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CENTRAL INTELLIGENCE AGENCY
WASHINGTON, D.C. 20505

1444

17 May 1973

MEMORANDUM FOR: The Director of Central Intelligence

SUBJECT : MILITARY THOUGHT (USSR): The Application of
Scientific Research Methods to Naval Problems

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 a quite general discussion of the value of scientific methodology, such as operations research by computer, in solving naval problems. Specific problems such as antisubmarine warfare, ballistic missile operations, and joint operations are nominated for study, but no concrete examples of current projects or past experience are presented. This article appeared in Issue No. 1 (89) for 1970.

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.

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W. E. COLBY
Deputy Director for Operations

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Intelligence Information Special Report

COUNTRY USSR

[Redacted]

DATE OF INFO. Early 1970

DATE 17 May 1973

SUBJECT

MILITARY THOUGHT (USSR): Increasing the Role of Military-Scientific Work in the Fleets in Resolving Problems of Combat Operations at Sea

SOURCE Documentary

SUMMARY

The following report is a translation from Russian of an article which appeared in Issue No. 1 (89) for 1970 of the SECRET USSR Ministry of Defense publication Collection of Articles of the Journal "Military Thought." The authors of this article are Captain First Rank B. Balev (Candidate of Naval Sciences) and Colonel F. Smirnov. Their comments are quite general, asserting the value of scientific research and the fact that this value is recognized throughout the Soviet Navy. The use of computers in this research is mentioned with a capability for ships at sea to communicate directly with the computers. Important problems which the authors identify for future research projects are the employment of ballistic missile submarines, antisubmarine warfare, coordination, and operational security.

END OF SUMMARY

COMMENT:

[Redacted] Captain First Rank B. Balev has authored several articles since 1969 on using the scientific approach in organizing military control and naval communications, defending lines of communications and naval action during World War II in Morskoy Sbornik and the Soviet Military Review. Lieutenant Colonel F. Smirnov reviewed A. N. Mushnikov's Men of the Baltic Fleet in the Campaign for Leningrad, 1941-1944 in 1955. Military Thought has been published by the USSR Ministry of Defense in three versions in the past--TOP SECRET, SECRET, and RESTRICTED. There is no information as to whether or not the TOP SECRET version continues to be published. The SECRET version is published three times annually and is distributed down to the level of division commander.

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Increasing the Role of Military-Scientific Work in
the Fleets in Resolving Problems of Combat Operations at Sea

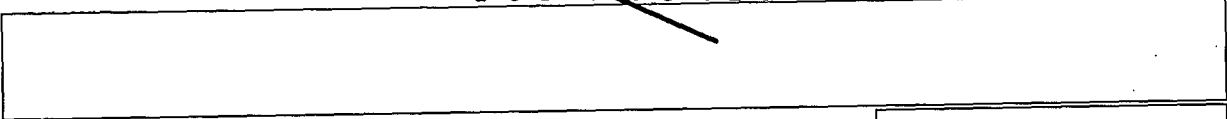
by Captain First Rank B. Balev, Candidate of Naval Sciences
Colonel F. Smirnov

The equipping of fleets with missile/nuclear weapons and the newest combat equipment demanded that naval science study the entire complex of new and very complicated problems of employing forces and weapons in combat operations at sea. The most urgent task of this study was to work out the problem of frustrating enemy nuclear strikes launched from the sea against vital installations in the countries of the Socialist commonwealth.

In connection with the broadening of the arsenal of weapons of war, the steady increase in their cost, and the rapidity with which they become obsolete, great demands were made for a scientific foundation on which to build the Navy and to develop its weapons and combat equipment, so that the technical equipping and the increasingly frequent rearmament of the various forces would be commensurate with the economic capabilities of our country.

