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AN EFFECTIVE PATH OF ON-SITE SAFETY MANAGEMENT FOR A GENERAL ACCIDENT REFLECTION

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Abstract: An in-depth and systematic analysis of a common general logistics operation accident based on the behaviors of the relevant personnel and the results of the behavior. Aiming to reflect the dynamic process of how the on-site dangerous operation increase the probability of the accident to the occurrence of the accident, as well as how these behaviors are reflected the problems existing in enterprise operation safety supervision, safety education and training, etc.. It summarizes an effective method of how to transfer the on-site safety operation from a disordered situation to an ordered model by self-discipline, mutual discipline and other discipline.

Key words: Common; General accidents; Mapping; Field operations; Out of control and order

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RESEARCH ON METRO LIFE CYCLE RISK ASSESSMENT AND SAFETY MANAGEMENT BASED ON DISTRIBUTED OPTICAL FIBER SENSING MONITORING SYSTEM

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Abstract: Subway construction often passes through a large number of existing buildings and various poor geological stratum, which has an adverse impact on the safety of subway construction and operation. With the rapid development of modern monitoring technology and information technology, comprehensive and integrated design should be carried out for the construction monitoring and health monitoring during the life cycle of the subway, so as to realize the intelligent safety management in the whole life cycle of the subway. In this work, according to the feedback data from the distributed optical fiber monitoring system, engineering geology, surrounding environment and other influence factors, a set of analysis method to accurately identify the construction risk and determine the location of structural diseases is put forward by analyzing and predicting the spatiotemporal variation law of subway engineering, and the risk classification standard is formulated according to the principle of "division, classification and grading". Finally, the integrated risk classification management and control procedure of subway engineering is established, so that the technical personnel can take the refined risk control measures timely according to the structure status of the subway. Therefore, it is of great practical significance and application value for the safety management of Metro life cycle to use modern monitoring means to accurately evaluate the structural state of the subway and formulate an efficient safety management system.

Key Words: Optical fiber sensing monitoring, Metro life cycle, Risk assessment, Risk classification management and control, Intelligent safety management

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CURRENT DIRECTIONS FOR THE DEVELOPMENT OF PASSENGER RAIL TRANSPORTATION LOGISTICS

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The logistics of passenger transportation by rail began to develop actively in the 19th century. The need for it began to manifest itself with the development of intercontinental passenger traffic. With the advent of rail transport and the needs of various types of passenger services, the implementation of simple

rail transportation of passengers was insufficient to meet the needs of the population in transportation. With the development of other types of transport in the twentieth century, the quality of railway passenger transportation by various types of transport ceased to satisfy the population. This was especially evident in long-distance direct communication. In the presence of vast territories of the USSR, the logistics of passenger transportation was practically absent. This affected many parameters: the route speed of passenger trains, there was no integration with other modes of transport in large interchange hubs, the organization of passenger transportation in interregional and regional traffic was carried out according to the residual principle of using the capacity of railway lines. Active development of population movement in the XXI century required new approaches to organizing the logistics of rail passenger transportation, especially in countries with a small territory and a developed rail network. Problems of cross-border and cross-border movement of the population have arisen, which can only be solved using new conceptual approaches to the logistics of rail transportation.

The existing forms of organizing passenger traffic at the present stage have received a variety and have significantly changed in terms of their functional content. Regular transportation of passengers, taking into account numerous factors of influence, becomes conditionally regular, which are carried out in accordance with the schedule of constant movement of vehicles along established routes. Constant trains are assigned regularly on days of the week (for example, twice a week or on separate days), month (on Mondays or Sundays). Regular passenger transportation received the status of conditionally regular or permanent. In this case, it became necessary to use the logistics of passenger transportation on railway transport and at points of contact transfers of passengers, as well as on the days of irregular passenger trains, attracting other types of transport: on the days of maximum meetings and an increase in travel for business trips by the population, air transport can be used from the regional centers of the country (in Belarus, in all regional centers on the outskirts of agglomerations, airports are located); from the centers of regional or republican subordination (their number in Belarus is 18), accelerated minibuses can go, the duration of the trip to the capital is 2.5–3.0 hours; appointment of express trains for target purposes (departure time from Gomel at 6–00 and arrival in Minsk at 8–20). In Belarus, there are many tourist trains to countries with mandatory visa support, which requires the personal presence of citizens at visa centers of foreign states on certain days and for periods of time: submitting documents for a visa before 12:00, receiving ready documents on other days after 14:00 ... Considering that up to two million Belarusian citizens living outside Minsk participate in this project during the summer period, conditionally regular transportation becomes regular with the specifics of their functional performance based on movement and the timing of departure and arrival of passengers.

