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NAVIES IN WAR AND IN PEACE

by Hero of the Soviet Union, Admiral of the Fleet of the Soviet Union S. G. Gorshkov

THE BASIC MISSIONS EXECUTED BY NAVIES IN THE COURSE OF THE SECOND WORLD WAR

The Second World War was basically continental, /24* since the main goals of it were achieved by armed combat on the ground fronts. However, certain strategic missions could not have been executed without the participation of navies (especially in the Pacific Theater); for example, sea and ocean communications were disrupted almost exclusively by naval forces. Consequently, combat operations at sea, although by nature generally subordinate to the strategic missions executed by the ground forces, nevertheless had a significant effect on the course of the war as a whole.

In our view, in the Second World War the navies were charged with the following missions: to disrupt the sea and ocean communications of the enemy in order to undermine his military-economic potential; to protect own communications; to cooperate with own ground forces in defensive and offensive operations, and above all in the opening of new areas of military operations on land and in increasing the rate of the offensive operations of own ground forces in the coastal areas by carrying out amphibious operations of various scales; and also to destroy groupings of hostile naval forces.

The communications battle extended to all sea and oceanic theaters, although its importance in the overall volume of military operations at sea differed in different regions. The greatest weight of this battle fell in the Atlantic theater, and the cutting off of shipping to England was the main mission of all Fascist German naval activity. In analyzing the situation, the heads of the

*Numbers in right margin indicate original pagination.

allied states who gathered in Casablanca in 1943 recognized the necessity of directing the main efforts of the allied nations primarily toward combatting the German U-boats. Churchill, for example, directly stated that the only thing he was really afraid of in the course of the entire war was the German U-boats.

In the course of WW II some special features of naval operations against communications emerged, occasioned by the growth of shipping and the poor preparedness of the belligerents for this type of operation. Therefore initially, to disrupt sea communications the navies devoted insufficient forces which were capable of achieving only comparitively small results. Only with an increase in these forces and the acquisition of experience, and also with an increase in the volume of shipping did the scale and activity in sea communications gradually increase.

Fascist Germany was late in developing the struggle against sea communications in the Atlantic on a widespread scale. In this connection, the events on the main, Soviet-German front had a great influence on these events. Germany's attack on the Soviet Union required the concentration of all of its possible forces on the /25
Eastern front of the armed struggle, therefore Germany conducted operations against communications in the Atlantic practically only with submarines without the support of other types of forces (especially without aviation which could have operated not only against ships at sea but also against ports, industry, and accumulated stores of supplies). The diversion of the main German efforts to the East permitted the British and Americans to develop mass construction of escort ships to protect communications from U-boat attacks, and to initiate the rebuilding of the merchant fleet. As a result the effectiveness of the Fascist German Navy and its influence on the British economy and on the level of the condition of the British armed forces (which, by the way, did not play a decisive role either in the war as a whole or even in its concluding stage) were reduced. The influence of the struggle in the Atlantic theater on the course and outcome of the war, although it was significant, was not decisive.

The integrated employment of various types of naval forces, and also of new forms of weaponry and combat equipment created during the course of the war, such as radar, sonar, homing torpedoes, the snorkel, etc., were characteristic of the battle of communications. The change in the combat characteristics of armament naturally evoked a change in the employment of forces. Thus, massive employment of forces and means became possible, the boundary between the conduct of day and night-time operations was erased, and the focus of attacks on ports and bases as the focal points of sea communications increased many times over.

Moreover, despite the exceptional threat to submarines by ASW forces, the German naval command did not conduct a single operation or other specially organized combat actions directed at destroying these forces, which doubtlessly reduced the intensity of the [sea] communications battle.

As is well known, different types of naval forces played far from the same role in the battle of sea communications. Thus, of the total number of destroyed transports, submarines sank more than 65%, aviation, about 20%, surface ships 6%, and 8% perished on mines.*

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* S. N. Maksimov, and K. V. Penzin. Voyenno-morskoye iskusstvo flotov kapitalisticheskikh gosudarstv vo vtoroy mirovoy voyne (The naval art of the navies of the capitalist states in WW II), Leningrad, 1962, p. 166.

However, these figures are not enough to determine the place of the forces in the battle of communications; we need an in-depth analysis of their operations.

Despite the considerable growth in opposition by ASW forces, submarines in WW II fully revealed their combat capabilities which they had displayed even in WW I. In particular, they attacked not only transports but also the combatants supporting them and operated successfully against enemy submarines.

During this war fascist Germany sank 5150 ships, whereby 68% of the destroyed tonnage was chalked up by submarines.* Their most effective operations were in 1939--1942, when they sank 2177 transports. Beginning with 1943 the effectiveness of submarine operations began to drop. In the second half of the war they succeeded in sinking only 651 transports**, despite the increase in the number of German submarines at sea.

* Beili, V. A., V. P. Bogolepov, L. M. Yeremeyev, Ye. N. Lebedev, B. A. Pochikovskiy, and A. P. Shergin. Blokada i kontrblokada (Blockade and Counterblockade), Izd-vo Nauka, 1967, p. 614.

** Yeremeyev, L. M., and A. P. Shergin. Podvodnyye lodki inostrannykh flotov vo vtoroy mirovoy voyne (Submarines of foreign navies in WW II), Voyenizdat, 1962, pp. 66-69.

In the last war the Americans sank 2143 Japanese ships, and 62.1% of the tonnage was accounted for by submarines.* In this case the success of the operations grew steadily. Thus, in 1942 they sank 134 ships, in 1943, 308, and 549 ships were sunk in 1944.**

* Ibid, p. 391.

** Ibid.

This is explained by the weakness of the Japanese naval opposition, the completely unorganized ASW defense, and the increase in the numerical strength of the American submarine forces participating in the disruption of Japan's shipping.

According to American figures, during the war the /26
Japanese submarines sank 147 ships (according to French figures 170) with a total tonnage of 776,000 tons. The submarine forces of the Italian Navy destroyed (according to German figures) 105 ships with a total tonnage of some one million tons.

From the cited figures it follows that in WW II submarines were actually the main force in the battle with enemy shipping, although their effectiveness varied noticeably according to the period of the war. This was mainly due to the course of the armed struggle on the Soviet-German front, which directly affected the character of events in all of the other theaters. Thus, the turning point in this struggle, which occurred as a result of the victory of the Soviet Armed Forces, forced Hitler Germany to concentrate all of its attention on the Eastern Front and to weaken its attention to the Atlantic Theater. Moreover, the German military command decided to transfer from the Atlantic Theater aircraft and a considerable part of the ship inventory to the Soviet-German Front, and to send part of the submarines operating in the Atlantic to the Norwegian and Barents Seas. The appropriations allocated to the German Navy were reduced from 12.1% in 1942 to 5.6% in 1944 (of the total sum allocated to the armed forces).*

* Istoriya voyenno-morskogo iskusstva (The history of the naval art), Voyenizdat, 1969, p. 521.

Taking advantage of the weakness of the Germans in the Western Theater, our former allies made amphibious landings in North Africa, on the island of Sicily, and on the Apennine Peninsula, which forced Italy to capitulate. All of this reduced Germany's submarine basing capabilities, narrowed the area of their operations, and permitted the British and Americans to transfer considerable naval forces from the Mediterranean to the Atlantic.

The ASW forces of England and the USA also had an important role in restraining the operations of the German U-boats. Soon after Germany's attack on the Soviet Union, more than 2,000 British and American ASW combatants and specially configured merchantmen and several thousand aircraft were in operation against the German U-boats in the Atlantic Theater. For each German U-boat there were 25 British and US warships and 100 aircraft, and for every German submariner at sea there were 100 British and American antisubmariners. A total of six million men were thrown into the antisubmarine war.

One can hardly find a similar ratio of forces between attacking and defending forces among all of the other branches of the armed forces.

Yet nevertheless, this significant numerical superiority of defenders was insufficient to force the attackers to fully curtail their active operations. Therefore the question of the ratio of submarine to antisubmarine forces is of great interest even under present-day conditions, since if ASW forces which were so numerous and technically up to date (for that time), possessing a vast superiority, turned out to be capable of only partially limiting the operations of diesel submarines, then what must this superiority be today to counter nuclear-powered submarines, whose combat capabilities cannot be compared with the capabilities of World War II era submarines.

Although the ASW forces pressed the submarines considerably, they were unable to discredit them and knock them out as was the case, for example, with battleships, whose reason for leaving the arena was the growing capabilities of attack aircraft. The submarines turned out to be very much alive: of all the armed forces of Fascist Germany only they represented a serious threat to British and US shipping right up to the very last day of the war. "The submarine war" was concluded only after German territory was taken by the anti-Hitler coalition.

The slowness of the technical improvement of submarines and also the insufficient level of training of the German submariners also had a great effect on the struggle between the submarine and ASW forces. However the forced construction which was begun in Germany of the new XXI series of submarines and the development of submarines with the Walther propulsion plants, although late, clearly showed that there were great reserves for the further upgrading of performance characteristics even prior to the nuclear-powered submarines. /27

The expansion of construction of ships for the merchant marines in England and the USA also was of important significance in reducing the effectiveness of German U-boat operations against Atlantic communications.

In the war years the Americans and British built transports with a total displacement of 42.5 million tons, i.e., almost twice the tonnage that was sunk.* The transport fleets grew considerably during the war, despite losses from submarine and air attacks. In this connection, the USA moved into first place with respect to tonnage, overtaking England.

* Op. cit. V. A. Belli et. al. p. 412.

Aviation made a fundamental change in the character of naval warfare as a whole and the battle of sea communications in particular. However, for a series of reasons its capabilities were far from being utilized fully. One of the reasons was the frequent absence of aviation within the composition of the fleets. Aviation units which were included within the composition of the fleets operated significantly more effectively than those temporarily attached (this was the case, for example, with the Germans). In this connection, if aviation was only second in sinking transports, in the defense of own sea communications it was number one. For example, the British and American air forces destroyed more than 40% of the submarines of the "axis" countries which were lost by them during the war.*

* Op. cit. L. M. Yeremeyev and A. P. Shergin. p. 428.

Surface ships were little used in combat operations for disrupting sea communications due to the fear of great losses from air and submarine attacks. Therefore, their role in the execution of this mission was not great. However, they were the main force in the protection of sea communications: they destroyed more than 53% of the submarines of the Hitler coalition countries.* It should be

* Ibid.

stressed that as early as the First World War, surface ships began to carry aircraft. In WW II, aircraft carriers became widely used and were first among the forces protecting ocean communications.

