

~~SECRET~~

CENTRAL INTELLIGENCE AGENCY  
WASHINGTON 25, D. C.

IRONBARK

9 JAN 1963

2836  
MEMORANDUM FOR: The Director of Central Intelligence  
SUBJECT : "Combat Against Enemy Nuclear Artillery,  
Free Rockets, and Guided Missiles in  
Offensive and Defensive Operations of  
an Army" (Chapter VI)

1. Enclosed is a verbatim translation of Chapter VI of a seven-chapter TOP SECRET Soviet publication entitled "Combat Against Enemy Nuclear Artillery, Free Rockets, and Guided Missiles in Offensive and Defensive Operations of an Army". It was issued by Scientific-Research Artillery Institute No. 1 in Leningrad in October 1960.

2. For convenience of reference by USIB agencies, the codeword IRONBARK has been assigned to this series of CSDB reports containing documentary Soviet material. The word IRONBARK is classified CONFIDENTIAL and is to be used only among persons authorized to read and handle this material.

3. Requests for extra copies of this report or for utilization of any part of this document in any other form should be addressed to the originating office.

*Richard Helms*

Richard Helms  
Deputy Director (Plans)

Enclosure

APPROVED FOR RELEASE  
DATE: DEC 2004

~~SECRET~~

~~SECRET~~

IRONBARK

Original: The Director of Central Intelligence

cc: The Director of Intelligence and Research,  
Department of State

The Director, Defense Intelligence Agency

The Director for Intelligence,  
The Joint Staff

The Assistant Chief of Staff for Intelligence,  
Department of the Army

The Director of Naval Intelligence  
Department of the Navy

The Assistant Chief of Staff, Intelligence  
U. S. Air Force

The Director, National Security Agency

Director, Division of Intelligence  
Atomic Energy Commission

National Indications Center

Chairman, Guided Missiles and Astronautics  
Intelligence Committee

Deputy Director for Research

Deputy Director for Intelligence

Assistant Director for National Estimates

Assistant Director for Current Intelligence

Assistant Director for Research and Reports

Assistant Director for Scientific Intelligence

Director, National Photographic Interpretation Center

~~SECRET~~

~~SECRET~~

IRONBARK

COUNTRY : USSR

SUBJECT : "Combat Against Enemy Nuclear Artillery, Free Rockets, and Guided Missiles in Offensive and Defensive Operations of an Army" (Chapter VI)

DATE OF INFO : October 1960

APPRAISAL OF CONTENT : Documentary

SOURCE : A reliable source (B).

Following is a verbatim translation of Chapter VI of a TOP SECRET Soviet publication titled "Combat Against Enemy Nuclear Artillery, Free Rockets, and Guided Missiles in Offensive and Defensive Operations of an Army". This document contains seven chapters and was published on 15 October 1960 by Scientific-Research Artillery Institute No. 1 in Leningrad. Each chapter will be disseminated as it becomes available and is translated.

In some cases, there are imperfections in the original text which leave doubt as to the accuracy of translation. Question marks are inserted in brackets following uncertain words or phrases. As in other IRONBARK reports, transliterated Cyrillic letters are underlined in translation, while Greek and Roman letters are given as in the original.

-1-

~~SECRET~~

~~SECRET~~

IRONBARK

Chapter VI

"Principles of Planning Combat Against the  
Enemy's Offensive Nuclear Weapons"

1. General Principles in Planning Combat  
Against the Enemy's Nuclear Weapons

With the modern state of weapons of armed combat, the attainment of fire superiority over the enemy is the most important factor for ensuring success in an operation.

With the constantly growing role of offensive nuclear weapons and with their wide use by the belligerents, in the end the struggle to attain fire superiority lies in combating the enemy's offensive nuclear weapons. It must start at the beginning of the preparations for the operation and must be continued uninterruptedly throughout the operation by the joint efforts of the artillery, missile troops, and aircraft [?]. Under modern conditions, the main burden of combating the enemy's offensive nuclear weapons falls on the missile troops and the artillery.

Combating offensive nuclear weapons has decisive importance not only in operations during the initial period of a war, when surprise and massed strikes with nuclear and thermonuclear weapons can have an enormous influence on the course of the whole war, but also in subsequent offensive and defensive operations.

In an offensive operation, the timely destruction of offensive nuclear weapons prevents the enemy's

~~SECRET~~

~~SECRET~~

IRONBARK

counterpreparation and separate nuclear strikes, and this, in turn, ensures the preparation of troops for the attack and the conduct of the subsequent advance at a high speed.

In a defensive operation, timely destruction of offensive nuclear weapons ensures the carrying out of an effective counterpreparation and the breaking up of the enemy's fire preparation, while during the operation it facilitates the successful committal into battle of second echelons and reserves, the conduct of counterstrikes and the attainment of the aims of the operation.

The variety of offensive nuclear weapons, their distribution in great depth, and their dispersal over a wide front demand a specific approach to performing the tasks of combating these enemy weapons.

The specific approach to performing the tasks of combating the enemy's offensive nuclear weapons lies in determining the procedure and time for destroying these or other objectives, in determining the kinds of fire for effect (annihilating, neutralizing, or harassing fire) or the degree of destruction, and in determining the forces and weapons to be employed to destroy the various targets. In this connection, it must be borne in mind that the only way to break up enemy nuclear attacks or, at least, of weakening them to a considerable extent is to destroy his weapons and not to neutralize them for a short time. Specially favorable conditions for destroying offensive nuclear weapons can arise when nuclear weapons are located in [one word illegible], in concentration areas, in waiting areas, when they are being transported by rail and other means of communication, and also when nuclear warheads are in depots and assembly bases.

Fire for neutralization and harassment (interdiction) should be regarded as a temporary measure

~~SECRET~~

~~SECRET~~

IRONBARK

because it can only upset the work of certain targets for a time (particularly of nuclear warhead depots and assembly bases) or delay the readiness for action of subunits which are making preparations to fire a nuclear shell or to launch a free rocket or guided missile (cruise missile).

After fire has ceased, or during the intervals between bombardments, the enemy will always be able to resume his preparations on the projectile or for firing (launching) nuclear projectiles (free rockets or guided missiles) or to take steps to evacuate a subunit which is being neutralized by our fire and to remove the nuclear warheads which are in danger of destruction. Therefore, fire to neutralize the enemy's offensive nuclear weapons should be regarded as a subsidiary form of fire for effect. The main aim of such fire will be to prevent a projectile with a nuclear warhead being fired (launched) before our weapons, which are capable of destroying the enemy's offensive nuclear weapons, are prepared and brought into action (tactical or operational-tactical missiles with nuclear warheads, sufficient subunits of gun artillery, aircraft, airborne forces, or reconnaissance and sabotage groups).

It is only by systematically putting out of action enterprises producing nuclear warheads, and by destroying the stocks of such nuclear ammunition and of their delivery vehicles, that our troops can be made safe from massed nuclear strikes.

In this connection, the destruction of depots and assembly bases of nuclear ammunition must not be [put simply on the same level as the tasks given to the ground troops?], but must be accomplished in the main as soon as they are detected [?].

~~SECRET~~

~~SECRET~~

IRONBARK

As a rule, the enemy's artillery weapons for nuclear attack will be at their firing positions (launch sites) for a short time. As a rule, firing positions and launch sites are occupied by them just before firing (launching), and after firing (launching) they immediately leave them.

In this connection, the problem of reducing the time between the detection of the enemy objective and the opening of fire for effect at it becomes of the utmost importance. The resolution of this problem depends on a series of factors both of a planning and technical nature.

Just as in previous wars, future armed conflicts will not be of the same intensity throughout their full extent. Periods of active combat operations will be interspersed with periods of preparation for them. Naturally, before the beginning of active combat operations the daily activity of troops will be supported mainly by fire using ammunition with conventional charges. Nuclear ammunition will be brought up to firing positions of artillery batteries in the main directly before active combat operations begin or just in time to fulfil individual tasks. Therefore, the possibility is not excluded that, in some comparatively rare cases, fire for the destruction of batteries which are not using nuclear ammunition at the given moment, would be inadvisable (for instance, through [one word missing] ammunition with conventional charges or through [two words missing] use nuclear warheads). Such batteries should be [?] neutralized in the usual way, i.e., with the same [one word missing] and methods and with the same expenditure of ammunition as are used to neutralize the enemy's conventional batteries [?].

