

Strategic Air Operation as one of the possible instruments in a hybrid war between the Russian Federation against Ukraine

Стратегічна повітряна операція як один із можливих інструментів у гібридній війні Російської Федерації проти України

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Purpose. Based on the analysis of the concepts of strategic paralysis and dysfunction of the state system, possible scenarios of a hybrid war of the Russian Federation against Ukraine to achieve a strategic goal in various areas (domains) are identified and options for counteracting existing threats are proposed.

Design/Method/Approach. The research is theoretical and empirical, was conducted based on analysis of the main factors that will determine the conditions of the operating environment. The values of quantitative and qualitative indicators of forces and means of air attack, air defense is determined considering the experience and trends of their development and impact on the current and future operating environment.

Findings. The threat of conducting a combined information and strategic air operation as an effective tool for achieving the political goals of the Russian Federation in Ukraine is substantiated. The main ways and principles of ensuring national security and strengthening Ukraine's defense in the air sphere are outlined.

Theoretical implications. The research is based on modern concepts, theories of hybrid wars and multi-domain operations. The article expands the range of research on possible mechanisms for achieving policy goals and their impact in today's operating environment.

Practical implications. There was conducting the systematic analysis of modern armed conflicts, means of air attack and air defense, which are in the service of the Russian Federation, which allowed to determine the quantitative and qualitative indicators of strategic air operations and justify scenarios for countering possible air threats.

Originality/Value. The research proves not only the possibility of conducting a strategic air operation by the Russian Federation in Ukraine as one of the tools to achieve a political goal, but also predicts possible consequences of impact on the operating environment and allows to substantiate counteraction scenarios of existing and future challenges and threats.

Research limitations/Future research. The research defines the conceptual provisions for understanding the nature and procedure of the Russian air and space forces to implement the concept of strategic paralysis and operations based on effects, the necessary tools to counter existing and future challenges and threats and outlines ways for future research on the existing and necessary capabilities

Meta. На підставі аналізу концепцій стратегічного паралічу та дисфункції державної системи, визначені можливі сценарії ведення гібридної війни РФ проти України для досягнення стратегічної мети в різних сферах (доменах) та запропоновані варіанти протидії існуючим загрозам.

Дизайн/Метод/Підхід. Дослідження є теоретико-емпіричним, проведеним на підставі аналізу основних чинників, що визначають умови операційного середовища. Значення кількісних та якісних показників сил та засобів повітряного нападу, протиповітряної оборони визначені з урахуванням досвіду і тенденцій їх розвитку та впливу на сучасне та майбутнє операційне середовище.

Результати дослідження. Обґрунтовано загрозу проведення комбінованої інформаційної та стратегічної повітряної операції, як дієвого інструменту досягнення політичних цілей РФ в Україні. Окреслено основні шляхи та принципи забезпечення національної безпеки та посилення оборони України в повітряній сфері.

Теоретична цінність дослідження. Дослідження базується на сучасних концепціях, теоріях ведення гібридних війн та багатодомених операцій. Стаття розширює коло досліджень щодо можливих механізмів досягнення політичних цілей та їх впливів в сучасному операційному середовищі.

Практична цінність дослідження. Проведений системний аналіз збройних конфліктів сучасності, засобів повітряного нападу та протиповітряної оборони, що є на озброєнні РФ дозволив визначити кількісні та якісні показники стратегічної повітряної операції та обґрунтувати сценарії протидії можливим загрозам з повітря.

Оригінальність/Цінність дослідження. Дослідження доводить не тільки можливість проведення стратегічної повітряної операції РФ в Україні як одного з інструментів досягнення політичної мети, а також прогнозує можливі наслідки впливу на операційне середовище та дозволяє обґрунтувати сценарії протидії сучасним та майбутнім викликам і загрозам.

Обмеження дослідження/Майбутні дослідження. Проведене дослідження визначає концептуальні положення для розуміння характеру та порядку дій повітряно-космічних сил РФ щодо реалізації концепції стратегічного паралічу та операцій на основі ефектів, необхідні інструменти протидії існуючим та перспективним викликам і загрозам та окреслює

of Ukraine's defense forces.

Paper type. Conceptual, theoretical and analytical.

Key words: air operation, operating environment, missile defense.

шляхи для майбутніх досліджень наявних та необхідних спроможностей сил оборони України.

Тип статті. Концептуальний, теоретико-аналітичний.

Ключові слова: повітряна операція, операційне середовище, протиракетна оборона.

1. Introduction

Today, as part of Russia's insidious neo-imperial policy against Ukraine, the so-called "hybrid war" continues, which is characterized by both hostilities and the use of a wide range of political, economic, energy and advocacy measures (Pashkov, M.; Martyniuk, V.; Polumiienko, S. K., 2017).

Analysis of the ongoing war in eastern Ukraine since 2014 shows that state structures and population of the country were poorly prepared for promptly, adaptive and adequate response to relevant challenges, risks, dangers, and threats. The actions of the political leadership of the Russian Federation show tendencies to create controlled chaos in Ukraine and other countries that seek to get out of the influence of the "Russian world" and have chosen their path of democratic development (Kniaziev, D., Kniaziev, S., 2017; Kyrychok, A.P., 2017; Senchenko, O. A., 2017; Fedorchak, O.V.; Prykhodchenko, L. L.). Therefore, the threat from the Russian Federation to change the political power and take control of the territory of Ukraine remains real.

The main goal of the Russian Federation is to weaken and decentralize Ukraine, bring the pro-Russian leadership to power, disrupt the course of European integration, and deprive Ukraine of de facto sovereignty by regaining control. At the same time, Ukraine's active opposition with using the military force did not allow them to implement the "Crimean" scenario completely. The "hybrid war" has turned into a protracted armed conflict between the two countries (Pashkov, M.; Martyniuk, V.; Levchenko, O. V., 2017; Future security environment 2030).

