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MEMORANDUM FOR: The Director of Central Intelligence

SUBJECT : MILITARY THOUGHT (USSR): Reconnaissance at Sea

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 discusses the need to conduct daily peacetime naval reconnaissance in order to accurately deploy vessels into a combat area after the outbreak of hostilities. The radio, radar, aerial and ship reconnaissance utilized in this task are described. The article also considers the use of naval reconnaissance in support of joint operations of the navy and front troops. Specific reconnaissance operations by Soviet aircraft and submarines against US surface vessels and submarines are described in which superior Soviet performance is claimed. This article appeared in Issue No. 2 (72) for 1964.

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]

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Summary:

The following report is a translation from Russian of an article which appeared in Issue No. 2 (72) for 1964 of the SECRET USSR Ministry of Defense publication Collection of Articles of the Journal "Military Thought". The authors of this article are Rear Admiral B. Bobkov and Captain First Rank I. Khurs. This article discusses the need to conduct daily peacetime naval reconnaissance in order to accurately deploy vessels into a combat area after the outbreak of hostilities. The radio, radar, aerial and ship reconnaissance utilized in this task are described. The article also considers the use of naval reconnaissance in support of joint operations of the navy and front troops. Specific reconnaissance operations by Soviet aircraft and submarines against US surface vessels and submarines are described in which superior Soviet performance is claimed.

End of Summary

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Reconnaissance at Sea

by

Rear Admiral B. Bobkov and Captain First Rank I. Khurs

In combat operations at sea a significant place is allotted to reconnaissance, whose role and significance have grown with the introduction into the navy of nuclear weapons and the development of means for their delivery. An extremely important aspect of reconnaissance at sea is the fact that it is conducted over a great distance. Practically speaking, in order to carry out reconnaissance missions against rocket/nuclear forces, and to support the combat operations of our strike forces, it will be necessary to organize reconnaissance over the entire depth of the theater--from the approaches to the bases of our forces to the bases of the enemy navy on other continents. In so doing, the depth of reconnaissance in each specific case is determined by the goals of the operations of the strike forces in the theater. Thus, for naval missile-carrying aviation at, for example, six-hour readiness for takeoff, to deliver strikes against enemy carrier strike forces prior to their approaching the area of combat maneuver, reconnaissance should extend about 2600 kilometers, while to support the combat operations of nuclear submarines deployed from bases--about 3900 kilometers. (For strike screens of diesel submarines, reconnaissance should be conducted to a depth of 1000 to 1500 kilometers in the direction of the enemy from the strike screens.) Also unusual is the frequency of reconnaissance at sea. In order to detect in time, for example, a carrier strike large unit prior to its approach to the line where its aviation will take off to deliver a strike, and to guide our submarines and aviation toward it, more than 40 flights by aircraft from reconnaissance units of the navy and long-range aviation will be required, and 12 to 15 diesel or 3 or 4 nuclear submarines must be brought in, as well as other reconnaissance forces (such as radio reconnaissance).

In view of the actual proximity of the day-to-day disposition of the rocket/nuclear forces of a probable enemy to the objectives of a strike, we may assume that in a system of reconnaissance at sea, reconnaissance conducted in peacetime is of special importance in supporting the first operations of the initial stage of a war. Conditions in naval theaters make it possible in peacetime, given sufficient reconnaissance means, to keep the main forces of the probable enemy under continuous observation. Thus, naval reconnaissance possesses the capability not only to warn the command in time about preparations for an attack by enemy naval forces, but also to discover in time his plans, the makeup and combat capabilities of his forces, the areas of operations, and methods of operational-tactical

use. These reconnaissance capabilities become highly significant also because the time required to deploy even nuclear submarines into areas of combat operations is considerable, and submarines, as is known, must be moved into these areas well in advance. Thus, information on the enemy obtained in advance will enable us to determine more precisely the direction of their operations. For example, it takes submarines ten days to reach the east coast of the US, six days to reach the Hawaiian Islands, and up to three days to reach the southern part of Japan.

