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CONTENTS

SUBMARINE CREW TRAINING ACTIVITIES

Leningrad LENINGRADSKAYA PRAVDA 25 Jul 76 p 2

/Article by Captain Lieutenant V. Morgun and Senior Lieutenant V. Rusinov: "Rainbow Over the Waves"/

/Text/ The crew of this excellent submarine was the first at the Leningrad Red Banner Naval Base to respond to the initiative of advanced Army and Navy collectives -- "To make the year of the 25th CPSU Congress a year for further improvement in combat training, increasing the quality of combat skill, and steady assimilation of new weapons and equipment". Having joined the socialist competition, the sailors are polishing their mastery and striving to respond to the historic decisions of the congress with specific deeds. Just prior to Navy Day, the troops carried out a regular combat training mission. The mission was not a simple one. Both the people and the equipment were pushed to their limits.

Confidently slicing through the dense waters with its cigar-shaped hull, the submarine neared its assigned area. Shipboard life continued as usual at the battle stations. Somewhere, the sun rose and set, storms and hurricanes raged. Aboard the vessel at sea, there was no day, no night, no enervating rolling. Only the sensitive instruments displayed the depth, course, speed, with the position shown on the chart. A soft, even light shone in the compartments. However, at first glance, the lulling monotony and measured life was in no way reflected in the activities of the crew. The men seemed to save up their energy for the main purpose for which they had gone to sea. Everything else was forced out of their minds and only the main task remained in the forefront. The entire group and each particular individual concentrated on it, the navigator Captain Lieutenant A. Strizhov, the torpedoman Warrant Officer S. Levitskiy, the helmsman at the vertical rudders Petty Officer 1st Class V. Kalmykov. Uninterrupted engine operation, unerring course laying, torpedoes immediately ready to be fired, all had to be in continual readiness. That is why everyone strived to do everything required as fast and as well as possible. The solution of the combat training mission facing the collective was dependent upon this.

"Begin the sonar watch!" came the order from the main command post as soon as the submarine arrived at the range.

The difficult miles of the tiresome search stretched on. Where is he, that clever and skilled enemy? Where is that elusive and swift submarine now, the enemy ready at any moment to forestall them and strike no less of a destructive blow?

Warrant Officer Shibalov and Petty Officer 2d Class A. Pikul'chenko attentively watch the station indicator. Their combat station is the kingdom of incredible sounds and hidden rustles. From time to time, the small space is filled with all sorts of strange melodic sounds of varied timbre, some rich velvety bass, others clear and piercing.

What remarkable experience a sonar operator must possess, what sharp hearing he must have to ferret out from all the sounds of various tones that particular sound, the one required to correctly classify a target and provide an advantageous position from which to launch a strike. Undoubtedly, remarkable equipment assists him but it only extends the limits of human perception. People determine success in battle.

Warrant Officer Viktor Shibalov. It is hard to calculate how many times he, a master of military affairs, has participated in difficult searches, established contacts with enemy ships. Shibalov is a virtuoso in action. He instructs his subordinates well, steadily seeks ways of effectively employing the capabilities of the submarine's radio technical equipment. He has a dream. Shibalov wants to become an officer. He has taken the first steps and the command section approved his request to study at the Higher Naval School imeni M. V. Frunze.

The subordinates are a match for the crew chief. It is no accident that a majority of the sonar operators are high class specialists, the leading people in the ship's company.

An oblong return, at first indistinct and then clearer and clearer, appears among a multitude of returns on the indicator. Several minutes pass for target classification. No, no doubt about it, it is a boat! Warrant Officer Shibalov reports to the command post:

"A return, bearing...range...I have a submarine contact!"

The sharp noise of the klaxon rips through the quiet of the compartments. Torpedo attack! This command can deeply affect both an experienced sailor, the captain wrapped around the bluish eyepiece of the periscope, and the young seaman as well. Thoughts, desires, aspirations, the actions of all submariners are now replete with one thought -- successfully cope with the circumstances. Each person has his own thoughts. For example, the work of the torpedomen during these moments increases, for others it slacks off. But, if you ask a machinist, for instance, what he is thinking about, he will be amazed. About the attack, of course, about his compatriots in the torpedo room. Why as such a question?

The success of the entire submarine crew is composed of the achievements of the individual troops. The struggle for the honor of being the excellent ship is the business of every submariner. And every successfully completed drill and mission is a sequential brick for the foundation of the overall success of the ship.

We peek into the torpedo room. Warrant Officer Levitskiy is at the controls, the master of an awesome submerged weapon. To say that he knows it inside and out is an understatement.

"He can prepare a torpedo for firing with his eyes closed," Senior Lieutenant A. Fedriko says about his subordinate.

Knowing that this officer is sparing with his praise, one can conclude that Levitskiy is a master at his job.

"Not quite yet," the warrant officer retorts. "But I will be for sure. And I will attain that goal for certain."

His certainty is based upon an excellent knowledge of the equipment. There are many good torpedomen in the unit (chast') but the title of best specialist goes to one. It now belongs to Warrant Officer Levitskiy. He is one of those people who does not rest on his laurels. And, having attained one height, they are already looking forward to the next. His subordinates are trying to do the same -- Petty Officer lst Class R. Praulin'sh, Leading Seaman A. Barchuk, the leader of the ship's Komsomol.

A submarine is rarely found at the pier. Sailors usually greet the sunrise and sunset far from home shores. The high moral and combat qualities of the crew, its combat tuning, its spirit of competition and mutual assistance show through at sea. To create one, to forge a collective, to focus each troop on the struggle for further improvement in combat training, these are the tasks of the party organization. It is on these very severe work days at sea that communists pass their difficult exam on party maturity, high consciousness. In competition, no one has the right to be a non-participant. Only a battler. No member of a party organization on an excellent ship would accept less. That is why, during these packed minutes of the torpedo attack, communists A. Khakhonin, A. Strizhov, V. Khomenko, P. Yurov, and others are operating skillfully, fully, energetically.

Warrant Officer M. Korablev is chief of the electricians' crew. He is also a communist, a master of military affairs, an otlichnik in combat and political training. He is tall and light-haired. Somewhat reticent, he is decisive at the crucial moment. He has a real familiarity with equipment. It once happened that execution of a complex maneuver required a response within seconds, not as envisioned by any standards. And, in virtually an instant, Korablev succeeded in providing the ship with the required speed.

"The microclimate in the electricians' crew," says the Deputy Commander for Political Affairs, "is healthy and fosters not only achievement of high indices in combat and military training, but also rapid formation of young troops into specialists.

Seaman V. Saadokvasov is one of the new troops. Putting out to sea, submerging, underway watch, all were firsts for him. When the submarine went into torpedo attack, Vladimir provided the required speeds. He worked evenly, skillfully, knowledgeably. They will give that evaluation to the seaman upon return to base but he himself will say: "I was nervous. Even my hands sweated at first."

The nervousness of Saadokvasov and his comrades, participating in a voyage for the first time, is understandable. But were they the only nervous ones during the attack? No. But old hands can hide nervousness under surface calm. Take Boatswain Warrant Officer V. Zadorozhniy at the vertical rudders. He is an experienced submariner who has made many voyages during his years of service. But each attack places special responsibility on his shoulders.

Judge for yourself. One wrong move by the warrant officer and the boat "dives." And if the torpedoes are suddenly fired at that very moment? Don't even mention that! However, Zadorozhniy learned to steer the ship as if "by the little thread." Regardless of circumstances, the depth gauge needle during a torpedo attack will be on the required spot.

But nervousness is all right. Submariners, even if they do have a romantic profession, are only people, living beings, and nothing on earth is alien to them. Perhaps only after a long voyage they spend a little bit longer looking at the blue sky, the bright sunshine, the trees, the flowers. They listen to the singing of the birds. They simply missed land when they were in the dark Baltic depths. The attraction of gravity affects submariners more than it does any of us.

The required data are fed into the automatic torpedo firing mechanism.

"Target course...speed...," Leading Seaman A. Umanets reports to the captain.

The captain orders: "torpedo tube number...Ready!"

The report that the order was executed reaches the central post from the first compartment. The final control computation, collation of the automatic data with data from the sonar operators.

"Fire!"

The boat shuddered. The torpedo dashed towards the enemy. Warrant Officer V. Zadorozhniy's hand equalizes the differential and maintains the ship at the assigned depth. The sonar operators monitor the noise of the propellors of the en route torpedo. The boat maneuvers, as is required after a salvo.

The submarine surfaced. Soon thereafter, news was received that it was a good torpedo and, had it been an actual enemy, things would have turned out badly for him.

It was raining when the submarine headed in to the base. The people sometimes refer to it as "blind." A bright sun is shining and silver drops fall from the light clouds. It gets heavier and then, over the sea on the horizon, the giant arch of a rainbow appears. A display of color, it remains for a long time over the water boiling with spray. Coming out of the sail hatch onto the deck, the submariners silently bask in the wonderful sight. It is as if nature herself is congratulating the defenders of the home seas.

The boat cuts the waves and, high in the sky, the rainbow overflows.

GORSHKOV'S 20-YEAR STEWARDSHIP OF SOVIET NAVY

Frankfurt SOLDAT UND TECHNIK in German Aug 76, No 8, pp 400-409

[Article by Siegfried Breyer: "Fleet Admiral Gorshkov Steers Course of Soviet Fleet for 20 Years--Leader in the Twin Offensive and Defensive Strategy of Naval Buildup Between 1956 and 1975"]

> [Text] Admiral Gorshkov was appointed commander-in-chief of the Soviet Navy on 5 January 1956. He succeeded Admiral Kuznetsov who had fallen into disgrace and during the ensuing years turned the Soviet Navy--which almost always had stood in the army's shadow--into a no less powerful instrument which Soviet foreign policy is employing to an increasingly threatening degree. The Soviet Fleet today is Gorshkov's work to a significant extent.

