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Central Intelligence Agency

Washington, D.C. 20505

24 July 1989

MEMORANDUM FOR: Director of Central Intelligence

SUBJECT : USSR GENERAL STAFF ACADEMY LESSON: Strategic Rocket Forces and Air Defense Forces

1. The enclosed Intelligence Information Special Report is part of a series now in preparation, classified TOP SECRET, prepared in 1985 for use in the Voroshilov General Staff Academy.

25X1, E.O.13526

2. [redacted] this document should be handled on a strict need-to-know basis within recipient agencies.

[redacted]

Richard F. Stolz
Deputy Director for Operations

[redacted]

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Page 1 of 17 Pages

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WARNING NOTICE—INTELLIGENCE SOURCES OR METHODS INVOLVED
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Intelligence Information Special Report

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COUNTRY USSR

[redacted]

DATE OF INFO. 1985

DATE 24 July 1989

SUBJECT

USSR GENERAL STAFF ACADEMY LESSON:
Strategic Rocket Forces and Air Defense Forces

SOURCE Documentary

Summary:

The following report is a translation from Russian of the text of a lecture given at the Voroshilov General Staff Academy in 1985. The topic of the lecture is the Strategic Rocket Forces and Air Defense Forces. The text is not in very good condition, but there is a historical introduction followed by a discussion of each branch: its mission, organization, and some very sketchy information on strength and types of armament.

End of Summary

25X1, E.O.13526

[redacted] comment:

This report is an amended version of a document previously issued as [redacted] under the title, "USSR General Staff Academy Lesson: Soviet Strategic Rocket Forces." Additional material recovered includes the introduction and beginning of the historical background, a section on the Soviet Air Defense Forces, and a few lines and words within the text. Some corrections have also been made in the text.

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STRATEGIC ROCKET FORCES AND AIR DEFENSE FORCES

The subject of this lecture is the purpose, organization, and armaments of the Strategic Rocket Forces and the Air Defense Forces. The first topic we will examine is the function, organization, and armaments of the Strategic Rocket Forces; and under this topic we will cover the following subtopics: the role of the Strategic Rocket Forces in a modern war and the primary directions of their development; the missions carried out by the Strategic Rocket Forces in a modern war; the organizational structure of the Strategic Rocket Forces; and the main combat performance characteristics of the missile armament. Under the second topic, the Air Defense Forces, we will examine the following subtopics: the role of the Air Defense Forces in a modern war; the missions carried out by the Air Defense Forces in a modern war; and the organizational structure of the Air Defense Forces.

Guided by the principle of coordinated [two words illegible] dynamic development [three words illegible] development and organizational principles of the Soviet Armed Forces during the postwar years, our Armed Forces were increased by two armed forces branches: the Strategic Rocket Forces and the Air Defense Forces. We [ended the war] with the traditional three branches of armed forces. In 1954 the Air Defense Forces were established as an independent branch, that is, a commander-in-chief of the Air Defense Forces was appointed. And in December 1959 the Strategic Rocket Forces were established, which was officially announced at a session of the Supreme Soviet in 1960. Both the Strategic Rocket Forces and the Air Defense Forces underwent considerable development during this period, in terms of both quality and quantity. The Strategic Rocket Forces underwent especially intensive development as the principle component of the strategic nuclear forces. As the late Ustinov noted at the 20th Congress when he was People's Commissar for Armaments, this branch had all the [latest] achievements of science and technology: nuclear physics, [three words illegible], mathematics, [word illegible], and a number of other areas of science and technology; the development of space itself is connected above all to the development [word illegible] [missile] [word illegible].

