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3601

CENTRAL INTELLIGENCE AGENCY
WASHINGTON, D.C. 20505

2 February 1978

MEMORANDUM FOR: The Director of Central Intelligence

FROM : John N. McMahon
Deputy Director for Operations

SUBJECT : MILITARY THOUGHT (USSR): Formalized Combat Documents and the Prospects of Their Use in the Control of Troops

1. The enclosed Intelligence Information Special Report is part of a series now in preparation based on the SECRET USSR Ministry of Defense publication Collection of Articles of the Journal "Military Thought". This article discusses the value of using formalized documents to streamline the processes of working out, drawing up, and delivering combat documents. In discussing the form and content of such documents, the author provides a sample variant of a formalized blank for a combat order, indicating the types of permanent information which is preprinted on the form, with blank spaces left to be filled in with the appropriate variable situational information. He also describes the procedure for transmitting this information, and briefly mentions the possibilities of combining formalized documents with computer equipment. This article appeared in Issue No. 2 (63) for 1962. [redacted]

2. Because the source of this report is extremely sensitive, this document should be handled on a strict need-to-know basis within recipient agencies. For ease of reference, reports from this publication have been assigned [redacted]

[redacted]

John N. McMahon

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Intelligence Information Special Report

COUNTRY USSR

[redacted]

DATE OF INFO. Early 1962

DATE 2 February 1978

SUBJECT

MILITARY THOUGHT (USSR): Formalized Combat Documents and the Prospects of Their Use in the Control of Troops

SOURCE Documentary

Summary:

The following report is a translation from Russian of an article which appeared in Issue No. 2 (63) for 1962 of the SECRET USSR Ministry of Defense publication Collection of Articles of the Journal "Military Thought". The author of this article is Colonel N. Gladyshevskiy. This article discusses the value of using formalized documents in raising the work efficiency of staffs, speeding up the working out of combat documents, and reducing the time needed for getting them to the executors, as well as reducing the load on communications means. In discussing the form and content of such documents, the author provides a sample variant of a formalized blank for a combat order, indicating the types of permanent information which is preprinted on the form, with blank spaces left to be filled in with the appropriate variable situational information. He also describes the procedure for transmitting this information, and briefly mentions the possibilities of combining formalized documents with computer equipment.

End of Summary

[redacted] Comment:

After 1962 the SECRET version of Military Thought was published three times annually and was distributed down to the level of division commander. It reportedly ceased publication at the end of 1970. [redacted]

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Formalized Combat Documents and the Prospects of Their Use in the Control of Troops

by

Colonel N. GLADYSHEVSKIY

The preparation, organization, and conduct of combat actions are bound up, as we know, with various kinds of documentation. The combat documents to be worked out are a most important means of planning a battle and operation, getting combat tasks to the executors, coordinating their joint actions, and directly controlling troops.

As the nature of combat actions changes and the control of troops becomes correspondingly more complicated, it becomes necessary to work out new combat documents along with the existing ones. At the same time, the growing dynamic character of combat actions requires maximum shortening of the times to work out combat documents and get them to subordinate, adjacent, and superior levels, etc.

We know that all the organization and work methods of staffs are subordinate to the maximum saving of time. Of the total time which staffs have at their disposal, a considerable part is spent on this very working out and drawing up of various combat documents. The struggle to save time often acquires the nature of a struggle to shorten and simplify combat documentation and to search out more streamlined ways and means of working them out, drawing them up, and delivering them.

Attempts to mechanically reduce the number of combat documents do not always yield positive results. Practice shows that giving up working out a number of documents leads to superficial planning of the battle and operation, introduces confusion into it, and may cause serious complications. Commanders and staffs, in relying merely on oral instructions without documentary confirmation of them, forfeit accountability for the actions of subordinates and are in no position to confirm the instruction issued by them if the need arises.

Once it came up, the peculiar problem of documentation required more thorough research of the staff working processes

connected with the working out, drawing up, and delivery of combat documents. Such research was conducted, in particular, at the M.V. Frunze Military Academy in 1959-1960. As a result, the question came up of using abbreviated, so-called formalized combat documents.

