

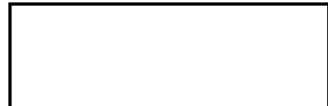
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CENTRAL INTELLIGENCE AGENCY  
WASHINGTON 25, D. C.

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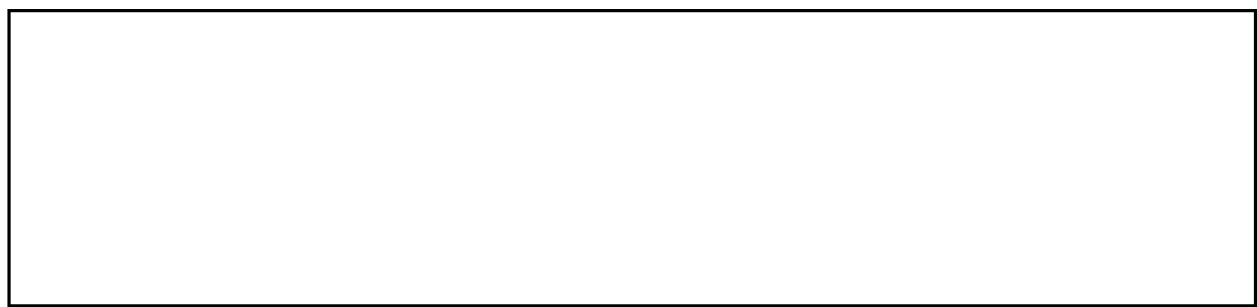


7 SEP 1962

NRO & USAF REVIEW COMPLETED

MEMORANDUM FOR: The Acting Director of Central Intelligence  
SUBJECT : MILITARY THOUGHT (TOP SECRET): "The Role of  
Space Weapons in a Future War", by  
Lieutenant-General N. Korenevskiy

1. Enclosed is a verbatim translation of an article which appeared in the TOP SECRET Special Collection of Articles of the Journal "Military Thought" ("Voyennaya Mysl") published by the Ministry of Defense, USSR, and distributed down to the level of Army Commander.

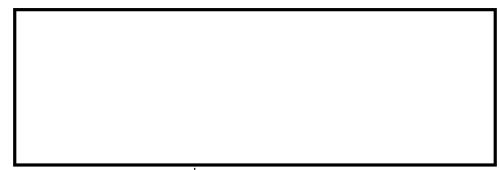


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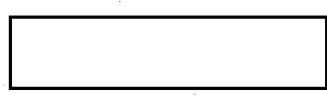


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Richard Helms  
Deputy Director (Plans)

Enclosure

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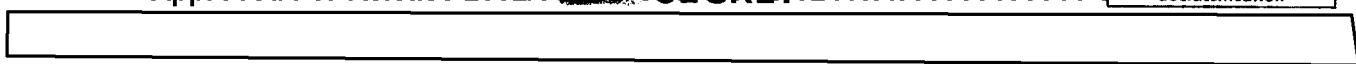
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Original: The Acting Director of Central Intelligence

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

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COUNTRY : USSR

SUBJECT : MILITARY THOUGHT (TOP SECRET): "The  
Role of Space Weapons in a Future War"  
by Lieutenant-General N. Korenevskiy

DATE OF INFO : December 1961

APPRAISAL OF  
CONTENT : Documentary

SOURCE :  25X1C

Following is a verbatim translation of an article entitled "The Role of Space Weapons in a Future War", by Lieutenant-General N. Korenevskiy.

This article appeared in the 1962 First Issue of a special version of the Soviet military journal Voyennaya Mysl (Military Thought). This journal is published irregularly and is classified TOP SECRET by the Soviets. The 1962 First Issue went to press on 29 December 1961.

Headquarters Comment: Military Thought is published by the USSR Ministry of Defense in three versions, classified RESTRICTED, SECRET and TOP SECRET. The RESTRICTED version has been issued monthly since 1937, while the other two versions are issued irregularly. The TOP SECRET version was initiated in early 1960. By the end of 1961, 61 issues of the SECRET version had been published, 6 of them during 1961.

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**SECRET**The Role of Space Weaponsin a Future War

(According to foreign views)

by

Lieutenant-General N. Korenevskiy

The space weapons which are coming into existence at the present time attract the intense attention of the government and military figures of the main capitalist countries.

