

**МІНІСТЕРСТВО ОБОРОНИ УКРАЇНИ
НАЦІОНАЛЬНА АКАДЕМІЯ СУХОПУТНИХ ВІЙСЬК
ІМЕНІ ГЕТЬМАНА ПЕТРА САГАЙДАЧНОГО**

**ПЕРСПЕКТИВИ РОЗВИТКУ
ОЗБРОЄННЯ ТА ВІЙСЬКОВОЇ ТЕХНІКИ
СУХОПУТНИХ ВІЙСЬК**

**Збірник тез доповідей Міжнародної
науково-технічної конференції
(Львів, 14-15 травня 2020 р.)**

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Збірник містить доповіді та тези доповідей за результатами наукових досліджень наукових і науково-педагогічних працівників, ад'юнктів, аспірантів, магістрантів та курсантів вищих навчальних закладів, науково-дослідних установ, підприємств та установ воєнно-промислового комплексу України, військових навчальних закладів Польщі. Призначений для науковців, викладачів, студентів, курсантів, представників підприємств і всіх, хто цікавиться проблемами розвитку озброєння та військової техніки Сухопутних військ.

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On brigade and Division level these specialized staff groups are established already in peacetime, however usually manned only with a very limited number of officers and non-commissioned officers to provide subject matter expertise. In operations these groups need to be extended to enable them to support the HQ permanently and sustainably over time. The personal for this is again coming from the sending formations.

Once a German Army formation is operating in a multinational environment, with elements or units from allies and partners attached to their echelon, it must be able to integrate staff cells from these foreign forces into the own staff structure. Similar to Specialised staff groups, the HQs Command post structures, processes as well as communications and information technology equipment must support this integration.

The integration of external elements, like the integration of Liaison officers, should be regularly exercises and described in detail in the Standing Operations Procedures (SOPs) of the formation.

Another relevant point to mention is the limited capability, in a high intense war fighting role, of the low tactical level HQs of the German Army, mainly on battalion and regiment level and to a certain degree on brigade level, to do execution of operations (current operations) concurrently to planning (future operations and plans) of the next operations. This has to be taken into consideration by the superior HQs, which have that capability, when ordering new missions to the subordinate formations. Without doubt a fully developed simultaneous planning and executing capability would enable the staff to be much more detailed and forward leaning in planning operations, provide more time for planning or enable the echelon to run a faster spinning decision cycle. Still, as the subordinated units have to reconstitute and rebuild combat power after their operations anyways, and it would require a larger staff with more coordination and specialized staff officers, the theoretical advantage comes at a price and can be questioned.

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TO THE QUESTION OF DURABILITY OF THE SLANTING DESIGN ROD RESCUING DEVICE

Experience of combat operations shows that for ensuring fight in the conditions of multi storied building by staff, weapons, equipment, food etc. it is sometimes necessary to use special emergency rescue equipment. Such devices are rod rescuing devices, which can be counted to devices of military engineering support. These devices are not bulky and compact during transportation and have a small mass. They could be installed and used quickly not only on a plain surface, but also on the slopes. The blocks system and a saving rope with the winch allow to carry out tasks quickly. These devices could also be used to resque people from under blockages of houses and other constructions with a limited access, which cannot be done using other technical means of rescue, to use them during mine clearing on water for a raising of projectiles from the bottom of water and in case of penetration of shells deeply. In that case such devices should have various modifications: for plain and slopy surfaces.

Mainly plain rod saving devices are presented at the market of Ukraine. Russian Federation usually acts as the manufacturing country of such devices. Slopy rod saving devices are presented by one or two samples.

The device called "Tripod", created by specialists of the Lviv State University of Life Safety is an example of the Ukrainian production rod saving device of a plain design. The device "Tripod" is much cheaper then foreign analogs, however rather more practical. For the purpose of improvement of a design of the saving device "tripod" and increasing of limits of its application there was a need for designing and creation of the same device, however of a slopy design.