The advantage of the logistics of regular transport in the presence of many factors that violate the sign of their classification is assessed in two directions:

a) *for transport organizations:*

1) the stability of the use of vehicles is realized (additional and prolonged downtime while waiting for the flight is excluded);

2) the predictability of the resource provision of passenger transportation and the vital activity of transport organizations remains (the need for drivers, machinists and qualified workers for the technical operation of vehicles, excess fuel reserves, spare parts decreases);

3) predictability of the transportation process, operating costs and income from its implementation is achieved;

4) there is a need for the development of transport infrastructure and vehicles;

b) *for passengers:*

1) high reliability of transport services for the population is realized;

2) the availability of transport modes to communications is ensured;

3) the logistics of regular passenger traffic allows setting tariffs that are relevant to the population, which ensures real competition between modes of transport (for example, the fare for one passenger at the level of business class service between Gomel and Minsk is € 5.2);

4) the priority of choosing the transportation logistics is established for the passenger. This allows to improve the quality of passenger transportation by various factors – delivery time, service along the route.

In the implementation of the logistics of passenger transportation on regular flights in modern conditions, there are disadvantages:

- 1) high costs for their implementation, associated with a large fluctuation in passenger traffic and the need for a mandatory flight assignment, regardless of their size;
- 2) obligatory presence of vehicles of various categories of service class;
- 3) maintenance at a high level of technological railway infrastructure, taking into account the requirements of passenger traffic;
- 4) the implementation of round-the-clock regulations for the work of stations and points of embarkation and disembarkation of passengers, which can be changed with optimal contact between the logistics of the work of stations and the schedule of passenger trains.

Taking into account the high seasonality of passenger transportation in Belarus, an irregular form of organization of transportation began to be used on many types of transport. In the system of organizing passenger transportation, they received the name charter. This form of organization of transportation is characterized by its own logistics. It provides for the carriage of passengers by any type of transport in accordance with contracts between individuals or legal entities for the carriage of passengers. The contracts stipulate the terms, route of transportation, the number of passengers, tariffs, types of transport involved in transportation. Transportation is ordered mainly by travel companies that organize the population for one-time trips. In the Republic of Belarus, charter transportation is carried out by all types of transport. Buses are mostly used (when leaving for Ukraine, Lithuania and Poland), trains of the Belarusian Railway (Varna (Bulgaria), Sochi (Russia), the Baltic countries) are limited.

Unlike regular flights, their charter form has great advantages:

- a) a high level of vehicle use (exclusion of zero and low-traffic runs);
- b) the efficiency of using vehicles in terms of passenger capacity (when performing charter flights) and the need for a small number of them;
- c) full payback of the flight in both directions and obtaining the expected level of profit;
- d) a wider possibility of using outsourcing in transport activities (hiring drivers to perform a specific transportation and using vehicles of private owners on motor vehicles, attracting foreign carriers to perform charter flights).

Charter flights have their drawbacks:

- 1) low vehicle mileage;
- 2) a large interval of inter-trip downtime of vehicles and personnel;
- 3) low labor productivity of the charter flight personnel;
- 4) high specific consumption of fuel and energy resources for transportation.

Taking into account the advantages and disadvantages of irregular (charter) transportations, they are used when transporting tourists. For the conditions of Belarus, the appointment of charter routes for passenger transportation in the summer period becomes more efficient than the appointment of additional trains, buses and aircraft on a regular schedule. To solve this problem, the development of passenger transportation logistics is required, which uses the logistics of regular trips and irregular traffic by means of transport. This option of passenger transportation logistics excludes additional routes of regular traffic. Instead of them, charter flights are envisaged with additional loading of passengers who are not included in the list of tourists.

The considered approach to organizing the logistics of passenger transportation allows us to solve the problem of their implementation in the context of a rapid change in the geopolitics of our own and other states. The efficiency of the logistics of transporting passengers in international traffic is greatly influenced by factors:

- a) the geographical location of the country and the participation of its transport infrastructure in the integration processes in the region;
- b) the existence of restrictions and prohibitions on the use of the transport network in the international market for passenger transport services, on the use of vehicles;
- c) the state and degree of development of the border infrastructure;
- d) geopolitical conditions in the region, which are formed for a long-term planning period (from 1 to 3 years) – restriction or expansion of the exit / entry of citizens to the Republic of Belarus and neighboring states, expansion of migration processes of the population within the country, entry of foreign citizens for tourism and recreation , visa restrictions or permits.