The Central Research institute
of the Armed Forces of Ukraine

Military Science. Vol. 2 No. 3 (2024)

DOI: 10.62524/msj.2024.2.3.07

Determination of the required composition of forces and assets for military and other formations for a stabilisation operation or territorial defence

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Abstract. The article analyses the existing methodologies used to determine the required composition of forces and assets for conducting a stabilisation operation or territorial defence. The article reveals the absence of information calculation tasks for the objectives of a stabilisation operation. Therefore, substantiating the approach to determining the required composition of forces and assets for conducting the stabilisation operation or territorial defence using an information calculation task, even in conditions of low level of personnel training, is an important and relevant issue.

In this regard, the authors of the article propose a methodological approach to determining the required composition of forces and assets for conducting a stabilisation operation and territorial defence. Based on such an approach, the authors propose to develop an information calculation task,

which will be used to calculate the demand for forces and assets, including strengthening the protection (cover) of the state border, identification and elimination of channels for illegal movement of weapons, ammunition and explosives, coverage of the state border sections, protection and defence of important facilities and communications, protection and escort of convoys, countering illegal armed groups and subversive reconnaissance groups, isolation of armed conflict area, ensuring conditions for reliable functioning of state executive authorities and local self-government bodies. A conditional "objective-normative" method is proposed for calculating the demand for forces and assets for stabilisation operations and territorial defence. Its essence is in the following: the number of "objects" is determined for each objective. The "objects" may include roads, factories, bridges, government buildings, columns, border sections, illegal armed groups, subversive reconnaissance groups, etc. After that, the conditions for stabilisation operations and territorial defence are determined. The conditions may include the type of terrain, methods of performing objectives, etc. Using the standards of the required number of forces and assets to accomplish objectives at one "object" in certain conditions, the total required number for all objects in all objectives is calculated. For each objective of stabilisation operation or territorial defence, standards are provided for the requirements of forces and assets under all conditions of the objective. The considered methodological approach can be used as the core for an information calculation task, which will automate the implementation of specific calculations and avoid biased errors on the part of the operational personnel.

Keywords: facility protection, state border, roadblock, illegal armed group, subversive reconnaissance group, stabilisation operation, territorial defence.

Introduction

One of the main tasks of the operational staff of command and control bodies in planning any operation is determining the required composition of their troops (forces) [6]. To solve this task, the military command and control bodies of the Armed Forces of Ukraine at the operational (tactical) level actively use the information calculation task 'Ratio 'from the complex of mathematical models and information calculation tasks (TMSS). The "Ratio" is based on the methodology used to determine and compare the combat potentials of the parties. Based on the value of the ratio, a conclusion is made about the sufficiency or insufficiency of their troops (forces).

However, in our opinion, it is impossible to determine the necessary composition of forces and assets to perform the objectives of a stabilisation operation [3] or territorial defence [4] using the "Ratio". The algorithm embedded in this information calculation task allows to determine the required composition of its troops only for the classical types of military operations: defence and offense. Based on the experience of several operational preparation events, one of the shortcomings of the work of operational-level command and control bodies is that, in most cases, they ignore the task of determining the need for forces and assets to conduct stabilisation actions and perform territorial defence measures. Most operational personnel do not know the methods of such calculations, and there are currently no information calculation tasks on these issues integrated into any information calculation complexes. Therefore, justification of the approach to determining the required composition of forces and assets for stabilisation operations and territorial defence with the help of an information calculation task, even in conditions of low level of personnel training, appears to be an important and urgent issue. This information calculation task should be integrated into the TMSS, which is currently one of the main tools for conducting operational (operational-tactical, operational-strategic) calculations in the military command and control bodies of the Armed Forces of Ukraine.

Nowadays, several methods partially allow determining the required composition of forces and assets for a stabilisation operation or a territorial defence. The National Academy of the National

guard of Ukraine (Kharkiv) has developed a complex of information calculation tasks at the tactical level. These include calculations of the march and route of movement of units, the required composition of forces and assets for smoke control measures, the required composition for protecting one object and psychogenic losses of personnel units of the National Guard. This complex includes information calculation task which allows for the determining of the required composition for certain territorial defence objectives, taking into account the specifics of the use of National guard of Ukraine military units such as blocking an area, searching for illegal armed groups. This set of information calculation tasks does not determine forces and assets for other stabilisation operation or territorial defence activities.

