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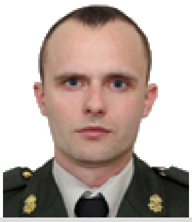

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MODEL OF CREATION OF BATTLE ORDER FOR PERFORMING TASKS ON PROTECTION OF CRITICAL INFRASTRUCTURE FACILITIES FROM AIR ATTACK MEANS

An analysis and modeling of organizational structures, processes, and methods for the employment of mobile fire groups to ensure the protection of critical infrastructure facilities have been conducted. The findings make it possible to strengthen the scientific foundation and improve the effectiveness of command and control over defensive operations, ensure their compliance with current challenges in the field of military security, and enhance the level of readiness for rapid response under conditions of high-intensity combat operations.

A hypothesis for the organization of the deployment of mobile fire groups has been created. The limitations and assumptions of the model are presented. Methods for occupying firing positions have been developed depending on the level of threat and available resources.

Keywords: *National Guard of Ukraine, air attack assets, critical infrastructure facilities, mobile fire group, firing positions.*

Statement of the problem. With the increase in threats associated with the employment of high-technology air attack assets, the need for prompt and effective protection of critical infrastructure facilities is growing; this constitutes a complex and multifaceted challenge for modern defense systems. At the same time, existing methods for organizing air defense often do not account for the dynamic nature of the combat environment, the specific mobility and rapid actions of mobile fire groups, and there is no single scientifically substantiated approach to organizing the highly effective advance and occupation of firing positions by mobile fire groups (MFGs) in response to rapidly evolving threats.

An insufficient level of automation and algorithmic support in the processes of planning and executing deployment measures undermines units' operational readiness, complicates the timely establishment of firing positions, and prevents rapid adaptation to changes in the combat situation. As a result, there is a risk of reduced effectiveness in the employment of mobile fire groups, which decreases the level of protection of critical infrastructure facilities against modern air attack assets.

A current problem is the lack of an integrated, scientifically substantiated model for organizing the processes of deployment and occupation by mobile fire groups under conditions of a dynamically developing combat environment, which negatively affects response speed and the level of protective measures in contemporary conditions. Consequently, it complicates the reliable protection of critical infrastructure facilities against air attack assets.

Analysis of recent research and publications. According to the analysis of the scientific source [1], a program was developed intended to enhance the requisite knowledge, skills and competencies of personnel who perform combat tasks as mobile fire groups assigned to air defense (AD) duties. The relevance of this publication lies in the establishment of an effective training system for training military personnel in training centers (training schools), one of the important elements of which is the training (or improvement of training) of mobile fire group personnel, capable of performing assigned tasks.

Article [2], based on an analysis of missions conducted by Ukrainian Defense Forces engaged in countering strike-type unmanned aerial vehicles

(UAVs) during the response to the russian federation's armed aggression against Ukraine, examines the effectiveness of fire groups employing heavy machine guns and proposes solutions to several identified problem areas – namely the detection, control and tracking of airborne moving targets (UAVs) – with the aim of ensuring effective engagement and neutralization of such targets using heavy machine guns.

When studying the methods and levels of air defense used to counter the armed aggression of the russian federation, the authors identified mobile fire groups equipped with heavy machine guns that perform missions during nighttime operations. They pointed out several problem areas, including airborne target (UAV) detection systems as well as fire control and fire adjustment systems.

A comprehensive solution to these issues has also been proposed through the conduct of experimental trials and practical validation during the direct execution of missions to destroy strike-type UAVs by personnel of the State Border Guard Service and the National Police of Ukraine operating as part of mobile fire groups [2].

Publication [4] notes that the effectiveness of mobile fire groups within the Territorial Defense Forces in destroying dozens, if not hundreds, of enemy aerial targets has already been demonstrated. This primarily concerns strike-type UAVs that attack the country almost every night. Nevertheless, Ukraine's Defense Forces are continuously refining their skills and coordination in order to maintain an effective defense.

The author of article [5] demonstrates how mobile fire group personnel are actively mastering a modern interactive multimedia shooting range where they practice the accuracy of engaging aerial targets. Virtual training enables instruction to be brought as close as possible to the real challenges soldiers face during combat duty.

The methodological recommendations [6] on countering Iranian-produced kamikaze unmanned aerial vehicles – Shahed-136 (Geran-2) – set out the main provisions regarding procedures for destroying kamikaze-type UAVs with small arms, and clarify firing techniques against aerial targets, taking into account sight offset and the tactical-technical characteristics of the UAVs.

