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"THE USE OF SURFACE VESSELS IN MODERN NAVAL WARFARE"

BY REAR-ADMIRAL N. ZVYAGIN

The important qualitative changes taking place in the armed forces as a result of their being equipped with the newest combat weapons have changed the role and place in war not only of the types of armed forces, but also of the arms of forces and troops. In our Navy these changes are apparent primarily in that the submarine is becoming the basic striking force of the Navy.[1]

In this connection, various views are expressed as to the role and position to be occupied by surface vessels in modern naval operations. Often opinions are voiced to the effect that surface vessels have lost their significance, that they will be useless in a future war, and are therefore not needed by the Navy. Thus, there is no apparent need to build new vessels; one can still use the vessels of various types which still exist as part of the Navy; later, with the development of submarines, the need for the use of surface vessels in modern naval operations will fall by the wayside.

It is a fact that such large ships as battleships, cruisers, and destroyers, to give them their former designation, have completely lost all combat value and have no prospects of being used as a naval striking force. The role of the latter has been given to the submarines; in foreign navies this role will continue to be borne for some time by aircraft carrier striking large units, although even aircraft carriers no longer represent the force they used to be in the not so distant past (this is why the American high command puts such great emphasis on the development of strike submarines).

But, as is well known, the purpose of surface vessels was not exclusively to resolve combat missions through the use of large

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1. The navies of the large capitalist countries have as their basic striking force large units of aircraft carriers, consisting of surface vessels and deck-based aircraft. In the near future the role of the main striking force will be assigned to the missile-carrying nuclear submarines, which are being built at an accelerated pace. The navies of the secondary naval powers are putting greater emphasis on the development of anti-submarine defense, which consists of surface vessels and anti-submarine aircraft and helicopters.

vessels. An important role was played by vessels of other types in support of the basing and deployment of naval forces, including submarines, in defense of naval communications and of the coastline from attack by enemy surface vessels, and also in resolving other missions.

Although submarines have become the basic arm of forces, they cannot always be used without the participation of other arms of naval forces. Submarines need support in their basing and deployment and, primarily, must be defended against enemy submarines. Of all the currently available forces and resources, special surface vessels are the most effective solution to these missions. In addition, there are some missions which in effect cannot be solved at all by other naval forces without surface vessels.

Therefore, we feel that although surface vessels no longer have the basic role in the Navy, they still are a very important part of it.

The missions of surface vessels under modern conditions have essentially changed. As already stated, in the near future the basic striking force of our probable enemy's Navy will be missile-carrying nuclear submarines. As the number of such submarines increases, the threat of the infliction of their strikes also increases-not only against our naval objectives, but against important industrial centers situated well inside our territory. Fighting against these enemy forces will be conducted by special submarines of the antisubmarine defense, aviation, and surface vessels.

For the present, as well as in the near future, the most effective solution of the mission of combat against enemy nuclear submarines can be achieved only the complex utilization of all available forces and means. Tracking facilities at present included in the equipment of surface vessels allow search and pursuit of enemy submarines to be conducted with great effectiveness. When surface ships are equipped with antiaircraft missiles and helicopters, their potential in combatting submarines will become even greater. Such an appraisal of the role of surface vessels in combatting enemy submarines is dependent on their ability to remain at sea for long periods of time at a considerable distance from land and to reconnoiter large areas of the sea in short periods of time with the help of helicopters.

The dispersed basing of the naval forces, the use of dispersed antiatomic combat and transit formations, the constant threat from enemy aircraft, submarines, and mines all stipulate the need to give

cover to submarines not only when entering or leaving their bases, but also to cover their deployment for operations in the open sea. Such support will take the form of combat with the antisubmarine submarines of the enemy which are deployed at the points of emergence of our submarines - in the narrows as well as along their probable routes to the open sea - and the detection and destruction of mines along the route of passage. Although the antisubmarine submarines and aircraft will be able to conduct combat with enemy submarines, surface vessels will play an important role in this engagement under cover of antiaircraft missile units of the Navy and the Antiaircraft Defense of the Country. As far as the danger from mines is concerned, it will be effectively conducted both now and in the near future only by surface vessels [part of line missing]... forces of the Navy, it will be necessary to bring in our missile-equipped surface vessels to engage with those enemy surface vessels which are interfering with the deployment of our submarines; for use as protection for vessels of antisubmarine defense, which are engaged in searching for enemy submarines at a considerable distance from shore, and for dealing with the destruction of enemy landing craft and their support ships.