In resolving all these problems many questions arose, the majority of which had never been encountered by the Navy, either in past wars or in the practical experience of the first years of postwar operational and combat training. There had not even been a serious theoretical elaboration of these completely new questions. Just how important it was to investigate them rapidly, thoroughly, and comprehensively may be judged by at least the fact that they encompass the following: the principles of organizing and mounting strikes against installations in enemy territory; the possibility, early in the war, of hitting his strike forces deployed in seas and oceans in order to frustrate or appreciably weaken their nuclear strikes; and the requirements, growing out of these factors, for equipping our fleets and ensuring their combat readiness.

The necessity has arisen for a basic review of the procedure for studying the World Ocean and the approach to be used in dividing seas and oceans into appropriate operational zones and



axes; seeking out new ways to increase the combat readiness of forces and weapons; completing the organization of service in the fleets; and greatly refining other vital and complicated matters.

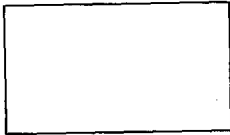
For the first time in the history of our fleets, it has become necessary in peacetime to work out methods for performing combat duty on submarines and surface ships and to conduct research on how to support them with large units of missile-carrying naval aviation; and, also, to find ways to provide rear area support for our forces in distant areas of seas and oceans, since we have no naval bases outside the borders of the Soviet Union and all our ship supplies and repairs, as well as rest and recreation for personnel, must be handled by mobile facilities of the rear area.

An important aspect of the military-scientific work of our fleets in recent years has been the question of increasing the effective use of nuclear/missile submarines to be used in destroying enemy land objectives. We have had to give particular attention to the maintenance of secrecy in the deployment and movement of submarines in given areas.

Among the urgent tasks of military-scientific work in the fleets are: to perfect methods of independent and combined use of forces and weapons in combat against carrier strike large units; and to find reliable antiaircraft defenses for fleet forces at sea.

The broad range of missions which devolves upon the fleet in a strategic operation in a theater of military operations also makes it necessary to concentrate military-scientific efforts on the following: a detailed study of coordination by naval formations and large units with other branches of the armed forces; research into ways of perfecting methods for launching combined nuclear strikes against enemy shore objectives and landing assault forces; working out fire support for ground troops; capabilities for disrupting naval communications lines and supporting our own troop movements, and so forth.

The theoretical resolution of problems and individual questions and propositions could not and does not proceed without differences of opinion. The inertia of old views on fleet use has led to attempts to squeeze the use of new fleet forces, with



their tremendous combat capabilities, into the framework of mere joint shore operations with ground forces of coastal fronts. This has naturally been a great hindrance to the development of modern principles of fleet use and the introduction of these principles into operational and combat training.

But thanks to Soviet naval science, guided constantly by Marxist-Leninist methodology and drawing freely on the sphere of mathematical research, the most effective ways for the overall development and use of the Navy are being worked out correctly and kept current.

At the present time all scientific work in the Navy is handled by the combined efforts of naval scientific-research institutions, the Naval Academy and naval schools, and the fleets. An important part of this consists of military-scientific work within the fleets, where it is applied directly in actual practice, where the correctness of theoretical propositions is tested in the shortest possible time during operational, combat and political training, and where the latest weapons technology is mastered and applied daily.

In addition, the fleets acquire a great deal of statistical information on the effectiveness of various methods of using weapons and on the tactics of various arms of service and the results of their collaboration. Comprehensive analysis of this information furthers the successful resolution of many questions regarding fleet development and the principles of fleet use in modern warfare.

The introduction of the Regulation on Military-Scientific Work in the Navy led to a new and fruitful stage in the further development of this work in the fleets.* This Regulation provided for the establishment and significant improvement of a single procedure for organizing, planning, and conducting military-scientific work in all fleets and large units. The Regulation also furthered close coordination, by time limit and by content, between the yearly plans for scientific work and the plans for operational and combat training in the fleets.

* The Regulation was promulgated in 1965 by Order No. 5 of the Commander-in-Chief of the Navy.