From all that has been said it is clear that submarines in WW II were, and even more so under modern conditions are the main means of combatting the enemy's shipping.

In examining the struggle for sea communications in WW II, it is impossible not to dwell in somewhat more detail on the so called "Battle of the Atlantic", which our former allies try to represent as the most important event of the Second World War which nearly led to the destruction of Hitler Germany.

The entire course of the war showed with all clarity that the significance of the Atlantic Theater and the role of the military operations in it in WW II turned out to be much less than in WW I. And here is why.

First, the naval blockade of Germany lost its former significance due to the fact that the Hitlerites succeeded in seizing and putting at the service of their own military machine the economies and the vast natural resources of almost all of the Western European countries. Therefore German industry did not experience serious difficulties because of the naval blockade implemented by the allied navies, and the state and military leaders of Germany (in contrast to those of England) were not even conscious of the very concept of the "Battle for the Atlantic".*

* K. Donets. German U-boats in the Second World War. Translation from the German. Voyenizdat, 1964, p. 136.

Secondly, the leadership of Hitler Germany, in preparing for the implementation of the "Barbarossa Plan" (the attack on the Soviet Union) was forced to call off operation "Sea Lion" (the invasion of the British Isles), converting it into a series of deceptive measures and also to curtail the "air offensive" against England and /28
sharply reduce (and subsequently to completely curtail) the employment of aviation to cut off the sea shipping to England in connection with the transfer of Goering's air force squadrons to the East.

Thirdly, after the attack on the Soviet Union, Hitler Germany, in reducing her operations in the Atlantic still further, gave the execution of the task of hindering England's oceanic communications in this secondary theater exclusively to the submarine forces. A significant part of the combatants, including submarines too, were directed to cooperate with their own troops on the Eastern Front. Thus, the German naval forces which had been operating in the Atlantic, were weakened and were incapable of fully executing the mission with which they were charged.

Fourth, the war with the Soviet Union required extreme efforts by the German economy which did not permit it to take effective measures to build up forces in the Atlantic Theater (this is affirmed particularly by the reduction in expenditures for the Navy which in 1944 were less than half of those in 1942.)

Fifthly, Great Britian and the USA, taking advantage of the diversion of German Fascist forces to the Eastern Front and their weakening operations against England's industry and communications, directed a considerable share of their economies toward the construction and development of forces and means to support sea shipping. For this reason the rates of growth of British and American forces and means of conducting combat operations in the Atlantic exceeded the rates of construction and introduction into service of German submarines several times over. Thus, already by the end of 1942 the British had about 1200 minesweepers in their naval inventory, and by the fall of 1943 the allies had put about 3,000 surface ships and 2,000 aircraft into operation to combat German U-boats in the Atlantic Theater.*

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* Op. cit. V. A. Belli, et al. p. 465-466.

The sharp alteration in the relative strength of the opposing forces naturally led to a reduction in the operational efficiency of the German U-boats against the Atlantic communications of the enemy and to an increase in their losses.

Thus, there is no basis to consider that the "Battle of the Atlantic" had a decisive effect on the course and outcome of WW II. With respect to results and with respect to the composition of the participants on both sides, the "Battle of the Atlantic" represented combat operations of a complementary nature in a secondary theater. Thus, the entire course of the battle of Atlantic communications directly depended on the events on the main front of the war--the Soviet-German front--where the fate of the peoples of the world, including the English and American people, was decided.

For the second time in her history Germany was forced during the course of the war to make a cardinal change in the employment of naval forces and belatedly to change over to the mass construction of submarines to hinder British sea shipping. Yet despite this, during WW II, Germany, having built 1131 submarines* (not counting "midget" submarines), inflicted great losses on Britain's merchant marine, destroying up to 60% of its prewar

* G. M. Gel'fond. Istoriya voyenno-morskogo iskusstva (The history of the naval art), Vol. III, Voyenizdat, 1963, p. 102.

inventory. Yet it was unable to achieve any more. One of the main reasons for this was that the submarines did not receive support from the other forces, and above all from the air force, which would have been able both to carry out reconnaissance for the submarines and destroy ASW forces, as well as to operate against the enemy's economy by attacking his ports and targets in the shipbuilding industry, not to mention attacks against ships at sea. These reasons considerably reduced the effectiveness of German submarine employment in cutting off the enemy's shipping in the Atlantic.

The battle of Japan's Pacific Ocean communications was of an entirely different nature. At the outbreak of war Japan possessed a 6.4 million-ton merchant marine and captured ships of other countries with a total displacement of more than 800,000 tons.* However, her capabilities

* Op. cit. V. A. Belli, et. al., p. 429.

to replace lost tonnage were insignificant, and the strength and quality of the forces protecting the transports were clearly inadequate to defend her own ocean communications. As a result, strange as it may seem, /29 the Japanese Navy, the Navy of an insular power, turned out to be completely unprepared to defend her own sea communications.

The Americans employed submarines, aircraft, and surface ships to combat Japanese shipping. In addition, they planted mines in Japanese waters (mainly with aircraft). The monthly average of American submarines operating against Japanese shipping was: 10 in 1942, 17 in 1943, 28 in 1944, and 14 in 1945.* Clearly the American

* Op. cit. L. M. Yeremeyev, pp. 382-384.

submarine forces handled the mission assigned to them without any special effort and sunk more than 80% of the Japanese merchant fleet, which attests to the simple and favorable conditions in which American submariners operated.

The emerging situation and the relative strength of naval forces permitted the Americans to seize control of the communications connecting Japan with the areas of the South Seas. However, the Americans did not put up any opposition to the sea communications connecting Japan with such important (from an economic point of view) areas as Korea, Manchuria, and Northern China. And indeed it was precisely from these areas that Japan imported in 1941, for example, about 80% of the iron ore, and more than 6 million tons of coking coal needed for the industries of the home country and a large part of the lead, zinc, chrome, molybdnenum, and tungsten required by Japanese industry.*

* Ye. M. Zhukov, et. al. Yapanskoy militarism (Japanese Militarism), Izd-vo Nauka, 1972, p. 185.

Thus, the results of the opposition of the American Navy to the enemy's shipping, despite their impressiveness, turned out to be entirely insufficient to force Japan to capitulate.

Japanese armed forces located in Korea, Manchuria, and China were not even subjected to opposition by the Americans. The strongest grouping of Japanese ground forces, the Kwantung Army, located on the Asiatic mainland, like the communications connecting it with the mainland, was also completely unopposed by the Americans.

What was this--an underestimation of the importance of communications for Japan, or a deliberate temporizing for a possible change in events and the preservation of the Japanese land armies for an attack on the Soviet Union in case of a favorable development of events for Germany on the Soviet-German front? /30

An analysis of the struggle for Atlantic and Pacific communications for which vast naval forces were employed permits the conclusion that the interruption of sea shipping to a great degree weakened the economies of the belligerents and had a definite influence on the course of the military operations in the secondary theaters, but was not the decisive factor determining the outcome of the war. On the other hand, the consequences of the operations against ocean communications were almost unfelt in the main sector of the armed struggle, on the Soviet-German front.

This provides the basis to assert that under the conditions of the continental nature of WW II, operations against ocean communications, although they extended to almost all of the World Ocean and they drew into their sphere the main part of the naval forces of the belligerents, were of only a secondary local significance for the opposing sides. As for the Soviet Union, their effect for it was expressed only in a slight limitation of the delivery of strategic materials and armaments which arrived sporadically and with great irregularity through lend-lease from our allies of that day.

The landing of landing parties became an important mission of the belligerent countries in WW II. The number of them in this war turned out to be unexpected for many naval theoreticians and for the commands of the majority of the bourgeois navies. This occurred because they, on the basis of the unsuccessful experience of the Dardanelles operation in 1915, overestimated the capabilities of

antilanding defenses during the period between the wars and underestimated the growing capabilities of armed forces to break through them and to expand the success ashore, and therefore they did not devote serious attention to landing operations. The only exception was Japan, who actively prepared herself to capture foreign territory separated from her by water expanses.

Some 600 amphibious landings of various scales were undertaken in all sea and oceanic theaters in the period of the Second World War.* As a rule, quantities

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* Op. cit. The History of the Naval Art, p. 523.

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of forces and equipment which were unheard of in any other form of warfare at sea were concentrated to participate in them.

A high level of combat actions, heavy losses, and a vast expenditure of material and equipment were characteristic of amphibious operations. They were often accompanied by major battles having the goal of destroying the enemy's forces at sea. The outstanding characteristic of the amphibious operations of foreign navies was that they were conducted only in a favorable military-political situation in the course of a strategic offensive in a theater.

Drastic changes in the methods of landing landing forces took place during the war under the influence of the ever expanding employment of air power in naval warfare. Air superiority in the area of an operation became the indispensible condition for the successful conduct of it even when the enemy was superior in other forces. By the end of the war airborne landing parties had become obligatory integral parts of amphibious operations.

Landing operations in WW II were very successful, which was the result of a considerable increase in the offensive capabilities of naval forces and of the troops being landed, their growing capability to break through the enemy's defense and to achieve the goals of the operations, and also due to the mass construction and employment of special landing party transport and landing means. In the entire war only two landings of operational landing parties failed--on Midway and at Port Moresby--

and neither of the landing failures was of a strategic scale. This is explained by the overall military-political conditions which were favorable for invading and also by the concentrations of landing forces which were superior to the forces concentrated for antilanding defense. Moreover, in the entire war not a single antilanding operation was carried out in which powerful and successive attacks against the landing party were delivered beginning with the point at which the force was concentrated in the area of its landing. This is explained by the delay of information on the preparation of the enemy landing party and by the insufficiency of means to attack it in all stages of the operation. /31

As the analysis shows, landing operations occupied one of the leading roles in naval warfare in WW II. In some theaters, particularly in the Pacific where the ground forces of the belligerents did not come in direct contact, landing operations and the battles accompanying them and combat engagements of the naval forces made up the main content of the armed struggle of the warring sides. However, the effect of landing operations on the overall course of the war, although it was significant, appeared only in the results of concerted actions in the offensive operations of the ground troops in the coastal regions or in island areas.

The destruction of attack groupings of the enemy's naval forces was no less an important problem in WW II. Yet whereas in WW I, the operations for carrying out this task were conducted apart from the other combat operations of the fleet, in WW II they were almost all integral parts of operations against communications or against the support of a landing party. We must not fail to note that the importance of gunnery armament as the decisive means of destroying the enemy's ships at sea dropped sharply in WW II. In connection with this, battleships, the main carriers of large caliber guns, lost their leading position in the navies, since large naval engagements, as a rule, were conducted primarily by carrier aviation forces, i. e., at ranges considerably exceeding the firing range of shipboard guns.

