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CENTRAL INTELLIGENCE AGENCY
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28 June 1978

MEMORANDUM FOR: The Director of Central Intelligence

FROM : John N. McMahon
Deputy Director for Operations

SUBJECT : MILITARY THOUGHT (USSR): Reducing the Preparation Time of a Front (Army) Nuclear Strike

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 proposes a method for reducing the time of a nuclear strike using the existing control means, by changing the operating procedure of staffs and launch batteries when a missile is being prepared for launching, so that as many operations as possible can be performed before the target coordinates are received. This reduction is conducted along two lines: reduction of the preparation and transmittal time of the command and reduction of the time for the launch battery to prepare the missile for launching after the command is received. It is also possible to prepare a nuclear strike more rapidly if the work of the staff to prepare and transmit commands and the work of the launch battery are combined. A graph is provided illustrating this time reduction through a comparison of the existing and proposed methods for preparing a nuclear strike. This article appeared in Issue No. 5 (66) for 1962.

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

John N. McMahon

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Intelligence Information Special Report

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SUBJECT

MILITARY THOUGHT (USSR): Reducing the Preparation Time of a Front (Army) Nuclear Strike

SOURCE Documentary

Summary:

The following report is a translation from Russian of an article which appeared in Issue No. 5 (66) for 1962 of the SECRET USSR Ministry of Defense publication Collection of Articles of the Journal "Military Thought". The author of this article is Lieutenant Colonel N. Lisovskiy. This article proposes a method for reducing the time of a nuclear strike using the existing control means, by changing the operating procedure of staffs and launch batteries when a missile is being prepared for launching, so that as many operations as possible can be performed before the target coordinates are received. This reduction is conducted along two lines: reduction of the preparation and transmittal time of the command and reduction of the time for the launch battery to prepare the missile for launching after the command is received. It is also possible to prepare a nuclear strike more rapidly if the work of the staff to prepare and transmit commands and the work of the launch battery are combined. A graph is provided illustrating this time reduction through a comparison of the existing and proposed methods for preparing a nuclear strike.

End of Summary

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. The Russian [illegible]

Reducing the Preparation Time of a Front (Army) Nuclear Strike

by

Lieutenant Colonel N. LISOVSKIY

The preparation time of a nuclear strike must be reduced at all of its stages by improving reconnaissance means, control means, and missile designs, and also by improving staff control methods and operation, beginning with the front (army) staff and ending with the missile battalion staff. In the present article, we shall examine the possibility of reducing this time through existing control means only, by improving the operation of the staff of the front (army) rocket troops and artillery and of the staffs of the missile brigade and battalion.

The task of reducing the time needed to prepare a missile for launching, from the moment the front (army) commander adopts the decision to deliver a nuclear strike to the moment the target is hit, is conducted along two lines: reduction of the preparation and transmittal time of the command from the front (army) staff of the rocket troops and artillery to the launch battery and reduction of the time needed for the launch battery to prepare the missile for launching after the command is received.

It is also possible to prepare a nuclear strike more rapidly, with respect to time, if the work of the staffs to prepare and transmit commands and the work of the launch battery is combined. For this purpose we must make a small change in the operating procedure of the staffs and the launch battery when a missile is being prepared for launching, in order that as many operations as possible can be carried out in the battery before it receives the target coordinates. It cannot be considered correct for the battery to start preparing to launch the missile only after receiving the full command containing all of the data needed for preparation of the launch. The work of the front (army) staff of the rocket troops and artillery and of the staffs of the missile large units and units must be organized in such a way that the preparations of the command and of the missile launching take place simultaneously and the launch battery is

already at work when it receives the data needed for launching.

Experience from exercises with missile units indicates that with existing control means, the capability exists to combine the work of the staffs and the launch battery. Such a combination makes it possible to reduce the total time needed for preparation of a front (army) nuclear strike by 10 to 12 minutes.

Let us analyze the existing procedure for preparing and transmitting commands when delivering nuclear strikes with operational-tactical missiles.

After designation of a missile unit to deliver the nuclear strike, the additional data needed to prepare the launch are determined by the front (army) staff of the rocket troops and artillery. The command which they work out is encoded and transmitted to the staff of the missile brigade, where it is decoded and, after establishment of the yield of the nuclear strike, it is forwarded to the battalion from which the launch battery has been designated. The battalion staff transmits the command to the battery, indicating the launching site by number. The battery commander, having received the full command containing all necessary data, gives the command to occupy the launching site and to start operations to prepare the missile for launching.