The first leap into space, accomplished by our country on 4 October 1957, naturally presented the question of the paths to the mastery of space, the means necessary for this, and the primary goals to be pursued in this.

On the one hand, as was stressed in the speech of the President of the USA on 25 May 1961, thus began the "battle for men's minds" in which the United States strives for "great enterprises" capable of demonstrating to the entire world the capabilities of the country and its science and technology. In his speech Kennedy gave American science and technology the task of "achieving the flight of a man to the moon and his safe return to earth by the end of this decade." In his opinion, "not a single space venture of this period will be more exciting, impressive or important for the overall exploration of space nor so difficult or expensive." In order to achieve this goal he has already requested an additional appropriation of 531 million dollars for the 1961-62 fiscal year, having warned that in future years even more resources will be required. The total cost of the program of conquering the moon is estimated by the Americans to be about 40 billion dollars.

On the other hand, the beginning of the conquest of space gave an impetus to its study for purely military

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purposes, in which the space nearest to the earth is viewed simply as the arena of future battles.

This article represents a first attempt to state, in a systematic manner, the views of the American command on the role of space weapons and the possibilities for employing them in combat. The article does not pretend to be a complete elucidation of all questions connected with this subject. However, the information cited by us below attests to the need for serious study of the space weapons of the USA, the plans and intentions of the American command, and the possibilities of utilizing space devices for military purposes. The need for such a study is explained by the fact that, for some time now, work in this field has gone beyond the limits of purely scientific investigation; it has a very definite military nature and is being given very serious attention by the highest American echelons, including even the President of the USA.

The ballistic missile proved to be the first means of attack through space and, even though, in itself, it does not relate to space weapons, its appearance caused the need to develop a series of purely space weapons systems. Special reconnaissance earth satellites have been recognized as the best means for detecting launching sites and launchings of missiles. The exact tie-in of the geodetic networks of the various countries and continents, which is necessary for determining the coordinates of such targets, proved to be feasible with the aid of special satellites that can be observed simultaneously by optical and radio-technical means from points which are within the networks being tied in. One of the basic tasks of so-called scientific satellites is to define more precisely variations in the gravitation of the earth, i.e., to produce the data

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necessary in preparing to fire intercontinental ballistic missiles. Artificial earth satellites--meteorological, radio reconnaissance, and communication--have been recognized as means capable of providing meteorological reconnaissance, radio reconnaissance and communications on a global scale.

Numerous projects for space systems for delivering strikes against ground targets, and for antimissile and antispace defense, appeared soon after the space support systems. The special significance of space weapons is also explained by the extreme difficulty of destroying space vehicles.

In confirming the adherence of the new administration of the USA to an aggressive policy, President Kennedy, in his special message of 28 March 1961, stated that the American government must have at its disposal strategic attack and defense weapons adequate to forestall any premeditated attack on the United States. In this connection, special attention is given to weapons launched from concealed, mobile, or invulnerable bases that will not be wiped from the face of the earth as a result of a surprise attack. Space weapons belong to this very category of weapons.

Until the recent past a special role in military strategy was allocated to the Air Force. However, in 1959 the American command had already included aerospace in the operating zone of its Air Force and announced the creation of the so-called aerospace forces. The aerospace forces are considered to be the fundamental U.S. strategic means, and include aerodynamic aircraft (airplanes and cruise missiles), ballistic missiles and military space devices. The basic principles of employing aerospace forces to achieve the goals of the American government are stated in the so-called Basic Aerospace Doctrine of the U.S. Air Force.\*

\*United States Air Force Basic Doctrine (Aerospace Doctrine). U.S. Air Force Manual AFM 1-2, 1 December 1959. Translation from the English, GRU Main Staff, Moscow, 1960.

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The aerospace forces are intended for operations in the total expanse beyond the surface of the earth without any limits in altitude. This expanse is considered to be, from the military standpoint, indivisible, and is called aerospace. According to the plans of the U.S. Air Force, made for a 15-year period (until 1975), the zone of combat operations in space will extend to altitudes of about 130,000 kilometers.

Aerospace forces are capable of operating anywhere and at any time. They have an unlimited range of operation, high mobility, great speed and firepower, and are capable of overcoming enemy defenses and conducting combat operations both in the atmosphere of any part of the globe or beyond the limits of the atmosphere.

