

ESTIMATION OF THE EFFICIENCY OF INFLUENCE OF «NON-LETHAL» WEAPONS ON TROOPS AND WEAPONS' RADIO-ELECTRONIC CONTROL SYSTEMS

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Within the scope of the concept of «non-lethal» weapons much attention is devoted to the elaboration of ways to inactivate military objects. A significant part of this research is devoted to the use of current-conducting aerosol particles and polymers, foaming glues and corrosion-active materials.

This work is an attempt of methodological approach to efficiency estimation of action of these facilities on typical targets of «non-lethal» weapons, such as troops and weapons' radio-electronic control systems (RECS). Radar stations, communication facilities, and radio-electronic reconnaissance will be considered as examples.

The importance of this work is based on the development of information resources that made the imitation modeling of the efficiency of usage of «non-lethal» weapons possible. Usage forecasts for different facilities and estimation of the requirements for new facilities are also important.

The methodological approach includes:

- analysis of military RECS ;
- development of the descriptive models of military RECS;
- determination of elements vulnerable to «non-lethal» weapons and corresponding effects ;
- basis for the list and range of parameters of «non-lethal» weapons for inactivation of RECS of weapons and troops control;
- formulation of effectiveness criteria of «non-lethal» weapons usage

Destruction of the state of operability of RECS is adopted as a major criterion of action of «non-lethal» weapons. It means destruction of ability to carry out certain functions as specified in standard-technical documents.

The major ability factors of RECS are the following:

- reach D ;
- root-mean-square error of coordinates determination: distance σ_D ; azimuth σ_α ; angle of elevation σ_β ; velocity σ_V ;
- azimuth coverage sector $\Delta\alpha$, and angle of elevation coverage sector $\Delta\beta$;
- scanning velocity Ω ;
- polar pattern width (viewing angle) θ ;
- antenna gain G

Qualitative estimation of «non-lethal» weapons action on RECS capacity for work is achieved by changing the coefficients, characterizing the deviation of the state of RECS from typical state: $K_D=D/D_H$; $K_\Omega=\Omega/\Omega_H$; $K_\sigma=\sigma/\sigma_H$; $K_\theta=\theta/\theta_H$; $K_G=G/G_H$.

For ability factors of RECS coefficients' values, ensuring abnormal operation of RECS, were calculated. Requirements and parameters of «non-lethal» weapons were also determined. The goal of development of mathematical models for «non-lethal» weapons action efficiency determination was formulated:

- determination of the dependence of ability factors on tactics-technical characteristics of RECS, parameters of «non-lethal» weapons and their functioning conditions;
- determination of the requirements for «non-lethal» weapons for the achievement of given effect of impact

Key words: efficiency, aerosol, influence, radio-electronic system.