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MEMORANDUM FOR: The Director of Central Intelligence

FROM : John N. McMahon
Deputy Director for Operations

SUBJECT : MILITARY THOUGHT (USSR): Engineer Support of Naval Operations

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 is basically an enumeration of engineer support tasks of naval operations for the initial period of a nuclear war, e.g., providing protective structures, temporary bases, roads, camouflage, etc., along with the measures they involve and some of the problems they entail. This article appeared in Issue No. 3 (76) for 1965. [redacted]

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

[redacted]

John N. McMahon

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MILITARY THOUGHT (USSR): Engineer Support of Naval Operations

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Summary:

The following report is a translation from Russian of an article which appeared in Issue No. 3 (76) for 1965 of the SECRET USSR Ministry of Defense publication Collection of Articles of the Journal "Military Thought". The author of this article is General-Mayor of Engineer Troops N. Mokhov. This article is basically an enumeration of engineer support tasks of naval operations for the initial period of a nuclear war, e.g., providing protective structures, temporary bases, roads, camouflage, etc., along with the measures they involve and some of the problems they entail.

End of Summary

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

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Engineer Support of Naval Operations
by
General-Mayor of Engineer Troops N. MOKHOV

In a nuclear war, the navy will be conducting operations to rout enemy naval forces, destroy his important shore installations, cut off or disrupt ocean and sea transport, and it will also be defending our own sea routes from attack by the enemy fleet and assisting the ground forces along coastal axes.

We all recognize what extreme importance the operations of the initial period of a war are acquiring; this includes naval operations, in which massed surprise use of missile/nuclear weapons can have a decisive influence on the entire course of the armed combat.

In a nuclear war, engineer support of the navy includes previous preparation of the naval theaters, implementation of an array of engineer measures conducted in the interest of the combat training of the branch arms of the navy, maintenance of their high combat readiness, and effective combat action in the course of operations. For this reason we believe that combat actions of the naval forces in the operations in an initial period of war should be at the center of our attention when ascertaining the tasks of engineer preparation of naval theaters and when selecting the most expedient means and working out the appropriate methods of engineer support of naval operations.

Engineer preparation of naval theaters of operations plays an extremely important role because the degree of preparation of the theater directly influences the combat readiness of the naval forces in peacetime and their capability to conduct surprise actions under war conditions. Here the foremost task is the previous establishment of a system of basing naval forces.

The NATO countries are paying much attention to engineer preparation of the theaters of military operations; the nature of this preparation corresponds to the plans of conducting an aggressive war, including operations of naval forces.

In order not to give the enemy a clear advantage in the initial period of war, it is necessary while it is still peacetime to establish a system of basing that guarantees rational protection of naval large units and units, materiel, and control organs for the purpose of making it difficult for the enemy, in the event that he initiates a surprise attack, to knock out the main naval forces, and for establishing favorable conditions for the actions of these forces.

Rational protection of troops or of strategic targets, the theory of which comprises the scientific basis of modern fortification, implies a combination of reasonable decisions on the protection of the given target. This combination includes all measures for reducing the vulnerability of the target. These measures must satisfy the following basic requirements: operational-tactical (or strategic), technical, and economic feasibility, relativity of protection, the gradual buildup of protective means with the preservation of constant combat readiness, the maximum increase of the degree of protection, and the concentration of the necessary means on the most important targets or groups of targets.

One of the principles of the theory of rational protection is dispersal. It is based on the understanding that one strike by a calculated means of destruction should knock out a minimum element of the battle formation of the naval forces or set of materiel, the loss of which will not affect the combat readiness of the naval large units. For this reason we must establish a definite system of dispersing forces and means on shore that will be most suitable for the given theater and expected situation. However, merely by dispersing and utilizing the protective features of the terrain, by duplicating facilities, camouflaging, and by carrying out antinuclear evasive actions, we cannot solve the problem of protecting our naval forces in modern war.