The purpose of the article is to study and substantiate effective methods for organizing the deployment and occupation of firing positions by mobile fire groups to ensure the reliable protection of critical infrastructure facilities from modern air attack assets, and to develop recommendations for refining the employment processes of mobile fire groups and enhancing operational responsiveness in conditions involving the use of air attack assets.

Summary of the main material. In the current context of rising geopolitical risks and the intensification of air attack assets, there is a pressing need to improve air defense systems, particularly with regard to critical infrastructure facilities. The effective organization of mobile fire groups is a key component in enhancing protection levels and operational responsiveness to threats employed by the adversary during large-scale attacks on Ukrainian territory.

A wide range of factors was taken into account when forming MFG firing positions, including the operational situation, technical equipment, tactical characteristics, and rapid deployment capabilities. Particular attention was paid to the selection of key positions for MFGs, their preparation, and camouflage to reduce the risk of detection by the adversary.

Modern communications systems are employed to ensure the firing activity and coordination of MFG actions, enabling rapid transmission of target coordinates and the coordination of fire maneuvers.

The employment of contemporary electronic warfare assets makes it possible to degrade the effectiveness of the adversary's air attack means and to ensure unobstructed operation of firing systems from positions in complex conditions. A firing position must provide an optimal distribution of forces and resources, readiness for deployment and combat readiness, as well as integration with automated target management systems. *An automated target management system* is a set of hardware and software tools used to automate the processes of detection, tracking, acquisition and tracking of targets, and to facilitate their engagement.

In order to ensure the protection of critical infrastructure facilities from air attack assets, a structured model for organizing the deployment and occupation of firing positions by mobile fire groups to protect critical infrastructure facilities from air attacks has been proposed. This model will make it possible to identify specific engagement positions against air attack assets and to increase the accuracy and speed of decision-making in crisis situations.

The hypothesis for organizing the deployment and occupation of firing positions by mobile fire groups to accomplish protection tasks posits that the geospatial disposition of mobile fire groups, the available transport network, meteorological conditions and the time of day at the moment of task execution should be determined with reference to the number of air attack assets, their flight altitude, and their speed and direction of movement toward the critical infrastructure facility.

Limitations and assumptions of the model:

– all weapon systems operate at 100 % effectiveness, with no technical malfunctions or failures;

– personnel and equipment must correspond to the staff of the unit involved in the performance of tasks;

– accurate and up-to-date data on the locations of obstacles, facilities and attacking assets are assumed to be available;

– at least one route suitable for movement to the firing position exists;

– only internal parameters are taken into account (range, speed, quantity); external factors (weather, enemy camouflage technologies) are not considered;

– personnel training is satisfactory;

– speed of transport depends on the quality of the roads;

– all actions and reactions occur sequentially and synchronously according to the calculation.;

– transmission of commands, signals, and data between system components is flawless, without delays or losses;

– the number of MFGs is limited and cannot exceed available personnel or technical capabilities;

– establishment of firing positions must be completed within specified time limits that take response speed into account;

– fire assets can only attack or intercept attack means within the tactical and technical characteristics of the armament;

– the probability of key assets being hit must not exceed the probability of MFGs failing to intercept attacking air assets;

– interaction between forces must take possible communications interference and failures into account; therefore, reserves or alternative routes should be provided.

A choice of method for establishing firing positions depends on the specific conditions of the facility, the level of threat and the resources available. In general, three principal approaches are distinguished.

Manual planning is a traditional way in which military specialists determine firing positions manually based on maps and experience. The advantages of this method are its flexibility and taking into account tactical features, the disadvantages are dependence on the human factor and possible errors.

Automated or computerised planning – this approach employs modern software systems for modelling, analysis and automatic determination of firing positions. It enables rapid consideration of a large number of factors, improving accuracy and reducing response time. Its benefits are particularly relevant in high-risk situations where speed is importantant.

Hybrid approach is a combination of automatic systems and human control, where software generates possible options for determining firing positions, and specialists adjust them, taking the tactical situation into account.