In a future war a significant role in support of ground troop operations will be the providing of sea transport of men and materiel, mounting tactical landing operations and disrupting naval communications between the enemy's coastal groupings and his rear bases. For the solution of these missions it will be necessary to use, along with other forces, surface vessels of small displacement. Only surface vessels of various designation will be able to accomplish such missions as protecting the transport of troops and military equipment, heavy freight, and troop landings.

It will be up to surface vessels equipped with antiaircraft missiles to screen convoys and transports from aerial attack during their passage and in many cases the vessels at their bases.

Surface vessels will have a definite role in the laying of antisubmarine and antilanding minefields.

Such are the basic missions which require the use of surface vessels. It is obvious that complete solution of these missions cannot be accomplished by conventionally armed ships. New classes of vessels with modern weapons will be required.

The composition of the Navy must include special vessels of two basic classes for antisubmarine warfare against enemy submarines;

vessels for short-range operations, and vessels for long-range operation. Both classes must have modern hdro-acoustical equipment, powerful antisubmarine weapons, antiaircraft missile weapons, and antisubmarine helicopters. With such aids they will be able to carry out long-range searches and destroy enemy submarines.

Special vessels such as trawlers, landing craft, and transports will be needed for locating and destroying mines, and transport of landing parties, troops, and equipment.

Vessels equipped with missiles will cover antisubmarine defense (PLO) vessels against attack by enemy surface vessels, primarily from carrier-borne hunter-killer groups of PLO forces, and will escort convoys and landing parties during their ocean passage.

Antiaircraft defense vessels will be needed to screen PLO vessels, convoys, and landing parties during the sea passage and in many cases to protect the bases of submarines and other combat vessels against air attack.

The conditions of the use of surface vessels of various types at the present time are characterized first of all by the fact that it became more difficult for them to defend themselves against enemy air attacks than previously. Aircraft carrying missiles can use their weapons against surface vessels from distances of much greater range than antiaircraft missiles launched from vessels. For this reason surface vessels have practically lost the capacity to defend themselves against air attack and are faced with the necessity of countering airborne missiles of great speeds, equipped with homing guidance and powerful nuclear charges, and having a high probability of hits.

Missile-equipped submarines will present, together with aircraft, a great menace to surface vessels. Missiles launched by these submarines, having the same characteristics as those launched by aircraft, will be able to strike at surface ships under any weather conditions. Fitting missiles with nuclear charges significantly increases the possibility of destroying surface vessels at the time when the vessels will have only a limited opportunity of defense against this weapon.

A particularly dangerous enemy of present-day surface vessels are nuclear-powered submarines equipped with long-range homing torpedoes and missiles capable of carrying nuclear charges. Nuclear submarines, capable of a high degree of concealment, have a speed about equip to that of the fast-moving surface vessels. In addition,

submarines have an advantage over surface vessels in the use of hydroacoustics. A surface vessel can be spotted from a submarine at a much greater range than a submarine from a surface vessel. Because of this, submarines are able to successfully attack surface vessels before being spotted, and can use their weapons more effectively than the surface vessels under attack by submarines. Nowadays submarines will not always strive to avoid encounter with surface vessels but will sometimes even attack PLO vessels.

In many cases, the present-day surface vessels will not be able to emerge victorious from an engagement with submarines. Though if still capable of carrying out independent combat against conventional diesel submarines, their capacity to effectively search, pursue, and destroy, or sometimes even to escape from nuclear submarines, is very limited. These circumstances made it necessary to equip surface vessels with antisubmarine defense helicopters which may help to make up the deficiencies of surface vessels in their combat against missile-equipped nuclear submarines.

