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METROLOGY AND MODERN WEAPONRY

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Анотація

У статті розглянуто метрологічне забезпечення, підвищення ефективності виробництва і якості зразків озброєння та військової техніки.

Ключові слова: метрологічне забезпечення, озброєння та військова техніка, вимірювання.

Abstract

The article explores with metrological support, improvement of production efficiency and quality of weapons and military equipment.

Keywords: metrological support, weapons and military equipment, measurements.

In modern society, metrology as the science of measurement and the field of practical plays an important role in modern society. This is due to the fact that there is virtually no sphere of human activity where the results of measurements are not measurement results are used. Based on measurements, information is obtained about the state of production, economic and social processes. With the development of science and technology, measurement is becoming more and more complicated, the number of measurements of various quantities. Measurement is one of the ways of cognition of human nature, combining theory with practical human activity. They are the foundation of scientific knowledge, used for accounting of material resources, ensuring the appropriate quality of products, interchangeability of parts and components, and technology improvement, production automation, and standardization, standardization, health and safety labor and many other areas of human activity. human activity, including state defense. At the same time, an important role in the development of weapons and military equipment is played by its metrological support, which determines actual parameters during design, production, operation and utilization of samples of weapons. Metrological support (MS) is a set of measures aimed at achieving uniformity of measurements and reliability of control over the parameters of military measurement objects in the Armed Forces of Ukraine and other military formations [1-2].

In a broad sense, MS is considered as a field that encompasses the theory, methods, tools and organizational rules for ensuring unity and accuracy of measurements, control and testing in order to ensure high efficiency of production, operation of technical facilities and the reliability of scientific experiments. In a narrow sense, the CMM refers to the work of metrological services, and sometimes the work on high-precision measurements, creation of special control and measuring and and testing devices of a specific application [1-3].

Metrological support accompanies weapons and military equipment (WME) at all stages of its life cycle, which includes:

1) Research and justification of the need to develop
2) Development
3) Production
4) Operation
5) Overhaul and repair
6) Utilization.

Let's consider the main goal and objectives of the MS, that are solved at each stage of the life cycle of the WME life cycle. The first stage of the life cycle is research and justification of the need for development. At this stage, the main goal of the MS is to achieve the required characteristics of the weapons samples under development through a reasonable choice of methods of measurements, determining the set of characteristics and parameters to be measured, determining the to be measured, determining the values of

permissible deviations of each parameter, with taking into account the conditions of measurement, use of the necessary means that to ensure reliable and accurate measurement and control of selected parameters of the selected parameters WME, as well as the processing of their results by standard or newly developed methods.

The second stage of the WME life cycle is development. The purpose of metrological at this stage are:
- establishing (selecting) the parameters of the sample of the weapon to be measured and measurement control during testing, production and operation, as well as parameters of technological processes, controlled during production;
- selection of means that provide measurement, control of certain parameters and characteristics of weapons and military equipment under development being developed, as well as technological processes with a given accuracy;
- development of test methods and development of test methods and manufacturing of missing items.

In the course of MS of weapons and military equipment production, the following are required quality indicators are achieved by measuring control of each operation of the technological process. At this stage works are performed to automate processes of measurement and measurement control, analysis and methods and means of measurement in technological processes, develop measurement methods are developed and their certification is carried out, if it is provided for by the relevant regulatory documents, technological processes and technical documentation are subject to metrological examination. At the same time, during the production of weapons and military equipment, one of the important tasks of the MS is to identify violations of the requirements for to the production process.

To prevent these violations, it is necessary to equip industrial equipment with measuring instruments that would monitor for its condition and the condition of the processing and the condition of the processing tool. Also, in automated production is becoming more and more widespread application are robots whose capabilities which are largely determined by the ability to navigate the environment, adapt to it and respond to its changes. changes. To do this, they must have measuring devices in their include measuring devices. Therefore, when managing the quality of production more and more attention is paid to controllability (observability) of the technological process.

As mentioned above, the MS of weapons and equipment is carried out at all stages of the life cycle of WME. However, the bulk of the means of measurement and control equipment is used in the during the operation of the equipment for monitoring and predicting their technical condition, searching for failures and malfunctions, measurement characteristics, adjustment, calibration, adjustment and regulation.

Metrological support of operation WME is a set of scientific, organizational and technical measures aimed at performing accurate and timely measurements, compliance with the unity, required accuracy measurements and increase the reliability of measurement control of parameters in the during the operation of the equipment.

The purpose of the MS at the "overhaul" stage - to ensure compliance of the medicinal product with advanced methods of performing measurements.

The final stage of the life cycle of the WME is "utilization" is one of the biggest challenges of our time. Utilization has become a national scale of national importance. The purpose of the MS at this stage is to move from the processes of simple destruction of WME (liquidation) to industrial utilization, as a result of which not only can not only component parts, assemblies, systems, but also the entire WME sample as a whole.

So, we can conclude that a correct understanding of the necessity and importance of the purpose and objectives of the WME at all stages of its life cycle allows organizing proper metrological support of the WME being developed, produced and operated, without which it is impossible to achieve high combat readiness of the WME, its quality, reliability and competitiveness.

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