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USSR Report

MILITARY AFFAIRS

No. 1803

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6 October 1983

USSR REPORT MILITARY AFFAIRS

No. 1803

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MILITARY-POLITICAL ISSUES

PARTY ORGANIZATION AND COMBAT TRAINING

Moscow SOVIET MILITARY REVIEW in English No 8, Aug 83 pp 14-15

[Text]



IN every unit and ship of the Soviet Armed Forces there is a Party organisation made up of Communists — officers, praporshchiks, mitchmans, sergeants, starshinas, soldiers and seamen.

The main task of army and navy Party organisations is to implement Party policy and requirements of the CPSU Programme on a high level of organisation and discipline in the Armed Forces of the USSR and on exemplary execution of missions by servicemen. It is the duty of every Party organisation to keep abreast of all matters bearing on combat training and political education, to broaden the technical knowledge of servicemen and to advance their military competence and combat skills. Keeping abreast of matters bearing on combat training means to know the level of combat proficiency of the unit (subunit), regularly to study and analyse the progress made in training and upgrade the study process.

To ensure success in its work the Party organisation must maintain close contacts with the unit commander and his deputy for political affairs. The commander briefs the Communists on the tasks, achievements and shortcomings in combat training and political education, gives advice on the measures the Party organisation should carry out and actively assists it in their execution. Quite often the commander submits a report on combat training to a meeting of the Party committee (bureau), or Party meeting of the organisation to concentrate the efforts of Party activists and all Communists in general on the tasks to be tackled by the military collective. Acting in close contact with the Party organisation, the deputy commander for political affairs organises Party work in the unit and bears full responsibility for it. The secretary of the Party organisation in turn briefs the commander and political worker on the measures the Party organisation has planned to accomplish, asks their advice on which matters (bearing on training and education) the Party or-

ganisation should discuss and on ways to ensure effective execution of the decisions adopted.

To secure better results in combat training the Party organisation above all obliges the Communists to set a personal example in combat proficiency. To illustrate the point we shall adduce the example of a tank unit Party organisation. Lieutenant A. Stepanenko, commander of a top platoon, is the secretary of the Party organisation. His results in gunnery practice are always excellent. In addition, he is a first class AFV driver. In addition, he normally posts the best time in cross country racing and negotiating the obstacle course. There are five other Communists in the tank company. All of them have excellent combat training and political education records to their credit and are top class specialists. They set a personal example in everything: in consistent mastery of skills, in meticulous execution of orders and in march drills. The other tankmen of the company try to keep up with them.

Every Party organisation strives to achieve better results in combat training and to put into operation latent reserves. The Communists are the first to reveal shortcomings in training, to appraise them properly and to take measures to eliminate them. Here is a case in point. Several men from a motorised infantry battalion whose Party organisation is headed by Captain A. Zhuravlyov showed poor results in fire training. Captain A. Safonov and Senior Lieutenant B. Sardaryan, members of the CPSU, attended a fire training exercise on the instructions of the Party bureau. They found that the instructors had simplified some of the fire missions. The Party bureau helped the young commanders establish the reasons for the shortcomings in fire training. At the same time the bureau drew up a plan of measures designed to improve the soldiers' proficiency. At a Party meeting several Communists and CPSU candidate members were given specific assignments. For instance, Sergeant A. Simonov shared with the others his experience in night fire practice. Praporshchik Ya. Galchenko, a member of the Party bureau, summed up the experience of Private A. Khafizov who, as a rule, could hit a moving target with the first round he fired. The Communists helped organise exchange of experience between platoon leaders in organising drills and exercises on the firing ground. These measures proved effective. At a test exercise the battalion earned excellent marks.

Socialist emulation is another effective means for mobilising the men to achieve better results in combat training. The Party organisations have concentrated the servicemen's efforts on fulfilling individual socialist emulation pledges and have assisted them in combat training.

The motorised infantry platoon under Senior Lieut. S. Andreyev decided to make every man an excellent soldier, i.e., to see that every man shows excellent results in combat training and political education. The Party organisation of the company supported the initiative. It instructed two of its members to assist the platoon in the undertaking. What did their assistance boil down to? One of the Communists helped prepare a meeting of the platoon Young Communist League organisation. The meeting was devoted to the tasks of the YCL members in the effort to make every man of the platoon an excellent soldier. The other Communist conducted a talk with activists on their role in the socialist emulation movement.

Both Communists kept a keen eye on the platoon's progress. They frequently met the personnel of the subunit, attended the drills and exercises and the summing up of the emulation results.