Combating enemy offensive nuclear and thermo-nuclear weapons is organized at all levels, starting with the General Headquarters of the Supreme High Command and ending with the large units fighting in the first echelon.

~~SECRET~~

~~SECRET~~

IRONBARK

A front, which has under its direct command large units and units of operational-tactical missiles, cruise missiles, bomber, fighter-bomber, reconnaissance, and artillery spotter aircraft, as well as other weapons, is the main organizer to combat the enemy's operational-tactical and tactical offensive nuclear weapons. In several cases the weapons of a front may also be employed to combat the enemy's strategic offensive nuclear weapons.

Weapons at the direct disposal of a front will be used to deliver strikes against military-industrial enterprises, depots [?] of nuclear ammunition, their assembly bases, cruise missiles and long-range guided missiles on launch pads and launch sites, and to hit bomber, fighter-bomber, and reconnaissance aircraft on airfields and in the air, and artillery offensive nuclear weapons and other weapons of mass destruction at stations where they are loaded and unloaded, in concentration areas, and on the march.

Combat against weapons of mass destruction is planned by the front commander and his headquarters.

The front commander with his staff determines the general tasks in combating the enemy's offensive nuclear weapons and distributes them between missile troops, the artillery, and aircraft [?]. The tasks of combating the enemy's nuclear weapons are determined and [five words missing]. Besides this, the front commander and his staff [one and a half lines missing] the enemy's offensive nuclear weapons.

An army has under its command large units and units of operational-tactical missiles and gun artillery, and in motorized rifle and tank divisions there are tactical missile battalions.

These means provide an army with the full capability of combating the enemy's tactical and to some extent his operational-tactical nuclear

~~SECRET~~



~~SECRET~~

IRONBARK

[redacted]

weapons: nuclear artillery, free rockets of the "Honest John" and "Little John" type, guided missiles of the "Lacrosse" and "Corporal" type, and in several cases, also, guided missiles of the "Redstone" and "Sergeant" type. There may be cases where there are launch pads for "Matador" and "Mace" cruise missiles within range of an army's weapons. In addition, army weapons can destroy army ammunition supply points.

Thus, an army now has a very considerable capability for combating the enemy's offensive nuclear weapons. If we take into account that in the near future an army may be provided with longer range operational-tactical and tactical missiles than it has at the present time, then it can be considered that an army element (armey-skoye zveno) will have at its disposal quite adequate fire weapons for stubborn combat against the enemy's tactical, and to some extent his operational-tactical, objectives of nuclear attack; also, the role of the army element in this fight will increase.

Combat against tactical offensive nuclear weapons is planned by the army commander and his staff, and the commanding officer of the army's missile troops and artillery takes a direct part in this work together with his staff.

The army commander and his staff determine the tasks to be carried out by the army's missile troops and artillery in combating the enemy's offensive nuclear weapons according to the phases of the army's operations and lay down the procedure for combating these weapons during the period of fire preparation for an offensive and during the operation (or during a defensive operation).

Besides decisions on other questions [?], the commanding officer of the army's missile troops and artillery, together with his staff, prepares [?] recommendations for

~~SECRET~~

~~SECRET~~

IRONBARK

[redacted]

the army commander on the problems [?] of combating the enemy's offensive nuclear weapons.

After the army commander has made his decision, the commanding officer of the army's missile troops and artillery draws up plans directly for combating the enemy's offensive nuclear weapons with the missile large units (units) and gun artillery under army command (taking into account the army's reinforcements in forces and weapons), as well as with the tactical missile battalions of the divisions and the subunits of long-range gun artillery, attached to divisions of the army's first echelon.

The commanding officer of the army's missile troops and artillery and his staff set specific tasks for large units and units under army command [?] and lay down the procedure for employing the tactical missiles and gun artillery of divisions (if such artillery has been attached to divisions) in combating the enemy's nuclear weapons.

Motorized rifle and tank divisions, which have, at the present time, battalions of tactical missiles in their composition, have only a limited capability to combat the enemy's nuclear weapons. The limitation in fire weapons is also aggravated by the lack of appropriate reconnaissance resources. Consequently, the divisions [?] are not able to combat the enemy's offensive nuclear weapons with their own weapons. However, when the divisions are reinforced with gun artillery and elements [?] of spotter-reconnaissance aircraft are attached to them, the divisions can organize the combat against the enemy's tactical nuclear weapons: nuclear artillery, free rockets of the "Honest John" and "Little John" type, and guided missiles of the "Lacrosse" type.

[redacted]

-8-

~~SECRET~~

~~SECRET~~

IRONBARK

The necessity for a division to fulfill this task with its own forces arises [one word missing] whenever a division is operating on a separate axis [?]. Thus, the planning of combat against the enemy's offensive nuclear weapons is carried out at two levels [?] - in the front and in the army.

The main echelon (instantsiya) or main level (zveno) for planning the combat against the enemy's operational-tactical offensive nuclear weapons is the front, and the main echelon or main level for planning the combat against the enemy's tactical offensive nuclear weapons is the army.

~~SECRET~~

~~SECRET~~

IRONBARK

2. Resources Used to Destroy and Neutralize  
the Enemy's Nuclear Artillery, Free Rockets,  
and Guided Missiles, and Their Combat  
Capabilities

At the present time, a combined-arms army can make use of the following weapons to combat the enemy's offensive nuclear weapons:

- army missile brigade, armed with operational-tactical missiles (8K11), capable of destroying enemy objectives situated in the tactical and operational depth of his defense at ranges of 120 to 140 km from the forward line of our troops;
- army gun brigade, armed with 130 mm guns, capable of destroying enemy targets situated in the tactical depth of his defense at ranges of 20 to 22 [?] km from our forward line;
- tactical missile battalion of motorized rifle and tank divisions, capable of destroying enemy targets situated in the tactical depth of his defense at ranges of 20 to 25 [?] km from our forward line.

Besides these forces and weapons, in a number of cases an army may also have as additional means of support independent subunits (units) of operational-tactical and tactical missiles, and also of gun [?] artillery of the Reserve of the Supreme High Command (RVGK) with the same capabilities in range as those given above.

-10-

~~SECRET~~

~~SECRET~~

IRONBARK

In some especially favorable cases, subunits and units of divisional artillery, armed with 122 mm and 152 mm howitzers, can be brought in to neutralize and destroy the enemy's offensive nuclear weapons.

When provided with the appropriate ammunition, the weapons listed above are quite sufficient to fulfil an army's tasks in combating the enemy's nuclear weapons.

As can be seen from Chapter IV, the task of destroying offensive nuclear weapons can be accomplished by means of independent strikes with operational-tactical missiles with a yield of from 4 to 100 to 150 kt (depending on the nature of the target and the range) and also by means of strikes with tactical missiles with a power of from 1 to 40 kt.

Batteries and battalions of conventional artillery can be used successfully to destroy the enemy's tactical offensive nuclear weapons. In Chapter V it was shown that to destroy any target connected with the enemy's offensive nuclear weapons little time is required (from 5 to 20 minutes) as a rule for batteries or battalions of artillery [?]. [five words missing] that in the majority of cases it is enough if one to two batteries are brought in to fulfil this task.

It is essential to take into account here that these data have been obtained for conditions of percussion fire (udarnaya strelba) with high explosive fragmentation shells. [It should be noted?] that the use of other ammunition, for instance chemical [?] shells with [one word missing] rapid-acting [?] [one word missing] toxic substances [?], or by using [?] high explosive fragmentation shells [three words missing] conventional [?] artillery [two words missing] and destruction of the offensive nuclear weapons of the enemy [one line missing].

-11-

~~SECRET~~

~~SECRET~~

IRONBARK

Operational-tactical and tactical missiles, as well as artillery, differ essentially from one another not only in regard to their range and the power of the ammunition used. They differ greatly in regard to the time required to prepare them for fire (firing or launching) for effect.