Mobile fire groups of the National Guard of Ukraine (NGU) play a key role in maintaining contemporary defense capability and the ability to respond rapidly to threats posed by air attack assets, particularly in the context of the current aggression by the russian federation. Mobile fire groups are capable of rapid re-orientation and relocation according to their area of responsibility. This complicates the adversary's planning and execution of air attacks, as it prevents precise prediction of the positioning of firing assets. In this regard, we consider the example of the A* algorithm, which was developed and described in 1968 by Peter Hart, Nils Nilsson and Bertram Raphael. The A* algorithm is similar to Dijkstra's algorithm in that it can be used to find the shortest path. It is also similar to the Greedy Best-First-Search in that it can use heuristics for self-guidance. The secret to its success is that it combines the information used by Dijkstra's algorithm (prioritizing nodes close to the starting point) with the information used by the Greedy Best-First-Search (prioritizing nodes close to the goal). The A* search algorithm finds an optimal path between two nodes in a graph Depending on the cost function that assigns a "weight" to each edge, optimality may mean the shortest, the fastest, or even the simplest path. Theoretically, the algorithm can solve any problem that can be represented as an optimal-path search on a graph. A* algorithm is used for planning advance routes. For route planning, the straight-line distance to the goal is commonly used as the heuristic function, since – by the triangle inequality – it provides admissible estimates [7]. In the context of combat operations, the value of the asset being protected by NGU units is far greater than the estimated cost of destroying incoming air attack assets [8]. The solution of the scientific problem is the partial use of Algorithm A* with the introduction of certain additions to it, which will be necessary for the successful completion of the tasks.

An example of a deployment variant for a mobile fire group is shown in Figure 1, where point 8 is defined as the start of movement of the MFG, which moves along the straight line ω toward the deployment point at a distance (S), that ensures the security of the critical infrastructure facility. The distance can be determined by the following formula:

$$S = V \times t, \quad (1)$$

where S is the distance from point 8 to the deployment point;

V is the speed of the mobile fire group;

t is the time taken to cover the distance.

The distance calculated using formula (1) is suitable for solving simple problems of determining the distance that the group will cover, given its speed and the time required to complete the route. However, taking into account the terrain relief and obstacles encountered along the movement route under real conditions, such a distance is unlikely to be accurate. Therefore, in an actual operational environment, the route will be considerably more complex and must take into account both unfavorable and favorable points for route planning.

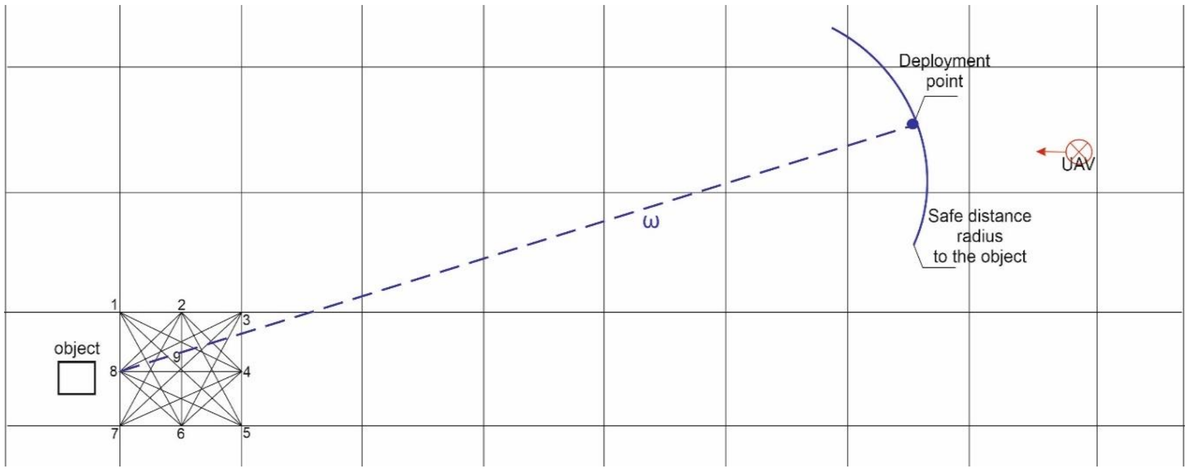

Figure 1 – The shortest movement route of the mobile fire group

The article presents a variant of movement for a mobile fire group along nine vertices. By dividing the map into imaginary squares, we identify the points of a single square (Figure 2).

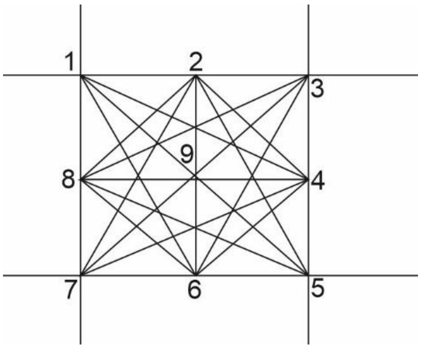

Figure 2 – Route distribution matrix considering possible directions

The scenario was constructed using a created algorithm, in which a matrix of favorable and unfavorable points was defined for each square.