Aerospace forces can conduct combat operations independently or in cooperation with other types of armed forces.

The most important principles in the employment of the aerospace forces are considered to be the principles of indivisibility and centralized control of forces, clarity and definitude of the task assigned to them, maximum display of initiative in all operations, concentration of efforts, insuring security, and close cooperation with other types of armed forces and with civilian and government components. The significance of the principle of surprise, which is acknowledged to be the determinant, is especially stressed, and every effort is to be made to attain it.

In a future general war, aerospace forces are given the decisive role. Therefore, attaining superiority in aerospace is made one of the most important tasks. It is maintained that "In general war the ultimate outcome would be a result of the decision in the aerospace battle at the outset"\*

\*United States Air Force Aerospace Doctrine, p.21.

∕ This page number apparently refers to the Soviet translation of the manual. The quotation is taken from page 13, paragraph 2 of AFM 1-2.7

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and supremacy in aerospace is already manifested in a capability "to destroy the military might of the enemy and concurrently protect the security of the United States of America and its allies."\* The aerospace forces are capable of acting against the elements comprising the enemy's might, and, by having supremacy in the aerospace, they obtain advantages for all other types of armed forces in their performance of the tasks before them.

Bearing in mind these basic tenets of the American aerospace doctrine, let us now examine the question of supremacy in space and the role assigned to space weapons in a future war.

The significance that is attached to attaining supremacy in space was best expressed by the present President in 1960 when he was still a U.S. senator: "Supremacy in space will be the substance of the next decade. The nation that controls space will also control the world," Kennedy said then.\*\* This assertion is consistent with the thesis of the aerospace doctrine, in accordance with which the ultimate outcome of a future war will be decided by combat operations in the aerospace.

The concept of supremacy in space differs from the earlier concepts of supremacy on land, on sea, and in the air.

In the opinion of the Americans the policy of supremacy is portrayed most vividly during combat operations on land. During combat operations on the sea, and especially in the air, this concept already has a limited application. Even greater limitations arise in its application to space. If the atmosphere ends at the maximum flight altitude of aerodynamic aircraft, then space is limitless and open for all countries. Even in that part of the aerospace closest to the earth, the possibilities for supremacy are considerably

\*Ibid, p.19. /Page 10 of AFM 1-27

\*\*"Missiles and Rockets", October 24, 1960.



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less than on land, on the sea or in the air.

However, supremacy in any environment remains as an ideal in the strategic concept by which one must be guided. Time and place become the basic factors under these conditions. In the opinion of General Power, the former Commander of the Strategic Air Command, "the existing concept of conducting combat operations in three dimensions of space will expand in time, if it can be expressed in this way, into the concept of conducting combat operations in four dimensions of space, combat operations in which the operational correlation between space and time will become the decisive factor."

In general, if it is impossible to control the entire aerospace in order to deprive the enemy of the capability to use it for his purposes, it is then necessary to resolve the simpler problem of controlling a certain part of it at a certain time. One of these most important parts is the aerospace directly surrounding the earth and extending to an altitude approximately equal to one radius of the earth. In the opinion of the U.S. military command, the significance of space combat operations, in a future war, will be determined by their influence on the combat capabilities of the enemy's ground forces and the operations of their own forces. From this point of view it seems realistic to deprive the enemy of the capability to use the indicated part of the aerospace nearest to the earth.

The special interest expressed in the USA in questions of military uses of the aerospace is explained, to a significant degree, by the weakness of the U.S. position in the conventional spheres of armed forces' operations. By casting their eyes into space, the realistic U.S. military theorists proceed from the position that the USA has been unable to achieve supremacy on land, on the sea and in the air. Therefore, space is considered to be the only expanse in which the USA can still count on obtaining definite military advantages.

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Proceeding from the position that the goal of strategy in peacetime is basically limited to making a selection of the best types of weapons, which cannot be acquired in a finished form and which have to be created gradually on a selective basis, the military theorists and scientists of the USA are already studying questions of the possibility of creating various new weapons to conduct war in space.

In order to achieve supremacy in space, a whole series of space weapons systems is necessary, permitting the conduct of offensive and defensive operations. As the origin of the military use of space was established by the ballistic missile, which brought about the need to create a series of supporting systems of satellites, so for supremacy in space a bombing system is first required, to consist of a great number of nuclear bombs circling the earth in various orbits.