When the war in Europe ended in May 1945, the Red Army was at the absolute zenith of its power and growth. By comparison, the fleet seemed years behind because what was left of it was barely enough to constitute the foundation for a similarly lasting power position on the sea. Anglo-American deliveries of numerous smaller warships did not change that situation either; nor could captured ships taken from the defeated Axis powers influence this situation. There were only six cruisers, some 30 destroyers, and barely 80 submarines left for commitment in the postwar navy. That was more than scant because this number of ships had to be distributed over four fleets. This is illustrated by the following table.

Table 1. Numerical Strengths of Soviet Fleet, 1945-1946

	Baltic Fleet	Northern Fleet	Black Sea Fleet	Pacific Fleet	Total
Cruisers	2	-	2	2	6
Destroyers	12	6	4	11	33
Submarines	17	20	19	21	77

The situation changed little even as a result of the completion, by the middle of the fifties, of a number of warships which were begun at the

start of the war but which were not finished. Of the five cruisers in the CHAPAYEV Class, two, each, remained in the Baltic Sea and the Black Sea; the fifth was sent to the Arctic Ocean; of the destroyers in the OGNEVOY Class, three, each, were assigned to the Baltic Fleet and the Pacific Fleet while two, each, were assigned to the Northern Fleet and the Black Sea Fleet. In addition there were some patrol vessels and 15 submarines. Just how much the navy--which during the war operated exclusively as an auxiliary of the ground forces--was in the shadow of the army can be seen from the fact that the Navy Commissariat early in 1946 was dissolved as an independent agency and was integrated into the War Ministry. Admiral Kuznetsov, who had been commander-in-chief of the navy until then, certainly could not agree with that. According to what we know today, he tried to continue his prewar plans in spite of all resistance (which probably came mostly from the army); these plans aimed at buildingup a huge blue-water navy. At one time, Stalin himself strongly promoted these plans but during the extremely difficult postwar years, the reconstruction of industry and the economy undoubtedly had priority. Admiral Kuznetsov was relieved of his post as commander-in-chief of the navy on 17 February 1947--his adversaries were obviously victorious. He was succeeded by Admiral Yumashev.

The First Postwar Naval Shipbuilding Program

Around that time, the Navy Reconstruction Program was being discussed and drafted in the Soviet Union. In view of the growing tension with the former Western allies it was obvious here that the situation that developed at the end of the war was used as basis; to be sure, the Soviet Army, which in the meantime had become just about unbeatable, could reliably protect the entire communist power sphere; but there seemed to be a potential threat coming from the sea. The Soviet Union had to recognize, not without being impressed, as of 1943-1944 what offensives the two Anglo-Saxon naval powers were capable of thanks to their unparalleled tremendous amphibious operations potential which had literally been created overnight. These two powers had moved entire armies in some cases over thousands of nautical miles by sea and had put those armies ashore, even on heavily-defended sectors of the coastline, under the effective protection of an umbrella made up of naval artillery and carrier bombers. More than that, they were able to widen the beachheads, step by step, and the supply of the units ashore hardly ever created any serious problems. Soviet military leaders had without question admitted the possibilities of amphibious operations by the Western powers especially since particularly the Baltic Sea and the Black Sea (and to a lesser extent the Arctic Ocean and the Far East) seemed just about ideal because of their favorable geographic conditions. The rulers in Moscow therefore gave top priority to defense against amphibious operations among all of the missions of the navy which was to be newly built up. In so doing they first of all assigned a definite defensive role to the navy. The naval strategy concept of that era presumably sprang from two lines of defense: the outer line--far away from the Soviet coast--was to be defended by submarines while the inner line--already located within the range of the Soviet Air Force--was to be defended by minefields and naval aviation units behind which there would be cruiser-destroyer task forces and minor units. In the course of this three-part program--which today is frequently referred to as the

"anti-Amphibik Program"--a requirement of about 35-40 cruisers, 180-220 destroyers, and 1,200 submarines was calculated. Further details on this program can be seen in Table 2.

Table 2. The Soviet "Anti-Amphibik" Fleet Construction Program

The implementation of this program had been scheduled for a period of 20 years. In order to ensure the most continual possible development of ship types, the program was subdivided into three phases. The first phase only partly called for the construction of new warships (this included the start of construction on 50 prewar type "M-XV" submarines as part of a crash program designed to close a threatening gap; the first SKORIY destroyers were included here). The main objective of this phase was the completion of the ships on which construction had been started before the war but which had remained unfinished. The second phase was to bring the series construction of newly designed units and from the second half of the phase, there was to be a transition to improved warship types. The third phase was to include the start of construction on major units, such as aircraft carriers and heavy cruisers but also numerous destroyers, submarines, etc. The numbers are based on the previously mentioned investigations by McGwire and Rohwer. Numbers in parentheses indicate how many units of these particular classes were actually finished.

	1st Phase 1946-1951	2nd Phase 1952-1957	3rd Phase 1958-1967
aircraft carrier	-	-	4 (0)
heavy cruisers	-	-	16 (0)
cruisers, completion	5 (5)	-	-
cruisers, SVERDLOV Class	-	24 (12)	-
destroyers, completion	10 (10)	-	-
SKORIY Class destroyers	32 (32)	48 (32)	-
"Tallinn"-Class destroyers	-	12 (1)	-
"Kotlin"-Class destroyers	-	36 (23)	-
"Kruplin"-Class destroyers	-	-	80 (0)
submarines, completion	15 (15)	-	-
"M-XV"-Class submarines	50 (50	-	-
"Whiskey"-Class submarines	-	336 (202)	-
"Quebec"-Class submarines	-	36 (15-22)	-
"Zulu"-Class submarines	-	36 (22)	-
"Romeo"-Class submarines	-	-	576 (24)
"Foxtrot"-Class submarines	-	-	144 (60)

In the case of the newly designed warship types, it was deliberately decided to refrain from seeking to incorporate the latest state of the art. Quantity was given preference over quality because anything else would have taken too much time and, according to the prevailing view then, there did not seem to be enough time. In terms of Soviet power expansion, there is no question that it was important to build ships in the shortest possible time and thus to carry out the program as quickly as possible. Nevertheless, the program was off to a rather sluggish start. And this circumstance seems to have been responsible for the fact that the navy, early in

1950, was taken out of the War Ministry and again was given its own top-level agency and that Stalin soon thereafter once again placed energetic Admiral Kuznetsov--whom he had fired just 4 years earlier--once again at the head of the Red Fleet. Obviously he considered him to be the ablest naval officer at that time who could carry out such a program. Around that time, orders had been placed for the first units and construction had in some cases begun. A definite revival and intensification however can be detected only after the restoration of Admiral Kuznetsov to his former position in July 1951. Starting roughly in 1952, new warships were commissioned in ever faster sequence--cruisers of the SVERDLOV Class, destroyers of the SKORIY Class, frigates of the "Kola" Type and others. In technological respects, they corresponded to the development level of the mid-forties to the end of the forties. The new submarines however had to be redesigned to incorporate the achievements of modern German submarines in them; the Soviet Union had received several such submarines as booty. This of course caused delays but Kuznetsov apparently accepted this fact intentionally. For most of the submarines which were to be built preference was given to a medium type, that is, the "Whiskey" Class. These boats had been so dimensioned that they would be able to operate not only in somewhat more limited waters, such as the Baltic Sea and the Black Sea, but also far from the Soviet coast in the Arctic Ocean and in the Eastern Pacific. Somewhat more than 200 of these boats were built. For the two European inland seas, a smaller type, the "Quebec" Class was created while for reconnaissance purposes, a large, ocean-going type was designed; this was the "Zulu" Class; but both of these were built in considerably smaller numbers than the "Whiskey" Class.

The international public--especially the United States--at that time got the impression that the Soviets, in case of an armed conflict, intended to conduct tonnage-sinking warfare using submarines. This interpretation proved to be wrong, as indicated clearly by the most recent research. In German-style tonnage-sinking warfare, the "Whiskey" Class submarines would have had to bear the brunt and their range of about 13,000 nm would have been too short in view of the long approach routes from the bases in the Far North and in the Far East. The view is therefore justified to the effect that--if the primary objective of Soviet submarine construction actually had been this kind of tonnage-sinking warfare--then it would have been indicated to build considerably larger numbers of the "Zulu" Class boats, which can be used in the oceans, at the expense of the "Whiskey" Class.

Struggle Over Priorities

After Stalin died in March 1953, there was at first hardly any change at all in the implementation of the naval construction program. But the ouster of Malenkov and Beriya from the post-Stalin leadership "Troika" and the takeover of power by Khrushchev alone resulted in consequences for the navy as such: Khrushchev obviously was able to win his power position only with the help of the army marshals and they used this great opportunity in order once again to take the navy, which had been independent for several years, under their wing and to reintegrate it into the Defense Ministry which was under the direction of the army.

It was quite obvious that the enormous naval buildup would have to consume considerable funds and moreover industrial capacities--for a navy whose value, in the army's eyes, had to be changed and shifted. This navy was placed far behind the nuclear and missile buildup effort which the Army High Command and the political leadership, headed by Khrushchev, kept demanding ever more urgently. To be sure, the Soviet Union in the summer of 1949 had taken a big step toward the atomic age with its first nuclear weapons test but it still did not have a suitable strategic delivery system. The road to that goal was difficult and, as in the case of atomic bomb development, required enormous expenditures. This circumstance caused the army to urge a thorough review of the existing situation in the overall armament effort in order to make more funds and capacities available for the development of strategic delivery systems. Khrushchev--himself a supporter and advocate of a modern missile force--was favorably inclined toward the army anyway and from the very beginning had his reservations about the navy.

In the course of this review, the Soviets were forced to realize that the threat from amphibious formations of the Western navies had ceased to exist a long time ago. The Western powers had drastically reduced this potential already during the very first few years after the war to such an extent that the Americans found it very difficult during the Korean War to move elements of an understrength corps to Korea and put them ashore there. We must remember the statistics from those years: in 1945, the Americans had 1,256 ocean-going landing craft in service; in 1946 there were 259 and in 1949 there were only 91. Around that time, 98% of the American landing craft were mothballed at their bases.