The algorithm for selecting points will be built by a computer program:

```
program a-twostar
    // Initialization of the list of known points; the list of favorable and unfavorable points is known (or unknown)
    // (f- value of the starting point is known)
    openlist.enqueue(startpoint, 1 or 2 or 3 or 4 or 5 or 6 or 7 or 8 or 9, Square.letter/number)
    // this path is followed until:
    // – an optimal solution is found
    // – it is established that no solution exists
    repeat
      // Remove unfavorable points
```

```
        currentNode := openlist.removeUnfavorable points()
        // Is the reached point favorable for transition to another square?
        if currentNode == favorable transition point then
        Square.letter/number.continued(favorable transition point, 1 or 2 or 3 or 4 or 5 or 6 or 7 or 8)
      // this path is followed until:
      // – an optimal solution is found
      // – it is established that no solution exists
      repeat
        // Remove unfavorable points
        currentNode := openlist.removeUnfavorable points()
        // Is the deployment point reached?
        if currentNode == deployment point then
        the target is impressed==if the target not impressed
    return Backup point
        Square.letter/number.continued(favorable transition point, 1 or 2 or 3 or 4 or 5 or 6 or 7 or 8)
      // this path is followed until:
      // – an optimal solution is found
      // – it is established that no solution exists
      repeat
        // Remove unfavorable points
        currentNode := openlist.removeUnfavorable points()
        // Is the backup point reached?
        if currentNode == backup point then
          the target is impressed
        return Return route
        // the deployment point has been fully explored
        closedlist.add(currentNode)
      until openlist.isEmpty()
      // the list of known points is empty – no solutions found
      return NoPathFound
    end
    // checks adjacent points and adds favorable ones to the list if:
    // – adjacent points are favorable for traversal
    // – a better path to this point is found
    function expandNode(currentNode)
      foreach successor of currentNode
        // skip if the point is already in the list of explored points
        if closedlist.contains(successor) then
          continue
        // calculate g-value of the new path:
        // g-value of the previous point + shorter path
        tentative_g = g(currentNode) + c(currentNode, successor)
        // if the adjacent point is already in the known list,
        // but the found path is not better than the already known one – skip
        if openlist.contains(successor) and tentative_g >= g[successor] then
          continue
        // set pointer to the previous point and save g
        successor.predecessor := currentNode
        g[successor] = tentative_g
        // update the value of f for the point in the list of known points
        // or add the node to the open list
        f := tentative_g + h(successor)
        if openlist.contains(successor) then
          openlist.decreaseKey(successor, f)
        else
          openlist.enqueue(successor, f)
      end
    end
```

This algorithm is designed to find the shortest and most optimal route in the presence of favorable and unfavorable points

The algorithm takes into account favorable and unfavorable nodes, as well as backup routes, thereby improving the reliability and efficiency of deployment point search.

The main goal is to determine the path from the starting point to the deployment point quickly and accurately, minimizing the total distance while accounting for possible changes in the air attack threat environment.

The algorithm is based on the widely used A* methodology, augmented with buffer zones around critical infrastructure facilities to prevent air attack assets from approaching within a dangerous proximity to the facility. It accounts for favourable and unfavourable nodes and transitions between adjacent grid squares. In the event of a change in the direction of movement of attacking air assets, the program computes a new deployment point and updates the route in real time.

Openlist – the list of favorable points to which potential paths for exploration are added.

Closedlist – the list of already explored points, used to avoid re-analysis.

Startpoint – the initial point of the route.

Target – the target point of the route.

Backup point – an alternate point for contingency routes.

Initialization – the startpoint is added to the openlist with an initial f-value.

Processing the best node – at each iteration, nodes are selected from the openlist (excluding unfavorable points) and moved to the closedlist.

Transition to favorable points and backup routes – if the current node is identified as favorable for transition, the algorithm proceeds to the corresponding sector. Similarly, if a backup point is reached, the path is considered found.

Neighbor consideration – for each neighbor:

If it has already been explored, it is skipped.

The tentative g-value is computed; if the new path is shorter, the node's data are updated.

New points are added and updated in the openlist.

Termination of the search: the process repeats until a path is found or all possible options have been exhausted. If the target or a backup route is reached, the route is finalized and the search terminates.