The Russian Federation continues to seek to exclude Ukraine from the system of international relations, turning it from a policy subject into a policy object and preventing closing with the EU and NATO. All possible spheres of influence are used for this purpose: political, diplomatic, economic, informational, humanitarian, military. The main object of influence is human consciousness. The primary mode of action is the manipulation of consciousness. The arsenal is the developed manipulative technologies, the foremost effective information, and psychological warfare tools (Herasymchuk, S., Matiichik Ya.; Future security environment 2030).

2. Results and Discussion

Possible hybrid war instruments of the Russian Federation against Ukraine

It is impossible to say precisely which scenario the Russian Federation is more inclined to. The logic of the aggressor's action depends on many factors and issues that lie far beyond the problems of Donbas and Ukrainian-Russian relations (Pashkov, M.; Martyniuk, V.; Polumiienko, S. K., 2017; Future security environment 2030).

Possible scenarios for achieving the political goals of the Russian Federation in Ukraine may be:

1. Distancing Ukraine from the West and leaving it in the sphere of its influence by non-military means;

2. Suppose the required alignment of political forces in Ukraine is not achieved. In that case, the enemy will use power to launch a massive, comprehensive strike against Ukraine from several directions simultaneously with regular troops to make a Russian-controlled arc connecting Transnistria and Crimea with its territory.

Implementing any of these scenarios will require significant resources. The contradiction between the state of the Russian Federation's economy and its foreign policy ambitions is becoming increasingly critical.

It is worth noting that the events in eastern Ukraine are similar to the actions of Russia in South Ossetia, Abkhazia, Nagorno-Karabakh, Transnistria, and, to some extent, in the annexed Crimea. In particular, it is about creation by force an entirely dependent and controlled pro-Russian enclave in the form of "unrecognized republics" with a puppet "government" and artificial attributes of pseudo-statehood (Pashkov, M.; Polumiienko, S. K., 2017; Levchenko, O. V., 2017; Kniaziev, D., Kniaziev, S., 2017; Kyrychok, A.P., 2017). However, the ultimate strategic goal has not been achieved in any of the conflicts created by the Russian Federation in the post-Soviet space. The number and duration of conflicts are constantly growing, the costs of maintaining them are growing, but this does not always give the expected results.

Russia's experience of open aggression in 2014-2016 using military force has shown an increase in the aggressor's losses and an increase in resistance as it advances deep into Ukraine. The further invasion would inevitably lead to an increase in the deployment of troops, an increase in the duration of the operation, and hence the cost of it. During the active phase of the conflict, the Russian Federation managed to achieve only tactical success in some areas. Requirements for success in operation were to scale the aggression, which Russia did not realize.

Today, due to the refusal of the political leadership of Ukraine to resolve the conflict by military means, it is being frozen. In any case, this will increase its duration and a constant increase of costs for the Russian Federation. According to the results of the presidential and parliamentary elections in Ukraine, rapid changes do not occur even with the leadership elite's change. The cardinal option for resolving these contradictions is to accelerate the destructive processes within into country. Such techniques can be catalyzed by internal protests and the severance of ties between the population and politicians.

Under such conditions, the possible use of two instruments of hybrid warfare – there is an influence in the information sphere by the forces and means of information struggle, and the influence in the physical sphere. Experience shows that the relevant information campaign achieves an impact in the information sphere. However, this option also does not give a quick result. And the lack of an immediate effect is not acceptable to the aggressor.

That is why comprehensive targeted information and physical impact on vital resources for the population, their destruction, can create chaos, a protest directed at the country's leadership. At the same time, the use of military force as an effective instrument to accelerate the effect of "controlled chaos" is likely.

Analysis of existing concepts to achieve dysfunction of the state system

The analysis of the research directions by the Russian military experts in the field of military science shows clear trends aimed at the gradual implementation of concepts: strategies of indirect action, "soft power", technologies of "controlled chaos", "color revolutions" (Solovev, A.Y.; Savyn, L.V.; Savyn, L. V.; Savyn, L. V.). These theories are based on the views of Sun Tzu and Clausewitz, who gave priority to the political aspects of the war and the manipulation of state leadership rather than the destruction of military force (see Fig. 1) (Savyn, L.V.; Savyn, L. V.; Ralph, D.).

Under these conditions, victory over the enemy, first of all, is achieved by the dysfunction of its state system without the complete destruction of its critical components – political leadership of the country, vital resources, infrastructure, population, deployed groups of troops (J. Warden's "five rings") (Warden, John A., Fadok, David S., Boyd, John, Warden, John; Ganske, Rich; Mets, David R.). According to John Warden's theory, to disrupt the functioning of the enemy state, it is necessary to hit specific critical nodes of the state system – "centers of gravity" and the links between them. In the case of neutralization of any "ring", the effective functioning of the entire system is disrupted. At the same time, the criticality of functioning is determined depending on the place of the "ring" in the state system.

An improved model of the modern operating environment based on J. Warden's theory is supplemented by another ring – information that unites all the others (see Fig. 2).

Given the outlined trends, it is likely that Russia may choose the concept of “strategic paralysis” to implement the power scenario. The best actions to implement this concept are airstrikes on the main strategic objectives throughout the country, especially on the objects of state structure economy, and not on the troops (forces). It avoids direct clashes of the armies (forces), achieves a political goal without land invasion and occupation, and minimizes losses, costs, and risks (Warden, John A.; Skoryk, A. B., Voronyn, V. V. and Doska O. M., 2009).