This made it quite clear that this particular Soviet naval construction program had been designed against what now turned out to be an imaginary threat. But that was not all: as of the end of the forties, the Soviet camp had watched the development of the Western and especially the American carrier air force. The Soviets had to admit that carrier planes would soon be available as atomic bomb delivery systems. But more than that, the commitment of American carriers off Korea, their increasing presence in crisis areas--in the Mediterranean, in the Eastern Pacific, and also in the Atlantic--and finally the resumption of aircraft carrier construction in the United States in 1952 constituted food for thought in the Soviet Union. The only conclusion that could be drawn from these facts could reside in the realization that the new Russian warships could not constitute an instrument against these brand new and considerably different weapons systems. New ways and means had to be sought to meet this threat. But it was obvious that the thinking here primarily ran along the lines of weapons systems based on modern rocket technology especially since it seemed possible to deliver nuclear payloads to the enemy only with the help of those weapons systems.

Sergey N. Gorshkov--The New Man

It was agreed that it would be possible to develop such a new naval weapons system--but at the price of discontinuing the current shipbuilding program

or at the very least, a very drastic cutback. It seems that Admiral Kuznetsov was not prepared to do that, perhaps even for presumably good reasons, such as the fact that many ships had already been started and that construction had progressed rather far and that voluminous material was in the production pipeline for those ships. At any rate, he seems to have triggered considerable controversies with his attitude among the party and government leadership; in the end, Khrushchev himself entered the debate. Admiral Kuznetsov was relieved on 5 January 1956. Khrushchev's new man was Sergey N. Gorshkov, 45, wartime commander of flotillas in the Sea of Azov and on the Danube and, most recently, commander-in-chief of the Black Sea Fleet. A new era began for the Soviet Navy when he took over.

Around that time the Soviet Union was experimenting with various missile models derived from the German "V-1"--an aerodynamic missile. Two such models were "navalized" during those years, that is to say, they were systematically rendered useful for employment from warships. In this way, the Soviet Navy obtained weapons systems especially suitable for action against surface vessels. Indeed, both weapons systems--the "SS-N-1" ("Scrubber") for destroyers and the "SS-N-2" ("Styx") for smaller units--were ready for use by the end of the fifties. That was a quite respectable success for the Soviet Navy because at that time no navy in the world had a comparable weapons system--not even the U.S. Navy which was the strongest in the world. But there was much more going on during those years. The development of a strategic naval weapons system had also been tackled; rather early, around 1949, an effort had been started in experimenting with missiles on the basis of the German "V-2" (A-4") in order to convert them for employment from submarines. At first Soviet engineers likewise tied in with a German development, that is, a submersible container, towed by the submarine; after the container had been righted, the missile could be fired from it. But these methods were quite complicated and involved and moreover were extraordinarily dangerous for the towing submarine because its speed and maneuverability were now reduced; in view of the still very limited range of these missiles, the submarine would have to operate in the immediate proximity of the enemy coastline and therefore would have to expect to be engaged rather soon by the enemy's defenses. This realization persuaded the Soviets to discontinue further experiments on this basis and instead to try to launch such missiles directly from the submarines. For this purpose, they fell back to the tactical ground-to-ground missile called "Scud-A" which had been introduced among the ground forces in 1957. It was correspondingly "navalized" and was employed for the first launches of missiles from surfaced submarines; from here on, development of ballistic submarine missiles was continued.

But there were still no corresponding "carriers" for these new naval weapons systems, in other words, there were no suitable warships. To be sure, the introduction of such weapons systems had been decided on as part of a review of the naval construction program in the middle of the fifties but nothing had been tackled by the time Gorshkov took over. It seems that one of his first measures was to stop the on-going construction program. That meant that only the most advanced warship construction

projects could be finished while all the others would be stopped and in most cases had to be turned into scrap. That involved not only cruisers of the SVERDLOV Class and destroyers of the SKORIY Class but also modern types, such as the "Tallinn" Class destroyers which were earmarked as destroyer-leaders (with the exception of one prototype vessel) and some units of the even more modern "Kotlin" Class. Most hard-hit however was the submarine arm where severe cuts were ordered in the "Whiskey" Class and even more so in its follow-on type, the "Romeo" Class.

New Weapons Systems for the Navy

The review of the entire naval construction program called for the gradual, three-stage introduction of the new weapons systems. The first stage contained improvisations in the program to the extent that existing units or units whose construction was far advanced were to be experimentally converted as carriers for such weapons systems. The idea was to gain experience in operating these vessels and to take the lessons learned into account in subsequent warship types and their weapons systems. During the second step--which likewise called for improvisations--the idea was to convert such weapons systems for already designed but not yet started ship types. During the last stage--subdivided into two parts--it was hoped that one could tackle warship types which were tailored from the very beginning for those new weapons systems. Relatively few units were built during the first improvisation stage. They included primarily four "Kotlin" destroyer hulls which--equipped with an "SS-N-1" missile system--were completed as experimental carriers for this new weapons system. This class henceforth was labeled as the "Kildin" Class by NATO.

Around that time, one could also detect the fact that other weapons would soon be ready for actual employment, that is, the "SS-N-3" ("Shaddock") as an improved tactical weapon against naval targets and the "SS-N-4," the first ballistic submarine missile created after the "Scud-A" experiments. To test the new "SS-N-3" missile weapons system for its usefulness in submarines, a "Whiskey" boat was equipped with a corresponding launch container which was placed, standing free, on the upper deck ("Whiskey Single Cylinder"). Seven as yet incomplete submarines of the "Zulu" Class were fitted out roughly at the same time as the first carriers for Soviet Navy ballistic missiles. From them sprang the "Zulu-V" Class. The transition to the second improvisation stage was accomplished with hardly any delay around 1958. This period of time was characterized by the units of the "Krupniy" Class which came out of a conventional destroyer design (which, under the name of "Kruplin" Class had been intended as the successor to the "Kotlin" Class). We might furthermore mention here the "Whiskey Twin Cylinder" boats which were equipped with two "SS-N-3" and the "Golf" Class equipped with three "SS-N-4" but which actually would belong to the third stage because this is not a redesign or a conversion of a prior development but rather a type designed from the very beginning for this weapons system. During that time we also had the completion of the first submarines of the "Romeo" and "Foxtrot" classes from the first building program, of course in much smaller numbers than originally planned.

The second stage however also includes the first nuclear-powered submarines whose development had been prepared rather early, roughly around 1952-1953. To be sure, the difficulties which arose at that time in terms of dimensions, weights, and radiation screens for the reactors were so great that it was at first decided to build a big surface vessel (the icebreaker LENIN) where no such problems would be encountered. The lessons learned in the operation of the nuclear powerplant of the LENIN--whose keel had been laid down in 1956 and which had been delivered in 1959--seemed to have been extremely valuable in developing submarine reactors. Building on these experiences, it was soon thereafter possible to continue the development of atomic submarines. The result of this was, starting in 1958, the completion of the first such prototypes of the "November" Class (a torpedo assault boat type) and the "Hotel" Class (which, like the conventionally-powered "Golf" Class had been equipped with three "SS-N-4" missiles). From here on in--roughly 1959-1960--there also began the delivery of guided missile boats equipped with tactical "SS-N-2" missiles with which the Soviets once again surprised the international public. The Soviets presented two different-sized types of which the smaller one, the "Komar" Class, sprang from a redesign of a standard PT-boat ("P-6" Class) and can thus be listed as a product of the improvisation phase, whereas the larger one, the "Osa" Class, belongs in the third phase.

Spectacular Naval Weapons Development

The development as part of that third stage however began to bear fruit starting in 1962. The most spectacular event here probably was the appearance of novel "missile cruisers" of the "Kynda" Class equipped with two quadruple groups of "SS-N-3." Here we might also mention the first cruisers and destroyers which were partially converted to ship-to-air missiles--at first of course only as prototypes; then we have additional submarines equipped with "SS-N-3" missiles in an improved configuration ("Whiskey Long Bin") and with nuclear engines ("Echo" Class). As a result, the Western world increasingly clearly was able to figure out against what kind of threat this new design of the Soviet warship construction effort was aimed--that is, against the carrier attack groups as new components of the American nuclear weapons potential.

This "anti-carrier program" thus was obviously the Soviet reply to the inclusion of American aircraft carriers in the nuclear strategic deterrent. This was bound to look by far more threatening to the Soviets than the amphibious threat. When the warship types designed for employment against these carrier attack groups became operational--roughly around 1961-1962--the situation on the side of the Free World on the other hand had once again begun to change. Now the potential threat had been switched to the American "Polaris" atomic submarines which were being finished as of the beginning of the sixties, while the aircraft carriers once again were returned to their traditional tactical and semistrategic role. Thus the Soviet Navy was faced with the necessity of once again revising its thinking and its planning. Now, ASW defenses had to be emphasized alongside the buildup of a Soviet strategic deterrent force at sea. This is why the on-going program was stopped or cut back to considerably smaller numbers of ships. This involved primarily the "Kynda"-Class vessel cruisers which originally was supposed to include a dozen units. The number was cut back to four units.

Table 3. The Soviet "Anti-Carrier" Construction Program

This table provides information on warship types which were developed especially during this era. The first figure--to the extent known--indicates the number of units planned (based on investigation results of McGwire); the following numbers in parentheses indicate the ships actually built and completed.

