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CENTRAL INTELLIGENCE AGENCY
WASHINGTON, D.C. 20505

31 August 1978

MEMORANDUM FOR: The Director of Central Intelligence

FROM : John H. Stein
Acting Deputy Director for Operations

SUBJECT : MILITARY THOUGHT (USSR): Air and Antisubmarine Defense of a Carrier Strike Large Unit and Methods of Negotiating It

1. The enclosed Intelligence Information Special Report is part of a series now in preparation based on the SECRET USSR Ministry of Defense publication Collection of Articles of the Journal "Military Thought". This article reviews a book published in 1964 on the defenses of a US carrier strike force and ways to negotiate them. On the whole, the book's chief fault is the omission of a number of points the reviewer would have liked to find, although there are portions where data are either obsolete or erroneous. The reviewer offers specific if sketchy recommendations about aircraft and submarine tactics against carrier strike forces. This article appeared in Issue No. 1 (77) for 1966. [redacted]

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

John H. Stein

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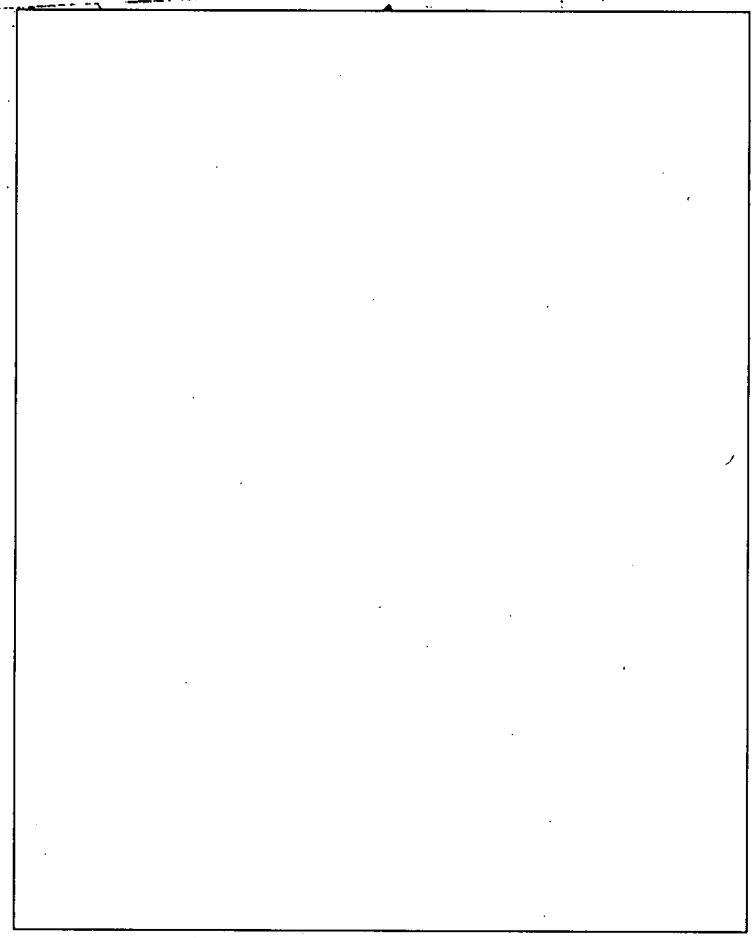

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Intelligence Information Special Report

COUNTRY USSR

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DATE OF INFO. ~~Early~~ 1966

DATE 31 August 1978

SUBJECT

MILITARY THOUGHT (USSR): Air and Antisubmarine Defense of a Carrier Strike Large Unit and Methods of Negotiating It

SOURCE Documentary

Summary:

The following report is a translation from Russian of an article which appeared in Issue No. 1 (77) for 1966 of the SECRET USSR Ministry of Defense publication Collection of Articles of the Journal "Military Thought". This article, by Captain First Rank V. Kurguzov, reviews a book published in 1964 on the defenses of a US carrier strike force and ways to negotiate them. On the whole, the book's chief fault is the omission of a number of points the reviewer would have liked to find, although there are portions where data are either obsolete or erroneous. The reviewer offers specific if sketchy recommendations about aircraft and submarine tactics against carrier strike forces.

