



PROSPECTS FOR THE DEVELOPMENT OF RADIO ELECTRONIC SYSTEMS OF THE ARMED FORCES OF FOREIGN COUNTRIES

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ABSTRACT: *The tendencies of development of radio-electronic devices used in modern and prospective systems of command and control of troops and weapons essentially depend on changes in the nature of modern combat operations and consist in:*

- *the need to operate in a time scale close to real;*
- *ensuring high bandwidth and noise immunity, the ability to transfer not only speech and text information, but also a variety of multimedia applications, including real video images;*
- *achieving information superiority, which has become interpreted as a wide situational awareness, increasing the speed of bringing orders.*

The implementation of the above trends is carried out in accordance with one of the conceptual documents of the US armed forces under the provisional name "Common Perspectives-2020" [3], determining the achievement of the objectives of the operation based on the global interaction of units, technological excellence of troops and information superiority.

These tasks are implemented within the framework of the concept of warfare adopted in the United States in a single information space or using networked information management networks (NCW - Network Centric Warfare) [4].

In accordance with this concept, it is envisaged, through the introduction of advanced information technologies, to ensure the unification of disparate forces and equipment dispersed in a vast combat space (personnel, command and control points, combat support, ground-based, air, sea and space-based weapons and equipment) into combat Formations with a high network architecture - global and local information networks.

According to the estimates of the military experts of the NATO member states, these formations, in comparison with the traditional ones, will have unconditional advantages and provide:



- creation in real time of a uniform picture of an operational and tactical situation;
- a significant reduction in the time of bringing information about important objects and targets of the enemy from detection systems to fire weapons;
- a significant advance of the enemy in making and implementing decisions, planning hostilities;
- rapid concentration of various means of destruction dispersed in the combat space for attacking important targets and targets of the enemy.

Currently, activities are being carried out in the US military as part of the initial phase of the implementation of the concept of military operations using integrated information and control networks. Priorities are programs related to the creation of automated combat control systems (ACCS), communications, intelligence, information and navigation support directly for combatants whose prototypes were tested during military operations in the Balkans, in Afghanistan and Iraq.

In conceptual and theoretical terms, the structure of the NCW is based on three functional subsystems: informational, sensory, and combat. A distinctive feature of the development of radio electronic systems in the armed forces of foreign countries as elements of all three subsystems is currently their wide integration into the command and control systems at all levels of control, from strategic to tactical. In the near future, the developing radio-electronic systems will contribute to a closer approximation (mutual integration) of troop and weapon control systems into a single information-system.

In this regard, there is a need to adjust the approaches to the definition of the main objects of the Radio Electronic Systems (RES), as well as to determine the degree of their importance by increasing attention to the organization of countering weapon control systems on a near-real time scale.

The technical basis of the sensor subsystem is (Fig. 1):

- airborne radar reconnaissance system for ground targets and E-8C JSTARS strike control systems (USA);
- long-range radar detection and control systems (LRDCS) E-3C AWACS and E-2C Hawkey (USA);
- electronic warfare systems based on EC-130, SR-71, RC-135, U2-S, EA-6B Prowler, EP-3;

- space-based imagery reconnaissance (radar - Lacrosse (USA));
- reconnaissance and reconnaissance strike of the UAV RQ-1 Predator;
- ARL-M multipurpose aviation intelligence system.