Daily reconnaissance in peacetime makes it possible even now to discover and determine the location of up to 80 percent of aircraft carriers and about 40 percent of nuclear submarines. This, of course, allows faster deployment of our naval forces directly into the areas from which the enemy intends to begin his military operations.

As the situation becomes more complex, the navy, possessing advance information, can quickly intensify its reconnaissance. Thus, in the period when the crisis was building up in the area of the Caribbean Sea, our navy, in addition to intensive radio reconnaissance, conducted active ship and aerial reconnaissance in the Atlantic. An analysis of naval reconnaissance activity during this period shows that it revealed fairly completely the operational situation in the ocean theater, and on the whole provided the command with the necessary reconnaissance data.

It should also be noted that the probable enemy is likewise already conducting extremely active reconnaissance of our ship forces and coastal objectives. During exercises by our fleets, the US and NATO naval command, as a rule, intensifies reconnaissance in the areas of the exercises. In July 1963 the NATO command conducted a special reconnaissance operation in the zone of the Northern and Baltic fleets, involving the use of 76 aircraft from naval aviation and a considerable number of reconnaissance aircraft from the strategic naval forces of the US and Great Britain. Also participating were 19 surface ships from the US, Great Britain, Canada, and France, and up to 11 submarines (two of them nuclear) from the US, Great Britain, and Norway.

It is characteristic of reconnaissance at sea that there is great diversity in the tasks to be carried out and a large number of objectives which must be observed in the interests of organizing and conducting combat operations. Thus, for example, in supporting combat operations against a NATO strike fleet in the northeast Atlantic, it will be necessary to reconnoiter simultaneously, besides "purely" naval objectives--four carrier strike groups and one or two carrier search-strike groups, and groupings of forces of antisubmarine and antiair defense and rear services support,--up to 30 primary bases for ships and naval aviation, naval depots for nuclear

missile weapons, as well as the system of long-range radio navigation and control of enemy naval forces.

For the conduct of reconnaissance at sea the navy has at its disposal all types of reconnaissance, among which radio and radiotechnical reconnaissance, aerial reconnaissance, and ship reconnaissance have become especially important. This is due mainly to the wide use of electronic means of the probable enemies' system of control of naval forces, and their active use in day-to-day and combat activity. But in a period of worsening international relations the number of functioning electronic means increases, as does the intensity of their use. Thus, in the area of the Caribbean Sea in October 1962, the overall growth of radio networks and radio communication links of the US Navy in the Atlantic theater amounted to 60 percent (two-thirds of which were for short-range communications).

Shore radio reconnaissance units of long-range radio communications are able by their observations to cover the entire world ocean and discover the makeup and even the deployment and nature of the activity of naval forces, as well as steps being taken by the enemy to prepare forces and naval theaters for war.

Of the greatest importance is reconnaissance against enemy forces by also observing their short-range communications (through the functioning of shipboard means of radar and radio navigation). It is sufficient to note that the basic organization of a carrier strike large unit provides for the allocation of almost 60 percent of short-range radio frequencies (as was the case, for example, in the FALLEX-60 maneuvers). In addition, three carrier large units have as many as 225 radar sets of various functions and over 20 active means of radio navigation.

Reconnaissance in short-range radio communication nets also makes it possible to discover the sailing and combat dispositions of large units of ships, the operational formation of enemy forces, and also to determine the place in the formation of the targets of a strike. But because of the short range of radio emissions, reconnaissance in short-range radio nets can be conducted most effectively in remote areas of the ocean (sea) not by shore radio reconnaissance units, but by forces of ships, boats, and aircraft having radio reconnaissance means on board.