In this respect, artillery undoubtedly has the greatest effectiveness. From experience gained during firings and tactical exercises during the last few years, it is known that an artillery battalion is capable of opening fire for effect against any target 2 to 3 minutes after it has been given the coordinates of this target. The same battalion, when forming part of an artillery group, divisional artillery, and army artillery, can open fire in 4, 5, and 6 minutes respectively after getting the coordinates of the target.

Thus, it can be reckoned that an artillery battalion has the capability of opening fire for effect against offensive nuclear weapons in 3 to 6 minutes after getting the coordinates of these weapons.

From experience in exercises it is known that tactical missile battalions, when their launch assemblies (startovyy agregat) are in the positions in full readiness to launch, can carry out a strike against a target of opportunity 10 to 15 minutes after they have received the coordinates of the target. If one takes into account that to make a decision, to cipher and decipher orders and to pass them down the channels of command: army - division - battalion - up to 15 to 20 [?] minutes at least are required, as experience gained in exercises has shown, and up to 10 to 15 minutes down the channels from battalion to the crews, then it can be reckoned that a tactical missile battalion can deliver a

-12-

~~SECRET~~

~~SECRET~~

IRONBARK

[redacted]

strike at a newly detected target in 20 to 35 [?] minutes after the coordinates of this target have been received by the commanding officer or headquarters of the army's missile troops and artillery, and 20 to 30 [?] minutes after the coordinates have been received by the headquarters of divisional artillery [?].

Thus, a tactical missile battalion is capable of delivering a strike against a newly detected target in 20 to 35 minutes after the coordinates of this target have been obtained.

Batteries armed with 8K11 operational-tactical missiles and with 8U218 launch assemblies can technically be at a readiness of 1, 15, 20, and of 35 to 40 minutes. For firing at newly detected targets of opportunity requiring immediate destruction (and particularly at the enemy's offensive nuclear weapons), operational-tactical batteries can be kept at a readiness of 15 to 20 and of 35 to 40 minutes, as 1-minute readiness can be used only in cases of delivering massed nuclear strikes or when strikes have to be delivered at a definite time indicated in advance.

A battery which is at a readiness of 15 to 20 minutes can fire at a target of opportunity 15 to 20 minutes after the target's coordinates have been obtained. To achieve such a stage of readiness, the launch assembly must be on the launch site ready to operate with the assembly engine (dvigatel agregata) switched off after preliminary checking of the missile and with the guidance equipment arranged and prepared for operation, and the missile itself is in the vertical position and the work of preparing the missile for firing in accordance with the "Directions for Firing Drill for 8K11 Missile Units" (Nastavleniye po ognevoy sluzhbe raketnykh chastey 8K11); including checking the parameters of the nose cone, having been already carried out, i.e.

[redacted]

-13-

~~SECRET~~

~~SECRET~~

IRONBARK

[ ]  
all preparatory measures laid down in the temporary [?] "Instructions for Launch Batteries on Duty Armed with 8K11 Missiles", 1960, have been carried out. The launch battery must be at the indicated state of readiness for not more than 24 [?] hours.

A battery which is at a stage of readiness of 35 to 40 minutes can fire at a target of opportunity 35 to 40 minutes after the target's coordinates have been received. To achieve such a stage of readiness the launch assembly with the missile in a horizontal position must be on the launch site or under shelter near it; in the latter case the cover must not be further away than a place from which the launcher can be put in position on the launch site within 5 minutes. The personnel must be standing by the assembly and ready to take up their places according to the combat schedule (po boyevomu raschetu).

Of these two kinds of readiness, the more advantageous one is undoubtedly the readiness of 15 to 20 minutes, and it should therefore be regarded as the basic type of readiness for batteries on the alert which are intended to combat the enemy's offensive nuclear weapons. If one takes into account that besides this time, considerable time is required to make a decision, cipher, transmit, and decipher orders (up to 15 to 20 minutes), then it can be reckoned that a strike with operational-tactical missiles can be prepared at present not more quickly than 30 to 40 minutes after the commanding officer or headquarters of the army's missile troops and artillery has received the coordinates of the target.

In concluding this summary of the characteristic features of the combat capabilities of artillery, tactical, and operational-tactical missiles, which must be taken into account in planning the combat against the enemy's offensive nuclear weapons, it is necessary to add that missile troops and artillery can accomplish this task at any time of the day

~~SECRET~~



~~SECRET~~

IRONBARK

or night or time of year, under any climatic conditions of nature, and practically in any weather conditions. In this respect, missile troops and artillery have unquestionable advantages over aircraft.

3. Destruction of the Enemy's Offensive Nuclear Weapons, Taking into Account the Time They Are at Firing Positions or Launch Sites

The characteristic feature of modern troops in general, and of subunits and units using nuclear weapons, in particular, is their great mobility, which, in the event of necessity, provides considerable capabilities for making rapid changes in the battle formations. Under modern conditions, all troops will change their locations systematically. Such changes of battle formations will be carried out particularly often in the case of units and subunits armed with offensive nuclear weapons. Thus, according to the views held in the US Army, units and subunits armed with offensive nuclear weapons should remain at their firing positions and launch sites only for the length of time necessary for preparing to fire or launch a missile. Having fired or launched a missile, a subunit must either change its firing position (launch site) immediately or must move to shelter situated a relatively large distance from the firing position (launch site). Therefore, the destruction and neutralization of the enemy's offensive nuclear weapons on their firing positions and launch sites depends wholly and entirely on opening fire for effect against the target at the right time.

However, the possibility that some part of the enemy's offensive nuclear weapons will be on the alert at the firing positions and launch sites

-15-

~~SECRET~~

~~SECRET~~

IRONBARK

should not be excluded. The possibility of their being on alert in this way will be a factor which to some extent facilitates combat against these weapons and increases its effectiveness. But one should not count on this. For [one word missing] correct methods it is essential to have [one word missing] unfavorable conditions for this [?]. Such conditions are those which [?] make the question of opening fire for effect against a target at the right time as one of first importance.

The requirement that fire for effect against a target should be opened at the right time is the priority requirement in planning the combat against the enemy's offensive nuclear weapons. This requirement applies with equal force not only to such targets as the firing positions and launch sites of the enemy's offensive nuclear weapons, but also to those which may be in the positions they occupy for a longer time, for instance, technical positions, control points and guidance posts, etc.

The most favorable results for us in combating the enemy's nuclear weapons will be achieved only in those cases when the destruction and neutralization of these weapons prevents strikes by them against our troops, i.e., in other words, the combat against these weapons will attain its greatest effectiveness when they are destroyed or neutralized before they fire or launch a projectile. Accordingly, these offensive nuclear weapons should be destroyed at transportation points, on the march, in concentration areas and waiting areas, and at depots and assembly bases. In these cases, too, the question of firing in time is of the utmost significance. Thus, for instance, the timely destruction of a depot of nuclear ammunition, leaving the firing subunits without nuclear ammunition, would prevent massed or individual nuclear strikes by the enemy; the destruction of such a depot in a large unit, for instance, after it has issued a considerable part

-16-

~~SECRET~~

~~SECRET~~

IRONBARK

[redacted]  
of the ammunition, will have no effect, or will have only a small effect, on the character and scale of the enemy's use of nuclear weapons.

The situation is more or less the same in regard to the destruction of control points. Thus, for instance, the timely destruction of a control point for a battalion of "Corporal" guided missiles would put the whole battalion out of action and, consequently, would completely prevent any nuclear strikes by this battalion.

However, stricter demands should undoubtedly be applied to times of readiness to open fire (firing) for effect when destroying (neutralizing) the enemy's offensive nuclear weapons at their firing positions (launch sites).