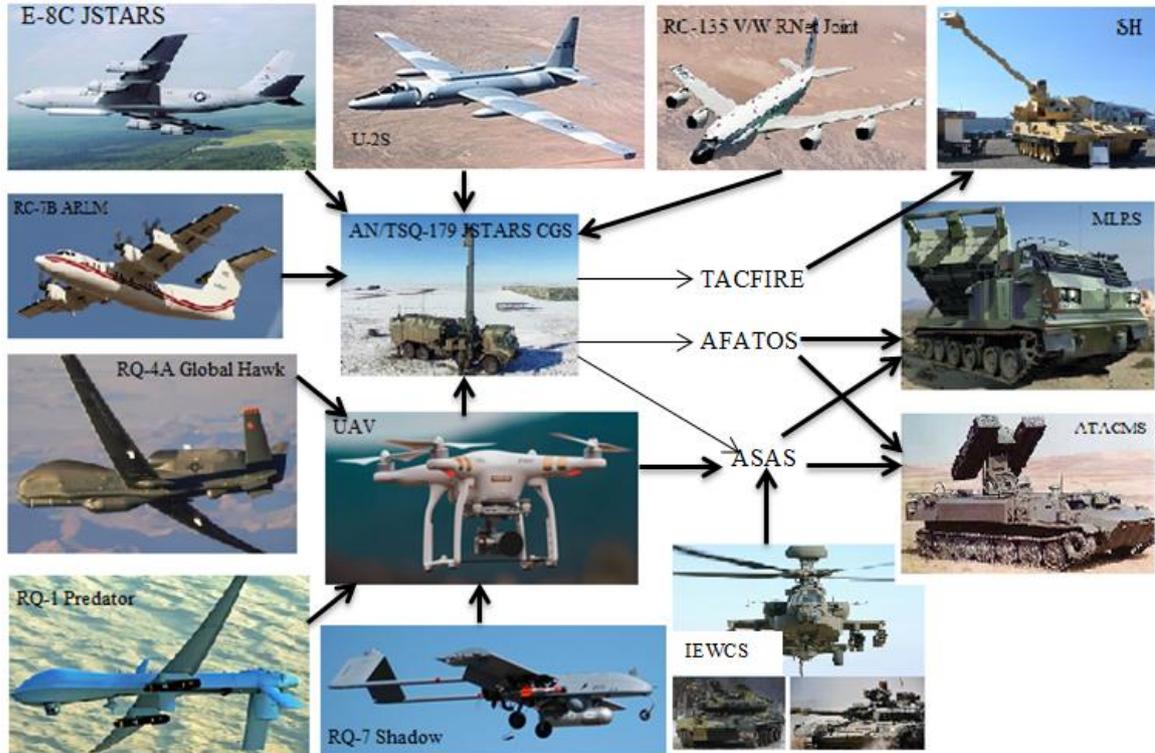


Fig. 1. US electronic systems and their interaction with elements of information and combat subsystems

There are two possible ways of organizing control, differing in the ways of bringing information to the elements of the combat subsystem (Fig. 2):

- transfer of primary (untreated) reconnaissance data on ground targets from E-8C JSTARS airplanes to the combat operations control center (COCC) of the AC field artillery (FA).

- operative transfer target designation (TD) of the control center for ground targets directly to the command post (CP) or fire control centers (FCC) of the OTM.

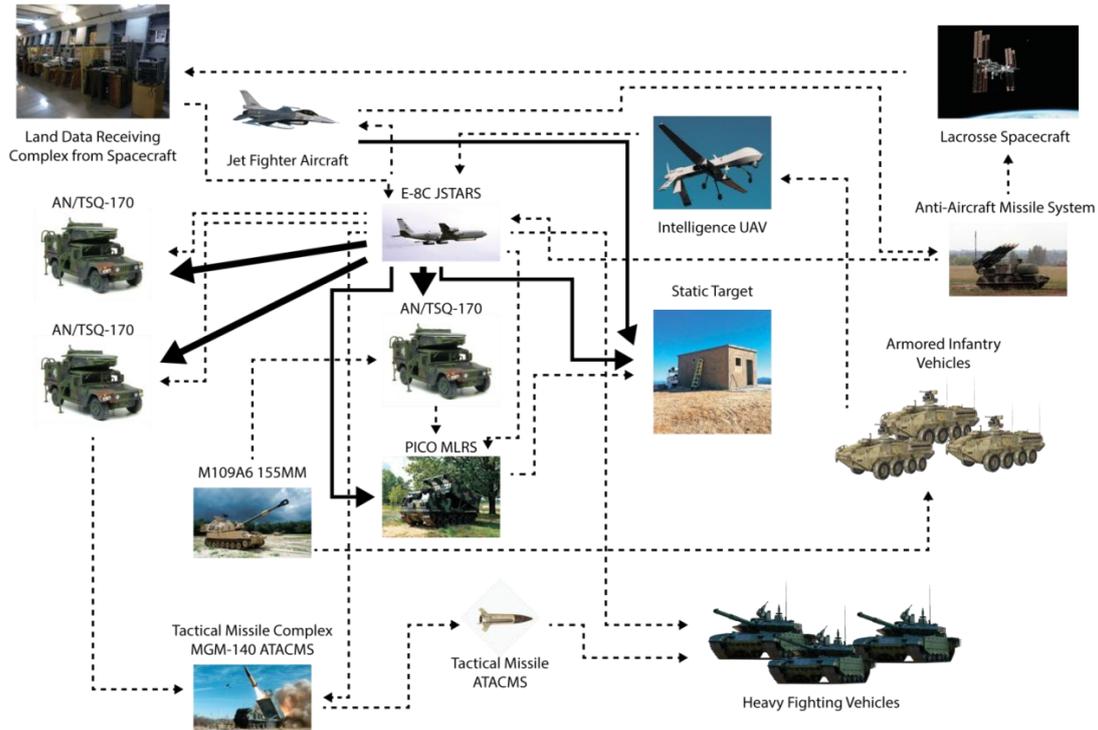


Fig. 2. Variants of the organization of control during the combat use of the JSAC

From the point of view of the implementation of the combat network structure, it is of interest to use the AWACS E-3C system to combat ground mobile targets, tested during a military operation in the Balkans [4]. The combat network structure was combined (Fig. 3) UAV RQ-1 Predator, LRDCS E-3C AWACS planes, OA-10A advanced airborne gunners, air operations control center (AOCC), F-16 planes, spacecraft (SC) communications and global broadcasting systems (GBS - Global Broadcast System).