The Party group of the platoon rendered effective assistance to Senior Lieutenant S. Andreyev, the platoon leader. Rational use of training time is one example. The Communists estimated that movement to the training grounds and fields took up approximately an hour a day on the average. They proposed to use this hour for work on combat training criteria and combat control signals. The platoon leader approved of this proposal.

The Communists worked out of training hours with the men who were not yet excellent soldiers.

By the end of the training year all the men of the platoon became top-flight soldiers. Addressing a Party meeting Senior Lieutenant S. Andreyev, platoon leader, said:

"Speaking on my own behalf and behalf of the men of the platoon I wish to express sincere gratitude to the Communists. They constantly gave us confidence in success, they inspired us and rendered us aid."

Proficiency in field training is the bedrock of combat efficiency. Tactical lessons and exercises upgrade the fighting skills of the men and put their proficiency to the test. Naturally, the Party organisation pays special attention to these forms of training. For instance, one of the battalions carried out the following measures in preparation for field exercises. The secretaries of the company Party and YCL organisations attended a special seminar. At this seminar the activists were acquainted with the specifics of the forthcoming tactical exercise, and they studied the experience of Party political work on the march, in the concentration area and in battle. The Communists displayed a differentiated approach in

their work with privates and sergeants of various specialities. In private talks they would find out how each serviceman understood his mission in the exercise, check to see how each knew his duties and tasks and how he prepared his weapons and other equipment.

On the march (which opened the exercise) Party-political work was concentrated on ensuring the efficiency of drivers and vehicle operators, on strict observance of the route and schedule of the march. At the halts the Communists kept the men informed of the latest developments and the vehicle operators who distinguished themselves.

Setting a personal example plays a very important role on the offensive. By displaying daring, resolve and skill the Communists got all the other men to follow them and helped maintain a high morale.



THE introduction of new equipment and weaponry demands a much higher level of technical training on the part of the personnel. The curricula and combat training plans provide for a wide range of measures to be taken to ensure such a level. The Party organisations mobilise the efforts of the men in pursuit of these plans and do their best to widen their military and technical knowledge. The Party committees have propaganda groups with sections engaging in the dissemination of military and technical knowledge. As a rule, they are made up of engineer officers. They draw up quarterly or term (half-year) plans of lectures which are closely linked with the tasks confronting the personnel of the units.

The men of the army and navy regard the Communists as their instructors and organisers, as a creative political force leading them to new achievements in combat training and in the execution of their regular duties.

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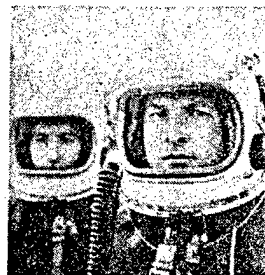
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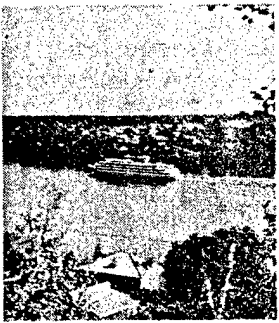
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Blue skies over Russia.
Photo by N. Aryayev

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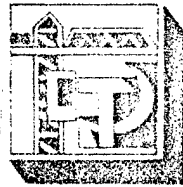
MAR. ENGR SHESTOPALOV ON MILITARY CONSTRUCTION TROOPS

Moscow SOVIET MILITARY REVIEW in English No 8, Aug 83 pp 2-5

[Text]

Nikolai Fyodorovich Shestopalov began his service in the army over 40 years ago. He graduated from the Kuibyshev Military Engineering Academy. During the Great Patriotic War he was involved in organising engineer support of the forces on many fronts, during the assault crossing of the Dnieper, Vistula, Oder and the Neisse, and also in neutralising mine and other explosive obstacles. After the war he headed various military construction groups. Today N. F. Shestopalov is Marshal of the Engineer Troops, Deputy Minister of Defence of the USSR for Construction and Quartering.

Military builders are unstinting in their efforts to fulfil the decisions of the 26th CPSU Congress and plans and socialist pledges undertaken for the third year of the 11th Five-Year Plan. They strive to do everything necessary for the combat training, service and everyday life of the servicemen with high quality and in good time. In accordance with the instructions of the CPSU Central Committee, the campaign to boost labour productivity and upgrade organisation, order and discipline on all sectors of work is constantly broadening.



What tasks are presently being solved by military builders?

The work of military builders is just as essential as that of pilots, reconnaissance men or tankmen. Builders in a military uniform lay the foundation of future successes and victories of all fighting services and branches of the Armed Forces. They build various installations securing the high combat readiness of the army and navy. They provide proper conditions for training, everyday life and supply of the personnel, i.e., they build training facilities, messes, hospitals, officers' houses, soldiers' clubs and stadiums.

