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## **Streszczenie rozprawy doktorskiej**

**Temat pracy: „Metoda wyznaczania wskaźników niezawodności dla wojskowych pojazdów mechanicznych eksploatowanych nieregularnie”**

*Obszar i dziedzina nauk technicznych*

*Dyscyplina: budowa i eksploatacja maszyn*

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### **Summary**

The presented thesis is analytical in nature and is dedicated to the method for determining indicators of reliability for military vehicles operated intermittently by recording operating events. Indicators of reliability are a helpful element in military logistics. The algorithm of reliability index is so generalized that it can be used to analyze other types of technical objects used in the rescue, transport, and specialized seasonal transport jobs.

The advent of information technology in the logistics of the military has helped to move the traditional paper system of recording operating events to the integrated IT military system. It allows to track the usage history of fleets of military vehicles with regard to the individual units of equipment. Polish Armed Forces capable of constant combat readiness maintain the potential of the fight, aids and logistics and transport on the vehicle chassis. Knowledge of the reliability of the various types of vehicles creates the possibility of a proper planning of the mission within the framework of its potential means of transport.

A method of obtaining desired increase of the efficiency of fleet management vehicles utilized irregularly has been presented in this thesis. Developed on the basis of analytical procedures, the algorithm of selection for vehicle (or group of vehicles) to perform the tasks takes into account the allocation of mobile resources, their complexity and complicated construction, the degree of modernity, with the so-called "morally obsolete", the history of usage - runs, current repairs, planned repairs, operation planned, the amount of spent fuel, oils and lubricants, industry regulations. The obtained results of analytical models and computer simulations carried out demonstrate the validity of the adopted thesis dissertation, which argues that the designated indicators of reliability for individual groups of vehicles can implement the Integrated Multilevel Information System of the Ministry of Defence.

To increase the efficiency of managing military vehicles author proposed to introduce an algorithm taking into account the mobility of vehicle, type of traction - wheeled or tracked, task specificity and the history of the vehicle. The author has also introduced a reserve procedure supported by the results of tests and computer simulations in this paper, the aim of which is to assess the reliability of the vehicle designated for the mission.

A mathematical model has been created, basing on the known test methods used to determine the reliability of a variety of mechanical systems developed. The selection of the

minimum necessary and sufficient operating parameters of the vehicle has been conducted, allowing to determine the indicators of reliability of military vehicles at the level of a single copy of the equipment.

A preliminary analysis of the economic effects expected when using the methods developed in the thesis which determine the indicators of reliability, has been made. Comparison of the recording methods currently used in the Polish Armed Forces with those proposed in the thesis, have revealed that the innovative methods will undoubtedly bring a positive effect both in increasing the reliability of carrying out rescue and intervention and will bring savings in the period of awaiting and storage.

At the end, the thesis shows the findings of the analytical considerations supported by an extensive database of various operating types of transport equipment used intermittently in the Armed Forces of the Republic of Poland