According to the Firing Manual for Missile Subunits, Units, and Large Units of the Ground Forces (KSR 2-60), the time required for transmitting commands within the staff of a missile brigade is four minutes and within the staff of a battalion -- four minutes. The same amount of time is also spent in the staff of the rocket troops and artillery of a front (army) after receipt of the decision. In all, up to 12 minutes are spent by the staffs on the preparation and transmittal of the command, and only at the end of this period does the direct preparation of the missile for launching begin (if the launch will be from an already occupied site), or the moving up of the battery to occupy the launching site begins (if the missile was at a waiting position).

Analysis of the work of launch batteries to prepare missiles for launching at a launching site, and also experience from tactical exercises with missile units, indicate that the time

needed to prepare a missile for launching at a launching site does not increase if the battery commander receives the target coordinates 10 to 12 minutes after the launching site has been occupied and the work of the firing section has begun, or 18 to 20 minutes after the command to move up to occupy the launching site if the battery was at a waiting position. This means that it is advisable to change the procedure for transmitting commands in such a way that the launch battery at first receives only the signal to prepare the missile for launching and that it proceeds to occupy the launching site and prepare the launch; and during this time it would receive the command containing the target coordinates and all other necessary data. Up to two minutes are spent transmitting this signal from the front staff to the launch battery over existing communications means. It is particularly important for the battery to receive the signal to occupy the launching site as early as possible, when it is still at the waiting position and when time is still required to complete the march.

The graph (Figure 1) shows how the preparation time of a front (army) nuclear strike is reduced when staff operations to prepare and transmit the command are carried out at the same time as the work of the launch battery to prepare the missile for launching. The work of the launch battery here will hardly change, even if the battery receives the signal to begin work after it is already at the launching site.

Let us briefly review the work of the launch battery in different cases of accomplishing fire tasks, and let us clarify just what data it requires first in order to begin the preparation of the missile for launching and what data the subordinate staff must receive from the higher staff in order that the batteries ultimately receive the signal containing the data necessary for them to begin working.

First case. A launch battery is located at a waiting position at Readiness No. 3. This is most frequently the case when carrying out unplanned fire tasks. In order to occupy the launching site, the battery will have to complete a march of two to three kilometers or more, usually over dirt roads or without roads, for which eight to 12 minutes are required. Up to two minutes are spent occupying the prepared launching site. In all, not less than 10 to 14 minutes pass before the firing section

starts work to prepare the missile for launching at the launching site. Under the existing methods of transmitting commands, the battery begins to move up to occupy the launching site after receiving the full command, i.e., after the work of all staffs is completed, whereas it could have occupied the launching site if it had received a signal containing only the number of the launching site to be used to carry out the fire task.

The battalion commander can indicate the launching site number to the battery with a signal if he knows the number of the battery assigned to carry out the task. The number of the launch battery will be determined by the brigade commander as soon as he learns the yield of the nuclear warhead. Thus the front (army) staff of the rocket troops and artillery, after receiving the task to prepare a nuclear strike, must immediately transmit to the missile brigade staff a signal containing the yield of the nuclear warhead. In this case, the brigade commander can send the battalion a signal indicating the number of the launch battery, and the battalion commander will send the battery a signal containing the number of the launching site, and the battery will begin to move up from the waiting position at almost the same time the preparation of the full command is begun in the front (army) staff of the rocket troops and artillery. The battery will receive the full command as it arrives at the launching site. The time needed for the front to prepare the nuclear strike in this case will be reduced by the difference between the time spent on transmitting the full command and the time needed for the passage of the signals indicated above, which will be about ten minutes.

Second case. A launch battery is carrying out an unplanned fire task from an unprepared launching site. At this site, the battery will have to stake out the direction of fire with an artillery gyrocompass. For this reason the battery must, as in the first case, receive first of all the signal to occupy the launching site, and then after a certain time the full command. A delay of the command by 10 to 12 minutes after receipt of the signal to begin work has no effect on the time needed to prepare the missile for launching at the launching site. Consequently the preparation time of the front nuclear strike is also reduced by about ten minutes. The signal from the front (army) staff of the rocket troops and artillery to occupy the launching site

must, as in the first case, contain the yield of the nuclear warhead.