Military builders render assistance to the country's national economy. When the ancient city of Tashkent was destroyed by an earthquake military builders were the first to help its inhabitants. It took them only seven months to build the town of Sergeli for 30,000 inhabitants, the town-satellite of the Uzbek capital. The same was the case after a natural calamity hit Gazli.

And Sevastopol? Everyone who visits this city today admires its unique appearance. The city has been revived from ruins to life by military builders with the active participation of its residents. It is not without reason that the grateful citizens named one of the city's thoroughfares Military Builders' Street and erected a monument in commemoration of their feat of labour.

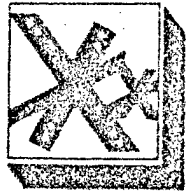
Military builders carry out special projects designed to immortalise the feats of arms of the Soviet people in the Great Patriotic War. Probably not everyone knows that the figure of the Mother-Country of the Memorial on the Mamai Hill in Volgograd is not only a piece of art, but also a unique engineering construction created by military builders. It was they who erected the majestic memorial complexes of Treptow Park, Malaya Zemlya (Small Land) and others.

It is difficult to enumerate all the work done by military builders during the last years alone. But in any case one should pay attention to the sites which decorate our capital — the Hero City Moscow. Such unique constructions as the Central Army Club Football cum Track and Field Complex where competitions of the 1980 Olympics were held, the Central Academic Theatre of the Soviet Army, the Central Museum of the USSR Armed Forces, the Grekov Studio of Military Artists — all these have become part and parcel of the capital.

Today military builders are working hard to fulfil the decisions of the 26th CPSU Congress and subsequent Plenary Meetings of the CPSU Central Committee. Many of our collectives met their production targets ahead of time and put into service quite a few facilities, dwelling houses and other structures. Construction organisations and units of the Order of the Red Banner Odessa Military District — initiators of the all-army socialist emulation of military builders — are successfully coping with the assignments of the 11th Five-Year Plan. Military builders also distinguished themselves erecting enterprises of the non-ferrous metallurgy in Kazakhstan.

The Communist Party and the Soviet Government highly appraised the labour exploits of military builders. During the 10th Five-Year-Plan

period alone 1,510 men were awarded Orders and medals. Working in our units today are four Heroes of the Soviet Union, seven Heroes of Socialist Labour, nearly 1,000 Merited Builders of the RSFSR and other Union Republics and quite a few State and YCL Prize winners.



Would you throw light on the history of the military construction units, on their labour exploits during the Great Patriotic War?

The trade of military builder is an ancient, honourable and heroic one. The history books say that as far back as the campaigns of Julius Caesar* and Alexander the Great** there were military subunits building roads, bridges and other structures.

Military construction units of the Russian Army originate from formations of militiamen which were set up in 1807 for constructing fortresses and field shelters. During the Patriotic War of 1812 the first military-working battalion was activated.

In the Soviet Armed Forces construction units were formed during the Civil War and the years of foreign military intervention. These were military construction battalions which merged into brigades.

The defensive lines installed by military builders reliably protected the fledgling Soviet Republic from the White Guard troops and interventionists. Thus, the Petrograd fortified area, installed by military builders, jointly with the troops and the population in 1918-1919 played a decisive role in repulsing the onslaught of the Yudenich's bands. The defensive lines in the area of Samara and Saratov played an equally important role in the defeat of Kolchak. They were set up in good time under the leadership of the famous Soviet military engineer and scientist D. M. Karbyshev.

* Gaius Julius Caesar — Roman statesman, general and writer.

** Alexander the Great — an outstanding military leader and statesman of the ancient world.

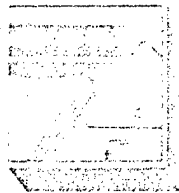
Military builders also stayed in combat formation after the Civil War. It was in those years that the Northern Fleet was born north of the Arctic Circle. In the Far East, military builders helped construct the city of Komsomolsk-on-the-Amur and provide all necessary conditions for the dislocation of the Pacific Fleet's ships. By the will of the Party, the Soviet people with their hard work carried out momentous campaigns to bolster the defence capability of the country in the western areas, where an entire system of field and permanent airfields was set up, roads built and fortified areas along the state border constructed. Construction units were active in this work.