A study of the system of radiotechnical equipment and its modes of use shows that these means are a significant basis for the effective conduct of reconnaissance by units and means of radio and radiotechnical reconnaissance. Therefore, considerable importance is attached in the navy to the perfection of existing--and the development of new--means of radio and

radiotechnical reconnaissance means, and the equipping both of shore units and reconnaissance aircraft, submarines, and surface ships with them.

For the conduct of aerial reconnaissance at sea, naval aviation contains reconnaissance aviation regiments (TU-16R and TU-22R reconnaissance aircraft). For carrying out particular reconnaissance missions, missile-carrying aircraft and antisubmarine aviation are brought in. TU-16R aircraft are able to conduct reconnaissance up to a depth of 2000 to 2500 kilometers. By refueling in midair their range can be increased by 25 to 30 percent after each refueling. Thus, in view of the geographical conditions in our naval theaters, aerial reconnaissance by naval forces can be conducted mainly within the probable areas of combat maneuver of carrier strike large units and on the nearest approaches to them.

The conduct of aerial reconnaissance in more remote areas can be carried out by TU-95 aircraft (of long-range aviation), whose tactical range enables it to detect and carry out observation of aircraft carriers 4 days before they reach the areas where the carrier aircraft are to take off to deliver strikes against coastal objectives. Landing forces and convoys can be sighted 9 to 10 days before their arrival from rear bases in the US to European waters or the western part of the Pacific Ocean.

Aircraft reconnaissance involves the use of radiotechnical means of reconnaissance, radar sights, cameras, and hydroacoustical means. In practice the fleets have obtained the following detection ranges for carrier groups: with radar sights--from 120 to 400 kilometers (initial observation of ships in pattern is provided up to 310 kilometers); oblique photography of ships is possible under favorable conditions from 25 to 30 kilometers or less. Detection ranges of carrier groups and individual ships at sea by the operation of their radar sets amount to 100 to 140 percent of the range of operation of shipboard stations against aerial targets. Based on the experience of the Pacific Fleet, US aircraft carriers can be sighted at a distance of 400 to 450 kilometers by aircraft-borne search sets (in flight at an altitude of 10,000 meters). The most difficult task for aerial reconnaissance is the identification in a pattern of classes of ships, and also the determination of the elements of their movement. The difficulty lies in the fact that reconnaissance aircraft must in such cases operate within the range of carrier fighters and the effective range of antiair missiles. For this reason the fleets in practice have made wide use of reconnaissance by groups of aircraft with combined use of aircraft reconnaissance means.

Reconnaissance conducted against US aircraft carriers by aviation of the Pacific Fleet confirms its ability to obtain the necessary reconnaissance information. Thus, for example, in conducting reconnaissance in 1963

against a US carrier strike group made up of the carrier KITTY HAWK and four protective ships, aviation of the Pacific Fleet sighted this group 66 times. Various means were used, including aerial photography and visual observation. Aircraft operating in the vicinity of the group at low altitudes either were not intercepted by fighters at all, or were intercepted while withdrawing, having fulfilled their reconnaissance tasks.

Specially equipped TU-16 aircraft, as well as aircraft and helicopters of antisubmarine aviation, conduct reconnaissance against submarines located either above or below the water. In this connection, the anti-submarine version of the TU-16 has the tactical-technical capacity to carry out a search for missile submarines at distances of up to 2000 kilometers from their airfields. A single aircraft can set out 24 radio-hydro-acoustical buoys in one flight, thereby ensuring observation of a 2000-square kilometer sector of the ocean.

In one of the exercises held in April 1963 by the Northern Fleet, 9 TU-16 (antisubmarine version) crews twice conducted surveillance of a nuclear submarine for periods of 13 and 7 hours.

