

# METHODOLOGICAL APPROACH TO DESIGN OF PROTECTIVE EQUIPMENT FOR MILITARY AVIATION FLIGHT RUNNERS

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**Abstract.** *A methodological approach to information support and development of protective equipment is used, which is based on the study of the peculiarities of professional and service activities, dangerous and harmful factors, microclimatic conditions of the environment; general method of analysis of existing samples with subsequent design of the product based on the obtained data. The expediency of using an unloading vest with a set of equipment bags has been established.*

**Keywords:** *protective equipment, military, uniform, unloading vest.*

## **Introduction**

The problem of maintaining a high level of health of pilots throughout the period of military service necessitates the development of the most uniform protective equipment to ensure a high level of their combat readiness. Constant modernization of aviation equipment and protective equipment, a steady trend towards the emergence of new textile protective materials and modern technologies of clothing manufacturing on the world market encourage the design of protective equipment, excluding the uniqueness of solutions and the completeness of the topic. Despite the developments in the design of effective protective clothing, the features of the development of military protective equipment are not fully covered.

## **Results**

Components of modern military aviation equipment are a single combat kit (uniform), information systems and controls (means of navigation, communication and communication, intelligence, processing and reproduction of information), means of destruction (weapons, personal firearms and melee weapons, means of conducting short combat) and life support (individual life support systems, protective high-altitude equipment, oxygen-breathing equipment, devices for monitoring physiological parameters).

It should be noted that the effectiveness of protective equipment and flight uniforms depends on their reasonable choice of tactical and technical characteristics, rational interconnection and compliance with all rules of operation during its use.

The development of an unloading vest with a set of bags for military pilots is a complex multi-stage process that has certain features, as their professional and service activities are related to the tasks under different environmental conditions and their factors. When designing a vest, it is necessary to take into account the daily long period of its use, to provide for the possibility of cleaning and maintainability, to prevent additional risks of physiological and thermal disorders of the body to maintain good health and high viability [1].

Analysis of the range of existing types of flight protective equipment among the armies of the world showed the relevance of using an unloading vest with a set of equipment bags, which in the intended operating conditions aims to protect the military from various dangers and the probability of saving his life in emergencies. It is established that the weight of the unloading vest with a set of bags should be taken into account in the total weight of the set of protective equipment.

Systematization and analysis of varieties of wear-resistant textile materials and sewing accessories for the manufacture of unloading vests with a set of bags are aimed at reducing the allowable weight of products.

Based on the methodological approach to the design of the unloading vest with a set of bags, it is established that at each stage of the tasks - during the flight, forced to leave the plane and after landing, the list, frequency and intensity of environmental factors differ.

It is established that flights can be accompanied by a sharp change in climatic parameters, which affect the environment outside the aircraft and, accordingly, the microclimate in the cockpit during piloting. Forced departure is particularly dangerous as it can lead to individual risks, injuries and fatalities. After landing, the pilot must analyze his condition and environmental conditions, make decisions on tasks aimed at protection, preservation of life and health. During the stay in a remote uninhabited area and / or on the territory of the enemy, the influence of physical, psychophysiological dangerous and harmful factors on the pilot increases [2].

It should be noted that in the course of professional service the pilot experiences a constant but variable in intensity and duration of the impact of various dangerous and harmful environmental factors, which should be considered and taken into account depending on the stage of the pilot's tasks, including flight, emergency leaving the plane or after landing.

The analysis of professional and service activity of military aviation pilots will allow to develop the nomenclature of dangerous and harmful factors and the topography of their influence. Systematization of information on the completeness of equipment, hazardous and harmful environmental factors, features of professional and service activities of the pilot in accordance with each of the stages of tasks, in particular during the flight, forced departure and after landing will help develop specific requirements and nomenclature of quality indicators for unloading vest [3].

Irrational placement of protective equipment leads to uneven load distribution, difficulty in removing its elements, tension of certain muscle groups, discomfort of the clothing microclimate, circulatory difficulties and restriction of freedom of movement.

The use of an unloading vest with a set of bags is aimed at ensuring the normal functional state of the pilot's body during flight and stay on the ground, effective performance of combat missions, maintaining viability and saving lives in case of forced departure and after landing.

### **Conclusions**

A methodological approach to the design of unloading vests, which is based on the study of professional activities of military pilots, identification of dangerous and harmful factors, analysis of the characteristics of the tasks, microclimatic conditions and completeness of protective equipment, which allows a comprehensive approach to unloading vest with a set of bags with predictable reliability and ergonomics.

### **References**

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