The potentialities of the mine as a weapon against surface vessels have also substantially increased. The present day reaction-surfacing (reaktivno-vsplyvayushchiy) mines are equipped with extremely sensitive non-contact detonators; these are based on the principle of exploitation of various physical fields of the vessel, and are adapted for installation within a wide range of depths. These properties make for a considerable increase of the areas considered hazardous for surface vessels. Conducting combat with mines in a theater of operations will take much effort and various combat means will have to be used. This will also limit the possibilities of the use of surface vessels for the solution of combat missions.

The future saturation of all arms of the naval forces with radio-electronic devices, will create conditions which make it impossible for surface vessels to conceal movement, even under the most advantageous weather conditions. Surface vessels can be detected by modern reconnaissance means at any time of day or night and in any part of the operational theater, and are subject to strikes by nuclear/missile weapons whose effectiveness is also independent of the time of day or night, or of weather conditions.

The threat of enemy use of nuclear weapons forces surface vessels to sail in dispersed formations. At the same time, due to the increase in the firing range of submarines, escort vessels must be placed at much greater distance from the escorted forces than in the

past. In order to create the necessary conditions for surface vessels for their solution of combat missions, it will be necessary to increase considerably the number of escort vessels which will have to be placed along the increased perimeter of the defended area. Practically speaking, however, in an overwhelming majority of cases this will be impossible.

While submarines use cruise missiles against escort vessels and transports, antisubmarine defense vessels will be able at best to use only their antiaircraft missiles. They will not always be able to take direct action against the submarine itself.

The use of improved homing devices will effectively increase the possibilities of destruction of surface vessels by torpedoes launched from submarines and small surface carriers.

The development of radar and the increase in the maximum effective range of coastal defense weapons in large measure impedes the approach by surface vessels, even in a distant approach route to the enemy coast. It has become increasingly difficult to use large vessels in confined theaters of operation; they can be detected by the enemy directly during their departure from their bases. Therefore, in order to utilize surface vessels effectively for the solution of combat missions in the enemy's coastal area, particularly in confined theaters of operations, a set of complex measures for their security will be required.

All of this complicates to a marked degree the utilization of surface vessels, and requires a large expenditure of forces for the support of their operations.

However, surface vessels which have missiles of various types, and radioelectronic apparatus, increase the combat capabilities of their individual classes. Today even small vessels equipped with missiles are capable of combat with large vessels carrying a greater number of missiles. In addition, the vessels' armor and other means of protection against nuclear weapons will have practically no bearing on the outcome of a combat encounter. This entails the complete rejection of a centuries-old principle which maintained that surface vessels can be used only in combat against similar or "equivalent strength" (ravnoznachnyy) vessels. Any vessel, although equipped with the most powerful modern weapons, heavy armor and perfect means of defense, can be destroyed by even a patrol boat capable of launching missiles. More than that, vessels of small displacement

which are not easily detected by radar and which, for this reason can approach a large vessel to within the range of their missiles, will possess important tactical advantages over the enemy.

The vessles of a striking force equipped with missiles, will not have to execute a complicated maneuver in order to take and hold positions adjusted in relation to the enemy, in order to use their weapons. Approaching and holding the firing position will also depend to a lesser degree on the relative speeds of the vessels engaged in combat, and their relative disposition.

Equipping vessels with antiaircraft missiles will lessen their dependence on constant air cover provided by land-based fighter aircraft, will permit them to resolve missions outside coastal zones of the PVO and to defend themselves from the means of enemy air attack. However, the restricted supply of antiaircraft missiles always will be the reason for the ship's limited time at sea.

In organizing tactical coordination between separate tactical groups of surface vessels, as well as between vessels and aircraft, it will not be necessary to maintain the rigidly prescribed disposition of tactical groups in relation to each other and to the chosen grouping of the enemy. In order to inflict a coordinated, concentrated strike against the enemy, it will be sufficient to have only the exact target designations and a predetermined sequence in the use of weapons by the various tactical groups. Therefore there are wider possibilities of organizing tactical coordination of surface vessels with aircraft in the solution of combat naval actions, in which case the control and guidance of the striking groups of aircraft could be effected from the surface vessels.