An analysis of experience acquired in recent years led the staffs of some fleets to the conclusion, a correct one in our view, that to increase the effectiveness of military-scientific work, it is advisable to have not only a yearly plan of military-scientific work but also quarterly plans, instructing large units two months in advance on the exact extent of work expected of them. There is every reason to believe that such plans will be an excellent aid in effectively guiding and correcting our military-scientific work by directing our efforts toward resolving urgent problems which keep arising in the use of forces and weapons of all kinds, and resolving these problems under conditions most closely approximating an actual combat situation at sea. At the present time, the planning of military-scientific work in the majority of fleets successfully combines the work of fleet officers with that of a professorial-instructor staff drawn from nearby higher naval schools in order to work on various subjects. This has a very useful effect on the combining of theory and practice as well as on the training of young officers.

At present, the basic forms of military-scientific work in the Navy are: collective or individual theoretical studies by officers on various questions in their fields of specialty; papers; lectures; articles in military journals; seminars; military-scientific and military-technical conferences at the level of large units, formations, and entire fleets; and wrapup conferences on the most important problems, conducted by the Commander-in-Chief of the Navy.

A completely new form of military-scientific work has also been introduced in recent years and has, perhaps, already taken shape--the systematic planned participation of fleets in large-scale combined scientific-research projects conducted by various institutions on the instructions of the Main Staff of the Navy. This places a basic responsibility on fleets to accumulate and disseminate statistical information and to conduct practical tests, during operational and combat training, on the specific and general theoretical propositions worked out in combined scientific-research projects in institutes of the Navy and in the Naval Academy.

Historiographical and information work form an important part of military-scientific work in the fleets. All of the above-mentioned forms of military-scientific work in the fleets are inseparably linked together and are usually conducted jointly, developing and supplementing one another.

The collective and individual theoretical resolution of individual questions, propositions, and aspects of major themes or problems by officers is the basic daily routine of military-scientific work in the fleets. As a rule, this work involves all junior and senior officers, admirals, and generals in all fields of specialty. It has been established over recent years that, because of the rapid growth of the combat capabilities of fleets and the steady increase in new equipment, the theoretical resolving of a number of important questions, especially those on naval art, is becoming too much for one person. Even with the best will in the world, one person cannot in one year, for example, work out the problems of directing forces in a naval operation or of organizing the coordination of forces and weapons in an operation to disrupt sea and ocean communications, to say nothing of more complex problems. Therefore, with increasing frequency we see several people collaborating to work on the same problem, thus forming creative collectives. Everything considered, collective work on problems, especially difficult ones, is increasing.

The experience of military-scientific work in the fleets shows that it is very useful to have the same questions, propositions, or parts thereof, worked out at the same time by several groups or individuals, since this makes it possible to approach them from different viewpoints and consequently to study them more fully and comprehensively.

This approach to working out problems also has great merit in that it brings forth and cultivates personnel with scientific-research propensities and makes it possible to train the most capable of them as professional military scientists. In this connection it is interesting to note that over the past three years thirty-seven naval officers have defended dissertations and received academic degrees, three of them doctorates of sciences.

We must in every possible way further instill in our officers a taste for such research, encourage the best officers, and improve their working conditions in every way possible. To stimulate collective and individual work, it is advisable to make wider use of the military-theoretical journals, information bulletins, and surveys put out in the fleets by publishing the best research studies in them. [The time has evidently come to charge the appropriate officers on ships, in units, and in staffs with the responsibility of making a notation in the service records of their subordinates if the latter participate in military-scientific work and have articles published in the military press.] In our opinion, the encouragement of naval officers who actively prove themselves in military-scientific work represents a response to the decrees of the CC/CPSU and the Council of Ministers of the USSR concerning a further increase in the role of science in all aspects of building communism.