The idea of creating such a system had already been advanced in the USA in 1948. However, at that time the necessary technical means to realize it did not exist. At the present time these means do exist. They are the "Atlas" missiles with which the U.S. Air Force is armed and to which "Titan" missiles soon will be added, and, later (in 1964), powerful "Saturn"-type carrier missiles.

A second important question, which naturally arises in an attempt to create such a system, is the question of accuracy. Until the recent past, the expected low accuracy of such a system, together with the high cost of putting satellites into orbit, was considered to be the basic obstacle to the creation of effective carrier-satellites (sputnik-nositel) of nuclear/missile weapons, but at the present time the problem of accuracy is already being resolved successfully. The most important phase in this line is the "Discoverer" program.

One of the goals in the "Discoverer" program is working out a system for the return from orbit of containers with various payloads. As of 1 December 1961, 10 containers had been recovered. These results are considered to be quite

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hopeful, and in the future the destruction of even comparatively small targets from space is considered possible.

At the present time certain requirements for a space bombing system have been formulated. The carrier satellites of this system must circle the earth in various orbits and must be supplemented by numerous decoy satellites (sputnik-lovushka). The creation of such decoys or dummy targets for misleading the enemy does not present any great difficulty. In order to hamper the radar or optical observation from the earth of each satellite of the system, it is intended to use antiradar covering and to paint them black.

Increasing the accuracy of nuclear strikes from space is planned by means of equipping the satellites, or the missiles launched from them, with homing guidance systems in addition to the programmed system, which must constantly be corrected from the earth. An infrared homing system is proposed as such a system.

The satellites of the space bombing system must, in advance, be put into orbits that pass over the territory of the Soviet Union. In the opinion of the U.S. military theorists, such actions cannot be considered to be an aggressive act so long as there is no international agreement defining the boundaries of the sovereignty of states beyond the limits of the atmosphere, and so long as there is no legal status for space bodies.

The creation of such a system, consisting of hundreds and thousands of satellites, ready to attack previously selected targets at any moment, and whose destruction presents great difficulties, is a kind of apotheosis of the strategy of intimidation.

On the other hand, authors of the plans for creating space bombing systems examine them from the standpoint of the possibility of transferring combat operations into space without conducting them on the earth, on the sea, or in the air. Thus, we are speaking of a new version of the theory of limited wars. It is contemplated that the results of military

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operations in space will have a great military-political and economic significance for the countries participating in them and will be able to force the Soviet Union to make concessions.

The political significance of success in such a war will be determined by the fact that the country that achieves it will demonstrate its superiority in materiel-technical means, in its technological base, and in its theory, which will simplify the "conquest of the minds" of men, the recruiting of allies and the resolving of arguments with the enemy to one's advantage in various international organizations.

The fact that the system exists will supposedly force the enemy to take defensive measures which will entail huge expenditures. It will be necessary to detect, recognize, and destroy or render harmless, all such satellites one by one, including the decoy satellites.

Combat with carrier-satellites presents a very complex problem. It is considered that the direct destruction of satellites is unacceptable because it can lead to radioactive contamination of the expanse between the atmosphere and the lower Van Allen belt. Moreover, the remains of the satellite and antisatellite satellite will create a great number of dummy targets. Therefore, the enemy will be forced to install braking rockets on the satellites in order to have these satellites lose altitude and burn in the upper layers of the atmosphere. In order to hinder this work, booby-traps or other automatically operating defensive devices can be installed on the satellites in advance.

Further, it is contemplated that the enemy, i.e., the Soviet Union, will not limit itself to defense, and will orbit its own carrier-satellites. In turn, the USA will conduct a system of measures to combat them. As a result, the Soviet Union will be drawn into combat operations that will be conducted with a great strain on its forces, and may prove to be beyond the strength of its economy.

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The development of space bombing systems is already being conducted by the USA at the present time under the NABS (Nuclear Armed Bombardment System) program. This program includes a series of special projects. One of them envisages the development of carrier-satellites of "space-to-surface class missiles (project PCBS), orbiting at an altitude of about 200 km. The other projects (SLOB and SHAOB) envisage the creation of strategic satellite bombers in "low" (altitudes up to 36,000 km) and "high" (altitudes over 36,000 km) orbits.

The practical creation of a space bombing system is considered feasible in the near future.