Reconnaissance of the enemy's offensive nuclear weapons at their firing positions and launch sites is a complicated matter. But it is still more difficult, and in some cases impossible, to determine subunits' degree of readiness for opening fire. Having detected a gun, battery, or a launch site having on it a launcher or a missile in a vertical position, one can come quite definitely to the conclusion that preparations are being made on this position to fire or launch and that the firing or launching can be carried out not later than a certain time. However, it is very often impossible to determine what state or what stage the work done at the position in preparation for firing or launching has reached. At the moment when a firing position or launch site is detected it can be contended with equal probability that preparations for firing from it have just started, that preparations on it have been going on for so many minutes, that preparations on it are coming to an end, etc. Hence, it can be reckoned that the time which determines the state of readiness of an offensive nuclear weapon detected at a firing position or launch site can be allotted in accordance with the law of equal probability. If, for instance, about two hours are required for preparing a launching of a "Corporal" guided missile and we have at our

-17- [redacted]

~~SECRET~~

~~SECRET~~

IRONBARK

disposal a weapon with which a strike can be made only one hour after the target is detected, then it can be contended that the probability of accomplishing the task within the time will be only 0.5 (50 percent), i.e.,

$$P_t = \frac{\tau - t}{\tau} \quad (28)$$

where  $P_t$  is the probability of fulfilling the fire task within the time schedule;

$t$  is the time taken to prepare a strike against a target from the moment of its detection to the moment when fire (a round) for effect is opened;

$\tau$  is the time that the enemy gun, battery, or launcher is at the firing position or launch site from the moment it occupies the firing position or launch site till it fires (launches).

In examining questions regarding the indicators of the effectiveness of fire it was accepted that the probability of fulfilling such an important task as that of destroying the enemy's offensive nuclear weapons must not be below 0.9. In Chapter IV, this index level for the effectiveness of fire was adopted without taking into account the probability of fulfilling the task within the time schedule.

On the basis of what is stated above, it can be concluded that the accepted probability factor in destroying any enemy offensive nuclear weapon should be that of absolute probability (polnaya veroyatnost) equal to:

$$R = P P_t [?] \quad (29)$$

where  $P[?]$  is the probability of fulfilling the task

~~SECRET~~

~~SECRET~~

IRONBARK

in regard to accuracy.

If we reckon that P is taken to be equal to 0.9 (90 percent) (for nuclear strikes), then it can be considered that:

$$R = ??P_t$$

Having details regarding the time required to prepare the various nuclear weapons in a US Army for firing or launching (given in Chapter I), it is quite easy to determine what length of time will be required for preparing fire (one round) for effect needed to ensure the various degrees of probability of destroying the enemy's firing position or launch site before fire has been opened from it. [Two words missing] and the probability of fulfilling the task.

This time is calculated by using the formula:

$$t = \frac{\tau (0.9 - R)}{0.9} \quad (30)$$

Details of the calculation are given in Table 46.

~~SECRET~~

IRONBARK

Table 48

Minimum Time Required to Prepare Fire for Effect to Ensure the Given Degree of Probability of Destroying a Firing Position or Launch Site (in Minutes)

Designation of offensive nuclear weapon	Minimum time at firing position (launch site) for prep. of fire	Probability of destroying target B						
		0.30	0.40	0.50	0.60	0.70	0.80	0.90 [?]
203.3 cm self-propelled howitzer	5 min	3.2	2.8	2.2	1.7	1.1	.5[?]	.3
203.3 cm mechanically drawn howitzer or battery of 203.3 cm howitzers [?]	30 min	20	17	13	10	6.5	3.7	1.7
200 mm gun T131	28 min	17	14	11	6.2	5.5	2.8	1.4
"Honour John" and "Little John" free rockets, "Lacrosse" guided missile (see launcher)	15 min	10	7.5	7.7	5.8 [?]	7.7	1.7	0.7
"Lacrosse" guided missile (battalion)	60? min	40	33	27	20	13 [?]	6.5	7.3
"Corporal" guided missile	2 hours	80	??	??	40	22	12	0.7
"Redstone" guided missile	3 hours	120	100	80	60	40	20	10
"Hastador" cruise missile	1 1/2 hours	80	??	40	30 [?]	20	15	5.0
"Haze" cruise missile	?? min	20 [?]	17	17	10	6.5	7.3	1.7

SECRET

SECRET

~~SECRET~~

IRONBARK

[ ]

From Table 46 it can be seen that the given [?] degree of probability of destroying the target can be attained only in those cases where the time taken to prepare fire (one round) for effect can be measured in a few minutes, and in some cases a few seconds, for instance in the case of the 203.2 mm self-propelled howitzer and an independent "Lacrosse" guided missile launcher. Consequently, the attainment of a high degree of probability of destroying some offensive nuclear weapons is a very problematical matter and cannot be achieved with the weapons now in existence, even when combat against these weapons is planned perfectly. ★

The time shown in Table 46 is in summarized form and represents the time necessary:

- to determine the coordinates of the target;
- to transmit the coordinates to the commander (commanding officer, chief) who has the right to call for fire;
- for the commander (commanding officer) to take a decision to open fire against the target;
- to pass the order to open fire to those who will carry it out;
- to prepare the settings for firing;
- to prepare and set the guns, launcher, or missiles to the target.

In addition, the time of flight of the shell or missile should also be included in the above time.

Experience gained during exercises carried out during the last few years has shown that to determine the coordinates of a target and to designate a

-21-

~~SECRET~~

~~SECRET~~

IRONBARK

[redacted]

target considerable time is expended, amounting to tens of minutes and sometimes to hours. As a rule, a considerable part of the time taken can, be attributed to poor planning and poor technical target determination (plokhoye tekhnicheskoye obespecheniye tseleukazaniya) (insufficient coordination of headquarters and reconnaissance organs, use of radiotelephones with a small radius of operation, lack of experience [?] of reconnaissance personnel, etc.).

The fulfillment of scientific-research work on questions concerning reconnaissance has shown, however, that if the work of reconnaissance resources, communications, and target determination procedure are properly organized, it is quite possible:

- to determine the target coordinates from an aircraft (helicopter)\* by visual reconnaissance with the help of a large-scale map or of aerial photographs and to report them in 3 to 4 minutes (from the moment of detecting the target to finishing the report);
- to determine the target coordinates from a photograph from an aircraft on reconnaissance using the one-stage photographic process (photographing, processing, getting the coordinates, and reporting them) in 10 minutes (from the moment of photographing the target to finishing the report);
- to determine the target coordinates from a map, to establish communications, and to pass the coordinates of the target, determined by a reconnaissance group or by secret agents (agentura) in 40 to 50 minutes (from the moment of detecting the target to finishing the report).

\* It is essential to bear in mind that reconnaissance from a helicopter of a previously undetected target [two lines missing].

~~SECRET~~



~~SECRET~~

IRONBARK

As for vertical and oblique photography from an aircraft using the usual two-stage process, then at the best 3 to 5 hours are required to get the co-ordinates of the target.

Of the data given above, the most acceptable can be considered to be only those which relate to reconnaissance from an aircraft visually or by means of photography by the one-stage process. Consequently, the minimum time which passes from the moment of detecting the target till its coordinates have been reported to the commanding officer or chief who has the right to make the decision on opening fire should be reckoned as 3 to 4 minutes (in the case of visual reconnaissance from an aircraft) or 10 minutes (when using the one-stage photographic process for reconnaissance of the target).

Details have been given above of possible time in which opening of fire with conventional artillery, tactical missiles, and operational-tactical missiles can be prepared. If we add to this the minimum time required to determine the target coordinates and to designate the target (4 or 10 minutes), and if we also take into account the approximate time of flight of shells and tactical missiles (about 1 minute) and of operational-tactical missiles (about 5 minutes), we can arrive at the approximate total time required to prepare fire (one round) for effect. This time is:

- for conventional artillery, from 8 to 17 minutes;
- for tactical missiles, from 25 [?] to 45 minutes;
- for operational-tactical missiles from 40 to 55 minutes.

-23-

~~SECRET~~

~~SECRET~~

IRONBARK

The sign value  $t$  and the value  $\tau$  (see Table 46) can be used to calculate the probability of fulfilling the task of destroying the enemy's various offensive nuclear weapons  $K$  by means of conventional artillery, tactical, and operational-tactical missiles according to the formula:

$$K = \frac{[\text{missing}]}{\tau} \quad (31)$$

Results of the calculation are given in Table 47.

