is in the abstraction of the time of their occurrence. Because landslides are one of the most dangerous geological processes that develop spontaneously [3].

Second, find a safe place. A comprehensive study of the area is needed to relocate people and farms to the relatively safe area. A comprehensive study should lead to a single conclusion [5].

THE RESULT

Solution of the Problem:

- An effective result can also be achieved when using a radio monitoring system based on fiber optic sensors as an innovative solution for the study of landslides. Light weight and volume of optical fiber, no fire hazard, high resistance to abrasion, low cost and explosion hazard allow the use of optical fibers as sensitive elements of the measuring system.



1- Picture. The principle of organizing a radio monitoring system.

- Optical fiber cables for data transmission can also be used as sensitive elements in determining temperature, pressure, vibration and quantities that have a physical effect. The main advantages of such systems are the ability of power grids to serve you, the absence of electromagnetic interference, high sensitivity and small size. In addition, the use of standard optical fiber cables and elements used in telecommunications shows that the cost of such sensors is not expensive.

- Optical fiber sensor (OFS) is a measuring instrument consisting of a measuring transducer (MT), which is transmitted from an optical fiber, connected to an optical signal processing and conversion device via an optical fiber communication line and measured to any optical fiber of physical size. Designed to present the measured data signals in the form of applications by varying the size of the signal [5]

The advantages of using optical fiber measuring sensors in the monitoring system of various objects and processes are:

- No effects on the measuring device;
- Absence of problems with the melter;
- Absence of problems such as arc formation and sparking;
- High resistance to adverse environmental conditions
- The ability to make measurements in potentially explosive atmospheres;
- The impossibility of the fiber to chemically react with the measuring medium;
- High mechanical strength and simplicity of system structure;
- Resistance to temperature rise.

DISCUSSION

The main advantage is, first of all, the ability to perform remote measurements when it is not possible to use electronic sensors or when their use is not recommended.

Based on the advantages and capabilities of the above optical fiber sensors, it allows for continuous monitoring of rock strata and mountain migration processes in mountain and foothill areas.

Second, in solving the problem of finding a safe place, it is necessary to create maps that reflect the specific crisis and danger. Based on these maps, security plans for the areas will be developed. Such events are taking place on a large scale in Europe and the United States.

CONCLUSION

Extensive study of innovative policies of high-tech developed countries, including the United States, Japan, South Korea in the field of life safety, the existing scientific and technical potential for the effective implementation of inventions and scientific developments, achievements in this field and capacity-building measures should be intensified.

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