The algorithm enables flexible and efficient construction of an optimal route, taking into account the specifics of transition nodes and contingency paths. Its application is particularly relevant for mobile fire groups operating in complex environments where conditions may change and rapid route adaptation is required.

The example is shown in Figure 3, which illustrates the start of the mobile fire group's movement toward the air attack weapon and defines that the MFG's movement begins from point 7, where:

for square (B4):

– unfavorable for transit points 2, 3, 4, 5, 6, 9;

– favorable for transit points 1, 7, 8;

for square (B3):

– unfavorable for transit points 1, 2, 3, 5, 6, 8;

– favorable for transit points 4, 7, 9;

for square (C3):

– unfavorable for transit points 1, 2, 3, 5, 7;

– favorable for transit points 4, 8, 9.

The algorithm displays the fastest feasible route for the MFG. The illustration contains a structure with numerous intersections and lines interpreted as connections between vertices traversed by the MFG. The algorithm indicates the direction of transitions between states, taking into account conditions or rules that determine the subsequent course of the process. The complex network of intersections reflects the processing of complicated routes that consider a variety of scenarios. The scheme can be applied in automated systems, computational algorithms and artificial intelligence systems to optimize these processes.

Consider the specified algorithm on the commander's working map for the MFG, taking into account Algorithm A** (Figure 4).

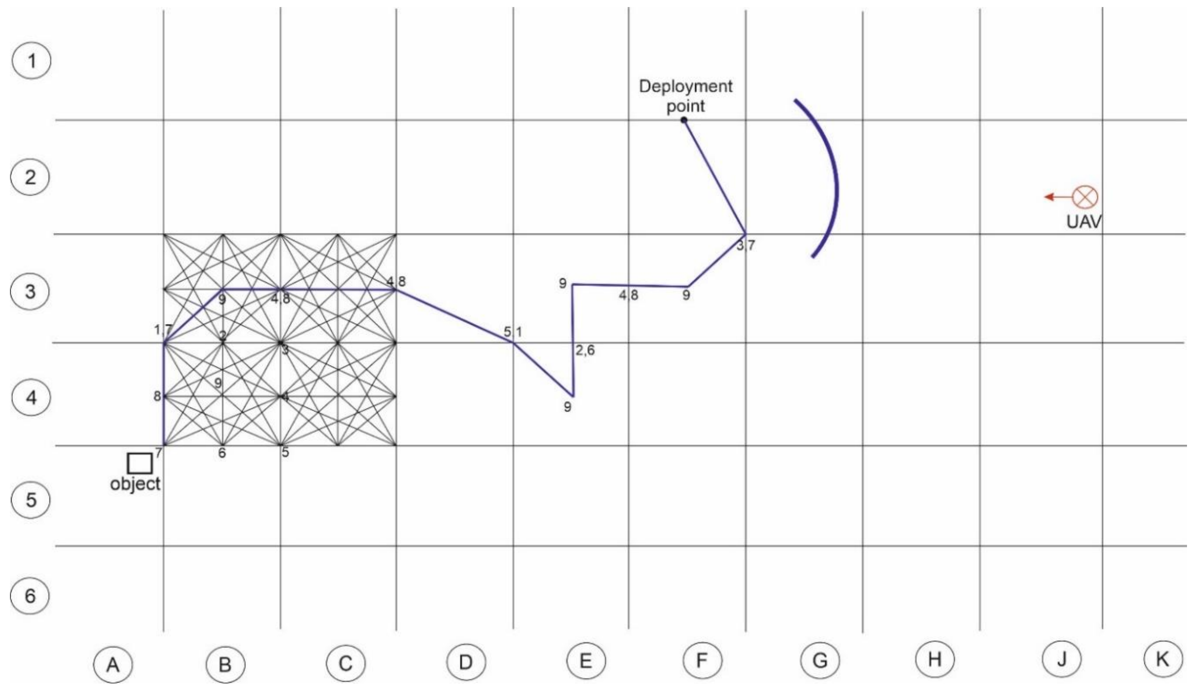

Figure 3 – Developed movement variant of the mobile fire group

Figure 4 – Movement variant of the mobile fire group according to Algorithm A**

The map shows planned actions and MFG routes in accordance with Algorithm A**, which assists the commander in decision-making while accounting for safety, effectiveness and mission speed.

The model for organizing the deployment and occupation of firing positions by MFGs to perform protection tasks for critical infrastructure facilities against air attack assets is shown in Figure 5 (it is more correct to speak of execution rather than organization).