The TU-95 and 3M aircraft of long-range aviation showed good capabilities for sighting aircraft carriers in remote areas of the ocean (Atlantic, Pacific), as well as for prolonged observation of them. For example, in February 1963, TU-95 aircraft twice conducted reconnaissance against the 25th US operational large unit, which was proceeding from Norfolk to the Mediterranean Sea. The large unit included the nuclear aircraft carrier ENTERPRISE and protective ships. In both cases the ship grouping was sighted at distances of 400 kilometers from the aircraft in the area south and southeast of the Azores. Using radar sets, radio-technical reconnaissance equipment, photographic equipment, and visual observation, the pattern, composition of ships, and elements of movement were determined.

At the same time, the results of reconnaissance conducted against US missile submarines by our long-range aviation are not encouraging. This would indicate a need for special antisubmarine aircraft of long-range aviation in naval aviation to conduct reconnaissance against submarines.

Submarines, by virtue of their tactical-technical characteristics, can perform a wide variety of reconnaissance tasks against ship groupings at sea, and against ports, bases, and the coastline of the enemy. They can conduct reconnaissance over the entire depth of ocean theaters, covertly negotiating deeply echeloned zones and lines of enemy antisubmarine defense, penetrate defended areas, and carry out covert observation of

reconnaissance objectives over a considerable period of time. At the same time, when using submarines we must bear in mind that their comparatively short range of visual and hydroacoustical observation, the impossibility of two-way radio communications when situated below periscope depth, the relatively slow speed of diesel submarines, and the need for periodic recharging of their batteries, which requires them to rise to snorkel level or to come to the surface.

Nuclear submarines have significant advantages over diesel submarines. They are able to conduct for an almost unlimited amount of time reconnaissance and observation of carrier strike forces and other enemy ship groupings, both in transit and in areas of combat maneuver. At the present time, submarines constitute the main forces of reconnaissance against missile submarines in remote areas of their combat patrol.

For the accomplishment of reconnaissance tasks, submarines have apparatus for radio and radiotechnical reconnaissance, hydroacoustical and radar sets, photographic equipment, and other means.

Reconnaissance experience obtained at sea shows that our diesel submarines under average hydrological conditions and low-noise speeds (2 to 3 knots) and at favorable depths are able to sight US nuclear submarines at greater distances than those at which US submarines can sight ours. US nuclear missile submarines are sighted by our diesel submarines at a distance of 7 to 14 kilometers. Uninterrupted observation of them is maintained for 10 to 15 minutes, and under favorable conditions up to two hours. On the other hand, our submarines are sighted by US submarines at distances of 3.7 to 5.5 kilometers.

On the basis of practical data on detection of US missile submarines by our diesel submarines, we should assume that one of our submarines using hydroacoustic means can in one day reconnoiter a region more than 1400 square kilometers in area and can detect a missile submarine in that area with a probability close to 100 percent. But to detect in a short time enemy missile submarines in possible areas of their combat maneuver, in view of the considerable size of these areas, requires substantial submarine forces to be brought in. Calculations show that to sight over a period of five days six missile submarines situated in an insufficiently reconnoitered region 350,000 square kilometers in area, from 24 to 30 diesel submarines must be brought in.

The equipping of submarines with more modern underwater detection devices increases considerably the effectiveness of reconnaissance against missile submarines. Two nuclear or diesel submarines equipped with sound locators having a detection range against a missile submarine of 33

kilometers--which corresponds to the practical range of the US AN/BQR-4 and 4a sound locator station--are capable, when operating in an extensive area, of sighting within 8 to 10 days all six of the six missile submarines with a probability close to 100 percent.

The accuracy of these calculations has been confirmed by experience. Seven submarines of the Northern Fleet, in a 14- to 15-day search in April 1963, sighted US missile submarines 5 times in the Norwegian Sea in a 290,000-square kilometer area. According to available data, there were three missile submarines on combat patrol in this area during the period of the search.