End of Summary

[redacted] Comment:

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

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Air and Antisubmarine Defense of a Carrier Strike Large Unit and Methods of Negotiating It

by

Captain First Rank V. KURGUZOV

The scientific research work Air and Antisubmarine Defense of a Carrier Strike Large Unit at Sea (on the Ocean) and Methods of Negotiating It,* prepared by a group of authors of the naval operational art department of the Military Academy of the General Staff on the basis of an analysis of the air and antisubmarine defense of carrier strike large units, examines their capabilities to counteract the breakthrough of our aviation and submarines to their primary targets, the carriers and command ships, explores the most rational methods of negotiating the air and antisubmarine defense of carrier strike large units, and defines the essentials of a method of calculating the forces and means required to negotiate the air and antisubmarine defense of a carrier strike large unit (page 6).

It must be stated that, in our opinion, the group of authors was not entirely equal to its tasks, although the work they have prepared does reflect the problems relating to the organizing of combat against carrier strike large units at sea (on the ocean).

A great deal of attention in the book is devoted to analyzing the combat capabilities of the different types of weapons of the ships and aircraft as well as those of the carrier large units as whole to repel aviation and submarines. As a result of the research, the strengths and weaknesses of the defense of carrier strike large units are, for the most part, correctly portrayed, and the optimum (most advantageous) methods of action by aviation and submarines to negotiate the danger zones are given on the basis of them.

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* Air and Antisubmarine Defense of a Carrier Strike Large Unit at Sea (on the Ocean) and Methods of Negotiating It. Scientific research work. Published by the Military Academy of the General Staff, 1964, 172 pages.

An analysis of the statements of US political and military leaders on the role of the branches of the armed forces in a future war and also of the appropriations allocated for their development testify to the fact that missile submarines and carrier strike large units have been at present placed on a par with land-based strategic missiles and that an important role in a world war is assigned to them. Therefore, one cannot agree with the assertion of the authors of the work that carrier strike large units are the main striking force of the US Navy only "until the introduction into service of the main portion of the planned number of missile-carrying nuclear submarines and the development of the operational-tactical procedures for using them" (page 3). Carrier strike large units have become firmly established as the main force at sea when conducting local non-nuclear wars and when supporting a colonial policy under conditions when missile submarines cannot be utilized. This is attested to by the fact that the US naval forces have been given permission to build three new strike carriers.

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Thus, one of the important missions of our navy is to wage combat against carrier strike large units, and this situation will evidently be maintained for a long time.

Let us dwell on these questions in somewhat greater detail.

The air defense of a carrier strike large unit and the methods of negotiating it. The authors present a detailed description of the principal air defense combat means of a carrier strike large unit (fighters, ships with surface-to-air guided missiles, and ships and aircraft with long-range missiles). The most important information for operational-tactical calculations has been systematized and presented in tables (pages 16-24). The possible distances away from the carrier strike large unit of the lines of interception of air targets proceeding at high and low altitudes with different speeds are calculated on the basis of the probable ranges at which air targets are detected by radar means and of the time spent on the notification and takeoff of fighters.

From an analysis of the data of Tables 3 and 4 we can see that the range at which fighters of a carrier strike large unit can intercept air targets at low altitudes is reduced by a factor of about 1.5. Consequently, it is more advantageous, within the

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radar surveillance zone of the carrier strike large units, for aircraft to close in on strike targets at low altitudes as far as the line of going into a climb for launching missiles.

The advisability of having aircraft negotiate the air defense zone of a carrier strike large unit at low altitudes is also corroborated by an analysis of the combat capabilities of the surface-to-air missiles on board the ships. Talos MK-2 missiles can be used only against targets proceeding at altitudes higher than 5,000 meters. All of the other types of missiles except the Tartar and Seaslug also have limited capabilities of being used against low-altitude targets.

