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SIMULATION MODEL IN THE CONTEXT OF DISTANCE LEARNING

Анотація. У час ведення повномасштабної війни з Російською Федерацією насущним є питання щодо відбиття ударів засобів повітряного нападу противника. Одним з найважливіших етапів відбиття ударів засобів повітряного нападу противника є підготовка номерів розрахунків бойових машин. Проведені дослідження дозволили сформулювати науково обґрунтовані рекомендації щодо використання імітаційних моделей та різного програмного забезпечення для навчання та підготовки номерів розрахунків бойових машин.

Ключові слова: засоби повітряного нападу, імітаційна модель, номери розрахунків, програмне забезпечення, підготовка, дистанційне навчання.

In a full-scale war with the Russian Federation, the issue of repelling enemy air strikes became a very important problem. One of the most important stages in repelling enemy air strikes is the preparation of combat vehicle crew members. The research made it possible to formulate scientifically based recommendations on the use of simulation models and various software for training and preparation of combat vehicle crew numbers.

Keywords: air attack means, simulation model, crew members, software, training, distance learning.

Today, an important scientific and applied task needs to be addressed - the implementation of an effective programme of training and preparation of combat vehicle crews to acquire the necessary theoretical and practical skills in repelling air attacks by various enemy air assets.

In the russian-Ukrainian war, the Russian Federation is using the full range of air attack capabilities available to it: from small «FPV» drones, «Lancet» and «Shahed» attack drones to cruise missiles with optoelectronic (X-59), inertial (X-55, X-101), radar (X-22), and satellite («Kalibr», «Kinzhal») guidance methods, and some missiles use several guidance methods simultaneously (X-555).

Ukraine's Western allies and partner countries provide a large number of different air defence systems to our country to repel enemy air strikes, but it is not enough to just provide a particular air defence system. An important stage is the training of personnel to work with different types of weapons. To this end, a huge training and education programme has been and is being deployed in Ukraine and abroad.

Firstly, we must analyse the components of the training programmes for combat vehicle crew members and other personnel. Any training or education cannot take place without the availability of trainees, materials and technical resources and a well-prepared training plan. Having analysed this, we can conclude that at this stage of the war, Ukraine does not suffer from a shortage of personnel, and thanks to a professional approach, well-prepared and meaningful educational programmes and training plans that suit the current realities of warfare have been developed. A serious problem arises in providing an adequate amount of materials and technical resources, fuel and lubricants, especially serviceable and operational weapons and military equipment.

Priority in the providing of weapons and military equipment is given to combat units performing combat missions both on the front line and throughout Ukraine. Consequently, for the education and training of personnel, the much-needed material and technical base is usually not available or is available in single units, which only puts a strain on the weapons and military equipment itself, as well as on the personnel undergoing training and the teaching staff.

The question of preserving the lives and health of personnel is crucial, and as long as the enemy has the capability to strike deep into the territory of Ukraine, the concentration of military personnel who have been gathered in one place for training or education, especially on modern weapon samples, is a priority target for the enemy. Therefore, the availability of this software on simulation models will also be very useful as a form of remote training for personnel to avoid concentration and the creation of threats to their lives and health.

The software serves as a trainer or simulator that simulates the operation of a specific weapon model, such as the self-propelled anti-aircraft gun «Gepard». In other words, the program includes blocks and specific elements of the system used in combat operations on this weapon model. This allows

the personnel undergoing training to memorize the material and technical base of the weapon model on which they are training, as well as the processes occurring during combat operations.

Thus, the result of the current work on creation such a simulation model of the self-propelled anti-aircraft gun «Gepard» is a software complex trainer (Figure 1 and Figure 2), which already provides certain training and preparation capabilities for the crew members on this weapon model.

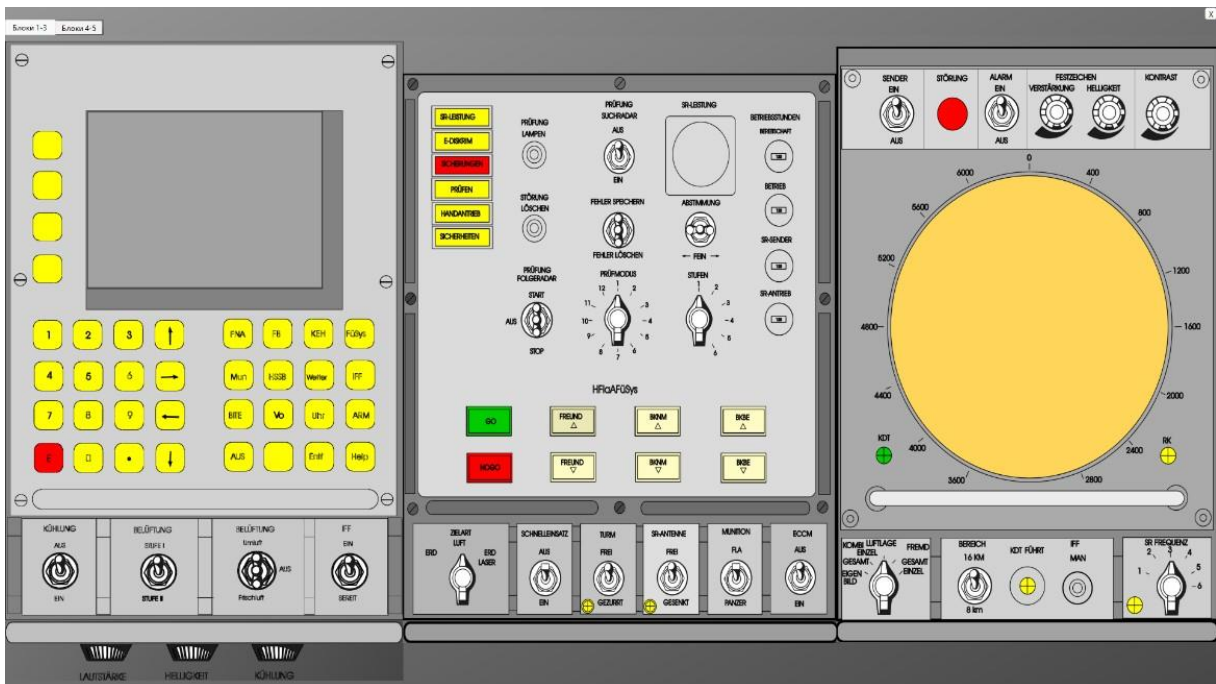Figure 1 - The main screen of the software complex trainer

Figure 2 - Operating mode «Training» of the software complex trainer

Conclusion:

The creation and development of software and simulation models for essential weapon samples and military equipment for distance learning and personnel training have proven to be crucial in the contemporary context of a full-scale war with the Russian Federation. The availability of a wide range of software simulating the operation of various air defence systems will contribute to a more effective training of personnel, assisting military personnel in mastering educational material, and reducing the strain on material-technical resources without the need for fuel and lubricants. The concentration of military personnel gathered in one place for training or preparation, especially on modern weapon samples, is a priority target for the enemy. Therefore, the presence of this software on simulation models will also be useful as a form of distance learning for personnel to avoid concentration and the creation of threats to their lives and health.

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