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CENTRAL INTELLIGENCE AGENCY

WASHINGTON, D.C. 20505

11 May 1977

MEMORANDUM FOR: The Director of Central Intelligence

FROM : William W. Wells  
Deputy Director for Operations

SUBJECT : MILITARY THOUGHT (USSR): The Conduct of  
Reconnaissance on Coastal Axes by the Forces  
of Formations of the Navy and the Air  
Defense Forces of the Country

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 examines ways of increasing the effectiveness of operational reconnaissance by fleets and air defense formations during joint operations on a coastal axis. Focusing on the capabilities and operating procedures of different reconnaissance forces and means (reconnaissance aircraft, OSNAZ radio units, radiotechnical units, and radar reconnaissance) when organizing cooperation and the mutual exchange of information, the author discusses their conduct of various reconnaissance tasks, mainly detecting enemy means of air and space attack. The procedure for transmitting reconnaissance data and cooperation commands also is treated with a view toward reducing transmission time and establishing a priority classification system for transmitting the information. This article appeared in Issue No. 1 (77) for 1966.

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

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Page 2 of 15 Pages

~~TOP SECRET~~

~~TOP SECRET~~



## Intelligence Information Special Report

Page 3 of 15 Pages

COUNTRY USSR

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### SUBJECT

**MILITARY THOUGHT (USSR):** The Conduct of Reconnaissance on Coastal Axes by the Forces of Formations of the Navy and the Air Defense Forces of the Country

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". The author of this article is Colonel A. Krasnov. This article examines ways of increasing the effectiveness of operational reconnaissance by fleets and air defense formations during joint operations on a coastal axis. Focusing on the capabilities and operating procedures of different reconnaissance forces and means (reconnaissance aircraft, OSNAZ radio units, radiotechnical units, and radar reconnaissance) when organizing cooperation and the mutual exchange of information, the author discusses their conduct of various reconnaissance tasks, mainly detecting enemy means of air and space attack. The procedure for transmitting reconnaissance data and cooperation commands also is treated with a view toward reducing transmission time and establishing a priority classification system for transmitting the information.

End of Summary

#### Comment:

Colonel Krasnov was identified as a Doctor of Military Sciences in 1974, and has also written a number of articles on air combat and air reconnaissance which appeared in Red Star and other publications. The author also wrote "Reconnaissance to Prevent a Surprise Attack" in Issue No. 5 (66) for 1962

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Page 4 of 15 Pages

The Conduct of Reconnaissance on Coastal Axes by the  
Forces of Formations of the Navy and the Air Defense  
Forces of the Country

by  
Colonel A. Krasnov

A fleet and an air defense formation possess powerful and diverse means of reconnaissance, whose capabilities are still far from being fully utilized in their common support. The purpose of this article is to set forth some thoughts on ways of increasing the effectiveness of reconnaissance by these branches of the armed forces during joint actions on coastal axes.

As we know, the Navy and the Air Defense Forces of the Country carry out reconnaissance daily and over vast areas. Naval reconnaissance is conducted to the entire depth of the basing and activity of the enemy's naval forces. Its capabilities have increased substantially in recent years. The fleets presently possess aerial and shipboard radio and radiotechnical reconnaissance that is able to successfully determine the nature of the activity of a naval enemy relative to employing missiles and carrier aviation.

Reconnaissance aviation of fleets operating to a depth of 2,000 to 2,500 kilometers is able to successfully conduct reconnaissance of carrier strike large units in the areas of their combat maneuvers and on the close approaches to them, and detect targets from great distances using onboard radars and from emissions from enemy shipboard radiotechnical means in operation. Thus when crews are using aircraft radio compasses, the range of the initial detection of American carrier groups, from the operation of their medium-wave radio beacons, is 220 to 500 kilometers (based on the experience of the Pacific Fleet). This range for all practical purposes does not depend on the flight altitude, thus making it possible to conduct reconnaissance at low altitudes.