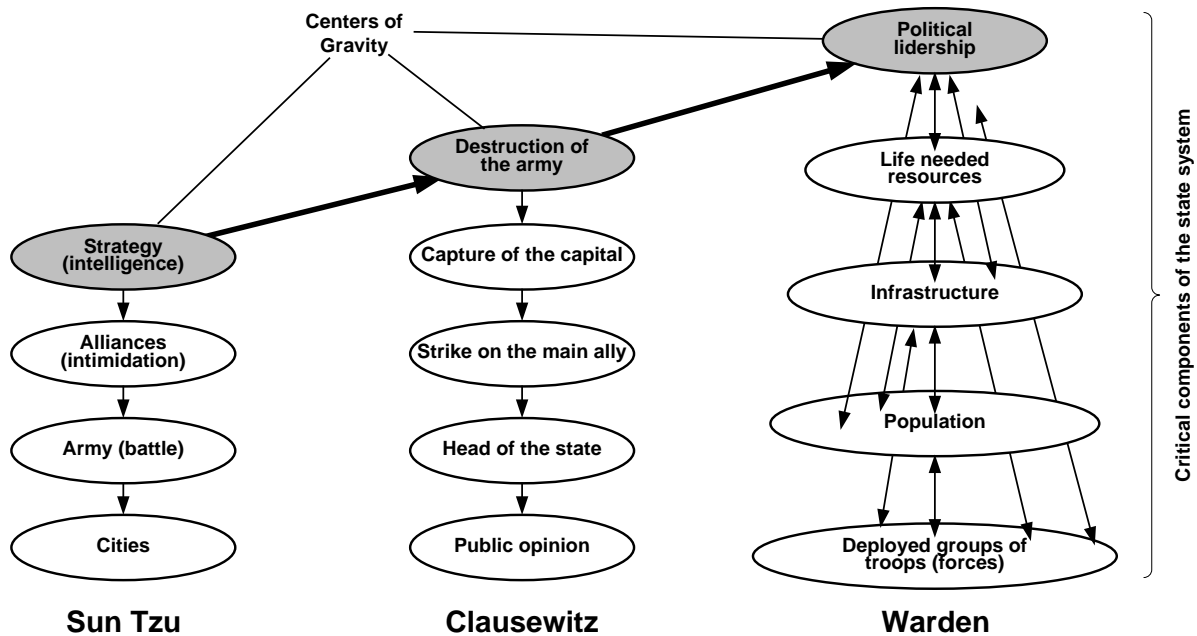


Figure 1 – Analysis of concepts to achieve dysfunction of the state system

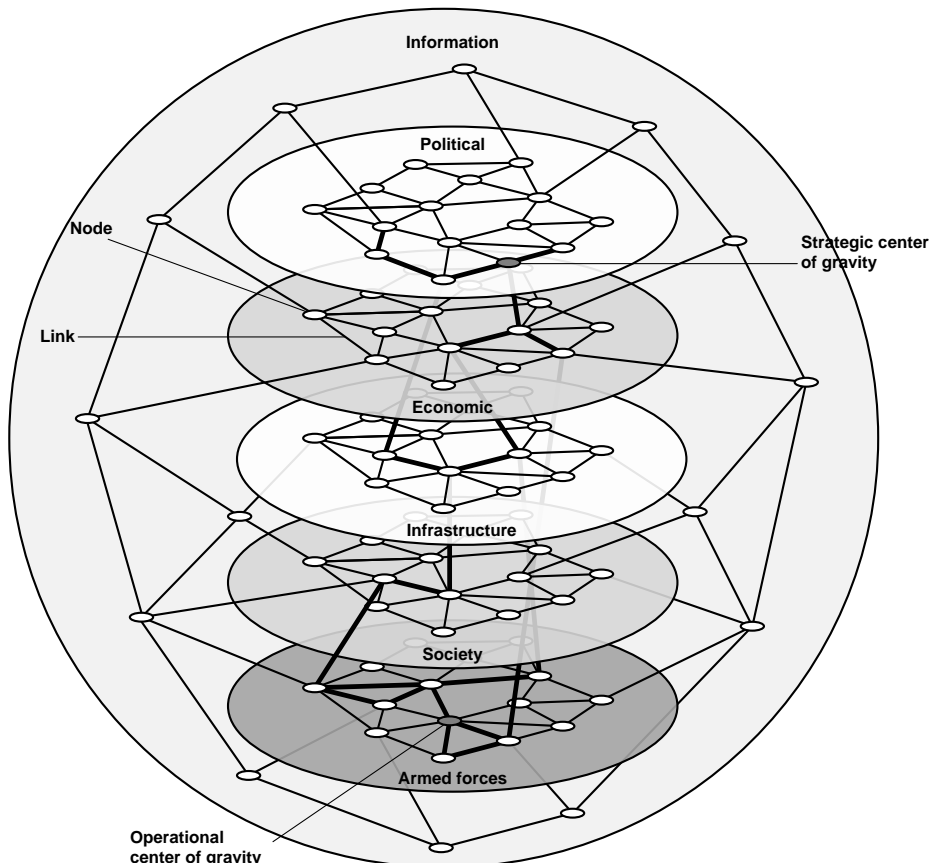


Figure 2 – Improved model of modern operating environment for effects-based operations

The United States and NATO have repeatedly tested this concept in various conflicts and have been actively studied by experts from the Russian Federation for a long time. After Desert Storm, this model was tested in Yugoslavia in Operation Allied Force in 1999. Coalition air forces struck troops and critical infrastructure: railways, bridges, television and radio stations, industrial enterprises, and other essential facilities to the population's livelihoods (Savyn, L.V.; Savyn, L. V., Skoryk, A. B., Voronyn, V. V. and Doska O. M., 2009; Popov, Y. M.). In combination with a powerful information campaign, the combined (physical, functional, and psychological) effect (operation based on results) achieved – accelerating the depletion of national resources, occurring a population's sense of insecurity, frustration, and dissatisfaction with the country's leadership, suppression of the will to resist (Warden, John A.; Skoryk, A. B., Voronyn, V. V. and Doska O. M., 2009).