The diversity of the missions assigned to surface vessels and the extensiveness of the areas in which armed combat at sea will unfold, dictate the necessity of intensive use of surface vessels throughout the course of the entire war. Furthermore, the intensity of these military operations will vary. It will be highest during the initial phase of the war, and also while supporting the deployment of large forces of submarines for operations at sea, and during their return to bases in the later phases of the war. It will also be augmented considerable while enemy submarines are in action against our naval forces and coastal installations.

In this connection it is important to plan surface vessel operations meticulously and ahead of time and to have the vessels so

located that they initiate the solution of combat missions immediately upon the outbreak of war. This is particularly true for vessels assigned to operate against enemy missile-carrying submarines and of missile vessels brought in for protection of operations by PLO vessels.

The distribution of effort, as well as the content of the tasks being resolved by surface vessels, will depend in large measure on the nature of the theater of operations and of the anticipated operations of the enemy.

In open theaters of operations the basic content of combat operations by surface vessels will be the screening of submarines during their deployment, and engaging in combat with enemy missile-carrying submarines. A significant part of the surface vessels' efforts will be expended in supporting the passage of convoys.

In confined theaters of operations, surface vessels will perform a limited number of tasks, the basic ones being the defense of naval bases and operations against the enemy's lines of communication.

The qualitative composition of surface vessels in a fleet depends on the nature of the theater of operations. The basic composition of the fleet's surface vessels operating in open theaters of operations, will consist of antisubmarine defense vessels with a wide radius of operation, antiaircraft defense vessels, and missile vessels. In confined theaters of operations, precedence will be given to small PLO vessels, missile patrol boats and small missile vessels. [1]

Let us now examine the methods of combat use of surface vessels in the solution of specific combat missions.

The use of surface vessels to support the deployment of submarines, as stated above, will be more characteristic of open theaters of operation. Surface vessels of various types will have an important role in the solution of this task, especially in their coastal zone, where their basic efforts will be required to be concentrated on the conduct of combat with enemy submarines, and on removing the threat of mines along the routes of deployment of our submarines. Combat operations of surface vessels will be conducted simultaneously with operations of antisubmarine aircraft and helicopters, using at the same time various positional resources of the PLO.

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1. For some time, motor-torpedo boats equipped with long-range homing torpedoes will continue to be of value.

The basic classes of vessels brought in for operations in coastal waters, will be antisubmarine vessels of short operational range which will be used in tactical coordination with other arms of naval forces, and ships of antimine defense (PMO).

As the submarines being deployed get further away from their bases, the composition and the nature of operations of the enemy's forces in action against our submarines will change and, therefore, there will also be a change in the composition and operations of our forces supporting the deployment. In distant theaters of operations, the basic threat to submarines will come from antisubmarine submarines, carrier-borne hunter-killer groups (APUG-avianosnaya poiskovo-udarnaya gruppa) and antisubmarine aircraft of the enemy. In these areas, in contrast with the coastal zone, it will be necessary to conduct combat not only with the enemy's submarine and air forces, but also with his surface vessels - specifically, the APUG. In this connection, it is imperative to give the antisubmarine hunter-killer groups anti-aircraft support by assigning a certain number of PVO vessels to them, and by bringing in missile vessels to screen the groups.

During the conduct of combat against enemy antisubmarine defense forces in the zone of deployment of submarines, the surface vessels must operate in tactical groups whose number and composition must be such as to ensure the solution of the main mission.

Operations of tactical groups of surface vessels in distant areas are carried out in close coordination with antisubmarine aircraft and antisubmarine submarines, and are supported by missile vessels and attack aircraft, and, whenever necessary, by units of missile troops.

Missile vessels will primarily be used by independent tactical groups operating in the zone of movement of our submarines, or in the maneuvering area of our surface force grouping which is carrying out search and destruction of the enemy's antisubmarine submarines.