Submarines also are able to carry out a successful search for carrier strike large units by operating at considerable distances from their bases. From the practice of reconnaissance activity by fleets, we know that submarines, when at periscope

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Page 5 of 15 Pages

depth and using radio and radiotechnical means of reconnaissance, are able to detect aircraft carriers (from the operation of their radars and medium-wave radio beacons) at ranges of 100 to 800 kilometers. Nuclear submarines are able to establish and maintain lengthy contact with carrier groups and periodically transmit data on their position, strength, direction of movement, and the nature of their actions.

Radio reconnaissance units of fleets also have a great range of operation. They conduct lengthy and systematic surveillance to the entire depth of theaters and beyond the most distant enemy targets.

The most complex task is searching for and detecting missile submarines, owing to their almost unlimited range, great endurance, and great concealment of operation. Both operational reconnaissance means and all branch arms of the antisubmarine forces of the fleets are allocated to detect and surveil them. But the existing means of search and surveillance of missile submarines are thus far insufficiently perfected and have a limited range of operation. Nor do there exist any reliable means of identifying them under water. In connection with this, the establishment of a long-range system of search and warning against missile submarines, based on the detection of targets by various physical fields, is a complex military technical problem. The most important part of this problem connected with the prevention of missile/nuclear strikes by submarines, is that of finding means and methods of detecting a launching of missiles by them.

The launching of missiles from submarines is accompanied by the formation of ionized trails, columns of water, clouds of smoke and steam, balls of flame, and other give-away signs. Research shows that shipboard radars and infrared radar direction finders already make it possible at present to ascertain the launching areas on the basis of these signs at an average distance of 35 to 40 kilometers. The detection of a missile launching from these same signs is also possible by using the onboard radars of reconnaissance aircraft. But accomplishing this task is a highly complex matter: the give-away signs are visible for a very short time (no more than 0.4 to 0.6 minutes). This makes it necessary to conduct almost continuous observation of the combat patrol areas of missile submarines during the

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~~TOP SECRET~~

Page 6 of 15 Pages

period of the anticipated employment of missiles.

Air defense formations having OSNAZ radio units, can in turn conduct continuous surveillance of the activity of enemy means of air and space attack in areas of space centers and missile and aviation bases by identifying their disposition, armament, and changes in the organization and manner of preparing for war. Radio reconnaissance can be conducted to a depth of 7,000 to 8,000 kilometers with a range of sure direction finding of targets of 2,000 to 3,000 kilometers. With the development of air defense and the equipping of the Air Defense Forces of the Country with means of antimissile combat and target detection (long-range detection radars, back-scatter radars, passive means of detecting missiles in active sectors of trajectories, etc.), it will become possible to determine the coordinates of missile submarines after they have launched the first missiles.

A comparison of the capabilities of reconnaissance forces and means of the fleets and of the Air Defense Forces of the Country shows that they are able to perform tasks both in support of their own commands and in support of common interests. Thus, in carrying out surveillance of the day-to-day activity of the enemy on land, on the sea, in the air and in space, they compensate to a large extent for each other's weak points.

Reconnaissance on a coastal axis in support of common interests may be conducted by means of the joint performance of reconnaissance tasks by the reconnaissance of a fleet and of an air defense formation in the very same areas and by means of independent reconnaissance actions.

Of utmost importance to the command of an air defense formation is the radio reconnaissance information of the fleet carrying out surveillance of the enemy to a great depth, as well as data obtained by aircraft, submarines, and ships with radiotechnical reconnaissance equipment on board.

Taking into account the prospects for developing reconnaissance means, the list of fleet reconnaissance data needed by the command of an air defense formation might include: the combat strength and grouping of missile submarines and carrier strike large units, their location, and the possible nature of actions at the outset of a war; measures being taken in

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Page 7 of 15 Pages

preparation for war; where and when missile submarines take their combat positions and carrier strike large units approach the areas of possible actions by carrier aviation on a given axis; information on the launching of missiles and the taking of aircraft to the air.