Third case. A launch battery at Readiness No. 3 is at a prepared launching site, from which a fire task is being carried out. Under the existing methods of preparing a missile for launching in a battery, the first thing the battery commander does after receiving the full command containing the target coordinates is to determine the approximate range of fire in order to set the damping and to age the integrator. If the range is transmitted to the battery by signal, the battery can receive the target coordinates and all other data 12 to 15 minutes after work is begun. Thus in this case the signal from the front (army) staff of the rocket troops and artillery must contain, in addition to the yield of the nuclear warhead, the range of fire as well. The preparation time for the nuclear strike is reduced up to ten minutes.

Fourth case. A launch battery is located at a launching site at Readiness No. 2 (in alert status). The time needed to prepare the missile for launching in this case is particularly important, since the battery is assigned to hit enemy nuclear means at their sites. If the launch battery receives a signal containing, as in the third case, the range for the damping setting and ageing of the integrator, and if at this signal it begins to prepare the missile for launching, then the full command containing the target coordinates can be delayed up to eight minutes without increasing the working time of the launch battery, and the time needed to prepare the nuclear strike in the front (army) will be reduced by six to seven minutes.

From the different cases we have considered regarding the preparation of missiles for launching at a launching site, it is evident that if the battery must complete a march in order to carry out a fire task, then the signal from the staff of the rocket troops and artillery can contain only the yield of the nuclear warhead, but if the battery is carrying out a task from an occupied launching site, the signal must contain the yield of the nuclear warhead and the range for the damping setting and ageing of the integrator. The assumption is made here that the main firing axis for preparation of the launching sites is known to the battery commander, and since the launcher makes it possible to hit targets within a fairly large sector to each side

of the main axis, there is no need to transmit the axis by signal in order to set it up. If targets on the flanks or in the rear are being hit, the battery commander must designate one or two secondary axes in advance and transmit them by signal when necessary.

In order to standardize the signal, it is best for the staff of the rocket troops and artillery in all instances to prepare and transmit a signal containing the yield of the nuclear warhead and the firing range; then in the first and second cases of the work of a launch battery which we have considered above, the full command can be delayed up to 20 minutes after receipt of the signal by the battery.

The range for setting the damping is determined in three limits: up to 100 kilometers, from 100 kilometers to 150 kilometers, and over 150 kilometers. The range for ageing the integrator is determined every 20 kilometers: within limits from 60 to 80 kilometers the range is 70 kilometers, within limits from 80 to 100 kilometers it is 90 kilometers, etc., up to a range of 150 kilometers. To determine these ranges, the staff of the rocket troops and artillery may use the scale shown in Figure 2 on which the ranges 70, 90, 110, 130, and 150 kilometers for transmission by signal are numbered respectively the first, second, third, fourth, fifth, and sixth.

Having obtained the range number, the battery commander can determine both the damping setting and the point of aim for ageing the integrator. To determine the damping setting, the range of 150 kilometers should be numbered with two figures. If the range of fire exceeds 140 kilometers but is less than 150 kilometers, the figure 5 is transmitted, which signifies damping "100", while the range for ageing the integrator is 150 kilometers. If the range is over 150 kilometers, the figure 6 is transmitted, which signifies a damping setting of "150", while the range for ageing the integrator is the same -- 150 kilometers.

In order to simplify the work of determining the required yield for a nuclear strike, some staffs use scales on which are plotted, opposite specific ranges of fire, the yields required for a nuclear strike depending on the dispersal, dimensions, nature, and degree of cover of the target and on a number of

other conditions affecting the effectiveness of the fire. Using these scales or the scale shown in Figure 2, and having the target and the siting areas plotted on a map, an officer can determine quite accurately the range for setting the damping and ageing the integrator.

When making up the signal, it is best to combine the yield of the nuclear warhead and the range number into one figure, to be transmitted by a specified code. For example, a yield of 40,000 tons and a range of 110 kilometers (range No. 3) can be signified by the three-digit number 403, if it is agreed that the last digit signifies the range number. This figure is encoded in the front (army) staff of the rocket troops and artillery and is transmitted by the established procedure to the staff of the missile brigade.

In the missile brigade staff, the received signal is decoded and, after the yield of the nuclear warhead is learned, a battery is designated to carry out the assigned task. An encoded number is transmitted to the battalion staff, containing the number of the launch battery and the range of fire. Let us say that the number 53 is transmitted, five being the number of the launch battery and three the range number, equalling 110 kilometers. The battalion commander informs the battery commander of the number of the launching site and the range of fire, after which the battery begins the march to occupy the launching site.