Radioelectronic countermeasures means occupy a prominent place in the air defense system of a carrier strike large unit. However, the authors have devoted too little attention to this exceedingly important problem (pages 30-32). The control of the air defense forces and means of a carrier strike large unit is also treated without sufficient completeness, profound analysis of this system, or indication of its strengths and weaknesses (pages 32-36). The radiotechnical means of communications and control, their capabilities, and their reliability are not examined at all in the work.

The authors have devoted much space to the organization of combat actions of aviation against a carrier strike large unit, to the selection of the most effective means of destruction and the priority of employing them, and to the disposition of forces and methods of their actions which ensure for aviation participating in the strikes the least vulnerability to enemy air defense actions and the best fulfilment of the assigned combat task. They set forth specific recommendations on negotiation of the air defense of a carrier strike large unit during the delivery of strikes by a missile regiment or division from one or several directions (pages 38-47). They convincingly demonstrate the advantage of delivering air strikes from several directions. Thus, for a division the time to deliver a strike from three directions is reduced by a factor of four, and losses are correspondingly reduced by 18 to 20 percent.

However, the greatest success is achieved, as is mentioned in the work (pages 48-52), when aircraft operate in a narrow sector, which ensures the launch of missiles in the shortest

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times. The experience of fleet operational exercises has corroborated the possibility of launching 24 missiles by this method in one to two minutes, with 65 to 75 percent of the missiles launched reaching the target. But when a strike is delivered from one direction, all missiles, as a rule, are shot down.

It is well known that the delivery of an effective initial nuclear strike in the initial period of a war is a decisive factor in achieving victory. It will be extremely difficult to carry this out without our timely detection of the enemy carrier strike large units at a distance which ensures the employment of our aircraft against them before the carrier-based aviation takes off to deliver a strike on our installations. Furthermore, one cannot properly plan nor effectively employ his forces in the initial strike if the strike target possesses high maneuverability.

A powerful air strike against a carrier strike large unit is a very complex form of combat actions. Such a strike requires careful coordination of the efforts of a large number of different strike and supporting groups. Therefore, in planning the operation, special attention is devoted to the disposition of the battle formation and to determination of the most advantageous sequence of actions by the aviation forces, with account taken of the possible changes in the situation during the operation.

The successful accomplishment of this complex operation is inconceivable without thoroughly prepared and purposefully conducted reconnaissance for the purpose of directly supporting the strike. Therefore, the authors should at least have indicated the principal requirements of the task and the orientation of reconnaissance when the operation is being prepared and conducted.

The work observes that the accuracy and timeliness with which aviation delivers a strike is affected to a considerable degree by "the total error obtained as a result of inaccuracy in determining the location of the strike and the point of combat deployment, errors in aircraft flying before the line of the launch of missiles is reached, and errors in wind determination," which may be as high as 180 to 200 kilometers (page 46). These

deviations may lead to a difference of as much as 13 to 15 minutes in the time of launching missiles from different directions. Regrettably, the authors do not give any practical recommendations on how to avoid or decrease this error, although, as we know, our fleets have enough experience in this matter. To avoid this error they have, for example, practiced the posting at sea of ships with homing radio sets as well as the placement of sonobuoys by submarines and aircraft.

The problems of reducing the opposition of the enemy's air defense forces by neutralization through jamming of his radar means of surveillance and control have been examined without duly relating this to the methods of delivering strikes against a carrier strike large unit. The authors assert that "losses of missile-carrying aviation from the attacks of fighters and guided missiles of the carrier strike large unit can be considerably reduced by disorganizing the air target radar detection system, by impeding the guidance of fighters, and also by disorganizing the guidance of enemy surface-to-air missiles to the delivery aircraft and cruise missiles" (page 56).