Preliminary information on the strength and probable nature of actions of missile submarines and carrier strike large units will make it possible to determine in advance the axes that are the most threatened and to reinforce them with air defense means, while the availability of data on the start of an air and space attack will greatly increase the balance of time for warning the troops and installations, for conducting a maneuver of air defense means, and for committing them to battle.

The fleet command receives the following data from the reconnaissance of the air defense formation: the combat strength and grouping of the means of air and space attack whose actions against fleet targets are possible on a given axis; the probable nature of actions by these means at the outset of a war; measures being taken in preparation for war; the position of means of attack in flight on distant approaches to fleet targets; possible targets of strikes; the location of missile submarines (after the launching of the first Polaris missiles); the nature of an air and space operation (the axis of actions, the disposition of the grouping, its strength and quantity of means of attack) on a coastal axis.

In accordance with the data cited, which must be refined in accordance with the developing situation, specific reconnaissance tasks may be specified and allocated between a fleet and air defense formation according to axes (areas), depth, and time, after which the composition of the reconnaissance forces and means to carry out these tasks is indicated. Following this a grouping of these forces and means is set up and the procedure for conducting reconnaissance and the mutual exchange of reconnaissance data is coordinated: who informs whom and by what method. These matters are reflected in the plan of reconnaissance cooperation of the fleet and air defense formation.

Measures to organize reconnaissance cooperation are effectively carried out in the fleets and air defense formations.

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Page 8 of 15 Pages

But in a fluidly developing situation, when data on the enemy quickly become obsolete, the mutual exchange of information must be carried out very efficiently.

Further improvement of cooperation should proceed along the lines of reducing the time required to obtain initial information on the enemy, ensuring speed of mutual target designation and targeting of reconnaissance forces against any tasks that should suddenly arise. This requires closer contact between cooperating levels -- not only between reconnaissance organs, but directly between the units and subunits who obtain the information.

At present such contact is needed primarily for OSNAZ radio units of a fleet and air defense formation, since it is they who possess the reconnaissance means with the greatest range of operation. Cooperation must provide for the exchange of radio intercept materials between the command posts of these units, and coordination of the work of radio direction-finding subunits. This will make it possible to obtain a more complete picture of the situation, as well as make a comparative assessment of and jointly monitor surveillance results. To reduce the time required for the passage of radio reconnaissance data, it is advisable to transmit information from peripheral radio direction-finding subunits not only to the command post of their own unit, but also directly to the command post of a cooperating OSNAZ radio unit of the fleet or of air defense. In addition, part of the forces may be allocated to conduct reconnaissance in support of mutual interests. It is obvious that successful cooperation will be possible if there is direct contact between the command posts of the fleet and air defense OSNAZ units and their subunits, using secure communications equipment.

At the present time a radio net has been organized in certain fleets for cooperation between OSNAZ radio units of the fleet and of air defense (of the military district). This makes it possible to have reliable communications with them and thereby promotes successful cooperation between them.

To reduce the transmission time of the most important information it is desirable to establish a classification system for the urgency of information. Information of overriding importance (concerning a drastic change in an enemy grouping, signs of preparation for an attack, etc.) should be transmitted

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Page 9 of 15 Pages

above precedence.

It is also advisable to specify the order of priority for transmitting information to cooperating levels. For example, information concerning the launching of Polaris missiles must immediately be transmitted by all types of reconnaissance to the command post of the air defense formation and to the combat flagship command post of the fleet, as well as to commanders of large units (units) of antisubmarine forces operating in the combat patrol areas of the missile submarines; information concerning a mass taking to the air of enemy aircraft must first be transmitted to the command post of the air defense formation, and then to the combat flagship command post of the fleet, to other command posts, and to the staffs concerned. It also is essential to provide for the immediate transmission to command posts of the air defense formation of data from the reconnaissance aviation of the fleet upon detection of a carrier strike large unit, and reconnaissance reports on the operation of aircraft onboard equipment and on the content of radio conversations between aircraft in radio nets in the ultra-shortwave band.