An important role in attaining supremacy in space is allocated to guided, manned spaceships. This was especially stressed by the former Chief of Staff of the U.S. Air Force, General Thomas White, who in 1960 stated: "In order to dominate aerospace it is necessary to have not only spaceships that can fly from one point of the globe to another, but it is also necessary to have men operate effectively in space."

The first steps in developing manned spaceships are the work on the experimental X-15 aircraft and the manned satellite of the "Mercury" project. In the near future flights of the X-15 aircraft are planned with the goal of attaining altitudes of 100 to 160 km, and in the beginning of 1962 the first flight of the American astronaut, Glenn, is expected, who is to orbit the earth three times.

Subsequent phases in this direction should be orbital gliding bombers and reconnaissance aircraft being developed in the "Dyna-Soar" project, and also, in the initial stage, by several leading American companies ("Lockheed", "Hughes" and others). The creation of manned space stations and command posts is planned for the future.

The moon is considered to be an important element of the U.S. "deterrent force" in aerospace. Its role from this point of view had already been stressed in January 1958

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by Brigadier-General Homer Boushey (U.S. Air Force). He said: "The moon possesses one advantage that has long been recognized by military science, namely, the advantage of altitude."

The possession of military bases on the moon will supposedly preclude the possibility of destroying the U.S. military might in case of surprise attack. The duration of a missile flight from the earth to the moon is about two calendar days. Therefore the simultaneous neutralization of a moon base and of targets on earth is impossible. During a strike against targets on the earth a potential for delivering a counterstrike from lunar bases is retained. On the other hand, a strike against lunar bases discloses the intentions of the enemy and provides time for preparing and effecting countermeasures.

The military significance of the moon is determined by the potentialities that unfold with the employment of lunar bases. Such bases can insure: --observation of enemy territory with the aid of telescopes; --detection of enemy ballistic missile launchings; --radio countermeasures against systems for controlling space weapons and space communication systems; --launching of missiles against ground targets from launching pads concealed on the hidden side of the moon.

Already, interest in the moon is not limited to a study of questions and a discussion of discovered potentialities. Specific projects are being worked out which propose the construction of various structures under the surface of the moon from the freight compartments of missiles, and also the employment of various versions of pneumatic structures. The U.S. Army Corps of Engineers, and also various American companies ("Martin", "Aerospace", etc.), are conducting a great deal of work in this direction.

Parallel with working out the question of the military use of space for offensive purposes, considerable attention in the USA is being given to defensive space systems intended for antimissile and antisatellite, or, more exactly,

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antispace, defense.

The U.S. Department of Defense is already working on designs for a combat space system, SCWS-694E, which includes several thousand destroyer satellites (sputnik-istrebitel) to destroy intercontinental ballistic missiles, and also for the "Saint" system, which includes several thousand interceptor satellites for intercepting enemy space objectives.

The creation of such antimissile and antispace defense means is already considered to be possible in 1966 or 1967. However, the generally accepted viewpoint in the USA is that in the near future space weapons systems will strengthen offensive, and not defensive, capabilities. Therefore, various versions of defensive space systems are considered to be less significant than plans for offensive systems.

A great deal of attention is also given to means of space reconnaissance. Such reconnaissance is completely feasible technically, not only for strategic but also for tactical purposes; it will greatly increase the capabilities of the ground, naval and air forces.

In accordance with the basic doctrine of the U.S. Air Force, aerospace forces must constantly be used to procure intelligence. It is recognized that in order to get intelligence information "a nation must be prepared to accept great risks when the risks of not having the information are considered greater."\*

In the USA the various stages in the military mastery of aerospace are considered to be the following: --the first stage (1962 to 1965) - creation of military support satellite systems; --the second stage (1965 to 1970) - creation of carrier-satellites and means of antispace defense, flight to the moon and return to the earth, the creation of powerful carrier-missiles and manned space ships;

\*United States Air Force Aerospace Doctrine, p. 9 / p. 5 of AFM 1-27.

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--the third stage (after 1970) - the creation of autonomous space systems, manned space stations and command posts, and military bases on the moon.