Thus, conducting an operation based on effects due to a robust, comprehensive targeted information and physical impact aimed at "centers of gravity" and their destruction can create chaos provoke public protest aimed at the country's leadership (Skoryk, A. B., Voronyn, V. V. and Doska O. M., 2009). As defined and predicted in 1921, the eminent military theorist Giulio Douhet and the experience of local wars and armed conflicts show that only the Air Force can ensure that effects are achieved by hitting key "centers of gravity" throughout the enemy's territory (Due, D.).

Conditions of the operating environment in which the Air Force of the Armed Forces of Ukraine will operate

It is necessary to consider the state and capabilities of the Armed Forces of the Russian Federation, which is constantly capable and ready for aggression, to assess the operating environment in which the Air Force of the Armed Forces of Ukraine will operate. The conditions of the working environment will be determined by the composition of the forces and means of air attack, forms of action, and methods of using aviation and air defense of the enemy, primarily the Air Forces (Horbenko, V.M., Tiurin V.V. and Korshets, O.A., 2019).

Russia is constantly increasing the number of its troops near the Ukrainian borders and in the occupied territories, modernizing and creating new strike operational forces, testing on practice the concept of their use in new generation operations. These forces have an offensive focus and are an instrument of aggression. Therefore, the threat of a full-scale invasion of Russian troops remains very real and can be predicted as one of the following possible stages of the hybrid war against Ukraine (Zarembo, Kateryna, Solodkyy, Sergiy).

The Air Force of the Russian Aerospace Forces is based on a set of quantitative and qualitative indicators capable of conducting a strategic air operation. Many Air Force flight and technical personnel gained combat experience in the Syrian campaign (Hamilton, Robert E., Miller, Chris and Stein, Aaron). As of the end of 2021, there were up to 1,330 aircraft in the Aviation of the Air Force, of which: 838 fighters and interceptors; 292 bombers, and 200 attack aircraft. The ratio of the number of modernized and non-modernized aircraft of different types, which are in service with the Air Force, is shown in Fig. 3 (Russia Military Power; Myers, Nicholas; Poulsen, Niels Bo & Staun).

The Air Force of the Russian Aerospace Forces and Aviation include anti-aircraft missile forces, radio troops, and special forces. They include up to 70 airbases designed to ensure the performance of tasks by units and subdivisions of various types of aviation (front, long-range, strategic, military-transport). In terms of its size, the Air Force of the Russian Armed Forces is second only to the US Air Force (The Russian army entered).

In recent years, the Air Force of the Russian Federation has received hundreds of aircraft, helicopters, and dozens of divisions of modern anti-aircraft missile systems. In 2021, the share of current and modernized military equipment reached 75% (Russia's modernized air force).

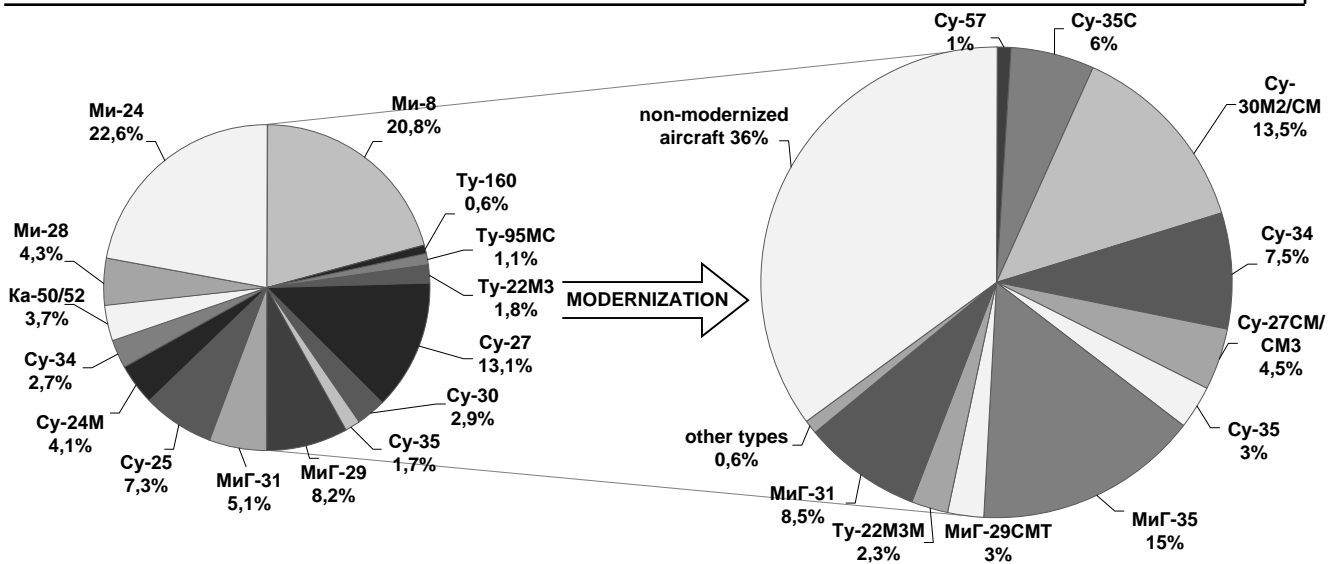


Figure 3 – The ratio of the number of modernized and non-modernized aircraft of different types, which are in service with the Air Force of the Russian Aerospace Forces

The organizational structure of the Air Force of the Russian Aerospace Forces consists of six operational formations – Arms of the Air Force and Air Defense. The southern part of European Russia is covered by the 4th Army, the 6th Army – the western regions of Central Russia, the 11th Army – the Far East, the 14th – Siberia, part of the Volga region and the Urals, the 45th Army of the Air Force and Air Defense – Arctic region (Russian Armed Forces; Norberg, Johan, Simpson, Natalie).