The Armed Forces of Ukraine have developed several methodologies that can be used to determine the required composition of forces and assets for a stabilisation operation or a territorial defence. In our opinion, the methodologies outlined in [1] and [2] deserve special attention. These methodologies use an approach that we propose to call ‘objective-normative’.

However, none of the methods has been implemented in a software product. All calculations, if any, are performed manually or using Excel.

The purpose of the article is to highlight a methodological approach to determining the required composition of forces and assets for a stabilisation operation or a territorial defence using a prospective information calculation task consisting of a set of mathematical models and information calculation tasks.

Methodological Framework

Based on analyses [3], [4] and [5], it is suggested that the following objectives of stabilisation operation and territorial defence should be included in the prospective information calculation task (conventionally called “Territory C”):

strengthening the protection (cover) of the state border;

identification and elimination of channels for illegal movement of weapons, ammunition and explosives;

coverage of the state border sections;

protection and defence of important facilities and communications;

protection and escort of convoys;

countering illegal armed groups and subversive reconnaissance groups;

isolation of armed conflict area;

ensuring conditions for the reliable functioning of state executive authorities and local self-government bodies;

Considering the specifics of performing objectives of a stabilisation operation or territorial defence, it is proposed that the need for forces and assets should be determined by the number of units, without considering the combat potential of armoured fighting vehicles and other types of heavy weapons.

To make calculations to determine the demand for forces and assets to accomplish the objectives of the stabilisation operation and territorial defence in the information calculation task “Territory C”, it is suggested to use the “objective-normative” method. Its essence is in the following: the number of “objects” is determined for each objective. The “objects” may include roads, factories, bridges, government buildings, columns, border sections, illegal armed groups, subversive reconnaissance groups, etc. After that, the conditions for stabilisation operations and territorial defence are determined. The conditions may include the type of terrain, methods of performing objectives, etc. Using the standards of the required number of forces and assets to accomplish objectives at one “object” in certain conditions, the total required number for all objects in all objectives is calculated.

Results and Discussions

1. State border area protection

Consider in more detail the objectives to be achieved by strengthening the protections of state border sections. Determining the required composition of forces and assets for this objective in the information calculation task is proposed to be carried out according to the following options for the implementation method: increasing the number of border patrols, increasing the number of observation posts, and involving mobile groups. The length of the sections must be taken into account.

The standards for determining the demand for forces and assets to strengthen the protection of the state border [2] are given in Table 1.

Table 1. Demand for forces and assets involved in strengthening the protection of state border sections (variant)

Objective	Directions (Areas) of objectives	Location	Methods of accomplishing objectives	Forces and assets involved
Strengthening state border protection	Cover on favourable lines *(up to 1,0–1,5 km)*, search *(up to 2 km deep)*, pursuit, encirclement *(up to 4 km radius) and apprehension*	The boundaries of the borderline and controlled border area	Increase the number of border patrols (foot patrols)	The number of patrols is assigned at the rate of – 1 km (at night) – 2 km (during the day) for a border patrol *(patrol – 2–4 people, 1–2 people from the territorial defence unit* (as an option)
			Increase the number of observation posts	The number of posts is determined according to the length of the state border section and terrain conditions *(per post – 2–3 persons., including 1–2 people from the territorial defence unit* (as an option), *(detection range – up to 1,0–1,5 km, observation width – up to 300 meters)*
			Involvement of mobile groups (response)	The number of groups is determined based on the range – up to *20–25 km* and response time – *up to 30 min (group – up to 10 people., including – up to 5 people from the territorial defence unit)*

2. Identification and elimination of channels for illegal movement of weapons, ammunition and explosives

The determination of the required composition of forces and assets for this assignment in the information calculation task is proposed to be carried out according to the variants of the implementation method (increasing the number of border patrols, pickets and observation posts) with the obligatory consideration of the sections' length.

The standards for determining the demand for forces and assets to strengthen the protection of the state border [2] are given in Table 2.

3. Coverage of the state border sections

It is proposed to determine the required composition of forces and assets for this objective in the information calculation task by the following options: increasing the number of border patrols, pickets, ambushes, observation posts, involving mobile groups, fire screens and creating the ambush lines. Considering the length of the border sections and the required number of personnel for each patrol (group, ambush etc.).

The standards for determining the demand for forces and assets to strengthen the protection of the state border are given in Table 3 [2].