The purpose of work is improvement of a design of the special purpose saving device with structural design of the slanting device and checking it on a static durability and stability of its main elements.

In work it is offered geometrical parameters of a design of the slanting device. Longitudinal forces in the lower supports of rods in case of their placement in one horizontal plane, in case of placement of the lower support of a rod with the fixed winch at some height from the horizontal plane and in case of placement of the lower support of two rods without winch at a certain height from the horizontal plane are determined. It is also calculated static tensions in device rods for these cases. Calculations were carried out for two values of static force which was loaded the device, specifically 5 and 8 kN. It is shown that two side rods work for a compression, and the core on which the winch is placed works for stretching. It is executed check on stability of the side rods of the saving device without winch working for compression. The research of longitudinally cross bend of the main rod of the device with the winch, as far as a differential equation of its elastic line was created and solved. As a result, the maximum static tension and the maximum bending moment in the main rod is determined. According to a condition of ensuring durability of rods of the device selection of the sizes of their cross section is executed.

In conclusion, the offered design of the rod saving device increases a possibility of its use not only on plain surfaces but also in the conditions of a difficult relief with a limited zone of access.

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THE ROLE AND PLACE OF TECHNICAL TRAINING IN THE DEVELOPMENT OF THE ARMED FORCES OF UKRAINE

The latest weapons and military equipment have radically changed the nature of military combat and the ways of its management. Determination and high maneuverability of the fighting, a quick and sharp change of scenery require personnel of the active, brave and proactive, high level of organization and complete moral and physical strength to defeat the enemy and achieve victory.

Success in modern warfare is impossible without a reliable means of transportation and fire damage. Modern weapons and equipment, in service with the Land forces of the Armed Forces of Ukraine, have high performance: the usability, efficiency, maintenance and repair, ergonomics, fitness of the machines for use in different conditions, reliability, and mobility AIDS repair and maintenance of weapons and equipment have a high agility, maneuverability, fuel economy, increased stability, and the like. However, the weapons and equipment supplied to the troops is characterized by the novelty and complexity of the structures. Therefore, all crew members require high technical training, the ability to effectively use the capabilities of assigned equipment. In recent years, especially with the beginning of Russian aggression against Ukraine has significantly increased the requirements for training of units, parts, connections, associations and bodies of military management at all levels of the Armed Forces of Ukraine. Training takes place during the events of operational and combat training of troops (forces). But the effectiveness of such events sufficiently still does not meet the requirements of modern times. This is due to the gradual moral and technical aging of material-technical base of training of the troops.

Only recently began intensive training of military control bodies with the use of modern information technologies (simulation tools or construction equipment). Of particular importance is the establishment of combat training systems and simulation tools of combat, which will provide the opportunity to significantly expand the scope of the basic stages of preparing units thanks to the possibility of mining complex tactical tasks of units of various species and genera of the Armed Forces, to track the movement of all involved exercise participants in real-time simulations of complex combat conditions.

According to the requirements of the Concept, Instructions for combat training in the armed forces of Ukraine and training standards, one of the promising directions of reforming of system of training of troops (forces) is improving the system of combat training of Land troops. It will include:

- ensuring the effectiveness of combat training planning;
- introduction of low-cost, highly effective forms of its activities in combat training;
- improvement of the existing sequence of the educational process in the training military units and in the preparation of line units;
- further introduction of a multi-level system of professional training of officers and sergeants;
- introduction in the process of preparation of personnel and units of training complexes, imitation of combat operations and testing equipment using the latest technologies.

These indicators require the personnel of active, courageous and initiative actions, high organization and full exertion of moral and physical forces. To defeat the enemy and achieve victory requires a high level of knowledge and skills in dealing with WCE. They characterize the degree of readiness of service men to realize the combat capabilities of the sample to the full. To achieve such a high level of readiness is possible only through numerous, close to real training conditions. This again emphasizes the importance of training facilities in the training system of the Armed Forces.