The space forces of the Russian Federation include air and space defense forces, which unite all forces and means of air and missile defense. The conditions of the operating environment in which the Air Force of the Armed Forces of Ukraine will operate will also be determined by the composition of the enemy's air defense and counter missile defense forces and means and their active actions. The Air Defense and Counter Missile Defense forces are designed to reliably protect and repel threats to Russia's national security in the air and space sector as part of a single combat system (Speed, Joseph, Stathopoulos, Panagiotis).

The development of air and space defense forces aims to improve troop control systems, missile warning, and global space navigation. The actions of the Air Defense and Counter Missile Defense forces of the Russian Aerospace Forces in a specific operating environment aim to effectively solve information and combat missions to prevent the enemy from gaining and maintaining supremacy in the air. In the information sphere, the Russian Federation continues to strengthen surveillance capabilities in air and space to timely inform the country's leadership and the armed forces about possible air and space attacks by the enemy.

Improving the capabilities of the surveillance and early warning system of air and space attack is provided by its echeloned, the inclusion in the scheme of elements of space, air, land, and sea bases, which operate on different physical principles. The distribution of forces and means of surveillance by echelons is determined, taking into account the nature of possible actions of the enemy's air defenses' climatic and geophysical features in a particular strategic air and space direction. This construction of the surveillance and early warning system of air and space attacks ensures compliance with the requirements for efficiency and reliability of the issuance of intelligence information.

The nature of possible changes in the application of means of the air attack that may operate in the operating environment

Aerospace Forces will soon be equipped the fifth generation with combat aviation system – a Prospective Airborne Complex of Frontline Aviation (PAC FA – Su-57 aircraft), Prospective Aviation Complex of Long-Range (strategic) Aviation (PAC SA), and heavy strike drone apparatus (UAV) S-70 "Hunter". Work is underway to establish a dagger hypersonic aviation complex (an air-to-surface aeroballistics missile capable of hitting surface and ground targets at a range of 2,000 km). The leadership of the Air Force of the Russian Aerospace Forces plans to modernize strategic aircraft expand the scope of their strike weapons (aerodynamic missile X-101/102 "air-to-ground" class with a range of about 6,000 km). All these measures aim to ensure success in overcoming existing and prospective air defense systems (Myers, Nicholas; Poulsen, Niels Bo & Staun; Russia's modernized air force; Russian Armed Forces).

Thanks to the participation in the Syrian campaign, new approaches have emerged in the tactics and operational art of the Air Force of the Russian Armed Forces. In addition to tactical aircraft, there were actively operational-tactical bombers Tu-22M3 and strategic missile carrier bombers Tu-95MS and Tu-160. All the application elements of massive missiles and airstrikes were practiced. Many flights and technical personnel received combat experience. The percentage of participation of the Air Force of the Russian Aerospace Forces in the structure of the troops involved in all-military operations is constantly growing (Hamilton, Robert E., Miller, Chris and Stein, Aaron).

According to military experts of the Air Force of the Russian Aerospace Forces, armed conflict in the future operating environment will be determined by developing and applying new technologies, increasing the effectiveness of weapons, and the widespread introduction of high-precision weapons (HPW) and unmanned aerial complexes. Under such conditions, operations and combat actions can occur without a land component. Missile and airstrikes will become "point" characters, which will reduce their number, carry out fire damage to the full depth of operational order of enemy troops, and reduce the overall duration of operations. Increasing the scale of application, the means of air attack will deplete the enemy forces destroy the economy, strategic, industrial, and military facilities. There is a steady trend of transition combat actions from direct frontal clashes of troops to long-range fire strikes (Hamilton, Robert E., Miller, Chris and Stein, Aaron).

Essential components of the current and future operating environment are high-tech intelligence, electronic warfare (EW), UAVs, and space satellites. Wide application of these components dramatically simplifies the search for objects to strike, allows for tracking the slightest changes in the situation (respond immediately), effectively fighting with command & control and communication systems, increase the speed and improve quality of fire adjustment, provide command and control of the aviation actions in real-time. The effectiveness of applying the air attack means will be due to their close integration and command & control systems evaluation.

Today and in the future, the urban city space becomes a component of the operating environment. Under such conditions, the complexity of the deployment and use of land forces and means will determine the growing role of the air attack means if hostilities will conduct in urban areas.

The analysis of the nature of possible changes in the operating environment, taking into account factors of military-political, military-technical, and military-geographical nature, allows us to conclude that the goal of aggression against Ukraine, under certain conditions, can be achieved without a ground invasion.

If the ultimate goal of aggression is to capture part of the territory of Ukraine, then the air phase of the armed conflict will be aimed at creating favorable conditions for land (sea) invasion. The aggressor's air offensive operation to gain air superiority will destroy the air defense system, which will create favorable conditions for a strategic air operation aimed at destroying strategic and regional systems vital to the population. It is enough to focus effort on one city – the capital- quickly achieve an acceptable result. The chosen mechanism (strategy) to achieve political goals by airstrikes on selected objects at a considerable distance from the strategic "center of gravity", combined with minimizing attendant losses, will create in the public consciousness the idea of "non-

involvement” to those events of the Russia Federation. The strategic air operation, combined with the information operation aimed at instilling the narrative: “the government and the president are unable to find effective mechanisms to improve the situation”, with further withdrawal of the ruling power “from the game” will increase public discontent and, as a result, another revolution with a projected and managed for Russia change of control. And if the protest of the society is severely suppressed, conditions will be created for the introduction of a “peacekeeping” contingent of the Russian Federation.