[Line illegible] revolutionary changes in military affairs, the factors which determined these changes were studied, in military affairs as a whole and [as] [word illegible]; [among them] nuclear missiles were named, that is, their creation and mass introduction into service. The very fact of the creation of nuclear missiles had not yet [dictated organizational] changes, but when in the late 1950s nuclear missiles began to be put into service at an intensive rate in all branches of the armed forces, it became necessary to make changes in the organizational principles or to establish new ones, and there began to be talk of revolutionary changes in military affairs [line illegible] .... that in our country missiles and nuclear weapons initially developed along independent

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lines. In the historical literature, especially the foreign historical literature, assertions can be found such as those to the effect that we copied the missiles, we borrowed them, we got them from the Germans....

[Unknown amount of text missing.]

... began to work intensively with missiles right after the Great Patriotic War, and in 1946 a committee was formed under the late USTINOV to visit Germany. All that was left [illegible] of aircraft and missiles and blueprints, since all of the specialists had been taken off to America under von Braun, and all that we had was [illegible]. As early as October 1947 a range had been built and our first rocket, the R-1, was launched from there. This rocket, of course, differed in design and military properties from the series of prototypes as well as the [illegible] and Vulcan which the Germans had had. Since 1947-1948, we are now in the fifth generation of ballistic missiles with which the Strategic Rocket Forces have been equipped.

Although the experience has been that the development period of a single missile system is around 15 years, we have had this cycle [somewhat] shortened for well-known reasons. We had no independent ways of developing nuclear weapons, but efforts in the area of nuclear physics were going on in the 1920s. Kharkov, Leningrad, Kiev, and Moscow had such laboratories. They were not numerous, but they were at any rate studying the problems. In 1943 KURCHATOV was summoned from the Black Sea Fleet, where he was engaged at the time. Starting in 1943, since we knew that a likely enemy of ours was intensively involved in this problem, we began development efforts. The Americans, after employing two atomic bombs in August 1945, assumed that it would take us 25-30 years to develop nuclear weapons. It was known as early as Yalta that the Americans secretly intended to blackmail us. STALIN already knew [illegible], and in 1949, it was announced that the secret of the atomic bomb was not a secret from us. There was a long debate over what to use as the delivery vehicle, leading to the conclusion that an airplane was not effective as the delivery vehicle for nuclear weapons because of its vulnerability and its dependence on different factors. Therefore efforts were undertaken to use rockets as delivery vehicles.

As early as 1955 the first tests were conducted with the R-5N with a nuclear warhead. After a long series of tests, this missile was put into service and it began to be said after this that we had acquired a new nuclear missile system combining the power of nuclear weapons with the great flight range of the missile. Since then, as the fifth generation of rockets proceeds, the rocket troops and arms, in spite of what we say, SALT-1, SALT-2, disarmament, it is natural, since the quality of our [three words illegible] this type of armament at the necessary level.

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What direction is development of this branch of the armed forces taking at the present time? First, improvement of launchers, silos, [illegible] systems with single launch. For level of automation, hardening, and battleworthiness, these [illegible] systems of ours are not only not inferior, but in some ways they surpass the American counterparts.

Second direction: Achievement of a high level of automation of control of troops and weapons. In this area the Strategic Rocket Forces [RVSN] can in truth be said to occupy a first position. The familiar troop and weapons control system [illegible] is the most sophisticated and makes it possible to implement a launch of any missile from any launcher from a central command post and even [illegible] from an airborne command post.

Third direction: Building of highly mobile missile systems with self-propelled launchers.

Fourth direction: increasing the strength of nuclear weapons and the invulnerability of ABW defense.

It should be said that the founding of the Strategic Rocket Forces produced serious changes in the forms of strategic employment of the armed forces. What are the new forms that appeared? With the creation of the Strategic Rocket Forces and other elements of strategic nuclear forces [illegible] as a new form, an operation of strategic nuclear forces. The second form is the strategic operation to repel an enemy aerospace attack. The third form of employing strategic forces is the strategic operation in a continental theater of military operations. The fourth is the strategic operation in an ocean or sea theater of military operations. The first two forms are classed as global operations, and the other two are local operations.