Since only one number group is decoded in the brigade staff, battalion staff, and battery, there is a significant reduction in the time needed for passage of the signal from the front (army) staff of the rocket troops and artillery in comparison with the time needed for passage of the full command, which contains more than ten number groups.

The proposed operating procedure for staffs during preparation of a nuclear strike should be regarded as one of the possible variants. Depending on the situation, the availability of nuclear warheads, the degree to which the staffs are informed on the level of readiness of the launch batteries, and the number of transmission links, the procedure for preparing and transmitting commands may differ from this, but the basic principle must be simultaneous operation at all command levels. Each higher staff must first of all report the data allowing work

to begin in all subordinate staffs and subunits down to and including the launch battery and then later transmit the supplementary data.

In equipping the staffs and subunits with computers and other calculating devices and also in improving communications means, the basic principle must continue to be reduction of the time needed to prepare a nuclear strike by having all command levels working at the same time.

If the method of transmitting preliminary signals is introduced, it is still necessary to establish direct communications between the front (army) staff of the rocket troops and artillery and the batteries on alert, but each extra link in the transmittal of commands should not take more than half a minute.

In this way, achieving simultaneous operation of all staffs and missile subunits in preparing a missile for launching, it is possible to effect a significant reduction in the time needed for a front (army) to prepare a nuclear strike, even though the working time of the staffs and the launch battery remains as before.