Submarines possess considerable capabilities for sighting surface ship groupings. By observing them they are in a position to discover their makeup, sailing and combat formations, and elements of ship movement. The detection range of enemy ship groupings by various means on our submarines ranges from 18 to 740 kilometers. One submarine from the Pacific Fleet, in 14 days of cruising in the western Pacific Ocean, made about 100 sightings of US strike and antisubmarine carriers operating during that time within a reconnaissance radius of 740 kilometers. It made timely sightings and carried out observation of US ship and air antisubmarine forces based on the operation of their sonar. The detection range here of ships and aircraft was about 33 kilometers.

To increase further the reconnaissance capabilities of submarines, special submarine automated systems must be developed which will substantially reduce the time required to obtain and process reconnaissance information.

Surface ships and fleet vessels are capable of conducting operational and tactical reconnaissance in peacetime over the entire depth of naval theaters, and in wartime at distances from the shore depending on the reliability of cover by coastal air defense means. The reconnaissance capabilities of surface ships and vessels have been substantially increased by equipping them with radio and radiotechnical reconnaissance means. When employed in operationally advantageous areas of ocean and naval theaters, the ships can play a definite role in accomplishing tasks of early warning of the threat of an enemy nuclear missile attack.

On the basis of experience gained at exercises and in the reconnaissance activity of fleets, let us examine certain problems of reconnaissance at sea. In recent years, problems of organization and conduct of reconnaissance by navies have received further development. From the point of view of the conduct of reconnaissance, a feature of the majority of the exercises was the fact that practically all existing

reconnaissance forces in the navies took part in them. Among the various reconnaissance tasks at the exercises, the greatest amount of attention was given to the development of reconnaissance support for combat operations designed to destroy enemy rocket/nuclear groupings in the initial period of a war. For these purposes (usually in navies in open theaters) two completely separate groupings of reconnaissance forces were created: one for reconnaissance against carrier strike large units, the other against missile submarines. In those cases where the situation indicated preparations by the enemy for landing operations and convoy escort, appropriate forces were allocated for reconnaissance against these objectives as well.

In organizing reconnaissance against missile submarines, primary attention was devoted to measures for the detection and observation of them in areas of combat patrol, on probable routes of deployment from bases, and in points of basing and combat preparation. In view of the fact that a portion of the missile submarines of a probable enemy are always situated in areas of combat patrol--and that these submarines are in the highest state of readiness for the launching of missiles--the primary task was the detection of submarine missile carriers in these areas before the beginning of combat operations.

In a Northern Fleet exercise held in April 1963, during a "period of threat", eight antisubmarine submarines and two ship search-strike groups were deployed in the actual area of combat patrol of US missile submarines. In six days of searching before the "beginning" of combat operations, US nuclear missile submarines were sighted seven times; four of them were in the search area.

At the same exercise, reconnaissance procedures were also developed for use against missile submarines on probable routes of deployment and in areas of possible operations by them from under the ice of the Arctic. For the conduct of reconnaissance, antisubmarine submarines, specially equipped TU-16 antisubmarine naval aircraft, and antisubmarine surface ships were brought in. An "enemy" submarine crossing into the launching area was sighted three times by two antisubmarine submarines, and twice by aircraft. During the reconnaissance there were two sightings of a foreign submarine (assumed to be the US nuclear submarine NAUTILUS), which at that time was conducting reconnaissance against our forces in the Barents Sea.

The TU-16T aircraft, equipped by naval forces with the "Baku" system (24 RGBN's and a Sparu-55 receiving apparatus), performed well at the exercise in seeking out submarines. During the search the aircraft flew 17 sorties, 15 of them with buoys, setting out a total of 21 barriers consisting of 184 buoys. This ensured control of submarines in an area 74

kilometers wide and 240 kilometers long. Aviation operations during the exercise and in the period of training flights showed that the greatest success is achieved when flying at 400 kilometers an hour and by dropping buoys from an altitude of 400 meters.