Operational intelligence officers of a command post of the air defense formation must in turn immediately report to the combat flagship command post of the fleet data on the actions of means of air and space attack on a coastal axis, and on air targets which pose a potential threat to the fleet.

Along with mutual reporting on the current situation, cooperation also includes the exchange of reports needed to study the enemy, to accumulate and collate signs of his preparing for war, as well as to record experience in conducting reconnaissance. In particular OSNAZ radio units of the fleet would be interested in the experience of certain OSNAZ units of air defense in the automation of radio direction-finding processes, which has considerably increased the capabilities of radio reconnaissance by direction finding against radio sets that operate for a short time.

To accomplish these matters it is advisable to organize not only the exchange of various types of information, but also personal meetings between the command personnel of reconnaissance organs and of OSNAZ radio units. For this purpose under

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Page 10 of 15 Pages

peacetime conditions general assemblies, conferences, and seminar studies may be held, at which experience is exchanged on reconnaissance-search work, and the procedure for the joint performance of tasks is established. In addition, intelligence officers should go out to the command posts of cooperating OSNAZ units more often, in order to exchange work experience.

The propositions examined above mainly concern the forces and means of operational reconnaissance of a fleet and an air defense formation. On the basis of reconnaissance data on the anticipated nature of enemy actions, contrasted with information obtained from other sources, the fleet and air defense troops may be brought to increased combat readiness in advance and be prepared for combat actions. While enemy attacks are being repulsed, operational reconnaissance data are used to assess the air situation on distant approaches to defended targets of the fleet and air defense formation.

But the content of cooperation between a fleet and an air defense formation in the area of reconnaissance is not exhausted by these propositions. It also is essential to have smooth cooperation between the forces and means of radar reconnaissance of the fleet and air defense. Taking into account existing principles of organizing and planning the air defense of fleet forces, all questions pertaining to joint actions by forces and means of radar reconnaissance should be worked out by the air defense department of the fleet and the staff of the coastal air defense large unit (formation) on the basis of the plan of cooperation between the fleet forces and air defense troops, and in consideration of the capabilities of reconnaissance means.

In the Air Defense Forces of the Country reconnaissance of air targets is conducted by radiotechnical troops of air defense large units, by radar subunits of surface-to-air missile troops, and by the radiotechnical reconnaissance means of SPETSNAZ units. The target detection range does not exceed 70 to 80 kilometers at low altitudes and 260 to 300 kilometers at high altitudes, with the exception of P-14 long-range detection radars, whose range of operation is 100 and 600 kilometers, respectively. On coastal axes the employment of radar picket aircraft also is possible.

The basic means of radar reconnaissance of a fleet are air surveillance ships, which may be used in the overall detection

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Page 11 of 15 Pages

system of the radiotechnical troops of coastal air defense large units, as well as in support of air defense of the fleet on the most threatened axes on approaches to dispersed basing points and bases, and to perform patrol duty. The range of detection of air targets by air surveillance ships is 35 to 80 kilometers at low altitudes and 160 to 180 kilometers at high altitudes. By moving out a considerable distance from shore, these ships are able to provide important information on low-flying targets in the naval sector. In addition, fleet forces have shipboard radars (on cruisers) and radar picket submarines with a detection range of 160 to 180 kilometers.