In block 1 (Figure 5), input data are entered for calculating the execution of MFG tasks aimed at protecting a critical infrastructure facility. These include spatial data of the facility (terrain relief, elevation above sea level, distance from populated areas, concealment level, and degree of importance), as well as data on the MFG itself with determination of its location (inside or at a distance from the facility) at a distance defined by the commander, taking into account camouflage and establishing a safety radius from the critical infrastructure facility.

In block 2, the UAV detection distance is determined in kilometers, along with the potential direction of UAV movement in radians, the UAV speed in kilometers per hour, and the probability of a threat to the critical infrastructure facility. If all indicators are set, the process moves to block 3.

In block 3, if the target is not detected, we return to block 2 and adjust the data and re-determine the distance, speed, direction of the UAV and the probable threat to the facility. If a target posing a threat to critical infrastructure is detected, a signal is sent to the MVG to advance (block 4).

In block 4, the risk level of the facility is established, and a risk matrix is defined (low, medium, elevated, and high levels), as shown in Figure 6. If the risk coefficient $R \geq R_T$ (block 5) is not met – it does not exceed or equal the risk of loss or damage to critical infrastructure facilities during the year – the process returns to block 4. If the conditions of block 5 are met, the process proceeds to block 6.

In block 6, the MFG's readiness time is determined, as well as the direction of movement toward the deployment point and the time required for the group to deploy. During the MFG's advance, the maximum movement speed is calculated considering all terrain segments. The commander is informed of the minimum safe distance from the critical infrastructure facility to prevent air attack assets from approaching within that range. Using Algorithm A** (block 7), the shortest movement route through deployment points is determined, allowing the elimination of unfavourable points. If the deployment (firing) point is defined, the process proceeds to block 8.

In block 8, visual and acoustic identification of the target is carried out.