Military-scientific and military-technical conferences conducted at the level of large units, formations, and entire fleets are the most important and, if we may say so, the most conclusive form of military-scientific work. These conferences consider those problems for which research requires extensive and thorough scientific collation on the basis of resolving an entire series of complex problems and analyzing numerous factors. The conferences must be very carefully and comprehensively planned so that they will be effective and will be able to summarize the military-scientific work for a given period. This is a very difficult and responsible task, and it is not surprising that they are not held very frequently. As a rule, each fleet holds one fleet-wide military-scientific conference a year, and each formation and large unit also holds one conference a year. The choice of subjects for these conferences is determined by the main problems of operational and combat training as projected for the year.

Conferences of fleet large units on matters involving combined combat operations take place jointly under the direction of the senior commanding officer. For example, questions on antisubmarine warfare are discussed at joint conferences of large units of antisubmarine ships and antisubmarine aviation, this achieves full and comprehensive coverage of the subject, taking into account the specifics of the actions of each large unit individually and in coordination with other large units.

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-10-

It is appropriate to emphasize that conferences are successfully fulfilling their role in working out vital principles of fleet activity. For example, because of the conferences, we succeeded for the first time in obtaining original materials for working out methods to determine the necessary makeup of combat service forces in various areas of the World Ocean, their organization, and methods of using and directing them.

Fleet combat service, as a new form of activity and the highest form of combat readiness of fleet forces, has brought to light many urgent problems requiring comprehensive scientific research, on which officers of ships, units, and staffs, have concentrated their efforts and on which tasks of military-scientific conferences have been based. Particular attention has been given to seeking ways of supporting extended ship operations in areas far from bases, under severe sea conditions and in constant combat readiness. It was at fleet conferences that the need became obvious for resolving anew many problems of Party political work in situations where ships spend long periods of time away from their bases. A specific recommendation was made, and later implemented, that special groups be created in the political directorates of fleets to direct Party political work in combat service. A proposal was made to set up an organization--which has fully justified itself--of Party and Komsomol groups in combat watches on ships and in aircraft crews. It was also arranged to use communications equipment for transmitting a radio-photo newspaper; other similar measures were also taken.

Conferences have made it possible to test and refine new theories of tactics and the art of operations and to work out common viewpoints.

Fleet scientific conferences have also been of great assistance in determining the most probable areas of combat patrolling by American nuclear/missile submarines and in estimating the actual capabilities and composition of our antisubmarine forces in order to track enemy submarines continuously and, if necessary, to engage them in combat.

As a result of military-scientific conferences, aviation staffs and air staffs of fleet large units worked out and presented recommendations for perfecting aerial reconnaissance methods against carrier strike large units by having groups of aircraft approach enemy forces at low altitudes and using jamming aircraft.

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-11-

As an outgrowth of broad discussions of landing operations at conferences, a number of fleets have developed and are now putting into practice a body of general knowledge on organizing the loading and unloading of combat equipment and personnel for assault landings consonant with the various types of landing craft and of ships of civil departments. A list of the basic operations-combat documents for planning landings was made and a standard format established. An analysis was also made of the possibilities for conducting fleet combat operations in cases where war begins without the use of nuclear weapons.

The experience of fleet conferences shows that the time has come to systematically include in our fleets representatives from navies of the countries of the Socialist commonwealth. In this connection, it is worth studying in detail scientific conferences held in various fleets over the past years, conferences which saw the participation of representatives of the armed forces of several socialist countries, as well as the staff of a military district and large units of long-range aviation.

We consider that several changes should be introduced into the present procedures for implementing recommendations worked out at fleet conferences. It is particularly advisable that the decisions made by the Main Staff and the central directorates in response to recommendations resulting from fleet conferences be widely applied in the fleets, with due consideration, of course, for security regulations.

The annual final conferences presided over by the Commander-in-Chief occupy a special place in the field of military-scientific work. They finalize the resolving of various problems on a Navy-wide basis and promote the development of unified views among command personnel. Also discussed at these conferences are fundamental questions involving the principles of operational art and tactics, questions which are linked to the further development of forces and weapons.