Successful operations by naval forces in detecting missile submarines cannot be regarded as a complete solution of the problem of reconnaissance to ensure the disruption of their nuclear strikes. It seems to us that mass forces must be created, incorporating within them modern means for detecting submarine targets and destroying them. Naturally, combat against missile submarines at the beginning of a war will be more successful if reconnaissance is able to obtain in peacetime the necessary data on missile submarines of a probable enemy (their makeup, deployment, and combat capabilities) and especially on equipped areas of combat positions. Therefore great importance is attached to the discovery of the areas of combat patrol of submarines. The solution of this task presents serious difficulties due to the great secrecy of operations of submarine missile carriers at sea.

In organizing reconnaissance against carrier strike large units, the main efforts were concentrated in areas of combat maneuver, while in the forward basing areas reconnaissance was envisioned against rear-area bases and routes of passage of aircraft carriers into the forward basing areas or into the zones of combat maneuver. Forces (means) of support for the combat activity of strike carriers were also placed under observation. The basic data for organizing reconnaissance in support of combat operations to destroy strike carriers was the information that reconnaissance was able to obtain in peacetime.

In the operational training of navies in organizing reconnaissance against carrier strike large units, the echeloning of reconnaissance forces in depth and along the front was practiced on a wide scale. This ensured timely and reliable detection of the "enemy" and lengthy observation of him. Here the most effective solution of tasks was achieved by the following formation of reconnaissance forces.

In areas of combat maneuver of strike carriers, reconnaissance was conducted by reconnaissance aviation and submarines. Before the start of "combat operations" reconnaissance ships were also actively used. Ship reconnaissance forces, equipped with radio and radiotechnical means of reconnaissance, took up an enveloping position with respect to the entire area of combat maneuver, with a view to ensuring the capability of radio direction-finding operations against the radioelectronic means of strike carriers and their support forces. Practice confirms calculations that for reconnaissance against a NATO strike fleet under conditions similar to those which prevailed at the exercises, at least eight submarines and three

reconnaissance ships will be required. The submarines should be deployed along the perimeter of the area under surveillance (the length of the perimeter may be as much as 3000 to 3500 kilometers). For reconnaissance in areas of combat maneuver of aircraft carriers, the reconnaissance-strike version of nuclear and diesel submarines may also be brought in. Reconnaissance aviation by groups of reconnaissance aircraft operating from various altitudes and directions, discover the makeup and location of carrier strike groupings in the area, maintain continual observation of them, and report to the command on established frequency data obtained on the enemy.

Reconnaissance against strike carriers at bases and in transit at sea was accomplished by aerial reconnaissance forces, and as they were leaving their bases--by submarines.

Reconnaissance experience in the fleets indicates that nuclear submarines are able in peacetime to establish contact with carrier groups, follow their movement for an extended period of time, and periodically transmit to the shore data on the location, makeup, and direction of movement of carrier groups located beyond the range of operation of naval reconnaissance aircraft. Thus nuclear submarines at exercises of recent years relentlessly followed over an extended period forces supporting carrier strike large units, periodically "attacking" them and transmitting data to the naval command for guidance of aviation strike forces and submarines. The practice of exercises confirms the well-known theoretical proposition that at the present stage in the development of nuclear submarines, especially of their electronic means of reconnaissance, there still exist definite difficulties in ensuring that they reach the strike carriers independently.

The tactical-technical characteristics of the electronic means of modern nuclear submarines ensure their reaching the strike carriers if they possess data on the area of the latter's location (not of their coordinates, as was typical of submarines with older reconnaissance means). In many cases, for assured guidance of nuclear submarines over a distance to where contact is made with aircraft carriers, it turned out that it was sufficient to receive radio-reconnaissance data not more than 4 to 6 times a day. But the frequency requirements for receipt of reconnaissance data are different in the case of guiding strike aviation to US targets. The experience of conducting reconnaissance against US aircraft carriers by long-range aviation aircraft over the ocean shows that with two radio-reconnaissance reports per day on the location of aircraft carriers, TU-95 aircraft, equipped with long-range radar sights, quickly locate the targets without any additional searching.