4. Protection and defence of important facilities

It is proposed to determine the required composition of force and assets for a given objective in the information calculation task by dividing objects by type, their number and the number of personnel required to protect a typical facility:

A large facility (airfields, train stations, industrial facilities, base areas, large warehouses etc.) – from the company (one object) to the battalion (2–3 objects);

A medium facility (warehouses, bridges, factories, post offices, telegraph, banks, large bridges etc.) – up to the platoon;

A small facility (small warehouses, small bridges etc.) – up to the squad.

The estimated number of personnel for facility protection is increasing by 25% including administrations, support units, checkpoints, inspection parties and transport passage.

Table 2. Demand for forces and assets involved in the detection and elimination of channels of illegal movement of weapons, ammunition and explosives (variant)

Identification and eliminations of channels for illegal movement of weapons ammunition, explosives, etc.	Covering (blockade) on favourable lines *(up to 1,0–1,5 km),* search *(up to 2 km deep),* pursuit, encirclement *(up to 4 km radius) and apprehension*	The boundaries of the borderline and controlled border area	Increase the number of border patrols (other patrols)	The number of patrols is assigned at the rate of – 1 km (at night) – 2 km (during the day) for a border patrol *(patrol – 2–4 people, 1–2 people from the territorial defence unit)*
			Increase the number of pickets	The number of posts is determined according to the length of the state border section and terrain conditions *(picket – 2–3 people., including 1–2 people from the territorial defence unit), (detection range– up to 1 km)*
			Increase the number of observation posts	The number of posts is determined according to the length of the state border section and terrain conditions *(per post – 2–3 people., including 1–2 people from the territorial defence unit, (detection range – up to 1,0–1,5 km, observation width – up to 300 meters)*

5. Protection and defence of communications

It is proposed to determine the required composition of forces and assets for this objective in the information calculation task, taking into account the length of communications, terrain conditions, according to the formula:

$$n_k = \frac{L_{заг.}}{L}, \quad (1)$$

where n_k – is the number of rifle units (squads, platoons, companies, battalions) that can be allocated by a separate territorial defence brigade;

$L_{заг.}$ – is the length of the communication to be protected, in km;

L – is the length of the defence area by one unit, in km.

The length of the defence are by one unit depends on the terrain conditions: closed – 5 km; semi-closed – 7 km, open – 10 km.

6. Protection and escort of convoys

It is proposed to determine the required composition of forces and assets for this objective in the information calculation task by the divide convoys by type: small, medium and large convoy; and by the number of simultaneous convoys.

Table 3. Forces and assets involved in covering sections of the state border (variant).

Coverage of the state border sections	Covering (blockade) on favourable lines *(up to 1,0–1,5 km),* search *(up to 2 km deep),* pursuit, encirclement *(up to 4 km radius), apprehension and destruction*	The boundaries of the borderline and controlled border area	Increase the number of border patrols (car patrols)	The number of patrols is assigned at the rate of *(1,5 km (at night) – 5 km (during the day) per 1 border patrol), (patrol – 4–8 people, including 2–4 people from territorial defence)*
Coverage of the state border sections	Covering (blockade) on favourable lines *(up to 1,0–1,5 km),* search *(up to 2 km deep),* pursuit, encirclement *(up to 4 km radius), apprehension and destruction*	The boundaries of the borderline and controlled border area	Increase the number of pickets	The number of pickets is assigned based on the length of the state border and terrain conditions *(picket – 2–3 people., including – 1–2 people from territorial defence), (detection range - up to 1 км)*
			Increase the number of ambushes	The number of ambushes is assigned based on the length of the state border and terrain conditions *(ambush – up to 20 people, including – up to 15 people from territorial defence)*
Coverage of the state border sections	Covering (blockade) on favourable lines *(up to 1,0–1,5 km),* search *(up to 2 km deep),* pursuit, encirclement *(up to 4 km radius), apprehension and destruction*	The boundaries of the borderline and controlled border area	Increase the number of observation posts	The number of posts is assigned based on the terrain conditions *(post – 2–3 people including 1–2 people from territorial defence), (detection range up to 1,0–1,5 km, observation width up to 300 m)*
Rapid response to changes in the situation on the state border			Involvement of mobile groups (response)	The number of groups is assigned based on the range – up to *20–25 km* and response time up to *30 minutes (group – up to 10 people including 5 people from territorial defence)*
			Involvement of fire screens	The number of fire screens is assigned based on the installation width – *up to 500 m (barrier – up to 10 people, including up to 5 people. from territorial defence)*
Rapid response to changes in the situation on the state border	Covering (blockade) on favourable lines, search, pursuit, encirclement, apprehension and destruction.	The boundaries of the borderline and controlled border area	Creation of ambush lines	Each territorial defence battalion prepares four to seven lines of ambush in the likely areas of advance of a subversive reconnaissance group in its area of responsibility (first line near the state border)