In the first stage, space weapons still have an auxiliary significance and are intended for supporting the combat operations of all the types of armed forces of the USA. Control of them is effected from the earth. By the end of this stage systems of artificial earth satellites must be created for reconnaissance of ground targets, for detecting the launchings of ballistic missiles, for the precise connection of geodetic networks and geodetic tie-in of targets, for exact navigation of missile-carrying submarines and strategic bombers carrying "air-to-surface" class missiles, for global radio communications, for forecasting the weather, and also for radio-electronic intelligence and radio countermeasures. In this way a total of 7 satellite systems must be created, which, in the opinion of the American command, can be employed for the support of 13 basic operations of an offensive and defensive nature, conducted by all the types of U.S. armed forces.

The types of combat operations and the support systems of satellites that are planned to be used in them are represented in table 1.

The capabilities of employing a system of satellites can be examined with strategic air operations as an example. Reconnaissance satellites are to disclose the targets for such operations. Ultra-long-range missile detection satellites, in essence, determine the necessary degree of combat readiness of aviation for participation in the first operation of a future war, and in the future, together with other means, they will provide the warning to get aircraft airborne in a timely manner in order to prevent their destruction by missiles on the airfields where they are based. On the other hand, they will determine, at least approximately, the area of a missile launching, and, together with other reconnaissance means, will aid in locating the sites of missile bases so that they can subsequently be destroyed by aircraft and missile strikes. Geodetic

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satellites will permit the defining of target coordinates for delivering strikes against them from the air; navigational satellites will permit the delivery of more accurate strikes against these targets with delivery aircraft carrying "Sky Bolt" and "Hound Dog" type missiles. Communication satellites will support communications, meteorological satellites will insure the receipt of the necessary meteorological data for planning operations, and radio-electronic intelligence satellites will provide data on the radiotechnical means of the enemy that must be neutralized or destroyed either in advance of, or during the operation itself.

From the table it is apparent that reconnaissance, ultra-long-range missile detection, communications and meteorological systems will find application in all the indicated operations, which explains the special attention now being devoted to space reconnaissance and communications systems. The remaining systems will also receive quite a widescale employment.

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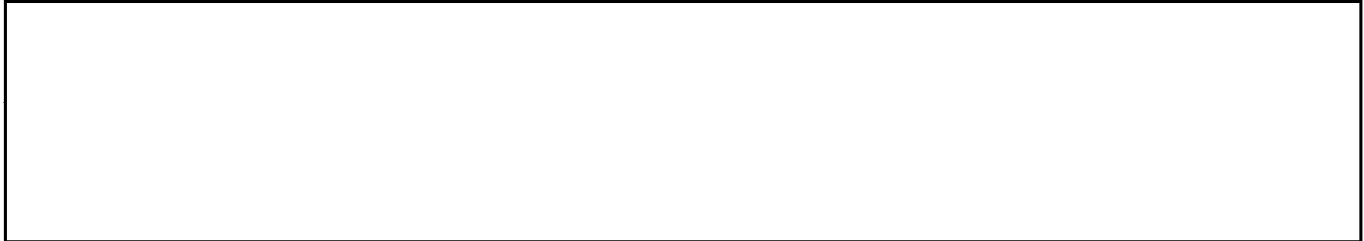


TABLE I

Employment of Supporting Satellite Systems  
in the Combat Operations  
of the Armed Forces of the USA

Type of offensive and defensive combat operations	Branch of the Armed Forces			Supporting Satellite System						
	Army	Navy	Air Force	Reconnaissance	Ultra-long-range missile detection	Geodetic	Navigational	Communications	Meteorological	Radio-electronic intelligence
1	2	3	4	5	6	7	8	9	10	11
Operations of an army corps of strategic designation	f	-	-	x	x	-	-	x	x	x
Operations of field armies	f	-	-	x	x	-	-	x	x	x
Landing operations	f	f	-	x	x	-	x	x	x	x
Missile-carrying submarine operations (with "Polaris" missiles)	-	f	-	x	x	x	x	x	x	-
Operations of carrier strike large units	-	f	-	x	x	x	x	x	x	x
Antisubmarine operations	-	f	-	x	x	-	x	x	x	x
Mine-laying and mine-sweeping operations	-	f	f	x	x	x	x	x	x	-
PVO operations	f	f	f	x	x	-	-	x	x	-

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TABLE I (continued)