	1st Stage (improvisations) 1956-1957	2nd Stage (improvisations) 1958-1960	3rd Stage as of 1961
"Kynda"-Class guided missile cruisers			12 (4)
"Kresta-I"-Class guided missile cruisers			12 (4)
"Kildin"-Class guided missile destroyers	4 (4)		
"Krupniy"-Class guided missile destroyers		12 (8)	
"Whiskey Single Cylinder"-Class guided missile submarines	? (1)		
"Whiskey Twin Cylinder"-Class guided missile submarines		? (6)	
"Whiskey Long Bin"-Class guided missile submarines		? (6)	
"Juliett"-Class Guided Missile submarines			72 (16)
"Echo-I"-Class Guided Missile submarines		? (5)	
"Echo-II"-Class Guided missile submarines			? (27)
"November"-Class submarines		? (15)	
"Zulu-V"-Class guided missile submarines	7 (7)		
"Golf"-Class guided missile submarines		60 ? (22)	
"Hotel"-Class guided missile submarines		? (10)	

Table 4. Typical Warships of "ASW" Program

Type	Class	Number
ASW cruisers (helicopter carriers)	MOSKVA	2
major ASW vessels (guided missile cruisers)	"Kresta-II"	8
major ASW vessels (guided missile cruisers)	"Kara"	4+
major ASW vessels (guided missile destroyers)	"Kashin"	19
major ASW vessels (guided missile destroyers)	"Krivak"	9+
ASW vessels (frigates)	"Petya"	45
ASW vessels (frigates)	"Mirka"	20
minor ASW vessels (corvettes)	"Grisha"	14+
submarines (nuclear-powered)	"Victor"	16

Table 5. Soviet Warship Construction Under Admiral Gorshkov

This table shows the type development and the continual fleet expansion during the last 20 years. The years in the left-hand column indicate the time of initial appearance or initial observation of the particular class. In parentheses thereafter we have the (mostly estimated) number of available ships; a plus symbol after that means that one can expect additional units to be added. Major reconstruction projects are shown in brackets. Ship types from the time prior to Gorshkov's takeover were not mentioned. A ● signifies nuclear power while a ■ refers to guided missile weapons systems. Arrows pointing down indicate further development.

Legend: RH--helicopter carrier in ASW cruiser configuration; CG--guided missile cruiser; DG--guided missile destroyer; FF--frigates; FS--corvettes; SS--submarines; SG--submarines with guided missile weapons systems; SB--submarines with ballistic missiles; PF--PT-boats; MB--minesweepers; MS--small minesweepers.

Jahr	RH	CG	DG	FF	FS	SS	SG	SB	PF	MB	MS
1956											
1957											
1958											
1959											
1960			■ „Kildin" (4)			„Foxtrot" (56)		■ „Zulu-V" (7)	■ „Komar" (~ 100		„Sasha" (40)
1961			■ „Krupny" (8)			„Romeo" (20)		■ „Golf" (22)	■ „Osa" (200+)	„T-58" (20)	
1962		■ „Kynda" (4)	■ „Kotlin-SAM" (8)			● „November" (15)	■ „Whiskey-Twin Cyl."				
1963				„Petya" (45)			■ „Whiskey-Long Bin"				
1964			■ „Kashin" (19)				■ „Juliett" (16)	■■ „Hotel" (10)			„Vanja" (70)
1965				„Mirka" (20)			■■ „Echo-I" (5)		„Shershen" (45+)		
1966							■■ „Echo-II" (27)			„Yurka" (45)	
1967		■ „Kresta-I" (4)									
1968	■ „MOSKVA" (2)										
1969			■ „Kanin" (8)			„Bravo" (4)	■■ „Charlie" (12)	■■ „Yankee" (34)			
1970		■ „Kresta-II" (8)			■ „Nanuchka" (12+)						
1971			■ „Krivak" (9+)		■ „Grisha" (14+)	● „Alpha" (1-2)				„Natya" (16+)	
1972									„Turya" (12+)		„Zhenya" (5)
1973		■ „Kara" (4+)				„Tango" (1)		■■ „Delta-I" (19)			
1974								■■ „Delta-II" (2+)			„Sonya" (4-6)
1975	↓					↓	↓				↓
	■ „Kurli" (2)					● „Victor-II" (2)	■■ „Papa" (1+)				„Evgenya" (8-10+) „Ijusha" (4-6+)

Table 6. Soviet Navy's Guided Missile and Rocket Weapons Systems

The following table illustrates the development of the various guided missile weapons systems, including ASW rockets. Where nuclear warheads are available, they are marked with Ü(N. A ○ means a conventional (TNT) warhead. Where both symbols are given, we can expect both warheads, on an alternate basis. The year indicates the time at which the weapons system became operational.

Legend: 1--year; 2--ship-to-ship guided missile; 3--ship-to-air guided missile; 4--guided-missile submarine (ballistic); 5--ASW missile; 6--ASW rockets; 7--being tested; 8--replacement of SS-N-3; 9--being developed; 10--against fleet formations; 11--in development or testing stage.

Jahr 1)	2) FK Schiff/Schiff	3) FK Schiff/Luft	4) U-Boot-FK (ballistische)	5) U-Abwehr-FK	6) U-Jagd-Raketen
1956					○ MBU-1800
1957			○ SCUD-A (Versuch)		
1958	○ SS-N-1 (Scrubber)				○ MBU-2500
1959	○ SS-N-2 (Styx)		● SS-N-4 (Sark)		
1960		○ SA-N-1 (Goa)			
1961	●○ SS-N-3 (Shaddock)	○ SA-N-2 (Guideline)			○ MBU-2500A
1962					○ MBU-4500
1963					○ MBU-4500A
1064			● SS-N-5 (Serb)		
1965					
1966				○ SS-N-14	
1967		○ SA-N-3 (Goblet)	● SS-N-6 (Sawfly)		
1968	○ SS-N-7				
1969	●○ SS-N-9				
1970	○ SS-N-10	○ SA-N-4			
1971	○ SS-N-11				
1972			● SS-N-8		
1973 1974 1975	7) In Erprobung: ●○ SS-N-12 8) (Ersatz von SS-N-3)		9) In Entwicklung: 10) ● SS-N-13 (gegen Flottenverbände!)	11) In Entwicklung bzw. Erprobung. ● SS-N-15 ● FRAS-1	

New Operational Concept Against Western Carrier Attack Groups

The roughly simultaneous redesign of the entire naval armament program then clearly showed that the Soviets had thoroughly considered the special requirements of ASW defense on the one hand and the creation of a new strategic submarine arm on the other hand, moving on to a new operational concept to be employed against Western surface forces but especially against the carrier attack groups. Thus the Soviets--initially in the Mediterranean--switched to the practice of shadowing such carrier attack groups with guided missile vessels as a way of maintaining contact. The meaning behind such a measure could of course be represented only by the expectation that these guided missile vessels would, in case of the outbreak of a military confrontation, be able, prior to their own destruction--which had

to be accepted as certain--to launch their guided missiles against the enemy carriers and to hit them so heavily that they would be out of action for at least the foreseeable future, if they were not wiped out in the first strike.

This kind of procedure necessitated two kinds of conclusions. First of all, this would not require such great guided missile ranges as in the case of the SS-N-3" (where this range could be fully exploited only if relay stations were available). This is why the range was considerably reduced in the follow-on guided missile weapons systems for use against ship targets.

And here is the second conclusion: the guided missile vessels would necessarily have to get along without the protection of friendly, exclusively land-based air force units whose effective range was clearly restricted; they would increasingly find themselves in danger of being attacked by enemy carrier aircraft. In order to counter this danger, the air defense potential of ships to be newly built had to be stepped up considerably whereby guided missiles weapons systems likewise had to be considered exclusively. But their development had been rather sluggish until the beginning of the sixties (proof of the fact that the operational concept of the Soviet Navy so far was always based on the idea of getting support from the Soviet Air Force). The consequence was that, on the new vessels, a twice as strong AA defense potential was installed as on the old vessels (and that involved the "Kynda"-Class guided missile cruisers).

The successor of the "Kynda"-Class was the "Kresta-1"-Class which likewise initially was scheduled to include 12 units and which had been started in 1964. It had already been earmarked as the successor to the "SS-N-3"--that is, the "SS-N-10"--but its operational readiness was delayed. It was therefore decided to retain the "SS-N-3" weapons system for this class but the number was reduced to four units. The new concept is characterized first of all by the fact that the AA defense potential of this class is twice as strong; likewise, its ASW capacity has been clearly stepped up. This also emerged in Soviet terminology: although this class undoubtedly involves the successor to the "Kynda" Class, the Soviets no longer referred to it as "rocket cruisers" as in the case of the former, but rather as "major ASW vessels." There is no clearer way to document the fact that the "anti-carrier program" had been converted into an "anti-submarine program."

This era also includes the start of work on other ASW vessels, especially the helicopter carriers of the MOSKVA Class which were labeled as "ASW cruisers" and which are designed for offensive ASW operations, carrying about 18 ASW helicopters, each, on board. Their strong defensive potential is quite noteworthy; it enables them to operate also in areas which are more threatened from the air, such as, in the area of "Polaris" submarine bases.

The hitherto valid "anti-carrier concept" had called for the commitment of "Kynda" missile cruisers together with new-type guided-missile destroyers of the "Kashin" Class, so to speak, as their "satellites"; this also called for the construction of three or two vessels annually; but this situation changed after the suspension of the "Kynda" program inasmuch as the construction of the "Kashin" destroyers was now pushed energetically. They, too, were equipped for ASW operations and they are likewise referred to as "major ASW vessels."

The construction of smaller ASW vessels had been launched early in the sixties, first with the "Petya" Class (1960) and the smaller "Poti" class (1962), both with combined powerplants including gas turbines and diesel engines. An improved "Petya" successor came out in 1963-1964; it was the "Mirka" Class. New submarine types--nuclear-powered and conventional--were also designed during the first half of the sixties and were built starting in 1966. Here we might mention the torpedo attack submarines of the "Victor" Class and the "Charlie" Class as successors to the "Echo" Class--both of them nuclear-powered. The "Charlie"-Class boats, which are equipped with new guided missiles, had aroused special attention in the West; in contrast to their predecessors, they are able to launch their missiles also while submerged. They will certainly constitute a considerable threat to the American carrier task forces.