Strategic nuclear forces as a whole and Strategic Rocket Forces are employed in accordance with orders of the Supreme High Command to perform the most important strategic missions in all theaters of military operations and all geographic regions. We know that under the new [illegible] there are 14 theaters and 4 geographic regions. Strategic nuclear forces, including the Strategic Rocket Forces, are able to carry out missions in all geographic regions -- North and South America, Australia, Africa, and the Pacific Ocean.

The role of this branch of the armed forces, the Strategic Rocket Forces, is determined by the importance of its missions and its combat capabilities. What are the missions given this branch?

First of all, the purpose. The Strategic Rocket Forces are intended for carrying out the basic strategic missions of a future war in cooperation with other strategic nuclear forces or independently. The strategic nuclear forces

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include, in addition to the Strategic Rocket Forces, the naval strategic nuclear forces and air strategic nuclear forces, i.e., long-range aviation and ground-launched cruise missiles.

Note that this branch is intended for carrying out the missions not simply in a future war, but a nuclear war, because it is equipped with nuclear weapons. Although the former Chief of the General Staff OGARKOV, in his most recent article, has said that since there is a growing possibility now of a prolonged war, a war with conventional weapons, it might be advisable to raise the question of equipping rocket troops with powerful conventional weapons. But this presents difficulties. For now, this branch does not have them; but, on the other hand, it is an interesting situation. I once participated in writing of the combat regulations of this branch, and a particularly complicated question came up: At what point are these troops considered to be fighting? This is not an idle question since it is a legal issue. There is a war going on all around; they are carrying out launches. Are the personnel involved in war or not? In fact, the situation is such that if there is a long period, of course, these troops will be exposed, first of all, to [illegible] or precision-guided weapons. At the same time, since they have [illegible], they are not actually participating.

Just what missions will the Strategic Rocket Forces have? First of all, destruction of means of nuclear attack, principally strategic means. Targets of this mission are strategic missile launch control posts, the launch sites themselves, nuclear weapons depots, submarines in basing points (although the Strategic Rocket Forces at this time have been tasked with [word illegible] (sinking?) submarines in any area of the ocean), and delivery aircraft at airfields.

A familiar brochure, which [illegible], describes the balance of strategic nuclear forces. All the data are compiled in it.

If we speak about target damage, the strategic nuclear forces of our probable opponent may use a thousand nuclear warheads with a total yield of 12,000 megatons [sic: apparently should be simply 12,000 nuclear charges -- Trans.] in one launch. There are in all 40,000 such nuclear warheads and the total yield is considered to be 8,500 megatons belonging to the enemy. But obviously, since we talk about parity, we are about the same. [Sentence illegible.] We have more on submarines -- 953 [illegible], but they have more on bombers and we have less. Now this is the overall problem, counting; the methods of counting are very complicated, with multiple warheads, etc.

The next mission assigned to the rocket troops is to hit the main enemy troop groupings in a theater. What groupings does this mean? Front means can be delivered 900 km; the largest operational/tactical missile, the R-900, which [word illegible] troops used to have, has a range of 900 km. [Several lines illegible.] ... that is, such groupings are primarily strategic and operational

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reserves in assembly areas, assault landing forces in areas near embarkation sites [illegible] groupings which cannot be reached by front means.

Next is disrupting state and top military control. The booklet mentioned previously cites figures to the effect that the enemy's global control system has 130 top state and military control posts, i.e., main and reserve state and military control posts. We know [illegible] primarily to impact on the control system. [Illegible]. That is, this task is carried out by the rocket troops by destroying directly and also by exploding nuclear weapons at a certain height and a certain time, producing so-called EMIs (electromagnetic pulses) which affect all electronic control systems. We see how much effort has gone into improving the destructive factors and redistributing the [illegible] of ordnance, and all may [illegible] EMIs in order to affect the electronic control systems.

