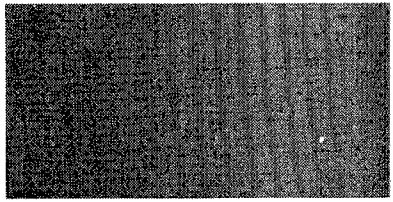


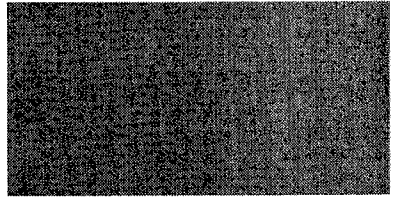
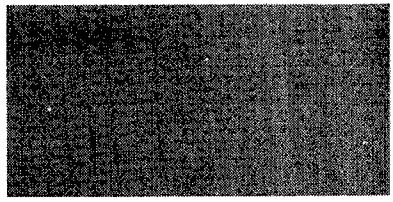
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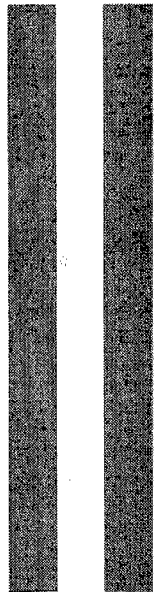


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MARSHAL KUTAKHOV ON AVIATION DAY

Moscow VOYENNO-ISTORICHESKIY ZHURNAL in Russian No 8, Aug 78 signed to press 21 Jul 78 pp 3-8

[Article by Chief Mar Avn P. Kutakhov, Hero of Soviet Union, deputy minister of defense of USSR, CIC of Air Force: "Mighty Wings of the Motherland"]

[Excerpts] On 20 August 1978 the Soviet people and their Armed Forces celebrate a banner date--USSR Aviation Day.

This holiday is a truly nationwide review of the achievements of native aviation, of our pilots, navigators, engineers and technicians, and of all aviation specialists, scientists, designers, workers of the aviation industry and DOSAAF aviation sportsmen.

Guided by instructions of the CPSU CC on the need for constant vigilance and high readiness to defend the interests of our people, the military aviators are celebrating their 60th Anniversary with new successes in combat and political training and in further improving combat readiness.

The Great Patriotic War confirmed the correctness of a number of provisions of Air Force operational art and tactics developed back in the prewar years. Meanwhile, it introduced much that was fundamentally new to military theory and the practice of combat employment of aviation.

Aviation was the most mobile and long-range means of warfare in defensive operations of the Ground Forces. It accomplished its missions not only in army operations, as was provided by prewar regulations, but also in front and strategic defensive operations. These and a number of other problems had to be elaborated and resolved again in practice. Among them we should note in particular the aerial counterpreparation accomplished to disrupt or weaken the enemy's offensive.

The most effective form of operational employment of aviation--the air offensive--was originated and developed in offensive operations. It brought together within its framework all missions performed by front and long-range aviation in the interest of attacking troops. The problem of operational employment of air formations in the interest of tank

armies (corps) and horse-mechanized groups as mobile groups of fronts was resolved in practice for the first time.

Such forms of operational employment of the Soviet Air Force as air operations and air battles became established in the struggle for air superiority. They permitted inflicting serious damage on the opposing air grouping and fundamentally changing the correlation of forces in our favor in a period of several days.

The problem of combat operations by aviation in encirclement operations was resolved for the first time during the war. Successful accomplishment of an air blockade of surrounded enemy groupings was something completely new in Air Force operational art.

A new and more effective form of the organizational structure of front aviation in the form of an air army was developed and carried out in the first period of the war. The formations which became part of the air army were converted into homogeneous formations: fighter, ground attack and bomber.

Along with this came successful resolution during the past war of the problem of creating and employing air reserves of the Headquarters of the VGK [Supreme High Command]--air corps and separate divisions. They made up from 48 to 63 percent of the order of battle of front aviation.⁹

All this permitted the creation of large air groupings during operations, the massing of air efforts on the most important axes, decisively influencing the course of battle for air superiority and development of operations, centralized control of aviation at the front level and provision for the closest operational and tactical coordination between aviation and ground forces in various situations.

Control of aviation at the operational level was improved constantly. Essential changes took place in the organization of control points in air corps and divisions. Tactics of subunits and units of all air arms was improved continuously throughout the entire war.

Fundamental changes took place in the postwar period in means of armed warfare, in development of the Air Force, and in views on its employment in battle, in an operation and in the war as a whole. But a great deal from the experience of the Great Patriotic War has not lost its current nature and can be used in the practice of troop training and indoctrination.

As before, with the increase in combat might of the Air Force, its role steadily grows under present-day conditions. Winning and maintaining air superiority is a determining factor for achieving success in an operation and in a war.

9. VOYENNO-ISTORICHESKIY ZHURNAL No 2 1977, p 94.

Development of military equipment, including aviation equipment, is taking place in a shorter period of time as a result of the constant concern shown by the Communist Party for accelerating rates of scientific-technological progress, the basis of which comprises major scientific discoveries. The replacement of generations of aircraft is taking place 1.5-2 times faster than was previously the case.

The Air Force now is mastering the third generation of jet combat and transport aircraft and helicopters in the postwar period. These craft embody the latest achievements of foremost native science and technology and they are characterized by high tactical flight specifications and the wide use of sophisticated automated control and navigation systems.

New aircraft with controlled weapons (missile and gun fire systems) as their chief means of combat comprise the basis of the Air Force combat might. The increased flight range, mobility, capability of quickly building up efforts in decisive sectors, broad maneuverability of forces and weapons, powerful weaponry and the capability of quickly detecting and effectively destroying targets permit aviation to perform a vast range of missions on any scale. To ensure their successful accomplishment, military aviation theory and practice must develop on a scientific basis the most effective methods for combat employment of the qualitatively new aviation systems.

Soviet aviation was the cradle of cosmonautics, the origin and development of which is inseparably connected with improvement of aviation and missile technology. Many USSR pilot-cosmonauts came from the ranks of military aviators, including the first cosmonaut in the world--Air Force pilot and officer Yuriy Alekseyevich Gagarin. The experience of training and indoctrinating pilots was used fully in training cosmonauts.

In outfitting military aviation with contemporary combat equipment, the Communist Party and the Soviet people paid special attention to training personnel capable of employing it with maximum effectiveness. The new generation of fighting airmen--ideologically conditioned, bold and courageous officers--are pilots and navigators with higher engineering education. Many of them have been decorated with the highest emblems of flight service: "Honored Military Pilot," "Honored Military Navigator," "Pilot-Sniper," "Honored Test Pilot" and "Honored Test Navigator."

The engineer-technical personnel and aviation specialists also have high qualifications. With the entry of the new generation of winged craft into the inventory of line units, the role of engineers, technicians and aviation specialists, which previously had been very high, increased even more. The level of unit combat readiness and flight safety largely depends on the depth of their knowledge, firmness of skills, discipline, execution and their understanding of the importance of their work and their responsibility for its quality.

At the present stage in development of the Soviet Air Force, special demands are placed on the moral-political and psychological training of fighting airmen and aviation specialists. Most important among these qualities is Marxist-Leninist ideology, political maturity, ideological steadfastness, and the personnel's faith in the triumph of the great ideals of communism.

Aviation personnel are improving their flight and tactical expertise and their ability to operate equipment competently, and they are achieving new success in increasing the combat readiness of the Air Force in classrooms, at airfields, in flight training zones and on the ranges. Soviet pilots show examples of endurance, courage, high professional expertise and the ability to hit given targets with the first attack in a sniperlike manner.

Air exercises and joint exercises with the Army and Navy play an important part in increasing the air and field training of subunits and units and in improving their combat readiness. The most important problems of operational art and tactics in the Air Force are investigated and tested in an integrated manner in the exercises. Their results vividly show that the military aviators have good training, have a good understanding of the importance and responsibility of the missions facing them, and that they spare no energy to accomplish them successfully.

Foremost methods based on the latest achievements of military science and the experience of the best units are being introduced more and more into the practice of training and organization of flying. The flight and engineering tests being conducted serve as a real contribution to development of the Air Force and development of the theory and practice of its combat employment. Scientific organization of flight work leads to a further strengthening of discipline, efficiency and flight safety.

The constant attention and concern shown by our party, by its Central Committee and by CPSU CC General Secretary and Chairman of the Presidium of the USSR Supreme Soviet, Comrade L. I. Brezhnev personally, inspire aviators of the Air Force to achieve new success in combat and political training and in increasing vigilance, combat effectiveness and combat readiness.

In celebrating the aviation holiday, each military aviator is imbued more deeply with a sense of personal responsibility for fulfillment of the patriotic and international duty of an armed defender of the country of victorious socialism and for implementing decisions of the 25th CPSU Congress.

Together with soldiers of other branches of the Armed Forces, the aviators--true sons of the Soviet people--stand vigilantly on guard over the achievements of October and are always ready to perform the Motherland's order.

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AIRCRAFT DESIGNER YAKOVLEV INTERVIEWED

Moscow VOYENNO-ISTORICHESKIY ZHURNAL in Russian No 8, Aug 78 signed to press 21 Jul 78 pp 69-74

[Interview of aircraft designer A. S. Yakovlev by Col A. Khorobrykh on the threshold of USSR Aviation Day]

[Text] I asked active member of the USSR Academy of Sciences A. S. Yakovlev the following in an interview:

[Question] Aleksandr Sergeyevich, you have many high titles: General Designer, Engineer-Colonel General, Twice Hero of Socialist Labor, Lenin and State Prize laureate... But when did you really feel yourself to be a creator of aircraft?

[Answer] Probably after receiving this souvenir, answered the academician, and he smilingly handed me a photograph after a few seconds.

I carefully took the print. There were three persons with a small aircraft in the background: pilots Vladimir Kokkinaki and Yulian Piontkovskiy, and the young creator of the aircraft, Aleksandr Yakovlev. Piontkovskiy had just set two world records in the light aircraft class of the time.

[Question] As a reward for creating the aviette, you were registered as a first-year student at the academy. But even earlier...

[Answer] You wish to ask whether or not a leaning toward designing appeared in me? It probably did. As a boy I worked with building aircraft models. Here is a relic which has even been preserved.

Aleksandr Sergeyevich handed me a time-yellowed document.

I read: "Award Aleksandr Yakovlev an honor scroll for organizing the first school aircraft model building circle in the city of Moscow." And the signature was S. M. Budennyi.

[Question] You came to the Academy as a beginning designer, but after receiving the diploma of aviation mechanical engineer you began to work as an ordinary engineer-superintendent at an aviation plant.

[Answer] And I don't regret it a bit. I was fortunate to work next to such renowned aircraft designers as Dmitriy Pavlovich Grigorovich and Nikolay Nikolayevich Polikarpov. At the plant I learned the secrets of production, for having a diploma even from such an authoritative university as the Academy imeni Zhukovskiy still doesn't mean that you are a designer. Creation of aircraft is not just science and technology. It is also an art which is inconceivable without production experience, inspiration and talent.

[Question] How did your experimental design bureau begin?

[Answer] With a bed repair shop. The first year's production plan was for 10,000 beds and one aircraft. But later everything was changed, of course not without the help of the party raykom and gorkom.

The half century of history of the double-order OKB [experimental design bureau] which academician Yakovlev has continuously headed represents a steady search and a constant striving for new things. The range of creative exploration of the collective is astounding. Sports training aircraft and the most maneuverable "Yakovlev's" of World War II, the first series-produced jet fighters and an entire family of supersonic YaK-28 combat aircraft of different purposes, a "flying wagon" type helicopter and a VTOL [vertical take off and landing] aircraft, the comfortable YaK-40 which now serves around 500 Aeroflot air routes, and finally the YaK-42, which was mentioned as beginning flight tests by CPSU CC General Secretary Comrade L. I. Brezhnev at the 25th Party Congress.

[Question] "What is your favorite aircraft?" I asked the designer during the days the congress was working.

[Answer] That's a difficult question. Does a mother really divide her children into favorites and nonfavorites? The favorite aircraft for our collective is the one on which we are working. Now it is the YaK-42.

Soon after this conversation I had occasion to become the first passenger of the new liner. The history of its origin knows no equal. The YaK-42 was created in a period of time unprecedented for passenger aircraft. Here is a brief chronology:

October 1973. The collective of the OKB was assigned to create a 100-120 place passenger aircraft for short-range main routes and local air routes.

February 1974. PRAVDA publishes an article by the General Designer, "YaK-42 Next in Line." Several months later a brief prospectus was returned to the OKB from the CPSU CC. It was a description of the new aircraft, the title page of which contained the inscription: "I wish Comrade A. S. Yakovlev and all workers of his design bureau complete success in accomplishing a great task necessary to the country--most rapid creation of a modern passenger aircraft. L. Brezhnev."

August 1975. The YaK-42 showed good flying qualities during tests.

October 1976. The first series model of the new passenger liner was built and flown at the Smolensk Aviation Plant.

Even before the flight it was known that the YaK-42 met all requirements placed on a modern Aeroflot aircraft: reliable, safe, economic in production and operation, with sophisticated flying and navigation equipment, comfort, and fully self-contained airfield servicing. And still the results of the air journey exceeded all expectations. The aircraft's crew also had the same opinion of the new liner.

Flight tests confirmed the correctness of the designers' calculations. The aircraft was successful. The engines created under the direction of Hero of Socialist Labor Vladimir Alekseyevich Lotarev "were well-suited."

Finishing of a new single-seater acrobatic aircraft went on in parallel with tests of the passenger liner, and this was rather successful. In 1976 the USSR national team, flying in the YaK-50, became overall winner of the 8th world championship in aerobatics, and test pilot O. A. Bulygin set a world speed record for aircraft of this class.

[Question] Designing sports and operational training aircraft is a good tradition for your collective. The International Aviation Federation awarded you the Great Gold Medal for creating acrobatic aircraft on the base of the "18." Before the war thousands of pilots who became famous in the Great Patriotic War learned to fly on your UT-1 and UT-2.

[Answer] Imagine that the UT-1 was a combat aircraft during the war, and I learned about this on the eve of the 20th jubilee of the victory. It turned out that in May 1942 they activated the 46th Air Regiment out of the best graduating cadets at the Yeysk Pilot's School. They armed the peacetime single-seater training aircraft with two ShKAS [Shpital'nyy-Komarnitskiy rapid-fire aircraft machinegun] (above the plane) and with four RS [rocket projectiles]. The regiment was part of the Black Sea Fleet Air Force. Pilots attacked airfields, the forward edge and watercraft and supported landings in the UT-1.

[Question] What other aircraft did the OKB create prior to the war?

[Answer] Basically light aircraft. In 1939 appeared the high-speed close-range BB-22 bomber.

[Question] And when did your name appear in the aircraft index?

[Answer] During development of the I-26 fighter. It went into serious production with the mark of YaK-1. That happened in 1940.

[Question] You visited Germany three times prior to the war. What impression did you form about the aircraft inventory of Hitler's Army?

[Answer] A rather definite one. Familiarity with German aviation technology confirmed that Soviet design thinking was working in the proper direction. Our primary aircraft, both fighters and bombers, which were created in the prewar period not only did not take a back seat in combat qualities to the German aircraft of similar purpose, but surpassed them in some things.

[Question] In what specifically?

[Answer] Soviet aviation had a higher culture of aerodynamics and weight, powerful machinegun and cannon weapons and a fundamentally new aviation rocket weapon--rocket projectiles. The IL-2 armored ground attack aircraft turned out to be a combat aircraft without equal in the world.

[Question] But then why...

[Answer] Our Air Force was in a stage of refitting and reorganization. At that time, and this was in October 1939, we still did not know that only 1½ years remained before Germany's treacherous attack on the Soviet Union. But the party CC and Soviet government were doing everything to arrange for most rapid production of the greatest possible number of new aircraft: the MiG-3, LAGG-3, YaK-1, IL-2 and PYe-2. Alas, their series production was only being set up at the beginning of the forties. The main inventory of air regiments still included the obsolete I-15, I-153, I-16, SB [medium bomber] and TB-3 aircraft.

[Question] What was the advantage which new Soviet aircraft had over the fascists?

[Answer] An analysis of aviation operations during World War II showed that the army's need for combat aircraft was satisfied by four or five basic types which were in production simultaneously. This was equally correct both for Soviet aviation and for German aviation. But our aircraft possessed reserves for modernization, which cannot be said of the German aircraft.

World War II fully confirmed the maturity, independence and farsightedness of Soviet scientific-technological thinking. The qualitative superiority of equipment and weapons in combination with their steady increase in numbers and growth in the pilots' expertise ensured air superiority for Soviet aviation by the beginning of the Battle of Kursk.

[Question] You spoke of reserves for modernization of our aircraft. Tell us in more detail about this.

[Answer] Take the LAGG-3 aircraft for example. It was modified by replacing the M-105 engine with the ASh-82. This permitted achieving high flight data in subsequent series of the LA-5 and LA-7 aircraft. Our OKB also did a great deal of work to modify its firstborn--the YaK-1 fighter. Replacement of the engine with the VK-105pf and a number of aerodynamic innovations allowed us to create the YaK-3, subsequently recognized as the lightest and one of the best fighters of World War II.