1	2	3	4	5	6	7	8	9	10	11
Antimissile defense	/	/	/	x	x	-	-	x	-	-
Tactical air support	/	/	/	x	x	-	-	x	x	x
Strategic air operations	-	-	/	x	x	x	x	x	x	x
<u>Missile operations:</u>										
intercontinental missiles...	-	-	/	x	x	x	-	x	x	-
intermediate range missiles...	-	-	/	x	x	x	-	x	x	-

Key:

- / - branch of the armed forces conducting the given operation;  
x - military space devices employed in conducting the given operation;  
- - the employment of the space devices in the given operation and for the given branch of the armed forces is non-characteristic

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The photographic equipment of the "Samos" reconnaissance satellites, including a container of film that can be returned to earth, should, according to the calculations of the Americans, insure the detection of ground objectives having linear dimensions of 6 to 18 meters, which is fully adequate for detecting such objectives and targets as missile bases, airfields, naval large units, concentrations of ground troops, industrial enterprises and others. From this standpoint, reconnaissance satellites are considered to be a reliable replacement for the special reconnaissance aircraft of the U-2 and U-3 type.

The operational "Samos" system must contain several (according to certain information, up to 20) satellites rotating in comparatively low orbits at an altitude of about 480 km.

The "Midas" satellites must provide for the detection of missile launchings in 1 to 2 minutes and warning 25 to 30 minutes before intercontinental ballistic missiles reach their targets (compared with the 15 to 17 minutes that are provided by the existing BMEWS ground radar system).

The operational "Midas" system will consist of 12 (from other data, 20) satellites constantly rotating around the earth in polar orbits at altitudes of up to 2500 km and higher. Besides detecting launchings, combat versions of the satellites will apparently be able to track, at least approximately, a certain section of the flight trajectory of missiles for target designation for ground antimissile defense (PRO) weapons. The immediate transmission of data acquired in this manner must be carried out through a network of communications earth satellites. The "Midas" program is being fulfilled according to proposed plans.

The program of creating systems of "Transit" navigational satellites and "Tiros" meteorological satellites is being successfully realized; the program of creating a global network of "Advent" communications satellites is being accomplished with a certain delay from the proposed

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plans, and preparation for launching the first "ANNA" and "SECOR" geodetic satellites in 1962 is being carried out.

It should be noted that the above-listed support satellite systems are to provide information which cannot be obtained by other methods, or if it can be obtained, with insufficient accuracy. For example, geodetic satellites should insure the tie-in of geodetic grids and determine the location of the most important targets with a permissible error of up to 30 m, while the existing methods permit tying-in of the geodetic grids of continents and islands with errors measured in hundreds of meters and even in kilometers.

According to available evaluation data, a system of from 4 to 6 navigational satellites will permit a determination of the geodetic coordinates of submarines and aircraft with an accuracy of about 160-200m, i.e., many times more accurate than all other known navigational systems. For comparison, it can be pointed out that the experimental American "Omega" radio-navigational system provides for determination of the line of position at a range of 9000km with an accuracy of about 1.6 km. The more precise radio-navigation systems being developed have a limited operating range, which reduces the possibility of their operational employment. Concerning inertial navigational systems, so far, under the conditions of prolonged submarine cruises they cannot provide accuracy comparable to that which will be given by the satellite systems.

In future military operations, meteorological satellites will be able to insure rapid receipt of information about the meteorological situation of huge expanses. They should become an effective means for receiving meteorological data for all types of armed forces under conditions where the receipt of such data from other channels is impossible or, in any case, made very difficult.

Besides the extensive work in creating support satellite systems, the "SPADATS" ground system, which permits the detection and tracking of all objects that are in orbit, has already been created in the U.S. and carries out observation of the aerospace.

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In this way, American plans to create military support satellite systems are, fundamentally, being realized successfully.

In the second phase, the arsenal of space weapons will expand considerably and will be reinforced by new weapons. In addition to the operational support satellite systems, it is planned, in this stage, to create space weapons for antimissile and antispace defense, which can be employed as a sort of shield preventing access to space and the carrying out by the enemy of his military space programs. During this same period it is possible that satellites to carry nuclear/missile weapons and space bombing systems will be created.

In this phase great significance is attached to powerful carrier-missiles which, according to American calculations, will be able to put the US in first place as far as weight of useful payload that can be put into space is concerned. For this purpose, three versions of the "Saturn" type missile and the "Nova" missile are being developed.