Soviets Develop Counterpart to American "Polaris" Force

The buildup of a Soviet strategic submarine arm as a counterpart to the American "Polaris" force was pushed energetically as of the middle of the sixties. This program could be carried out with the new strategic "SS-N-6" guided missile weapons system which had become operational in 1967 and which is to have a range of 1,300 nm (recently even as much as 1,600 nm) = 2,400-2,950 km. The series construction of the "Yankee" Class was begun in 1967 in Severodvinsk; after 34 had been built, the series was terminated in 1974. The average construction rate of almost five units per year clearly shows how significant the establishment of this fighting force is considered to be.

By way of supplementation of these two program directions, more comprehensive modernization projects were also carried out starting in the middle of the sixties. Thus, a number of "Kotlin" destroyers was converted to ship-to-air guided missile systems; soon thereafter, the "Krupniy" destroyers were converted; their obsolete "SS-N-1" guided missile system was replaced with a ship-to-air guided missile system; in both classes, the ASW potential was at the same time increased, in some cases quite considerably. Early in the seventies came the modernization of the "Kildin" Class in a similar manner. Development also progressed among the light naval forces. The most important step here was the switch to guided missile corvettes ("Nanuchka" Class) for which a new ship-to-ship guided missile system had been developed in the form of the "SS-N-9" model. Of course, we can tell from the hitherto small numbers of this class that it has not yet come up to expectations. Nevertheless, one can expect improvements in the very near future so that these guided missile corvettes could turn into very dangerous adversaries in the marginal and inland seas.

Table 7. Range of Soviet Naval Guided Missile Systems, Including ASW Rockets

1) Reichweite 3) in sm = 1852 m	in km = 1000 m	2) Waffensysteme
4000	7400	SS-N-6
1600	2950	SS-N-6 (neuere Version) 4)
1300	2400	SS-N-6
700	1300	SS-N-5
370	685	SS-N-13
300	550	SS-N-4
260	480	SS-N-12
250	460	SS-N-3 (von U-Booten gegen 5) Festlandziele)
170	315	SS-N-3 (von Überwasser- 6) schiffen unter Einschaltung von Relaisstationen)
150	280	SS-N-9 (mit Relaisstationen) 7)
130	240	SS-N-1 (gegen Festlandziele) 8)
80	150	SCUD-A
30	55	SS-N-7, SS-N-9
25	46	SS-N-15
21	40	SA-N-2, SA-N-3
20	37	SS-N-14
18	33	SS-N-10 (maximal) 9)
16	30	SA-N-1
15	28	SS-N-2 (maximal), SS-N-10
10	18	SS-N-2 9)
5	9	SA-N-4
3,2	6	MBU-2500A
1,35	2,5	MBU-4500, MBU-4500 A
1	1,8	MBU-1800

Legend: 1--range; 2--weapons systems; 3--in nm; 4--more recent version; 5--from submarines against continental targets; 6--from surface vessels, using relay stations; 7--with relay stations; 8--against continental targets; 9--maximum.

New Emphasis on ASW Operations

A switch to new warship types once again took place in 1966-1967, once again headed by "major ASW vessels" in the configuration of the former "guided missile cruisers." During that time the Soviets developed the "Kresta-II" Class which within 8 years had increased to eight units, in other words, one vessel per year. Compared to its predecessor types, the "Kresta-II" Class marks a considerable step forward inasmuch as it was possible to integrate the latest guided missile systems--the "SS-N-10" against naval targets and the "SA-N-3" against airborne targets--in it. Just 2 years later, work was started on the even further improved "major ASW vessels" of the "Kara" Class--hitherto the "latest" in this development direction. They carry the same weapons systems although they were increased by two "SA-N-4" systems and besides they are the hitherto biggest Soviet warships with gas-turbine drive. The destroyers of the "Krivak" Class were ordered roughly at the time construction clearance was given for the "Kresta-II" Class; they are likewise carriers of "SS-N-10" and "SA-N-4" and constitute the first series-equipped warship type with deep-sonar (VDS); they are therefore particularly well suited for ASW operations. During that time, construction clearance was also given for "small ASW vessels" of the "Grisha" Class. This type became

operational starting in 1970-1971 and is generally considered the successor to the "Poti" Class. It is worth noting in this connection that, in spite of its small size, it was equipped with a full-fledged ship-to-air guided missile system and therefore would seem to have good survival chances also in areas under more severe threat from the air.

Concept for the Present: "Forward Deployment"

It was realized in 1971 that the Soviet Navy had begun to build aircraft carriers, in other words, a type of warship which, according to long-standing Soviet ideas, allegedly had no justification for existence any longer. That was expressed in publications, including the daily press of the USSR, and by high-ranking and very high-ranking political and military leaders. There seems to be one explanation, right off for this obvious change in attitude: the Soviets had realized at last that the presence of a fleet alone was not enough to establish the foundation for a seapower position but that this also requires an air umbrella; they were particularly inspired in this realization by their failure off Cuba which, last but not least, was due to the fact that they could not possibly be successful with their fleet since they had no carrier-supported airpower. More detailed analyses in the meantime reveal that the Soviets certainly do not have "pure-bred" aircraft carriers but rather an improvement of the MOSKVA Class.

The mission concept behind these ships appears clear now: protected by carrier-based (VTOL) combat aircraft they are supposed to go after submarines with their ASW helicopters. In other words, they do not fully and entirely belong within the "anti-submarine program" and they probably do not--as is assumed in the Western world here and there--belong to a new phase which might perhaps be aimed at building up a separate carrier aviation capability according to the American model. In other words, the bulk of the Red Fleet still has the mission of keeping threats coming from the sea away from USSR territory. The new thing here however is that the defense line now is to be pushed forward as far as possible into the enemy's area of concern. This "forward defense" or, better still, "forward deployment," has been paralleled, since the beginning of the seventies, by the observable emphatic expansion of the logistic component in the form of new supply vessels and the introduction of modern supply techniques and systems.

We must not overlook one other component of the Soviet Navy, that is, its amphibious potential. It was created from rather modest beginnings during the fifties. But this crash program probably began during the following decade. What the Soviets have today in the way of amphibious potential of course is not suited for operations against overseas areas, such as the Americans mounted them during World War II; that obviously is not the intention at all, anyway. But there cannot be any doubt that this potential is aimed against the European NATO partners and represents a very serious threat to them.

Meanwhile, the buildup of the Soviet naval-strategy deterrent force continues. After the Soviets succeeded in making a new ballistic submarine

missile of considerably greater range (about 4,000 nm = 7,400 km) operational in the form of the "SS-N-8," there came a switch to the "Delta-I" Class submarines which were equipped with this missile (a redesign based on the "Yankee" Class) and the successor, the "Delta-II" Class which is obviously a new design. The "Delta-I" boats carried 12 of those missiles, each, while the "Delta-II" boats carry 16 such missiles for which--as became known toward the end of 1975--it now obviously also seems to have been possible to develop multiple warheads. Overall, the Soviet Union's strategic submarine arm in the spring of 1975, according to British estimates, had a total of 55 units (ready and under construction, not counting the old boats up to and including the "Hotel" Class) and their nuclear-strategic potential at this moment is based on a total of 804 ballistic missiles with nuclear warheads (by comparison, the "Polaris" and "Poseidon" submarines have a total of 565 missiles on board, in other words, 184 less than the Soviets).

The expansion of the tactical submarine arm has of course been definitely slowed down--presumably because absolute priority had been given to the strategic atomic submarines; but here again we can recognize new developments, such as the "Victor-II" Class (initially called "Uniform" Class) and the "Papa" Class, the successor to the "Charlie" Class. The "Alpha" Class apparently was an experimental type designed to test advanced automation procedures and the "Bravo" and "Tango" classes are supposed to be conventional submarine types, although they were made only in very small numbers.

The development of fighting forces needed for offshore operations has not been neglected either because of all this. During the early sixties, the "Shershen" Class represented a larger and stronger PT-boat type; it was followed by the fast ASW boats of the "Stenka" Class which were based on the same fundamental design; the most recent development is represented by the "semi"-hydrofoil PT boats of the "Turya" Class which were observed for the first time in 1972. Mine defense vessels are considered very important. Following the construction of the "T-43" Class, the Red Fleet's first postwar minesweeper type, we have had a whole range of types here, with the latest ones being represented by the "Natya," "Zhenya," and "Sonya" classes. The "Yevgenya" and "Ilyusha" types are the smallest vessels for mine defense at river mouths, in harbors, and in the area immediately off the coast. The fact that even the construction of river gunboats has been resumed constitutes a rather interesting hint as to the planned cooperation between the army and the navy in case of war.

If we want to summarize all of these efforts, we arrive at a rather noteworthy observation: since the sixties, Soviet warship construction has departed from its, until then absolutely defensive concept and has entered a combined defensive-offensive phase, in other words, a stage which is causing the West and especially the Americans increasing worry. After the Americans, over more than two decades, again and again demonstrated to the Soviets what opportunities a fleet can have as a power instrument even during a time when there is no war, the Soviets are now doing exactly the same thing. Above all, they have learned to demonstrate their maritime power in certain regions and, against this background, to influence

political decisions in accordance with their desires. And there is one more thing that begins to emerge ever more clearly: probably in the very near future, the Soviet Union may be able, in areas of tension, to neutralize American naval forces, at any rate, so long as there is no open conflict breaking out. Here the Soviet Union will not even have to demonstrate with superior naval forces. Gone are the days when the United States Navy could cast its power into the scale of global-political decisions because the Soviets had not yet learned to apply the realities of "seapower"--and because they had not even grasped the full significance of this factor.