During the escort of convoys, it is expected that they will be divided into:
small convoy (3-5 vehicles) – up to the rifle squad;
medium convoy (10-15 vehicles) – up to the rifle platoon;
large convoy (30-45 vehicles) – up to the rifle company.

One rifle battalion is allocated for the simultaneous escort of three convoys (30-45 vehicles each).

7. Countering illegal armed groups and subversive reconnaissance groups

It is proposed to divide this objective into three partial objectives: blocking, searching, pursuing and destroying the enemy.

Blockade. The initial data for this objective are the method of combat (simultaneous or sequential), the method of execution (outpost, roadblocks, screens) and the length of the blocking area.

For the purpose of calculations, the smallest unit is the rifle squad *(n)*:

roadblock – up to the rifle platoon *(3n)*;

outpost:

as a part of a rifle platoon *(3n);*

as a part of a rifle company *(9n)*;

screen – as a part of a rifle battalion (up to the two rifle companies *(18 n)*.

During the calculations, it should be taken into account that units assigned to blockade, from rifle platoon and above, allocate up to 20% of their available forces to reserve for suddenly arising objectives.

A platoon outpost can protect an enclosed area up to 1 km along the front and an open area up to 2 km, respectively.

A platoon roadblock can take control of an area up to 1 km along the front.

Search. The initial data for this objective are search range length and terrain conditions.

The standards for determining the demand for forces and assets to search for illegal armed groups and subversive reconnaissance groups are given in Table 4 [2].

Table 4. Oriented search chain front of search group

Group composition:	In closed area	In open area
rifle squad	up to 100 м	up to 150 м
rifle platoon	up to 300 м	up to 500 м
rifle company (platoon – 3)	up to 900 м	up to 1500 м
counter-sabotage company (platoon – 2)	up to 600 м	up to 1000 м
rifle battalion (rifle company – 4)	up to 3600 м	up to 6000 м
separate territorial defence brigade (rifle battalion, counter-sabotage company)	up to 4200 м	up to 7000 м

Pursuit and elimination of the enemy. The initial data for calculating the demand for this objective are the predicted composition of the enemy, the defence conditions of the illegal armed group (the level of engineering equipment of positions, the type of terrain)

The following standards are proposed to determine the required composition of forces and assets for pursuit and further elimination.

According to analyses [1] and [2], the approximate ratio of forces and assets involved in the elimination of illegal armed groups and subversive reconnaissance groups should be as follows:

engineer-prepared defence of illegal armed group – 4:1 (in favour of own troops);

illegal armed group` defence in closed terrain – 4:1;

unprepared in terms of engineering illegal armed group defence – 3:1;

defence of illegal armed groups in open terrain – 3:1;

defence of illegal armed groups in urban areas – 6:1.

8. Isolation of armed conflict area

The initial data for calculating the need for this objective are the classification of roads by type (major, minor) and their number.

Assume the smallest unit *n* is a rifle squad and so we have:

roadblock – platoon *(3n)*

outpost – platoon *(3n)* – company *(9n)*;

checkpoint – squad *(n)*;

The number of roadblocks ($P_{бп}$) and checkpoints ($P_{КПП}$) will depend on the number of roads. At the same time, roadblocks and outposts should be placed on the roads of the inner circle of isolation and checkpoints – on the outer circle of the defined roads.

9. Ensuring conditions for the reliable functioning of state authorities and local self-government bodies

This objective is similar to the objective of protecting and defending important facilities. Government and self-government buildings are divided into types of protected facilities (large, medium, small) with the corresponding standards for the requirements of forces and assets to protect the facility.

The information calculation task will make it possible to determine the demand for forces and assets both for single objectives and the overall demand for a complex of objectives. This approach will make it possible to prioritise the objectives of the stabilisation operation or territorial defence, regulate the scope of activities and assess options for the composition of the forces and assets involved and their distribution.

Conclusion

Hence, the above methodological approach to determining the necessary composition of forces and assets for conducting a stabilisation operation or territorial defence will allow to carry out the relevant calculations using information calculation tasks from the complex of mathematical models.