[Question] What ties existed between your OKB and the frontline pilots?

[Answer] The closest. Our engineers often traveled to frontline airfields. Regimental commanders and many rank and file pilots regularly wrote to us or dropped in at the OKB to tell about the combat work of the YaK's. Their advice and recommendations were considered in modifying the next aircraft. For example, following the advice of frontlinesmen, we achieved an increase of speed, maneuverability and firepower of the YaK-1 without increasing the fighter's weight.

[Question] It was in these aircraft that pilots of the "Normandy-Neman" Regiment defeated the enemy?

[Answer] The French patriots began in the Yak-1 in March 1943. They participated in the Battle of the Kursk Bulge in the Yak-9, and returned home in the Yak-3.

[Question] Did you have occasion to meet them?

[Answer] After the war I had occasion to meet with Heroes of the Soviet Union Jacques Andre and de la Pape, as well as with Pierre Puiad, who now is an International Lenin Prize Laureate. By the way, at one of the receptions in the Kremlin, Stalin asked his opinion about the Yak's. Puiad answered that the French pilots were flying the American Aerocobras and British Spitfires, but preferred the Soviet YaK-3.

[Question] Aleksandr Sergeyevich, during the war years you performed duties of deputy people's commissar for the aviation industry. I would like you to say a few words about rates of growth in aircraft production.

[Answer] They were unprecedented. In 1941 the aviation industry produced around 16,000 aircraft. In the difficult year of 1942, under conditions of the evacuation of aviation enterprises, over 25,000 aircraft were produced, with almost 35,000 in 1943, over 40,000 in 1944 and almost 21,000 combat aircraft for the first half of 1945. This was an exploit by rear area workers and all the Soviet people.

[Question] You transferred one of the State Prizes to the defense fund for aircraft construction. To whom was it given?

[Answer] The patriotic initiative of the Saratov beekeeper Ferapont Golovaty, who contributed 150,000 rubles of his personal savings to build the YaK fighter, was taken up by thousands of Soviet citizens. I also did my bit. The YaK-3 aircraft was received by a pilot of the Leningrad Front, Twice Hero SU Petr Afanas'yevich Pokryshev.

[Question] How many combat YaK's of all modifications were built?

[Answer] There were 8,721 YaK-1 aircraft, 4,848 YaK-3's, 600 YaK-4's (BB-22), 6,399 YaK-7's, 16,769 YaK-9's, for a total of 36,000 YaK fighters.

Aleksandr Sergeyevich named these figures without using any notes.

[Question] When did our designers begin to think of more than just combat aircraft?

[Answer] At the very height of the war, strange as it may seem. There were reasons for this. Soviet aviation was dominant in the air. The aviation industry was working at full capacity. Many designers then began to think about transport and passenger aircraft. The IL-12, then the IL-14 and the workhorse AN's were placed in serious production immediately after the war. Our OKB was faced with different problems. Together with the Il'yushin, Mikoyan and other design bureaus, we were solving problems of introducing jet aviation technology.

[Question] The first flights of the MIG-9 and YaK-15 jets took place on 24 April 1946. What were you thinking about on that spring day?

[Answer] My thoughts placed me along with pilot Mikhail Ivanov in the aircraft cockpit. Later I felt a surge of some kind of unusual happiness. This also was repeated in air reviews when military pilot Polunin and the flight of Hero of the Soviet Union Khramov, and later the five of Twice Hero of the Soviet Union Savitskiy in YaK jets demonstrated solo and formation flying for the first time.

[Question] The YaK's showed new things for the first time in many reviews. Which of them is especially memorable to you?

[Answer] Design and construction of a VTOL combat aircraft began on an assignment from the government in 1963. Chief pilot Hero of the Soviet Union Valentin Mukhin demonstrated this aircraft in the sky over Domodedovo Airfield at an air review in honor of the 50th Anniversary of the Great October. The flight produced an enormous impression on everyone.

[Question] Your OKB's contribution to creating combat jet aircraft is inestimable. When did work begin on the YaK-40 passenger aircraft?

[Answer] We began to work on the YaK-40 in the mid-sixties. As of today the plants already have produced around a thousand such passenger aircraft.

[Question] What do you consider the most difficult in your work?

[Answer] To "lead the band." The work of a general designer is to direct the efforts of a large group of designers, scientific workers, engineers, technicians and workers to one preset and carefully conceived goal. Not to fear difficulties, detect mistakes in your work in time and eliminate them as quickly as possible.

[Question] What, in your view, is the most interesting moment in creation of an aircraft?

[Answer] When all parts begin to come together in the assembly shop, when the entire aircraft is being assembled.

[Question] You took part in a record flight of one of your firstborn. Is it obligatory for an aircraft designer to fly?

[Answer] It is probably not obligatory, but many of our creators of winged craft such as Professor Vladimir Petrovich Vetchinkin, academicians Mstislav Vsevolodovich Keldysh and Sergey Pavlovich Korolev, and my colleague Oleg Konstantinovich Antonov took a flight training course in gliders and aircraft.

[Question] What is inherent in the Soviet school of aircraft building?

[Answer] Its history is the history of development and technical growth of aviation cadres: scientists, designers, engineers and technicians. Tens and hundreds of highly qualified directors of scientific research institutes and design bureaus received their knowledge and experience already in the years of Soviet power. The Soviet school of aircraft construction is an offspring of the Communist Party and all the Soviet people. It combines simplicity and boldness of engineering and design thinking with a high scientific level and innovation. Our aircraft designers quickly respond to today's demands and at the same time take account of the long term. Their characteristic trait is rational design in conformity with demands of life, and a sober accounting of the country's economic and material resources.

[Question] At one time the question of whether or not military aviation will be retained in the future arose under the impression of the successful development of missile construction.

[Answer] Life itself answered this. A missile has a very broad field of application. Nevertheless, it can replace the aircraft in far from all cases. Finally, military specialists here and abroad came to agreement that tactical flying craft used as a means of close combat and aerial photo and communications reconnaissance, in coordination with ground troops, and also as a means of intercepting the air enemy over territory with insufficient surface to air missile launchers, will without question remain for a long while in the inventory of armies of all countries of the world. And as long as capitalistic encirclement and aggressive forces exist, we will be forced to build combat flying craft.

[Question] The concept of a third generation of jet aircraft has firmly become current in our days. What could you say on this account?

[Answer] In military aviation these are multipurpose supersonic missile platforms, VTOL aircraft and powerful military transport liners. Our military leaders told us rather well what they were capable of on the eve of the 60th Anniversary of the glorious USSR Armed Forces. The time has come for a third generation of jet passenger craft as well. The YaK-42 and IL-86 (airbus) are its firstborn. They are distinguished from predecessors by heightened economy and flight safety and an even higher level of comfort.

We are conversing in Aleksandr Sergeevich's workroom. There is nothing superfluous here, just strict coziness and cleanliness. The air is fresh-- the room's master does not smoke. I mentioned this to him. The academician laughs.

[Answer] By the way, do you know that, besides myself, Tupolev, Lavochkin, Il'yushin, Sukhoy and Mikoyan also do not smoke? And Antonov does not smoke. And this, by the way, does not hinder work, but to the contrary.

[Question] Millions of readers know you as the author of several books. How do they begin?

[Answer] With an assignment by Aleksey Maksimovich Gor'kiy. He told me to write a sketch entitled "Development of the Soviet Engineer" for an almanac he had founded entitled "The Year 1917." In 1957, at the request of the editor in chief of the journal YUNOST', writer Valentin Katayev, I prepared a tale about several episodes from the life of a beginning aircraft designer and, finally, wrote "Goal of Life." And so that is how my path to the books began, but of course, my chief calling is that of aircraft designer.

[Question] Recollections of people in aviation and industry have become a part of your own biography, as it were. Whom do you recall most often?

[Answer] My teachers, comrades, colleagues and the outstanding test pilots Chkalov, Piontkovskiy, Suprun and Anokhin. To this day I do not cease to be surprised by their astounding expertise.

[Question] What human trait irritates you most?

[Answer] Carelessness, in all its manifestations.

[Question] What is your attitude toward fame?

[Answer] I think this is not a subject of conversation at all.

[Question] What do you dream of?

[Answer] About that for which I entered aviation: working for the good of the beloved Motherland and strengthening the air power of the first socialist state in the world. That was, is and will be the goal of my entire life.

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EARLY RED ARMY GENERAL STAFF DEVELOPMENT DESCRIBED

Moscow VOYENNO-ISTORICHESKIY ZHURNAL in Russian No 8, Aug 78 signed to press 21 Jul 78, pp 101-106

[Article by Col V. Danilov, candidate of historical sciences: "From the RKKA [Workers' and Peasants' Red Army] Staff to the General Staff of the Workers' and Peasants' Red Army (1924-1935)¹"]

[Text] In the complicated mechanism for leading the USSR armed forces, a special role is given to the General Staff which in the words of B. M. Shaposhnikov "controls the military system and ties it to the other branches of the state machinery...."² The rich experience in building this central military control organ has not only theoretical but also great practical importance.

During the last ten years questions concerning the formation and development of the RKKA General Staff and its practical work during the prewar period and during the years of the Great Patriotic War have been dealt with to a greater extent in Soviet military literature.³ However, the prehistory of the creation of the General Staff has been covered quite poorly in the pages of the military press and until now has not been examined as a separate problem. An attempt has been made in this article to examine some aspects of the development of the RKKA Staff during the period 1924-1935.

* * *

In connection with the aggravation of the international situation during the Twenties and Thirties. We in this country under the leadership of the VKP(b) [All-Union Communist Party (Bolsheviks)] Central Committee took large-scale organizational and technical steps, known as the military reform and technical reconstruction of the army and navy, in the area of military construction. The implementation of this reorganization took place on the basis of the industrialization of the country, the collectivization of agriculture, and the cultural revolution; therefore, by the mid-Thirties the Red Army "had been completely reborn, having become from the viewpoint of the quality and quantity of weapons, organizational structure, and combat training of its personnel a seemingly fundamentally different army."⁴

The changed conditions required first of all new organizational forms for operational and strategic leadership. M. N. Tukhachevskiy, the chief of the RKKA Staff pointed out in the spring of 1928: "The development of the RKKA now places the improvement of combat control as one of the fundamental problems...."⁵ The acute need for strict centralization of the leadership of operational, organizational and mobilizing work, combat training, its inspection and control, and many other areas of military control appeared.

One of the most important military reform measures was the considerable organizational restructuring of the Staff of the Workers and Peasants Red Army. Created in February 1921 the unified RKKA Staff⁶ had, as is known, broad functions connected with working on the main questions of preparing the country's defenses, the leadership of the troops' combat training, the direction of their day-to-day life and activity, etc. In March 1924 its functions were distributed among three organs.

The RKKA Staff remained the operational organ. The functions of the over-all preparation of the country to repulse a military attack, the development of operational and mobilization plans, the foundations for the organization of the armed forces, and the summing up of combat experience from the Civil and First World wars were concentrated in it. The RKKA Staff performed these functions through the corresponding directorates (Operational, Intelligence, Organizational, Mobilization, Military Communications, Military Topographic) and sections (for the engineer preparation of theaters of military operations, military history, etc.). At the same time, a Mobilization Committee and a Committee on Engineer Defenses were created at the RKKA Staff.⁷

The administrative direction of the day-to-day life and activity of the armed forces was concentrated in the newly created Directorate of the Workers and Peasants Red Army.⁸ It handled questions concerning staffing, the rank and file and command element, preinduction training, service life, etc.

The Inspectorate of the Workers and Peasants Red Army which was also newly formed became the combat training and inspection organ of the ground, air and naval forces of the USSR. It consisted of two directorates (for combat training and military training establishments) and five inspection sections (infantry and preinduction training of the workers, cavalry, artillery, engineer troops, and signal troops).⁹

The distribution of the functions of the former staff between three central organs permitted the new RKKA Staff to exercise more effective leadership of the most important areas in military construction. M. V. Frunze emphasized: "We conceive the study of these questions... not in the narrow meaning of that word, not exclusively and only from the point of view of the military operational one and for application only in the Red Army as a force operating in a theater of military operations --but from an extremely broader point of view: from the point of view of considering all the capabilities--economic, political and strategic--which the Soviet state has at its disposal. This operational staff must be not only the brain of the

Red army--it must be the military brain for our entire Soviet state and must supply that material which lies at the basis of the Defense Council's work."¹⁰

Thus, during the military reforms the RKKA Staff was freed from a whole series of functions connected with the day-to-day maintenance of the army. It began to engage basically in working on the key problems in preparing the country's defenses, building armed forces which were responsive to the level of development in military affairs, and summarizing the experiences from the wars.

Subsequently, the process of improving the structure and functions of the RKKA Staff was primarily conditioned by the technical reconstruction of the army and navy which had begun. As an analysis of archive documents and materials shows, this process was quite complex and contradictory. The sharp polemics on such fundamental questions of higher military control as the essence and nature of the central organ for preparing the country and army for a possible war, the role and place of this organ within the system of Soviet state and military control, its functions during peacetime and wartime, and many others were a reflection of the many difficulties while creating the most effective organizations for the RKKA Staff.

During the Twenties and Thirties it is possible to distinguish in the most general way two diametrically opposed approaches to the solution of these questions. The military leaders, who at various times headed the RKKA Staff--S. S. Kamenev, M. N. Tukhachevskiy, B. M. Shaposhnikov, and A. I. Yegorov", regarded the RKKA Staff as an organ which combined all the country's preparations for war, as the operational organ of the Supreme Command for directing combat operations in a war theater. B. M. Shaposhnikov wrote that in so far as the preparation of the armed forces for war is based on operational training, combat training, the appropriate organization of a wartime army, its weapons and supply, and finally the mobilization of the armed forces, industry and civilian peoples commissariats, the immediate solution of these questions must be concentrated in the RKKA Staff.¹²

Unfortunately, this point of view was not shared by everyone in higher military circles. Some eminent military workers (N.N. Kuz'min, A. M. Postnikov, M.K. Levandovskiy, and others), in agreeing to a partial redistribution of functions between the RKKA Staff and the RKKA Main Directorate, nevertheless resolutely objected to a revision of the system--introduced in 1924 but which had already ceased answering the spirit of the times--into two staffs: the RKKA Staff--an operational and planning organ, and the RKKA Main Directorate--an administrative organ to handle questions on calculating and directing current processes in the army's day-to-day life and activity. They maintained that the RKKA Staff would "consider itself an eye over everything..." and "achieve a dictatorship of the general staff", and "the young academicians (i.e., military workers who had completed Soviet military academies-V. D.) were infected by the bacillus of a large general staff...." The concentration in the RKKA Staff of the most important functions in preparing the army for the defense

of the country, in their opinion, could lead to an undesirable exaggeration of this organ's role within the system of higher military control.¹³ Thus, M. K. Levandovskiy, the chief of the RKKA Main Directorate, in his comments in connection with the suggestions of B. M. Shaposhnikov, the chief of the RKKA Staff, on the need to improve the central military apparatus pointed out in April 1929: "Under the conditions of a proletarian state a chief of the General Staff in this understanding, as bourgeois military circles define it and which comrade T. Shaposhnikov sticks to, is unthinkable and dangerous."¹⁴

Such categorical judgements were based on the complexity and novelty of the tasks in organizing a higher military control system during the reconstruction period. However, as subsequent experience in military construction showed, the fear about a possible exaggeration of the role and importance of the RKKA Staff in the system of higher military control organs was not corroborated. It is known that in the Soviet state the policy of higher military organs is not and cannot be the fruit of the personal opinions of this or that figure or group of individuals. It, just as military construction on the whole, is always conducted "accurately based on the general directives given by the party in the person of its Central Committee and under its direct control"¹⁵ as was emphasized in December 1918 by the party's Central Committee in the decree "Concerning the Policy of the Military Department." Therefore, under the conditions of a socialist state there has never been nor can there be any economic, social or political foundations for converting any organ, including the RKKA Staff into an organ similar to the German General Staff which, as is known, was a state within a state.¹⁶ The clash of the two points of view during the discussions was not able to halt the development process for the structure and functions of this organ which was called forth by the urgent requirements to further improve the organization for controlling the armed forces.

The continually growing technical equipping of the army and the new forms caused by this in the ways and methods of armed combat required corresponding organizational forms for controlling forces during wartime. In connection with this, substantial changes and additions were incorporated in the spring of 1930 into the organization for the field control of forces, which had been adopted in 1928,¹⁷ based on a recommendation by B. M. Shaposhnikov, the chief of the RKKA Staff. The distribution of the major functions within the RKKA Staff during wartime between the chiefs: of the operational service (the development of operational plans and the amalgamation of the work of the Operational, Intelligence, Communications, Military Topographic, and other directorates), the organizational services (working on and implementing army organization, staffing and logistics questions and the amalgamation of the work of the Organizational and Mobilization and Materiel Planning directorates), Military Communications, and Air Defense (created as the 6th Directorate of the RKKA Staff at the beginning of 1930).¹⁸ This distribution of the most important functions of the RKKA Staff and the assignment of specific officials responsible for carrying them out permitted the RKKA Staff to prepare more purposefully for controlling the armed forces in the event a war broke out.