The establishment of a dispersed system of basing must also provide for extensive protective -- fortification -- construction, the volume and nature of which are determined on the basis of the principles of rational protection. Protected, dug-in, and ramparted structures most effectively increase the protection of the main elements that directly support the combat activity of submarines and missile-carrying aircraft in the course of an operation. They include underground shelter bases for submarines, weapons, ammunition, and fuel depots, shops for preparing weapons, shore command posts and communications centers.

Thus the organization of the basing of the naval forces must provide first of all a system of basing the nuclear submarines and missile-carrying naval aircraft. The most important elements of this system are obviously the naval bases and the network of airfields.

The modern naval base is a built-up area having within its confines basing and supply points as well as the forces, means, and various purpose facilities located at it.

The main basing points represent a complex array of structures. Thus, to support only the stopping-over, supplying, and between-cruise repairs of nuclear submarine large units requires constructing a long quayage and having installations that consume considerable amounts of electrical energy (including direct current), ordinary and high-purity steam, domestic drinking water and high purity water, nitrogen and air under high pressure, as well as large shops for navigation equipment repairs. The cost of the shore installations to support the above-mentioned types of supply is very high.

Such a complex of structures, spread out along quayage some one to 1.5 kilometers long and with buildings up to five stories high is virtually impossible to protect against enemy nuclear strikes. For this reason it is difficult to guarantee the stability of such a base under war conditions. It plays its role in the preparation of the first crushing blows against the enemy, but may not be able to support the naval strike forces in subsequent operations.

Consequently, simultaneously with the construction of the main basing points it is necessary to prepare temporary basing and supply points for ships and already in peacetime to provide for submarines to be supplied from floating bases. The provision of the floating bases themselves and the issuing to them of missiles and torpedoes and other types of rations can be done at the temporary basing and supply points. These points are considerably simpler in respect to engineer preparation, they are cheaper, enable temporary basing means to be used, and they are less noticeable and can be camouflaged better.

Besides the operational expedience, such a solution, in our opinion, enables us to raise the stability and survivability of the basing system, lower the energy requirement, shorten the quayage required, and reduce the construction time for the main submarine basing points.

The engineer support of ship repair is extremely important. On the basis of the problems of the most important repairs to submarines, missile ships, and other vessels, the organization of ship repairs in the fleet should, in our opinion, be solved in accordance with the following basic assumptions. New ship repair yards under construction should be situated a certain distance from other important targets in order to avoid their being hit by one burst of a calculated means of destruction. The protection of existing ship repair yards must be increased by dispersing the production facilities in the branch yards prepared for this purpose that carry out scheduled repairs on ships already in peacetime with the assistance of floating machine-shops and floating ship-hoisting means; protective shelter bases must be built for the repair of submarines. We must also in good time prepare sites for deploying mobile ship-repair groups, taking into account the use of the repair facilities of the merchant fleet.

If engineer support of the ship-repair system is done in keeping with the points cited, it will allow us, in our view, to create favorable conditions for the performance of repair work and thereby restore the combat capability of submarines and ships of the fleet in time of war.

Where the ship basing points and materiel reserve depots are widely dispersed and where it is necessary to prepare routes for the shore mobile missile units, road support is one of the main measures within the system of engineer preparation of the naval theaters of military operations. The main roads and larger towns may turn out to be under enemy strikes. This must be taken into account in the planning for the use and preparation of the existing network of roads, as well as in the building of new roads.

Engineer camouflage measures are conducted not only to hide the preparation of an operation, the deployment of the naval forces, and the nature of their actions. They must to the maximum degree promote the reduction of losses of the naval forces. Among the camouflage measures, the camouflaging of naval targets to be done by engineer means is very important both in peacetime and in wartime.

The improvement of means of observation, as well as of black-and-white and spectral-band aerial photography, which is used widely in reconnaissance by the enemy, forces us to go over to integrated use of camouflage means.