The systematic planned participation of fleets in major joint scientific-research work conducted by various institutions on orders of the Main Staff permits the timely implementation of worthwhile practical suggestions and the testing of the results of theoretical research. Experience emphasizes that this kind

of close cooperation among fleets and scientific-research institutes and academies produces very positive results and is the most effective way of resolving the complex problems of combat actions at sea. Stated more succinctly, the joint fulfillment of work by scientific-research organizations and fleets keeps theory in line with reality, thereby ensuring the complete satisfaction of our practical requirements.

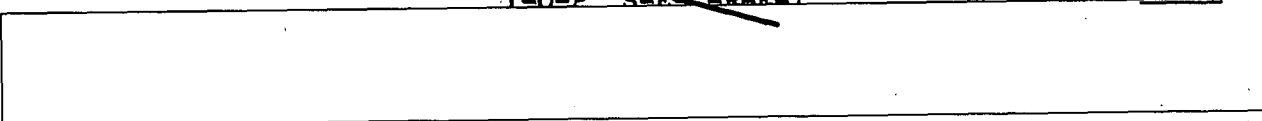
In reviewing the role of military-scientific work in the fleets, we must say that mathematical methods of analyzing various occurrences and events find very broad application in all aspects of fleet activity. Of greatest importance now is that admirals, generals, and officers of all levels master these methods and apply them skilfully in actual practice.

The use of computers in applying mathematical methods of operations research not only produces results much more rapidly but also increases their reliability; this promotes a greater insight into the essence of the processes and events under review and furthers the discovery of new patterns in the development of naval art.

Modern mathematical methods of operations research with the wide use of computer technology enable us to find the best solutions in a short time and with the fewest possible errors and miscalculations. This in turn has made it more important to make efficient use of modern mathematical methods in military-scientific work. In mastering these methods staff officers are greatly aided by specialists from the computer information centers (informatsionno-vychislitelnyy tsentr-IVTs) of fleets, who are being used more and more for studies and consultations.

Thanks to the systematic increase in mathematical knowledge and the adoption of computer technology, the fleets have collected, organized, and brought together in special libraries a significant body of information on the methodology and programming of various operational-tactical, tactical, military rear area, technical, and special problems for solution by computer.*

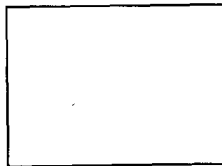
* At the present time, the library of methods for solving problems of the Navy by computer contains about 200 possible methods of making calculations on the use of submarines, aircraft, coastal rocket units, surface ships, and support forces.

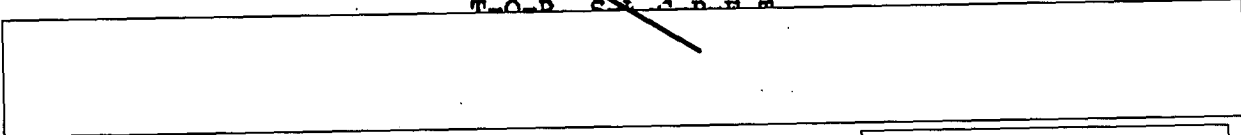


In addition, there are methodologies for information problems which, with the aid of computers, make it possible to automate the collection, processing, and dissemination of information on the status of the forces and weapons of the fleets. The implementation of these methodologies by computer furthers research on various questions and problems of fleet activity within a very wide range of variable input data and with great accuracy. This in turn offers the possibility of obtaining optimum research results and assuring a sufficiently high degree of effectiveness. It is appropriate to note here that, although appreciable progress has been achieved during the past two to three years, the full potential of this technology is far from being realized because large units and units lack personnel with a good understanding of the mathematical methods of research. Consequently, the methods and programs worked out in the computer information centers of fleets, in the Naval Academy, and in the institutes of the Navy, are still being assimilated in some units and large units with difficulty.