Factors that will determine the conditions of the operating environment of the Air Force of the Armed Forces of Ukraine

Obviously, the Air Force of the Russian Federation, in cooperation with means of remote fire destruction of other types of armed forces, is capable of inflicting selective high-precision strikes on the selected range of critical infrastructure at full depth of territory of Ukraine.

Factors that will determine the conditions of the operating environment of the Air Force of the Armed Forces of Ukraine include:

- the presence of large groups of enemy air attack means near the state border;
- proximity to sources of instability and increased conflict, the presence of such sources within the state;
- the significant length of walls;
- a significant area of the territory, which complicates the possibility of concentrating forces and means of the Air Force in dangerous places;
- the presence of territories temporarily occupied by the Russian Federation (the Autonomous Republic of Crimea, certain districts of Luhansk and Donetsk regions);
- availability of critical state and other man-caused and dangerous objects;
- the insufficient density of the information field in the essential areas.

These and other factors together create favorable conditions for applying the means of air attack in the operating environment and complicate the solution of the Air Force of the Armed Forces of Ukraine in operations (combat actions) and the protection of Ukrainian airspace. The results of a possible strategic air operation created by the Air Force of the Russian Aerospace Forces near the borders of Ukraine can be assessed on the example of a comparison with a similar operation, “Desert Storm” in Iraq (see Fig. 4).



Figure 4 – Proportionality of the territory of Ukraine and Iraq to assess the scale of a possible strategic air operation

The results of the comparative analysis show that the first stage of the air offensive operation to gain supremacy in the air will allow in 3-5 days (up to 450 sorties) to destroy the air defense system (Keaney, Thomas A., Cohen, Eliot) by destroying only airfields, aircraft on them, anti-aircraft missile forces and radio engineering troops of the Air Force of the Armed Forces of Ukraine (see Fig. 5).

In this case, the main tasks of the Air Force of the Russian Aerospace Forces will be:

- gaining supremacy (superiority) in the air in certain areas (directions);
- destruction of critical infrastructure objectives, command, and control system of troops and weapons, air defense, intelligence and EW, bases, arsenals, groups of troops (forces), aviation at base airfields;
- covering action and close air support of force grouping (troops);
- maintaining supremacy (superiority) in the air.

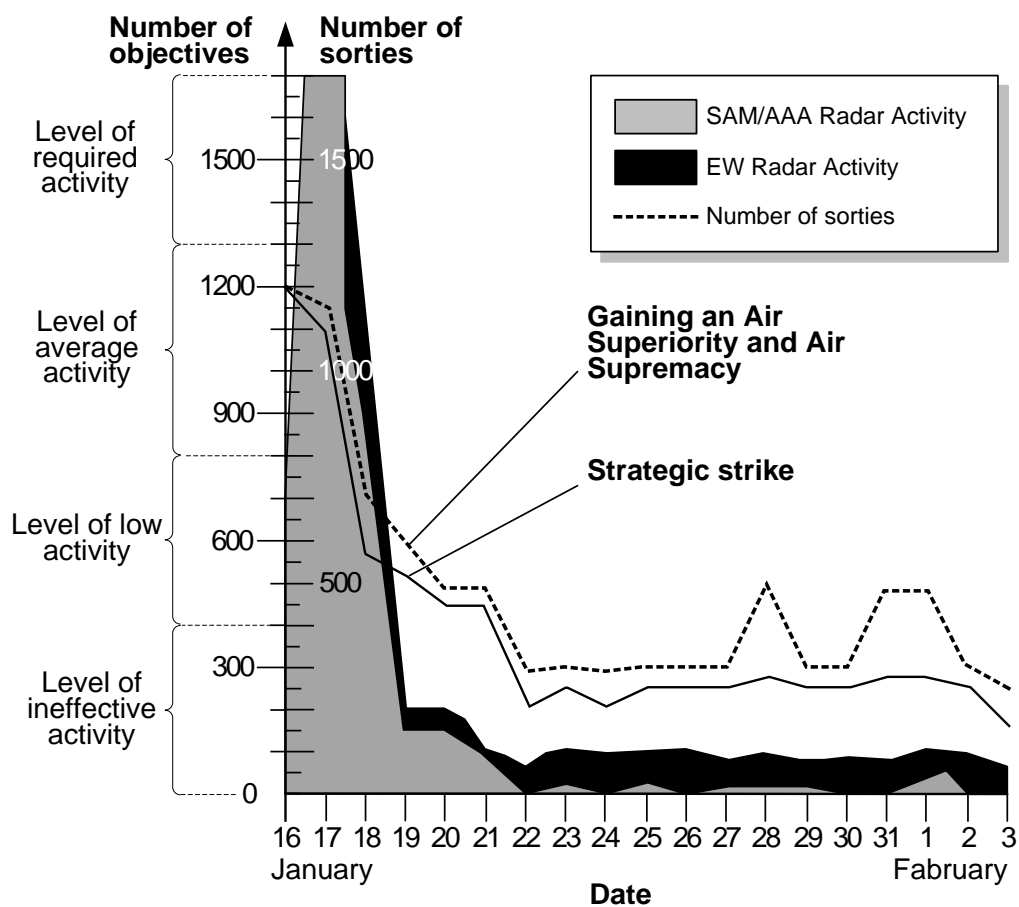


Figure 5 – Experience in combating the air defense system in Operation Desert Storm

Gaining supremacy in the air will create favourable conditions for a strategic air operation, the purpose of which will be – the destruction of strategic and regional systems vital to the population: electricity, fuel and lubricants, and others. Under such conditions, within 7-10 days, the enemy will perform the main tasks of the operation, making up to 1200-1500 sorties (see Fig. 6) (Keaney, Thomas A., Cohen, Eliot).