The destruction of naval forces at sea held an important place in the offensive and defensive operations of the enemies. The achievement of success in a given case not only ensured the prosecution of that operation within whose framework they were operating, but also had a considerable effect on the overall course of combat operations at sea.

The naval forces of the enemy were destroyed not only in major naval engagements, but also at their basing points. An analysis of such operations permits drawing conclusions on the increase in their scale in WW II. Thus, whereas in WW I only five surface ships (about 1% of all the ships sunk) were destroyed in ports, in WW II, 87 surface ships and 71 submarines (8%) were destroyed, and aviation accounted for some 80% of the losses suffered by the enemy.* In many /32

* Op. cit. B. A. Belli, et. al. p. 609.

cases the destruction of surface ships was closely tied to the conduct of operations for hitting sea shipping or the landing of an amphibious force.

Thus, still in the course of WW II the tendency was clearly defined of the growing threat of the destruction of ships in bases (primarily by attack aircraft) which engendered the need to disperse forces and means in basing areas and changes in methods of supporting them (including also support from the rear).

The war forced a re-examination of the importance of the individual types of forces within the composition of the navies and also of the role of navies within the system of a country's armed forces and their influence on the course of the armed struggle as a whole.

During the war, type forces of the fleets were converted into mixed forces permitting the execution of more responsible missions at sea. Methods of combined opposition to the enemy through different types of forces and forms of weaponry in deeper and more open combat formations were developed and improved.

Naval combat activity revealed the growing necessity for a balancing of forces to the extent needed to execute a wide range of missions arising for the navies. Navies which supported the success of the execution of various missions which were by nature of an operational-strategic scale were in a more favorable position. Fleets with a narrower mission (i. e., directed at executing one certain mission or another),

occupied the position of defenders, since they were stripped of the possibility of actively opposing the enemy in new combat sectors, thereby yielding to him the initiative not only in the selection of the time and place of attack, but also in the development of own naval forces and means. An example of the most unbalanced fleet is the fleet of Fascist Germany, the employment of which was practically limited to the mission of disrupting England's ocean communications. The Navy of imperialist Japan, which possessed powerful attack forces, yet had almost no ASW forces, can also serve as an example of an unbalanced Navy.

In the course of the war the importance of aircraft carriers rose and the role of such traditional types of forces as battleships declined. Despite losses, the number of attack carriers almost doubled and their total number (including escort carriers) rose by a factor of eight. On the other hand, the /33
number of major gunnery ships (battleships and cruisers) decreased some 20%. The experience of combat operations at sea forced all states to refrain from constructing new battleships and to take them out of the active fleet inventory after the war was over. Superiority among surface ships had completely shifted to carriers.

On the eve of WW II the opinion existed among bourgeois naval theoreticians that submarines were a weapon of the weak. The course of the war at sea totally refuted this. Moreover, submarines became the most important means of combat at sea. And while in some states their capabilities were underestimated in the prewar period, in the course of the war they had to make a reassessment of submarine forces. Thus, Hitler Germany, which in no way was among the weak countries in a military respect, underestimated the importance of submarines in the prewar period and during the war built 1131 submarines. Despite the furious development of enemy ASW forces and means, and the considerable losses from their action, the number of German submarines grew from 57 boats at the outbreak of war to 493 at the end (on 1 January 1945).

The USA, which also had underestimated submarine forces in the prewar period, by the end of the war had increased their strength by a factor of almost 2.5.

During the war submarines played an important role not only in combatting Japan's ocean shipping, but also in destroying their surface ships.

The other main imperialist states also intensively constructed submarines. During the war they constructed 1669 units, i. e., almost four times the submarine inventory at the outbreak of war. And despite the vast losses in submarines--1123 units--their number by the end of the war had more than doubled as compared with the prewar level.*

* Op. cit. L. M. Yeremeyev, et. al. p. 421.

Naval aviation, both carrier and land-based, was furiously developed in the war years. Not only a manifold numerical increase in it occured, but also a division into torpedo, bombing, ASW, and reconnaissance aviation took place. In WW I the capabilities of aviation as a combat arm of the navy were only outlined, while in the course of WW II it was transformed into a type of naval force directly and actively participating in almost all of the combat operations at sea and firmly occupying one of the leading places in the fleets of all countries.

The construction of antisubmarine ships grew furiously during the war: the USA and England alone built about 4500 of these ships.* By mid-1945 their

* Op. cit. S. N. Maksimov. p. 215.

specific weight within the naval inventories had grown several times in comparison with the prewar level. At the same time there was mass construction of special escort and landing ships, and minesweepers, the constant participants in almost all of the main naval operations. The fact that the USA alone from 1 July 1940 to 31 August 1945 built more than 82,000 landing ships and landing means vividly attests to the importance and scale of the construction of special landing ships and landing means for various missions. Having fully justified their employment, they remained within the inventory of all of the navies even after the war.

Based on what has been said, we may conclude that the navies of the belligerent states played a significant role in WW II which had a clearly expressed continental character. The activity of the navies to a great degree was goal-oriented toward cooperation with the ground fronts and toward supporting their needs, i. e., it stemmed from the nature of the armed combat in the main theater of the war where the most decisive events in the struggle of the main forces of the opposing coalitions took place.

The activity of the navies in the secondary theaters of the war was very important, since it considerably affected the economic level of the warring countries and supported the execution of strategic mission of their armed forces.

Of particular significance was the fact that, having itself received the blow of the main part of the armed forces of Fascist Germany and her satellites and later containing them and destroying them, the Soviet Union presented the allied states the opportunity to develop their military-economic potentials, to mobilize armed forces, and to initiate widespread mass construction of fleets in response to the nature of the armed combat at sea practically without hindrance.

Availing themselves of the occupation of the main striking forces of Hitler Germany on the Soviet-German front and the favorable conditions which arose in connection with this, the British and US Navies realized the military-economic potentials of their countries for the battle of the Atlantic communications and also in Africa and Western Europe. To an equal degree the American Navy realized the capabilities of the US economy in operations against Japan.

Nevertheless the superiority of the American Navy over the Japanese turned out to be insufficient to surround Japan and force her to capitulate (even after the barbaric nuclear bombings of Hiroshima and Nagasaki). Not having actually hurt the economic potential of Korea, China, and the other countries of Southeast Asia, and having preserved in their entirety the ground forces and their main nucleus, the Kwantung

Army, the USA preserved conditions in Japan for the prolonged continuation of the war. Only the defeat of the Kwantung Army by Soviet troops and the capture by them of Japan's economic base on the continent--Korea and Manchuria--led the country of the rising sun to military failure and forced her to capitulate.

After the end of WW II in which a nuclear weapon was used for the first time, the revelation of the possibilities of its employment in armed combat at sea like other new combat means was initiated. Thus, all of the leading imperialist countries turned their attention to missiles as a promising means of delivering nuclear charges against strategic and operational attack targets. At the same time intensive searches were begun for possibilities of expanding the spheres and ways of employing electronics, nuclear power, etc. The military-technical revolution became emminent and on the threshold of this, each of the great powers strove to ensure decisive superiority for their navies over the fleets of potential aggressors.

The imperialist countries strove to use scientific discoveries and technical gains primarily for military aims and especially to develop their navies. Scientific investigations and technical research related to the creation of qualitatively new means of armed combat, including also combat at sea, were widely developed. New concepts of the employment of fleets appeared, and then began a period of re-examination of naval doctrines and their applicability to the presence of new forms of weapons and to the new forms of armed combat. Naturally this brought about changes in the role and missions of the navies.

(To be continued)

Photographs- p. 29, caption: A British cruiser accompanies transports heading to Soviet ports in the North.
p. 31, caption: Soviet landing on the Kurile Islands.
p. 32, caption: The end of the Fascist cruiser ADMIRAL GRAF SPEE on 17 December 1939.

MORSKOY SBORNIK, No. 11, 1972, pp. 35-39.

WITH THE SHIPS, UNITS, AND FORCES OF THE FLEET

Red Banner Northern Fleet

A meeting was held of the chiefs of the political organizations of the Northern Fleet. Member of the Military Council and Chief of the Political Directorate of the Northern Fleet Admiral F. Sizov delivered a report on "The course of preparations for the 50th anniversary of the formation of the USSR". The participants exchanged experiences on the organization of competitions and singled out ways of increasing their effectiveness. /35

Member of the Military Council and Chief of the Political Directorate of the Navy Admiral V. Grishanov participated in the work of the meeting.

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The crew of the X-th submarine is greeting the 50th anniversary of the formation of the USSR with glorious deeds. Here several of the departments are rated outstanding, and more than 80% of the crew are 1st and 2nd Class Specialists. In the course of Socialist competition the normal times for preparing the ship for battle and for getting underway have been reduced. The leading officers and Communists of the submarine deserve a great deal of credit for this. They are: head of a subunit Captain 3rd Rank Yu. Kusmartsev, Captain-Engineers V. Bukki and M. Petrus', and others.

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In August 1941 the submarine M-172 under the command of I. Fisanovich for the first time since the outbreak of war penetrated into the base at Petsamo, which was occupied by the enemy, and with an accurate torpedo salvo it sunk a transport standing at the pier of the port of Liinakhamari.

Recently a ceremonial dedication of a monument to the courageous submariners was held in Liinakhamari. It resembles the conning tower of a submerged M-class submarine with the CO standing at the periscope.

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A meeting was held of the graduates of the Naval Youth School which is located on the Solovetski Islands.

Veterans from 38 cities of the country came to the meeting. Many of them are working as geologists, journalists, designers, and teachers. There were naval officers there, and B. Shtokolov has become a People's Artist of the USSR!

The former pupils of the School lined up in a ceremonial formation. On their chests were the orders and medals "For the Defense of Leningrad", "For the Defense of the Soviet Polar Region", "For the Liberation of Belgrad", "For the Capture of Vienna", "For the Capture of Berlin", and "For the Victory over Japan", modest witnesses to their front-line paths. /36

The veterans dedicated a monument to those fallen in battle--a high grey stone with an anchor placed at its base. A metallic plate on the stone reads: "A monument will be constructed here to the pupils of the Solovetski Training Detachment of the Northern Fleet and of the Naval Youth School who perished in the Great Patriotic War. 1941-1945."

But perhaps the most moving event was the farewell putting to sea... A wreath was cast on the waves. This was a heart-felt remembrance. A remembrance of those who did not return from a combat cruise.