The operations of our antisubmarine vessels supporting the deployment of submarines will result in the detection, destruction, or forced withdrawal of the enemy antisubmarine submarines found in the zone of movement of our submarines to a distance exceeding the range of their weapons. These operations will be planned according to the usual tactics of the hunter-killer groups used for the detection and destruction of the enemy antisubmarine submarines.

In order to limit the possibility of undetected penetration by

enemy antisubmarine submarines into the secure area in order to attack our submarines, the operations of the vessel hunter-killer groups will have to be supplemented by specially detailed vessels which would set up screens of sonar (radiogidro-akusticheskiy) buoys on the borders of the zone under observation. The operation of these screens, set up at a short distance from the coast, will be by antisubmarine aircraft and vessels, as well as by helicopters based on the coast. At a great distance from our coast, this operation would be done by some of the helicopters carried by antisubmarine vessels, as well as by vessels and aircraft. Enemy submarines detected by the sonar buoys must be attacked and destroyed by the vessels, aircraft, and helicopters detailed for operations in that area.

During support of submarine deployment, simultaneously with the solution of missions of combat against enemy antisubmarine forces, there will have to be a search for and destruction of mines laid along the line of passage of the submarines. Trawlers and helicopters can be used for this purpose. Special groups must be formed from these, capable of destroying mines in those areas which cannot be bypassed by the submarines.

The use of surface vessels in combat against enemy missile submarines will consist of the search and destruction of those submarines, mainly within the boundaries of the possible firing positions for submarines approaching the coast to strike targets situated in the depth of our territory. The use of surface vessels in the outer zone of antisubmarine defense will be limited because of the difficulty in the matter of their support.

Taking into account the disposition of a series of objectives and the capabilities of enemy missile submarines, one can assume that the probable areas of their firing positions will be 300-900 miles (540-1600 kms) from the coast. In these areas, combat against enemy submarines will be carried out primarily by long-range antisubmarine vessels resolving missions in coordination with antisubmarine aircraft and submarines, utilizing the systems of antisubmarine surveillance available in the theater of operations.

In open areas, surface vessels can resolve the missions of location and destruction of enemy submarines only if they use the data on the initial discovery of these submarines obtained by the positional resources, aircraft, and helicopters. The operations of the antisubmarine vessels must be organized in conjunction with the

operations and disposition of these capabilities.

Unilateral operations by surface vessels in locating enemy missile submarines in open areas will be extremely ineffective, since missile submarines, having a hydroacoustical detection system of wider range than surface vessels and the capability of the same speed, can avoid any encounters. In addition to this, having weapons with an effective firing range equal to the range of detection of the surface vessels, the submarines can destroy them before they themselves are detected.

In this connection, and considering the present capabilities of surface vessels in combat with atomic submarines, which maneuver over wide areas, the former can be counted upon as a real force only if they operate within a unified system of antisubmarine defense for a given theater of operations, as one of its components.

Surface vessels can successfully conduct unilateral combat operations against nuclear submarines when the latter are trying to break through narrows, when the possibility of dispatching forces for detection purposes can realistically be expected to meet with the necessary success, and when the enemy submarines must operate within a limited area.

Inasmuch as the length of stay at sea of the tactical groups of vessels of the PLO is insignificant, due to the limited supply of antiaircraft missiles on their escort vessels, they will for the time being be able to go out into distant areas only periodically, for resolving missions of locating and destroying those enemy missile submarines which have been detected through other means within the limits of the sea zone of antisubmarine defense. As antisubmarine defense vessels are equipped with an increased number of antiaircraft missiles and as more antiaircraft defense vessels join their ranks, their use for operations in distant areas for continuous long periods of time will be increased.

On the whole, the operations of surface vessels far removed from their coast will have an important bearing on the general system of combat with enemy missile submarines. Their use in those areas will increase significantly the effectiveness of antisubmarine defense, and will become a substantial addition to the operations of anti-submarine submarines and antisubmarine defense aircraft.

In the coastal zone (pribrezhnaya zona), small surface vessels

of PLO will be used to good advantage for locating and destroying enemy submarines. They will fulfil their missions in coordination with aircraft of the antisubmarine defense and shore-based helicopters, and will be supported by a wide-range (razvernvtyy) observation system consisting of various forms of fixed resources.