These missiles are to perform the task set by President Kennedy--to carry out the flight of a manned spaceship to the moon and return it to earth by 1970. They can also be employed to put heavy military spaceships with a man into orbit around the earth and to create military command posts in space. In this way the dependence of space weapons on ground systems will be decreased sharply, and the prerequisites for their autonomous employment will be created.

Therefore, in the opinion of the Americans, the second phase should create the necessary technical prerequisites for US achievement of supremacy in space.

In the third phase, the widescale employment of space weapons is considered possible, both for supporting combat operations on earth during possible local

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conflicts and in general war, and for conducting "limited" war in space.

During this period, military space systems will already possess sufficient autonomy, not only for conducting war in space, but also for delivering strikes independently against ground objectives and targets when destroying or putting out of commission ground means of control and communications. The creation of military bases on the moon during this stage will significantly increase the "deterrent power" of space weapons.

In order to control combat operations, the creation of space command posts and bases in space is envisaged during this period. The need to create invulnerable command posts was stressed by President Kennedy in his message to Congress on the budget for the 1961/62 fiscal year. In this message Kennedy stated: "Command posts and communications centers that are invulnerable and are permanently located in space are only the beginning of an important and absolutely necessary effort directed toward the creation of a genuinely unified, invulnerable national system of command communications at a high level."

The U.S. Air Force, taking these conditions into consideration, undertook a study of the possibilities of creating space stations that could be used as command posts for controlling the combat operations of all types of armed forces, especially of space weapons, and also for carrying out reconnaissance and supporting the operations of their space forces.

Already, the American command does not limit itself only to the development of various types of space weapons and to resolving the technical problems connected with this. As is known, the formation of the first large units and units of ballistic missiles of strategic designation had already been started in the USA in 1957, two years before "Atlas" intercontinental

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ballistic missiles were introduced into armament. Now the first aerospace large units and units are being formed in a similar manner. Their mission includes the combat employment of the space weapons being created.

In 1960 the special 6594th Test Wing was already created in the U.S. Air Force. This Wing is located at the Vandenberg Air Force Base and consists of the following basic subunits: a satellite launching support squadron; a squadron to insure the security of satellite launchings; a group for collecting reconnaissance data from satellites (the composition of this group includes a squadron to search for equipment capsules and photographic containers ejected from orbiting "Samos" and "Discoverer" satellites, and also of manned Project "Mercury" satellites.) The T/O of the 6594th Wing consists of approximately 3000 men. At the present time the Wing has about 2000 persons.

The formation of the 9th Antispace Defense Division was begun in August 1961. The composition of the division includes a squadron for control and observation of space, which directs the work of the "SPADATS" system and collects data on the situation in space for reports to the military command. So far the staff of the division, composed of 28 men, has been organized. In the future, the 9th Division is to serve as the basis for organizing other units and subunits of antimissile and anti-space defense.

The first aerospace division has also been formed in the composition of the U.S. Strategic Air Command. It is based at the Vandenberg Air Force Base and at the present time provides training of the personnel for the missile units that are being formed. Apparently in the future this division will carry out the training of personnel for space weapon units.

In conclusion it must be stressed that plans for converting space into the arena of future battles are

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of a nature that is far from theoretical. The US government and the command of the U.S. Armed Forces are executing a broadly conceived program of military mastery of space, by which the scale and tempo of work in this direction will increase from year to year.

While advancing proposals on banning the use of space for military purposes, the government of the USA has at the same time developed a 15-year program calculated to achieve supremacy in space which requires expenditures of tens of billions of dollars.

It is impossible to discount the successes in this direction that have already been achieved in the USA up to the present time. By 1 December 1961 the Americans had undertaken 109 attempts and orbited 64 various space devices, including 39 artificial satellites that have a clearly military purpose. In addition, by that time there were already 24 American military-purpose satellites orbiting the earth, including "Samos" and "Midas" experimental reconnaissance satellites.

Preparatory work for achieving supremacy in space includes such measures as working out basic doctrines, organizing widescale military research work, creating a special command to develop new armament systems, with a T/O of about 60,000 men, and organizing large units and units of aerospace and purely space weapons.

All this requires further serious study of the opinions, plans and technical achievements of the USA in the field of mastering the aerospace, in order to retain and strengthen the leading position of our country in the exploration and mastery of space.

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