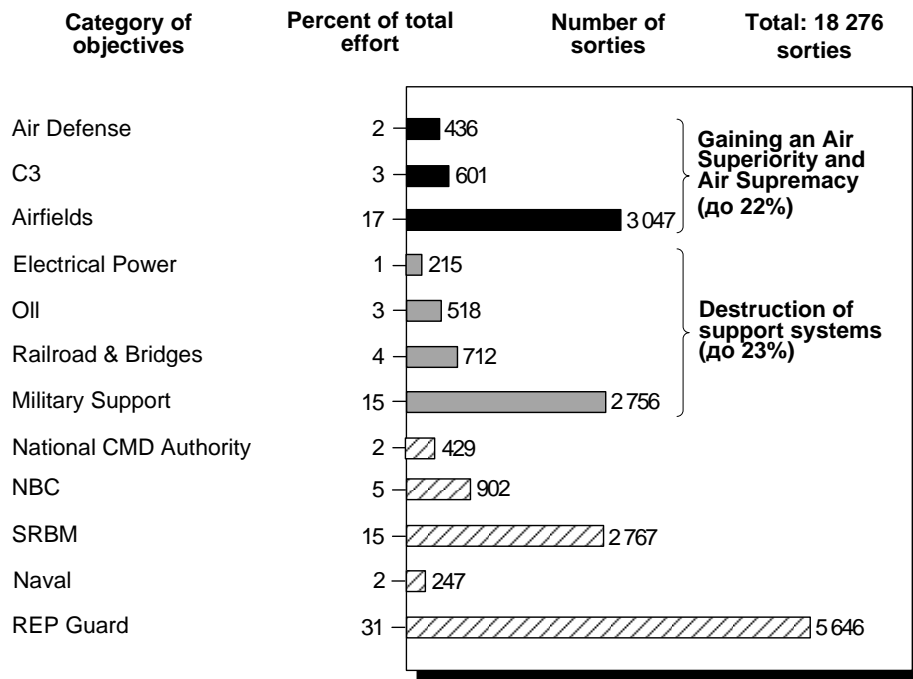


Figure 6 – Spending of flying life by categories of targets in Operation Desert Storm

Probable scenarios of the Air Force application in the operating environment

Today, possible scenarios of the Air Force of the Armed Forces of Ukraine application in the operating environment are based on studies of existing forms of action and methods of application in combined and joint military operations, the theory and practice of which have been studied and worked out in detail.

The analysis of probable scenarios of military confrontation in military conflicts of various scales shows that the main tasks of the grouping of the Air Force of the Armed Forces of Ukraine in the operating environment will not change. The primary forms of action of the Air Force grouping are and will remain air operations and combat actions. However, in the early stages of military conflict, when there is missing or limited armed confrontation, the use of these forms will not match the requirements (objectives) of the Defense Forces to implement a set of strategic deterrence measures. This period will be characterized by an increased escalation of information warfare and special operations forces. Under such conditions, to prevent the resolution of the military conflict or turn it into a larger-scale military action, the grouping of the Air Force of the Armed Forces of Ukraine will be used according to a single plan together with other components of the Defense Forces. In the case of military conflicts of varying intensity, as part of a set of strategic deterrence measures, today proposed “new” or “non-traditional” forms of action of the Air Force grouping, such as actions to maintain the potential threat to the enemy, particular aviation actions, etc.

If the enemy conducts an air offensive operation, the main tasks of the Air Force of the Armed Forces of Ukraine will be:

- prevention critical objects, command and control centers, forces and means of the Air Force against damage by enemy Aviation;
- reflection of attacks of the air attack means disrupting the enemy's air offensive operation and achieving parity in the air;
- conducting air defense in areas of responsibility in specific directions;
- providing covering action and close air support for the actions of the troops (forces) grouping;
- restoration of the air defense system in threatening areas.

The analysis shows that the “new” forms of action are only a compilation of existing applications and combat tasks. However, each condition of movement of the Air Force grouping is characterized by certain qualification features, namely, the level and scope of functions and capabilities of military formations for their implementation. The choice of certain forms of action of the Air Force grouping is influenced by a vague set of factors, the main of which are:

- the scale of the armed conflict (the spatial scope of action, the composition of forces and means involved, the expected duration of action);
- the purpose, goals, and objectives of the Air Force grouping in the operating environment;
- projected (probable) scenarios of the Air Force grouping application.

Methods of application of the Air Force grouping are determined for specific forms of action and depend solely on the purpose, goals, and objectives of the operation, composition, state of forces and means of the created groupings, the conditions of the situation (Horbenko, V.M., Tiurin V.V. and Korshets, O.A., 2019). Their content is the sequence of operational tasks, the use of forces and means, the implementation of the maneuver. Thus, the probable scenarios of the Air Force application in the operating environment will depend on:

- the method of the creation of the Air Force grouping (operational construction, the order of regrouping and comprehensive support);
- capabilities of the created Air Force grouping, the level of readiness of deployed military units (subunits, crews, services, etc.), the availability of time;
- availability and opportunities for the use of combat-ready reserve;
- provision of reserve bases (airports), prepared positions;
- effectiveness of cooperation with partners (allies).

Under such conditions, the purpose of using the Air Force of the Armed Forces of Ukraine in the modern operating environment will be compelling solution information and force tasks, which will not allow the enemy to gain and maintain supremacy in the air.

The analysis of possible instruments of the hybrid war of the Russian Federation against Ukraine makes it possible to predict probable scenarios for the use of the Air Force in the future operating environment, which is a combination of forms of action in different domains – on the land, on the sea, in the air, in the space; in information, mental and cyberspace (see Fig. 7).