Promising areas for further research are the improvement of the prospective information calculation task "Territory C" (form the complex of mathematical models and the information calculation task "TMSS") in terms of automating formulation of proposals for the list of military formations of the Armed Forces of Ukraine and other formations of the Defence Forces of Ukraine that can be involved in the implementation of stabilisation operation and territorial defence in a designated operational area.

Recommendations

The article's material is recommended for use during the planning of territorial defence measures in the command and control bodies of the territorial defence forces or other formations of the defence forces of Ukraine to determine the required composition of forces and assets.

References

1. *Information material on the creation, objectives, methods of use of military units of territorial defence.* (2018). No. 116/2/1/9779 of 12.07.18.
2. *Indicative standards for the performance of certain objectives by separate territorial defence brigade*. (2018). No. 172/568 t of 29.11.2018.
3. *Operation fundamentals of the Troops (Forces) of the Armed Forces of Ukraine.* (2018). The General Staff of the Armed Forces of Ukraine. Order of 17.09.2018. Vol.10.
4. Президент України. (2016). *Regulation on the Territorial Defence of Ukraine. Approved by the Decree of the President of Ukraine of 23.09.2016* (406/2016).
5. The Law of Ukraine "On the Principles of National Resistance". (2022). *Bulletin of the*

Verkhovna Rada. 01.01.2022.
6. *Temporary Doctrine of Joint Planning*. (2020). The General Staff of the Armed Forces of Ukraine. Order of 30.03.2020. No. 3.

Визначення потрібного складу сил і засобів військових та інших формувань для ведення стабілізаційної операції або територіальної оборони

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Анотація. У статті зроблено аналіз щодо існуючих методик, які використовуються для вирішення питань визначення потрібного складу сил і засобів для ведення стабілізаційної операції та територіальної оборони. Виявлено відсутність інформаційно-розрахункових задач щодо завдань стабілізаційної операції. Тому, обґрунтування підходу до визначення потрібного

складу сил і засобів для ведення стабілізаційної операції та територіальної оборони за допомогою інформаційно-розрахункової задачі, навіть в умовах низького рівня підготовки особового складу, є важливим і актуальним питанням. У зв'язку з цим автори статті пропонують методичний підхід до визначення потрібного складу сил і засобів для ведення стабілізаційної операції та територіальної оборони. На основі даного підходу запропоновано розробити інформаційно-розрахункову задачу, за допомогою якої буде здійснюватися розрахунок потреби у силах та засобах, зокрема: посилення охорони (прикриття) ділянок державного кордону; виявлення та ліквідації каналів нелегального переміщення зброї, боєприпасів, вибухових речовин; прикриття ділянок державного кордону; охорона і оборона важливих об’єктів і комунікацій; охорона та супроводження колон; боротьба з незаконними збройними формуваннями та диверсійно-розвідувальними групами; ізоляція району збройного конфлікту; забезпечення умов для надійного функціонування органів державної виконавчої влади та місцевого самоврядування. Для проведення розрахунків з визначення потреби у силах та засобах для ведення стабілізаційної операції та територіальної оборони запропоновано умовний “об’єктово-нормативний” метод. Його сутність полягає у наступному. Визначається кількість “об’єктів” за кожним завданням. “Об’єктами” можуть бути дороги, заводи, будівлі органів влади, ділянки кордону, загони незаконних збройних формувань, диверсійно-розвідувальні групи тощо. Далі визначаються умови проведення заходів стабілізаційної операції та територіальної оборони. Умовами можуть бути: тип місцевості, способи виконання завдань тощо. Використовуючи нормативи щодо потрібної кількості сил і засобів для виконання завдань на одному “об’єкті” у визначених умовах, вираховується загальна потрібна кількість на всі “об’єкти” у всіх завданнях. За кожними завданням стабілізаційної операції або територіальної оборони надані нормативи щодо потреби сил і засобів за всіма умовами виконання завдання. Розглянутий методичний підхід може бути покладений в основу інформаційно-розрахункової задачі, що дозволить автоматизувати здійснення визначених розрахунків і уникнути суб’єктивних помилок з боку оперативного складу.

Ключові слова: охорона об’єктів, державний кордон, блокпост, незаконні збройні формування, диверсійно-розвідувальні групи, стабілізаційна операція, територіальна оборона.