During the Great Patriotic War the military builders did an enormous volume of work. Many thousands of people, frequently in combat conditions holding a tool in one hand and a rifle in the other, laid the road of victory. Five hundred sixty-two defensive lines nearly 50,000 km long, more than a million weapon emplacements, almost 22,000 km of fortification obstacles and 71,000 km of trenches and communication trenches — such is far from the complete output of construction units during the war. Plus the thousands of bridges and crossings, station structures, field depots and bases, hospitals, etc. And very often these objectives were installed or built under enemy fire. Frequently military builders were forced to put aside their tools for a while and help the infantry beat off enemy attacks.

There was not a single sector on the fronts of the Great Patriotic War where combat actions were carried out without military builders. Everywhere they spared neither their pains nor their lives, realising that for the time being they had only one "planned rate of output" — to provide the army with everything it needed for victory. A leaflet of the Political Department of the Central Front reported at the time that many military builders on the Kursk Bulge dug during a single day an average of 58 running metres of trenches while the standard output was from 6 to 10.5 running metres.

During the war over 150,000 military builders were awarded Orders and medals. For exemplary fulfilment of the Command's missions a number of departments of military field construction

and dozens of construction detachments were decorated with the Order of the Red Banner and the Order of the Red Star.



What is the present organisation of construction units, how are they manned, what possibilities do young builders have for acquiring this trade?

The basic form of organisational structure of construction units is a military construction detachment consisting of companies which are subdivided into platoons. The latter, which comprise several sections, make up production teams. Military construction detachments are subordinated to chiefs of construction departments.

Construction detachments are provided with personnel through military commissariats from among citizens called up for military service and who have mainly engineering or related trades. Besides, draftees can acquire engineering trades after 2-3 months training without discontinuing work. In training centres, schools and on courses military builders master the complicated trades of electric welder, excavator and tower crane operators and electrogas welder.

Serving in the army, military builders, besides receiving occupational skills and upgrading them, take a course of military and special training and political education. All military regulations as well as labour legislation are fully applicable to them.

Military construction units are a good school of ideological steeling, combat and occupational training, high discipline, friendship and comradeship. Nikolai Zlobin, Hero of Socialist Labour, a celebrated builder of the country went through such a school.

After receiving army steeling and acquiring the trade of builder, our personnel, after transfer to the reserve, are given employment at enterprises, works and factories. Every year quite a few military builders from our units, upon recommenda-

tion by YCL Committees, go to the priority construction sites. We receive many letters in which the management of enterprises and organisations praise their work.

For those who wish to become professional military builders the doors of the higher schools are wide open. Among them are the Order of the Red Banner Leningrad Higher Military Engineering School named after General of the Army A. M. Komarovskiy and the Pushkino Higher Military-Engineer Construction School. Here all facilities are provided for training and educating cadets.

A military builder's trade fosters in a man such good qualities as a high morale, industry, firmness of character and the ability to work effectively. This attracts the youth. As for me, I have never been sorry that I chose this trade. It was difficult but you realised that you were where you were needed. This instills in you the desire to do as much as possible.

In short, the life of military builders, as of all servicemen of the army and navy, is determined by the responsible missions they are called upon to execute, ensuring the security of this country, and its friends and allies. The personal contribution of everyone to the economic and defensive might of our country, involvement in the great accomplishments of our people give all military builders deep satisfaction, and instill a desire to fulfil their military duty in the best possible way.

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ARMED FORCES

CULTIVATION OF COURAGE

Moscow SOVIET MILITARY REVIEW in English No 8, Aug 83 pp 18-20

[Article by Colonel V. Vasilyev]

[Text]

The exceptional importance of courage for victory is graphically evidenced from numerous episodes during the Great Patriotic War (1941-45). Here is one such episode.

Four Soviet fighter planes engaged 50 Heinkels. One attack followed the other... The nazis lost several bombers and the Soviet side now numbered only three aircraft. This battle is vividly described in the reminiscences by its participant, twice Hero of the Soviet Union A. Vorozheikin, who writes:

"We ran out of ammunition. It was getting dark and we came to the realisation that the only means left for us to confuse enemy formation was to ram him. I made the last turn to close in with the nazis and gave a farewell glance at my wingmen Ye. Chernyshov and G. Kolinichenko. The wings of their planes nearly touched mine. I saw the Heinkels quickly growing in size, my strain increasing enormously... But no ram followed. The enemy aircraft scattered in all directions and, bombing at random, hit their own troops."

FORMS AND METHODS

Today, when the enemy is fitted out with the latest weapons and combat equipment, the importance of such volitional qualities as boldness, bravery and courage becomes even greater.

People aren't born courageous. They are liable to experience fear to varying degrees when facing danger. However, a person can be taught to overcome this feeling. What are the main forms and methods for cultivating courage practised in the Soviet Armed Forces?