Radar reconnaissance means of a fleet and air defense large unit must be combined into a harmonious system which is indissolubly linked with operational reconnaissance means of the fleet and air defense, and which ensures that the lines of initial warning by air defense means are moved out as far as possible from the shore and from the fleet's forces, that the enemy is under continuous surveillance from the time he enters the radar detection zones and that information is transmitted quickly to the command posts of the fleet and air defense. This kind of cooperation is necessary not only at the outset of military actions, but also in peacetime for combat against foreign reconnaissance aircraft which are operating most intensively on coastal axes and approach our shore at low altitudes. Early detection of these aircraft in neutral waters will make it possible to prevent them from violating the borders of the Soviet Union and to carry out the measures necessary to camouflage and preserve the concealment of operation of our radiotechnical means.

When organizing cooperation, it is first necessary to determine the capabilities and procedure for joint actions of the radars of the fleet and those of the air defense radiotechnical troops. In doing so, zones and lines of detection must be allocated among them, and it is essential to coordinate the deployment sites of radar subunits of air defense large units along the coast and on islands with the areas and time of radar picket patrolling. Zones of reception and transfer of targets and the procedure for controlling the combat operation of radars during various types of enemy attacks must also be coordinated. To increase the combat stability of air surveillance ships (radar picket submarines) against strikes from the air and sea, picket

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Page 12 of 15 Pages

stations must be changed, radars must be turned on and off according to a special schedule, air defense cover must be organized, etc.

Air surveillance ships may be used to build up a continuous radar field of an air defense large unit in the direction of the sea or to establish autonomous zones of detection. They may serve also as a reserve for the quick restoration of a radar field that has been disrupted by the enemy.

When organizing a continuous radar field jointly with an air defense large unit, the distance of picket stations from the shore depends on the range of operation of the radars located on shore and on ships, and on the anticipated altitudes of enemy actions. For example, in anticipating enemy actions at altitudes up to 1,000 meters, this distance will be 110 to 180 kilometers, while at high and medium altitudes -- 350 to 400 kilometers.

Zones of detection may be established outside the radar field of an air defense large unit on the probable axes of enemy flight at distances which ensure the interception of detected targets by fighters from an airfield alert status in Readiness No. 1. Air surveillance ships may be employed only in areas where they can be covered against the naval and air enemy.

In support of air defense of a fleet and for cooperation with the fleet, an air defense large unit should first provide long-range detection radars. As the experience of exercises has shown, P-14 radars can provide ships with data on the air enemy for the timely opening and conduct of barrage fire both by antiaircraft weapons and by the main artillery of the ships.

However, a fleet's existing system of air defense warning on the air situation provides for only the centralized warning of ships from the command post of an air defense large unit (formation). Such warning, based on transmission of data through many levels, naturally leads to a considerable delay in the information and a loss of accuracy. There is, therefore, an urgent need to have, in addition to centralized warning of ships, decentralized warning as well, especially from units and subunits which have P-14 radars. But this will require additional communications channels.

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Page 13 of 15 Pages

No less important is the use of radar picket aircraft in support of the air defense of a fleet. They may also be employed to build up a continuous radar field of an air defense large unit, to be on airborne alert in zones located on probable axes of enemy action, and may also be brought in to guide their own fighters in cooperation with shipboard control and guidance posts. As a highly mobile means of radar reconnaissance, radar picket aircraft are able to quickly change their position relative to covered installations and establish mobile zones (fields) of detection of air targets according to the specific nature of the enemy's actions.

Owing, however, to their limited flying time and range of detection, the use of radar picket aircraft according to time and place should be done taking into consideration data from other types of reconnaissance which make it possible to detect the air enemy in advance (operational reconnaissance of a fleet and air defense).

After organizing the overall grouping and allocating tasks between the radiotechnical troops of air defense and the radar patrol, the procedure and methods for target designation and for mutual reporting on the actions of one's own means of reconnaissance should be coordinated. In the process, it is desirable to ensure the transmission of information to forces of the fleet, not only from the reconnaissance information center of the air defense large unit, but also directly from the command posts (control posts) of radiotechnical units, and sometimes from radar subunits of air defense radiotechnical troops, especially from subunits having P-14 radars. It is essential also to provide for the transmission of messages by air defense posts on air surveillance ships, both to reconnaissance information centers of an air defense large unit (flagship command post of a large unit of ships), and to command posts (control posts) of coastal radar subunits of air defense radiotechnical troops. In addition, information must be provided on the actions of one's own aviation in the patrol area.