Red Banner Pacific Fleet

Secretary of the CPSU Central Committee K. Katushev visited one of the Fleet's ships. He talked with the sailors and took an interest in their duty and their daily life. The ship's CO reported on the course of the Socialist Competition in honor of the 50th anniversary of the

formation of the USSR. The ship has an outstanding rating, all of the seamen and petty officers are class specialists, and a majority of the fighting men are otlichniki in combat and political training.

Token gifts were given to the guest. At the request of the navymen the secretary of the CPSU Central Committee was photographed with the men.

K. Katushev wrote in honorary guest book: "I wish that the ship's personnel will fully master the formidable combat weaponry entrusted to them by the Soviet people for the defense of the sacred borders of our great Motherland--the Soviet Union."

"I hope that you will greet our holiday, the 50th anniversary of the USSR, with new successes in combat and political training and expand the glorious traditions of the Pacific Fleet."

"I wish you happiness and personal well-being dear comrade navymen. Katushev."

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A Fleet aviator museum has opened in the Pacific Fleet. Its documents, photographs, and other exhibits tell of the life and combat training of the air warriors. Part of the materials is devoted to Marshal of Aviation S. Zhavoronkov, Generals N. Ostryakov, I. Borzov, and Ye. Preobrazhenskiy, and to pilot-cosmonaut P. Belyayev, who served in the Fleet Air Force.

The museum has examples of air armament of various years and models of naval aviation aircraft.

Materials which have been collected by Lt. Colonel A. Kravets over a period of many years form the basis for the exhibits.

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In the unit where Senior Lieutenant V. Dobrovolskiy serves a Komsomol youth club named "Attack" has been formed and is in operation. The club aids in educating the fighting men in a spirit of high political vigilence. The club is run by a council. Diverse activities are used in the work. For instance, an evening was held on the subject "The US Army. Criminal aims, criminal means"; a readers conference was held on "The brutality of the 'Green Berets' in Vietnam", based on O. Gorshalov's book "The Falling Rain"; an oral journal entitled "The sharpest front of the class struggle" was presented; and a talk on ideological diversion was given.

Twice Honored Red Banner Baltic Fleet /37

The personnel of the escort ships KOMSOMOLETS LITVY, KOBCHIK, and BARSUK have successfully carried out a joint mine laying problem for the CinC Navy Prize. The ships operated at night against a difficult tactical background: the mine laying was carried out after the repulsion of attacks by surface ships, aircraft, and submarines of the "enemy". The head of the underwater weapons department, Senior Lieutenant A. Churikov, especially distinguished himself. The navymen kept their word: They would do everything to retain the CinC Navy Prize in mine laying which they won last year. This is another step by the Baltic Fleet men in the struggle for the Pennant of the USSR Minister of Defense and the Jubilee Honorary badge of the CPSU Central Committee, of the Presidium of the Supreme Soviet of the USSR, of the USSR Council of Ministers, and of the All-Union Central Trade Union Council.

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The crew of the cruiser OKTYABR'SKAYA REVOLYUTSIYA, which is on a long cruise, is successfully carrying out combat training missions. The crew of the main battery turret commanded by a leading officer of the ship Captain-Lieutenant A. Petrov is operating outstandingly.

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A competition was held in a submariner force for the best watch officer. First place was won by Captain-Lieutenant V. Vorob'yev, and Captain-Lieutenant N. Maykov took second place.

Red Banner Black Sea Fleet

The Military Council of the Black Sea Fleet discussed the question of the course of preparation for the 50th anniversary of the formation of the USSR. A report was given by CinC of the Fleet Admiral V. Sysoyev. He and the other speakers stressed that an active struggle is underway aboard the ships and in the units to fulfill Socialist obligations, and for the right to be awarded the Jubilee Honorary Badge of the CPSU Central Committee, of the Presidium of the Supreme Soviet of the USSR, of the USSR Council of Ministers, and of the All-Union Central Trade Union Council. Among the leaders are the guided missile helicopter cruiser LENINGRAD, the guided missile cruiser GROZNYY, the large ASW ship SMETLIVYY, several submarine crews, and subunits of the air force and military construction workers. The Military Council directed the navymen to take aim at the successful execution of all obligations so that they will /38 make a worthy contribution to further increasing the combat readiness of the Fleet.

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The Red Challenge Banner has been awarded to the Komsomol organization of an outstanding air force unit by the Komsomol Central Committee for successes in combat and political training and for active work in the Communist education of the fighting men. Second Secretary of the Ukrainian Komsomol Central Committee A. Korniyenko presented the high award to the Guardsmen.

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Pilot-Cosmonauts of the USSR, Twice Honored Hero of the Soviet Union Major General of Aviation G. Beregovoy and Hero of the Soviet Union Colonel Ye. Khrunov, visited the cruiser ADMIRAL GOLOVKO. They talked with the personnel of the ship aboard which representatives of 26 nationalities serve. Memorial gifts were given to the guests. The cosmonauts left the following note in the honored visitors book: "Dear Combat Friends. We are delighted by your courage and military deeds. We wish you new successes to the glory of our Motherland. Smooth sailing."

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The Chief of Staff of the Indian Navy Admiral S. M. Nanda, who is in the Soviet Union on a friendship visit at the invitation of CinC of the Soviet Navy Admiral of the Fleet of the Soviet Navy S. G. Gorshkov, visited the Black Sea Fleet. The high guest saw the sights of the heroic city of Sevastopol and visited the guided missile cruiser GROZNYY which had arrived here.

Red Banner Caspian Flotilla

The Caspian men love sports. The Flotilla is proud of its pupils: Olympic games medalists Ye. Sal'tsin, N. Kuznetsov, Z. Bortkevich, and honored trainers of the Republic S. Syrovatkin, G. Logovskiy, and N. Trukhin.

Sports aid the navymen in achieving better results in combat and political training, and in surmounting problems and tests with high marks. This is attested to, for example, by the successes of the fighting men of the minesweeper IVAN FIOLETOV and the ships where officers V. Glebov and I. Klimov serve. Among the sportsmen and rated sportsmen are representatives of the most varied fleet specialities: Engineman PO 2nd Class Marchenko, chemist Senior Seaman Pugach, radarman Seaman Krotov, and electrician Seaman Fesin.

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The 34th annual carnival of the Caspian Flotilla devoted to the 50th anniversary of the USSR has concluded. The Caspian Flotilla men competed successfully in the all-round naval combined competition, track and field, soccer, basketball, volleyball, and water polo. During the carnival the norms of the Military Sports System were passed.

A subunit of minesweeper men was awarded the Flotilla Cup for best achievements and mass participation in the sporting competitions. The sportsmen of the subunit where officer S. Vas'kovskiy serves took second place.

Leningrad Naval Base

A branch of the Central Naval Museum, the museum "Lifeline", has been opened in the area of the Osinovetskiy light, located on the western shore of Lake Ladoga. It was built upon order of the CinC Navy, Admiral of the Fleet of the Soviet Navy S. G. Gorshkov, to widely propagandize the unprecedented courage, the heroism and tenacity of the fighting men of the Leningrad front and of the navymen in the struggle with the Fascist German occupiers.

The opening was attended by representatives of the Executive Committee of the Leningrad Oblast Council of Workers' Deputies, of the Leningrad Oblast Committee, and of the CPSU City Committee, residents of the heroic city, veterans of the "Lifeline", officers and men of the ships of the Leningrad naval base, fighting men of the garrison, young pioneers, and school children. The Senior Naval Officer in Leningrad, Commander of the Leningrad Naval Base Vice Admiral V. Leonenkov, CinC of the Red Banner Ladoga Flotilla in the Great Patriotic War Vice Admiral V. Cherokov (Reserves), former deputy chief of the Northwest River Shipping Line A. Propeshnyy, veteran of the "Lifeline" Ye. L'vov, shock worker of Communist Labor V. Lagutenkov, private Myagkov, and PO 1st Class Strizhak spoke at the meeting.

Photographs- p. 35, caption: Commanding officer of a leading guided missile patrol boat Captain 3rd Rank S. Nererov. The crew led by him always carries out combat training missions with high marks.

p. 36, caption: Member of the Party Bureau Warrant Officer M. Kitayev devotes a great deal of attention to the education of young Communists. In the picture M. Kitayev (right) is talking with Warrant Officers A. Lekomtsev and N. Gribushin about the upcoming exchange of Party documents.

p. 37, caption: Submariners are always satisfied with the torpedoes prepared by the men of Senior Lieutenant V. Novikov. In the picture: a regular check of torpedoes prior to sending them aboard ship.

p. 38, caption: The engineering subunit commanded by Lieutenant-Engineer V. Zakrevskiy is outstanding. In the picture Lieutenant-Engineer V. Zakrevskiy checks how the young seaman are standing their watch.

p. 39, caption: Raising the naval ensign aboard ship.

MORSKOY SBORNIK, No. 11, 1972, pp. 51-55.

MILES OF MASTERY AND COURAGE

by Captain 3rd Rank Yu. Grachev

On a long cruise favorable conditions are created /51
for combat training. The attention of the men is entirely given over to the ship, the subunit, and the action station. But these prerequisites must be made use of.

What must be done and how should it be done?

Planning is the Guarantee of Success. One of the key questions concerning the correct organization of training is the posing and development of combat training tasks for the cruise. In order that the plan be realistic, it is essential to compile it taking into account the separation of the ship from home shores, the nature of the forthcoming physical and psychological stresses, the effect of the climatic conditions, the overall situation, etc., on the personnel.

In hot regions, especially in the equatorial latitudes, the heat and increased humidity has an intensive effect on equipment. This necessitates more frequent and thorough checks of the equipment and means that less time remains for combat training. Scheduled measures must be curtailed or postponed, and an additional load is created on the crew.

Thus, Lieutenant-Engineer A. Polukhin, when preparing for a cruise, incorrectly calculated the fuel consumption for the auxiliary machinery. He did not /52
take into account the high temperature of the sea water and the surrounding air. However, in the southern latitudes the main and auxiliary machinery operate with a greater load. The group commander understood this only when alarming reports came in on the overconsumption of POL materials. Immediately, however, the subunit initiated a check of the units and machinery in place of specialty training. New schedules were compiled for inspections and servicing of the equipment, changing

the oil, and replacing parts and units. Thus, much effort had to be expended on solving questions which were not taken into account in port. And the combat training schedule was the first to suffer from the failure.

Such examples are not frequent. A great deal of cruise experience has been gained aboard ships, and indeed the training center has long ago shifted to the ocean. Yet despite this, in compiling the combat training schedule for each long cruise it is essential to more fully take into account the situation in which the ship will have to carry out missions. It is important that each shipboard officer familiarize himself in a timely manner with the cruise experience of other ships which have carried out missions in the area of the forthcoming cruise.