To instill high combat and moral qualities in servicemen, it is necessary to steel them ideolo-

gically, to shape their Marxist-Leninist outlook and to cultivate their devotion to the people and communist ideals.

To educate servicemen successfully, it is very important to brief them on the physiological and psychological background of different emotions and states including negative ones (uncertainty, confusion, fear). Men in active service are explained what may cause negative emotions, how they manifest themselves and what should be done to overcome them. At the same time they are graphically shown what a great evil may be caused by cowardice on the battlefield.

Such explanations are highly beneficial in educational work. However, they are not enough to mould a brave and resolute personality. The eminent Soviet pedagogue A. Makarenko stressed that man cannot cultivate his boldness until he is placed in conditions requiring him to show this quality.

To show courage is a demand made of servicemen by objective conditions. In peace-time such situations take shape more often than not during field training. In these circumstances the men often have to run risks (usually under their commander's supervision). Operating at night and in bad weather, on unfamiliar terrain and in an emergency situation or when negotiating water barriers the soldier steels his psyche and gets accustomed to great nervous strain. Gradually he gets used to danger as an inalienable component of combat activity. Steeled morally and ideologically, the soldier is ready to cope with any difficulty. Army life demands that the men always be ready to show bravery and resolve.

Much is done in the forces to make tactical exercises closely resemble real battle. Here is an instance illustrating how field training is organised in one motorised infantry subunit.

LIKE IN REAL BATTLE

In this subunit the men begin training with a course of individual psychological steeling: they fight "enemy" tanks which move at combat speed keeping at definite intervals from each other.

By order of Senior Lieutenant B. Urchiyev a soldier takes up his position in a trench and gets ready for firing. When he sees an "enemy" tank approaching his trench, he throws an antitank grenade to hit it. Then, after the tank has rolled over his trench, he hurls one more grenade at its rear. The soldier again assumes his position in the trench and when the second tank approaches him, he drags up a mine to its track. When the

next tank appears, he "destroys" it with fire from a light antitank rocket launcher. Then the soldier quickly changes his training place, climbs the wall of a destroyed building, jumps down on the "enemy" tank passing by, and "smashes" its observation and firing devices with his entrenching shovel.

Then the trainee proceeds to the last exercise. He takes his position in a tree. When a tank approaches, he jumps down on it and sets fire to the safety fuze of a trinitrotoluene block to make an explosion. He then jumps off the tank and takes cover.

After these exercises have been carried out by all the men of the company, they set to mastering their team-work as a tank-borne party. The trainees mount the tanks, head for the "enemy" strong point, then dismount and attack it in cooperation with tanks. They finish training in this sector by working up fire-fighting techniques dealing with incendiaries and burning tanks.

The whole complex of exercises imposes great psychological strain on the men who always experience the sensation of an imminent threat from an approaching tank and its fire. It is not easy for a man to suppress his fears and, for instance, to creep up to the track of a moving tank or, while in a trench, to let it pass over his head.

Private P. Kulazhenko, a trainee, recollects in this connection:

"When I saw that I was separated from the tank by only several dozens of metres, I was gripped with excitement and experienced great strain... I had to show bravery and poise. When the tank was passing over my trench, I had a feeling of being crushed by its mass."

In the second sector of the training field a combined exercise is worked up by different subunits (infantry, tank, artillery, chemical and signal). The members of this combined-arms team master their actions both on the offensive and defensive. First they simulate a powerful artillery attack on the "enemy" strong point. Powerful explosions close to the defenders' positions make their trench walls crumble. This is followed by an "air strike." Then infantry and tanks launch an attack on the "enemy" strong point, firing blank ammunition from submachine guns, machine guns and grenade launchers. At this moment the fighting reaches its culmination.

Each skirmish line of the attackers overcomes three continuous fire zones. The men also have "to blind" the tanks which have broken through in the depth of the defences. To this end they jump down on the tanks passing past them.

from the windows of burning houses and close their observation slits with their capes.

PRELIMINARY TRAINING

The men must be trained in advance before being allowed to carry out the above exercises. They study tanks' performance characteristics, learn to use skilfully accidents of the terrain and practise firing. They also gain the necessary skills to defend themselves against mass destruction weapons. In this they study incendiaries and how to neutralise them, how to operate in conditions when the enemy uses flame-throwing weapons and smoke-making devices and how to render first aid for burns.

It may also happen that during tactical exercises some trainees will fail to show poise and the ability to act boldly and coolheadedly. However, thanks to regular training sessions, these men learn to overcome their timidity and indecision, their self-confidence increases and they become ready to fulfil their missions in any conditions. Thus, when the young soldiers of one unit were "run over" by tanks for the first time, they felt uncertainty.