~~SECRET~~

~~SECRET~~

IRONBARK

Table 47

Probability of Destroying Offensive  
Nuclear Weapons at Firing Positions  
and Launch Sites

Designation of weapon	Probability of destruction		
	By artillery	By tactical missiles	By operational-tactical missiles
1	2	3	4
203.2 mm self-prop. howitzer	-	-	-
203.2 mm mechanically drawn howitzer	0.35 [?] - 0.??	0-0.1?	-
T121 280 mm gun	0.7-0.??	-	-
"Honest John" and "Little John" free rockets	0-0.42	-	-
"Lacrosse" guided missile (one launcher)	0-0.42	-	-
"Lacrosse" guided missile (battalion)	0.65-0.78	0.28-0.52	0.08-0.30
"Corporal" guided missile	-	0.66-0.70	0.49-0.60

~~SECRET~~

~~SECRET~~

IRONBARK

"Redstone" guided missile	-	0.68-0.78	0.62-0.70
"Matador" cruise missile	-	-	0.5 $\frac{?}{0.49}$ 4-
"Mace" cruise missile	-	-	-

~~SECRET~~

~~SECRET~~

IRONBARK

From the details given in Table 47, we arrive at the following extremely important practical conclusions. From these details it is clear first of all that in several cases the task of destroying certain offensive nuclear weapons before they have fired at our troops cannot be fulfilled in practice. Up to the present time the most operational weapon (from the standpoint of rapidity of opening fire) is artillery. However, even it is not capable of preventing fire from such weapons as 203.2 mm howitzers.

There is very little probability of artillery being able to destroy such weapons as free rockets of the "Honest John" and "Little John" type and guided missiles of the "Lacrosse" type. When the most urgent procedure for giving firing orders is adopted, i.e., when the order [?] is given direct to a battery, the probability of destroying these targets before they have opened fire is not greater than 0.4 (40 percent). If the target coordinates are determined by photography (one-stage process), and the firing orders are given down the chain of command; headquarters of the army's missile troops and artillery; headquarters of an artillery large unit; headquarters of a unit; battalion, then the probability of destroying targets of the type of "Honest John" and "Little John" free rockets and "Lacrosse" missiles before they have fired will be nil, because the time taken to prepare our fire will exceed the time taken to prepare these weapons to open fire. The destruction of batteries of 203.2 mm howitzers and of 280 mm guns at their firing positions before they have fired can be carried out by gun artillery with a reliability of from 0.30 to 0.65, depending on the method adopted to determine the target coordinates and the procedure for passing the firing orders to those who will execute them.

Such offensive nuclear weapons as guided missiles of the "Corporal" and "Redstone" type cannot be

~~SECRET~~

~~SECRET~~

IRONBARK

destroyed by tube artillery in the overwhelming majority of cases because they will be located out of its range.

Tactical missiles are a less operational weapon than gun artillery. As a rule the fairly considerable time required for preparations to open fire (25 to 45 minutes) excludes hitting such targets as the 203.2 mm self-propelled howitzers, 280 mm guns, "Honest John" and "Little John" free rockets, and individual "Lacrosse" guided missile launchers before they have fired. When the time required for preparations to open fire is such, the probability of destroying batteries of 203.2 mm howitzers before they have fired is very low (less than 0.15). Moreover, the destruction of a battery of 203.2 mm howitzers before it has fired can only be accomplished under conditions of visual reconnaissance from an aircraft and when the transmission of the order is made, by the authority which makes the decision to open fire, direct to the battalion (bypassing all intermediate echelons).

Tactical missiles can attain a somewhat higher degree of probability of destroying their targets when firing at siting areas of "Lacrosse" guided missile battalions, if one bears in mind that a battalion may remain at the area for not less than 60 to 70 minutes. Of course, it is impossible to prevent the first firings from individual "Lacrosse" launchers from such a siting area by means of a nuclear strike with one tactical missile; however, some of the firings can be prevented, and the probability of destroying "Lacrosse" launchers which have not yet fired can vary from 0.25 to 0.50.

Nuclear weapons such as "Corporal" and "Redstone" guided missiles cannot be destroyed by tactical missiles either, because of their limited range of fire. If tactical missile units and subunits are equipped with missiles whose range will extend to

~~SECRET~~

~~SECRET~~

IRONBARK

60 to 70 km and if the time taken to prepare them for firing does not exceed the limits given above, then such missiles can also be used to destroy "Corporal" and "Redstone" guided missiles on their launch sites. The probability of destroying such weapons will be of the order 0.65 to 0.75.

The time required for preparing to launch SK11 operational-tactical missiles is such that in practice it excludes their use against the enemy's tactical offensive nuclear weapons with the object of preventing their firing. Of the enemy's tactical offensive nuclear weapons, only a "Lacrosse" guided missile battalion in a siting area can be regarded as a possible target for our operational-tactical missiles. However, it is essential to take into account here that the probability of destroying this target by means of a nuclear strike can vary only from 0.08 to 0.30. Consequently, it is inadvisable to make use of operational-tactical missiles to destroy the enemy's tactical offensive nuclear weapons at their firing positions (launch sites).

When using operational-tactical missiles against such targets as "Corporal" and "Redstone" guided missiles and cruise missiles of the "Matador" type on launch sites, the probability of destroying such targets can reach 0.50 to 0.70, i.e., these nuclear weapons can be destroyed successfully by operational-tactical missiles. As for "Mace" cruise missiles, they cannot be destroyed after being detected at launch sites or launch pads, because the total time taken to prepare our missile for launching exceeds the time these cruise missiles remain at their positions.

Thus, SK11 operational-tactical missiles can be used to destroy only such offensive nuclear weapons at their launch sites as "Corporal" and "Redstone" guided missiles and "Matador" cruise missiles.

~~SECRET~~

~~SECRET~~

IRONBARK

The limited capabilities of destroying offensive nuclear weapons at their positions (before they have fired) make it essential that these weapons should be destroyed before they move into their firing positions or launch sites, i.e., when they are in concentration areas or in waiting areas, and also on occupying or leaving firing positions or launch sites.

The destruction of offensive nuclear weapons in concentration areas and in waiting areas is a very significant [?] factor in the general system of combating these weapons by fire. However, the accomplishment of this is accompanied by [?] a whole series of difficulties, connected with the [one word missing] and reconnaissance of such areas. It is known that in occupying concentration areas and waiting areas [two words missing] units and subunits take the maximum possible measures to camouflage such areas, setting up dummy concentration areas, etc. Moreover, it is very difficult to distinguish units and subunits armed with offensive nuclear weapons, located in concentration areas or waiting areas, from other military units and subunits. The sum total of all this taken together is that the ratio of destroying offensive nuclear weapons in concentration areas and in assembly areas cannot be good enough. However, this element should on no account be left out of the reckoning.

An equally vital moment in combating the enemy's offensive nuclear weapons is that of reconnaissance and, if possible, destruction of them while they are moving into a firing position or launch site. Up to 15 to 20 minutes are required to deploy some of the enemy's offensive nuclear weapons. Naturally, in cases when we manage to find some subunit at the moment it is moving to its firing position or launch site, fire for destruction will be more reliable because those firing will have a little more time at their disposal. However, to ensure the detection (razvedka) of offensive nuclear weapons while they

-30-

~~SECRET~~



~~SECRET~~

IRONBARK

are moving to firing positions or launch sites it is essential to maintain continuous, mainly air, reconnaissance of definite areas. The maintenance of continuous air reconnaissance of certain areas, [one word missing] of a kind that will ensure getting and passing the coordinates of the target within 5 to 10 minutes after detecting the target, is a [one word missing] matter under modern conditions, as for carrying on such continuous reconnaissance it is necessary to [one line missing] the enemy's antiair weapons.

Besides the possibilities of destroying offensive nuclear weapons at firing positions and launch sites, outlined above, there is the possibility of destroying these weapons on their positions after they have carried out a firing or launching.

In Chapter I it was noted that certain offensive nuclear weapons could not leave their position immediately after firing. For instance, the T121 280 mm gun can leave the firing position only after 45 [?] minutes, a battery of 203.2 mm mechanical traction howitzers 20 minutes, and an "Honest John" launcher 5 minutes after firing or launching. Some weapons can leave their position even faster, for instance the 203.2 mm self-propelled howitzer. It can be surmised that such weapons as launchers of "Little John" free rockets and of "Lacrosse" guided missiles will leave their positions not later than 3 to 5 minutes after having launched a rocket or missile. Consequently, certain types of offensive nuclear weapons can be destroyed while they are being moved from [?] firing positions [?], [one and a half lines missing] positions before fire for annihilation or neutralization is organized against them.