Horizontal, vertical, and convex camouflage nets, camouflage painting, smoke screening and improvised means can be used in integrated camouflage against visual-optical observation. Corner reflectors, vertical screen camouflage nets, T/O&E or improvised, can be used against radar observation. Thermal decoys, smoke screens, aerosols, and screens that reduce the thermal contrast of targets are used as camouflage against infrared observation.

A system of basing the fleet drawn up with the above considerations taken into account, will, it seems to us, enable us to ensure the necessary dispersal of ships, combat equipment, control posts and communications stations, materiel, and ship repair facilities, as well as their protection against sudden enemy attacks and the rapid deployment of the naval forces for actions at sea.

These are the fundamental points of engineer support of the system of naval basing. As far as concrete recommendations are concerned, they will emerge from the peculiarities of the specific naval theater and the tasks assigned to each fleet.

Engineer support of naval forces during operations is carried out by the engineer troops of the navy, the forces of the shore units and large units, and by the engineer troops of other branches of the armed forces in close cooperation and on the basis of a unified concept. The erection of shelters for personnel, equipment, and armament, the camouflaging of objects with T/O&E and improvised equipment, the maintenance and simplest repairs of motor roads, the operation of shore installations, and emergency restoration work when eliminating the aftereffects of enemy nuclear strikes are done by the troops themselves. The more complicated problems associated with the mechanization of works are entrusted to the naval engineer troops, who, depending on their T/O function, are equipped with various engineer-preparation equipment.

The main measures involved in engineer support of modern naval operations and of joint operations of the navy and troops of a front along coastal axes are: engineer reconnaissance, engineer preparation of the areas for basing the fleets, road support for transporting materiel and for maneuvering coastal missile and artillery units according to the plan of the deployment of forces and the conduct of combat actions by them, the support of amphibious landing operations and joint operations by the navy and ground forces.

Let us consider these problems in somewhat more detail.

Engineer reconnaissance is conducted for the purpose of obtaining reliable data on the status of the engineer preparation of enemy naval bases and ports, airfields and facilities in the antilanding defense system of an enemy coast, as well as information on the coastal strip of the sea and of the terrain in the areas of impending combat actions. These data may also be obtained from other types of reconnaissance. The most modern method is aerial photography, which enables one in a very short time to detect not only obstacles placed in the water, but also mixed minefields on the ground, and also to determine the depth of the water at the shoreline, which is particularly important for the detection of sandbars and shoals.

The engineer preparation of basing areas for fulfilment of the operational tasks assigned to a fleet will primarily involve engineer support of the operational deployment of forces. The basis of this support is previous creation of a system of basing. However, it cannot be expected that in peacetime all of the basing points will be sufficiently prepared or protected and surface depots constructed. For this reason, in a period of threat or at the beginning of combat actions, an additional number of temporary basing points may have to be set up quickly, from which large units of submarines and other vessels can operate. How can this problem be solved?

In our opinion, the necessary condition for the successful support of naval forces in the initial period of war should be considered the use of floating, mobile, and rapidly erected engineer means of basing in conjunction with other methods of construction in wartime.

The engineer preparation of temporary basing should include quayage, temporary technical sites for preparing and storing missile and artillery weapons, a mine-torpedo system, areas for a mobile missile-technical base, systems for supplying ships and shore installations with electric energy, steam, water and pressurized air, liquid-fuel depots and other types of supply depots, as well as a shore command post for the commanders of the shore base and the large unit being based, living quarters for the personnel of the shore base and units, and a medical station.

At a temporary basing point the engineer works include the construction of ramps and the main parts for setting up floating piers, reconnaissance of the water area at the approaches and in the area of piers by frogmen, the assembly and construction of floating piers, grading of areas for setting up technical means, digging of excavations, and erection of various purpose demountable structures, construction of shelters for equipment and transport means and shelters for personnel, preparation of the lines for laying engineer networks, preparation of a water source and water supply point, construction of approach roads between areas, and the assembly and erection of false radar targets and the camouflaging of shore installations.