The men of the 2nd training team made sure that no danger threatened those who were "run over" and when their turn had come to undergo the same test, they showed better results. When this exercise was repeated a few days later all the members of both training teams coped with their mission.

In a nutshell, persistent and regular training enhances the men's bravery and self-confidence. To improve their professional skills pilots train in flight; paratroopers, in parachute jumping; tank drivers, in operating on difficult terrain; and missilemen, in missile launching. **Mastering their professional skills, the men simultaneously develop courage as their inherent quality.**

Sport greatly contributes to forming courage in the individual, especially such disciplines as diving, ski jumping, boxing and sambo-wrestling. Physical training cultivates fearlessness, self-control and poise gradually converting a man's brave behaviour into a habit. Military-applied sports also have a substantial educational impact. They are differentiated according to military professions since they help to develop the men's responses peculiar to this or that speciality. For instance, it is a good practice for pilots to hone their skills by using looping swings and trampoline nets; for tank drivers, to master underwater swimming, and so on.

Daily training and overcoming difficulties is a true school of courage and resolve. A person who is well-trained will never be at a loss at a critical moment.

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ARMED FORCES

IMPROVEMENT OF MILITARY COMPOUNDS DISCUSSED

Moscow SOVIET MILITARY REVIEW in English No 8, Aug 83 pp 36-37

[Article by Lieutenant-Colonel Engineer S. Potapov]

[Text]

Much thought is given in the Soviet Armed Forces to servicemen's daily life. In 1977 an all-army conference was held to tackle this problem. Specifically, it dealt with the arrangement of military cantonments, i.e., the places of troop quartering. Speaking at the conference, USSR Minister of Defence Dmitry Ustinov set the task of working out general layouts and standard designs of military cantonments with due regard for the specifics of servicemen's combat duties and training missions, climatic conditions and the organisation of the food, medical and cultural services.

In keeping with these instructions quite a few military cantonments have been refurbished.

The following is a description of a cantonment of one military unit. In the centre of this post there is a drill ground where the personnel parade, take the oath of allegiance and where meetings are held. The drill ground is surrounded by five-storied barracks and by the buildings in which the unit HQ and a club are located. Somewhat farther there is a mess designed to accommodate all the personnel. Situated in the other sector of the cantonment are a training centre, a medical aid station and a bath-house. Behind the club there are a canteen and a soldiers' tea-house. A sports complex is positioned separately.

The cantonment contains areas for the storage and maintenance of combat equipment and armaments, a lot for vehicles, depots and public service facilities.

The military cantonment also includes dwelling houses for officers' and praporshchiks' families, pre-school establishments, an every-day services shop, a general store and a café. In the inhabited sectors of remote cantonments provision is made for schools, stadiums and swimming pools.

Great importance is attached to servicemen's living conditions in barracks. As far back as in the initial period after the Civil War and foreign military intervention (1918-20) the prominent Soviet military leader M. Frunze wrote: "We want the Red Army barracks to be a place where the young men mature as soldiers and, at the same time, broaden their political and cultural outlook. We want every young man willingly to enter the barracks where he can train to become fit for carrying out his civilian duties after his honourary discharge from the army."

Today Soviet servicemen live in modern well-built barracks. Here, after a day's rigorous training, the men can have a good rest and enjoy themselves during their leisure time. Barracks' dormitories are usually designed to accommodate a section or a platoon. Here the men have

shower-baths, every-day services rooms (where they can iron or repair their uniforms or shave) and clothes and foot-wear driers.

Lenin Rooms are especially cosy. Here the servicemen can watch TV, read books and periodicals and play chess or checkers.

Soldiers' messes are spacious and well-lit. Dinner-tables are covered with coloured plastic and set nicely for 4 or 6 men. Mess foyers are adorned with plants, small-size ornamental waters or aquariums in which fish are kept. Mess walls are decorated with mosaic panels, metal chasing and pictures.

Regimental clubs have a festive appearance and look unique on the inside. Their designs incorporate large assembly halls, spacious libraries and reading halls and Rooms of Combat Glory.

Military cantonments usually boast an abundance of verdure. The servicemen are very enthusiastic about growing trees and flowers there even though they have to live in arid or semi-desert areas.

