Bibik S., Nesterenko H., Muzykin M., Kuzmenko A. Improvement of the Automated Control Technology of Trains Traffic with Dangerous Goods. International Scientific and Technical Conference on Computer Sciences and Information Technologies. Vol. 2 : 16th IEEE International Conference on Computer Science and Information Technologies (CSIT 2021), Lviv, 22–25 September 2021. P. 190–193. DOI: 10.1109/CSIT52700.2021.9648611.

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Improvement of the Automated Control Technology of Trains Traffic with Dangerous Goods

Abstract:

This article is devoted to the actual issue of improving the automated control technology of trains traffic with dangerous goods due to the addition of the existing set of tasks. These tasks are solved on the basis of operating automatized working places of dispatching personnel, by the software for decision-making support system developed on the basis of the graph of the Bayesian Belief Network that describes the security status of trains traffic en route. The scientific value of the article lies in the development of new technology for planning and managing the transport of dangerous goods through intelligent support for decisions at the tactical and operational levels.

Keywords: dangerous goods, routes of trains movement, automatized working places, computer simulation

References:

1. D. Jovanovic and N. Zivkovic, "Routing problems in transportation of hazardous materials", Working and Living Environmental Protection, vol. 7, no. 1, pp. 43-51, 2010.
2. V. Akgim, E. Erkut and R. Batta, "On finding dissimilar paths", European Journal of Operational Research, vol. 121, no. 2, pp. 232-246, 2000.

3. P. Leonelli, S. Bonvicini and G. Spadoni, "Hazardous materials transportation: a risk-analysis based routing methodology", Journal of Hazardous Materials, vol. 71, no. 1–3, pp. 283-300, 2000.
4. Ya. Dayub, Metodi ta modeli optimizatsii peremishchennya vantazhiv pidvishchenoi nebezpeki, vol. 138 C, 2011.
5. V. G. Dudchenk, o. A. M. Basae, v. S. V. Kutek, o. V. O. Boroviko and v. V. M. Krishtal, Problemni pitannya gasinnya pozhezh i likvidatsii naslidkiv avariy na zaliznichnomu transporti pid chas perevezennya nebezpechnikh vantazhiv, vol. 18, no. 2, pp. 13-16, 2008.
6. M. Babyak, R. Kersys and L. Neduzha, "Improving the dependability evaluation technique of a transport vehicle", Transport Means _ Proceedings of the International Conference, pp. 646-651, 2020.
7. A. Prokhorchenko, A. Panchenko, L. Parkhomenko, H. Nesterenko, M. Muzykin, H. Prokhorchenko, et al., "Forecasting the estimated time of arrival for a cargo dispatch delivered by a freight train along a railway section", Eastern-European Journal of Enterprise Technologies, vol. 3, no. 3–99, pp. 30-386, 2019.
8. O. V. Lavrukhi, n. P. V. Dolgopolov, V. V. Petrusho and v. O. M. Khodakivskiy, Informatsiyni sistemi ta tekhnologii pri upravlinnya zaliznichnimi perevezennyami, pp. 118, 2011.
9. S. Bibik, O. Strelko, H. Nesterenko, M. Muzykin and A. Kuzmenko, "Formulation of the mathematical model for the planning system in the carriage of dangerous goods by rail", IOP Conference Series: Materials Science and Engineering, vol. 985, no. 1, pp. 01 2024, 2020.
10. V. M. Akuliniche, v. V. A. Kudryavtse and v. A. N. Koreshkov, "Matematicheskiye metody v ekspluatatsii zheleznykh dorog", Uchebnoye posobiye. Moskva: Transport, pp. 223, 1981.