

## AUTOMATION OF TECHNICAL STATE CONTROL PROCESSES OF MILITARY COMMUNICATION

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**Key words and phrases:** algorithm; control systems; control object.

**Abstract:** The ways of perfection of the system of radio-communication means checks are examined. The automation system of radio-communication means check and the algorithm of check of technical state controlling object by means of that system are offered.

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Communication facility operation system is a control system of their technical condition with the purpose of maintenance of high efficiency of battle application of military aircraft and safety of flights.

The quality of technical state control is determined by the quality utilization control. Control is the only source of information about technical state of means and the results of control information cutting is the basis of the control in their technical state utilization system. That is why the improvement of communication means utilization system is necessary to start with the utilization control systems.

Nowadays the communication means control system is manual; it contains a set of control parameters, a set of control means setting in utilization documentation for these means. Analyzing and controlling element of this system is operator, realizing connecting, parameters control, analysis of results and making a conclusion about technical state of control object.

Discrepancy of existing control system opportunity to modern demands by high technical readiness of military communication technique guarantee gives rise to a problem of its improvement. One of the ways of solving this problem is a development of a single control system simultaneously with the development of communication means meeting the requirements of the control and maintainability.

The basic ways of control system improvement are:

- Elaboration by means of famous methods of communication means control parameters set.
- Development of means design taking into account the convenience of exploitation in the process of their control.
- Real pass to a forecast control.
- Inculcation of automation control processes.
- Development of effective methods and algorithms of automation control.

By this time there is some experience of conducting radio-detectonic devices technical state control on the basis of creating automation control systems (ACS). Two main trends of their evolution can be pointed out: device module and problem-aided ACS the basis of which is unique equipment designed specifically far that ACS.

Serial means of measurements, having connecting junctions with one of the standard device interface and standard microcomputers are used for a device-module ACS construction. The advantages of device-module ACS are relative simplicity of development and a possibility of multiple use of the same measuring means different ACS.

The following algorithm is a characteristic of a technical state test of control object with the help of automation system:

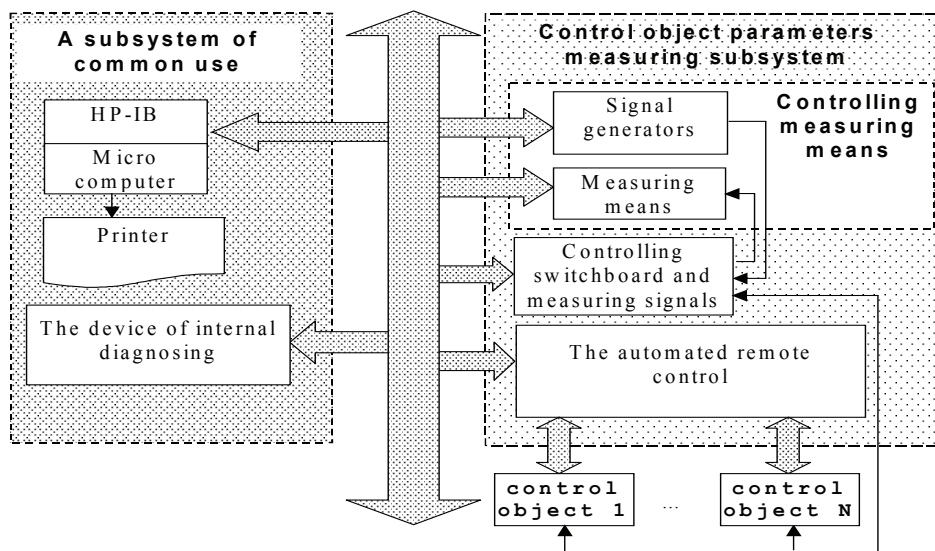
- formation and distribution on the object of control in the given temporary sequence of stimulating signals;
- transformation and processing of feedback controllable signals;
- formation of the conclusion about a control object technical state.

According to the algorithm a typical device-module ACS can contain: a control device and processing of measuring results (microcomputer with a Hewlett Packard Interface Bus (HP-IB)); the sources of stimulus signals to control object (signal generators); controlling switchboard and measuring signals; controlling measuring means (measuring devices with interface device); the device of control results document. Besides the ACS must contain a device of inner diagnostics for the control guarantee of ACS elements correct function, the role of which can be performed by logic state analyzer.

On the basis of common demands there developed an ACS structure including two subsystems: a subsystem of common use and control object parameters measuring subsystem.

A given ACS guarantees the realization of:

- functions of a single control of ACS elements according to a concrete control tasks;
- functions of ACS elements delivery, proceeding from the conditions of requiring types of combining types;
- functions of measuring circuits switch boarding, switch boarding of control object and control their performance;
- functions of formation and delivery of stimulus influence on a control object;
- functions of physical quantities measurements according to stated control algorithm and output on changed control object parameters;
- functions of ACS correct function control.



Information obtained during the control process must have sufficient completeness for the estimating of the state of control object. Moreover it can be marked as “fit” or “unfit” when forming the conclusion of control results.

Apart from quality marks of the state of the object it is necessary to get meanings of main electrical performance of control object with sufficient exactness. As a result, obtained data and current measurements can be used to predict the technical state of common control object.

The information about a control object is fed into the monitor in a form convenient for perception (table and graphics). The information about number and name of control object; current control results and their estimate; the type of technical maintenance; test data; the surname of operator holding a test can be given in the printed form.

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## **Автоматизация процессов контроля технического состояния военной техники связи**

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**Ключевые слова и фразы:** алгоритм; система контроля; объект контроля.

**Аннотация:** Рассмотрены пути совершенствования систем контроля средств радиосвязи. Предложена автоматизированная система контроля средств радиосвязи, а также алгоритм проверки технического состояния контролируемого объекта с помощью данной системы.

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## **Automatisierung der Prozesse der Kontrolle des technischen Zustandes der militärischen Kommunikationsapparature**

**Zusammenfassung:** Es sind die Wege der Vervollkommnung der Kontrollsysteme der Mittel der Funkverbindung untersucht. Es ist das automatisierte Kontrollsystem der Mittel der Funkverbindung, und auch den Algorithmus der Prüfung des technischen Zustandes des überwachten Objektes mit Hilfe des gegebenen Systems angeboten.

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## **Automatisation des processus du contrôle technique de l'état de la communication militaire**

**Résumé:** Sont examinées les voies du perfectionnement des systèmes du contrôle de la radio-communication. Le système automatisé du contrôle de la radio-communication est proposé ainsi que l'algorithme du contrôle de l'état technique de l'objet contrôlé à l'aide de ce système.