Earth works account for 40 percent of the labor consumption, the road work 20 percent, the hydrotechnical work 15 percent, and assembly work to put structures together 10 percent; all of these are connected with the engineer preparation of the terrain and water area, and only up to 15 percent of the labor consumption for all these operations is spent on the engineer preparation for setting up the mobile means themselves.

In order to ensure the engineer preparation of an area for setting up a basing point for large diesel-electric missile-armed submarines, up to 1,000 tons of various building materials and structures have to be brought into the area (not counting the floating piers).

The naval engineer units set up and operate sets of mobile engineer means to provide the shore installations and ships based there with water, steam, electric power and compressed air. The remaining ship support facilities are set up by other services of the fleet.

In our opinion, it is advisable to divide all the operations of setting up a temporary basing point into two priorities in order to reduce the time for initiating the complete mobilization of submarines and surface ships at a temporary basing point and to put it into full service in the shortest time. The first priority should include the tasks that ensure the receipt and storage in the open and partly in structures of the main types of materiel reserves in the assigned volume, the setting up of shops for preparing the weapons, the berthing of ships at the piers, and the supplying of submarines. The second priority should include works that ensure setting up of all the rest of the temporary basing point complexes, the assembly and erection of structures for storing reserves in full and the improvement of the engineer preparation of the terrain (development and improvement of road networks and access roads, construction of shelters for equipment and personnel, improvement of camouflaging of shore installations and ships).

If we assume for our calculations the most complicated conditions of setting up a mobile base for large diesel-electric missile submarines on a coast that has not been prepared in the engineer sense, to perform all the operations would take 5,500 man-days and up to 2,700 machine shifts of various means of mechanization. A navy engineer battalion with a mobile engineer basing equipment company of 350 men can perform this task in 15 to 17 days, including nine to 10 days for the first priority operations. The erection of the floating piers, the deployment of the sets of mobile equipment, and the initial supplying of ships with the necessary rations can be carried out in one or two days, not counting the time required for forwarding this equipment to the area where the temporary basing point is being set up.

Road support of materiel shipments and combat actions of the shore forces and means during naval operations may require the construction of a large number of new military roads, column routes, detours around large installations and defiles, as well as the use of special engineer road units. The main tasks of road support will be engineer reconnaissance, technical coverage, restoration, maintenance, and construction of roads, access roads, and the artificial structures on them.

The road units and other engineer contingents of a fleet under the present organization are able to perform only that work associated with the maintenance of the road network in passable condition, the restoration of it, and the laying of column routes for maneuver of the shore units and rear services facilities. According to the experience gained in exercises, a fleet should have four or five engineer road battalions in order to perform the whole complex of road support works.

Engineer support of landing operations is one of the most complicated tasks that requires serious preparation of all forces and equipment beforehand.

As a rule, landing an amphibious landing force will be planned on an unprepared coast and, only if conditions are favorable, in a port. It can be done without transferring troops from transports to landing craft, or by a combined method in which the first echelon of the landing force is landed by the "shore-shore" method and the second by transferring the troops from transports to landing craft. The presence in a fleet of landing ships and various types of amphibious landing means enhances the success of an assault landing.

The most favorable shore for landing and disembarkation of an amphibious landing force is one with deep water near the shore. However, with a sea state higher than three balls the landing of a landing force on an open shore becomes very difficult. One could have become convinced of this in the exercises of the Twice Red Banner Baltic Fleet. At the same time, a sea state of three to four balls is still "operating weather" for the Baltic Naval Theater. Consequently, we shall have to find methods and means of landing amphibious landing forces even under these conditions.

The location of the units of marines and troops designated for landing as a landing force should be planned already in peacetime and should guarantee rapid maneuver into the concentration and waiting areas and embarkation points. The embarkation points must be chosen, as a rule, on those sectors of the coast where there is a developed network of roads and safe mooring for the landing ships and favorable conditions are ensured for rapidly loading combat equipment and troops on them.

