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Central Research Institute of Arms of the Armed Forces of Ukraine

COORDINATION PROBLEMS OF MILITARY TECHNICAL AND DEVENSIVE INDUSTRIAL POLICY IN UKRAINE. WEAPONS AND MILITARY EQUIPMENT DEVELOPMENT PERSPECTIVES

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Abstracts of reports

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SECTION 4
DEVELOPMENT PROSPECTS OF THE NAVY ARMAMENT AND MILITARY EQUIPMENT

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At the first level, there are three main classes: indicators (natural or artificial), devices, complexes of technical means of CBRN reconnaissance and monitoring. Each of them can, in turn, have its own subclasses. For example, the class of complexes of CBRN reconnaissance and monitoring equipment includes the following subclasses: special CBRN reconnaissance machines, object-specific CBRN monitoring systems, nuclear strike stations, special CBRN control laboratories. Under the complex of technical reconnaissance and monitoring equipment, we will understand the target set of devices and tools integrated into a single system for simultaneous measurement of multiple parameters for the purpose of comprehensive assessment of the current CBRN situation. The components of such systems may be (in addition to the actual intelligence and control indicators and devices): meteorological kits, controls, communications and information processing, decision support systems, sampling and storage tools, etc.

The class of CBRN reconnaissance devices includes the following subclasses: radiation, chemical, biological intelligence tools, combined radiation-chemical, chemical-biological, radiation-chemical-biological reconnaissance tools, remote chemical, biological, chemical-biological reconnaissance devices. Each of these subclasses contains one or more types of CBRN reconnaissance devices. For example, a subclass of radiation intelligence devices contains two types of instruments of this class: the detection and control of radiation conditions. Each of these types can in turn be subdivided into subtypes.

The classification given to a certain extent takes into account all possible criteria: the principle of operation, the type of contamination, the purpose, the mode of transportation and detection. In our opinion, it can be the basis for further work on the formation of principles for systematization of technical means of CBRN intelligence and control, which do not contain contradictions.

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EXPERIENCE IN DEVELOPMENT AND USING NON-LETHAL WEAPONS IN NATO

Interest NATO to non-lethal weapons (NLW) begins with the mid 1990s, after briefing the general Anthony Zinni about the results of using non-lethal weapons during the UN mission in Somalia. In 1999 North Atlantic Council (NAC) published NATO policy in the field NLW (NATO NLW Policy), which was based on the initiative of Defence Capabilities (Defence Capabilities Initiative, DCI) and considered NLW as a critical additional capability, which is necessary to meet the needs of future operations.

Later, the need to combat terrorism put the operational NATO community in front of the problem of minimizing land losses, which accompany force actions and

lead to escalation of violence and danger against both civilians and military, leading to unwanted injuries, mission failures and political resonances. So in 2007 Conference of National Armaments Directors (CNAD) decided to expand the Defence Against Terrorism Programme of Work (DAT POW) due to using Non-Lethal Capabilities (NLC). Development these capabilities has become 11s direction of realization for DAT POW and since then remains relevant.

Non-lethal weapons development, as and traditional weapons and military equipment in NATO countries started from related research. For this purpose, a separate system of state and non-state ownership subjects has been created and is effectively functioning.

Basic research execution mechanisms are:

attraction of the scientific potential of NATO member states and partners withing Science & Technology Organization (STO), former Researh & Technology Organization (RTO);

using industrial research capabilities with help NATO Industrial Advisory Group (NIAG);

multinational projects of “Smart defence”;

Defence Against Terrorism Programme of Work (DAT POW).

Besides, should be indicated researches within European Defence Agency (EDA) or without attraction non-state organization structure of national level on bilateral or multilateral basis.

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THE USE OF ALGORITHM OF ANT COLUMNS FOR SOLUTION OF ROUTING TASKS IN NETWORKS OF COMMUNICATION WITH THE POSSIBILITY TO SELF-ORGANIZATION

Routing in communication networks with the possibility of self-organization is a complex scientific and practical task. The authors of this report suggest the use of multi-agent systems for solving routing problems, one of which is the ant colony algorithm.

Simulating the self-organization of an ant colony forms the basis of ant optimization algorithms. The colony of ants can be considered as a multi-agent system in which each agent (ant) operates autonomously under very simple rules. The basis of the behavior of the ants is self-organization, the mechanisms of which