Testing of the formalized combat documents in a number of games and exercises has confirmed the great possibilities for their use at various control levels. Experience has shown that the use of such documents permits raising the efficiency of the work of staffs, speeding up the working out of orders, instructions, and reports, and shortening the time of getting them to executors. The load on communications means is also considerably reduced. The use of formalized documents becomes especially necessary in connection with the introduction of means of minor automation and mechanization and electronic computers into the control of troops.

What has caused the necessity of using formalized documents?

We know that all combat documents, depending on their purpose, are divided into planning, reference, and records. The number and content of combat documents depend on the specific conditions of the situation, the availability of time, and the necessity of working out documents at one or another level.

As a quantitative analysis shows, the number of necessary combat documents is quite large. Thus, according to the experience of a number of exercises, for a battle (operation) there are worked out: in a regiment, 50 to 80; in a division, 100 to 150; and in an army and a front, several hundred written and graphic documents.

The form and content of the combat documents to be worked out by the officers of staffs are extremely varied. Receiving instructions to work out a combat document, a staff officer spends time studying the appropriate recommendations of regulations and manuals and variants of documents worked out earlier. The form and content of a combat document often determines the method of working it out. Usually, a document is considered complete only after all its points have been worked out and it is signed or approved by the appropriate chief. The multi-stage process of working out combat documents with the

predominance of hand work entails the expediture of a large amount of time. As repeated tests have shown, three to four hours are spent on working out the combat order of a division (army), and six to eight on working out the planning table of cooperation.

Many documents are also made unwieldy and complex by the inclusion of generally-known requirements and points laid down by regulations.

After a combat document is worked out, there ensues a no less complex process -- the delivery of combat documents to the executors. In the delivery process, just as in the process of working out combat documents, nearly all the officers of the staff and the commander personally take part. Means of communications are used for this, with great overloading. Every executor of a document endeavors to get its contents as quickly as possible to the appropriate persons and levels. In spite of this, one constantly observes the tardy delivery of combat documents.

Analysis of the process of delivering combat documents shows that the most labor-consuming undertaking in it is the double processing of the documents to be transmitted with the aid of secure troop control documents. The process of encoding and decoding a combat document sometimes requires half again to twice as much time as working it out. Here it should be kept in mind that encoding and decoding do not ensure high enough reliability.

Thus, slowness and tardiness in getting combat documents to executors is most often caused by the imperfection of the secure troop control system, an imperfection that commanders and staff officers are constantly alluding to. In the last war, to speed up the passage of combat documentation to executors, commanders and staffs sometimes resorted to a so-called conversational "open code" in which only part of the information transmitted was encoded. However, open code only created the appearance of security; in reality, it did not ensure it.

The use of this primitive conversational open code compromised to a considerable degree the idea of simplifying secure troop control and caused the drastic complication of secure troop control documents. Staffs began to work out tables

with double and triple encoding and a complex frequently-changing key system. As a consequence of this, the timely delivery of combat documents was hindered still more.

The imperfection of the existing secure troop control system naturally provokes definite demands to search out more productive ways and means of ensuring the security of transmissions.

In the delivery of combat tasks to executors, the need often arises to reproduce the documents worked out. To reproduce written combat documents, typewriters are usually used; but the reproduction of graphic documents is basically done by hand.

The practice of war and the experience of troop exercises shows that, in spite of the apparent simplicity of the process of reproducing combat documents, a large number of forces and a great deal of time are spent on it. The typewriter, in use since 1867 without serious design changes, has an extremely low printing speed for today -- one page in eight to ten minutes -- and, naturally, cannot satisfy modern requirements. The topographical printer sometimes used to reproduce graphic documents, the TPA-1, is also characterized by low productivity and poor quality of printing. At the same time, the availability of more perfected technical means allows us to substantially speed up the process of reproducing combat documents and, in a number of cases, by making extensive use of sound recorders, video converters, and automatic information machines, to do away entirely with the reproduction of certain documents.

One of the causes of tardiness of combat documents is the length of transmission time of combat documents by communications means. The existing communications means are meant basically for the transmission of information by voice or telegraph impulses. The speed of such transmissions comes to 20 to 30 groups (words) per minute. Since the documents to be transmitted contain hundreds and even thousands of groups, the transmissions usually take an extremely long time. The experience of the Great Patriotic War showed that the average daily exchange in corps and division communications centers came to around 200 to 250 documents (12 to 15 thousand groups).