They approach training creatively aboard the cruiser VARYAG. The department heads are given a great deal of independence in determining the volume of tasks and the periods for working them out. They constantly and thoroughly study the experience of long cruises of other crews. In this connection, they often talk not only with heads of subunits, but also with leading petty officers and with nonrated specialists. They visit classes being held there.

Officer E. Poydyshev prepares for a cruise in precisely this manner. When participating in a long cruise for the first time, he was able to calculate the optimal operating conditions for refrigerator machinery correctly and to ensure normal work for the personnel.

The situation at sea is constantly changing. In connection with this, at times, due to the impossibility of support, it is still necessary to slightly postpone one task and to replace it with others. Therefore it is essential to provide in advance a reserve option, and it must be thought through just as thoroughly as the main tasks. During the last cruise not once were the measures planned for the day replaced by new ones aboard the VARYAG. Because the options had been thought through in detail, the transition to them was made efficiently and painlessly.

The men of the VARYAG have succeeded in avoiding unnecessary material and technical expenditures and fully utilize the time allotted for combat training.

The Relationship of Theory to Practice. The cruiser returned to its home port. During the cruise the personnel had received a wealth of practice in the employment of weaponry and technical equipment. Of course by the end of the cruise the men were tired and the physical stress particularly told upon those stations where there was a watch and watch system, for example in the navigation department where the helmsman fell ill. The ship's CO permitted Torpedoman N. B. Vatulov, who mastered a specialty unfamiliar to him during the cruise, to stand watch. Such replacements became possible owing to the correct accounting for the cruise experience of other ships.

Prior to putting out into the ocean the ship's CO familiarized himself with the combat training of his neighbor which had returned from a cruise. He convinced himself that long cruises permit navymen not only to increase specialized knowledge, but also to master the specialities of those whom they will replace. He found out that aboard the destroyer BLESTYASHCHIY specialists of the engineering department successfully replace gunners: torpedomen replace helmsmen and signalmen; and gunnery officers can operate the torpedo tubes. Aboard the cruise DMITRIY POZHARSKIY during practice training sessions some nonrated and rated men not only replace every man in the team, but even exceed the norms established for them.

Having evaluated the conditions of the impending cruise, the CO of the VARYAG charged the cruiser's crew with the same task. Many men included in their [Socialist] obligations the point on mastering related specialities. The ship's CO judged the training not only from /53 reports by officers and the XO, but also from personal observations. He often visited action stations, talked with the crews, and aided them to correctly understand the requirements of the combat training and to see the time potential better. During one such talk, Seaman N. Vatulov requested permission to study the duties of a helmsman. He was a 1st Class Specialist in his main specialty and the CO gave his permission, which later was very valuable.

Many experienced officers believe that during a long cruise combat training should not be only narrowly specialized. Indeed under today's conditions the individual influence of every serviceman is immeasurably growing. The probability of his being put out of action has also grown. Then who will replace a fallen or badly fatigued comrade? In battle, of course, his neighbor. And after the battle? Clearly he who has the least load. This means that this must be in the center of the CO's attention.

Where do you get the time to train navymen in related specialities? As cruise experience shows, much depends on the organization of combat training. Here is how, for example, the training went on this same cruiser. Training in the basic speciality was conducted in two watches. Two thirds of the personnel trained up to dinner, and the rest after dinner. Theory was alternated with practice. Guards Senior Lieutenants Yu. Furlet and V. Komissarov conducted classes precisely in this manner. In the first half of the day they helped the young navymen master theoretical knowledge and held practice work in the afternoon. Owing to the goal-oriented training, in a short time the sailors acquired the needed knowledge and necessary skills.

After the navymen had achieved 2nd Class Specialist norms, the study was begun of the equipment and weaponry of those whom they would replace according to the bills.

The head of a subunit of AA gunners, Guards Captain 3rd Rank V. Romashko, did a great deal of work in raising the effectiveness of specialty training. As a result, the officers and petty officers learned to work with practically any crew composition. This helped in the competition for a better mastery of specialities.

Guards Captain 3rd Rank V. Vitkevich introduced much that was instructive into the combat training. He could often be seen among the personnel of the missile complexes and in the gun mount turrets. Upon seeing inefficient or indecisive actions, he sat down in the position of one crew member or another and showed how it should be done. /54

The relating of theory and practice in training is important. Some officers believe that on a long cruise personnel learn so much by standing watch, and therefore they do not need the theory. This opinion is false. Experience shows that only a skillful combining of theory with practice in combat training permits the acquisition of thorough knowledge.

The Dynamics of Everyday Training. A longer cruise poses the crew with the question of combat readiness with particular sharpness, and forces everyone to be collected and ready for surprises at any moment.

Prior to a long cruise young specialists who had recently been graduated from a training detachment arrived in the engineering department of the cruiser DMITRIY POZHARSKIY. The department head, Captain 2nd Rank-Engineer A. Sokolov, decided to organize their training according to a program developed by the ship's officers. It more fully took into account the level of training of the young men and the specific features of training on a cruise. On a cruise the equipment of the subunit is constantly in operation. Initially, the young fighting men prepared the back-up machinery and learned to service it. Later, having obtained the initial skills, they went over to operating machinery. Here experienced nonrated and rated men explained to them the rules for the care of the machinery when running, and they learned how to control its operation, stand watch underway, etc. As a result, the young specialists received authorization to stand watch underway independently considerably faster than in port.

This experience has been employed on other ships too, particularly aboard the cruiser VARYAG.

Petty officers and officers train constantly on a cruise.

For example, when the ship entered the warm latitudes, one machinery unit began to overheat. As they moved southward the temperature increased even more. The department head thoroughly scanned the lists made during previous cruises. An answer was found. An air hose was run to the machinery from the ventilation system.

And everything ran normally. However, the department head did not limit himself to this. He told the officers about other salient points about operating equipment in a similar situation. The officers conducted classes with the rated and nonrated men on the very same subject. The training was useful. Not even two weeks had passed when the young navymen were given the required examinations and began to independently service the machinery in their charge, and by the end of the cruise the majority of them were operating on the 2nd Class Specialist level.

Damage control was particularly thoroughly worked out on the cruise. Preparation for it was begun on the very first days of the cruise. In the tropics it is hot. One of the group leaders asked: "Can the men pour water over themselves from time to time?" The idea seemed sensible to the department head. They decided to try it. One of the officers donned protective clothing, and when he became really hot, they poured water over him several times. The work became much easier. Thus a way was found out of this situation.

Our combat training path is from the simplest operations to the more complex, from a slow tempo to a higher one. Thus, back-up equipment kept in reserve serves not just as a training aid. The men constantly train on them, working out various problems.

And the ship's CO makes the rounds of the action stations. He tirelessly follows the course of training.

"What are you so sad about?" he once asked division head Guards Captain-Lieutenant-Engineer S. Yakovlev.

"For some reason or other our marks are not good, Comrade Captain, although they should be higher. We are really working."

The sweaty faces and wet backs of the navymen attested to their earnestness. The CO inspected the machinery thoroughly. Dozens of eyes followed him. It wouldn't be right if he made a mistake. /55

"Doesn't it seem to you that the clearances have been reduced by the heat? And this makes the work harder," he said, and while leaving he advised changing to another grease.

In the evening the department head happily reported that many action stations had exceeded the norms.

On a long cruise the visit of a ship's CO to the action stations and crew's spaces takes on a special meaning, because the personnel are cut off from their home shores. A good word, and the commanding officer's concern about training, daily life, and morale of the personnel are valued highly by navymen.

A cruise of many months with a firmly established plan of the day often gives birth to a feeling of relaxation among the men. Vigilence lags. Yet the crew of a warship must be prepared at any moment to repulse an enemy attack. Therefore, in addition to scheduled activities, it is essential to hold surprise drills and checks.

The experience of the Guards cruiser VARYAG, like many other ships, has been used to develop a methodology for combat training on long cruises.

Aboard the ship 70% of the personnel are otlichniki in combat and political training, and 66% are 1st and 2nd Class Specialists. The Socialist obligation of the men of the VARYAG, i.e., to have 65% of the crew become otlichniki by the 50th anniversary of the formation of the USSR, has been fulfilled.

Photographs- p. 53, caption: Mission accomplished. Within a few minutes the helicopter will land on the ship's deck.
p. 55, caption: Before a storm.

MORSKOY SBORNIK, No. 11, 1972, p. 57.

WITHOUT REDUCING THE INTENSITY

by Captain 2nd Rank S. Kireyev

/57

On a long cruise a crew is constantly in a situation which approaches a combat situation to the maximum degree. On a cruise the quality of the preliminary training of the navymen, the level of their practical schooling, and the level of a crew's readiness to carry out combat missions are checked. Moreover, the most favorable conditions are created for training personnel and for the practical mastery and improvement of methods for operating weaponry and equipment.

Experience has shown that practical training proceeds advantageously at sea. Theory is taught only in those cases where you cannot avoid it. But even under these conditions it is impossible to accept spontaneity in training. It is essential to systematically conduct practice classes and training on on-line or back-up equipment during the course of its operation.

The intensity of training on a cruise is associated with the nature of the activity of the ship's personnel.

Every long cruise may be arbitrarily divided into three stages: the transit to the operational area; cruising in the given area; and the return to port.

These stages have their special features. Thus, at the beginning of the first stage the crew is only still getting into the rythmn of cruise life and mastering their functions under new conditions. And although everything may have been provided for, much time is spent on nothing.

This period lasts several days. In order not to stretch it out, it is important even before the cruise to pinpoint every mission and goal and to introduce concrete planning. The course of training in the other stages also depends on what living routine and training tempo is set in this first period.

Gradually the men master what they must do, and where and when they must be, and become accustomed to the new requirements. Training takes on a more and more efficient character, a firm time is established for holding classes, practice training and drills, whereby rest for the personnel after standing watch and work is taken into account.

In the plan of the day, and the CO compiles it at this time, it is advisible to provide for a special time to drill the personnel standing the underway watch.

In the second stage of the cruise, training runs more efficiently, since the conditions for carrying out the main mission of the cruise are usually as close to combat conditions as possible.

During the return to port the intensity of the crew's work and training decreases somewhat. Fatigue is felt. Greater attention is given to maintenance, inspections, and repair of the ship's equipment, and less to training. The officers, and even the petty officers, spend a great deal of time preparing records.