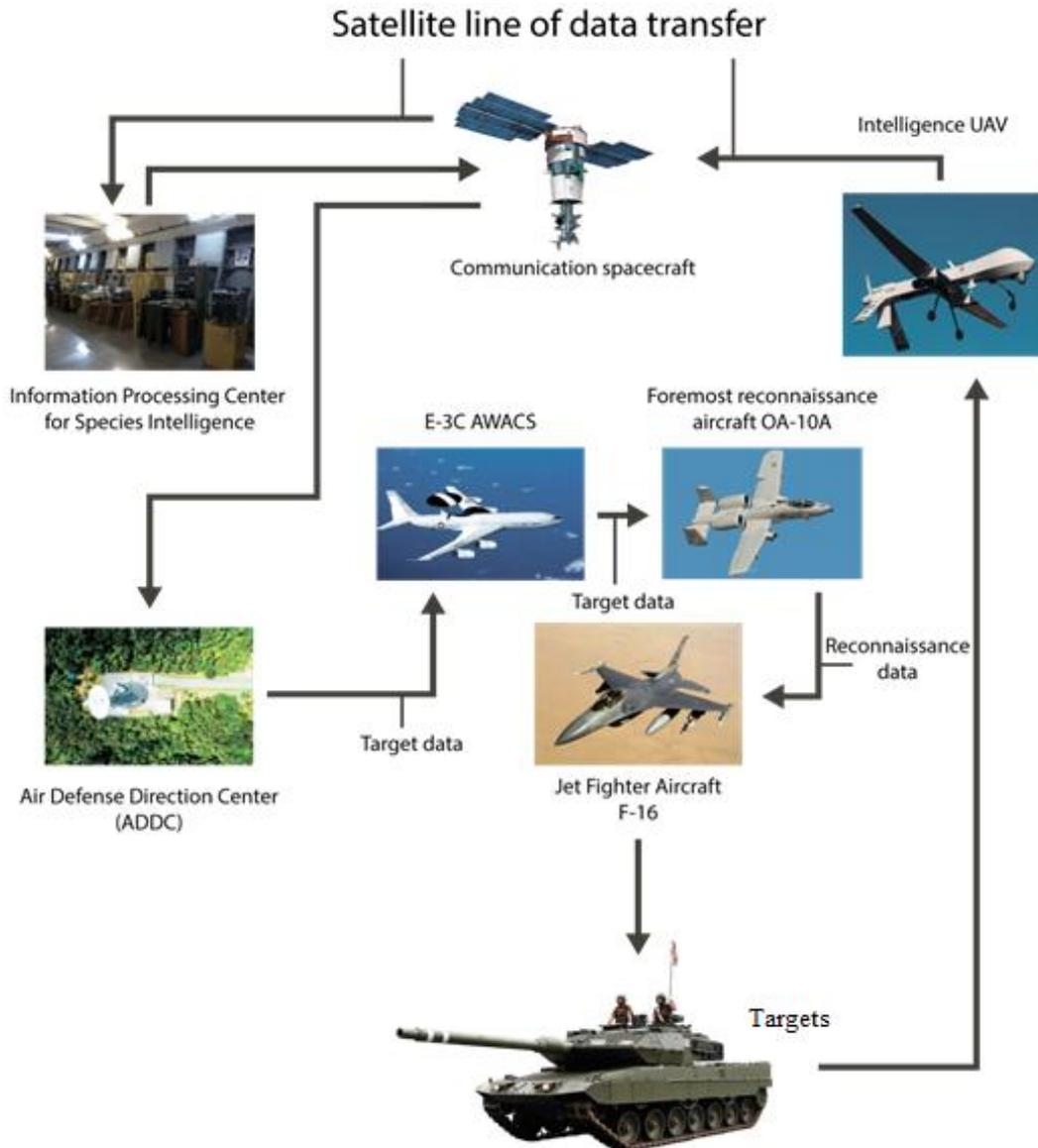


Fig. 3. A variant of the organization of the network structure using the AWACS E-3C system to combat ground mobile targets in operations in the Balkans

Imagery information about targets with RQ-1 Predator UAV via broadband satellite communications channels arrived at the ground satellite communications station of the information processing center in the continental United States. Then, the processed information was transmitted via the satellite GBS to the AOCC, deployed in Italy. After evaluating the information on the AOCC, the target data was transmitted through the AWACS E-3C aircraft to the OA-10A airborne forward-air gunner, which, as the TD arrived, directed the attack aviation to the targets.



CONCLUSION

The current state and prospects for the development of the RES are characterized by:

- organizational and technical integration of RES for various purposes into a system of combat operations in a single information space, combining three functional subsystems - information, sensory and combat;
- the widespread introduction of electronic systems in the control systems of troops and weapons at all levels of control - from strategic to tactical;
- the presence of objective reasons for the reduction of energy, hardware, semantic and structural accessibility of radio emission sources.

LITERATURE

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