The necessity of transmitting a large volume of information causes communications, including radio, to work a long time. It

is known that, under present-day conditions, going on the air for even a few seconds can be not only detected by the enemy but also covered by the means of radioelectronic countermeasures. It is not out of the question that the transmission of combat documents relying on the prolonged working of communications means will become impossible. In this connection, the necessity arises to search out more perfect methods of transmitting and to bring in ultrahigh-speed radio means to go on the air for only tens of seconds.

In the process of getting combat documents to executors, four intermediate steps usually occur, namely: encoding (enciphering), transmission of the encoded message by a radio (telegraph) operator, receipt of the encoded message by a radio (telegraph) operator, and decoding (deciphering). At each step the document to be transmitted (received) undergoes the appropriate service processing (it is logged, given service notations, placed in a specific priority sequence, etc.), for which a corresponding time is required. Besides this, at each step the appearance of inaccuracies and mistakes is possible. Statistical analysis shows that one mistake occurs for every 100 groups even under favorable conditions. If one takes into account that mistakes are possible during encoding and decoding and during transmission and receipt by the radio (telegraph) operator, then for each 100 groups (words) there can be up to 20 mistakes. All of this necessitates the maximum reduction of the intermediate steps and the search for capabilities of transmitting a document directly to the executor.

These are some of the conclusions resulting from an assessment of the existing system of documentation which have caused the question of formalizing combat documents to come up. Formalization should be regarded as one of the attempts to facilitate the solution of the problem of documentation.

Formalization of combat documents presupposes the use of combat documents in which a considerable part of the content is worked out beforehand and expressed in the form of an appropriate blank (form).

We know that in every written or graphic combat document there are two kinds of information: permanent and variable.

Permanent information represents the inventory of specific phrases, numbers, expressions, and arbitrary designations nearly always reflected in a combat document independently of changes in the situation. For instance, in a written combat order for an offensive, such words and concepts as "enemy," "axis," "line," "area," "immediate task," "demarcation line," "readiness of fire," etc. are constantly used; and on graphic combat documents, in addition, there is the topographic base.

Variable information expresses the more specific conditions of the situation and is constantly changing. It reflects the numbering and designation of subunits (units, large units), reference points and their coordinates, the time and various specifics of the individual positions and actions of troops.

As an example, let us take one of the variants of the first point of a combat order of a division in an offensive battle and assume that its sequence and content are expressed in strict conformity with the requirements of the regulations and manuals.

1. In the zone of offensive of the division, in a prepared position, the 7th and 8th Battle Groups of the 6th Infantry Division are defending.

The forward edge of the enemy runs along the line Stepanovo (4472), Ilyinskoye (4824), Petrovo (4615).

The position of the division reserves is on the line: benchmark 44.5 (4216), elevation 170.3 (4218), Gomozono (4260).

The second zone runs along the west bank of the Sinyaya River.

The enemy reserves are in the following areas: Division reserves -- benchmark 170.6 (4816), Sidorovo (4820), Mukhino (4824) up to a tank brigade; Krasnyy Sovkhoz (2816), Stolbovo (4820), Terskoye (2412) up to a battle group; corps reserves -- Pukhovo (1612), Severnoye (1410), forest (1218) -- up to an armored division.

Means of nuclear attack are in the areas: grove (4678) -- Honest John battery; forest (5694) -- Corporal battalion.

By volume of information this point contains 500 characters, or 100 words. The permanent information, which comes to 215 characters (45 words), or 42,3 percent of the total information, is underlined. The variable information consists of 294 characters (57 words) and comprises 57,7 percent of the total information.

As for the content of the other points of a combat order and especially of documents on materiel-technical support, in them the permanent information comprises up to 80 percent.

Comparing the permanent and variable information of the first points of many combat orders of a regiment, division, corps, and army on the offensive, we have come to the conclusion that the entry of permanent information can be done beforehand in the shape of a distinct blank form. For the variant of the first point of the combat order we have selected, the formalized blank can be as follows:

Blank No. 1 (key ...)