Of course, the above does not justify an excessive reduction. Even in the concluding stage of the cruise training must be kept at a high level. During the return leg, it is essential to concretely plan every training measure, and to include more active forms of exercises so that the students see the results of their own work immediately. Especially effective, for example, are various exercises whose success depends on the quality of execution of defined norms, skills, and resourcefulness of the personnel. It is essential to begin the conduct of these exercises with the action station, gradually increasing the number of personnel involved until the exercise is executed in the department. And it is advisable to carry out an exercise on a shipboard scale as the concluding stage of the training at the very end of a long cruise.

In the final stage of the cruise it is advisable to conduct competitions for the title of "Best Specialist (helmsman, engineman, etc.) of the Cruise", and

"Best Specialist of the Day". It is also important to check the cross training more often. This affirms the desire of the navymen to continue training and upgrade their skills.

It is not easy to organize the training of personnel on a long cruise. We believe that further quests and generalizations are needed and of course a regular exchange of experience.

MORSKOY SBORNIK, No. 11, 1972, pp. 58-59.

THE CREW IS TRAINED BEFORE A FLIGHT

by Major V. Sustavov, First Class Military Pilot

Successful mastery of modern aircraft and helicopters in the Navy requires that the crew have good knowledge and sound skills in operating the equipment in the cockpit. Here a definite role is assigned to training in special vehicles and aircraft. /58

A standing procedure for the operation of a trainer and plans of study for flight personnel help us to utilize trainers with great efficiency.

In selecting a training subject, the detachment commander ought to consider as fully as possible the level of training of his subordinates, putting before them the assignments, mistakes made in the last session, and the individual characteristics of the aviators.

The trainer permits simulation of flight under various regimes, speeds, altitudes, and landing approaches in simple and difficult metereological conditions. In the exercises the main attention should be given to developing the crew's coordination in group flying and its action in special flight conditions.

We would note that in carrying out a control exercise with the instructor, the pilot is always ready for a tactical problem.

Another feature of the trainer is where special events "happen" unexpectedly. And if the officer is poorly prepared for these events or loses his presence of mind, he becomes confused in the procedure for operating the equipment in the cockpit, which can lead to undesirable results. Therefore we are constantly inculcating in the crew members the ability to quickly recognize the cause of the trouble in the equipment's operation, to make decisions correctly, and to react accurately in complex situations. /59

PLAN FOR TRAINING FLIGHT PERSONNEL
OF THE FIRST AIR SQUADRON

Table 1

Person using Trainer	Time				Number of topics completed	Supervisor
Second Detachment	17:30-18:00				4	Detachment Commander
First Detachment & Detachment Commanders		18:00-18:45			5	Deputy Squadron Commander Squadron Commander
Deputy Commander of Squadron			18:45-19:00		5	
Squadron Commander				19:00-19:15	5	Deputy Unit Commander

Once I asked the pilots of a subunit how they determined engine failure. Some answered that they did it basically by the readings on their instruments. But a large part of flight time must be spent observing flying instruments, and in such a situation you must not leave out of your reckoning of the behavior of the aircraft and personal sensations.

For example, when the engine fails, a turning moment arises, and the background noise changes. Furthermore, at the disposal of the crew is an illuminated indicator board, which also serves as a great help in difficult situations.

With regard to what has been said, we have begun to conduct training in a more goal-oriented fashion under conditions approaching actual conditions. To this end the commander of the detachment who is the superviser of the exercise usually observes the actions of the pilot. The commander of the squadron or his deputy, is behind the trainer panel performing as a monitor. After the training session the commander of the detachment analyses the mistakes of the student in detail and suggests ways to eliminate them.

It is advisable to conduct training sessions in aircraft cockpits with the full crew complement. They are of greatest use when the men are in flying suits with survival gear, and the aircraft is "under power". In this case the pilot, navigator, and operator are in their operating positions, and their instructors are in the instructor cockpits. The training leader gives the pilot a tactical problem and observes him. It is desirable to hold the critique directly after the completion of the training session.

At one time it was thought that the pilot should master the cockpit equipment to such a degree that he could operate it automatically with his eyes closed. Perhaps this was correct at that time, since the aircraft equipments were not distinguished by a large number of instruments and indeed they were not as complex as today's instruments.

PLAN FOR TRAINING THE SECOND DETACHMENT

Table 2

Last Name of Pilot	Time, Number of Exercise			Number of topics completed	Evaluation	Supervisor of the exercise	Remarks
Ivanov	17:30-17:45. 17			4	4	Major Sidorov	Did not make sure of the proper operation of automatic controls
Petrov		17:45-18:00. 17		4	4	Major Sidorov	Incorrect succession operations in activating dampers.
Sidorov			18:00-18:15. 35	5	4	Major Morev	Incorrect activation and deactivation of ailerons.

Undoubtedly today the aviator must also know the cockpit to perfection. However, its systems must not be operated mechanically. The actions of a crew member must be well thought out. Therefore during the training sessions it is advisible for the pilot (navigator) to ask what happens when one tumbler switch or another switch is turned on and what is the physical concept of the phenomena occuring when this happens.

Practice has shown the importance of practice training sessions is growing as the equipment and missions being handled by aviators become more complex. Consequently, it is essential to conduct them systematically, skillfully selecting the subjects of the training. This will aid in mastering aircraft sooner and will save a great deal of money for the state.

MORSKOY SBORNIK, No. 11, 1972, 78-82.

FAILURE-FREE OPERATION OF RADIO EQUIPMENT--A FACTOR IN INCREASING FLIGHT SAFETY

by Major-General of Aviation M. Bagrov

Success in air tactical training, accident prevention, and flight safety depend to a great extent on the careful organization of flight control and the quality of the operation of communications and radio navigational aids. Personnel in communications and electronics support units must clearly and precisely assume the responsibility which is entrusted to them for the successful completion of each flight. /78

Stable and uninterrupted communication, a high level of operation, reliable tracking of aircraft, the precise operation of radio gear--these are all required conditions for the successful completion of the complex and responsible tasks involved in achieving flight safety.

To these we should also add: support in the assembly of aircraft into tactical groups after take-off, the immediate execution of flight along any predesignated course with the required precision of piloting, the pullout of groups and individual aircraft to airfields for landing, aid in the safe movement of aircraft in the airfield zone, aid in their descent and approach for a landing, timely information of aircraft crews concerning dangerous weather phenomena (heavy cumulus clouds and dangerous cloud covers) and many other specific demands related to night flights and flights under difficult meteorological conditions.

Modern communication and navigational and landing-support aids have high accuracy and reliability built in during their manufacture. Maintaining the high readiness and reliability of such gear during their use depends on a variety of factors of a subjective nature, e. g.: precise and undeviating observance,

on the part of personnel, of the rules and requirements in the technical use of communication and navigational aid devices, on the level of competence and practical skills of specialists in servicing the gear entrusted to them, and on the correct use of ground communication and navigational aid equipment by aircraft crews in flight and by the flight-control group at the airfields.

Total or partial breakdown of radio gear and even a slight deviation in their individual parameters during their operation may lead to the output of inaccurate data to the aircraft and to the flight-control group, substantially complicate the analysis of the situation in the air, and--in some cases--lead to a flight accident.

Taking into account what has been enumerated, flight support unit personnel should clearly know the capabilities of the gear being used, and the distinguishing features of their operation during use.

Analysis which has been carried out confirms the fact that the intensity of failures of electronic gear, as a function of the time of their operation from the beginning of their use, is broken down into three periods: the period of "breaking in", the period of "normal operation"--from the "breaking in" until the expiration of its entire service life, as established for any given type of equipment (under the condition that the instructions for its use are complied with) and, finally, the period of "wearing out and aging".

Experience in the use of electronic gear in the units has shown that the number of breakdowns during the first period is determined not so much by the existence of hidden defects in the device as by incomplete mastery /79
of it by the personnel, and the violation of norms for technical use and time periods for inspection of the instruments.

Therefore, engineering and technical personnel in the units must: more rationally organize instrument inspection of the operation of their gear, correctly assign

highly-qualified specialists throughout their areas to offer aid to the personnel in mastering new equipment and using it correctly, and work out and carry out preventive steps in diagnosing and preventing sudden failures and defects.

Particular attention should be paid to radio navigational aid devices and equipment, which are subject to the greatest frequency of failures. Servicing this equipment should be entrusted to the most highly trained specialists, particularly warrant officers.

The greatest threat to flight safety is sudden failures, due to the difficulty in anticipating them and, consequently, in preventing them in time. However, to reject completely the possibility of foreseeing such breakdowns would be incorrect. As practice shows, they usually arise in assemblies and pieces of equipment operating under difficult conditions in terms of temperature or dynamic loads. Therefore, in units where the organization of the technical employment and servicing of equipment by the personnel is arranged not according to a pattern but by making allowance for the weak aspects of each type of equipment, sudden breakdowns are substantially reduced.

While not dismissing the existence of objective causes for sudden breakdown, it must nevertheless be acknowledged that the major cause is still in-use breakdowns due to the personnel. Therefore, the careful training of personnel, timely technical inspection of antenna and feeder systems, scanning and landing radars, short-range navigation systems, as well as of electric power plants and other components will substantially forstall the occurrence of sudden breakdowns.

On the basis of experience it can be asserted that the timely changing of lubricants in mechanical units, the use of lubricants of only those types indicated in servicing instructions, the careful and timely adjustment of clearances and the making of adjustments makes it possible to prevent sudden breakdowns.

In electrical circuits, a sudden breakdown as a rule is the result of too much heat or electrical overloads resulting from spontaneous cutouts or failure of the ventilating systems and sharp drops in the voltage supply.

During the period of "normal operation" and substantially more often during the period of "aging and wear", so-called self-correcting failures occur in individual pieces and units. They usually appear when a device is turned on, and correct themselves after it warms up. Most frequently, the causes of such failures are poor contacts in the tube panels, switches, flexible and rigid connections, contacts and relays, as well as short-circuits between electrodes and tubes. Failure may result from acid and dirt on the contacts. Therefore, keeping contacts perfectly clean is an imperative condition for the reliable operation of radio equipment.

Self-correcting failures most often appear in units and components of equipment with low current and voltage levels: in control and signal units, telephone circuits, switch gear, and primary and secondary multiplexing.

During the "aging and wearing-out" period, breakdowns may occur due to hardly noticeable gradual deviations from the norm for the parameters of a given component in the circuit or for the equipment as a whole. This is aging of the materials, as a result of which there are structural changes and even destruction of the dielectrics, wear of the parts which make contact, /80
deformation due to mechanical or thermal actions which change the properties of the conductors and dielectrics under the influence of light, moisture, sharp temperature drops, and other factors.