A. I. Yegorov played a prominent role during the first half of the Thirties in creating strategic control organs. As chief of the RKKKA Staff, he persistently put into practice the principles for building a centralized apparatus and a Supreme Command for the branches of the armed forces (ground, air and naval forces), and saw to the concentration of the functions for directing the men's combat training in the RKKKA Staff.

In connection with this, the Combat Training Directorate which had been directly subordinate to the Peoples Commissariat since January 1931 was again incorporated into the RKKKA Staff at the end of 1934.

A. I. Yegorov attached great importance to the questions of ensuring maximum concurrence of the wartime and peacetime organization of the central apparatus. He considered it absolutely intolerable that the central apparatus would undergo any substantial disruption at the beginning of military operations because this would create an interruption in control during the period when its work had to be the most strenuous and accurate. The correctness of this conclusion was subsequently corroborated by the experience of the Great Patriotic War, especially its initial period. Some questions-- which remained unresolved at the time of fascist Germany's attack--concerning the organs in the Headquarters of the Supreme Command could not help but "be reflected in the control of the forces, the results of the first operations, and the over-all operational and strategic situation", as Marshal of the Soviet Union G. K. Zhukov has pointed out.²⁰

Thus, based on its development and improvement the RKKKA Staff had become by the mid-Thirties an organ which in accordance with the decisions of the Peoples' Commissar for Defense combined the work of all the directorates in the Peoples' Commissariat for Defense and gave tasks and instructions to them.²¹ The responsibility to develop plans for deploying troops and their actions from the beginning of a war as well as for the organization and employment of all ground, naval and air forces and the organization of the rear area and logistics support of the armed forces during wartime was placed on it. It engaged in the operational preparation of theaters of military operations, preparing and using routes and lines of communications, etc. Consequently, the RKKKA Staff was actually converted into the major organ of the USSR Peoples' Commissar for Defense for the training and employment of the armed forces for the country's defense.²²

In connection with the increase in the role and the compounding of the functions of directing the armed forces, the VKP(b) Politburo adopted a degree in September 1935 about reorganizing the RKKKA Staff into the General Staff of the Workers and Peasants Red Army.²³ A. I. Yegorov was appointed the first chief of the General Staff.²⁴ At the same time one of the most important periods in the history of the building of central control organs in the Soviet armed forces was completed. The solution of such extremely important problems as determining the essence and nature of the RKKKA General Staff, the role and place of this organ in the Soviet state and military apparatus system, its functions during peacetime and wartime, etc. was its primary result.

It was demonstrated in theory and then proven by the practices of military construction that the most rational and effective organizational form for directing the preparation of the country and the armed forces for defense is the General Staff.

The functions for amalgamating and directing the work of military control organs and of the forces in preparing for war must be concentrated in the General Staff as the operational organ of the Supreme High Command. However, its structure and functions have not been without changes. They are constantly being introduced in accordance with the urgent requirements of military construction. To a well known degree the General Staff must be the driving generator which organizes the work of the entire military control apparatus based on the scientific prediction of the nature of a probable war, the development of the country's military technical base, the military and political situation which has taken shape, and other factors.

The conclusion also made during the interwar period to the effect that the General Staff provides leadership for the armed forces both during peacetime and wartime is no less important. Consequently, its organizational structure during peacetime must be suitable to the maximum possible degree for exercising effective leadership of the military operations of the armed forces in the event a war breaks out.

The importance of the reorganization carried out was primarily the fact that a qualitatively new organ of the Supreme High Command was created in the person of the RKKA General Staff which occupied a special place in the military control system and provided the appropriate authorities for organizing the defense of the Soviet state and the building of the USSR armed forces. In doing this, the foreign policy aspect of its future activity was also considered because by the mid-Thirties the limits of the international ties of the Soviet Union had been broadened and strengthened considerably. At the same time the contacts of the USSR Peoples' Commissar for Defense²⁵, and in particular of the RKKA Staff, with the military ministries and departments of various bourgeois states began to intensify. Under these conditions, the fact that the high competency and authority of this organ in military matters was emphasized by the name itself, also has definite significance.

Thus, in creating a new type army the Communist Party and the Soviet government paid continuous attention to the organization of an effective system for controlling the armed forces considering the uninterrupted development of military affairs, the forms and methods of armed conflict, and the growth in the threat of imperialist aggression.

In the history of the building of the RKKA Staff during the period 1921-1935 it is possible to distinguish two basic stages. The first (1921-1924) is characterized by the creation and activity of the staff while shifting the Soviet armed forces to a peacetime footing. The formation of the RKKA Staff was a further step in the development of Soviet strategic

leadership. The second stage embraces the period from 1924-1935. Its main content was the steady organizational strengthening of the RKKA Staff during the 1924-1925 military reforms, the incessant search for a more improved structure, and the increase in the role of directing the armed forces.

The thorough and profound study, the scientific summation of experience in creating the General Staff, the bringing to light of its conformity to law and the trends in its development were some of the conditions for the successful solution of the new tasks in Soviet military construction for the sake of further strengthening the defensive power of the USSR and the countries of the socialist commonwealth.

FOOTNOTES

1. This article is a continuation of earlier published material by V. Danilov on this subject. Cf. VOYENNO-ISTORICHESKIY ZHURNAL, No. 9, 1977.
2. B. Shaposhnikov, "Mozg armii" [The Brain of the Army], Book 1, Moscow Voyenny vestnik, 1927, p. 12.
3. "Istoriya Kommunisticheskoy partii Sovetskogo soyuza" [History of the Communist Party of the Soviet Union], Vols 4-5, Moscow, Politizdat, 1970; "Istoriya vtoroy mirovoy voyny 1939-1945" [History of the Second World War 1939-1945], Vols 1-9, Voenizdat, 1973-1978; "50 let Vooruzhennykh Sil SSSR [50 Years of the USSR Armed Forces], Voenizdat, 1968; K. A. Meretskov, "Na sluzhbe narodu" [At the People's Service], Moscow, Politizdat, 1968; A. Vasilevskiy, "Delo vsej zhizni" [A Cause for All of Life], Moscow, Politizdat, 1975; G. K. Zhukov, "Vospominaniya i razmyshleniya" [Reminiscences and Reflections], Vols 1-2, Moscow, Izd-vo APN, 1975; S. M. Shtemenko, "General'nyy shtab v gody voyny" [The General Staff During the War Years], Book 1, 2d edition revised, Voenizdat, 1975 and Book 2, Voenizdat, 1973, and others.
4. "XVII s"yezd Vsesoyuznoy Kommunisticheskoy partii (b)" [17th All-Union Communist Party (Bolsheviks) Congress], Stenographic Report, Moscow, Parizdat, 1934, p. 228.
5. TsGASA [Central State Archives of the Soviet Army], f4, op 1, d 720, l 135.
6. Cf. VOYENNO-ISTORICHESKIY ZHURNAL, No 9, 1977.
7. "Order of the USSR Revolutionary Military Council [RMS] No 446/96 dated 28 March 1924", TsGASA, Collection of RMS USSR Orders for 1924.
8. In the fall of 1924 it was renamed the RKKA Main Directorate.
9. In October 1924 the Inspectorate was included in the RKKA Staff. However, during the searches which were conducted for a more improved organization

of the central organs during the period being described it subsequently was excluded several times and then again included in the structure of the RKKA Staff.

10. M. V. Frunze, "Sobr. soch." [Collection of Works], Vol 2, Moscow-Leningrad, Gosizdat, 1926, p 32.
11. The RKKA Staff was headed by: P. P. Lebedev (February 1921-March 1924), M. V. Frunze (April 1924-January 1925), S. S. Kamenev (January 1925-November 1925), M. N. Tukhachevskiy (November 1925-May 1928), B. M. Shaposhnikov (May 1928-April 1931), A. I. Yegorov (April 1931-September 1935).
12. TsGASA, f 4, op 1, d 743, l 4 reverse.
13. Ibid., f 4, op 1, d 1413, l 3. Cf. also M. V. Zakharov, "Uchenyy i voyn" [The Scientist and the Fighting Man], 2d edition, Moscow, Politizdat, 1978, pp 63-64.
14. TsGASA, f 4, op 1 d 743 l 81.
15. "KPSS O Vooruzhennykh Silakh Sovetskogo Soyuza" [The CPSU on the Armed Forces of the Soviet Union], Voenizdat, 1969, p 35.
16. G. Ferster, G. Gel'merg, G. O tto and G. Shnitter, "Prussko-Germanskiy General'nyy Shtab 1640-1965" [The Prusso-German General Staff, 1640-1965], Translated from the German, Moscow, "Mysl'", 1966, pp 84-85.
17. Cf. VOYENNO-ISTORICHESKIY ZHURNAL, No 6, 1972, p 82.
18. TsGASA, f 31511, op 1, d 91, l 118-118 reverse.
19. Ibid., f 4, op 15, d 72, l 360.
20. G. K. Zhukov, "Vospominaniya i Razmyshleniya", Vol , 2d edition revised, Moscow, Izd-vo APN, 1974, p 319.
21. TsGASA, f 4, op 15, d 72, l 359 reverse.
22. In 1934 the RKKA Main Directorate was reorganized into the RKKA Administrative and Mobilization Directorate whose missions were the recruitment of personnel, organizational and T/O and E questions, troop mobilization, and the arrangement of RKKA services and life (cf. TsGASA, f 4, op 15, d 72, l 300 reverse).
23. TsPA IML [Central Party Archives, Institute of Marxism-Leninism attached to the CC CPSU], f 17, op 3, ed. Shr 971,111 (f. also: "Istoriya Kommunisticheskoy partii Sovetskogo Soyuza" [History of the Communist Party of the Soviet Union], Vol 4, Book 2, Moscow, Politizdat, 1971, p 405.

24. A. I. Yegorov occupied this post until 25 June 1937.
25. The decree of the USSR TsIK [Central Executive Committee] about eliminating the USSR Revolutionary Military Council and renaming the Peoples Military Commissar the Peoples' Commissariat of Defense was adopted 20 June 1934. Cf. "Konstitutsii i konstitutsionnye akty Soyuzha SSR (1922-1936)" [The Constitution and Constitutional Acts of the USSR (1922-1926)], Moscow, "Vedomosti Verkhovnogo Soveta RSFSR", 1940, p 150.

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REVIEW OF 9TH VOLUME OF HISTORY OF WORLD WAR II

Moscow VOYENNO-ISTORICHESKIY ZHURNAL in Russian No 8, Aug 78 signed to press 21 Jul 78, pp 111-115

[Article by General of the Army I. Shavrov, professor: "On the Way to the Victorious Completion of the Second World War"]

[Text] The scheduled ninth volume of the "istorii vtoroy mirovoy voyny 1939-1945" [History of the Second World War] was recently published.¹ In it light is cast on events during the second half of 1944--the deciding stage on the way to the victorious completion of the Second World War in Europe and Asia. The fascist bloc began to fall apart under the powerful blows of the anti-Hitlerite coalition's armed forces. The alliance of people and states united in the struggle against fascism continued to spread and be strengthened. The people of the occupied countries surged upon the enemy like a swelling wave. The hour for the final defeat of the aggressor inexorably drew nearer. The Soviet Union, carrying the major weight of the war against the main forces of the fascist bloc--Hitlerite Germany, played the leading role in the anti-Hitlerite coalition.

One of the peculiarities of this stage in the Second World War was the fact that Germany in connection with the landing of large Anglo-American forces in Normandy was forced for the first time to conduct military operations in Europe on two fronts. However, despite this the Soviet-German front continued to be the decisive front in the struggle against fascism. Thus, by the beginning of the summer-fall campaign in 1944, the Hitlerite command had more than 60 percent of all the men and equipment in the Wehrmacht active forces on this front (p. 19). This ratio actually did not decrease even after the landing of the Allies in France.

The decisive importance of the military operations on the Soviet-German front was determined not only by the fact that the enemy kept his main forces and equipment here but also by the results which were achieved during the strategic offensive of the Soviet army. This is well demonstrated in the volume using the example of the strategic operations of Soviet forces which were conducted during the 1944 summer-fall campaign. The decision for a powerful offensive was made at the end of April during a joint session of the party Central Committee's Politburo and the Headquarters of the Supreme High Command (p 19).

The military and political goals of the campaign were stated in the 1 May order of Supreme Commander in Chief I. V. Stalin. They consisted of "clearing all our land of fascist invaders... liberating our brother Poles, Czechoslovaks and the other peoples of Western Europe, allied with us, from the German slavery...."²

Along with the expulsion of the Hitlerite occupiers from our land, great international tasks--the liberation of the enslaved peoples of Europe from the fascist yoke--faced the Soviet army.

The content of the volume reflects the major events of the campaign. It consists of three parts. The first is devoted to the armed struggle on the Soviet-German front. The second examines the armed struggle in Western Europe, on the Pacific Ocean and in Asia. The third part investigates political, economic and diplomatic problems and also sums up the results of the development of the armed forces and military art in the countries of the opposing coalitions.

Primary attention in the volume is devoted to military operations on the Soviet-German front--the decisive front in the Second World War. In this connection one should point out that bourgeois historiography, not daring to openly falsify the brilliant operations of the Soviet armed forces during the second half of 1944, is often silent about them or mentions them casually. Western historians consider the landing of the Anglo-American forces in France and their offensive against the German fascist forces as the major factor in the victorious completion of the war.³

The objective elucidation of the most important operations during this period provides an opportunity for the reader to compare the scope and results of the struggle in the east and in the west and to draw a correct conclusion about the decisive contribution of the USSR to the struggle against fascism. As a result of the victories of the Soviet Union during the summer-fall campaign of 1944, fascist Germany was on the verge of catastrophe.

Naturally, an appropriate place is allotted in the volume to the revelation of the Soviet military art and a demonstration of its superiority over the German fascist one. The originality of the concepts for the operations, the skilful selection of avenues for the main strikes considering political, economic and military factors and the combining of different methods for destroying large enemy groupings are clearly shown in the chapters devoted to the operations to liberate Karelia, Belorussia, Western Ukraine, Moldavia, Romania, Bulgaria, Hungary, Yugoslavia, the Baltic Area, and the polar area. The decisive massing of men and equipment on the most important avenues, the rapid breakthrough of defense lines, bold actions during an encirclement, the defeat of forces and reserves moving on the outer front with the simultaneous breaking up and destruction of enemy forces on the inner front of the encirclement, the uninterrupted pursuit of a retreating enemy, the disruption of his attempts to stabilize the front on favorable strategic lines, and swift movement to a great depth were characteristic of Soviet forces during this period.

The Belorussian Strategic Operation was the pivotal event for the 1944 summer-fall campaign. It determined to a great extent the success of all the subsequent operations on the Soviet-German front and exerted considerable influence on the further course and outcome of the Second World War. Not only the men and equipment of four fronts but also the partisans of Belorussia were included in it.

The originality of the concept for the operation, the high military art of front and army commanders, the great skill of commanders, and the mass heroism of Soviet fighting men displayed during the operation ensured the complete destruction of a strong enemy grouping in a short period of time and the liberation of the Belorussian land. A total of 17 divisions and 3 brigades in the "Center" army group were completely destroyed by the powerful blows of the Soviet forces and 50 divisions lost more than half their men (p 64).

The best achievements of Soviet military science were embodied in this remarkable operation. It entered the Soviet and world history of war and military art as a classic example.

The Yassko-Kishinevskaya strategic offensive operation which was conducted during August 1944 by the troops of the 2d and 3d Ukrainian front in coordination with the Black Sea Fleet and the Danube Military Flotilla, which was magnificent in its concept and execution and which changed the political and strategic situation in the Balkans, is allotted the required place in the book.

The experience, acquired during this operation on massing to the maximum extent possible forces and equipment on the avenues of the fronts' main attacks, on breaking through a deeply echeloned enemy defense at a high tempo, and on rapidly surrounding a large enemy group, entered the arsenal of Soviet military art and now serves as a classic example for our theory and practices.

Using a lot of factual material and new data introduced during the scientific revolution, the important problems which faced the Soviet armed forces in connection with their liberation mission in the countries of southeast Europe supported by the armed uprising of the people of these countries against the pro-fascist regimes and, consequently, in connection with the new aspects of ideological, party and political work among Soviet fighting men and the population of the liberated countries, are examined in the volume.

The fact that the last operations on the southern wing of the Soviet-German front had a coalition nature, is noteworthy. Troops of liberated Romania and Bulgaria and the Peoples' Liberation Army of Yugoslavia, which was allied with us, took an active part in them. This military coordination arouses obvious interest today.