[First eleven lines of paragraph missing] directing the launching, situated on a motor vehicle or under shelter. On carrying out the launching,

~~SECRET~~

~~SECRET~~

IRONBARK

[redacted]

all these vehicles and assemblies leave the launch site immediately (in practice in 3 to 5 minutes) and move off to shelter.

We shall now determine the possibility of destroying the enemy's offensive nuclear weapons which have revealed themselves by firing or launching, assuming that there is time to fulfill this task.

At the moment of firing or launching, a gun, a launcher, or a missile (guided missile) betrays itself by several revealing indications (flash, dust, smoke and sound of firing, flame from the engine of the missile or guided missile, flight of the projectile itself, breaking of radio silence, etc.). Naturally, it is much easier to detect a firing position or launch site at such a moment. However, it is necessary not only to detect such a target, but also to establish that a nuclear projectile has been fired or launched. Moreover, it is essential to determine the coordinates of the detected target with sufficient accuracy, and this circumstance considerably reduces the effectiveness of those reconnaissance means which are capable of getting the target coordinates from only one firing (launching).

It is possible to detect a target from one firing and then to determine its coordinates from an aircraft or helicopter, by means of visual reconnaissance, and also with the "SATURN" radar [one word missing] [being?] developed at the present time.

As has been stated above, the detection of a target from an aircraft or helicopter, the determination of its coordinates, and the transmitting of target designations [two words missing] takes a minimum of 3 to 4 minutes. If the aircraft or helicopter is in direct contact with a battalion

[redacted]

-32-

~~SECRET~~

[redacted]

~~SECRET~~

IRONBARK

of gun artillery, then fire for effect can be opened at the target not earlier than 5 to 7 minutes after it has been detected. If the aircraft or helicopter is in contact with headquarters of the army's missile troops and artillery, then fire for effect can be opened at the target not sooner than 8 to 10 minutes after it has been detected. Consequently, such targets as the 203.2 mm mechanical traction howitzer and individual 280 mm guns can be caught by artillery fire before they leave their positions, regardless of the ways in which target designations are transmitted and orders to open fire are given.

The time given to prepare artillery fire exceeds the time taken to leave their firing positions or launch sites by individual 203.2 mm self-propelled howitzers (2 minutes), batteries of such howitzers (3 to 5 minutes), and by individual "Honest John" and "Little John" free rocket launchers and "Lacrosse" guided missile launchers (2 to 3 minutes). Consequently opening fire against these weapons, in cases where they are detected from an aircraft or helicopter, is quite obviously inadvisable [?].

The radar "SATURN" ("Utes") now under development is intended to detect guns, batteries, free rocket launchers, and guided missile launch sites, on firing or launching. This station is capable of determining the coordinates of the target from a single firing or launching; moreover, the coordinates are determined automatically in 10 to 15 [?] seconds. The time for [one word missing] these coordinates with [three words missing] cannot exceed one to one and a half minutes [?]. Consequently, in this case not more than two minutes [?] are required to detect the target and to report its coordinates. If this radar is directly linked [?] to an artillery battalion, then it will be possible [?] to open fire on the target 4 to 5 minutes after its detection. This amount of time is adequate to ensure successful firing not only against the firing positions of 203.2 mm howitzers and 280 mm

-33-

~~SECRET~~

~~SECRET~~

IRONBARK

guns, but also against "Honest John" launchers, which will not have enough time to leave positions they are in after launching a rocket.

Thus, gun artillery can destroy batteries of 203.2 mm mechanical traction howitzers and individual 280 mm guns which betray themselves by firing, if reconnaissance of these targets is carried out visually from an aircraft or helicopter. If reconnaissance of the enemy's offensive nuclear weapons after firing (launching) is carried out with the help of radar of the "SATURN" ("Utes") type, then gun artillery can also destroy "Honest John" launchers.

As has been stated already, the time required to prepare the launching of a tactical missile which is in full readiness on its position is 10 to 15 minutes from the moment that the target's coordinates are received. Taking into account that an army and in some cases a division [?] can have the right to decide to carry out a nuclear strike, it can be reckoned that for taking the decision and for transmitting the order, for ciphering and deciphering it, directly to the battalion [?] a minimum of 2 to 3 [?] minutes will be required. The total time required will thus be 13 to 22 minutes [?] when the coordinates of the target are determined from an aircraft or helicopter (using visual reconnaissance) or 17 to 20 [?] minutes when reconnaissance of the target is carried out with the help of a "SATURN" ("Utes") radar. Consequently, even under the most favorable circumstances, by means of strikes with tactical missiles, it is possible to destroy only batteries of 203.2 mm mechanical traction howitzers, and in some cases 280 mm guns. In the case of all individual targets [?] such strikes will not give the desired result because launchers or guns will have time not only to leave the position from which they have fired, but to get altogether out of the area which can be hit by a nuclear burst. However if the total time taken to prepare a tactical missile for launching is more than 20 to 25 minutes (for

~~SECRET~~

~~SECRET~~

IRONBARK

[redacted]

example in enciphering and deciphering the order), then generally speaking they cannot be used for strikes against targets that reveal themselves by firing or launching.

The position in regard to operational-tactical missiles is similar. The time required at present to prepare them for launching is still so great that it definitely does not ensure being able to destroy the targets and assemblies on the enemy's launch sites during the very short time they are there after launching a guided missile or a cruise missile.

The only possibility of destroying guns, launchers, vehicles, and assemblies on firing positions and launch sites after they have fired or launched will occur in cases when not one, but two or several firings (launchings) are carried out from this position, and particularly when the possibility of destroying them occurs with [?] individual batteries of 203.2 mm self-propelled as well as mechanical traction howitzers when they fire shells with conventional charges [?]. The possibility also cannot be excluded that "Honest John" rockets and "Lacrosse" missiles, as well as "Matador" and "Mace" cruise missiles may be [one word missing] launched from the same position. However, such cases will occur [line and a half missing].

\*  
\*

Thus, of all [?] [two words missing] of the enemy's offensive nuclear weapons after they have carried out a firing or launching, our weapons can destroy only the 203.2 mm mechanical traction howitzers and individual 280 mm guns, and when a "SATURN" ("Utes") radar is available, "Honest John" launchers can also be destroyed. All the other weapons have the capability of leaving the firing position or launch site in time to avoid being destroyed. Consequently, it is inadvisable in the great majority of cases to prepare and carry out a strike against these positions.

\*  
\*  
\*

~~SECRET~~

~~SECRET~~

IRONBARK

That is the way things stand in regard to destroying individual firing positions or launch sites after firing or launching.

The possibilities are a little better in cases where units (subunits) of the enemy's offensive nuclear weapons are disposed compactly within the limits of a comparatively small area. It is known, for instance, that in some cases battalions of "Honest John" free rockets and of "Lacrosse" guided missiles can occupy one siting area, the size of which does not exceed 1000 m in width and 1000 m in depth. "Honest John" free rocket batteries of infantry and armored divisions may also be disposed in a similar compact way on firing positions. Consequently, even if one launcher is picked up [?] and detected, there is a possibility of destroying the whole battery or the whole battalion located in the siting area by a strike with a tactical, and in some cases with an operational-tactical, missile, assuming that battalions or batteries of "Honest John" free rockets and battalions of "Lacrosse" guided missiles will be in [two words missing] area for a comparatively long time. Thus, for instance, a "Lacrosse" guided missile battalion can be [three words missing] in the siting area not less than ?? to ?? minutes. If to this time [one word missing] the time for preparing the first launching (?? - ?? minutes), then it can be reckoned that after the first launching (i.e., after the "Lacrosse" launcher is detected as a result of the launching of a missile) we will have about 35 to 50 minutes, and this amount of time, as has been established earlier, is sufficient to prepare a strike with a tactical missile, and in some cases it will also be adequate to prepare a strike with an operational-tactical missile. However, such possibilities of destroying units and subunits of free rockets and guided missiles can occur only in cases where it has been reliably established that battalions and batteries of "Honest John" free rockets and battalions of "Lacrosse" guided missiles

~~SECRET~~

~~SECRET~~

IRONBARK

are systematically occupying combat positions in one comparatively small area. When "Honest John" free rockets and "Lacrosse" guided missiles are disposed in their combat positions in other, more dispersed ways, the destruction of whole units and subunits of these offensive nuclear weapons will be impossible.