Hitting the military industry centers and disorganizing enemy logistics. The US military industrial complex, which seats and unseats American presidents and dictates to them, is known to have among its material assets 146 federal and 4,000 private enterprises. The booklet mentioned earlier contains a comparison entitled "Soviet and American Military Strength." It describes the [illegible] tank plant in Detroit and compares the area of the [illegible] plant and the Detroit [illegible].

In addition, as it says in the service regulations, this branch of the armed forces, the Strategic Rocket Forces, in peacetime conditions carry out the mission of national [illegible], pulling alert duty at launch sites and command posts every minute and every second around the clock.

The composition of the Strategic Rocket Forces consists, as you learned in another lecture, of [illegible] troops, of intercontinental missile forces, medium-range missile forces, special troops, and rear services units and facilities. There are also military schools and research facilities in the rocket forces, although, incidentally, there are no secondary military schools -- this branch has only higher-level schools.

The intercontinental missile forces are intended for hitting strategic targets in remote territories and geographic regions and deep in continental and sea theaters of military operations. That is, part of the grouping of Strategic Rocket Forces is to carry out missions in remote territories and geographic regions. And another part, the medium-range missile forces, is to hit strategic targets [ob"yekty] principally in continental and sea theaters of military operations.

The intercontinental missile forces have single-silo missile sites. The systems are located in a launch silo. A silo is about 40 meters deep with a cushioned capsule suspended in it. This ensures the possibility of launching

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even after a direct hit. The control post is also 40-meter 12-story silo with a 24-day life-support system. [Several lines illegible.]

The medium-range missile forces are equipped with above-ground silo launchers, if they are still there. These are now being taken away in Europe and being replaced by [illegible]; they are launched from the surrounding structure in launch position. And progressive trends in this branch arm are the self-propelled missile launchers, the so-called PIONER [Pioneer] or SS-20, which is often mentioned in the open press, a very advanced mobile system. Each regiment has as many as three alternate siting areas already surveyed. They belong in medium class but the design is such that they can be used for intercontinental class missiles. We were 22 years building these SS-20s. [Several lines illegible.]

Special troops in the branch are nuclear technical troops, involved in support, preparation, storage, and maintenance of nuclear weapons. Missile technical troops are the troops who do maintenance work. A missile may stand ten years at [illegible]. It is fueled, canisterred, mated with nosecone, and stored for ten years. But during those ten years maintenance work is done on it regularly -- semiannually and annually. In the rocket forces it is a problem to compute how many launchers are in the [illegible] and how many are out for servicing, because they are all [?targeted] and at the same time [in] the constant readiness forces they have their own targets [ob"yekty], so the record is duplicated. If a missile is taken from a launcher, [illegible] duplicates a certain number. After this [illegible] ten years and the rocket is changed; that is, it is fueled again, and from there [illegible].

The first rockets were alcohol. Then they went to nitrous oxide, and pure oxygen. At the present time all [are?] liquid with the exception [of self-propelled launchers?]; they are solid fuel, the only ones with solid fuel. [Illegible] we worked on this fuel. We simply could not produce powders. It was not the powder -- they could make that, it was regulating [pressure], range, and propellant flow; either fuel intake would not work or the powder would burn [illegible]. The self-propelled launchers now have fully adequate [solid-fuel] systems.

Radiotechnical (R&B) troops are a department or rather a whole directorate of all branches. Radiotechnical troops in general [illegible], but in this branch, these special troops mainly perform the function of organizing radio compatibility of operation of means of special combat as well as intelligence collection, though they do not have their own intelligence collection.

Engineer troops. Someone decided that these troops should be in remote areas and at remote sites. When they were founded, particularly in Dushanbe, [illegible] and in the Mariyak ASSR, out in the taiga. The premise was to conceal them, i.e., keep them secret. But then when siting areas were

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constructed in Europe and they were conducting their own exercises, they were photographed [illegible] and it could all be seen like the palm of one's hand.

Special aviation. Each army has a squadron of [word illegible]. The function of [word illegible] aviation is to [word illegible] alert duty personnel to remote launch sites, [illegible] alert duty personnel have left to [word illegible] handle an emergency.