During September and November, operations were conducted in the Baltic. This was a new set of front operations coordinated with the Red Banner Baltic Fleet which were original in concept and execution. They made a great contribution to the treasury of military art, especially the well known Memel'skiy maneuver which was connected with the secret and rapid movement of the forces of the 1st Baltic Front to a new avenue and the inflicting of a surprise blow. The successful offensive in the Baltic led to the destruction of the "North" enemy army group. More than 30 enemy divisions were cut off from East Prussia, pinned to the sea in Courland, and blockaded there until the end of the war.

The military operations in the other war theaters which are examined in the second part of the volume took place under the influence of the victorious offensive of the Soviet armed forces. The well organized and successfully conducted operations during the 1944 winter created favorable conditions for completing the preparations for and carrying out the landing of the Anglo-American forces in France on 6 June 1944.

At the time the Normandy assault operation ended the allied front was about 100 kilometers, whereas Soviet forces were conducting an offensive on a front greater than 1000 kilometers and on 25 August when the allied forces moved to the Seine River along a front of 500 kilometers, the offensive from the east was being conducted from the shores of the Bay of Finland to the Black Sea along a front of about 3000 kilometers. As General G. Marshall, the chief of staff of the U.S. Army pointed out, "the Red Army command is fulfilling its promise" and "the offensive operations of the Red Army are being conducted in coordination with the allies" (p 278). A simple comparison of these facts and events proves the complete ridiculousness of the assertions by the West German authors of "Germanskoy istorii" [German History]-- which are given in the volume--that the Soviet army allegedly used the fruits of the allied victory and exploited the offensive through Poland when "all German armies were tied down in the west" (p 279).

The authors of the volume point out the art of the allied command which was displayed in solving a number of complicated problems connected with the landing of naval and air assault forces. At the same time it is pointed out that in the battle on the western front many opportunities for the decisive destruction of German forces were neglected during this period as a result of the existing shortcomings and the extraordinary methodicalness and carefulness of the allied command.

Extensive documentary material in the volume shows the struggle of the French liberation forces which gave considerable help to the advancing forces of the allies, contributing to a speed-up in the liberation of their motherland from the fascist occupiers. However, their actions could have been more effective if the allies had given them the necessary help.

Based on information in domestic and foreign archives, light is thrown on the counteroffensive of the Hitlerite forces in the Ardennes which began on 16 December 1944. It caught the allied command by surprise and led to the complete confusion of the American forces which began a disorderly retreat.

In order to eliminate the consequences of the blow inflicted by the fascist forces in the Ardennes and prevent their subsequent blows, the prime minister of Great Britain, W. Churchill, requested help from the Supreme Commander in Chief I. V. Stalin. The Soviet Union, true to its alliance duty met it and accelerated the preparations for our forces' offensive from the Nieman to the Carpathians.

Events on the Italian front were also determined to a great degree by the progress of the Soviet forces' offensive, especially by the defeat of the enemy in the Balkans.

The war in the Pacific Ocean and in Asia entered a decisive stage during the middle of 1944. However, the final defeat of Japan was planned by a joint committee of the chiefs of staff of the United States and England only after the entry of the USSR into the war against it.

The section devoted to the liberation movement of the peoples of China and Southeast Asia is interesting. The active struggle against the Japanese occupiers in Vietnam (led by Ho Chi Minh), Burma, Indonesia, the Philippine Islands and Malaya is shown in it. The facts convincingly prove the conclusion that where communists were able to lead national front organizations, the liberation movement acquired a broader dimension.

A significant place is devoted in the volume to the struggle on sea and ocean lines of communications. In 1944 it reached its climax in the east in connection with the fact that the allies had created a considerable superiority in forces and had seized the majority of the enemy's military naval bases. Their dominance of the sea permitted them to increase the isolation of fascist Germany and begin a direct blockade of the Japanese islands (p 354).

The further strengthening of the anti-Hitlerite coalition and the process of breaking up the fascist bloc is shown in a detailed and documented way.

Important significance is attached to questions concerning the activity of the Communist Party and the Soviet state in achieving decisive victories over Hitlerite Germany. Here, the military organizational work of the party and the ideological work on the front and in the rear to further strengthen the moral and political unity of the Soviet people is thoroughly examined. The party took large-scale military mobilization steps. From June to December 1944 about 750,000 replacements were sent to the active army (p 359). A total of 138,000 political workers of all categories performed continuous party and political work among the troops (p 860). Their efforts were directed toward mobilizing the fighting men to successfully solve combat missions, to strengthening the lower party organizations of the active army in whose ranks more than 1.7 million communists and candidates for party membership were fighting on 1 June 1944 --by the end of the year their number had increased by more than 728,000 individuals. By this time, the party stratum in the army was 23 percent and in the navy--

31.5 percent. The number of communists in the armed forces exceeded 3 million people. This was 52.6 percent of all party membership (p 361). The CPSU was indeed a fighting party.

Two chapters (15 and 17) are devoted to investigating economic problems. A detailed analysis of the development of the military economy of the USSR, the United States, England, France, Italy, China, Germany, and Japan is given in them. Primary attention is devoted to an examination of the further build up of the military economic might of the USSR. The material testifies to the fact that the national economy of the USSR during the second half of 1944 achieved new successes in all the leading branches of the economy. The national economy was rapidly restored on the territory of the countries liberated from the occupiers. The military production of the latest types of combat equipment and weapons was steadily improved. This contributed to achieving superiority over fascist Germany in all major indicators.

Of the allied states the economy of the United States achieved the greatest development during this period. This country, which had not experienced the destructive effects of the war, doubled its military and industrial production by the end of the year based on a comparison with prewar production. The major efforts of the United States were directed to the creation of the atom bomb whose manufacture began in October 1944.

The economy of Great Britain was in a difficult situation. Production in the main branches of British industry was at the 1943 level or lower. A significant decrease was observed in military industry. This was tied primarily to the shortage of war materials and workers (p 440).

The economies of France, China and Italy were extremely deranged by the war and had practically no effect on the progress and outcome of the war.

As a result of the loss of many rich raw materials in the occupied territories of the east and west and the curtailment of supplies of strategic materials by neutral countries, the military economic capabilities of fascist Germany were sharply diminished. However, despite the contraction of the raw material base, the production of the basic types of weapons and military equipment in Germany continued to grow during the second half of 1944 at the expense of decreasing the output of consumer goods, strictly economizing raw materials and equipment, using raw material reserves, and taking a number of other "extraordinary" steps. However, all this was not able to satisfy the growing demands of the Wehrmacht for equipment and weapons. A similar situation took shape in Japan.

The growing difficulties in the economy of fascist Germany and militarist Japan was accompanied by a deepening in the crisis of their political regimes and by a strengthening of the antiwar attitude of the populations.

The national democratic and socialist revolutions in the countries of central and southeast Europe are extensively covered in the volume, their

causes are revealed, and the revolutionary situation, which was based on the maturing internal demands for social development and by the need for basic social, economic, and political changes, is analyzed. The victories of the Soviet army contributed to the build up of these revolutions. The leading force of the revolutionary process in these countries was the working class headed by the communist and workers' parties. The Soviet Union, in carrying out its great liberation mission, provided enormous help to the workers in carrying out the revolutionary changes.

An important place in the volume is devoted to questions on foreign policy and international relations and to problems concerning the postwar mechanism for peace. The main efforts of the party and Soviet state in the foreign policy field during the second half of 1944 were directed to the further consolidation of all anti-fascist forces, the isolation of Hitlerite Germany in the international arena, the development of principles for the postwar mechanism for peace and the helping of a number of central and southeast European countries to break away from the capitalist system.

The volume ends with an analysis of the status of the armed forces and the military art of the major participants in the war. The primary propositions in the strategy of each of the sides during the second half of 1944 are examined in a chapter.

The publication of the volume being reviewed is an important event in Soviet historical science. Our own and foreign specialist historians and readers have received the next book in a fundamental work which correctly and thoroughly examines the most important events of the second half of 1944 on World War II fronts.

FOOTNOTES

1. "Istoriya vtoroy mirovoy voyny 1939-1945" [History of the Second World War, 1939-1945], Vol 9, "The Liberation of the territory of the USSR and European Countries. The War in the Pacific Ocean and in Asia", Voenizdat, 1928, 554 pp.
2. I. V. Stalin, "O Velikom Otechestv ennoy voyne Sovetskogo Soyuz" [On the Great Patriotic War of the Soviet Union], Moscow, Gospolitizdat, 1953, pp 145-146.
3. In this regard, the works of the American historian Harrison, the Englishman Liddel-Hart, and the German Toppel'skirkha, and others are characteristic.

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AVIATION GROUND SERVICE OPERATIONS DESCRIBED

At a Field Air Base

Moscow ZNAMENOSSETS in Russian No 8, Aug 78 signed to press 20 Jul 78 p 12

[Article by Warrant Officer N. Artemov, specialist 1st class, Soviet Group Forces Germany: "We Do the Servicing"]

[Text] I have been involved in the servicing of aircraft equipment at a field air base many times and I know that this work has its own special characteristics. Here you do not have the facilities and conditions found at a base airfield. And certainly it is more difficult for personnel to ready aircraft while operating under unaccustomed conditions.

But let us not get ahead of ourselves. I remember a field air base flooded with spring waters. Aircraft were taxiing with their canopies splashed with water. The man in the adjacent parking space, Warrant Officer V. Skugarev, had begun to wipe the plexiglass using a plain rag. I cautioned him, saying that was how a canopy loses its clearness. You need flannel, the kind used for wiping which has been passed through a magnetic filter, otherwise you end up with scratches. And when a canopy is out of commission, then the aircraft might as well be out of commission also.

At the beginning of my service career I frequently found myself without the necessary materials. Now I always come prepared. These are little things -- a bunch of rags, a roll of safety wire, a spare steel or rubber washer, but sometimes they determine success or failure. And this simple spare parts kit can be placed in a bag and kept ready with only periodic attention needed for replacing items. Flight engineer Senior Lieutenant V. Boyko advised us to do this.

...My plane is 42. According to my instructions I have a certain number of minutes to turn the plane around. I know the maintenance procedures by heart. I begin the inspection of the aircraft from left to right, from the forward strut of the front landing gear. I give special attention to the engine air-intake. If I discover a new scratch here, I carefully examine the compressor blades through the access hole with the help of a light -- to see whether

there are any dents or scoring. The main thing for me is to satisfy myself that a foreign object, which could be sucked in by the air, has not gotten into the air intake. Upon reaching the compressor such an object could result in damage to the blades. And this would mean engine failure.

Then I examine the takeoff and landing equipment, the landing gear, flaps, etc. I check the condition of the tires and the extent of wear. A tire casing can undergo considerable wear as the result of a hard landing. This situation is quite dangerous, especially when operating on a concrete runway. A stone or piece of hard asphalt from a seam which hits a tire at the weakened point can damage it and create an emergency situation during takeoff or landing.

After completing an external inspection of the plane and am satisfied that everything is all right, I check to see that the aircraft mechanic has refueled the plane and provided it with a new air supply. I have already familiarized myself with the fuel servicing instructions and permission for its use, examined the fuel-transfer equipment and condition of the filters, as well as the grounding of the fuel truck and the aircraft, and checked to see that the hose, filter and pump are working. Also the records for the compressor truck, oxygen supply unit, and oil-servicing vehicle were verified by me ahead of time, and the quality of other type fluids, their adherence to state standards, and the time of last test and lab analyses were checked.

When the mechanic, Private A. Bobylev, has finished refueling I verify his work and close the top of the fuel tank. It is mandatory that I do this personally. There have been instances where the cover, lacking one or two turns, has vibrated loose in flight and the fuel which is under pressure in the tanks has "gushed out." It is hard to imagine a worse situation for a pilot.

Then I move the ladder into position, but before climbing into the cockpit I clean my boots. Again this seems like a little thing, but it cannot be ignored at a field air base.

Turning the power supply on, I observe the instrument readings, the dial lighting, and the instrument panel illumination, and I adjust the fuel-flow indicator according to the size of the refueling. Leaving the cockpit I make sure the switches for all the types of armament are in the position specified by the manual, since sometimes an unintentional release of bombs, drop tanks, and even missiles can occur. And finally I check carefully to see whether any foreign objects have been left in the cockpit behind me. As for my tools, the depressions in their storage box are painted red. If something is not in its place the red spot is a signal -- find and replace it. It is possible for a wrench, screwdriver, or some other item to jam the control stick or short-circuit the electrical system.

I record all operations I perform in the aircraft maintenance log-book and check list. This is not merely a formality, but a very important step. For instance the repeated replacement of a light can indicate that it is being overcharged from an outside force. This cannot be noted in its operation, but an analysis of the log entries will definitely signal the trouble.

When the pilot arrives I report to him about the status of the aircraft for flight. Then I assist him into the cockpit and fasten him in.

After the engine starts I watch the oil pressure, voltage of the on-board electrical system, and temperature rise. When the engine is idling properly I close the canopy and check to see that it is sealed tight by using the warning lights.

As opposed to the large base air fields, here a flight engineer must keep a close eye on the work of specialists from the servicing groups.

This is especially important with the specialists handling armament. I always write down everything from the flight planning table that a pilot has to do in my aircraft. For example, intercept work means prepare missiles, while work on the range means bombs, rockets, etc. Therefore I carefully watch to see what type of racks are installed in order that nothing is mixed up in the rush to get it done.

And one more point. Recently, after servicing a flight at a field air base I was faced with the problem of conducting regular periodic maintenance. The specialists from the aeromobile technical-maintenance unit conducted this work under conditions which they were unaccustomed to, but nevertheless everything was done in the designated time and strictly according to the manual. Of those participating in the work, many had learned their trade from such masters in this field as warrant officers V. Zakharchenko and V. Illarionov. This gave me practical experience in carrying out certain engineering operations, and I studied the plane's equipment in great deal. One should not ignore such an opportunity. Remember, combat conditions also require repair work, even if it is something small. Is it possible for a flight engineer to handle this on his own? He can only do this if he has prepared himself for it.

Success in his work depends on the level of knowledge and training of a flight engineer, as well as on his independent thinking. A real situation may dictate that he make a decision as an engineer. And during combat training our specialists have run into similar situations. Those such as Lieutenant B. Mesha and warrant officers N. Robota and M. Sustav have emerged from difficult situations with flying colors. In this respect the practical experience obtained from maintaining aircraft equipment at field air bases represents a valuable training school. Work under these conditions force flight engineers to know the techniques and procedures for monitoring all airborne systems and weapons, to keep track of everything that is done on their aircraft by other specialists, to make sure safety procedures are followed, and also to maintain records accurately. A pilot should begin his flight fully confident that everything that is supposed to be done has been done.

I do not want to brag, but when the pilot comes up to my "42" he has no doubts about the quality of work gone into preparing his aircraft, and on his return he thanks me for the service. And this is the greatest reward aviation people can receive for all their work and resulting headaches.

Preflight Inspection

Moscow ZNAMENOSSETS in Russian No 8, Aug 78 signed to press 20 Jul 78 p 13

[Article by Warrant Officer L. Dubovskoy, master in combat skills, Soviet Group Forces Germany: "Operational Aircraft"]

[Text] A normal occurrence on a flying day. One after the other fighter-bombers streak toward the clouds. But before taking off each one of them stops for a minute or so at a hut painted in black and white squares, which is located beside the runway. This technical control point is the final control authority before an aircraft takes off. A small amount of time is given to the on-duty specialist for making the appropriate checks.

What could you possibly find wrong? I have been a flight engineer for over 15 years. I know how conscientiously all aviation specialists approach the servicing of aircraft. All the same you have to keep your eyes open at the control point. Although it is infrequent, sometimes things are missed: a cover plate is not closed, there is an indication of leaking fuel or hydraulic fluid, or something else.

Together with other warrant officers, I frequently am assigned to the technical post. And I know in my own mind: despite the apparent simplicity of the job -- to inspect an aircraft already prepared for flight -- this work requires a great deal of occupational knowledge, skills and concentration. Even when an aircraft is taxiing I listen to the engine's hum, so as to tell by the sound whether something is wrong. It is possible that during taxiing a foreign object can enter the air intake. So the aircraft is stopped. I check the wings, the leading edge slats, the flaps -- everything must be in good working order. I make a detailed inspection of other items: whether the canopy is locked and the handle in the proper position. I give special attention to the landing equipment. I check the condition of the landing gear, wheels and struts, and I evaluate the degree of loading of the shock absorbers by the level of compression. I take a thorough look to see if there is any hydraulic fluid streaking, if hatches and cover plates are closed, and if there is any damage to the fuselage.

The work of the controller at a technical point becomes more complicated at night. Visual inspection is sharply curtailed. Therefore I set up a strong battery-powered light ahead of time. As for checking the plane, I give special attention to the wings, canopy, pitot tube, and navigation lights. Another difficult time is during air base maneuvers, redeployment and group sorties. Here time for the checks is cut to a minimum. The aircraft taxi slowly, and standing on various sides the flight engineers make the inspections. And they must be just as reliable as normal.

When a new pilot is in the cockpit the man at the technical point must be especially alert. Not long ago specialist 1st class Warrant Officer Yu. Chizhov stopped an aircraft from taking off when its wings were not in the take-off position. Other comparable incidents have occurred.