In the matter of increasing the accuracy of reconnaissance data from individual reconnaissance forces and means, of great importance is the processing of information obtained from various sources. In this connection, attention should be drawn to the experience of the shore-based flag command post of the commander of the Northern Fleet at an exercise held last year. At this exercise a "Ural-1" electronic computer was used for partial automation and mechanization of the processes of plotting the situation on maps and plotting boards, and the collection and processing of reconnaissance information. Tasks were developed and programmed in advance, making it possible to collect and give out information on the status of its submarines and average out the data from various sources on the coordinates and elements of movement of carrier groups. At the exercise, information from the computer was automatically transmitted to a special plotting board attached to it by means of a printing telegraph apparatus. Using the electronic computer at the exercise, thirty mean positions were obtained, with an average error of 12.2 miles. (In calculation performed by hand the margin of error reached 18.6 miles.)

In order to increase the accuracy of aerial reconnaissance in remote areas of the ocean, we must develop systems of long-range aerial navigation, the automation of air navigation processes, the processing of reconnaissance data on board reconnaissance aircraft and the quick transmittal of it to the shore command and to forces at sea.

* * *

The experience of the joint exercises of fleets and military districts shows that reconnaissance in joint operations of the navy and front troops on maritime axes has its own special features. The basic data for planning reconnaissance in areas of the sea adjacent to the maritime axes of the operations of ground forces will be the tasks and plan for the front offensive operation, the tasks of naval forces taking part in the troop operation, reconnaissance forces and means that may be brought in to support the operations of naval forces, as well as basic directives for the coordination of naval reconnaissance with reconnaissance from formations and large units of front troops, front aviation, long-range aviation, and air defense troops of the country. In determining the makeup of reconnaissance forces and means, special consideration must be given to the possibility of navy and front forces jointly carrying out reconnaissance tasks in the same areas (against the same common objectives) and of independent reconnaissance operations in support of each other.

Naval reconnaissance in offensive operations by ground forces is designed to provide data on the enemy in the theaters of operations of naval forces that are giving support to front troops, and also to carry out

tasks in support of large units and formations of other branches of the armed forces.

For the conduct of reconnaissance, forces and means from all types of naval reconnaissance may be brought in, among which either aerial or ship reconnaissance will be of primary importance at different times. In a number of cases a special role will be played by units of reconnaissance divers and reconnaissance subunits of naval infantry.

In peacetime, the organizational basis of coordination of reconnaissance forces and means of a fleet and a military district might be planning tables of coordination, mutually arranged between headquarters of fleets and military districts, as well as with formations of other types of armed forces. This is the way coordination of reconnaissance is organized, for example, between the Northern Fleet and the Leningrad Military District. The coordination table determines the schedule of reconnaissance data of general interest, and that which is of interest only to a fleet or to a district. It also establishes the forms and times for mutual exchange of information and determines the order of transmittal of reconnaissance information. In addition, the planning tables of coordination may include other items, such as the sequence of conducting reconnaissance in specific areas of naval theaters, mutual support of the operations of reconnaissance forces, the sequence of reconnaissance tasks, etc.

In an amphibious landing operation, naval reconnaissance is directed toward providing the command with the necessary data concerning the debarkation area, sectors, and points for the landing, and on enemy naval forces carrying out antilanding defense. This reconnaissance is organized by naval headquarters and involves the participation of front reconnaissance forces and means in accordance with the plan of the naval commander and instructions from front headquarters.

During the conduct of a landing operation, and especially when troops are being loaded onto transports and landing ships, as well as when the landing force is in transit at sea, reconnaissance efforts are concentrated on the task of continuous observation of the location, makeup, and nature of the activity of those enemy ship groupings capable of delivering a strike against the landing force, in order that our own strike force may be guided in against them.