Topogeodetic, meteorological, and technical support troops. Topogeodetic surveying involves much work because launch sites and silos are surveyed in and the accuracy of a hit depends not only on the accuracy of target coordinates but also on how accurately the launcher itself is surveyed in. The ground is always changing and these troops [survey?] many [illegible] places for monitoring, aiming, and geodetic support.

The Strategic Rocket Forces are organized into the commander in chief, staff, and several directorates [upravleniya] -- weapons procurement directorates, main technical directorate, [illegible] central directorates, [illegible]. The line element [voyskovoye formirovaniye] or operational formation [operativnoye ob"yedineniye] is considered to be the missile army. The missile army is meant for carrying out missions on one or several crucial aerial axes by conducting the initial and subsequent missile launches in keeping with the Strategic Rocket Forces plan, which is an integral part of an operation of strategic nuclear forces.

In the first place [illegible] is the missile army, the operational formation; as in all the branches of the armed forces, the army conducts operations. Here too the army performs its mission by conducting combat actions. This is a new form, not readily understood, since in general parlance fighting means conducting combat actions, and this form is organized as an integral part of an operation, almost on a par with an operation. This form is intrinsic to the Strategic Rocket Forces, the Air Forces, and Air Defense. There is also the form of systematic combat actions, which we shall discuss when we look at [illegible].

So far these forces have existed for 25 years; they are the only branch of the armed forces which have never been in [illegible] operations. How many dissertations have been written and defended on these things. It is not an idle question if one acknowledges that an operation of the Strategic Rocket Forces [illegible] collective plan[s], the whole system of training for this branch, and the system of operations of the armed forces. At the present time this is in the Principles but most likely with an eye to the future; for now it is on paper: a missile army conducts combat actions according to the plan of a Strategic Rocket Forces operation, which is an integral part of an operation of strategic nuclear forces.

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[Illegible] the difficulty, on the other hand, is that once there is an operation of strategic nuclear forces and once it has integral parts, this means that all these integral parts, since they do participate, carry out some kind of form. That is, they are obviously conducting an operation. But in theoretical and practical terms, a Strategic Rocket Forces operation cannot be [illegible].

The main large unit. In all branches of the armed forces the division is the tactical large unit. Here there are no tactical missions performed; therefore we have gotten away from the expression tactical large unit, since this division does not carry out tactical missions. The basic large unit of rocket forces is the missile division. [Illegible. Possibly lines missing.] ... consists of several regiments, units, and subunits for support. [The number?] of regiments in a missile division is [most varied?]. Nearly all missile divisions have [nine?] regiments, each regiment has ten launchers. [Illegible] command post, which can carry out the launch of the missiles [illegible] of the regiment.

The basic combat unit of the rocket forces is the missile regiment, as well as the RSD [medium-range missile] regiment and the MKR [intercontinental missile] regiment. The MKR regiment is numerically about the same as a missile battalion; the number of personnel has been greatly reduced through automation of the control systems.

The missile regiment is intended for performing alert duty and preparing and conducting missile launches. The main combat subunit of MKR forces is the launch group. The launch group assigns several combat crews who are always on duty in shifts. The personnel of this group may carry out a launch either remotely or independently. In terms of automation this branch of the armed forces is in first place. The whole missile launch system is automated and provided with remote control and monitoring.

Five years ago there were some experimental central command post launches of missiles which [illegible]. Now there is a missile called [illegible] that if somewhere close there is a hit and the control system is disrupted it takes off. Moreover, it is well protected [illegible], and they can launch from launchers whose control system has been disrupted. But these are still studies.

The command post is roughly 70 km from each launcher. The command post is a silo just like a launcher but equipped as a 12-story command post, where there are two men on duty.

[Paragraph illegible.]