Thus, aging of selenium rectifiers can lead to changes in the voltages supplied above the permissible limits, gradual changes in capacitance--and to a substantial distortion of the frequency characteristics of various circuits and filters, aging of tubes--to a drop in the power of transmitters and decreased sensitivity of receivers, a decrease in the insulating properties of electrical installation wires and other parts--and to an increase in losses or breakdowns.

Prevention of this type of failure requires timely engineering inspections and systematic test measurements.

In a properly organized engineering servicing of electronic equipment, the number of failures can be substantially decreased, which boosts the reliability of the operation of the equipment, makes it possible to extend the periods between repairs, and aids flight safety.

Most unit commanders in communications and electronics of aircraft flight and landing support units skillfully organize the technical use of their equipment, and take steps with initiative and skill to increase their service reliability, as a result of which the reliability of electronic gear in these units is close to the limit determined by the manufacturing plant.

In working toward increased service reliability and decreased numbers of breakdowns, the thorough analysis of the breakdowns and defects which appear and correctly organized systematic information concerning them acquire special significance. The most serious breakdowns and defects must be entered in the log books at the stations, and all--without exception--in the failure record log.

Information on individual failures must indicate: the time the breakdown appeared (relative to the instant the device was turned on), the nature of the deficiency, the causes of its occurrence, steps taken to restore operational capability, and steps required to prevent recurrence. Particular attention must be paid to the reliability of the information, since otherwise its value is lost.

Experienced commanders well understand that the greater the extent to which breakdowns and the conditions leading to their occurrence are revealed and dealt with, and the deeper and more objective their analysis, the more useful this will be in the general flight safety campaign.

As statistics show, in winter the greatest number of failures occurs in lighting equipment and concerns primarily junction boxes, feed cables, and runway lights during snow removal. In this connection failures arise most frequently at airfields where the snow-removal operations are not coordinated with the commanders of communication and air navigation units and subunits, as well as when the layouts of cables and the positions of lights in snowdrifts are not indicated by clearly visible reference markers (surveying field rods, tree branches, etc.).

In the spring and autumn, during high humidity, failures are greatest in antenna feeder systems, particularly VHF radio sets and automatic VHF radio direction-finders: power and communication cables which suffer ruptures of their insulation coatings also fail. Therefore, attention is drawn to the experience of various units in preventing moisture from reaching their VHF radio antenna feeder systems by making the discone antennas airtight with vinyl chloride covers.

The hot summer months are mostly characterized by failures caused by the overheating of units and components and the entry of dust and sand into the equipment. These are failures of high-voltage circuit elements, the wear on electrical network protection systems, the destruction of contacts, and the breakdown of friction mechanisms and parts (bearings, antenna-system reduction gears, and electric power-plant collectors). /81

This is why, particularly after sandstorms and strong winds, all filter devices and contact surfaces and assemblies must be thoroughly washed systematically, after which checks must be made to verify that all contact components and units are moving freely.

All cases of the operation of electronic gear are characterized by the occurrence of inaccuracies at the instant of their nonstationary or--to use the current expression--the transient operating regime of the device, i.e., at the instant it is switched on. Therefore, information should obligatorily contain an indication on the number of switch-ons per hour during the flight shift (beacons, radio-transmitters, etc.). This will make it possible to determine statistically a guaranteed number of failure-free switchings.

To maintain high reliability in electronic gear, special steps should be envisaged, primarily preventive and pre-flight preparation of devices, systematic servicing, steps for protecting equipment on position and in warehouses, and engineering and laboratory checks. When such types of engineering servicing is being performed, it is advisable to use specially developed routing and technical cards which indicate the sequence of operations, their enumeration, and a short methodology for carrying them out. Favorable results in this direction have been achieved in the subunits commanded by A. Zadorozhnyy and M. Shchekaturov. Here, flights have long been carried out with nothing below outstanding and good ratings.

During periods of repair and adjustment work and technical servicing, particular attention must be paid to finding and replacing unreliable parts and poorly installed units.

Therefore, maintaining spare parts in constant readiness for the individual components and units of the equipment is an imperative condition for reducing the time necessary to put a piece of equipment into operation.

A preoperational test is required for parts and instruments intended for replacement (shifting them from the "running in" period to that of "normal operation"), which unquestionably decreases the probability of the occurrence of failure. Such a test run is particularly needed for electronic vacuum and semiconductor instruments and selenium rectifiers. Individual circuit components (capacitors, resistors, transformers, relays, etc.) must undergo a check on testing machines before being included in the spare-parts stock of a combat device. Test runs and instrument checks must be made on all parts and instruments going into a combat device and spare parts to sets or devices. The number of hours that parts are subjected to test runs should not exceed 5% of their total service life, as guaranteed by the manufacturing concern or the instructions for use. It is advisable that such tests be carried out during repair operations.

A major factor in speeding the reintroduction of broken-down equipment is the proper organization of spare parts for a combat device and other spare parts and units. They should be located directly near the equipment, in clearly indicated bins, compartments, or boxes with corresponding labels bearing the date of the last test.

High reliability and failure-free operation of electronic gear cannot be maintained without experienced specialists with good know-how. Particular attention must be paid to the training of junior replacements, because it is on them that the level of flight support ultimately depends. As we see it, the most proper method of training, which has been used by a number of units, is that in which for the first two or three days, large groups of new men familiarize themselves with the organizations, tasks and basic demands for maintaining flight safety. Experienced pilots and navigators speak to them and describe the role played by various pieces of equipment in flight support, and the consequences resulting from failures of such equipment, particularly during difficult meteorological conditions. /82

These steps must be the center of attention of not only commanders, but also the the Party and Komsomol organizations.

After the third or fourth day, the new men are assigned to different instruments, and, for practical training, specialists with a great deal of time on the job are assigned to them. Socialist competitions in the units so that the experience is passed on to the young men in the best way possible raises the responsibility of the men with time on the job in training the new replacements.

Positive results have been obtained through the joint training of operators and radar plotters. From the very first day of training, a mutual understanding was achieved between these specialists, which substantially raised their operational capabilities on the job and increased the rate at which data were turned out at the plotting boards.

A good learning base makes it possible to carry out the training of the young replacements objectively and to obtain good progress.

To achieve highly valuable training of specialists in operating radar gear and short-range navigational systems, during their training period special flights of aircraft should be planned on the basis of courses which are previously determined, but which are unknown to the personnel. This will permit the young specialists to gain practical experience in guiding airborne objects even prior to their independent use of the equipment. There is no question that the expenditure of resources on flights will pay for itself in higher-quality service in the future.

Rationalizers and inventors play a great role in maintaining the failure-free operation of communication and radio navigational aids. Approximately 60% of their proposals have been put into use. Many proposals on improving existing radio navigation equipment have been presented to industry and design bureaus, part of them incorporated into production, and in some cases bulletins have been issued on improving the equipment.

All this makes it possible, from year to year, to boost the reliability of electronic equipment and systems used in flight support, and consequently in boosting flight safety.

We can state in conclusion that in the proper organization of service in the communication and radio-navigation units, in the correct technical use and proper training of specialists, the precise carrying out of instructions and regulations, and the highly exacting requirements and responsibility for conducting its operations, each unit is capable of fully eliminating failures in its electronic equipment due to the fault of the personnel.

MORSKOY SBORNIK, No. 11, 1972, pp. 94-96.

THE SEA SHOULD BE CLEAN

by Captain 3rd Rank-Engineer V. Danilov,
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"Ships are forbidden to pump water overboard which has oil admixtures... Personnel aboard ships standing at docks and piers are assigned the cleaning of debris from bodies of water immediately adjacent to their ships..."

USSR Navy

Shipboard Regulations

Articles 305-307

The problem of maintaining a clean environment /94
is urgently confronting mankind today. According to UN data, more than one million tons of oil products are dumped yearly from ships into the world's oceans, excluding pollution due to tanker accidents.

A stable oil film (100 liters of oil can form a film with an area of approximately 1 square kilometer) prevents gas exchange between the water and air, which leads to the death of live organisms inhabiting the surface layers. The penetration of sunlight is decreased, and this, in turn, retards the photosynthesis of phytoplankton, which is called the pasture of the sea for billions of living creatures.

During a high sea state the oil, by mixing with the water, enters the deep layers and settles to the bottom, damaging the bottom flora and fauna, as well as the spawning beds of bottom fish. Thus, on 16 September 1969, as much as 665,000 liters of fuel oil leaked into the sea off the coast of Massachusetts. Three days later, oceanographers carried out trawling in the polluted zone. Almost the entire catch of fish was dead. A year later, the bottom layer was still poisoned. The toxic materials

in the oil are dispersed by means of currents. Even a 1:1000 solution of this poison kills marine life or makes it unfit for food.

Each year, more and more supertankers are sailing the seas. An accident involving one supertanker can pollute vast expanses with oil. For example, on 11 June 1972, more than 20,000 tons of oil covered a vast area in the Mediterranean Sea. This oil spill, which was formed after a Greek tanker broke up in the open sea between Sicily and Greece, caused great damage to the coastal countries.

On 21 August 1972, as a result of the collision of the tankers TEXANITE and OSWEGO GUARDIAN (having 100 tons displacement each) off the coast of South Africa, the coastal waters were covered with an oil film, and the coast to the south east of Capetown (Union of South Africa) was turned into an ugly black wasteland for several dozen kilometers.

Pollution of the sea and coastal waters, which threatens the well-being of the coasts and the fishing industry of maritime nations, has given rise to the need to take preventive steps on an international scale. An international convention was drawn up in 1954 on preventing the pollution of the sea with oil, and went into force on 26 July 1958. It contained requirements on the use of ships and spelled out steps for the corresponding equipping of ports. The government of the USSR ratified this convention (with the 1962 and 1969 amendments) in 1969.

The Convention prohibited commerical vessels and warships from discharging oil and oil-water mixtures into all the bodies of water of the world's oceans unless they observed conditions agreed upon in Art. 3 of the new edition of the Convention. Requirements concerning the discharge of ballast waters from tankers were stiffened considerably. A new form of log was introduced for oil operations which also had to be kept on ships and auxiliary vessels.