In order to widen the circle of officers capable of applying computer technology to their own work (particularly those on duty in locations far from fleet staffs), a system has been created for long-distance use of facilities of the computer information centers. Should the need arise, officers of large units, units, ships, and installations send telegraph requests to the fleet computer information center for various calculations to be produced by previously agreed upon methods and the results are sent back by telegraph. ✓]

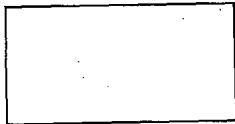
During officer training, it is advisable that officers of large units and units study mathematical methods of operations research to whatever extent needed in their work. In this connection it is desirable to organize, in garrison officers' clubs or directly in large units, special courses for the study of mathematical methods of operations research, for which instructors may be obtained from specialist-mathematicians from the computer information centers of fleets, faculties of higher naval schools, and specialists from civilian higher educational institutions in areas where fleet large units are located.

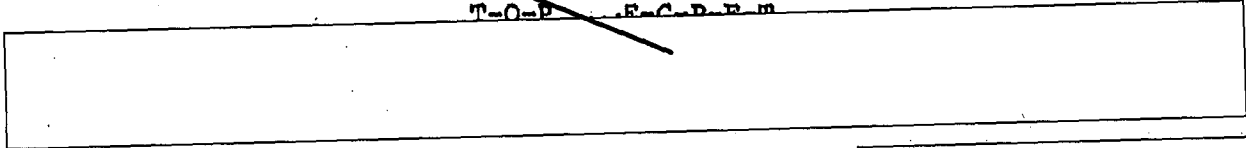




Since 1967 the fleets have devoted considerable attention to instilling the methods of network planning and control (setevoye planirovaniye i upravleniye - SPU) into the activity of staffs and administrative organs, which requires that the officers have a clear understanding of its fundamentals. For this reason, the study and practical application of network planning and control methods has become one of the important divisions of military-scientific work in the fleets. At the present time network planning and control methods are being applied in the most diverse areas of fleet activity: from the repair of ships, weapons, and equipment, to bringing them and units to a high degree of readiness, even when fleet forces are actually engaged in operational and tactical missions. The experience gained in applying network planning and control methods shows that they appreciably accelerate the fulfilment of various measures, give a clear picture of the problem areas in attaining final results, and clearly define the direction and control of various processes of activity. The introduction of network planning and control methods into actual practice has required the working out of standard network graphs for various fields of activity. The fleets have already worked out network models and standard variations of network graphs, taking into account the actual composition of forces, the geographical conditions, and the specific characteristics of the assumed areas of combat actions. The greatest successes in network planning have been achieved in the Red Banner Pacific Fleet, where military-scientific work included the collation of experiences gained in the use of network planning and control and where it was successfully used by fleet staffs and institutions.

Historiographic work in fleets aids in the systematic accumulation of historical materials important for the preservation and further development of the best combat traditions of the fleet, large units, units and ships; and it furthers the cultivation in personnel of a spirit of high patriotism and boundless devotion to the building of communism. This work broadens the military horizons of officers, admirals, and generals and aids them in assimilating the history and theory of naval art in forming the habit of using a creative approach in the resolution of practical problems.





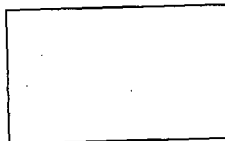
Historical work has received particular impetus in recent years in connection with the fiftieth anniversary of the Soviet State and the outstanding events of the Great Fatherland War.

Almost all large units have set up rooms of combat glory and historical museums, and accounts of the combat careers of large units are written and systematically updated. Veterans' Councils do a great deal of work in connection with the rooms of combat glory, by making personnel aware of the combat traditions of large units and units.

Fleets and large units have historical journals which present events characterizing life and combat activity in large units and aboard ships and in which the best personnel are given recognition. The articles in these journals quite fully reflect the combat service and the daily combat and political training; and they include an analysis of events.