[Illegible] have self-propelled launchers, silos, and combination launchers. The basic technical unit is the technical missile base. It is the unit which installs the missile into the silo, fuels it, puts it in the cannister, and

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attaches the warhead. This unit performs constant [illegible] and [illegible] maintenance.

The repair technical base is the same, except it services the nuclear warheads. But like everywhere [line illegible] .. maintenance, storage, and servicing of the warheads. This is not easy service; they have a large percentage [illegible].

The role of the rocket forces is determined both by the importance of their mission and by the combat capabilities of the missiles. The main combat capabilities of missiles are the following: high readiness for combat employment, [illegible]. [Illegible] connect with the cables, run [illegible] checkout of the whole missile system, then erect it and fill it, check it out, then put fuel in it again and check it again -- a task that takes 24 hours.

[Illegible] combat capabilities, range, and yield have improved, but readiness has not fared well. At the present time the combat readiness of the main missile systems is measured in minutes. [Illegible] from the moment the president makes the ballistic missile decision [illegible] six or seven minutes. This figure is not exact but it is clear that [illegible] roughly the same readiness.

Range of missiles. Those first missiles had a range of 500 km, then 900 [illegible], then 1,200. Then in 1961 the Gagarin flight was also a combat missile, [PITILEK], 8754 motor. And then range increased. At present, range is not an issue since these missiles can hit a target [illegible].

We know that American counterpart systems [illegible] and others have gone to various [multiple?] launches. Our silos are made that way. Silo launchers [illegible] afford the possibility of a repeat launch in roughly 20 hours. [Illegible.] Mobile launchers can carry out as many launches as there are missiles.

Flight time to targets [substantially] [illegible]. Flight to maximum range takes as a rule 25-30 minutes, and the [range?] is 12,000-13,000 km. No other weapon has such capabilities.

This is all well and good, of course, but we were six minutes short. [Illegible] where to get it? So it was decided to resort to submarines to gain time. [Illegible.]

[Lines missing] ... great trajectory height: in the passive leg not the missile but the nosecone with which the missile was launched is approximately 1,000 km. It is clear, of course, that at this height it is hard to reach with current means. It is not without reason that the question of [illegible]-based space systems is such an urgent one. Besides great height and invulnerability,

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let us examine other technical measures. Each nosecone has a radar-attenuating [protivoradiolokatsionnoye] coating. Second, each nosecone has [decoy?] warheads, i.e., when in trajectory, at some point it releases the decoy warheads, and [illegible] appear[s] on the radar screen. Third, the last stage of the missile breaks off. This is all metal; the metal is of flat [illegible], but at any rate, on the radar scope clutter [illegible]. And the warheads, each of which has its own control system, its own target, and its own system of control [kontrol'] in height and direction.

Great combat effectiveness of missile hitting of targets, which consists of the great power of the warheads. Perhaps you recall the speech of Nikita Sergeyevich KHRUSHCHEV, who said approximately that we had missiles [illegible] and their yield was 100 megatons. We did not have such missiles but in principle technical capabilities make it possible to build such yields. But as computations and practice showed, building warheads over 30 megatons [illegible] inadvisable in practice, and yields at the present time are not a problem either for them or for us.

Hit accuracy. With the R-1 it was believed that if the missile or the warhead.... [Several lines missing.] [But when] control systems [illegible], [missiles] have gone over to onboard digital computers at the present time. And whether they wanted [illegible] onboard digital computers, which have made it possible to appreciably increase both the accuracy of missiles and the possibility of putting different programs in the control systems. The rocket forces have such complexes that [illegible].

At present the accuracy of our missiles is reckoned in tens of meters. And the same foreign sources say that [illegible] since the 80s our systems at maximum range and accuracy can be considered [illegible].

High launch reliability of missiles. Is it possible to launch [illegible] missiles which have stood fueled and canisteredfor 10 years? The launch reliability there is [illegible].

Incidentally, all our enemy theoreticians remark not only about our weapons, but the high reliability of our weapons. They say roughly that American weapons are meant for engineers and ours for soldiers. [illegible] 30,000 fewer motor parts than its counterpart in an American system.