Even during routine flights a considerable amount of concentration is necessary. You are checking the aircraft, and the pilot is looking at you from the cockpit with impatience, saying come on, let's go. But you cannot rush. You must remember all safety precautions. Although it is only idling, the engine is running. And this can distract you -- but you cannot overlook a problem. I, as well as the majority of specialists, have developed a set pace which allows me to complete a careful inspection of a plane. Only when I am sure everything is okay do I confidently give the signal with my flag at the side of the runway.

Our most experienced and well-trained flight engineers and mechanics, and aircraft and engine specialists are assigned to the technical control point. The following masters in their respective jobs handle these duties in an outstanding manner: warrant officers V. Konovalov, A. Litovets, and V. Pasternak. Possessing broad job skills and extensive practical experience, they conscientiously apply themselves at the briefing conducted by the duty flight engineering officer, each time studying all equipment documents and the check list. For example, a handbook issued at the briefing contains signs of possible malfunctions and methods of detecting them during the inspection. It is very useful to refresh yourself on the material in the handbook before assuming your check duties.

Much attention is given to the training new specialists for serving at the technical point. Sometimes they still are found to be lacking in knowledge and experience. Recently a unusual incident occurred. The man on duty at the technical point prohibited the take-off of an aircraft because the exhaust gas flap of the turbine starter was open, even though this is the normal operating position of the flap. The resulting delay in flight caused by this incident was not justified. This matter was a minor problem. But an actual malfunction could be overlooked through a lack of knowledge.

In addition to planned training sessions and briefings for preparing new specialists at our unit, we hold talks and demonstrations which are conducted on both an individual and group basis. These programs help to ensure a better mastery of the work, and are aimed at achieving the socialist obligations adopted during the year of the 60th anniversary of the USSR armed forces, one of the main points being: "Do not allow flight accidents because of personnel errors."

Communists are in the forefront of our struggle for high quality in servicing aircraft equipment. The work of flight engineer and master of his military specialty Warrant Officer N. Kvaka serves as an outstanding example for all personnel. And there are many specialists of his caliber. There has not been one instance of a faulty aircraft being put in the air at the unit. Here much credit goes to those who work at a difficult and responsible post -- the technical control point.

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PROBLEM-SOLVING AS A TRAINING METHOD FOR AIR CADETS ENCOURAGED

Moscow AVIATSIYA I KOSMONAVTIKA in Russian No 9, Sep 78 signed to press
1 Aug 78 pp 22-23

[Article by Engr-Lt Col M. Ksenofontov, candidate of technical sciences; Engr-Lt Col B. Soloukhin, candidate of technical sciences; and Engr-Maj B. Dmitriyev: "From the Life of the Universities: The Cadet's Learning Activity"]

[Text] The broad scope and high tempos of scientific-technical progress have a direct influence on the sphere of military affairs. The latest achievements of mathematics, cybernetics, physics, metallurgy, electronics and other sciences also are embodied in contemporary models of aviation equipment. Its constant improvement and the introduction of new, previously unknown systems and complexes cause changes in the structure of the work of aviation specialists maintaining this equipment. More and more, they are required to think creatively and, as practice shows, only with continuous learning activity is the aviator capable of quickly mastering technical innovations and accomplishing new tasks.

Much in the aviator's official work spurs him to activeness in learning and in particular, to a deep understanding of his duty, love for his profession and the desire to improve his expertise. The attraction for knowledge is intensified in the training process when problem situations are created in classes and the trainee is given an opportunity to find ways to the truth on his own.

As a progressive form, problem training is being introduced more and more into the practice of training cadets and is helping satisfy increased demands placed on the training of aviation personnel.

The development of pedagogics, an improvement in methods and content of training, as well as better preparedness of the youth entering aviation schools give rise to and facilitate an activation of the cadets' learning activity. The first experience shows, however, that there still are many unresolved questions and much vagueness in problem training.

A majority of psychologists and pedagogues state that problem training is a new type of training which carries special developing functions. It assumes the indirect training coordination of instructors and trainees which makes up their joint activity in formulating and resolving cognitive training (scientific and professional) problems. This system cannot be set in opposition to the present overall training system or separated from it. Moreover, problem training includes previously formed didactic techniques and methods as component elements. It appears to us that this definition of problem training most fully reflects its essence.

The important element in problem training lies in the organizational structure of the cadets' learning activities. Under traditional training, the instructor explains the new material, presents particular theses, reinforces them with illustrative material and so on. The trainees perceive everything aurally and visually, interpret it and memorize it. In problem training, however, the cadets acquire knowledge in the process of independent work under the instructor's direction. Trainees themselves seek ways for obtaining the knowledge which they lack. They experience satisfaction from intellectual labor, from overcoming difficulties which arise in the process and from a solution found independently.

Two elements are distinguished in problem training: creation of a problem situation and control of further progress in assimilating training material. Used here are methods of problem presentation, special exploratory work and independent research. The essence of these methods is revealed to a certain extent in the article by Ye. Abrashin, "Cadets Solve Problems" (AVIATSIYA I KOSMONAVTIKA, No 12, 1977). It appears advisable to us, however, to understand just what is a problem, a question, a problem question, a task, a problem task, a problem situation and other categories.

For example, the concepts "question" and "problem question" are not one and the same thing. If a class is arranged with questions and answers, this still says nothing about problem training. A question can become a problem question depending on the cadets' knowledge and on the training situation in which the question is posed.

Thus, in giving the lecture "Factors affecting vital activities of an aircraft crew in high-altitude flight," the instructor gave an example of how in 1875 three French aeronauts experienced an emergency in a high-altitude flight aboard the balloon "Zenit." Basing themselves on preliminary statements by the well-known scientist and physiologist (Pol-Ber) that additional oxygen has to be used for breathing at altitudes over 8,000 m, they took with themselves an oxygen reserve in special cushions. But all three lost consciousness before even reaching an altitude of 8,000 m. Only one of them came to after the balloon descended. The instructor asked the question: "What was the reason for the death of the aeronauts?"

Inasmuch as the cadets already had preliminary information on the structure of the atmosphere, some of them expressed the supposition that oxygen

starvation arises when ascending. The instructor remarked that this was correct, but the scientist also was correct in calculations of the oxygen content of the air as one increases altitude.

The trainees realized that the available knowledge was insufficient to solve this problem, and they developed an interest and motivation for learning and independent solution of the problem. Conjecture arose as to the influence of temperature and pressure on the human body with an increase in altitude.

The problem was almost solved, but it required conclusive generalization, which the lecturer provided. He informed the cadets that in 1879 I. M. Sechenov made a thorough analysis of the cause of the French aeronauts' death. He pointed out that a reduction in the partial pressure of oxygen in the air is the decisive factor at high altitudes. After this the instructor gave the definition of partial pressure and wrote the formula of its calculations on the board.

Thus the question which had been asked led the trainees to a problem situation and its solution permitted them to acquire new knowledge which became fundamental for study of this course in the future.

A problem task differs from an ordinary task not in its degree of complexity or laboriousness, but by a certain novelty for the trainee. Relationships which are not provided in conditions of the task are needed for its solution.

There also are certain complexities in delineation of the concepts of "problem question" and "problem task." A question is a necessary structural element of a task with which the required unknown is fixed. A problem question also represents a structural element of a problem task, but it also can have independent significance. The problem question and problem task become component elements of problem training when they generate a problem situation.

Problems do not have to be depicted artificially. They can be ordinary training questions. For example, in examining the principle of measuring the ground speed and drift angle of a flying craft with the help of radio-electronic Doppler systems, the instructor recalled the essence of the Doppler effect, derived the mathematical relationship of the Doppler shift in frequency to ground speed and drift angle, and revealed the operating principle of the simplest measuring device with a single-wire antenna system. He thus gave the trainees the minimum amount of theoretical knowledge allowing activation of their work.

And further, in presenting the principle of constructing a two-wire measuring device with a fixed antenna system, the instructor showed the relationship of ground speed to the Doppler shift and to the drift angle and posed the question: "How can this relationship be considered and precision of measuring ground speed increased?"

Through an active search the trainees arrived at the conclusion that it was necessary to automate the introduction of drift angle correction. The instructor confirmed the correctness of the solution and assigned the task of automating the measurement of ground speed and drift angle.

Having the necessary theoretical training in general engineering, the trainees on their own proposed a variant of a mobile antenna system and solved this task with the instructor's help. Then, in a search for increased precision of measurements of W and US [drift angle] depending on the bank angle and pitch angle, on the basis of the knowledge received in the class and logical reasoning, the cadets concluded the advisability of a multiple-wire antenna system. The instructor reinforced this with mathematical computations and told them to complete the calculations on their own.

This example contains both a problem question and a problem task, but this separation is purely arbitrary. The important thing is that the trainees themselves follow the process of creating a problem situation and take part in its explanation. They master new techniques of creative activity, learn to find original solutions and develop learning activity.

The concept of "problem situation" is a primary one in problem training. This situation arises in posing problem assignments regardless of whether this is a question or a task. It is characterized by a certain psychological state arising in the trainee is performance of the assignment when known methods of operation are unsuitable and new ones must be found.

In creating problem situations we must consider the rules of problem training. Here are a few of them.

The trainee must be given an assignment where, in the process of accomplishing it he will be able to discover new knowledge or new actions for himself. It is necessary for the assignment to correspond to the trainee's intellectual capabilities, based on the knowledge and ability which he has, and also that it generate in him the need to acquire new knowledge.

The instructor generalizes the situation so that each trainee perceives the problem. Presentation of the material must follow after the problem situation has arisen and must meet a cognitive need.

An assignment which is too difficult is given in the form of successive partial problems. It is important that the first problem situation which arises at the beginning of topic study generates in the trainee the need to learn a general principle. This situation is called the basic situation. The entire system of successive problem situations serves to further reveal the basic task.

The inclusion of individual problems in the training process must not be at random, but must comprise a total system, one of the signs of which is increasing complexity.

And finally, it is necessary for a problem situation in training to always contain something new. The novelty is unquestionably lost if the trainees of different training groups are able to exchange impressions with regard to a given situation.

An important quality of today's aviation specialist is the ability to analyze a large volume of data under a rigid time limit and make a correct decision in a specific situation. Documents on maintenance of aviation equipment do not cover the solution of all probability tasks. Memorization of a vast amount of data also is difficult. And so problem training is designed with consideration of the correctness and swiftness of the decision being made. Training in which the time factor is considered is called dynamic training. It must be an organic part of the training process in practical classes.

There remains a number of theoretical and practical problems which still must be solved. We must determine the relationship of problem and non-problem activities in studying specific disciplines and develop a criterion for assessing training results in problem-solving for comparison of problem training with traditional training, as well as various methods within problem training; we must create training literature reflecting the problem approach to instruction; and we have to organize the training of instructors and generalize experience which has been gained.

The effectiveness of cadets' problem training is fully confirmed. Even now we can say that it permits increasing the scientific level by inclusion of the latest data in training programs; shaping a firm communist outlook in trainees; developing their mental, creative and professional abilities and stimulating interest in training disciplines and in their own specialty; and it helps cadets better assimilate materials.

Inasmuch as the criterion of truth is practice, problem methods of training must be applied in practical classes. Here a great deal of methods work by the instructor and careful consideration of all actions is necessary.

Problem training is best introduced gradually by including problem elements in traditional methods, i.e., solving individual tasks having a low problem level. This will lead to an activation in the cadets' learning endeavors and an improvement in the training process.

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INSTRUMENT-AIDED AVIATION MAINTENANCE DESCRIBED

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1 Aug 78 pp 26-27

[Article by Engr-Col Gen V. Skubilin: "Foremost Experience Into Air Force Engineer Service Practice: Introducing Modern Control Methods"]

[Text] Those times have passed when a visual inspection and report of the pilots or crews on an aircraft's behavior in a previous flight was sufficient for an estimate of technical condition. As equipment became more complex, there was an ever-increasing role for means of instrument control, which were continuously improved and are being improved. Today the requirements reduce primarily to the demand that they be suitable for maintenance and require no complicated checks or laborious adjustments.

Onboard and ground means of control already have firmly entered aircraft maintenance practice. Onboard means include installed means of control (SK) and readings, automated control systems, and analog and discrete recorders. Ground means consist of general-purpose instruments, means of flaw detection, specialized and integrated means of control (KSK), automated means of control (ASK), as well as means for processing onboard recorder data.

Such a broad range of instrument means of control is explained by the complexity and features of contemporary aviation equipment. Aircraft onboard systems are redundant many times over and usually are made multifunctional to increase the effectiveness of combat application of modern aircraft. What is on the whole a positive trend leads, however, to a situation where malfunctions sometimes arising in flight in some redundant devices or a reduction in efficiency do not always have tangible external signs. Therefore flight and technical crews do not notice them up to a certain point, since it is rather difficult to detect these malfunctions visually. This is why installed automated devices or special ground apparatus is provided for rapid checks of the operation of each back-up branch or functional regime not used in flight.

It should be noted that systems included in the onboard aircraft equipment complex have very high precision characteristics. Their normal functioning is ensured, however, only with strict observance of the condition of non-trimming conjugation of systems, sometimes with a number of external devices (such as ground-based radio beacons, control systems and so on). For normal operation of such devices we must above all provide for holding and matching of all chains of tolerances within parameters which determine the capabilities of conjugation, and we must also strictly observe allowable deviations established for parameters affecting the reliability of data put out by the system.

The guarantee of high quality in monitoring the operation of aviation equipment now consists of strict observance of the rules of metrologic support and the use of a large number of precise instruments for checking onboard equipment. In particular, onboard recorders of flight parameters are acquiring increasing importance. They are used not only in the training of flight crews and the analysis of the working capacity of equipment in flight, but also to prevent consequences arising in case of malfunctions of aviation equipment. Their capabilities have increased in connection with the introduction of BTsVM [onboard digital computers] and digital recordings.

Onboard flight parameter recorders register data in all equipment operating modes and throughout the range of altitudes and speeds. Consideration is thus given to nonstandard operating conditions of aviation equipment as well as to modes in which malfunctions occur.

All this requires personnel to understand the processes occurring in the aircraft and engine systems in flight, as well as the corresponding changes in parameters being monitored. Moreover, specialists must know the circuits for shaping one-time commands and analog signals, the interaction between aircraft and engine systems during their operation and the display of these data by data facilities. The specialist must be able to orient himself well not only in general principles, but also in the characteristic signs of their violation involving the appearance of some kind of malfunction in specific aircraft or engine systems, as well as in the onboard recorders themselves. All this obligates engineers of all specialties to be imaginative in analyzing flight data.

Knowledge of installed control facilities and onboard automated flight data recording facilities is of great importance both for ensuring flight safety and for effective personnel training. Opportunities for their use are expanding steadily. While the K2-713 and K2-717 VH recorders and the K3-63 recorder registered two or three flight parameters in the sixties, now such systems as the SARPP-12, the K9-51 and the MSRP-12 are capable of registering up to 12-15 parameters. Photographic films and magnetic tapes protected against the effects of high temperatures and shock loads have begun to be used as data carriers.

The initial operating period of SARPP-12 and MSRP-12 recorders required personnel of the Air Force Engineer Service to take a creative approach to elaborating the methodological principles for using data obtained for increasing the effectiveness of monitoring the technical condition of aviation equipment, flight modes of aircraft and helicopters as well as crew actions in performing the assignment in the air. Monitoring of the working capacity of flying craft and quality of air training of flight crews was organized between flights on the basis of a systematic analysis of SARPP-12 recordings.

It should be noted that even more sophisticated facilities of the flight parameter recording system such as the "Tester" and the MSRP-64 appeared. In comparison with the SARPP-12, they provide even higher quality in monitoring the condition of aviation equipment.

The introduction of new means of between-flight monitoring imposes heightened responsibility on IAS [Air Force Engineer Service] specialists. Now as never before, personnel of the Air Force Engineer Service are required to have a thorough knowledge of technical specifications of onboard recorders and ground data processing facilities, and of the rules for their operation, interpretation and analysis of recorded parameters.

Skillful use of objective monitoring facilities and analysis of the data obtained from them allows timely identification of those deviations in the operation of aviation equipment which cannot be noticed by simple observation during flight. These same facilities help reveal the slightest mistakes made by crews in operating equipment and in performing flying missions. This is why there must be precise observance of the requirement that an aircraft is allowed to take off only when its onboard recorders are fully serviceable and preventive maintenance has been performed on them at the established time.

Engineers V. Petrov, V. Nasonov, V. Osovich, Ye. Giro, V. Minubayev and I. Kuts are real enthusiasts of effective use of modern onboard objective monitoring facilities, and they are experts at thorough analysis of flight data. Thanks to their endeavor and persistence, the onboard objective monitoring facilities are kept in exemplary condition and all the valuable data supplied from the flights are recovered from them. These officers performed genuine research in analyzing recorder data obtained during the flight of aviation equipment.

Study by units of the repetition of effective overloads under actual equipment operating conditions is of great importance. This is important for determining service life of the airframe and propulsion unit, as well as for scientific research establishments.

