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MASS IMPLEMENTATION OF THE GLONASS SYSTEM
INTO THE WORK OF RUSSIAN RAILWAYS

Аннотация: *в статье рассматривается роль спутниковой навигационной системы ГЛОНАСС на железнодорожном транспорте для обеспечения более высококачественного уровня управления перевозками и повышения безопасности движения поездов. Данная система является основой для перспективного развития отрасли, которая предполагает переход на скоростное и высокоскоростное движение на железнодорожной магистрали.*

Ключевые слова: *ГЛОНАСС, КЛУБ, РЖД, спутниковые системы, навигация, безопасность.*

Abstract: *the article considers the role of the satellite navigation system GLONASS in rail transport to ensure a higher-quality level of traffic management and increase in the safety of train traffic. This system is the basis for the long-term development of the industry, which involves the transition to rapid and high-speed traffic on the railway.*

Keywords: *GLONASS, Russian Railways, satellite systems, navigation, safety.*

Railway transport provides freight and passenger traffic. Therefore, it is necessary to improve safety systems. The problem of the research is the inaccessibility of the full use of the GLONASS system throughout the entire network of railways in Russia by various engineers. With the introduction of this system, the capabilities of the GPS

system are used. The purpose of the research is to study the prospects for the development of the GLONASS system in the work of Russian Railways. The main tasks of which are:

1. To study the existing capabilities of the GLONASS system.

2. Determine the increase in the safety of train traffic on the Russian railways network using the GLONASS navigation system.

GLONASS (GLOBAL Navigation Satellite System) is a satellite radio navigation system that allows you to determine your coordinates and speed with high accuracy. At the moment, such a system is used in the organization of air, sea and rail traffic and is one of the main components of these types of transport. The main characteristics of the GLONASS system are:

1. Accuracy of navigation definitions by position – 50–70 meters with a probability of 99.7%.

2. The accuracy of determining the components of the consumer's velocity vector is not worse than 0.15 m / s with a probability of 99.7%.

3. The time required for the first navigation determination is from 1 to 3 minutes; subsequent navigation definitions range from 1 to 10 sec.

The first satellite «GLONASS» was launched on October 12, 1982, but officially this system was introduced on September 24, 1993 by order of the President of the Russian Federation.

Currently, the GLONASS system has been widely used in the «KLUB» device. The complex locomotive safety device «KLUB» is installed on the traction and self-propelled railway rolling stock and combines automatic locomotive signaling and electronic locomotive speedometer.

The most accessible open system of the GPS standard is used as a communication system, the operators of which on the selected sections of railways guarantee us the possibility of connecting and delivering messages. Such opportunities have already been implemented on the Moscow, Kuibyshev and South Ural railways.

Offered GLONASS complexes for installation on locomotives possess a high level of protection from mechanical and climatic influences, adapted to the

requirements of installation of equipment on the rolling stock of Russian Railways, and meet the relevant safety standards. The transmitting devices of the onboard systems allow operation both in standalone mode and in conjunction with complex locomotive safety devices.

At the moment, the total number of mobile units equipped with this satellite technology is about 35% of all Russian Railways locomotives. Thus, the total demand of Russian railways for GLONASS satellite navigation devices by 2019 will be 29–35 thousand units according to preliminary data. Russian Railways will provide the possibility of implementing a multi-level integrated security system by GLONASS satellite navigation technologies introduction.

The use of such satellite technology will enable Russian Railways to provide the global spatial coverage required by the railways and prompt delivery of the information necessary to make appropriate management decisions and implement proactive measures to reduce the risks of occurrence and prevent the consequences of man-made or natural disasters.

This will increase the competitive advantages of Russian Railways on the international transport market and will contribute to the expansion of the company's transport business.

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