I should report that all the Strategic Rocket Forces, deployed according to wartime [TO&E], are located in the so-called siting areas which are [illegible] siting areas. They comprise siting areas of missile regiments, [illegible], command and reserve command post, [illegible], and housing compounds where officers and NCOs of the [word illegible] service live. At the present time, conditions have been created to ensure high readiness of this [word illegible]

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and [word illegible] for the storage and protection of the missile [is necessary] and normal conditions [illegible], personnel and [illegible].

All strategic nuclear forces, including the Strategic Rocket Forces, are employed according to orders of the Supreme High Command, and a reliable system of NSF (unauthorized launches) has been worked out in this branch for probably ten years. In principle, no on-site commander on his own -- not a [two words illegible], army, or division commander can independently launch a missile. There will first be a signal to get ready, then a signal to unblock, then the key is inserted, and only then is it possible to launch according to the system of the General Staff.

[Unknown amount of text missing.]

... a general description of our air defense, they are capable of effectively engaging in combat both with existing and with potential air and space targets of the enemy and of conducting combat actions under adverse weather conditions and under conditions of electronic warfare. The importance of air defense is reflected in the new "Principles" and in the organizational structure and missions of the Air Defense Forces. In general, the Air Defense Forces are intended for anti-aircraft defense, antiballistic-missile defense, and space defense of individual areas of the country and of military and industrial installations and [troop] groupings.

What are the tasks performed by the Air Defense Forces? Above all, combat with the aerospace enemy. Second, detecting the beginning of an enemy missile and air attack and issuing a warning of the attack. [Unknown amount of text missing.] ... air defense, [several words illegible] protection of administrative-political centers, industrial areas, troop groupings [word illegible] and [word illegible] from strikes by missile [several words illegible]. The Air Defense Forces are presently assigned the [complex] task of [reconnaissance] and destruction of military space objects in orbit.

[Unknown amount of text missing.]

... space objects which we have and they are used for economic, navigation, and communications purposes; there are, of course, military-purpose objects [word illegible] reconnaissance [several words illegible] [which] the enemy also has. First of all, [several words illegible].

The Air Defense Forces are also tasked with combatting the enemy's aerial reconnaissance means and his air assault [word illegible]. In peacetime the Air Defense Forces protect the air borders, monitor the established flight activity of [two words illegible] aviation, and monitor circumterrestrial space.

[Unknown amount of text missing.]

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The number of branch arms in this branch of the armed forces has doubled [word illegible], and [three words illegible] Air Defense Forces of the Country to Air Defense Forces

[Unknown amount of text missing.]

The mission of the Missile Attack Warning Troops is first of all to detect the beginning of an enemy missile attack and issue a command [sic -- should be warning?] [?to] the General Staff, theater commander, and commander-in-chief [?of the branch]. This task is performed using over-the-horizon and above-the-horizon radars as well as reconnaissance satellites. And, as the textbook of the General Staff Academy states: "In principle these systems detect missile launch and issue a warning of the launch within a period of time equal to the missile's approach time." This is why we [word illegible] say that no one, so to speak, will get away from a retaliatory strike.

[Unknown amount of text missing.]

Missile Defense Troops are intended for in-flight destruction of ballistic missiles using land-based means and systems -- we have such systems -- and using air intercept means, as a rule, over the territory of our country or in areas which [are contiguous to our] territory, that is, within the limits of the capabilities. [Line illegible.]

Space Defense Troops are intended for monitoring space and destroying military-purpose space-based means. It should be said that these three branch arms exist, there is [word illegible], but this is still only a [plan]. It is true that the Americans say that we [line illegible]. Of course, we [word illegible] [these issues], but that does not mean that there is such an initiative.

Surface-to-Air Missile Troops are considered [in principle] to be the main striking force of the Air Defense Forces. I will give you a very brief description of the existing surface-to-air missile systems that we have and the basic data.