Operations of the forces of antisubmarine defense in the near zone (blizhnaya zona), in polar areas, and at the edge of ice, will be conducted systematically.

The joint search for enemy submarines by antisubmarine vessels and helicopters can be carried out within the borders of the coastal zone of the PLO by using land-based helicopters. In the Arctic the range of combined operations by vessels and helicopters can be somewhat increased by setting up helicopter bases on the ice.

It is necessary to use helicopter-carrying vessels for locating submarines in distant and open water areas. However, since helicopters have a limited load-lifting capacity and range of operations, they can be fitted only with equipment for finding submarines within a comparatively short range from the parent vessels. As for the destruction of submarines, the solution of this task presents well-known difficulties for helicopters, since they are incapable of carrying the necessary torpedoes or bombs. For this reason, it will be necessary in the near future to use helicopters together with antisubmarine vessels which are capable of carrying large supplies of submarine destruction weapons for long periods of time.

The hunt for enemy submarines can be carried out by groups of surface vessels with special equipment enabling them to detect the position of a submarine by the column of ionized gases at the moment of launching of the ballistic missile. These vessels must have long range antisubmarine missiles in order to be able to destroy the submarine. The groups of vessels set aside for a hunt by the method stated will be deployed in the areas assigned to them in such a way that they can effect an overlap of detection along the entire zone of possible firing positions of the enemy submarines. The distance between groups of vessels must be such that a detected submarine can be destroyed by antisubmarine missiles at any point of the observed area. The operations of vessels conducting a submarine hunt based on detection of the column of ionized exhaust gases of the missiles will be carried on in coordination with shore installations established for the same purpose.

The hunt for enemy missile submarines by ships of the PLO can

be carried on with the aid of the fixed hydroacoustical observation systems or with sonar buoys set out by vessels and aircraft. Surface vessels, utilizing the information on detected submarines as it comes in through the fixed hydroacoustical means of detection, can then go to the area where the submarines have been detected, and locate and pursue them.

In coastal zone operations, surface vessels can execute the hunt when called upon on the basis of primary data received from the fixed hydroacoustical systems of submarine detection. In addition, surface vessels can be used for patrol searches (kontrolnyy poisk) of those submarines which have penetrated into the coastal zone.

In solving missions concerning the defense of naval communication lines, surface vessels will be used for the protection of moving convoys against attacks from submarines, aircraft, surface vessels, and mines. Various classes of surface vessels will constitute the basis of naval forces assigned to defend communication lines. This is due to their ability to stay at sea for long periods of time, their readiness to repel enemy attacks under difficult weather conditions and their acceptance of a significant part of the effort in carrying out antisubmarine, antiaircraft, and antimine defense of convoys during their sea passage.

Surface vessels assigned for antisubmarine, antiaircraft, and antimine defense will resolve their missions primarily by the method of direct defense of the transports.

The antisubmarine defense of the convoys must be so arranged as to secure their defense from both porpedoes and missile weapons from submarines.

The antiaircraft defense of the convoys in coastal areas, must be effected by the troops of PVO of the Country, aided by vessels of antiaircraft defense. There will be a special need for the use of PVO antiaircraft vessels in the next few years for the protection of convoys moving beyond the areas of responsibility of the troops of PVO of the Country.

The convoys will be able to move away from the coast only in the company of PVO vessels carrying powerful antiaircraft missile weapons. In this connection, the duration of their movement outside the zone of responsibility of the troops of PVO of the Country will depend primarily on the presence of PVO vessels within the composition of the convoys, and on the number of antiaircraft missiles which can

be used for repelling air attacks.

In operations beyond the coastal zone of PVO, the PVO vessels will be included for the most part in the composition of the convoys, included in the general combat formations with them.