One can hardly imagine a military cantonment without the numerous posters which popularise the decisions taken by the Party congresses, excerpts from the Oath of Allegiance or military regulations. This stimulates the servicemen's training activity and helps broaden their political outlook and upgrade their patriotic, moral and esthetic education. Quite a few cantonments have "Hero Lanes" where military units erect sculptures of their fellow-

soldiers awarded the title of Hero of the Soviet Union. One can also see there different models of combat equipment (tanks, aircraft, guns) mounted on pedestals as a reminder to the young soldiers about the past battles fought by their fathers and grandfathers. To revere the memory of those who fell in action obelisks and memorial complexes are set up there with the eternal flame burning nearby.

The movement for model military cantonments with an exemplary social order and high culture has become widespread in the Soviet Armed Forces. This kind of social activity embraces all the servicemen and the members of officers' and praporshchiks' families living in the cantonments. Many garrisons enjoy the assistance of public councils functioning there. These organisations help commanders and political workers in their efforts to maintain a well-appointed cantonment and also to keep it clean and in good order. The constant upgrading of the conditions in which the servicemen live testifies to the fact that the Communist Party's policy is geared to its loftiest aim — everything for the sake of man, for the benefit of man!

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ARMED FORCES

TRAINING EXERCISE REVEALS PSYCHOLOGICAL INADEQUACIES

Moscow KRASNAYA ZVEZDA in Russian 2 Aug 83 p 2

[Article by Lt Col G. Sverdlov, Red Banner Odessa Military District: "On Topics of Pedagogics and Psychology: Emotions and Tact"]

[Text] After completion of the drill radar station chief Capt V. Petrichenko went up to Sr Lt V. Krekhov, who had directed the teams' actions, and said with poorly concealed resentment in his voice:

"You see, you were mistaken in not believing us. You only offended the people..."

Sr Lt Krekhov was silent. And what could he say now when the heat of the practice action had subsided and an opportunity had appeared to go into all its troubles in a calm situation and find out who was right and who had made a mistake? It was not difficult to determine the truth with the help of the records and Sr Lt Krekhov was left with nothing else other than to apologize to Capt Petrichenko.

"You understand that it's the first time I was in such a situation. I didn't get the better of my nerves and was hasty," he admitted with embarrassment.

As a matter of fact the situation did not turn out to be a simple one. At a signal from the control point Capt Petrichenko's subordinates turned on the radar and soon detected the target, but several minutes went by and drill director Sr Lt Krekhov required the team to issue a new target. According to information at his disposal there should be one other target nearby and at the very same altitude. The operators and Capt Petrichenko carefully examined the area and there was no other target. That's what they reported to the control point.

There would appear to be no sense in retelling the course of events in detail. We will note only that Sr Lt Krekhov did not conduct himself in the best manner. Not believing the report, he demanded the most rapid detection of the target with a persistence worthy of better application, now and then

exercising his vocal cords. As it later was learned the officer was guided here by data of the warning net about that same target the radar operators had been tracking from the moment the station was switched on.

In a critique of the drill Officer Krekhov was reproached for inattentiveness, for forgetting certain rules of estimating the air situation, and for other mistakes. But they didn't give proper attention to the moral costs connected with the tactless conduct toward people, and this was a big mistake.

It is possibly not worth it to discuss this incident in such detail but unfortunately those who love to "make noise" during combat work are still around.

"When you think of it, where's the problem with scolding a subordinate? He began to work better after this," I was told by a subunit commander once after a difficult practice combat.

But is that so in fact? The senior commander who performed an analysis of the team's work noted that the specialist had not coped properly with his task, that he had acted fussily and the decisions he made were far from optimum. Strictly speaking there is nothing surprising here. The person suddenly got into a stress situation and was not able to get himself in hand and cope quickly with his nervousness. Unfortunately the subunit commander completely unsettled him with his abrupt, tactless comments.

There is no question that the mood of subordinates depends largely on the commander and chief. Let's assume he expressed criticism of officers, even just criticism, in an irritated tone of voice. Everything might go further in a chain reaction. It can of course be assumed that the psychological stability of some officers, warrant officers and NCO's will be sufficiently firm and they will not "get unhinged" but will retain a demanding and at the same time friendly tone in dealing with subordinates. But most of the people react sensitively to an "emotional overload" and the consequences of this affect combat work.

It was noted long ago that when a person does something without enthusiasm he is not using even half of his abilities and is not working to his utmost, as they say. And if for some reason he gets into a stress situation the results can be even poorer. This is especially important to consider during combat work of air defense personnel where success of an important job is at times decided by seconds.

Not long ago I had occasion to talk on this subject with Lt Col V. Parkayev, an experienced teacher and master of combat qualification. The thoughts he expressed would appear to be of interest.