In actual fact, organizing radioelectronic warfare (BRESP) includes the accomplishment of a large and complex array of tasks and measures. The principal ones are: reconnoitering the parameters of the radar for detection and guidance of fighters and control of surface-to-air guided missile fire and neutralizing them through active and passive jamming; reconnoitering the parameters of the electronic means of communications and control and neutralizing them through active jamming and by deceiving the enemy about our intentions and actions; jamming the intercept and aiming radars of aircraft as well as the homing heads of missiles; directly covering with active and passive jamming the battle formations of the aviation strike groups; creating dummy targets; and using deception measures, etc.

In exercises that have been conducted by the fleets, the accomplishment of these tasks has been ensured by the massive use of radioelectronic warfare means and by the centralized control of them. The importance of this problem is indicated by the fact that often approximately 30 to 50 percent of the overall complement of forces participating in an operation have been

specially used to accomplish the tasks of radioelectronic warfare.

The organization and methods of jamming, the amount of forces and means required for this, and the overall combat effectiveness of these measures are, in fact, not examined in this work. The incompleteness of the research into this very important problem is pointed up by the fact that in the book only four and a half pages in all (pages 56-61) are devoted to it.

Without thorough planning of radioelectronic warfare, including radiotechnical reconnaissance (to determine the parameters of the electronic means), the successful conduct of operations against such a powerful enemy as carrier strike large units is inconceivable.

As shown by the experience of exercises conducted by our fleets, the following sequence in the delivery of strikes by aviation against a carrier strike large unit is the most expedient. Tactical reconnaissance forces act first for the purpose of precisely determining the coordinates of the carrier strike large unit, the components of its movement, and the nature of the cruising formation, as well as the parameters of the radioelectronic surveillance and communications means. Simultaneously with this, measures are carried out to ensure the target-approach accuracy of all groups of aviation.

Then diversionary groups and radioelectronic countermeasures groups begin to operate for the purpose of dissipating the efforts of the air defense system of the carrier strike large unit, of neutralizing to a certain degree the operation of the radar of the ships, and for misleading the enemy in determining the nature and axis of our main attack. Simultaneously with this, specially allocated aviation forces destroy the radar picket ships (aircraft).

After all of these supporting actions, missile-carrying aviation will deliver a massed strike using missiles with conventional and nuclear warheads. When this is done, the first to operate will be missile-carrying aircraft which are capable of launching missiles from distances beyond the range of fighters from the carriers, as well as of missiles which have low flight altitudes.

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The antisubmarine defense of a carrier strike large unit and methods of negotiating it. It must be said that the battle formations of carrier strike large units used by the enemy prevent us from simultaneously hitting two ships with one medium-yield nuclear burst and ensure that aircraft attacking any carrier are intercepted; at the same time, the combat capabilities of the antisubmarine defense of the carriers in these formations are considerably reduced. This results from the fact that, should there be a threat of an air attack, the American command contemplates -- and works out in exercises -- the removal of the close-in ship escort of the carriers so as to make their recognition and attack by aircraft difficult. Furthermore, the use of dispersed battle formations by carrier strike large units considerably enlarges the zones of movement of the ships, which in turn makes it easier for submarines to detect and attack them.

In connection with this, it would seem that negotiation of the antisubmarine defense of carriers and their destruction by submarines would be considerably easier. But calculations indicate that the relatively low speeds of submarines do not allow them to maneuver rapidly to concentrate in the required area, which makes it difficult to accomplish the task on the whole.

Regrettably, all of these very important problems have been inadequately researched. Much space in the work is allotted to a repetition of generalized intelligence data, already known in the fleets, about weapons and forces and also about enemy carrier strike large unit exercises conducted in 1960 to 1961, data which have now become to a considerable degree obsolete. It amazes us that sonobuoys, which are at present the main means of initial submarine detection by aviation, are for some reason not examined at all in the work nor even mentioned, although in the combat training practice of the US Navy they are used very extensively and effectively.