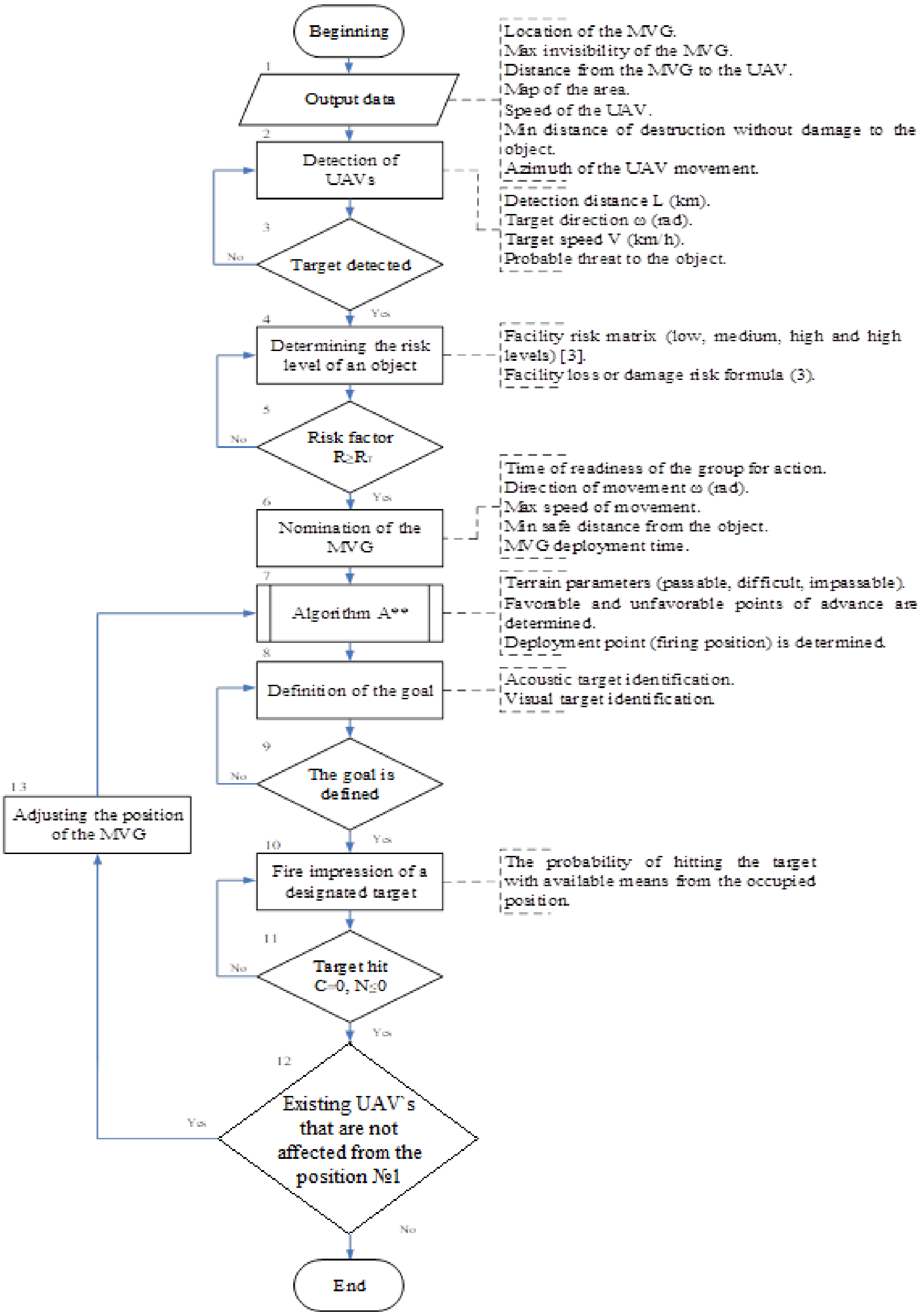

Figure 5 – Model for organizing the deployment and occupation of firing positions by mobile fire groups to carry out protection tasks for critical infrastructure facilities against air attack assets, based on the specified parameters

If in block 9 the target is not identified, continuous observation is maintained (block 8), and another attempt to identify the target is made. If the target is identified, the process proceeds to block 10.

In block 10, fire engagement of the identified target is executed, taking into account the probability of target destruction by available assets. If the target is not neutralized (block 11), the process returns to block 10 for repeated engagement. If the target is neutralized (block 11) and no additional air attack assets appear near the occupied position, the process proceeds to block 12.

In block 12, if other UAVs are detected at distances preventing engagement from the current position, the process returns to block 7, where the MFG adjusts its position and redeploys to a new firing position. If no other UAVs are present within the defense zone of the critical infrastructure facility, the task is considered complete, and the MFG returns to its initial location.

Each critical infrastructure facility is subject to various risks. In general, risk assessment involves several stages:

– risk identification as the process of recognizing and describing;

– risk analysis, which involves understanding the nature of the risk and determining its level;

– risk evaluation, which involves comparing the results of risk analysis with criteria to determine whether the risk is acceptable or tolerable [3].

If the task involves prevention and preparedness for a specific type of threat, the risk can be quantitatively defined as a function of the probability of the threat occurrence, exposure (the total value of all elements under risk), and vulnerability (the specific impact on the exposure).

Risk assessment includes a series of steps that allow for the consideration of the influence of key hazard factors.

The scientific article, taking into account national and international experience, presents the risk assessment R, which can be used as a functional F, that links the probability P of an unfavorable event occurring and the mathematical expectation of the loss L resulting from it [3]:

$$R = F_R\{L,P\} = \sum_i \left[F_{R_i}(L_i,P_i)\right] =$$
$$= \int C(L)P(L)dL = \int C(P)L(P)dP, \qquad (2)$$

where i is the types of unfavorable events;

C is the weight functions that account for the mutual influence of risks;

L is the mathematical expectation of the loss;

P is the probability of an unfavorable event occurring.

In EU countries, for the purpose of conducting a National Risk Assessment for critical infrastructure, it is recommended to use a 5 × 5 risk matrix as a means of visualizing the assessment results (Figure 6) [3].

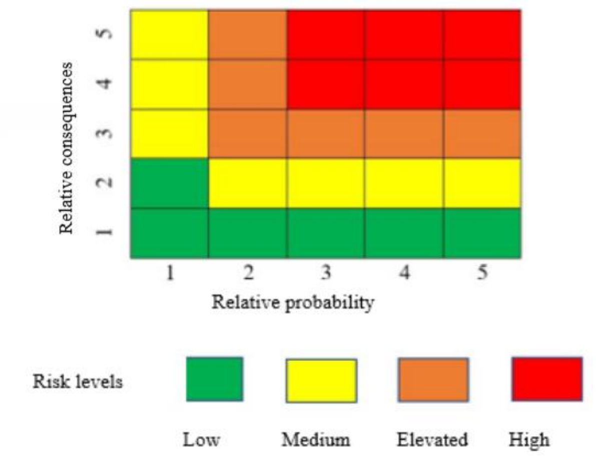

Figure 6 – Risk Matrix

The risk of loss and damage to infrastructure facilities during the year [3] is determined by the formula:

$$R_T = \sum_{i=t}^{n} P_{Ti}\left(V_{T1i} \times L_{T1i} \times N_{T1i} + V_{T1i} \times L_{T2i} \times N_{T2i}\right) =$$
$$= \sum_{i=t}^{n} P_{Ti}\left(\frac{N_{T1i}}{N_{Ti}} \times L_{T1i} \times N_{T1i} + \frac{N_{T2i}}{N_{Ti}} \times L_{T2i} \times N_{T2i}\right), \quad (3)$$

where P_{Ti} is the the probability of occurrence of the i-th incident causing damage to the infrastructure facilities of a given region;