It will also be necessary to coordinate radio communications data from allocated means and establish short signals for the transmission of cooperation commands: to switch on radars, for a picket to take its station, to change its station, a threat of enemy attack against the picket, etc. After the staffs of the

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Page 14 of 15 Pages

fleet and air defense large unit work out and incorporate these matters into the air defense plan, the overall schedule of operations of radar means on alert may be worked out, and then the fleet staff, taking the time of operation of coastal radars into account, makes up the patrol duty schedule.

In carrying out cooperation, the most complex and labor-consuming process is the collection, processing, and display of information on the air situation that comes in from all means of reconnaissance.

At the present time the analysis of the air situation based on data from various sources, including from air surveillance ships, is carried out in the reconnaissance information center of the air defense large unit. During a complex air situation, however, information from ships is often lost in the great flow of messages coming into the reconnaissance information center from all the radar subunits of the large unit. For this reason it is advisable to have in the reconnaissance information center a specially assigned officer from the air defense radiotechnical troops, whose functions must include monitoring the actions of radar patrol, assigning tasks, issuing target designations, and analyzing information coming in from the patrol. The inclusion of air surveillance ships in the automated control system of the air defense large unit, and the installation on them of the proper equipment for extracting and transmitting data, will undoubtedly make for the most complete utilization of patrol information by all command posts concerned.

To analyze the air situation, extensive use must be made of operational reconnaissance data of the fleet and air defense. The availability of information on [the presence of?] carrier aviation, on an enemy launching of Polaris missiles, and on the characteristics and coordinates of means of [attack?] detected in flight, makes it possible to foresee the air situation within the detection limits of the radars of air defense and the fleet. In this instance it will be possible not only to take measures in time to repulse [the attack?], but also to target radar subunits against the enemy [means?] and thereby increase the probability of detection.

Nevertheless to display the air situation [word missing] of the air enemy at the command posts of air defense large units are

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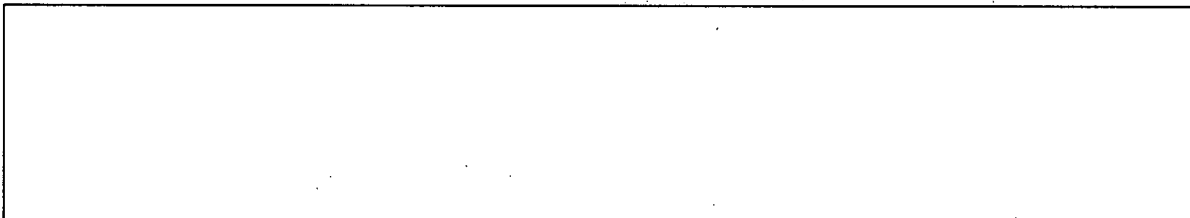


Page 15 of 15 Pages

shown [word missing] mainly only radar reconnaissance data [words missing] is often indicated during critiques of exercises, however, [word missing] the display of operational reconnaissance data on plotting boards [and display panels?] of the command posts under the existing situation is extremely difficult.

To do this it is necessary, in the first place, to ensure [words missing] the processing of data from all types of reconnaissance at the command post [of the air defense formation?], transmission over the channels of the radiotechnical troops to the reconnaissance information centers of the air defense large units and the fleet and, in the second place, [word missing] the immediate receipt of data from operational [reconnaissance?] of the cooperating air defense large unit.

Thus, the joint conduct of [reconnaissance on a coastal?] axis by forces of the fleet and Air Defense Forces of the Country [requires taking?] a whole complex of measures, which will make it possible to provide [continuous?] observation of the enemy according to a single [plan without much?] duplication.



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