4. Planning and Technical Measures to Raise the Effectiveness of Combating the Enemy's Offensive Nuclear Weapons

As is already known, the most important factor [one word missing] successful [?] combat against the enemy's offensive nuclear weapons is the timely opening of fire for destruction against the target. Consequently, questions of reducing the time to prepare [?] both for [separate headquarters or elements?], as well as [three words missing] the work [?] preparing fire for effect on the target [?] are now extremely pertinent and acute [?]. The problem of reducing the time taken to prepare fire for effect can be solved only by means of improvements in equipment [?] [four lines missing].

By the planning aspect of resolving this problem is meant the system of planning the combat against nuclear weapons at a certain level (front, army); the procedure for receiving reconnaissance information and transmitting the tasks to those who will execute them; the grouping of weapons available to combat the enemy's offensive nuclear weapons; determining the procedure to destroy these weapons during the various phases of the operation; the organization of coordination with other arms of troops, and particularly with aircraft, etc.

~~SECRET~~

~~SECRET~~

IRONBARK

[REDACTED]

By the technical aspect of resolving this problem is meant a whole series of measures directed toward the constructive improvement, or replacement with new models, of the combat equipment with which our army is now equipped; the development of automatic instruments and mechanisms which would enable the time taken to prepare launchers for firing for effect to be reduced; the use of automatic communications security apparatus (avtomaticheskaya zasekrechivayushchaya apparatura svyazi-ZAS) for transmitting orders to open fire; the improvement of the means of communications, etc.

Let us consider some of these problems and measures in greater detail.

For successful combat against the enemy's offensive nuclear weapons, the control of the forces and weapons which are made available to fulfill this task must be centralized. The main levels at which this centralization must be effected are the front and the army. Combat against the enemy's operational and operational-tactical weapons is planned on a front scale, while the engagement of the enemy's tactical, and in some cases also operational-tactical offensive nuclear weapons, is planned on an army scale.

When control is centralized, the right to give an order to means using nuclear weapons to open fire belongs only to the commander in whom this centralized control is vested. In an army, this right is held by the army commander. This inevitably entails a rather cumbersome system for transmitting the intelligence data obtained, for analyzing these data, for making a decision, and for passing the tasks to those who will execute them. For instance, this system may consist of the following elements: certain means of intelligence; intelligence department of army headquarters, chief of staff of the army, army commander, commanding officer of the army's missile and artillery troops, missile or artillery large unit (unit), battalion, and battery. There can also be the following alternatives:

-38-

[REDACTED]

~~SECRET~~



~~SECRET~~

IRONBARK

certains means of intelligence, headquarters of the army's missile troops and artillery, commanding officer of the army's missile troops and artillery, army commander, commanding officer of the army's missile troops and artillery, missile or artillery large unit or unit, battalion, and battery.

Consequently, the process of preparing fire or a strike against some enemy offensive nuclear objective can comprise up to 6 to 8 echelons of command (instantsiya). Experience gained in training exercises shows that such a procedure demands a very great expenditure of time - from some tens of minutes to one to two hours. As a result of this, the fire effort that is prepared against the enemy's offensive nuclear objective cannot meet with any success.

Thus, the question of the right to order opening of fire in general and the question of the right to deliver nuclear strikes against the enemy's offensive nuclear weapons in particular is of very great importance.

The following structure may be a more acceptable alternative for the general organization in an army for combat against the enemy's offensive nuclear weapons.

The army commander, together with his staff, on the basis of instructions or a directive from the front troop commander, an elucidation of the army's task, an evaluation of the situation regarding the enemy's offensive nuclear weapons, and an analysis of one's own capabilities of destroying and neutralizing these weapons, determines the army's general tasks in combating the enemy's offensive nuclear weapons, decides how his forces and weapons should be grouped, and also plans the procedure for conducting this combat in the various phases of the operation.

~~SECRET~~

~~SECRET~~

IRONBARK

[REDACTED]

In making a decision, the army commander must determine the quantity of nuclear (and if necessary of conventional) ammunition allotted to combat the enemy's offensive nuclear weapons in the various phases of the operation, and he must also authorize the commanding officer of the army's missile troops and artillery to expend this ammunition on confirmed targets which must be destroyed immediately. Together with giving the commanding officer of the army's missile troops and artillery authority to order opening of fire, he must also put directly under his command the intelligence means of the army, or those attached to it, which are to play a decisive role in planning the destruction of the enemy's offensive nuclear weapons at the right moment.

The commanding officer of the army's missile troops and artillery, together with his staff, is directly responsible for planning the combat against the enemy's nuclear weapons.

In planning this combat, provision must be made for measures which will ensure the maximum operational efficiency in the work of reconnaissance units and subunits, especially in reporting the enemy's offensive nuclear weapons detected by them. The best form of organization for coordination with intelligence means will be the one that will ensure that information regarding detected enemy offensive nuclear objectives reaches the headquarters of the army's missile troops and artillery directly from the particular reconnaissance element which has detected these objectives. Together with this, conditions must be created which will ensure that firing tasks will reach those who will be directly carrying them out with the maximum speed; likewise, provision must be made for units and subunits to be in a constant state of readiness to open fire against a target of opportunity.

The passing of firing tasks to those who will be carrying them out with the maximum speed can be

[REDACTED]

-40-

~~SECRET~~

~~SECRET~~

IRONBARK

achieved if two conditions are met: firstly, by passing the tasks directly to whoever will carry them out and bypassing all intermediate links, i.e., by using the "Orel" method of fire control, which has justified its value in practice in conventional artillery; secondly, by giving up encoding orders with the help of various tables. It is comparatively easy to meet the first of these conditions. For this, it is essential to set up and make good use of the "Orel" fire control method in training, and in command and staff exercises and tactical exercises. The second condition is a more complicated matter. In order to achieve a considerable reduction in the time taken to encode and decode orders, it is necessary to introduce and make extensive use of communications securing apparatus. And taking into account that this is a very complicated problem, it is necessary at the same time to continue passing orders for nuclear strikes also in the form of conventional gunnery orders with the minimum amount of coding. In addition, it is advisable to study the problem of giving uncoded orders in cases where there is a possibility of delivering a strike immediately after receiving the order or a few minutes after receiving it, i.e., in cases where the enemy, having intercepted our order, could do nothing about it.

Constant combat readiness of missile units and subunits to deliver a nuclear strike against the enemy offensive nuclear weapons that have been detected is achieved by detailing units and subunits to be on the alert. The number of units and subunits put on the alert is determined on the basis of the total number of missile large units and units at the disposal of the army commander, the availability of nuclear ammunition, and the number of the enemy's offensive nuclear weapons which he can deploy in a definite period of time (for instance, in twenty-four hours) in the army's zone of combat operations and on its flanks. The proposed number of objectives for reconnaissance is determined from an analysis of the opposing enemy grouping and of the results of previous [?] operations.

-41-

~~SECRET~~

~~SECRET~~

IRONBARK

Taking into account the various times at which the enemy's offensive nuclear weapons are detected, it can be reckoned that the number of subunits on the alert can be comparatively small and can comprise not more than one-third [?] of the total strength of forces and weapons available to combat the enemy's nuclear weapons.

Thus, for instance, the number of subunits put on the alert in an army can be determined on the basis of the following calculation:

-- operational-tactical missiles - one or two launch assemblies, in practice, one battalion for the whole army zone;

-- tactical missiles - one launcher for 15 to 20 km of army front, altogether 4 or 5 launchers, i.e., in practice two to three battalions of tactical missiles;

-- subunits of gun artillery - one battalion of 130 mm guns for 15 to 20 km of the army's front-- altogether 4 to 5 battalions of gun artillery.

It is necessary to note that the availability of battalions of tactical missiles, in motorized rifle and tank divisions only, does not ensure their effective use for combating the enemy's nuclear weapons. To combat the enemy's offensive nuclear weapons successfully, an army must have its own tactical missiles in the form of an independent unit. Such a unit can be an army regiment of tactical missiles consisting of two to three battalions (with three launchers in each battalion) or a tactical missile regiment of the Reserve of the Supreme High Command (RVGK), which could be attached to an army in support.