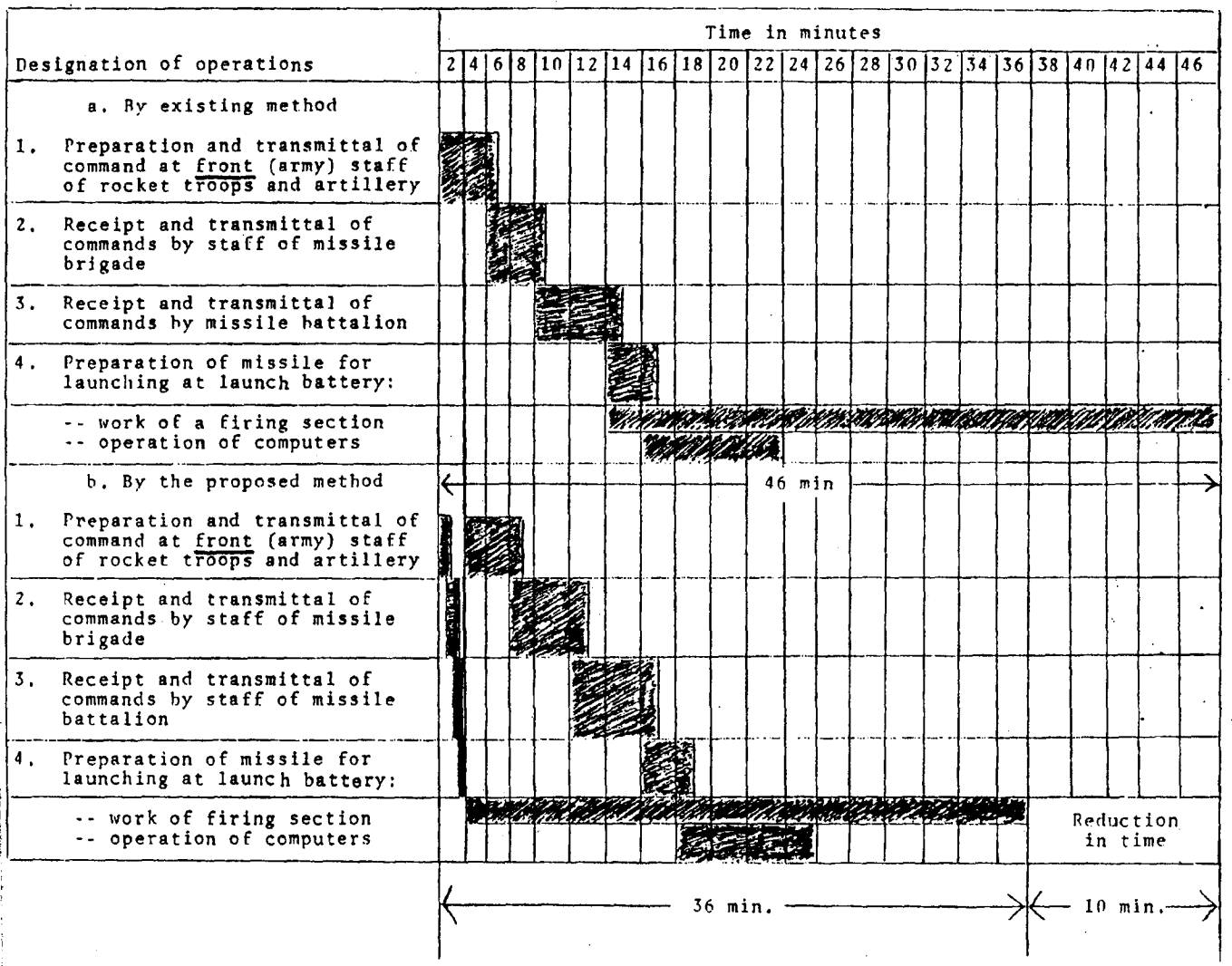

Figure 1. Graph of preparation of a nuclear strike in a front (army)

(from moment of adoption of decision)

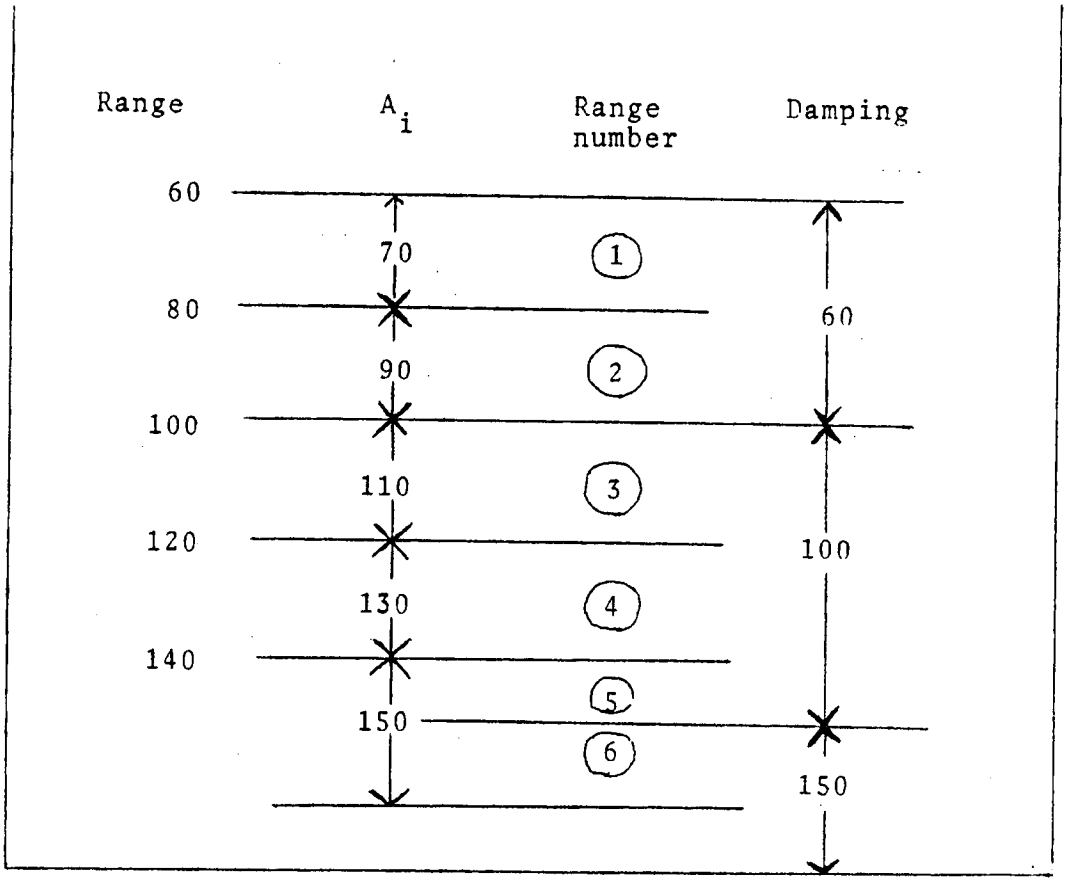

Figure 2. Scale for determining the damping setting and range for ageing the integrator.