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Electronic warfare systems. History and application of systems of radio-electronic warfare

The basis of command and control systems for troops and weapons of all types the armed forces of modern states at the present time put radio-electronic means (RES). The most widely such means are used in aviation, air defense and missile defense, in the navy. Modern electronic missile and barrel weapon control systems are of great importance significantly increased the probability of hitting any aircrafts, surface vessels and ground objects [1].

Integrated use of methods and means of reconnaissance, radio communications counter measures and means of countering radio counter measures are called radioelectronic warfare. Success in such a struggle is achieved by superiority over the enemy in terms of quantity and quality of electronic technology, the possibility of its use in combat, providing stealth work and suddenness of action [1].

Electronic warfare also known EW is a type of armed struggle, during which the enemy's electronic control, communications and reconnaissance means are affected by radio emission (radio interference) in order to change the quality of military information circulating in them, protect their systems from such effects, as well as change the conditions (properties environment) propagation of radio waves.

Electronic warfare is primarily a means not of aggression, but of defense. Electronic warfare systems are used not only in military practice, but also to protect critical civilian facilities. For example, such as nuclear power plants. Electronic warfare is used during major events to counter international terrorism - world summits, meetings of leaders of countries, the Olympic Games, football championships and others [2].

The first officially recorded case of the use of radio interference in combat operations was the confrontation between Russian and Japanese radio operators during the defense of Port Arthur in 1904. Then two Japanese cruisers, having taken advantageous positions, began using the telegraph to direct Japanese artillery at Russian targets. In order to prevent them, as Rear Admiral Ukhtomsky, commander of the Pacific Fleet, reported afterward, "immediately, the battleship Victory and the Golden Mountain stations began to interrupt enemy telegrams with a big spark." As a result of the actions of Russian radio operators, not one of the 208 large-caliber shells of the Japanese fleet hit the target [2].

The targets of radio interference are radio links for communication, control, guidance and navigation. Interference mainly affects the receiving part of radio equipment. Active and passive means are used to create radio interference. Active media are those that use the generation principle to create radiation (e.g. transmitters, jammers). Passive means - use the principle of reflection (re-emission) (for example, corner and dipole reflectors, etc.).

EW systems consist of several parts such as electronic countermeasures, electronic protection, electronic intelligence and electromagnetic destruction.

Suppression consists in disrupting or reducing the effectiveness of enemy electronic systems. Includes radio engineering, radio engineering, optoelectronic and hydro acoustic suppression. This can be active and passive interference, the use of decoys, traps and other methods. The development of means of electronic suppression is carried out in close cooperation with the development of radar technology and characterized by constant technical and scientific confrontation [1].

Electronic protection is an integral part of the means of electronic warfare, aimed at ensuring the stable operation of electronic means (RES) under the influence of intentional enemy radio interference, electromagnetic radiation from a weapon of functional destruction, electromagnetic and ionizing radiation arising from the use of nuclear weapons, as well as under the influence of unintentional radio interference [3].

Electronic intelligence is the collection of intelligence information based on the reception and analysis of electromagnetic radiation. Electronic reconnaissance uses both the interception of signals to detect communications between people and technical means, and the possibility of using radar, monitoring radio interference and other electronic means [3].

Electromagnetic defeat is an electromagnetic impact (impulse) that disables the radio engineering, communication and power equipment of the enemy. The striking effect is achieved by induction of induction currents. This was first noted during nuclear explosions in the atmosphere [4].

Currently, magnetrons are used to create a damaging pulse. Electromagnetic destruction systems are in service with the United States and other NATO countries [4].

Литература

1. Никольский Б. А. Основы радиоэлектронной борьбы: учебник / Б.А. Никольский. – Самара: Изд-во Самарского университета, 2018. – 268 с.: ил. – Текст электронный.
2. Ростех: официальный сайт. –URL:<https://rostec.ru/news/pomekhi-v-efire-o-radioelektronnoy-borbe/>(дата обращения 10.04.2022). – Текст электронный.
3. Цветнов В. В., Демин В. П., Куприянов А. И. Радиоэлектронная борьба. Радиоразведка и радиопротиводействие. — М.: МАИ, 1998. — Т. 2. — 248 с. — 1000 экз.
4. Wikipedia: официальный сайт. –URL:<https://ru.wikipedia.org/wiki/>). – Текст электронный.