As for tactical missiles held by motorized rifle and tank divisions, their main task should be that of destroying and neutralizing the opposing

~~SECRET~~

~~SECRET~~

IRONBARK

enemy troops when our troops go over to the offensive and of repelling the attacks of the advancing enemy when our troops go over to the defensive. The task of combating the enemy's offensive nuclear weapons cannot constitute the main task of these weapons [one word missing] because a division does not have at its disposal the necessary material capabilities for this, and, in particular, the appropriate resources for intelligence. However, this circumstance cannot be regarded as a reason for failing to destroy the enemy's offensive nuclear weapons in cases where it is quite possible to destroy them. Confirmed nuclear attack objectives of the enemy must be destroyed by all suitable weapons.

The problem of organizing the coordination of missile troops and artillery with aircraft is of no small importance for successfully combating the enemy's offensive nuclear weapons. Aircraft, especially fighter-bomber aviation units, can be employed to destroy and neutralize not only the enemy's operational and operational-tactical offensive nuclear weapons, but also to destroy his tactical offensive nuclear weapons. In this, aircraft have a definite advantage over missile troops and artillery. This advantage lies in the fact that with appropriate planning aircraft are capable of destroying and neutralizing the enemy's fire weapons immediately after they are detected in concentration areas, on the march, and at firing positions. In a previous section of this chapter it was shown that nuclear attack objectives such as individual 203.2 mm self-propelled howitzers cannot be caught at firing positions either by missile strikes or by fire from gun artillery. These weapons can be destroyed or neutralized at firing positions only by fighter-bombers, and then only by those aircraft which detect these weapons while they are moving into their positions. Naturally, the planning and execution of systematic flights by fighter-bombers "on the hunt" (if such an expression can be used) for offensive nuclear weapons

~~SECRET~~

**SECRET**

**IRONBARK**

calls for the systematic neutralization of the enemy's antiair weapons, and first of all for the neutralization and destruction of subunits of anti-aircraft guided missiles (ZURS). In addition, such flights must be coordinated as for place and time with the combat operations of missile and artillery units and subunits in order to preclude the possibility of our own aircraft being destroyed by our nuclear strikes or projectiles in flight. Coordination with intelligence groups operating in the enemy's rear must be just as carefully organized. When it is possible to adjust the fire of the gun artillery, intelligence groups should have direct communications with the units and subunits of gun artillery.

The organization of close coordination between units and subunits of gun artillery and tactical missile units and subunits is a significant factor in successfully combating the enemy's offensive nuclear weapons. In several cases, only gun artillery can prepare and open fire for effect immediately against a nuclear target; in order to prevent the enemy from firing a nuclear projectile, and also in order to stop the enemy from leaving his position, it is advisable to start neutralizing this objective by gun artillery fire and then to deliver a nuclear strike against this objective as soon as a tactical missile has been prepared. There is no doubt that the best results from such joint operations can be attained only when control of these operations is centralized, when good communications have been arranged with the various units and subunits, and when the units or subunits themselves are in constant readiness to carry out the tasks they are given.

Together with resolving organizational problems, it is essential to improve our combat equipment and raise their capabilities, all the time, especially in regard to reducing the time required to prepare them for firing or launching. The time calculations

**SECRET**

~~SECRET~~

IRONBARK

given in a previous section of this chapter [one word missing] the equipment now in service in the armed forces of our probable enemies. However, the arms in the armies of our probable enemies are being continuously improved. This improvement can be clearly seen by comparing some of the new models with previous ones. Thus, for instance, it takes about one and a half hours to prepare a "Matador" cruise missile for launching on a launching pad, whereas the new "Mace" cruise missile, which is replacing the "Matador," takes only 30 minutes. As a result of this reduction in the time required to prepare cruise missiles for launching, the possibilities of destroying them by SK11s on launch pads or launch sites have decreased sharply (if they have not disappeared altogether). To restore the lost possibilities of destroying cruise missiles, it is essential to reduce the total time required to prepare the launching of missiles to 10 to 15 minutes. Similar examples can be given in regard to other offensive nuclear weapons possessed by the enemy, and our means of destroying them. And the only conclusion from an analysis of such examples will be the conclusion regarding the absolute necessity of reducing the time required to prepare missiles for launching.

Possible ways of achieving this end are further shortening and simplification of prelaunching checkout, automation of the preparation of settings for a target strike, replacement of instruments the preparation of which for action requires a considerable time (for instance, electrolytic integrators of longitudinal acceleration) (elektroliticheskiy integrator prodolnykh uskoreniy) by other instruments which do not require lengthy preparation for action, etc.

At the same time it is essential to bring into service instruments and apparatus which speed up and simplify reconnaissance and the process of determining the coordinates of targets (for instance, observation instruments [four words missing], radar

-45-

~~SECRET~~

~~SECRET~~

IRONBARK

stations of the "SATURN" type, etc.

In designing and building these new models of equipment [?] one of the main tactical-operational demands [?] must be the requirement regarding the time needed to prepare them for firing or launching. Here, it should be borne in mind that in order to combat similar weapons of the enemy successfully, the total [?] time spent on preparing for firing or launching should be at least 30 to 40 percent less than that required by the enemy to prepare a firing (launching).

#### Chapter Conclusions

1. Organizing the combat against the enemy's offensive nuclear weapons is done at two levels -- by the front and by the army. The main level organizing combat against operational-tactical offensive nuclear weapons is a front, and the main element organizing combat against the enemy's tactical offensive nuclear weapons is an army.

2. The weapons at present in service in an army can fundamentally ensure the capability of successfully combating the offensive nuclear weapons of our probable enemies. But for this it is essential to create an efficient system of control of missile and of artillery units and subunits, a system that would ensure the minimum expenditure of time on the setting of tasks and greater operational efficiency of intelligence means and that would also substantially improve the field training of headquarters, units, and subunits. Moreover, it is essential to automate and mechanize the processes of preparing settings for fire (firing or launching) for effect against a target.

3. The destruction and neutralization of the enemy's offensive nuclear weapons can be carried out

~~SECRET~~



[REDACTED]  
~~SECRET~~

[REDACTED]  
**IRONBARK**

[REDACTED]

by operational-tactical and by tactical missiles, and also by gun artillery. Gun artillery, using ammunition with conventional fillings, has very considerable capabilities to destroy and neutralize the existing tactical offensive nuclear weapons of our potential enemies. Therefore, gun artillery should be regarded as one of the main means of combating the enemy's tactical nuclear weapons.

Tactical missiles are the main weapons to destroy the enemy's tactical offensive nuclear weapons by nuclear strikes. However, their capabilities are somewhat limited by their comparatively short range and the relatively long time required to prepare them for launching. To create more favorable conditions for combating the enemy's nuclear weapons, an army must have tactical missiles under its direct command.

Operational-tactical missiles are the main weapons to destroy the enemy's operational-tactical offensive nuclear weapons. Owing to the considerable time required to prepare operational-tactical missiles for launching, they cannot be used to destroy and neutralize tactical offensive nuclear weapons located at firing positions and launch sites.

4. As a rule, the enemy's offensive nuclear weapons, located at firing positions and launch sites, must be destroyed before they have been fired or launched. The overwhelming majority of offensive nuclear weapons cannot be annihilated on the position they occupy, if these positions are detected when projectiles with nuclear warheads are fired (or launched).

5. To increase the chances of destroying the enemy's offensive nuclear weapons, located at firing positions (launch sites) it is advisable to make the fire effort against them in two stages: as soon as these weapons are detected, neutralization fire should

[REDACTED]

-47-

[REDACTED]  
~~SECRET~~

~~SECRET~~

IRONBARK

be opened against them immediately by gun artillery with the object of preventing their firing (launching) a projectile with a nuclear warhead or leaving their firing position (launch site), and then, as other weapons are made ready, for instance, a tactical missile or the necessary quantity of artillery, a strike (or a sufficiently heavy fire concentration) should be delivered with the object of destroying these enemy weapons.

-48-

~~SECRET~~