The available calculations of the probabilities of submarine detection by the different antisubmarine forces of a carrier strike large unit are made on the basis of a primitive method, which is well known in the fleets but which does not meet present-day requirements. The realism and reliability in concrete values of the calculations also give rise to doubts and

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demand a critical attitude. Thus, for example, the accepted probability of attack of a detected submarine, $P_a = 0.5$ (page 92), the coefficient of the calculation of the effective width of search by ships having sonar with all-round scanning, $K = 1.4$, and of the detection range, $D_p = 2.5$ (page 102), are clearly understated.

All the calculations to determine the probability of hitting submarines have been made for some reason on the basis of a one-time attack on the submarine and with only a single torpedo, whereas in reality one should expect, as a rule, repeated multiple-torpedo attacks. We know that even helicopters are armed with two antisubmarine torpedoes each.

The tactical problems of submarine actions during the breakthrough of an antisubmarine defense are poorly set forth without regard for the experience of fleets. Many of the recommendations are unsound, as for example, the suggestion to equip submarines with surface-to-air guided missile weapons systems (pages 98 and 133), although this has been repeatedly examined at various levels of command and recognized as inadvisable, or the recommendation to carry out the breakthrough of the close-in ship escort at the greatest possible submerged depths (page 112). The authors should know that the security system adopted will compel submarines to use their torpedo weapons out of the zone of surveillance of the ships and that, to do this, submarines have to be at shallow depths.

Nor can one agree with the assertion that the use of torpedoes against antisubmarine ships will be expedient only in those cases when the enemy detects the submarines first (page 123). This deprives submarines of their advantage. On the contrary, upon seeing the impossibility of evasion, a submarine must endeavor to attack the nearest escort ships first so as to facilitate their own breakthrough to attack the carriers and to facilitate the actions of other submarines. Furthermore, destroying surface-to-air guided missile ships, which also carry out antisubmarine tasks, facilitates to a considerable degree the actions of our missile-carrying aviation against the carrier strike large unit. For it is known that a relatively small number of ships are allocated for carrier escort but, as a rule, they have powerful surface-to-air and antisubmarine weapons, and therefore every ship sunk substantially increases the

vulnerability of the carriers and is, moreover, an irreplaceable loss for an extended time.

One should expect greatest success in destroying a carrier strike large unit when missile-carrying aviation and submarines operate jointly. But we must not take this to mean that their actions must be compulsorily bound together with respect to the same overall place and time. This is far from being always possible and is not even a decisive factor for success. It is of greater importance in achieving the objective of an operation for these forces to give each other mutual support based on the coordination of their actions.

We have shown above the sequence of the actions of aviation against a carrier strike large unit. The initiation of aviation actions must be coordinated with the time when the area where the carrier strike large unit is located is approached by the main body of submarines, which destroy with torpedoes all enemy ships encountered, reserving the missiles and torpedoes with nuclear warheads for the delivery of strikes directly against the carriers.

The ultimate objective of the actions of each submarine is to seek out and destroy carriers. It is more advantageous for missile submarines to deliver a strike directly against the carriers by approaching them under the cover of torpedo submarines, which then continue closing in and deliver a strike against the close-in escort ships and hit the carriers with long-range torpedoes having nuclear warheads.

The actions of the main forces of aviation must be fully supported by groups of tactical reconnaissance aircraft, by radio countermeasures against enemy surveillance and communications means, and also by diversionary groups. It must be noted that under conditions of the growing effectiveness of radioelectronic warfare, the more forces and means brought in to support the operation, the fewer are required to accomplish the main task, the destruction of the main forces of a carrier strike large unit -- the carriers.

In conclusion, it should be stated that overall, despite the deficiencies noted, the work contains many useful pieces of advice and recommendations on the problems of waging combat

against carrier strike large units which will provide substantial assistance to the admirals and officers in the fleets in their practical activity.

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