ENSURING TRAFFIC SAFETY ON RAILWAYS

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Abstract: In this article, traffic safety on railwayscurrent issues of provision are highlighted. The main factors that threaten security, the existing problems and the proposed measures for their elimination are covered in detail. Also, information about the role of modern technologies, the need to improve the skills of employees, and the legal framework is provided. The article reflects a comprehensive approach aimed at increasing safety in the railway transport system.

Keywords railway, traffic safety, technical failure, human factor, monitoring, automation, legislation, safety system, transport infrastructure, technical service.

Railway transport is one of the most important sectors of the country's infrastructure and is a safe, efficient and inexpensive way of transporting goods and passengers. Therefore, ensuring traffic safety on railways is one of the important tasks facing the state and society.

The essence of traffic safety

Traffic safety on railways is a system of ensuring the movement of trains, locomotives and other railway vehicles in accordance with the established rules, without harming human health and property. This system includes technical, organizational and regulatory measures.

Factors that threaten security

Several factors have a negative impact on traffic safety in railway transport:

Technical failures: poor condition of the road network, malfunctions in the signaling system or failure of locomotives and wagons to meet technical requirements

Human factors: errors made by drivers and other railway employees due to fatigue, carelessness or inexperience.

Natural disasters: heavy rainfall, snowstorm, heat wave and other natural phenomena reduce traffic safety.

Organizational problems: poor planning, lack of organizational control or inadequate enforcement of rules.

Security measures

The following measures are important to increase the level of security:

Introduction of modern technologies: automated control systems, GPS-monitoring, constant control of train movement through digital signaling devices.

Training of employees: organization of regular training sessions, certification and stress resistance training.

Acceleration of technical maintenance and repair work: regular inspection and repair of the technical condition of railway infrastructure, locomotives and wagons in accordance with established norms.

Strengthen the monitoring and analysis system: identify any technical failure or incident in time and thoroughly analyze its causes so that it does not happen again.

Legislation and normative legal framework

There are laws and regulatory documents that regulate traffic safety on railways. In particular, the Law "On Railways", traffic safety rules, technical regulations and decrees related to the field serve as the main legal basis in this regard. On the basis of these documents, the activities of railway employees are regulated and responsibility for each incident is determined.

International experience and practices to be learned

Many developed countries have advanced technologies and experience in ensuring traffic safety on railways. Including:

Germany: DB Netz AG has introduced a real-time traffic safety monitoring system. Minimized the human factor through automatic warning and stop systems (ETCS).

Japan: Shinkansen high-speed train traffic control uses seismic sensors and artificial intelligence. Any shakin

if detected, the train will stop automatically.

Russia: RZhD is widely introducing a digital signaling and dispatching system based on the "Digital railway" concept.

Such experiences can serve as a roadmap for the modernization of the railway system in Uzbekistan.

The role of digitization and innovation

Modern technologies are an important factor in increasing security:

Artificial Intelligence (Al): automation of motion analysis, prediction of faults in advance.

IoT (Internet of Things): remote monitoring of the condition of each railway element (rails, conductors, wagons).

Big Data: identifying danger zones through the analysis of large volumes of traffic data.

In Uzbekistan, these technologies are being gradually introduced, but it is necessary to expand them on a full and systematic basis.

Summary

Traffic safety on railways is a complex system that is ensured as a result of the responsible approach of not only the employees of the railway system, but also the whole society. In this regard, it is possible to achieve a high level of security by using modern technologies, improving the skills of employees, strengthening systematic control and improving legislation.

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