Keys

1. THE ENEMY

1.	Who is defending in the zone of offensive of the division (numbering, strength, affiliation)	
2.	Condition of enemy positions	
3.	Forward edge	
4.	Positions of division reserves	
5.	Second zone of defense	
6.	Areas of the location of reserves (strength, affiliation)	Area 1 Area 2 Area 3
7.	Areas of the location of means of nuclear attack (grouping, type of means)	Area 1 Area 2

It is obvious that the availability of a formalized blank, while preserving the content of the first point, permits us not only to shorten it by nearly 50 to 80 percent, but also to

correspondingly speed up working it out. A staff officer, under these conditions, must only answer the questions set before him.

In the other points of the combat order, the permanent and variable information can also be separated, as a result of which there appears the possibility of working out a completely formalized combat order.

For the purposes of testing the possibilities of working out formalized orders, in 1960-1961 a number of experiments were conducted with the students in the M.V. Frunze Military Academy. It was proposed that the students work out, on the background of one tactical task, a conventional combat order, and then on the background of another task (similar in respect to the conditions of the situation) to work out a formalized combat order. The results of the experiment showed that, while in the first case three hours 15 minutes to four hours 10 minutes were spent on working out the combat order, in the second case one hour to one hour and 13 minutes were spent.

Comparing formalized combat orders and combat instructions of a regiment, division, corps, and army, it is not difficult to note that they have a great deal in common in the sequence and content of the points. This circumstance attests to the possibility of having such a formalized order as would be simultaneously acceptable in a regiment, division, corps, and army. The availability of such an order not only allows reducing the variety of forms of combat documents, but it also opens up definite possibilities for bringing formalized combat documents closer to an automated system of troop control.

All written combat documents in which a definite sequential order of setting them forth and of the content of the separate points has been established can undergo formalization. Thus, in a regiment, division, corps, and army, identical orders, combat instructions, and combat reports can be worked out according to types of combat actions.

The use of formalized blanks permits the process of working out combat documents to be speeded up three to six times.

In examining the volume and content of the variable information, i.e., that information that must be entered on the

formalized blank, we see that it basically consists of such data as can be translated relatively simply into numerical expression. Thus, for instance, on Blank No. 1, the entire content of points 3, 4, 5, 6, and 7 amounts to an indication of reference points which are translated into numerical expression on a coded map. As for points 1 and 2, a translation table is needed for them. Such a table will involve a relatively small number of characteristics: the grouping of forces and means, the affiliation of troops, the condition of positions, and the nature of the employment of means of mass destruction. Experience shows that the availability, in a code table, of 30 to 40 quantities permits the translation of basically all the information written on the formalized blanks. Staff officers quickly master the content of the code table and use it without any difficulties. The possibility of quickly translating the variable information into numerical expression has especially important significance for its transmission by technical means of communications or for input into automatic equipment.

To demonstrate the process of transmitting variable information, let us take one of the variants of a filled-in Blank No. 2 reflecting the combat task of a division. Each formalized blank must, for purposes of transmission, have a definite changeable key system.

The transmission of such a combat document is done in the following way.

The staff officer who is in charge of transmitting the combat task, after establishing direct contact with the executor and assuring himself that the executor is ready to receive the formalized document, gives the number of the blank, the number of the point in the blank, the designation of the subpoint (if there is one) and transmits its numerical content. In practice, the beginning of the transmission would appear thus:

"017--35--First;--44581--48602; second--52385--42451."

Blank No. 2 (key 017)

2. COMBAT TASK OF DIVISION

Keys			
35	1. Sectors of offensive	1st sector	Stepanovo (44581), Petrovo (48602)
		2nd sector	Khomutovo (52385), Vasyuki (42451)
36	2. Axes of attacks	a) Main	Nestorovo (46125) Krasnyy Sovkhoz (56135)
		b) Secondary	Gavrilovo (48128) elevation 170.5 (58135)
37	3. Immediate task (area)		elevation 145.0 (64170), elevation 150.2 (68135), elevation 190.2 (66132)
38	4. Subsequent task (area)		Dalneye (84175), Terekhovo (84176) Bozochnoye (88152)
39	5. Axis of subsequent offensive		Gomozovo (96135), elevation 180.2 (92142)

The officer receiving the information must react to it in the following way: The first group is "017": the officer opens his field notepad to Blank No. 2 (having the key 017 at this period); the second group, "35", stands for the first point of the blank; the third group, "First!", designates the first sector of the attack; the next two groups of five-digit numbers stand for the coordinates of the first sector of the offensive, and they are entered by the receiving officer on the formalized blank, and so on.