It is not everywhere, however, that concern is shown for effective use of objective monitoring facilities. There are still cases where aircraft are allowed to take off without a thorough analysis of the working capacity of

equipment from recordings of objective monitoring facilities on the previous flight. Some units have not set up strict supervision over fulfillment of aircraft flying regimes prescribed by the programs, while important data is sent off late to higher echelons and in violation of established requirements.

These shortcomings are encountered in particular in the units where officers O. Neshta, A. Pozdnyakov and Ye. Pavlov are responsible for maintenance of onboard objective monitoring facilities.

We must decisively get rid of the present shortcomings and raise the culture of technical personnel. This is even more important because monitoring facilities continue to develop. Further improvement of onboard recorders is following the line of an increase in precision and number of recorded parameters and recording of the most informative parameters. In this case maximum use of onboard recorders can be achieved if flight data processing facilities are installed directly aboard the flying craft. Prospective systems for recording flight parameters and flight data processing facilities must ensure that signals are put out to the crew when a difficult situation arises and that conversations between crew members and the control post team are recorded. All data must be fully preserved regardless of surrounding conditions, there must be effective and continuous monitoring of the status of aircraft engines and systems, timely detection of a drop in their technical specifications and the output of data for replacement of units.

Important functions now are imposed on ground monitoring facilities which permit the Air Force Engineer Service to successfully accomplish tasks of ensuring reliable operation of aviation equipment. The major portion of ground-based facilities consists of general-purpose instruments and specialized facilities. At the present time they are characterized by further expansion in the application of discrete, digital measurement methods along with the appropriate base of the monitoring facilities themselves. Another characteristic feature is the integrated use of several specialized SK with a general unified work program for checking the inter-related systems of onboard aircraft equipment. For this reason the methodology of performing monitoring operations also is steadily becoming more complicated. For example, in checking the panel of one of the radars, the operator must perform more than one set of ten switchings in a strict sequence. This is why it is now so important for specialists to have high qualifications, to be exceptionally industrious and to take a creative approach to maintaining aviation equipment and monitoring facilities.

Steps are being taken at the present time aimed at reducing the time for checks and at increasing their effectiveness. This is being done primarily through automation of monitoring operations and improvement in programming joint work by specialists of different services aboard the aircraft.

Programs and flow charts worked out for integrated checks considerably consolidate the working time of IAS personnel aboard an aircraft. This approach, however, requires outstanding expertise and precise cohesiveness of actions by all specialists. IAS leaders must pay very serious attention to the forming and training of teams.

Automated monitoring facilities substantially increase objectivity of an assessment of the technical condition of aircraft, and they increase labor productivity. In working with such facilities, however, it is very important to learn to restore them quickly in case they malfunction and also to be zealous in using up the service life of automated units. Performance of upkeep and restoration work must ensure a minimum of non-productive use of service life.

Systematic use of automated monitoring facilities equipped with devices for documenting monitoring results as well as use of discrete onboard flight parameter recorders opens up wide opportunities for collecting and automatic processing of data for the purpose of forecasting the condition of aviation equipment. To solve this problem effectively unit engineers must constantly master contemporary methods of data analysis and statistical processing, and technical personnel must provide for scrupulous collection and storage of data on changes in aircraft or helicopter parameters under different operating conditions.

IAS has various flaw detection instruments for preventing malfunctions involving destruction of force joints in aircraft or helicopter structural elements. The number of methods and means of flaw detection is growing as the operating life of first and second generation jet aircraft is increasing, as well as in connection with the appearance of new types of flying craft. The diversity and complexity of the tasks explains the present introduction of a complex of seven methods of nondestructive monitoring which differ considerably in their essence. Moreover, there still is no one universal method. Each flying craft has its own inherent objects of flaw-detection monitoring.

As a rule, scheduled flaw-detection monitoring is done during the performance of periodic technical servicing. In some cases flaw detection facilities are used to check only individual parts or assemblies in one-time special inspections during periods between technical servicings.

Ultrasonic and radiation methods permit detection of defects in places closed to direct observation. Modern ultrasonic flaw detectors determine the defect coordinates and assess its extent. They identify cracks, non-fusion, pores and other defects in joint welds, in rotor blades of GTD [gas turbine engines], in beams and in frames if their reflective surface is 0.2-1.0 mm². It is possible, from results of radiation inspection (without disassembly of panels), to register wide cracks, such as in a wing spar, bubbles and poor penetration in joints, and to detect foreign objects and moisture in cellular structures. The acoustic impedance method

of inspection detects a breakdown in the glue connections of these structures even over small areas. Optical instruments are used to detect mechanical wear, corrosion damage, holes, fractures, residual strains, coarse and wide cracks and disturbances of protective coatings.

Optical-visual, eddy-current and ultrasonic methods are advisable for inspecting places and parts which are difficult of access. The x-ray method also can be used in a number of cases.

Many years of experience in using flaw detection facilities in units have shown their high effectiveness. Flaw detection instruments must be convenient to use in spite of the fact that all of them are rather complex. As a rule, they are electronic devices. Competent, skilled specialists in flaw detection who are permanently assigned to a specific work sector and who regularly perform flaw detection monitoring have to operate them. In this case they gain experience and improve their expertise.

Training movies and slide films on use of automated equipment monitoring facilities, onboard recorders and flaw detection gear put out by the Ministry of Defense Film Studio are of considerable help in training. In particular, the film course "Nondestructive Methods of Monitoring Aviation Equipment," which includes six films, and also five slide training films on the same subject, intelligibly and graphically present not only the physical principles of flaw detection methods, but they also show methods for using modern monitoring facilities directly on aviation equipment.

As we can see, our Air Force today is equipped with modern, high-capacity means of instrument monitoring which allows providing objective monitoring of the technical status of flying craft and their reliable maintenance in the air and on the ground. It is a very important mission for all IAS specialists to master to perfection modern monitoring facilities and methods and to be able to use them widely and competently for keeping aviation equipment in constant readiness for flying and for assuring accidentfree flight operations.

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AIRCRAFT CREW SERVICE DAY ACTIVITIES DESCRIBED

Moscow AVIATSIYA I KOSMONAVTIKA in Russian No 9, Sep 78 signed to press
1 Aug 78 p 28

[Article by Gds Engr-Maj V. Vysotskiy: "Aviators on Service Day"]

[Text] Recently a group of Air Force Engineer Service specialists headed by Officer V. Anishchenko was presented in a ceremony with the General Designer Challenge Prize for the seventh time. The aviators received this award for competent maintenance of missile-carrying aircraft and for high technical culture and persistence in constantly improving their professional expertise.

In recent years the collective has done a great deal to increase the effectiveness of all preventive measures involving the servicing of aviation equipment. Service days hold an important place among these measures. On these days the aviators accomplish a large range of tasks involving the servicing and maintenance of aircraft systems and assemblies. In particular, there are regular special inspections of equipment, the skills of aviation specialists are polished and training is organized for flight personnel.

Airship commanders, navigators and operators take an active part in the service day. Together with the engineers and technicians they inspect the systems and assemblies of the long-range missile platform and check the functioning of radioelectronic gear and flying and navigating equipment. All this helps improve their knowledge and brings the airmen closer to those who ready the combat aircraft for flight.

Capabilities are expanded on service days for a thorough inspection of the most remote compartments of the missile platform, for which time naturally is not allocated on days of flying or preliminary training. In planning the service day the commander and his IAS [Air Force Engineer Service] deputy take this into account and determine precisely what the personnel have to do at the aircraft hardstand. All this is reflected in the planning table for engineer aviation support for that day.

As already has been noted, personnel training directly aboard the aircraft is given a significant place during service day. Such practices represent one of the effective means for shaping high moral-psychological qualities in specialists and for giving them the ability to maintain the modern missile platform confidently.

Flight personnel reinforce skills in preparing aircraft for flights during service days. I recall the following incident in this regard. During a tactical flying exercise one of our crews had to land at another airfield. The pilots prepared the aircraft for the next take-off on their own. They acquired this ability during service days.

Gds Lt Col E. Basargin, a first-class military pilot and commander of an outstanding squadron, devotes much attention to organizing training on the equipment. Training is conducted at a high methods level and is of unquestionable benefit to pilots, navigators and operators. Prior to this the squadron commander summons the problem directors and instructors without fail and gives them specific recommendations and advice. Training under the following topics was arranged in the subunit just recently: "Crew Actions in Preparing the Engine for Starting," "Checking Machinegun and Cannon Weaponry," "Monitoring Oxygen Gear" and "Starting the Propulsion Unit."

The squadron commander held many practices for the record aboard the aircraft. Not one service day goes by without his participation. Basargin not only sets the personal example for industriousness and persistence in studying equipment, but he also skillfully directs the work of subordinates and strives to make effective use of each hour for improving the aviators' professional expertise. He is imaginative in directing the actions of detachment and crew commanders. The squadron commander, his deputies and the subunit party and Komsomol organizations strive to create an atmosphere of mutual understanding, respect and firm friendship between flight and technical personnel in the collective.

The people serving in the squadron vary in character, habits and level of professional training. They are united by the desire to accomplish difficult missions on the ground and in the air in the best way possible. Therefore on service days the members of flight crews not only inspect equipment carefully, but also actively assist IAS specialists in performing the necessary amount of preventive measures aboard the aircraft. Airship commanders, navigators and operators show exceptional coolness, industriousness and mutual help. The squadron commander and his IAS deputy show constant concern for increasing the methods expertise of officer-instructors. This is one of the reserves for achieving new successes. The subunit has trained skilled mentors and real champions of high technical culture. Among them are officers D. Aksenov, V. Anisimov, N. Samokhin and others.

For example, Gds Capt Tech Serv N. Samokhin, chief of an RTO [radiotechnical equipment] service group, competently combines training operations aboard the aircraft during service days with effective monitoring of their accomplishment by trainees. Under his direction the members of flight crews acquired confident skills in performing such important training practices as "Checking Control of Defensive Weapons from the Machinegun Sight" and "Switching in Electrical Circuits in Autonomous Servicing."

Foremost officer-methodologists use sets of visual aids and technological documentation in holding the training sessions: assignment cards, instructions, technical descriptions, and a list of the most typical mistakes made during practices. Such sets always are at hand.

There are instructive training sessions in which crew actions are practiced when generators malfunction or trouble occurs in the hydraulic system or propulsion unit assemblies. Such incidents are rather rare, and so primary attention in such classes is given to improving the aviators' technical knowledge and expanding their horizons.

The compiling of a planning table for engineer technical support as well as continuous use of a dispatcher system for preventive work conducted at this time had a significant effect on the quality with which the service day was organized. We should primarily highlight the special inspections and detailed checks of the status of aircraft systems and assemblies recommended by higher echelons and the efficient exchange of technical information. Flight personnel also take an active part in this important matter, such as airship commanders V. Fedorov, I. Dolgopolov and others. This considerably increases the effectiveness of preventive measures for aviation equipment.

The commander often assigns experienced officers--and not only engineers, but pilots as well--for purposes of increasing the effectiveness of monitoring the work performed on service day. Once Gds Maj A. Osipov, a first-class navigator, performed the duties of senior member. He noted that the specialists were working on the fuselage without safety lines. The officer reminded the technical crew that ignoring safety measures in working on the modern missile platform could lead to much unpleasantness.

The role of socialist competition is great in successfully accomplishing service day tasks. If it is well arranged, if precise goals have been set for each specialist, if there is an element of competitiveness in pledges and if propaganda of the best persons' achievements is conducted actively, then there is higher effectiveness in aviators' work on service day.

The experience of foremost subunits confirms the great importance of service days for increasing aviators' training, expanding their horizons and ensuring high reliability of all aircraft systems and assemblies in flight.

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AIRFIELD GROUND SUPPORT EFFECTIVENESS DISCUSSED

Moscow AVIATSIYA I KOSMONAVTIKA in Russian No 9, Sep 78 signed to press
1 Aug 78 p 29

[Article by Col L. Nekhoroshkov: "They Support Flights: The Feel of the Airfield Into Classrooms"]

[Text] Socialist competition is widespread in foremost Air Force rear services subunits. Thanks to this, there is an increasing number of outstanding personnel and rated specialists in the subunits. There are more and more officers, warrant officers, sergeants and privates who are mastering related specialties. During flight training the commanders strive to make fuller use of available reserves and capabilities. They are devoting special attention to mastering new equipment, to a steady search for progressive methods of logistical support to aviators' combat training, to keeping airfields in operational readiness and to the effective use of various vehicles and machinery. A primary role in accomplishing these tasks lies with precise planning of classes, the methods expertise of officer-directors and the presence of a modern training facility.

Combat and political training is arranged smoothly in the unit commanded by Maj I. Vasilevskiy. Here tactical-rear services and special classes take place in an atmosphere close to that in which personnel have to operate at the airfield and practice sessions are filled with narrative problems. This leads to the shaping in personnel of such qualities as resourcefulness, initiative and the ability to make a competent decision and implement it with a sudden complication of working conditions.

This unit is seriously concerned for technical training of specialists. Meriting attention in particular is the experience of the motor transport company commanded by Capt Yu. Raykov, a first-class specialist. Here each director of classes and practice sessions is required to be able to show subordinates how to act when a situation becomes complicated during flight support work.

Officer Raykov conducts classes with platoon commanders. He is an active rationalizer and one of the best methodologists in the unit. He does a

great deal to increase the graphic nature of training. Together with WO V. Bolgarin, Sr Sgt V. Mel'nikov and Pvt G. Kiribayev, he made up an electrified diagram of the Ural-375 vehicle and he refitted a traffic safety classroom, especially for airfield traffic safety. The display recreates the most difficult road sectors and crossroads for travel. All this permits the motor transport personnel to operate vehicles and machinery competently and improve their knowledge constantly. As a result, many drivers have increased their class ratings in recent times.

The fact that theoretical matters are tied in with the subunit's missions also leads to success in the classes. For example, in studying the topic "Maintaining and Servicing Airfield Technical Support Facilities in Summer," Engr-Sr Lt A. Peregoroda recognized the best drivers who had an outstanding knowledge of their entrusted equipment and maintained it competently under all conditions. He told of the experience of Sgt A. Kurbanov, Pfc O. Tagayev, Pvt S. Klimenko, Pvt V. Chichenkov and others who are on the right flank in socialist competition.

WO A. Kretov, commander of an outstanding platoon, and Party Member S. Grin', first sergeant of an outstanding company, also hold classes in a methodologically correct manner. They helped many young drivers join formation quickly. The experienced specialists came out as initiators in competition for increasing equipment operating periods between repairs and for saving on fuel and lubricants. They were assisted here by the training facility, which has become a firm base for increasing the effectiveness and quality of combat and political training and for improving the officers and warrant officers' methods expertise.

This is not the situation everywhere, however. For example, the subunit where Sr Lt I. Prikhod'ko serves does little work to improve the training facility, nor is concern shown for its close ties with the subunit's missions. Serious shortcomings have been identified here in training and indoctrination of subordinates.

Capt I. Rogozhkin, former commander of a vehicle maintenance company who had to be relieved from his position, also took a formalistic approach to organizing the training process. But the blame for mistakes also lies with those who were obliged to help this officer, to monitor his actions and to be concerned for his ideological conditioning and technical and methods training.

Heightened demands on the training of military personnel of the Air Force rear require the use of new training techniques and supervision over independent training by specialists along with careful planning. In this regard there is much importance in individual assignments which combine theoretical study of a topic with actual practice of it on the equipment at the working area. In elaborating individual assignments we must observe the tested method of going from the simple to the complex, which ensures continuity and consistency in studying planned topics.

In seeking to achieve an improvement in the organization and methods of training, we must not forget the indoctrinational significance of the training process. It is important to constantly shape high moral-combat qualities in subordinates, otherwise it can happen that a specialist knows his tasks precisely but becomes confused in a difficult situation. This is the cost of training and indoctrination work. The feeling of responsibility, confidence and the ability to overcome difficulties comes during strenuous practice which fully recreates the features of the difficult job of supporting flights by personnel of the Air Force rear.

We also should remember to create good everyday conditions for personnel. Not all officials, however, regard this important matter in the appropriate manner. For example, serious complaints could be made about officers B. Kostyukov and V. Fridman. It was through their fault that a drying room was not outfitted in the airfield maintenance company barracks this past winter.

Speaking at the All-Army Conference on Improving Troop Welfare, CPSU CC Politburo Member and USSR Minister of Defense Mar SU D. F. Ustinov noted: "We must organize matters so that, under any conditions, the soldiers have a place for warming themselves if they are cold, a place for shelter from the heat, and a place where it is possible to eat normally, spend free time culturally and, if necessary, have a good class."

Personnel of the Air Force rear are working to accomplish important tasks in the jubilee year of the Soviet Armed Forces. By improving personnel training and the conditions for training, military labor and everyday living, we can achieve outstanding support to each flight section.