In officers' clubs, volunteer military-scientific societies made up of reserve admirals, generals, and officers are working successfully. Officers and admirals on active duty are scheduled by these groups to appear before them with reports and lectures. Conferences on military-historical themes are held regularly, as are veterans' meetings; large historical projects are being carried out; and collections of memoirs are being published. Members of the society regularly conduct military-patriotic work among young people in the fleet and in civilian jobs.

At the present time the staff of each fleet assigns one of the best-trained officers of its operations directorate (department) to the direct planning and organization of military-scientific work in the fleet and control over its implementation; this officer carries out these functions in addition to his other assigned responsibilities. In our opinion, the corresponding organization of the system of directing military-scientific work demands substantial improvement, since the organization of control over military-scientific work has become substantially more complicated with the abolition of the military-scientific sections which existed previously in fleet staffs. Many admirals and officers of fleet command staffs believe it is advisable for appropriate echelons to review the question of creating special fleet organs





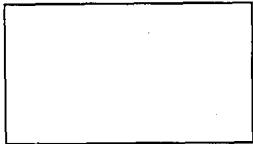
to direct and coordinate military-scientific work; these organs would be directly subordinate to fleet chiefs of staff, and it would be useful for them to include information and historiography specialists.

The status of military-scientific work is periodically reviewed at meetings of the military councils of fleets and formations, which raises the quality of the work and increases the responsibility of commanders for its progress and practical application of its results. Over the past two years, staffs in some fleets have begun to work out special plans for implementing the results of military-scientific conferences. Organizing control in this way produces positive results, and it is advisable to make the practice more widespread. At the end of the year, fleet staffs publish a summary of the results of their military-scientific work, in an order of the fleet commander. The High Command of the Navy is devoting considerable attention to military-scientific work in the fleets. From time to time the High Command hears and discusses reports on this subject from the fleet chiefs of staffs. These meetings usually include representatives of all the fleets, of central directorates with an interest in the subject, and of scientific-research institutes.

The Military Council of the Navy also discusses the status of military-scientific work in fleets and in the Navy as a whole.

In conclusion, we note that military-scientific work has become an established part of the daily life of the fleets. Commanders, commanding officers, officers, admirals, and generals participate actively in this work and are perfecting its forms. Much has been achieved, but even more remains to be done. Thus, the most immediate problem at present is the further resolving of problems regarding the use of missile submarines armed with long-range ballistic missiles for striking installations in distant territories.

It is extremely important that we conduct comprehensive research on our capability to apply new types of antisubmarine forces and weapons in combat with enemy missile submarines, as well as on methods of mounting strikes from missile submarines against ground objectives by using space vehicles to assist in naval reconnaissance and target designation.



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More thorough research is also required on ways to increase the security of the activities of fleet forces, especially of submarines, in areas where enemy missile submarines are active, and also in actions to disrupt enemy transport of troops and combat equipment in oceans and seas.

In our military-scientific work in fleets we must, as before, direct our efforts toward finding ways to perfect the organization of coordination among the various arms of fleet forces and long-range aviation in operations for the destruction of carrier strike forces, and to perfect methods for joint operations between naval large units and large units of other branches of the armed forces in strategic operations in a theater of combat operations. No less important is the need to work out methods of action by the forces of a fleet in warfare using only conventional weapons and to conduct research on problems on the use and comprehensive support of large units of a fleet and their coordination with other branches of the armed forces. In doing this we must devote more attention to studying the possibilities of creating a floating rear area and its use for supporting fleet forces during operations in distant seas, and of conducting research into ways of creating mobile shore installations in order to allow for flexibility in deploying fleet bases. We shall therefore continue our comprehensive development of military-scientific work in the fleets and shall seek new forms; and we shall effectively exploit, and efficiently apply, scientific-research experience, both our own and that from abroad.

We must make broader use of modern research methods and of the divisions and branches of Soviet science, as well as new technology, in order to further improve this important aspect of fleet activity and to raise the combat effectiveness and combat readiness of our Navy in every way possible.

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