The Convention gives the right to coastal governments to inspect vessels and ships violating the rules

for oil discharge. The famous French investigator of the undersea world, Jacques Ives Cousteau, at the opening of an International Conference on problems of pollution of the ocean environment, in noting the difficulty of monitoring in the open sea, proposed the use of artificial Earth satellites to track ships polluting the ocean. Methods have been perfected for "fingerprinting" oil which make it possible to find the vessel guilty of careless or negligent discharge of oil by means of the "fingerprints" on the ocean surface. /95

Responsibility for violating the requirements of the Convention is borne by the captain or owner of the vessel according to the laws of the country in whose territory it is found. The amount of the fine is imposed on the basis of the amount of damage incurred. Thus, for example, for the discharge of oil in the territorial waters of Great Britain, a fine is imposed that runs up to 1,000 Pounds sterling, while in Italy it is 1 million Lira, in West Germany it is 10,000 Mark, and in Japan up to 100,000 Yen or up to three months in jail. Fines are also levied on the captains of ships who either deliberately or through negligence do not make the proper entries in the oil-operation logs or who knowingly make false entries. In Great Britain, for example, such infractions carry a fine of up to 500 Pounds sterling or six months imprisonment, and in Japan it is 10,000 Yen.

Ship captains and commanders who have witnessed oil pollution of the sea are obligated to immediately inform the Navigational Service of the coordinates, nature, extent, and source of pollution so that steps can be taken to clean the body of water.

A series of organizational and technical steps had been taken in the Soviet maritime fleet even before adoption of the Convention which facilitate the carrying out of its requirements and recommendations. These include: the building of cleaning devices in ports, equipping tankers with a closed tank-washing system, the installation of separators for bilge waters, upgrading of shipboard and separating systems, and the equipping of ports with floating cleaning stations and oil-waste collectors.

For example, the experience in the use of shore-based cleaning stations in the port of Ventspils produced good results. In four years, more than 30,000 tons of oil were collected, of which 24,000 were used as raw material for oil-processing plants and the rest used to satisfy needs of oil bases. The cleaning of each cubic meter of ballast water yields 10 to 12 kopecks of clear profit, not to mention its great health and hygienic effect. In three or four years, the cleaning station has paid for itself.

The Directives taken at the XXIV CPSU Meeting of the Five-Year Plan for the development of the economy of the USSR for 1971--1975 made this point: "It is imperative to strengthen the protection of nature and to increase the responsibility of ministries and government departments, institutions and organizations for the rational use of natural resources--earth, water, and atmosphere..." The annual expenditures for these purposes have more than doubled in our country in the last five-year period.

The effective protection of nature requires not only technological transformations, but social as well. Public ownership of the means of production--this is the truest pledge for the successful solution to this problem in the Socialist countries. On the other hand, the individual philanthropic actions for protecting nature undertaken in the West have inevitably met with indifference and open resistance by the world of private enterprise.

Seamen of the USSR Navy, in solving tasks concerning the protection of the maritime borders of our homeland, have not forgotten to maintain the cleanliness of the sea. Personnel of the engineering departments of our vessels and ships have applied great responsibility to this important concern.

Secure tight sealing of fuel and oil systems, well thought-out organization of repair work, timely removal of petroleum products and oil-soaked rags from the ships have made it possible for them to avoid polluting bodies of water. Frequently this requires great effort, because petroleum waste must be removed from areas lacking access and taken to shore or floating containers. Instructive efforts are being carried out on our vessels and ships to prevent pollution of the sea with oil.

Much is being accomplished with respect to maintaining the cleanliness of the harbors in the Red Banner Black Sea Fleet. Long before the naval ensign is raised, the working day begins for workers of the Sevastopol bays --for the floating oil-waste collectors. An item worthy of attention is the procedure instituted at Sevastopol for the daily (at the same time each day) cleaning of the bodies of water in the bays by the crews of the military units and civil organizations responsible for them. During the inspection of naval and commercial ships and during the checking of units and commercial concerns, a rating is given to the state of the body of water in the immediate vicinity of them, and organizational and technical steps are taken to prevent pollution of the sea. /96

In the ship-repair yard headed by officer M. Parasenko, they have already switched from refuse barges to a container system for the collection of refuse and oil waste from ships. The cleaning areas of the Fleet's motor pools are equipped with gasoline and oil traps with closed-cycle water usage. All this shows that serious concern is being given in the Black Sea Fleet to keeping the bodies of water of its ports clean. Not a single infraction escapes the sharp eyes of the roadstead service authorities. Those guilty of polluting the sea are dealt with severely.

However, keeping the sea clean is not a temporary campaign. There is a great deal of work which remains to be done. Nor can all the problems of this important matter be resolved by the Black Sea Fleet. Underway refueling of ships at sea requires perfecting a monitoring system for the level of fuel oil in the ships' tanks.

The floating waste-oil collectors being manufactured are not efficient or maneuverable enough. They lack special portable boom defenses for locating a damaged flood of oil products on the surface of the sea.

Some naval and commercial ships and Black Sea units are taking organizational and technical steps for preventing sea pollution which have not yet become the object of Socialist competitions. Many technological problems still remain to be solved by the Fleet rationalizers and inventors. This will demand substantial outlays of materials and much organizational work. It would be desirable to learn how such problems are being dealt with in the other fleets, and what they have which is new and instructive.

MORSKOY SBORNIK, No. 11, 1972, pp. 110-111.

SCIENCE OF MANAGEMENT

by Doctor of Technical Sciences,
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Doctor of Technical Sciences,
Captain 2nd Rank-Engineer O. Shcherbakov

At the present time, an extraordinarily great /110
amount of attention is being focused on management in various branches of science and technology, and especially production. This is completely natural, since the timely and correct fulfillment of various types of national economic tasks and the efficiency of production largely depends on management.

Management also plays an important role in military affairs, which accounts for the considerable number of publications on this topic in military journals, as well as the appearance of special monographs.*

* See D. A. Ivanov, V. P. Savel'yev, P. V. Shemanskiy, Osnovy upravleniya voyskami (Fundamentals of Management of Military Forces), Military Publishing House, 1971; from the USA, Sovershennyye metody upravleniya (Accurate Methods of Management), translated from English, Nauka Publishing House, 1971; U. Morris, "Science of Management. Bayesian Approach". Translated from English, Mir Publishing House, 1971.

At the same time works dealing with management problems, taking into account various aspects of naval activity are clearly insufficient.

Therefore, one must welcome the publication of a work by Candidates of Naval Sciences V. D. Skugarev and K. O. Dubravin, entitled "Nauka upravleniya i flot" (Science of Management and the Navy),* which is of unquestionable interest to its readers.

* V. D. Skugarev, K. O. Dubravin. "Nauka upravleniya i flot (Science of Management and the Navy). Military Publishing House, 1972. p. 213, 5000 copies. Price: 1 Rubli, 1 Kopek.

We will note some of the salient points of the monograph.

First, the authors consider various aspects of management, beginning with the systems approach, which enables them in the first chapters to set forth clearly their views on the basic problems of management and to indicate the role and place of individual aspects of management in the overall process of constructing and organizing the Fleet.

Secondly, the basic problems of the managerial process are described in the book as they closely relate to one another. This allows the reader to grasp the problem as a whole, with separation of the role and place of its individual components according to the stages and aspects of management.

Thirdly, the authors creatively approach the problem set forth. They critically analyze a great quantity of literature, isolate the most important aspects of the problem, and expose the major problems of management theory. As a result, there is a fairly complete presentation of the present state of the science of management and the paths of development.

The first two chapters consider the essence of the science of management and its basic concepts of management systems, which can be applied to the Navy. Management science is a very young science. In considering it, it is impossible not to welcome the attempt of the authors to find scientific grounds for it and to unify individual concepts and terms. True, in individual cases their interpretation of some terms differs somewhat from the generally accepted and is to a certain extent debatable.

Indicating the role of scientific disciplines in the management process, the authors justifiably contend that there should not be such extreme positions as the denial of the role of mathematical methods and disparagement of the creative activity of commanding officers, since this contradicts the basic principles of the Marxist-Leninist dialectic.

In the section devoted to the concept of the system, the authors express a variety of new views and ideas concerning actual management problems in the Navy (the functioning of such management systems as staffs, main control positions, etc.).

Subsequent chapters of the monograph consider various aspects and methods of management. Thus the third chapter gives a classification of different structures of managerial units, considers their characteristics and merit, and indicates their weaknesses. The recommendations cited are based on an analysis of existing structures and can be useful to specialists in the Navy involved with problems of management. /111

Of some interest is the material on work standardization in managerial units. This material is set forth not only in broad outline but also in concrete examples, which permits utilization of the methods proposed by the authors in different types of computations. It must be considered fortunate that measurement of the parameters of information flows serves as the basis for standardization. Here use is made of such new mathematical tools as information theory, the theory of mass servicing structure analog theory, etc. This makes it possible to obtain a very precise quantitative evaluation of work input in management. It also makes it possible to determine the requirements for a different structure of managerial units.

In connection with the latter theme the authors, in the course of this lengthy work on this subject, desire to analyze how the widespread introduction, into the work of managerial units, of advances in electronics, and especially of computer technology, is reflected in improved methods and techniques and, in the final analysis, in the very structure of management units.

The fourth chapter considers the principles and style of managerial activity. To date, these problems have virtually been ignored in the literature in relation to management systems.

It is well known that V. I. Lenin devoted great attention to the process of management, and, in particular, to work style. He first formulated the two most important features characteristic of contemporary management. "It is not a matter of institutions, nor reorganizations, nor new decrees, but a matter of people and control of execution."*

* V. I. Lenin. Polnoye sobraniye sochineniy. (Complete Works), Vol. 45, p. 417.

The book describes the basic features of the Leninist style of leadership, taking into account the systems approach to management processes and considers, as an example, the practical work of a commanding officer (leader, educator). This makes the monograph especially useful for a wide circle of readers, and above all for officers.

The fifth chapter discusses the basic methods of management. Much attention is given to problems of planning and forecasting applicable to naval management systems. Methods of organization and control are adequately described.

Finally, the last chapter deals with questions concerning the bases of documentation in management systems. Recommendations cited in the monograph can be fully utilized by appropriate specialists and above all by operators of automated management systems and especially by specialists in the general system mathematics of automatic control systems.

While noting the positive aspects of the work, one cannot pass over specific deficiencies in it. Thus, the section on forecasting does not deal with all aspects of this important problem. It would be useful to relate the materials on methods of management directly to structure and functioning of management units, their goals and tasks.

Regrettably, some inaccuracies are encountered in the book. For example, from Page 45 of the text one can draw the conclusion that information can be transmitted without consumption of energy. Obviously, the

work ought to reflect more accurately and completely the relationship between energy and information. The work does not quite successfully handle the classification of external information flow of a management unit.

An overall deficiency of the whole publication is the small type, which makes for difficult reading.