At the present time we have three surface-to-air missile systems. The S-125 NEVA is a low-altitude system; the S-75 is old and being replaced, but it still exists; and there is the very effective long-range system....

[Unknown amount of text missing.]

... [line illegible] -- a low-altitude system which hits targets located at altitudes from 20 meters to 22 kilometers. There is a constant dispute now in connection with cruise missiles. [Line illegible.] These data were recently

TS #898445
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obtained from the General Staff Academy, but I believe that now it is a matter of an omission and that this can be [line illegible]. We are very interested in [word illegible]. The slant range is 25 km. Targets are hit at a velocity of 2500 km/hr with a probability of 0.5-0.6. By the way, the [kill] probability used to be very high until they started using radio- [two lines illegible].

The medium-range [system] hits targets at altitudes of [?1000] meters to [?] kilometers; the slant range is 50 [km]; the target velocity is [?]; and the probability [of kill] is [0.?]. This system is being replaced. [Line illegible.]

The long-range system hits targets at altitudes of 300 meters to 40 kilometers: the [slant] range [two words illegible] is [245 km]; and targets are hit at a velocity of 3000 km/hr. The probability of kill by two missiles [several words illegible] 0.99.

It should be noted that the Surface-to-Air Missile Troops [two words illegible] Missile Troops are also being equipped with nuclear warheads. When they use nuclear warheads they can hit multiple moving targets with great effectiveness. This branch arm of the Air Defense Forces is also used against land and surface targets.

Air Defense Aviation used to be called "Air Defense Fighter Aviation," but now the name has been changed, because Air Defense Aviation mostly consists of fighter and special aviation; it is intended primarily for destroying the enemy's offensive air weapons at [word illegible] which are at the maximum distance from our territory.

[Unknown amount of text missing.]

The Mig-29 and Mig-31 are new types of aircraft which are not yet [several words illegible]; the Mig-25B, Su-9, Su-15, which are being replaced by helicopters; and the Yak-28 and Tu-128. The maximum speed is 1840 to 3000 km[/hr]. [The speed depends on the flight altitude and varies sharply.] [Several words illegible] from 500 meters to 30 kilometers and flight range from 1500 km to [number illegible.] [Several words illegible] and sufficiently high, because the maximum altitude of the probable adversary's [types of] aircraft is 25 km, [several words illegible] and the speed [can be] up to 1500 km/hr [line illegible].

Radiotechnical troops are equipped with various types of radars. By the way, in the [three words illegible] system there are 2000 radars, 54 regiments [of fighter] aviation, 300 regiments [line illegible] and 50 airfields.

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There exists a concept of a unified air defense system. [Several words illegible] asked the question: What do we have in air defense? As a brief explanation, here is what we take to be the unified air defense system. The unified air defense system includes the Air Defense Forces (in the form that I described them by branch arms) as well as the fighter aviation of the Air Forces and the air defense forces of the Navy -- all this is the Unified Air Defense System of the Country and of the Armed Forces. Three of the branch arms of the Air Defense Forces -- the Missile Attack Warning Troops, Missile Defense Troops, and Space Defense Troops -- are the forces and means of Missile and Space Defense, and their command is immediately subordinate to the Commander-in-Chief of the Air Defense Forces. Surface-to-air missile troops, air defense aviation, and radiotechnical troops which are part of combined-arms [word illegible] armies or air defense districts, or of air defense corps and divisions of the front or of [frontier] military districts -- these are the forces and means of the Air Defense of the Country. [Word illegible] is now subordinate to the military district commander, and [word illegible] military districts to the commander-in-chief of the axis [glavkom na napravlenii]. These are all forces and means of Air Defense of the Country. Surface-to-air missile troops, antiaircraft artillery, and radiotechnical troops which are part of combined-arms formations and large units, that is, combined-arms armies, tank armies, and motorized rifle and tank divisions, are all forces and means of Tactical Air Defense.

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