That the Russian Fleet managed to catch up with the maritime present and that the big gap separating it from the technological level of the U.S. Navy has shrunk so considerably, it owes probably primarily to its commander-in-chief who has now held this office for 2 decades--longer than any of his predecessors. Nevertheless, he too very often managed to exploit the opportunity of the moment and could count on the Moscow leadership being prepared, without compromises, to get the Russian population to accept every restriction of its general living standard in order to cope with armament expenditures. That this came off successfully, that the Soviets were able to reduce the technical-military gap separating them from the Americans to such a considerable degree can to a substantial extent be traced back to the Americans themselves. While the Soviets always reacted with their own technological efforts in response to the technological innovations of the Americans, the Americans, for their part, during the last decade, hardly came out with any essential new technological advances. Moreover, their past numerical superiority kept shrinking, on the one hand, due to the just about hectic reduction of ship units and, on the other hand, the highly economical handling of funds for new ship construction due to the ever rising cost pressure--a rather worrisome shrinkage. Fleet Admiral Gorshkov will be noted in Russian naval history as the man who made the Soviet Fleet into a highly significant factor of Soviet international political strategy.

PHOTO CAPTIONS

Figure 1. Fleet Admiral Sergey Gorshkov, for 20 years at the head of the Soviet Navy. He was born in Kamenets-Podolsk in 1910 and entered the Soviet Navy at the age of 17; he made a name for himself during World War II in the Black Sea as sailor and seasoned communist and became commander-in-chief of the Black Sea Fleet in 1951. After taking over, he ordered a thorough review of the current fleet construction program and pushed the switch to modern ship types and weapons systems. Under his leadership, the Soviet Navy developed into a significant instrument of Moscow's worldwide political strategy. The photo shows Gorshkov during the sixties at the height of his power.

Figure 2. During the early sixties, the Soviet Navy came out with new weapons systems: naval-target missiles with which enemy surface units could be attacked from a safe distance, over combat ranges considerably greater than those of the conventional artillery. The spectacular

presentations of small warships, such as the PT-boats of the "Komar" Class (shown in the photo) in the summer of 1961 were part of the propaganda repertory of the Soviets.

Figure 3. Gorshkov can also be credited with the first Soviet guided-missile destroyers. Started as units of the conventional "Kotlin" Class, Gorshkov had construction suspended and ordered them to be redesigned. The result was represented by the "Kildin" destroyers, one of which is shown in the photo. They were equipped with the "SS-N-1" ship-to-air guided missile systems which in the meantime has become obsolete. Its place has been taken by improved and more effective weapons systems. The "Kildin" Class was equipped with the most modern gear only recently.

Figure 4. The construction of helicopter carriers was initially misinterpreted in the West. At first they were tied in with a new amphibious concept. But soon their real function turned out to be ASW. After two vessels--the MOSKVA and LENINGRAD--had been built, the Soviets shortly thereafter ordered a larger type which, according to all expectations, will come out soon. This photo was taken in the Mediterranean where the Soviet Navy has been stationing a squadron for many years. That squadron almost permanently includes one of the two helicopter carriers. The photo shows the MOSKVA during a resupply maneuver.

Figure 5. The AA defense potential of Soviet warships today is in no way behind that of modern Western types. This purely defensive armament sector had initially been neglected by the Soviets, apparently because priority in development was at first assigned to offensive systems, such as naval-target missiles. Today, modern ship-to-air guided missile systems are standard equipment on Soviet warships. The photo shows a destroyer of the "Kotlin-SAM" Class which has been converted to a "SA-N-1" ship-to-air guided missile system. Off the starboard bow, a survey vessel of the "Moma" Class.

Figure 6. The Gorshkov era also includes the employment of modern powerplants, such as gas turbines. Entire series of destroyer-escorts were equipped with such powerplants, initially still combined with diesel engines but later on used by themselves. The first warship types equipped with gas turbines include the destroyer-escort of the "Mirka" Class, one of which is shown here. The weapons systems of this class include efficient tube artillery, ASW rockets, and target-seeking ASW torpedoes.

Figure 9. Under Gorshkov's leadership, the prerequisites were created for a fleet with a worldwide operational capability. This included the construction of the necessary auxiliaries such as tenders, workshop vessels, fuel tankers, rescue vessels, etc. This circumstance to begin with is one of the surest indications as to the Soviet Navy's global concept. The photo shows an "Ugra"-Class escort vessel meeting a fuel tanker. The photo was taken from an American reconnaissance aircraft.

Figure 7. The Soviet Union was not spared certain setbacks. Only a few cases and disasters have become known and all of them occurred on the vast world oceans, so to say, in the public "eye." This included the damage to

this particular atomic submarine of the "November" Class in the spring of 1975 in the Atlantic (the vessel presumably was abandoned soon thereafter and sank). But there is silence on those cases which took place in maritime regions within the Soviet power sphere, where Western observers do not have access.

Figure 8. The development of nuclear-powered submarines with ship-to-ship guided missile systems is considered to be very important. After the by now more than 30 units of the "Echo" Class came the partly essentially improved "Charlie" Class which for the first time features the underwater launch of the ship-to-ship missiles carried on board. The photo shows an atomic submarine of this "Charlie" Class as seen from an aircraft. According to the latest figures published in the West, the Soviet submarine arm at the beginning of 1976 consisted of 386 units; 145 of them are equipped with guided missile systems and 141 are nuclear-powered.

Figure 10. The age of modern Soviet warship construction is reflected in the "Krivak" Class, presently the Red Fleet's most modern destroyer type. Here it is interesting to note the large number of weapons systems, including ship-to-ship and ship-to-air missiles, tube weapons, torpedo tubes, ASW weapons, electronic gear, and the corresponding command, control, and communications equipment, and of course, gas-turbine powerplant. The photo shows one of the "Krivak" destroyers.

5058
CSO: 8320/4600

TRAINING ACTIVITIES ABOARD THE CRUISER 'SVERDLOV'

Moscow IZVESTIYA in Russian 5 Aug 76 p 5

/Article by B. Ileshin, IZVESTIYA special correspondent aboard the cruiser "Sverdlov", Twice Red Banner Baltic Fleet: "The Bells of a Loud Battle"/

/Text/ There is no work day aboard ship, just watches. Military sailors stand them day and night, in a cruel storm and pouring rain, under starry skies and in thick fog when you cannot see your hand in front of your face.

Today, the sea was rough, boiling waves rolled by. A violent wind whistles in the superstructures. The huge cruiser lists more than 20 degrees. It is difficult in such weather. Self-control, special concentration, and a thorough knowledge of the equipment are required. But Captain 1st Rank V. Kolondyrets, captain of the cruiser, has confidence in his subordinates. He knows they will not falter.

Ye. Kozlov, the best watch officer, is on the bridge. First class specialist M. Androsyuk, commander of the helmsmen section, works confidently. This is not the first time he is battling the elements. He has survived worse.

A lot depends upon the machinists, on the men who monitor the operational heart of the ship. Prior to sailing, they diligently, painstakingly checked out each assembly, each sub-assembly, each instrument. In spite of the difficulties caused by the raging elements, Chief Machinist's Mate Petty Officer 2d Class A. Serdyuk, commander of the electricians' section Petty Officer 1st Class V. Konnov, and control room technicians I. Taydakov and A. Smirnov served in an excellent manner.

Work at the navigational combat stations goes along in an accurate, well-coordinated manner. The navigational systems are operating reliably. But, one additional input was received: reduce the use of radio technical means to a minimum. Anything can happen in a combat situation and, therefore, one has to be able to orient oneself on a map, know the steaming area in detail, be able to employ all ship-handling means.

The most serious emphasis on the ship is placed on navigational training. And, here are the training results: both the people and the equipment pass with flying colors. The sailors in the navigation division exhibited high skill and the ability to rapidly become oriented in a complex situation and make correct decisions.

The bells of a loud battle ring out: practice alarm!

In an instant, sailors' boots clatter along the deck. The sailors operate with precision and in concert. There is no wasted motion. Bulkheads and compartments are battened down. The preliminary preparation of each element speaks for itself. The training will not be for naught.

The desire of the cruiser's personnel for new successes finds living embodiment in the broad competition unfolding aboard the ship. It began with the appeal from the personnel of the Guards Port Arthur Motorized Rifle Regiment to the troops of the Armed Forces to make the year of the 25th CPSU Congress a year of further increase in combat readiness and improvement in the quality of combat skills and in the steady assimilation of new weapons and equipment.

I enter the main battery division, commanded by Senior Lieutenant V. Drobot, a short, stocky man with screwed-up attentive eyes. Senior commanders have recommended him as an excellent specialist and an example officer. To the sailors, his word is indisputable. They are convinced that he does not waste words. Based on the results of socialist competition, the division won first place. During the summer period, the personnel of the sub-unit (podrazdeleniye) improve their mastery and sharpen their skills. At one of the guns, Petty Officer 2d Class S. Petrov is working on loading drills with V. Rudyuk, a young seaman. Nearby is P. Makarenko, crew chief. He has proved himself a first class specialist (he has served here more than 20 years). His motto is: master the equipment yourself in an excellent manner, then teach it to your subordinates. Right now, P. Makarenko is training his subordinates to work with the gear, to find and correct discrepancies. The sailors he commands, as a rule, not only accomplish tasks within the established norms but significantly surpass them. All received excellent results at the just-completed gunnery exercises.

I am talking with Leading Seaman S. Korolev. He is from Yalta and has a secondary education. He worked at Kurortzelenstroy prior to call up into the fleet. Now he is the senior artillery electrician responsible for operation of the instruments which insure hitting the target accurately. His commanders are satisfied with him. He learned the finer details of the equipment and does not let his commanders down. It is a pleasure to pass this on to his parents, to his father Feodor Grigor'yevich, a photographer, and his mother Lidiya Alekseyevna, a nurse at Nizhnyaya Oreandra Sanatorium.

Leading Seaman V. Basovskiy is a Ukrainian from Chernigovskaya Oblast. In the fleet he mastered the complex speciality of plotter. The data which he prepares to lay the weapon are faultless.

"My greatest joy is to serve in the Twice Red Banner Baltic Fleet with its glorious combat traditions," Vadim says. "I love my ship deeply. Excellent equipment, but the main thing is the excellent collective."