V_{T1i} is the the vulnerability of infrastructure facilities to destruction resulting from the i-th incident;

V_{T2i} is the vulnerability of infrastructure facilities to damage from the i-th incident;

N_{T1i} is the number of destroyed infrastructure facilities as a result of the i-th incident;

N_{T2i} is the number of damaged infrastructure facilities resulting from the i-th incident;

N_{Ti} is the total number of infrastructure facilities in a given region;

L_{T2i} is the losses resulting from damage to infrastructure facilities as a result of the i-th incident.

Conclusions

The developed model for organizing the deployment and occupation of firing positions by mobile groups enables increased operational responsiveness, optimized resource utilization, and rapid reaction to changing combat conditions. At the same time, the implementation of automated control system's and the improvement of tactical procedures are key components for enhancing the system's effectiveness and reliability.

The development and implementation of this model contribute to strengthening the protection of critical infrastructure facilities and ensuring the resilience of defense systems under contemporary combat conditions.

Future research should be directed toward the advancement of technological solutions, the automation of processes, and the integration of modern command systems aimed at maximizing the adaptability of mobile fire groups to rapidly changing combat situations.

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The article was submitted to the editorial office on 10 July 2025

УДК 355.3

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МОДЕЛЬ СТВОРЕННЯ БОЙОВИХ ПОРЯДКІВ ДЛЯ ВИКОНАННЯ ЗАВДАНЬ ІЗ ЗАХИСТУ ОБ'ЄКТІВ КРИТИЧНОЇ ІНФРАСТРУКТУРИ ВІД ЗАСОБІВ ПОВІТРЯНОГО НАПАДУ

У сучасних умовах динамічного розвитку військових технологій, зростання потенціалу засобів повітряного нападу та їхньої тактико-технічної складності питання захисту об'єктів критичної інфраструктури набуває особливої актуальності. Об'єкти критичної інфраструктури виконують *функції забезпечення життєдіяльності, обороноздатності держави і є пріоритетними цілями для засобів збройного нападу. Їхня уразливість під час сучасних конфліктів зумовлює необхідність розроблення нових підходів до організації системи захисту, зокрема ефективного застосування мобільних вогневих груп.*

Науковий підхід до формування системи захисту базується на дослідженні динаміки бойових дій, аналізі тактико-технічних характеристик засобів повітряного нападу, а також розробленні моделей оперативних дій і логістики. Вивчення процесу висування та зайняття вогневих позицій мобільними групами є важливими аспектами у підвищенні швидкості реакції та ефективності протидії засобам повітряного нападу. Особливої актуальності набуває створення універсальної, адаптивної та автоматизованої системи організації цих процесів, що враховує сучасні вимоги до мобільності, швидкої дії та точності у контексті високої динаміки бойової обстановки.

Розроблення моделі організації висування і зайняття вогневих позицій мобільними вогневими групами дає змогу не тільки підвищити рівень оперативної готовності, а й оптимізувати ресурси, підвищити ефективність застосування штатних засобів і відповідних систем управління. Це сприяє формуванню системи превентивних та оперативних заходів, що здатні протистояти сучасним засобам повітряного нападу й мінімізувати можливі втрати стратегічних об'єктів критичної інфраструктури.

У межах цього дослідження було поставлено завдання з аналізу й моделювання організаційних структур, процесів та методів застосування мобільних вогневих груп для захисту об'єктів критичної інфраструктури, що дає можливість підсилити наукове обґрунтування та підвищити якість управління оборонними заходами, забезпечити їхню відповідність сучасним викликам у сфері військової безпеки, а також підвищити рівень готовності до швидкого реагування в умовах високої інтенсивності бойових дій.

Ключові слова: *Національна гвардія України, засоби повітряного нападу, об'єкти критичної інфраструктури, мобільна вогнева група, вогневі позиції.*

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