When the landing force is disembarking, the forces allocated to reconnaissance obtain more precise information on the activity of antilanding defense forces, and conduct intensified reconnaissance of remaining strongpoints, centers of resistance, rocket launchers and gun mounts, and other firing points. As the same time, reconnaissance must be

unfailingly maintained against enemy ship forces in bases, at sea, and in landing areas, in order to prevent in time enemy strikes against the landing force while it is still afloat.

In an amphibious landing operation, ship reconnaissance may be given the task of discovering areas of ship patrols, the mine and navigational situation at the approaches to the landing places, waterways and cruising conditions in narrows and on approaches to the shore, the emergence of enemy ship forces from their bases and their crossing of certain lines, as well as searching for enemy submarines along the transit route of the landing forces.

Reconnaissance in the assigned areas at the approaches to the enemy shore can best be carried out by single submarines. The task of discovering the enemy's system of antilanding defense and observing the areas of the impending landing will be accomplished by surface ships and patrol boats. These should be used at night and when visibility is poor.

When the landing force is disembarking, surface ships assigned to cover the landing force and neutralize the antilanding defense are in a position to detect forces and means of antilanding defense on shore, and groups of surface ships and individual enemy submarines at sea.

Radio and radiotechnical reconnaissance units are directed toward the discovery of data mainly concerning enemy ship groupings capable of opposing the landing forces, as well as the discovery of radiotechnical equipment in the landing area. It is not impossible that in a number of cases it will be necessary to redeploy a certain portion of naval radio and radiotechnical reconnaissance forces into the combat zone.

Diver-reconnaissance units conducting reconnaissance against antilanding obstacles in the water and in the coastal strip are able to discover the locations of rocket/nuclear weapons and the makeup and deployment of ships in coastal areas. They are partially able to determine the movement of troops and equipment and the state of the roads in the coastal strip.

During a landing in a tidal zone, aerial reconnaissance plays the major role. Experience in naval combat training shows that when organizing aerial reconnaissance, the nature of the objectives to be reconnoitered should be carefully considered. For example, in supporting an amphibious and aerial landing on islands in a tidal zone, based on the experience of the exercises of the Red Banner Baltic Fleet, it will be necessary to take at least three aerial photographs of the landing areas and adjacent sectors: the first for use in adopting the plan (area photography); the

second for detailed direction and study of underwater obstacles and the system of ground defense (vertical air photography); the third in order to detect changes in the antilanding defense and to support the forces with the necessary specific data and materials.

Reconnaissance in support of combat against enemy amphibious landings during offensive operations by troops of a maritime front will be a fairly complex matter. In all cases it is aimed at providing the command with timely data needed to organize the destruction of the enemy landing from the moment it begins. Reconnaissance should ensure the disruption of the landing at points of concentration and loading onto transports. For this purpose, good use may be made of aerial reconnaissance forces and diver-reconnaissance units planted ahead of time at the embarkation points of a landing force.

When landing forces are sighted at sea, they are kept under continuous reconnaissance in order to ascertain their strength in time and guide naval strike forces against them. But when supporting efforts to repulse a landing force's debarkation on shore, primary reconnaissance efforts are directed toward discovering the time and direction of the approach of the landing force to the debarkation area, the number and makeup of echelons of the landing force, the makeup and amount of equipment of the troops being landed, the areas where the transports are anchored and the organization of their defense, and the composition of security, cover, and support forces.

In the event of a successful landing by the enemy, a unit of reconnaissance forces will be switched over to support naval operations on communication lines feeding the enemy landing force.

From an examination of the tasks and capabilities of naval reconnaissance forces, it follows that reconnaissance operations are a highly complex process and require precise coordination among all types of reconnaissance forces. The development of the organization of reconnaissance at sea, with joint operations between the navy and front troops, must be the constant concern of the command of navies and districts when carrying out measures of operational and combat training. If this is accomplished, initial operations will be provided to the greatest extent possible with the necessary data on the forces of an opposing enemy.