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NAVY DAY: CAPABILITIES OF PRESENT-DAY NAVY

Moscow AGITATOR ARMI I FLOTA No 13, Jul 78 signed to press
26 Jun 78 pp 1-6

[Article by Vice Admiral P. Navoytsev, First Deputy Chief of the Main Naval Staff: "The Soviet Navy's Oceangoing Watch"]

[Excerpts] On 30 July the Soviet people and its armed forces celebrate Soviet Navy Day. This will take place in the atmosphere of an enormous upsurge of political and labor activity connected with the historic decisions of the 25th Congress of the CPSU, the adoption of the Constitution of the USSR and the basic laws of the union republics and the celebration of the 60th anniversary of the Great October Socialist Revolution and the jubilee of the Soviet Armed Forces.

In speaking about the party's extensive program for the five-year plan and the distant future, Comrade L. I. Brezhnev pointed out at the 13th Komsomol Congress that it was entirely "subordinated to one goal: that the Soviet people be able to live still better and more fully and happily and that we be able to advance still more confidently toward our bright goal--communism."

As it sets out the tasks to be accomplished for the economic and socio-political development of Soviet society, the Communist Party tirelessly concerns itself with strengthening the country's defense. It is legislatively established in the Constitution of the USSR that the Armed Forces of the USSR are duty-bound to "provide a reliable defense of the socialist fatherland and to be in a constant combat readiness guaranteeing an immediate rebuff to any aggressor." Deeply conscious of their duty to the people, Soviet seamen are standing a vigilant watch over the achievements of socialism and providing a reliable defense of the maritime boundaries of the fatherland.

The entire 60-year history of the Soviet Navy is inseparably connected with the glorious history of our state, with its

victories over its enemies and with its successes in peacetime construction. During the years of struggle against the autocracy and the bourgeoisie, the Bolshevik Party relied confidently on the revolutionary temper of the sailors.

The modern-day Soviet Navy is a qualitatively new branch of the Armed Forces, oceangoing, nuclear missile-equipped and capable of accomplishing strategic and operational tasks in all naval theaters of military operations. The navy accomplishes these tasks both independently and jointly with other branches of the Armed Forces. Our navy can destroy important enemy land facilities and his forces at sea and in their bases, support ground forces in amphibious landings, repulse landings of enemy forces, disrupt enemy ocean and sea communications and protect our own communications.

The creation of the modern-day Navy became possible only on the basis of the scientific-technical revolution, thanks to the selfless creative work of scientists, designers, engineers, technicians and workers. Soviet nuclear-powered missile-carrying submarines occupy a leading place in the make-up of the navy. These are versatile vessels, which are capable of engaging enemy naval strike forces and destroying vitally important land facilities on his territory. Under the permanent ice of the Arctic Ocean as well as in tropical latitudes, Soviet nuclear submarines have demonstrated excellent seagoing qualities, remaining at a high level of readiness to deliver a strike against an enemy.

The combat capability of naval aviation has been significantly enhanced. Provided with missile-carrying jet aircraft, ASW aircraft and helicopters, it has become truly oceangoing and has developed into the most important means of combat at sea.

Surface vessels are an important arm of our naval forces. Missile-carrying and ASW cruisers; ASW, mine countermeasures, and landing ships and missile-carrying boats equipped with the latest weapons can accomplish a variety of military missions in action against enemy surface vessels, submarines and aviation.

The naval infantry, which became famous for its victories during the Great Patriotic War, has been reconstructed on a new technical base. It is now capable of making independent strikes against enemy forces and providing support for its own ground forces.

Shore-based rocket-artillery units (chast') provide defense for naval bases and other facilities on shore against enemy naval attacks. They are provided with missile complexes capable of destroying enemy ships at sea at great distances from the facilities being defended.

The Soviet Navy's most valuable possession is its personnel-- ideologically tempered; limitlessly devoted to party and people; resolute, strong-willed men who have gone through the tough naval school. Soviet seamen are always prepared, weapons in hand, to defend the achievements of October. With assurance they handle modern-day equipment and apparatus and operate missile complexes and the most complicated instruments.

Party-political work plays an important role in the development in Soviet seamen of high moral-political and military qualities. Since the 25th Congress of the CPSU it has become richer and more varied in content. Naval communists, Komsomol activists and agitators have widely propagandized for our Leninist theoretical heritage, the decisions of the 25 Party Congress and the December (1977) Plenum of the CC CPSU and the Soviet Constitution. Our naval personnel are studying with great enthusiasm the speeches given by Comrade L. I. Brezhnev at the 23^d Komsomol Congress and the gala meeting in Minsk for the occasion of the presentation to the hero-city of the Order of Lenin and the Gold Star medal and his books "Malaya zemlya" and "Vozrozhdeniye" [Rebirth].

The agitational-propaganda work conducted in subunits (podrazdeleniye), aboard ships and in units (chast') is closely bound up with tasks accomplished by personnel. Among those making a noticeable contribution to improving the quality of military training are naval propagandists Captain 1st Rank S. Shakhov, Captain 3d Rank P. Tereshchenko, Captain-Lieutenant V. Kudryashov and many others. By the force of the party's voice and their personal example they mobilize military personnel for an irreproachable fulfillment of their constitutional duty to the motherland, the tightening of discipline and the further raising of the level of combat readiness and vigilance.

Soviet seamen saluted the 60th anniversary of the Armed Forces of the USSR with high ratings in military and political training. The celebration of this important date has given new impetus to socialist competition. According to the results of the winter training period, the best ratings were achieved by the submarine "Yaroslavskiy Komsomolets," the cruiser "Murmansk," the large ASW ship "Ochakov" and the units in which serve officers N. Avvakumov, B. Skvortsov, N. Kuznetsov and V. Yakovlev.

Naval personnel are always aware of the concern of the party's Central Committee and Marshal of the Soviet Union L. I. Brezhnev, General Secretary of the CPSU Central Committee and chairman of the Presidium of the Supreme Soviet of the USSR, who devotes unremitting attention to strengthening the country's defense. In accordance with the instructions Leonid Ilich gave during the course of his trip through regions of Siberia and the Far East, they will continue in the future to increase their mastery of combat skills and their level of military training and improve their political training.

Waving proudly over the ocean expanses is the flag of the Soviet Navy. Our seamen stand a vigilant watch in a variety of latitudes, protecting the national interests of the Soviet Union.

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COMMENTS ON U.S. ACTIVITIES IN THE INDIAN OCEAN

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[Article by Captain 1st Rank T. Belashchenko: "Pentagon Tentacles in the Indian Ocean"]

[Text] Early on a March morning in 1971 an American squadron approached Diego Garcia, an island lost in the central Indian Ocean. Constructed here in the course of almost 5 years were port facilities capable of maintaining attack aircraft carriers and nuclear-powered missile-carrying submarines, a large air field for strategic and patrol aviation, a long-range radio communications center and other military facilities.

By 1975 the base was being widely used by the American military for supporting the activities of the U.S. armed forces in the Indian Ocean and surrounding regions; carrying out wide-ranging espionage operations directed against other countries, primarily against the maritime traffic of the Soviet Union and other socialist countries; and for the purpose of interfering in the affairs of the countries of Asia and Africa. In particular, the ships and aircraft based here are used by the Pentagon to support Israel in its aggressive actions against the Arab states; and they have played their filthy role in providing arms deliveries to the ruling circles of Somalia during its attack on Ethiopia and in other aggressive actions.

This imperialist beachhead, which has been established by the enemies of peace on the island of Diego Garcia, which belongs to England, is only one element of the Pentagon's aggressive strategy in the Indian Ocean basin, the strong point of the ring-leaders of NATO, who are attempting to expand their military presence here to the maximum extent.

A squadron of the U.S. Navy is always deployed in the Indian Ocean region, finding anchor primarily in the American bases which have been created on the Bahraini Islands (Manamah), in Saudi Arabia (Dhahran) and in Qatar (Doha).

"Business contacts" are developing on an increasingly wide-ranging basis, which also include those in the military area between the U.S. and the racist regime of the Republic of South Africa. Reactionary circles in the U.S. attach no little importance for safeguarding their military positions in the Indian Ocean basin to the antipopular regimes in Israel and Egypt.

So the Pentagon has now spread its tentacles over virtually the entire enormous water area of the Indian Ocean and surrounding regions. Basing themselves on their network of military bases, as well as on those of other countries the Pentagon has drawn into antipopular military blocs, American imperialist circles are becoming increasingly active in their effort to consolidate their position in the Indian Ocean region.

In addition to the U.S. naval forces deployed in the Persian Gulf, other American ships have also regularly been found here in recent years, including attack aircraft carriers and missile-carrying submarines sent from the Atlantic and Pacific Oceans. The Pentagon is now working intently on the problem of creating in the Indian Ocean a permanent American task fleet like the 6th Fleet in the Mediterranean Sea and the 7th Fleet in the western Pacific. Maintained here for this purpose are substantial forces of land-based aviation deployed on Diego Garcia, in the Republic of South Africa and other areas, while large naval task forces are periodically sent into this area. In March-April 1978, in particular, there was a force in the Indian Ocean composed of a missile-carrying cruiser, two frigates and other vessels, while somewhat earlier a U.S. naval carrier attack group and other forces were operating in this area.

Washington's effort increasingly to expand its military presence in the Indian Ocean comes as a result of an entire series of factors: economic, political, military and others. American capital lusts intensely after the enormous natural and economic resources of the Indian Ocean region. For it is here, as we know, that is concentrated more than half of the proven petroleum reserves in the nonsocialist part of the world, produced the bulk of natural rubber and extracted a substantial amount of tin ore and other minerals.

American imperialism strives greatly to dominate the most important trade routes passing through the Indian Ocean and connecting Western Europe and America with the countries of southeast Asia and the Far East. It is characteristic, in this regard, that, as

declared to a correspondent of the newspaper AMRITA BAZAR PATRIKA by an Indian government spokesman, during the period 1963-1965 the U.S. Central Intelligence Agency set up and maintained on the Andaman and Nicobar Islands, which belong to India, spy equipment for surveillance of ships and submarines in the Indian Ocean. This equipment was located on the islands of Koihoa, Trinkat and Little Nicobar, as well as mounted on floating buoys.

Imperialist circles in the U.S. attempt to cover over their far-reaching aggressive designs with all possible "objective reasons," one of the primary ones of which is the time-worn fantasy of an alleged "necessity" for the West to counter a "Soviet threat," some kind of a "Soviet danger," which also exists in the Indian Ocean basin. An example of this kind of propaganda, clearly intended for the man-on-the-street duped by bourgeois demagogy, can be provided by the review of a certain Bratcher published in the American newspaper WASHINGTON STAR, which calls on the ruling circles of America to "employ American military power in the area of the Persian Gulf and other zones of the Indian Ocean region" in case of a "direct Soviet threat to Near Eastern oil and American interests in this region."

Today this antipopular policy is more and more often meeting with resistance on the part of the popular masses and broad circles of society, especially in the countries of Asia and Africa, the peoples of which have had many chances to see that the Soviet Union not in words, but rather in deeds comes out for the limitation of military activities in the Indian Ocean basin and for its transformation into a zone of peace. This in particular was the subject of a special memorandum introduced by the Soviet Union for consideration by the UN General Assembly in 1976, as well as of a number of other proposals by the Soviet Union. "Recently," emphasized Comrade L.I. Brezhnev, "proposals have multiplied in a number of countries that the Indian Ocean region not become an arena for the creation of military bases by one power or another. We sympathize with this proposal. As far as the Soviet Union is concerned, we have not planned, nor do we plan, to build military bases in the Indian Ocean. And we call on the United States of America to take the same position."

The Soviet Union's peaceloving, practicable proposals and its consistent effort to assure the peace and security of the peoples are receiving acceptance and support from the broadest circles. But it has nevertheless to be said that the situation in the Indian Ocean basin, just like the situation in a number of other regions of the world, fills the peaceloving forces with **serious** apprehension. The activities of reactionary circles in the U.S. and the highest military leadership in the Pentagon are looked upon as a direct threat to the peace and security of the peoples. "The creation of new military bases by the U.S.

in the Indian Ocean basin," writes the journal FAR EASTERN ECONOMIC REVIEW, "represents a continuation of the policy of the United States as the world policeman."

All this compels the peaceloving forces to demonstrate daily their concern for strengthening their defense capabilities and to follow attentively the intrigues undertaken by the enemies peace, including those in such an important strategic region as the Indian Ocean.

Meanwhile, observed A. A. Gromyko, member of the CPSU Central Committee Politburo and USSR Minister of Foreign Affairs of the USSR at a special session on disarmament of the U.N. General Assembly, we still have before us the question of "freezing" military activity in the Indian Ocean at the current level. This is only a beginning, of course. After this we will be ready to search for ways to make decisive reductions in this activity, including the liquidation of foreign military bases. So the idea of turning the Indian Ocean into a zone of peace, which the littoral states have proposed and which has been supported by a majority of U.N. member-countries, is taking on increasingly concrete form.

The Soviet Union, which is interested in the security of its southern borders, in the maintainence and expansion of world trade, in the strengthening of international economic and political ties, in the development of world navigation, and in the expansion of all contacts between countries, including the countries of the Indian Ocean basin, is devoting considerable effort to insure a positive resolution of controversial international problems and a further development and extension of the process of the relaxation of tension in relations between countries with different social systems. At the same time we are carefully watching the activities of aggressive forces and closely observing their intrigues in different parts of the world. The Soviet Union, the other socialist countries and their armed defenders are standing a vigilant watch over the interests of the peace and security of the peoples.

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ACTIVITIES OF RAILROAD TROOPS RELATED

Moscow AGITATOR ARMI I FLOTA in Russian No 17, Sep 78 signed to press 28 Aug 78 pp 20-23

[Article by Lt Gen Ya. Mayorov, member, Military Council; Chief, Railroad Troops Political Directorate: "Soldiers of the Steel Highways"]

[Excerpts] The soldiers of the steel highways have for six decades loyally served their people under Communist Party guidance. They made a worthy contribution toward the defeat of foreign intervention and domestic counter-revolution during the civil war years, to victory over the German-fascist invaders in the Great Patriotic War, and toward strengthening the economic and defense might of the socialist state.

"The victorious advance of the Red Army," stated the Republic Revolutionary Military Council Order dated 31 January 1921, "was facilitated to a substantial degree by the conscientious and selfless efforts of the railroad units in restoring to service the vital lifelines of the army in the field -- the railroads.

"In the marshes of the Polesye, in the deserts of Turkestan, in the gloom of the Murman arctic night, on the ice and in the snow, railroad units, inspired by revolutionary enthusiasm, gave all their energy to their work, accepting all deprivations patiently and without complaint.

"The Red Army will not forget the assistance rendered by the railroad troops in its difficult struggle. On behalf of the Red Army, the Republic Revolutionary Military Council declares its gratitude to the railroader enlisted personnel, command personnel and commissars of the Republic's railroad troops."

When the civil war came to an end, the railroad troops were enlisted in the task of rebuilding transportation, and during the years of the first five-year plans they gained practical experience in surveying and constructing new rail lines. The first survey activities on the future BAM route from Sovetskaya Gavan' to Komsomol'sk-na-Amure was conducted in the 1930's by detachments of the Special Railroad Troops Corps.

The homeland highly praised the labor and combat heroism of the military railroaders. Twenty-eight men were awarded the title Hero of Socialist Labor, while tens of thousands of persons were awarded decorations and medals.

The wealth of combat experience and the glorious fighting and labor traditions of the railroad troops continued to grow in the first postwar years. Carrying out the state plan for construction of rail lines and at the same time improving their special skills, the railroad troops built thousands upon thousands of kilometers of new lines and second tracks, as well as various types of bridges and culverts. The Abakan-Tayshet, Ivdel'-Ob' and other lines became landmarks in the history of the railroad troops of those years.

A decision by the CPSU Central Committee and USSR Council of Ministers to enlist the railroad troops in construction of the Eastern division of the Baykal-Amur Mainline was a major event for the railroad troops. The vast scale of the route, the complexity of the engineering, the unusually tight schedule for achieving the stated objectives, and the harshness of the weather and natural environment -- all this demanded extreme organization and discipline, mobilization of all energies and resources, a high degree of skill and solid volitional toughening on the part of personnel.

From the very first days on BAM commanders, political workers, party and Komsomol organizations, employing all forms and means, made the men aware of the importance of the tasks assigned them and helped them comprehend and determine their place in accomplishing the specified plans. Through their selfless labor the military men working on the BAM are justifying the confidence of party and government.

This remote taiga region has changed unrecognizably in the last 4 years. On sites where the first tents stood, there stand today well-constructed housing and service buildings, arrow-straight cleared stretches extend ever deeper into the taiga, and roads are being built. Hundreds of kilometers of main line have been laid, and dozens of bridges and culverts have been constructed. Work trains travel from Tynda to Mareva and from Urgal to Suluk. The Tynda-Zeysk haul road running along the line is open to through traffic.

The year 1977 -- year of the 60th anniversary of the October Revolution and adoption of the new USSR Constitution -- became especially memorable in the biography of this great project. It became memorable due to historic events taking place in the Soviet Union, as well as labor victories.