There are high class specialists and real masters of military affairs in each sub-unit (podrazdeleniye). The cruiser's equipment is complex, modern, requiring complete familiarity. One must not only study particular components but delve

deeply into the theory of the processes going on in each. It requires not only a firm knowledge of physics and mathematics, but a familiarity with electronics and cybernetics. Therefore, sailors have, as a rule, either a general or special secondary education. They are continually studying. Many intend to enter technical higher education institutions after their tour of duty is up. They will be model students, there is no doubt of that.

Speaking of shipboard life, I would like to name those as well who work in the galley providing the cruiser's personnel with excellent food under any conditions, regardless of the situation. You can compare a ship's galley with a kitchen factory. The cooks attempt to prepare the best, tastiest, and most varied meals possible. They bake their bread in their own shipboard bakery while underway. And, I must say that the bread is excellent!

Great attention is placed on party-political and educational work. Commanders and political workers pass out political information, tell how to bring into being the historical decisions of the 25th CPSU Congress, explain the peace-loving policy of the party and government, the combat traditions of the fleets, the tasks facing the Navy. The ship's captain, Captain 1st Rank V. Kolondyrets, was a delegate to the congress. His talks always attract a large audience.

A newspaper is published aboard ship and each sub-unit (podrazdeleniye) publishes its own wall newspapers. Here is one of them -- IMPUL'S. The Komsomol organization in the radio technical service publishes it and it is edited by Petty Officer 1st Class A. Nechay, an otlichnik of combat and political training. The newspaper is interesting, of solid content, and a labor of love. Seaman A. Gribakov writes in one paragraph: "During the summer training period, a great deal lies ahead and we are doing everything in our power to carry out the assigned tasks. Our people need not worry. Brave defenders of the Homeland stand guard over its welfare day and night".

Ties of voluntary assistance between the ships, submarines, and missile patrol boats and the Komsomol organizations of the republics, krays, and oblasts have become a great tradition in the Baltic Fleet. The Komsomol organization in Altayskiy Kray has such ties with the cruiser "Sverdlov." Many people from there serve on the advanced ship. And naturally, personnel in the units (chasti) and sub-units (podrazdeleniya) maintain a lively interest in the affairs of their patrons.

Those aboard the cruiser know the foremost people of the Altay and are proud of the fact that Ol'ga Dmitriyevna Sotnikova, driver of a heavy tank during the Great Patriotic War and cavalier of many orders and medals, works at the Altay Engine Plant. They are also proud of Hero of Socialist Labor Aleksandr Yefimovich Burmatov, machine tool adjuster and considerate mentor of youth who has taught dozens of young workers, who works in Rubtsovsk.

The sailors proudly relate that V. Savinov, a combine operator at Shipunovskiy Sovkhoz, was a delegate to the 25th CPSU Congress, that he is one of the authors of a letter from the country's leading combine operators to Comrade L. I. Brezhnev, General Secretary of the CC CPSU. In it, V. Savinov and his comrades in labor wrote that the business of all machine operators, all farmers, is to carry out this year's agricultural work and the harvest of grain and other crops with the

highest efficiency and quality, insure successful fulfillment of the first commandment in the sale of grain and other products to the government.

"We are proud that Comrade L. I. Brezhnev warmly supported the appeal of the distinguished machine operators," says Petty Officer 2d Class S. Petrov, who worked as a chauffeur in the Ust'-Pristanskiy Rayon, Altayskiy Kray, prior to call up to the fleet.

These days, the Baltic Fleet sailors attentively follow how wide grow the ranks of the followers of the Kuban' farmers, who decided to mark the first year of the Tenth Five-Year Plan with new labor successes.

Envoys from the cruiser "Sverdlov" often visited their patrons and the Altay Komsomol members visited the Baltic.

7869
CSO: 1801

SUBMARINE CREW COMBAT TRAINING ACTIVITIES

Alma Ata KAZAKHSTANSKAYA PRAVDA in Russian 24 Aug 76 p 4

/Article by Yu. Baranov: "Torpedo Attack"/

/Text/ The submarine put out to sea at dawn. The sun had just come up, painting the glossy waves with a tranquil pink light. The diesel engines knocked dully, blending the sweetish diesel smoke with the morning freshness. The usual working situation existed on the fore bridge. The watch officer Captain Lieutenant Boris D'yachenko, bending toward the microphone of the ship's intercom system, issued clear and short commands to the lower watch. The helmsman, Chief Petty Officer Second Class Nikolay Zagorul'ko, met the heading, turning the wheel. The signalman, Seaman First Class Viktor Kir'yanov, peered intently at the dim horizon line.

The crew was faced with the task of going to a prescribed area and, submerged, search for a surface vessel target. Then they had to get close to the "enemy" and attack it with practice torpedoes.

The sailors had prepared thoroughly and with mutual efficiency for this cruise. Intensive training went on in the torpedo firing classroom, in the training classes and at the battle stations. The navigators, sonar operators, torpedo electricians and helmsmen learned to interact with one another on the trainer ship. The submarine commander trusted the expertise of his sailors. Nevertheless, he tried to use each free minute at sea for additional drills and training.

The interrupted trill of the loud battle bells resounded. It was an emergency training alarm.

"A hole in the first compartment," the tactical problem was fed in from the control room.

Immediately the entire compartment went into action. The sailors worked quickly, without fuss. One hermetically sealed the watertight bulkhead so that the incoming water did not enter the neighboring compartment, another prepared the oxygen breathing equipment for operation, a third had already placed a shield with a folding support--a special device which stops a leak--over the imaginary hole. The compartment commander Warrant Officer (michman) Vladimir Gal'chenko glances expressively at the stop watch--hurry up, guys, he says.

Finally, the warrant officer pushed the stop watch button and smiled. The standard time was bettered. Gal'chenko reported by telephone: "control room, the hole in the first compartment has been stopped up, there is no leak."

A new tactical problem follows: "fire in storage." In the neighboring compartment the sailors act just as harmoniously and quickly, using the ship's fire extinguishing equipment in fighting the "fire."

The modern submarine is a complex, technically perfect organism. It seems that it is packed to the limit with mechanisms and instruments. These permit it not only to move with great accuracy in the necessary direction, at a certain depth and at a given speed, but also to hear and see for many miles around. The main weapons of a submarine are powerful long-range torpedoes; its main advantage is secrecy. These qualities, coupled with the expertise and courage of the crew, make the submarine the ferocious ruler of the ocean depths. Its crew is comprised of yesterday's young workers, kolkhoz farmers and students.

One of its crew is Seaman First Class Vladimir Zobnin. He was born in Bashkiriya. He went to school, graduated from a technical and vocational institution, and worked on his native kolkhoz as an electric welder. He had dreamt of the sea since childhood. When the time came for him to serve, he applied only for the navy. He got what he wanted. Coming to the ship, he mastered the electrical specialty in a short period of time, received an outstanding rating and became a category specialist. The other sailors are the equal of Vladimir; they are resolute, courageous, enamoured of the sea and of their own difficult, but honorable, submarine service. As a rule, all of them have secondary school graduation certificates or tekhnikum graduation diplomas.

During a cruise, ship life in the submarine's compartments goes on according to a strict routine--at specified hours the watch takes over and it changes, studies and training are conducted. Operational news sheets, which report on ship matters and on the experience of the foremost specialists, are regularly published in the compartments. Socialist competition, which the sailors have developed in honor of the 25th CPSU Congress, goes on between battle stations and during sailing. The aim of this patriotic movement is to raise even higher the battle training of the sailors.

The navigator, Senior Lieutenant Vladimir Golubev, reported that the submarine had arrived at the prescribed area where the search for the target vessel must be started.

"Stand by to dive"--this command of the watch officer resounded through the ship's intercomm system.

The engines quieted down. The upper conning tower hatch was battened down. The vents flapped and one could begin to hear as the seawater noisily burst into the ballast tanks. The submarine submerged. In the control compartment the frosted dome lights shone brightly, the multi-colored signalling bulbs on the instruments blinked. Breathing was as easy as it was on the surface--the ship's air purification system was working. The needle of the depth gauge moved slowly, indicating the thickness of the water above the tower.

Now total control of the submarine was shifted from the upper bridge to the control room. The helmsman accurately held the course, the chief boatswain's mate--the depth.

The sonar operators carefully sound the horizon in order to determine a bearing on the target through sea noises. However, the surface vessel is not detected. Only a monotonous crackling--the voice of the sea--is heard from the switched-on dynamic loudspeakers.

The commander orders the helmsman to go on a new tack. The search is continued. The compartment chronometer counts off the agonizingly long minutes.

"The sound of propellers at bearing 80," the sonar operator finally reports.

"General quarters, prepare for torpedo attack," resounds over the intercomm.

The submarine lies on a course close to the target vessel. The torpedo data computer is working full-time, giving out information necessary for the accurate destruction of the target by torpedoes. Tension is building at the battle stations. The entire crew of the submarine as if clenched in a single fist, lives with one breath, one thought--to hit the target.

The red eyelet of the signalling bulb lights up on the torpedo data computer. The torpedo tubes have been brought to a readiness condition.

"Tubes, fire," the commander's voice resounds in the loudspeakers. The body of the submarine shook. The fired torpedoes were swiftly carried to the target.

Complete silence came over the compartments. The people listened tensely to the sounds of the sea, although each knew in advance that no explosion would follow because they were firing practice torpedoes, not combat ones.

Covering the prescribed distance toward the target, they will blow off the ballast with compressed air and surface.

The submarine surfaced. They opened the upper conning tower hatch and in the control room they breathed the salty sea freshness. The radio operators established communications with the surface vessel which sent a radio message saying that both torpedoes had passed accurately under the bottom of the target vessel. In response to this news, a unanimous sailor's "hurrah" rolled throughout all of the compartments.

The diesel engines started up and a trail appeared astern. The ship's flag was raised over the conning tower. The submarine made for its base.