The most favorable embarkation points are ports and naval bases with quayage protected from the sea and the necessary hoisting and transport means for rapid organization of the loading operations. But it is not always possible to make use of ports and naval bases. With the beginning of a war, strikes may be delivered on them, which will disrupt or delay the embarkation of a landing force. For this reason it is necessary to plan beforehand and prepare, in the engineer sense, on the coast a certain number of points of embarkation outside of ports and naval bases. The technical measures for organizing the loading of tracked and wheeled vehicles directly from the shore onto amphibious landing means are not very complicated. It is most important in this case to pay heed to the protection of the water area from the sea at the embarkation points so that the embarkation of the landing force can be guaranteed even if weather conditions should change.

The engineer support of the battle after the landing of an amphibious landing force is the most complicated problem of all. Acquiring special importance under modern conditions is the rapid rate and continuity of the landing of troops and unloading of heavy equipment and weapons, which will make it possible to rapidly build up efforts and maintain the superiority of the landing force over the enemy defenders in the battle following the landing.

Making lanes in the antilanding obstacles in the water and on shore is organized in keeping with the disposition of the battle formation of the landing force and the type of obstacles. For a motorized rifle battalion, for example, it is necessary to make two or three lanes, each 40 to 50 meters wide; for a regiment four to six, and for the first echelon of a motorized rifle division eight to twelve approach lanes. The lanes should be prepared in the shortest time in order to ensure the landing of the landing force without a pause. According to the experience of the exercise, this time was determined as H-20 minutes.

For the destruction of engineer antilanding obstacles in the water, special atomic warheads and floating Bangalore torpedoes with conventional explosives at depths of down to five meters can be used. The Bangalore torpedoes can be towed into the obstacle zone at the landing point by special towing launches or by helicopter. The detonation of a single charge will produce in a mixed minefield a lane 32 to 35 meters wide, and in a sandbar a ditch 1.3 to 1.6 meters deep and 12 to 13 meters wide. In limited cases the making of lanes can be done by diver-scouts released from a submarine or surface ship and equipped with special "ZLS" charges.

For making lanes in obstacles on shore and in the water it is advisable also to land, as part of a helicopter landing group, engineer subunits who will also perform the task. Eight to twelve frogmen and 16 to 24 combat engineers will be required for a landing point.

The nature of the engineer support of the unloading of the combat equipment and personnel of the second echelon of the landing force onto the beach depends on the methods of landing: directly onto an unprepared coast under conditions where the water depths allow the landing ships to reach shore, with transferring of the combat equipment and personnel from troop transports and landing ships onto self-propelled amphibious landing means and ferries made up of floating piers when there are sandbars and considerable shoals in the offshore area, as well as onto the quay walls of ports or naval bases in the event that they are taken.

Engineer assault-landing vehicles, the BAV large amphibious truck, K-61 and PTS amphibious transporters, the BTR-60P armored personnel carrier, floating piers, and the MI-4 and MI-6 helicopters can be used under favorable conditions for transferring personnel and equipment of the second echelon from the landing ships to the shore.

Tanks and trucks can be taken from the landing ships and transports to the shore using ferries made up of sections of the floating piers PRP-52 or PM-61 previously fitted out with a ramp for landing the tanks and wheeled equipment.

A section of floating pier 32 meters long with the attached ramp can be towed on the water to the landing point at a speed of eight to nine knots in a sea state of three to four balls. Two landing barges or seagoing tugs tied up along the sides of the pier can be used to tow such ferries from the landing ship to the shore and back. Each ferry accommodates five tanks or armored personnel carriers. On the basis of the experience of an exercise, one trip of two kilometers took 100 minutes, including the loading and unloading.

The engineer preparation of a landing base is done by specially designated naval engineer units that are put onto the enemy coast after the first echelon of the landing force. The landing base is intended for support of the unloading of the heavy equipment and rear services of the landing force, to provide them with reserves and with all types of supply, to evacuate the wounded and sick, and also to support the fleet forces operating in the area of the landing until it is completed. In order to support the combat actions of the landing force on the shore, the landing base can be redeployed to a temporary basing point of the ship large units.