Military construction crews on BAM worked under the most difficult conditions. For example, the line workers of the subunit under the command of Maj V. Nesterenko laid track across the steep slopes of the Dusse-Alinskiy range. In laying the roadbed through the mountain fastness they were compelled to drill hundreds of meters of blastholes in solid rock in order to blast their way through the rock obstacles blocking their way. Once a heavy downpour began

during blasting operations. Murky torrents rushed down from the mountain heights above. The drilling rig crews were ordered to move to the next rock blasting site and continue operations. The risk was great: they had to climb 30 meters up a steep and slippery mountain slope.

The first to volunteer was Komsomol member Pvt V. Rynzin. His commander gave permission. The drilling machine crept slowly upward, its tracks tearing loose a thin layer of moss. Occasionally it would slip on exposed permafrost and slide downward. But the escorting soldiers were vigilant. They used rocks, poles and branches. The difficult and hazardous climb took more than an hour. The soldiers' courage triumphed.

Performance results in the jubilee year attest to the fact that the military personnel on the BAM project did a good job. This became possible thanks to the fine organizational and political work performed by commanders, political workers, party and Komsomol organizations of the units and sub-units. Our leading officers -- K. Kurochkin, B. Shkibtan, M. Gafurov, I. Uretskiy, and A. Kartusov -- demonstrated the ability to mobilize personnel for selfless labor and exemplary performance of responsible tasks.

The labor of the railroad troops was highly praised by party and government. Many received coveted decorations. Personnel awarded the "For Construction of the Baykal-Amur Mainline" medal included officers Yu. Abramov, R. Sidoruk, Yu. Tsyganov, Sgt V. Dobryakov, Pfc V. Pastukhov, Privates A. Alekseyev, M. G. Grigoryants, and others.

This year, the year of the 60th anniversary of the Soviet Armed Forces, the men are picking up the work pace and are vigorously participating in socialist competition. A new upsurge of labor enthusiasm in the builders of the Baykal-Amur Mainline was evoked by a get-together between CPSU Central Committee General Secretary Comrade L. I. Brezhnev, Chairman of the Presidium of the USSR Supreme Soviet, and the pioneer builders of the taiga rail line, his speech at the 18th Komsomol Congress, his report at the July (1978) CPSU Central Committee Plenum, and the plenum decisions. The military railroaders are filled with resolve to consolidate the labor enthusiasm and rhythm of the jubilee year, to complete the target for the first three years of the five-year plan by the first anniversary of the USSR Constitution, and to lay 170 kilometers of track in 1978. The movement for ahead-of-schedule completion of annual quotas by all excavator crews, mastery of adjacent occupational specialties, and high quality of completed facilities is expanding day by day. Many men are already working on 1979 targets.

Taking part in construction of the mainline, military railroad troops are working hard to achieve excellent quality of combat and political training, are working to master new equipment and technology, and are becoming experts at their job. Enlisted men, noncommissioned officers, warrant officers and officers are aware that increase in troop combat readiness and accomplishment of production targets are closely interlinked. This is dictated by the necessity of further strengthening the military-economic might of the Soviet state and improving the combat readiness of its Armed Forces.

Honoring their jubilee in a worthy fashion, the men of the railroad troops are increasing their efforts in accomplishing their assigned tasks. The soldiers of the steel highways see as their duty successful implementation of the historic resolutions of the 25th CPSU Congress, increased vigilance and combat readiness, and reliable defense of the building of communism.

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HISTORY OF THE 'ORDER OF VICTORY'

Moscow AGITATOR ARMI I FLOTA in Russian No 18, Sep 78 signed to press
12 Sep 78 p 21

[Article by Docent Col N. Savichev, Candidate of Historical Sciences: "Highest Military Decoration"]

[Text] The Order of Victory is the highest military decoration.

The Order of Victory was first awarded in the spring of 1944, a year of decisive victories on the battle fronts of the Great Patriotic War. On 10 April 1944 the Presidium of the USSR Supreme Soviet awarded this decoration to Mars SU G. K. Zhukov and A. M. Vasilevskiy, representatives of Headquarters, Supreme High Command. Order of Victory No 1 was awarded to G. K. Zhukov. On 28 July 1944 this decoration was awarded to Supreme Commander of the USSR Armed Forces I. V. Stalin. In 1945 this highest military decoration was awarded to Mars SU I. S. Konev, K. K. Rokossovskiy, R. Ya. Malinovskiy, F. I. Tolbukhin, L. A. Govorov, S. K. Timoshenko, K. A. Meretskov, and Army Gen A. I. Antonov, Chief of the General Staff. Generalissimo of the Soviet Union I. V. Stalin and Mars SU G. K. Zhukov and A. M. Vasilevskiy were awarded this decoration a second time in 1945.

In addition to 11 Soviet military commanders, the Order of Victory was awarded to five foreign military leaders from the nations of the anti-Hitler coalition.

On 20 February of this year, at a solemn ceremony in the Kremlin, the Order of Victory was awarded to CPSU Central Committee General Secretary Mar SU L. I. Brezhnev, Chairman of the Presidium of the USSR Supreme Soviet and Chairman of the USSR Council of Ministers. Comrade L. I. Brezhnev was awarded this highest military decoration for his great contribution to the victory of the Soviet people and its Armed Forces in the Great Patriotic War, for his outstanding services in strengthening the nation's defense capability, and for drafting and consistent implementation of the peace-seeking foreign policy of the Soviet state, which reliably ensures this country's development under conditions of peace.

Awarding of the Order of Victory to Leonid Il'ich Brezhnev took place on the eve of the 60th anniversary of the Soviet Army and Navy, and this is profoundly symbolic, for our country's defense capability, the might of the Soviet Armed Forces and the name of Comrade L. I. Brezhnev are inseparably linked.

The Order of Victory is awarded only by ukase of the Presidium of the USSR Supreme Soviet.

As a mark of special distinction, the names of those persons who have been awarded the Order of Victory are being inscribed on a special memorial tablet which is being placed in the Great Kremlin Palace.

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RECONNAISSANCE TRAINING OF HELICOPTER PILOTS DESCRIBED

Moscow KRYL'YA RODINY in Russian No 9, Sep 78 signed to press 14 Aug 78
pp 12-13

[Article by Sr Lt V. Usol'tsev: "Helicopter Reconnaissance Personnel"]

[Text] ...The exercise was proceeding on schedule. Personnel involved included ground troops and us helicopter crews. We were hauling supplies and personnel, delivering deep reconnaissance teams, providing communications and control between subunits, and performing other missions. We would frequently receive various scenario changes, and then the crews would be summoned to the regimental commander for assignment of an unscheduled mission.

This time the loudspeaker barked out our names. Capt Anatoliy Komov and I, grabbing our navigation charts, left the briefing room. An officer, the ground troops representative, was sitting with the regimental commander in his office.

"Let's see a map covering the exercise area!" the commander ordered and, spreading it out on his desk, checked carefully to see if everything was marked on it. The map portrayed the tactical situation: the "Red" force, seizing the initiative, was readying for a decisive attack; the "Blue" force was redeploying under cover of air defense weapons. Casting an inquisitive glance our way, the tanker said: "Our subunits are to mount a tank attack.... In order for this attack to be successful the command needs precise information on the disposition of the 'aggressor' troops on the forward edge of the battle area and to the immediate rear. Fighters were to handle the reconnaissance, but they have been given a different mission. Therefore we are counting on you. According to intelligence obtained by ground reconnaissance, 'aggressor' tanks are located here." The officer took a sharp pencil and circled on the map a green spot designating a grove of trees. "Armored personnel carriers and infantry combat vehicles are assembled here, by this creek. Blue force missiles are located somewhere in the vicinity. We have not yet been able to spot them. This is also part of your mission."

The officer took his gaze from the map and, looking over at us, continued: "You understand how important this information is, particularly just prior to

an attack. In addition we must determine the location of troop massing points in this area here," he drew a large circle on the map with his pencil, "and the direction of movement of 'aggressor' columns. Once again determine the disposition of antitank batteries on the forward edge of the battle area: the Blue force may redeploy them at the last minute. The tank crews must definitely have this information." And he repeated: "We are counting on you, comrades."

Half an hour remained to departure. It was sufficient time to think about how better to accomplish the assigned mission and what tactics should be employed. Komov and I carefully weighed all the pros and cons, realizing that the results of our mission would determine not only the success of the tank attack but also human lives, if one were assuming that this was actual war, not an exercise.

Reconnaissance of the adversary's forward positions is rightly considered a complex task. And it is not only the danger of being under fire by all kinds of weapons, including small arms; the difficulty lies in the fact that within just a few minutes of time above the enemy's positions it is difficult to spot his carefully-camouflaged and concealed equipment. Without good knowledge of telltale signs and proper practical skills, one could spend an entire hour circling over enemy positions, and the result would be zero. These skills are gained through practice and hard training.

...I recall that first air reconnaissance mission on the "aggressor's" forward positions.

"You will go along with Captain Kulev. It will be instructive. Theory alone is far from sufficient for air reconnaissance personnel. Practical experience is necessary," the commander said, and added the following advice: "Carefully watch everything the pilot does. Observe how he approaches the battle line, how he maneuvers when the helicopter is taking ground fire, how he flies his approach to the objective. Pay close attention to his preflight preparation. In short, try to extract maximum benefit from the mission."

But I, quite frankly, was thinking to myself at that moment: "What is so complicated about it? You go to the objective area, spot targets, mark them on the map, and head for home." I even remembered from tactics classes that a single tank can be spotted at a distance of 1.5-2 kilometers from a height of 200 meters, while a truck or tank column can be spotted at a distance of 3.5 kilometers....

The mission called for spotting a tank and motorized rifle subunit, which the "aggressor" had moved to the "battle line" the previous night.

"How are we going to approach the objective?" Captain Kulev asked, as if taking counsel with me.

"It is probably best to approach from the rear," I replied immediately.

"That is of course correct," Vasilii Antonovich approved. "But in what sector shall we cross the 'battle line'?"

I thought about it, examining the tactical situation in the exercise area depicted on the map, and pointed to the sector I would choose.

"Substantiate your decision," Kulev ordered.

"There is a weak point here in the 'aggressor's' antiaircraft defense."

"Yes, this is the weakest point," the captain replied, "but you fail to take into consideration the 'aggressor's' small arms and have forgotten that in each of his subunits there are antiaircraft gunners trained in firing both at fixed-wing and rotary-wing aircraft. I plan to cross the 'battle line' in this sector here," the captain decided and indicated the point.

"Yes, but there is an antiaircraft missile battery here, designed to hit air targets," I retorted in surprise.

"But it too has its weak points. We shall exploit them," the captain replied and proceeded to explain. He then added: "When crossing a 'battle line,' do not forget to maneuver. And not simply for the sake of maneuver but, as they say, scientifically," and Vasilii Antonovich showed me a prior-calculated speed maneuver table. "And we shall utilize the sun. When we are in this sector, it will be coming up from behind the mountains, and the 'aggressor' will have a hard time spotting us."

Then the experienced air reconnaissance pilot explained to me in what locations our targets might lie concealed. And I was amazed at how skillfully the pilot had provided for every single item, how he had taken into consideration every single item which would seem trivial. When I mentioned this, Kulev replied: "Otherwise you cannot count on success. The air reconnaissance pilot must possess good knowledge of tactics, the armament of the presumed adversary, the performance characters of one's helicopter and indications giving away camouflaged equipment on the ground below. Only by combining this knowledge with practical experience can one become a reconnaissance pilot."

We took off. Captain Kulev precisely executed the plan elaborated on the ground. We approached the "battle line" at low altitude. As we approached it we spotted an "aggressor" fighter in the air. He would not spot us: the green helicopter, flying low over the ground, merged with the green background of the spruce forest. Just to make sure, however, we kept an eye on him and were prepared to execute an evasive maneuver at any moment. We crossed over a low hill, coming out of the sun, and dipped into a gorge, disappearing from the field of view of the "aggressor" infantry and surveillance radar. The ground flashed past in varicolored patches, seemingly at the very wheels of the helicopter. Occasionally the pilot would climb, peruse the terrain, and again dive toward the treetops.

"There they are, the tanks are dispositioned by the lake," Vasiliy Antonovich exclaimed, pleased that his suppositions had proven correct.

In reply I merely shrugged my shoulders. I had noticed no tanks by the lake.

A few minutes later Kulev turned the helicopter back toward the home field.

"What about the motorized riflemen? We are supposed to be looking for them too," I reminded the captain.

"They are in the woods by the road fork!" the captain replied in surprise. "Didn't you see them?" Then, aware of my chagrin, he said consolingly: "That's the way it is with everybody the first time out. When we are back on the ground I shall explain everything in detail."

Reporting mission accomplished, we headed for the briefing room. Vasiliy Antonovich proceeded: "The tanks are well concealed, but if you look carefully you cannot help but notice the difference between the bright-green vines along the shore and the vines concealing the tanks. They are not so vividly fresh looking, as they have dried out somewhat overnight. The marks of tank tracks are clearly visible in two places. A soldier wearing black coveralls was scooping water out of the lake...."

"And how did you spot the motorized riflemen in the woods?"

"I saw a few sun flashes from vehicle windshields. And there was a field kitchen set up in a patch of young forest. It was too big for a small sub-unit. And there was the radio antenna," the captain went on. "And all the vehicles were close to a good road, although armored personnel carriers have good off-road capability."

Listening to Captain Kulev, I was amazed at how much he had been able to spot and identify. He said: "Log some more hours in the air, listen to some experienced people, and you also will be able to do it. The fact is that conversation with veteran pilots is just as useful as actual training missions. They can tell you all the clever devices which help successfully accomplish an assigned mission and about all the tricks the 'aggressor' is capable of utilizing to confuse a pilot!"

But ability, said Captain Kulev, is only part of what the reconnaissance pilot should acquire. He should also develop aggressive qualities, so that he will not tremble under heavy enemy fire and if necessary will be able boldly to engage hostile aircraft and helicopters. In addition, he should be prepared for extended flight at low altitude, day and night....

That first reconnaissance mission and detailed discussion with Captain Kulev took place a long time ago. Now, after being assigned a task by the officer-umpire, Captain Komov and I were thinking about how best to accomplish the mission. "The weather will help," stated Anatoliy Ivanovich. "With haze we can reach the target with the element of surprise."

"But it will also be more difficult to find the target," I replied to the commander.

He agreed and at the same time retorted: "Nevertheless this weather is just what we need."

I had to agree. For an experienced pilot, flying in any and all weather, it requires only seconds to get over the objective, spot the target and memorize the required information. But the "aggressor" requires more time to open fire on a helicopter which has suddenly appeared over his positions. Also helping gain the element of surprise is the fact that the sound of a low-flying helicopter is similar to that of a tank or truck, while it can be visually spotted only in the last few seconds when flying low and in thick haze. In addition, in bad weather it is unlikely that anybody other than observers will be watching the sky.

Precisely at the designated time we taxied out and took off. A minute later checkerboard fields and forest clearcuts, streams and gray winding roads, dim in the bluish haze, were passing under us.

"This is 44, over point of departure. Altitude.... Heading.... Request mission clearance," reported Captain Komov.

"44 cleared for mission."

Receiving the go-ahead, we descended. We were close to the ground and tree-tops. It is not easy to pilot a helicopter under such conditions, and visual orientation was also more difficult. On the other hand, we could not be seen by the vigilant eyes of the "aggressor" radar operators. En route we made use of every terrain irregularity, every ravine and gorge. We had thoroughly studied their configuration while still on the ground. When crossing the "battle line" we executed evasive maneuvers against anti-aircraft guns and missiles, simultaneously altering speed, altitude and heading.

The "aggressor" was obviously not expecting a helicopter to appear in such dank weather, and we got across the "battle line" without incident. The entire crew was keeping an eye open. We constantly maneuvered, bypassing high ground and areas with strong anti-aircraft defense.

We noted that the Blue force tanks had remained in the trees, while the infantry combat vehicles and armored personnel carriers had moved to a new location. We radioed this information to the command post. We were also able to fix the location of Blue force antitank batteries on the forward edge of the battle area.

Frequently during a reconnaissance mission pilots also receive "scenario changes" from the "aggressor." This mission was no exception. We overflew all the conjectured locations where the missile subunit might be, but without result. The missile crews seemed to have disappeared from the face of the earth.

"Could they be concealed in the ravine?" Komov conjectured. "But the slopes are steep."

"Calculated risk is the handmaiden of success. In war you have to take risks," I replied to the captain.

We headed the helicopter toward the ravine. We could not see the ravine bottom through the heavy tree crowns and thick brush. There were no signs of smoke or lights anywhere in the vicinity. We suddenly began to wonder if we had been right. We brought the helicopter a little lower. Suddenly we spotted tire tracks running across a meadow still wet from the rain of the previous night. The tracks headed into the ravine. In an opening between the trees we could just make out a steel missile body....

Our mission accomplished, we headed for home.

...Somewhat later we learned that the Red force tank attack had been successful. Our labor was partly responsible for the success. "Nice, isn't it?" Komov said. "Very nice," I admitted to the captain.

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