In many cases the PVO vessels, jointly with other PVO forces and resources in a common plan, will be used for defense of the basing and assembly points of the convoys. Specifically, they can be used for radar surveillance in a naval sector, as well as for reinforcing units of troops of PVO of the Country which protect installations of the Navy. This will permit a considerable increase in the depth of the PVO points of basing and communication lines within a naval sector. In newly created basing points where fixed PVO means have not yet been deployed, PVO vessels might be the only means of combatting the enemy in the air.

In open theaters of operations missile vessels will have to be detailed for screening convoys against possible strikes by enemy surface vessels, inasmuch as the convoys make their long distance passages slowly and at a considerable distance from shore. These vessels can be merged into independent groups. When multi-purpose missile vessels are used to reinforce the PVO of convoys part of them can proceed in the same formation with the transports.

In confined theaters of operations, missile vessels will not be used as often for screening the convoys, since this mission can be resolved for the main part by missile troops and naval aviation.

The use of surface vessels in antimine defense will consist of the detection and destruction of mines in the areas of bases and of operations of submarines and surface vessels, as well as along the routes of convoys. Inshore the search for mines will be carried out by search vessels (korabl-iskatel), jointly with the coastal and sea-going resources of PMO. In areas far removed from the coast, this mission can be resolved only by means of vessels.

In their search for mines in coastal areas where the places of mine-laying are determined by shore-based or floating posts of anti-mine detection, the search vessels must move into the places indicated by these posts, and conduct a search for the mines. The destruction of the mines located will be done by special vessels guided by the search vessels.

The use of surface vessels in support of ground troops will

depend on the missions being performed by the latter. Surface vessels can be used for landing operations and for the protection of flanks and certain installations in the rear of a maritime front, against operations of enemy missile vessels, including patrol boats.

In landing operations the basic mission of surface vessels consists of the transportation and unloading of heavy equipment in the landing sector. This mission is resolved by special landing craft whose operations are supported by missile vessels and vessels of the PLO, PVO, and PMO. The operations of the PVO vessels have an especially important role. As they follow the overall route and combat formations of the landing craft, they give cover from air strikes to the landing parties during sea passage, during the landing operation, and subsequently, until the deployment of antiaircraft missile units on shore; they will also protect the actual points of landing.

Missile vessels, especially patrol boats' (kater), will be used extensively to cover the landing force during their transport at sea, from enemy missile vessels. In many cases these vessels can be merged into detachments of fire support vessels (OKOP - otryad korableyognevoypodderzhki) assigned specific targets on shore, in the interests of the support of the landing operations.

Missile vessels and patrol boats will play an important role in the resolution of missions for the destruction of coastal communication lines serving the enemy's maritime groupings of troops. In addition, missile vessels can be used for the destruction of enemy surface vessels supporting ground troops which are situated outside the range of fire of the coastal, short-range missile complexes.

In resolving missions for the support of troops carrying out a defensive action on shore, missile vessels, especially patrol boats, will participate in the destruction of enemy vessels and landing force transports as they approach the defended coast; they will also participate in the destruction of the vessels protecting the enemy's landing operations, above all the PVO and PLO vessels.

The operations of missile vessels covering the troops on shore who are on the defensive against the enemy strikes from the sea are carried out in coordination with units of missile troops of the Navy. They will consist mainly of periodical patrolling by groups of vessels close inshore in order to detect and destroy enemy missile vessels attempting to penetrate areas not monitored by units of the missile troops of the Navy.

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The use of nuclear/missile weapons has had its direct effect on the development of such arms of naval forces as surface vessels. Having lost their role as the basic naval striking force, surface vessels have become an integral part of the support forces and have retained the capacity to resolve certain other missions.

Equipping surface vessels with cruise and antiaircraft missiles, with modern means of antisubmarine defense and installing new engines-steam-turbine and nuclear-will permit a wider use of surface vessels. New surface vessels will be able to stay away from their bases for a long period of time and, operating at a significantly long range from their coast, they will be able to perform various important combat missions.

In a future war, the use of surface vessels of various classes in coordination with other arms of the naval forces will give reliable support to submarine operations and will result in the more effective performance of combat missions against missile submarines of the enemy, as well as a more successful defense of the basing areas of naval forces.