In transmitting the second point, the officer, without repeating the number of the blank, says: "36, a", coordinates,

"b", coordinates, etc.

From what has been set forth it can be seen that the transmitting and the receiving officers work only on the basis of the formalized blanks, which simultaneously fulfil also the role of procedural tables. They do not use any additional special code tables, for all the variable information of Blank No. 2 represents numbers on a coded map.

Thus, formalization of combat documents not only permits the time to work them out to be considerably shortened, but it also ensures the quick delivery of documents to the executors. The officer receiving the formalized document actually receives a copy of it, in which connection the necessity of sending a duplicate document disappears.

The use of formalized documents is especially necessary, as we have already indicated above, in connection with the introduction of means of minor automation and mechanization and electronic computers into troop control. Let us dwell briefly on the possibilities of combining formalized documents with automatic equipment.

The transmission of a formalized document by a voice communications channel presupposes the work of two officers, one transmitting and one receiving the information. The transmitting officer reads the information from the formalized blank and transmits its numerical expression by voice. The receiving officer writes down the numerical content of the responses on the formalized blank. In spite of the fact that the transmission of a formalized document takes much less time than the transmisssion of an ordinary one, it still lasts tens of minutes. We have already said that only a few seconds is enough for the enemy not only to detect the exchange of information, but also to use means of radioelectronic countermeasures to prevent two-way communications.

The rapid development of radioelectronics has permitted the discovery of new technical solutions to the problem of shortening the time of going on the air and the development of equipment having high operating speed. The "apparatus-A" complex, developed and accepted into service, allows the automatic transmission of up to 50 characters of information to be done in

0.6 seconds. A different type of equipment, the so-called automatic information machine, allows the transmission of 60 characters in 0.7 seconds. On the average, 50 to 60 characters correspond to 50 to 60 words of formalized information. If, for instance, a formalized instruction consisting of 230 to 250 words (groups) is transmitted orally in 10 to 15 minutes (with a speed of 20 groups per minute), the transmission time can be reduced to 13 to 15 seconds with the aid of ultrahigh-speed equipment.

Research results have shown that any formalized document can be put into an automatic information machine, which ensures the sequential transmission of its contents by ordinary communications channels in the course of a few seconds.

The use of formalized documents in conjunction with automatic information machines has permitted not only speeding up the process of getting tasks to executors, but also introducing certain changes in the method of working out documents. A number of experiments have revealed, in particular, the possibility of sequentially working out and transmitting a formalized document. After one of the points is worked out, the document can be transmitted to the executor, since it reflects information needing virtually no overall editing of the document. To sum up, the document is transmitted piecemeal. Working out the last point of the document means in practice that all the preceding ones are already transmitted and received.

In one of the operational games, formalized documents in conjunction with the "system-K" automatic information machine were used at the army and front levels. It was revealed that to work out operational documents and transmit them to executors it took on the average:

-- for the combat order of an army: one hour to one hour 10 minutes;
-- for the combat instruction of a front: 15 to 25 minutes;
-- for the combat instruction to a missile brigade to open fire: three to five minutes;
-- for the combat report of an army: 25 to 35 minutes;
-- for instructions on reconnaissance: 15 to 20 minutes;
-- for a reconnaissance report: 15 to 25 minutes.

The experience of exercises has shown the possibility of widely using an automatic information machine not only in place, but also on the move.

During laboratory and field tests, a number of experiments were conducted on the input of formalized information from the automatic information machine into an electronic computer. The input data received on the display screen of the automatic information machine were read by the operator of a MOLNIYA electronic computer and keyed into the computer. The result obtained was keyed into the automatic information machine and distributed to the executors.

Thus, the formalization of combat documents is one of the conditions for the input of information into automatic equipment and electronic computers. Moreover, the use of automatic equipment, electronic computers, and high-speed means of communications is virtually impossible without preliminary formalization of information.

In conclusion, let us point out that the formalization of combat documents is one of the attempts to find more streamlined methods of work of commanders and staffs. It is bound up not only with the problem of documentation, but also with many other processes of troop control. The use of formalized documents can considerably speed up the collection and processing of data, the working out of decisions, and the delivery of them to executors; it substantially improves the system of secure troop control and the exploitation of means of communications; and it has a definite effect on the organizational structure of control organs and the work methods of commanders and staffs.