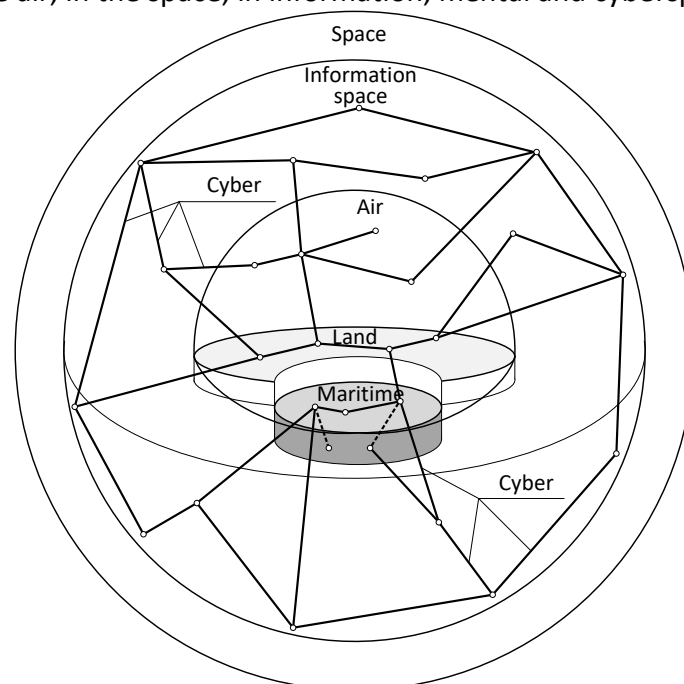


Figure 7 – Multi-domain operating environment of the future

This approach makes it possible to compensate for the insufficient capabilities of the troops (forces) of grouping in a single domain (or several domains) and achieve overall success in the operating environment (Jennings, Nathan A.; Tradoc Pamphlet). Therefore, the probable scenarios for using the Air Force grouping of the Armed Forces of Ukraine should include participation in multi-domain operations (battles). Under such conditions, the Air Force of the Armed Forces of Ukraine will perform tasks in new forms of action with a jointly defined ultimate goal, simultaneously or sequentially in different domains, where groupings of troops (forces) of other parts of any level are only one of the subsystems of a complex system.

The main trends that will affect to the use of the Air Force of the Armed Forces of Ukraine in the future multi-domain operating environment are:

- the use of aviation of the whole arsenal of effective tactical techniques, the suddenness of the service means of air attack, the use of extremely low altitudes, bypassing areas affected by air defense, operations at night and under cover of electronic interference;
- use of aviation systems for long-range radar detection and guidance to control the air situation and guide aircraft to the ground (sea) and air targets;
- application of modern unmanned and manned combat aviation complexes of the 4th and 5th generations;
- use of "stealth" technologies, hypersonic speeds, laser, and electromagnetic weapons;
- the massive use of high-precision guided weapons, cruise missiles with conventional combat equipment to strike stationary point objects;
- allocation of significant aviation forces to combat air defense;
- the desire to reduce the effectiveness of the means of air attack through false targets, positions, models of military equipment, etc.

Armed confrontation in the future operating environment will be determined by the development and application of new technologies, increasing the effectiveness of weapons, and the widespread introduction of high-precision weapons. Under such conditions, operations and combat operations can take place without a ground component, missile and airstrikes will become "point", which in turn will reduce their number, carry out fire damage to the full depth of operational construction of enemy troops and the country, reduce the overall duration of operations.

The purpose of using the Air Force in the operating environment is to effectively perform tasks that will not allow the enemy to gain and maintain air superiority. At the same time, the probable scenario of military conflict should include such forms of action and methods of using the Air Force that would be adequate to the projected movements of the enemy and determine the required capabilities of Air Force groups in a single domain or multiple domains simultaneously.

3. Conclusions

The article examines and substantiates the possible instruments of the hybrid war of the Russian Federation against Ukraine. There are analyzed modern concepts for achieving the dysfunction of the state system without destruction of its critical components.

Given the trends outlined in the article, it is likely that Russia can choose the concept of "strategic paralysis" to achieve a strategic goal in Ukraine using one of the possible instruments – a strategic air operation. The best actions to implement this concept are airstrikes on the main strategic objectives throughout the country, especially on the objects of the structure of the enemy state, the economy, and not his troops (forces).

Dysfunction of the state system is possible and quite probable under the following conditions:

- the progressive inaction of the ruling elite;
- disregard for significant trends, examples, lessons, evolutionary processes;

- neglect of the principles of development of the state and society;
- contempt for history and its population, universal values, and national interests;
- the humiliation of the role of the Armed Forces of Ukraine as one of the guarantors of state security.

The following principles should be adhered to in public policy to prevent such situations:

- consistent implementation of a single flexible public policy;
- integration of forces and means of the security and defense sector;
- the creation and implementation of a unified system of mutually agreed and comprehensively considered economic, political, informational, and military measures were adequate to challenges and threats.

Given the results of the analysis of the future operating environment in which the Armed Forces of Ukraine will operate, the country's defense capabilities should be further strengthened in all areas, primarily information and air. Intraspecific integration of personal surveillance, control, and destruction systems of the Air Force of Ukraine into a complex system will allow responding quickly to changes in the situation, adapt (change or clarify) tasks of the Air Force ahead of the enemy in decision-making, and further integrate it into a single system of Ukrainian Armed Forces.

Implementation of the concepts of "combat actions in a single information space" and "multi-domain operation (battle)" will allow the Air Force of the Armed Forces of Ukraine to conduct joint actions at a qualitatively new level as part of collective groupings of different, diverse forces. With the modernization of the economy, social sphere, governance system, defense forces, especially the Air Force of the Armed Forces of Ukraine, Ukraine will be able to resist Russian aggression and will be able to implement an acceptable model for resolving the conflict in Donbas.

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The authors declare that they have no competing interests.

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