The nature and degree of engineer preparation of a landing base depend on the make-up and tasks of the landing force and are determined by the decision on the operation. In the planning of a landing operation it is necessary to envisage the capture of a water area that is protected from the sea. Meeting these requirements are ports or port sites, the capture of which allows one more rapidly to ensure the disembarkation of subsequent echelons and rear services of the landing force regardless of weather conditions. This is a very important requirement and must not be forgotten. The unloading of a transport in the open roadstead when the sea state is three to four balls is practically impossible because of heavy rolling.

The engineer support of various types of modern naval operations has certain general peculiarities. Before an operation is initiated, ordinarily there will be only a limited number of engineer forces and means available; the majority of engineer units, construction units, and production facilities will be at peacetime strength. The times for the execution of engineer works, however, will be shorter than for ordinary operations. Moreover, the lack of combat experience in executing engineer support tasks under conditions of massed use of nuclear weapons will put the engineer and construction units in a difficult position: they will have to be the first ones to carry out works on the coast and in the areas of naval bases in the presence of heavy destruction and extensive zones of radioactive contamination of the terrain. They will also be required to carry out engineer works in large volume for camouflage from enemy observation.

Acquiring special importance in all types of naval operations is engineer support of the operational deployment of the submarine forces. It must be provided for in the plan for engineer support of operations as a first priority task.

It is obvious that, with submarines operating at distances of several thousands of miles from their bases, they cannot be oriented solely to permanent basing points prepared beforehand. Such points will have to be moved forward and prepared on the basis of the necessity of supporting the submarine forces in the areas of combat actions of the fleets.

When naval forces are assisting forces on the defense along coastal axes, the main engineer measures are the support of the survivability of the basing system in the face of surprise enemy use of weapons of mass destruction and the support of the antimissile defense of the fleet targets. On this basis, all of the engineer measures should be directed toward supporting the dispersal of the ships and materiel, the constant combat readiness of the forces to repel surprise attacks by the enemy, and the rapid transition from defensive to offensive actions. Very important here will be engineer support of the passage of our own ships through the inland waterways, the river and canal systems.

Submarines, aircraft, surface ships, and coastal missile and artillery units of the fleets are called upon for disrupting the landing of enemy landing forces. The engineer support of these forces does not differ in principle from the cases discussed above. The conduct of combat actions in the defense of a seacoast depends on a previously developed antilanding defense, in which engineer measures play an essential role. The main forces of the ground forces allocated for combat against the landing force are stationed in areas from which timely maneuver is possible to the most probable axes of the landing of a landing force. The engineer units and water crossing equipment of the fleet are assigned along with the engineer forces and means of the ground forces to set up antilanding engineer obstacles in the water.

Placement of the system of minefields on the approaches to the coast is done by naval forces.

* * *

We are witnessing a fundamental conversion of the navy to atomic energy, missile/nuclear weapons, telemechanics, and radioelectronics. All of this has drastically changed the nature of the engineer support of the naval theaters, and has also increased considerably the requirements for engineer support of the naval forces in an operation.

At the present time the tasks of engineer support of the navy, during both peacetime and particularly in time of war, can be accomplished successfully only with the combined use of the engineer and military construction forces and means with extensive use of mobile basing means. Three or four years ago we had too few of these means; now we have considerably more. It is already possible to accomplish crucial engineer tasks with mobile basing means. Forms of organization of the naval engineer units have been found for the use of these mobile bases. Now, we feel, we must find, and test in exercises, new methods of tactical employment of them in accordance with the new tactics of the combat means of the navy in modern naval operations.

We must also improve the forms of organizing engineer support, modernize the methods and reduce the times to perform works, and develop improved mobile engineer basing means for the new types of naval combat means.

The problems raised in the article regarding the engineer support of the forces of a fleet in modern naval operations do not exhaust the subject, but require further comprehensive study in military science work and in the system of combat and operational training.