8524
CSO: 1801

CHIEF OF RAILROAD TROOPS DISCUSSES THEIR MISSION AND CAPABILITIES

Moscow KOMSOMOL'SKAYA PRAVDA in Russian 3 Sep 76 p 4

/Interview with Chief of the Railroad Troops, Colonel General of Technical Troops A. M. Kryukov by V. Ovcharov/

/Text/ When we meet a person in a military uniform, we automatically stare at his jacket lapels. Who is he? A tanker? A sapper? A motorized rifleman? Even after seeing the emblem which has an adjustable spanner and hammer next to wings and an anchor, many people are probably confused. It is true that few people know this emblem although it represents troops the army could not do without. We asked the Chief of the Railroad Troops, Colonel General of Technical Troops A. M. Kryukov, to tell us about them.

/Question/ Aleksey Mikhaylovich, how did you become a military railroad troop?

/Answer/ In 1934 I entered the Leningrad Institute of Railroad Transportation Engineers. Four years later I was in the military--I volunteered for the Red Army and then switched to the Military Transportation Academy. And now for almost 40 years my fortune has been tied to the transport troops, to the people whose tracks and sirens have become my pride and the purpose for my entire life.

/Question/ What does the emblem of the transport troops symbolize?

/Answer/ Both the railroad troops and the military communications organs have the same emblem. It symbolizes being a part of railroad (hammer and spanner), sea (anchor) and air (wings) military transportation.

/Question/ What tasks must the railroad troops carry out?

/Answer/ Our troops are special. Their task is the rehabilitation, the construction and the operation of railroads in support of the combat activities of the Armed Forces. In peacetime, besides combat training, they are also charged with performing heavy-duty work in constructing and strengthening railroads.

/Question/ Could you give us a brief biography of the railroad troops?

/Answer/ For the first time in the world, these troops appeared in Russia in 1851. When the Saint Petersburg-Moscow railroad was built, the first railroad units were formed to operate it. Since that time the role of these troops has continuously increased. The Soviet railroad troops were established by the direct order of V. I. Lenin. Their birthday is considered to be 5 October 1918 when, in accordance with a decree of the Revvoyensovet /Revolutionary Military Council/, the order of the Commander-in-Chief of the Armed Forces of the republic on establishing military transport units was signed.

/Question/ It is a fact that during the Second World War years, the transport troops restored about 117,000 kilometers of track, including 36,000 on foreign railroads, more than 15,000 bridges and conduits, 700,000 kilometers of communication lines wire, thousands of water supply points, and dozens of tunnels. Two million mines and land-mines and 60,000 aerial bombs were removed and deactivated by the railroad mine specialists.

/Answer/ Yes, these are impressive figures. A vast amount of toil, blood and sweat of hundreds of thousands of fighting men as well as the bitter taste of defeats and the joy of victories went into these statistics. I will cite only one episode in which I participated. In January 1943 the troops of the Leningrad and Volkhov fronts had broken through the Leningrad blockade, liberating a narrow strip of land along the southern coast of Lake Ladoga. The military railroad troops were ordered to build the new Polyana-Shlissel'burg railroad line, connecting Leningrad with the outside world, in this strip.

The battle had not yet ended and fascist shells were still bursting when the railroad troops began clearing the area of mines and the planners surveyed the line and the bridge crossing. Neither the artillery and mortar shelling nor the bombings and machine-gun fire of the enemy stopped the bridge builders, railway engineers, signalmen and water supply workers. The first train carrying provisions for the Leningraders ran along this line three days ahead of the time period which had been set. The same kind of heroism and fearlessness were displayed by the railroad troops in the battles around Stalingrad and on the Kursk bulge, in restoring the Dnepr bridges, and in the territories of the East European countries. Railroads and communications lines rose from the ruins and river banks were connected by bridges two and three times earlier than the set time periods.

Our fighting men, within hours of enemy aircraft raids, ran trains along

the destroyed sectors and the first troop trains arrived in the liberated cities within several days of the expulsion of their occupiers.

/Question/ Critical situations require special courage, endurance and resourcefulness of a man. Pilots, paratroopers and sailors show this. Have the troops of your profession exhibited these qualities?

/Answer/ Yes, they have. Have you heard of the exploits of Viktor Miroshnichenko, the sergeant of a railroad battalion, a demolition expert and Komsomol member? In October 1941 when the enemy burst up to Moscow, Miroshnichenko's crew was instructed to prepare for exploding and, if required, to blow up the railroad bridge over the Snopot' River. When the fascist tanks and sub-machine gunners approached the bridge, Miroshnichenko activated the blaster but the explosion did not follow. Apparently an electrical wire leading to the charge was broken. Now the Germans were already hurrying over the bridge. The sergeant decided to blow it up by lighting the charge himself. This was the only thing that could be done. It was 100 steps through enemy fire to the nearest charge. Wounded by a mine fragment, he crawled forward meter by meter. Viktor arranged a safety fuse detonator set toward the enemy forces and set fire to the safety fuse. The explosion erupted in five seconds.

Miroshnichenko was killed. He was posthumously awarded the title of Hero of the Soviet Union.

/Question/ Yes, but this was in wartime. What about in peacetime?

/Answer/ At the BAM /Baykal-Amur Railroad/ construction project, the Bureya River overflowed its banks and flooded a vast area. Dwellings, tents, warehouses, equipment and most important of all--a just-built 600-meter bridge--were threatened. The railroad soldiers commanded by Major L. Svetlov struggled against the elements. The water level rose by 10 meters, started to wash away the approaches to the bridge which appeared to be cut off from the banks. A huge obstruction made of floating trees, stumps and roots formed near the bridge abutments. The bridge was barely holding up under this monstrous pressure. Night came and the rain did not stop.

Major Svetlov formed up his men by sounding the siren and asked who wanted to carry out a crucial and dangerous task--to land by helicopter on the bridge and save it. All of them stepped forward. The hardiest and most courageous were chosen. Day and night, at risk to their lives, ignoring danger, rest and food, the troops worked, dismantling the obstruction. The bridge stands.

/Question/ How are today's soldiers continuing the rich and glorious traditions of the railroad troops?

/Answer/ There is a museum for our troops. Unique photographs, documents, weapons, tools, equipment models and the personal belongings of famous commanders and soldiers are on exhibition there.

There are two especially interesting photographs in the museum. The first one shows the laying of sections of track on the Kustrin-Berlin sector--uprooted fiery railroad cars, the earth pock-marked by shells and mines, soldier repairmen working strenuously. These are the troops of Captain I. Chayka's railroad company preparing the way to the lair of the fascists. On 25 April 1945, at 1500 hours, the last spike was driven in at the Berlin-Lichtenberg station. The first Soviet troop train with tanks and artillery arrived in the German capital where violent battles had waged.

In the second photograph we see the laying of the first section of track at a BAM sector. Komsomol member Private L. Smirnov, an army man with an excellent reputation in combat and political training, is driving in the first spike. Above the embankment where the track is being laid, the standards of the war years are fluttering. This is a symbol, of course.

The railroad soldiers of the seventies are strengthening these traditions by their labors. At BAM they fulfilled last year's plan for construction and installation work ahead-of-schedule. Military posts have grown up in the tayga, wide forest openings have been prepared, and hundreds of kilometers of highway routes and the first dozens of kilometers of railroad tracks have been completed.

A large group of troops, including BAM workers, were recently decorated with orders and medals of the Soviet Union for their selfless labor and their successes in combat and political training.

/Question/ Among people far removed from the army, there sometimes exists the opinion that military railroad workers are exactly the same as railway engineers and builders except that they wear uniforms. Is that so?

/Answer/ A railroad troop officer is, first of all, a commander and military engineer. He certainly must possess a civilian engineer's knowledge of an appropriate specialty--bridge builder, railway engineer, construction machine engineer. However, the officer must know and be able to do many other things, e.g., how to rebuild destroyed projects quickly, how to organize work in a combat situation, what structures to use for this, what equipment. He must have a perfect grasp of military questions--the principles of modern warfare, the clearing of mines and the technical reconnaissance of railroads, protection from the enemy's weapons of mass destruction, the technical characteristics of war equipment and armaments.

Our future officers will learn this at the Leningrad Order of Lenin Red Banner Higher Academy of Railroad Troops and Military Communications imeni M. V. Frunze. The academy offers a secondary military education and an engineer's diploma. An officer can obtain a higher military

education at the Military Academy of the Rear and Transportation.

/Question/ Is it important for the youth to work on a railroad before entering the army?

/Answer/ Of course. For example, if he is an excavator operator he will be sent to an appropriate mechanization subunit where, after a short training period, they will have him working independently on an excavator. If he is a diesel locomotive engineer's assistant, he will work on locomotives. However, there is also an effective system for training specialists of different types in our units. Within short periods of time, the young troops who do not have a specialty can become pile driver operators, motor vehicle drivers, track machine and crane operators and they can master other professions.

/Question/ Do many of the railroad troops, after finishing their active duty, continue working in the transportation field?

/Answer/ Yes, many, after completing their active duty, begin working for the Ministry of Railways and the Ministry of Transportation Construction and they attend transportation tekhnikums and institutes.

Quite recently, for example, a group of troops from one of the railroad units, after completing their active duty, decided to remain working on the construction of BAM. Among them were Sergeant Mikhail Seregin, who learned to be an excavator operator in the army, Private First Class Petr Pasisnichenko who fulfilled the yearly obligation in the unit for transporting soil two months ahead-of-schedule, and Private First Class Viktor Kudryashov who completely mastered a heavy-duty bulldozer. Yesterday's privates Yuriy Vorob'yev, Valeriy Prikhod'ko, Fanil' Sharapov and Ivan Sannikov went on Komsomol travel orders to work on construction installation train number 573 which is known throughout the country by the name "Moscow Komsomolets." The BAM builders are assured of receiving fine reinforcements.

8524
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