"Situations at times arise in the service of air defense personnel which couldn't be more acute," said Viktor Ivanovich. "The equipment we operate reduces the physical load on soldiers but the complexity and responsibility of missions they are accomplishing increases stresses of a psychological nature. It is impossible not to take this into account. A person cannot entirely rid

himself of negative experiences but it is fully possible to reduce their influence or restrict the number of such experiences. This depends on all of us. We train the memory, the wits and the working capacity of the brain. But why do we forget about training our feelings, for by controlling our emotions we can become their complete master? There is an old, effective formula tested many times over. At times, and I know from my own experience, it is enough to count to ten mentally before letting your emotions go, and there will be no nervous outburst."

It is impossible not to agree with the opinion of the experienced officer-indoctrinator. Above all those entrusted to direct combat must learn to control their emotions. Their work unquestionably is difficult and other specialists also have a difficult time. It is hardly possible to figure accurately the expenditure of their physical and nervous energy. This is why high military culture is required of an officer who is at the control console. Crude shouting and other "liberties" in his conduct have a negative effect on subordinates' moods, deprive them of confidence and at times generate indifference toward results of their work. Mistakes thus are not always caused only by a reduced sense of responsibility for the assigned job, against which, as it seems to them, those who love "dressings-down" are fighting successfully.

I recall an episode which happened at one time at a high-mountain site. Sr Lt V. Yel'kin, who had just returned from leave, ascended to the company at the first opportunity.

"Just in time," said company commander Capt V. Vilkauskas happily. "There is a drill on control targets in an hour, so come to the station."

Yel'kin tried to explain that he was tired after a long trip and it wouldn't hurt to practice an hour or two at the scope, but the commander didn't take his arguments into account: "You're a first class specialist and you know the job best."

Yel'kin took over a team in the drill. Initially everything went well but the situation only had to be complicated and the radar operators' actions lost their former precision. Capt Vilkauskas could not help but see that the fault for this rested above all with Sr Lt Yel'kin. He did not change the equipment operating mode on time, he didn't switch on the channels suggested by the situation, and he maneuvered the rocking of the antenna system uncertainly.

Initially the company commander merely frowned in dissatisfaction when the specialist made another mistake. But after the command post demanded that decisive steps be taken Capt Vilkauskas could not restrain himself. Without regard for the fact that his voice could be heard in all the huts he scolded Sr Lt Yel'kin loudly without especially selecting his words and removed him from leadership of the team.

Yel'kin himself sensed that the work was not going well but he didn't expect such sharp words from his commander and considered them unjustified. Later

after cooling off Capt Vilkauskas himself admitted that he had made two serious mistakes. Above all he had included the officer in the drill without first giving him time to adapt to equipment controls. The commander also had not behaved in the best manner during combat work although he couldn't help but realize that the reason for Yel'kin's mistakes was not in an absence of diligence but in the skills which had been lost somewhat during leave.

It was a very instructive incident and indicates how important it is for a commander to seek out the true reasons for failures. It is true that they do not often lie on the surface.

I would like to note one other thing. Along with a confident and, I will emphasize this, calm manner of the commander's conduct, he is also required to know and make skillful use of the so-called primary law of emotions which goes: Emotions are considerably easier to crowd out with other emotions than simply to be uprooted.

Display of emotions in a person is strictly individual. Some relax and suppress activity and deprive of energy while others to the contrary elevate the general tone and activate. As medical personnel and psychologists assert, positive emotions improve the body's energy capacities, make vision and hearing more acute and uncover additional memory storage areas. It is understandable that all this helps a soldier find the optimum version of a decision in a difficult spot. Therefore a commander who is in charge of combat must create that situation in which subordinates would act independently, confidently and with initiative and imagination. The most important role here is played by his word and personal example.

Young officers take the example above all from their commander. They try to adopt both habits, manner of behavior and manner of contact with subordinates. It is well if all these components of a commander's character and work style are worthy of emulation but unfortunately it also happens differently.

We were at the control point of one of the radar companies when Lt N. Arestov was directing the action. He was passing on target designations to the teams in a calm, even tone of voice and this created an atmosphere of confident, precise work by the specialists. But after a few minutes everything changed sharply. First Arestov, breaking into a shout, would scold someone for a slight mistake, then he would rather crudely rebuff the announcer who had turned to him with some question.

Why did such a strange metamorphosis occur with the lieutenant? It turned out that the subunit commander who was an adherent of just such a method of directing combat work had dropped in at the control point. In his desire to earn praise the young officer began to copy his style.

After completion of the drill we began talking with Lt Arestov. It turned out that he understood well that the high physical and mental working capacity of specialists is retained longer if nervous overexertion is precluded and calm, businesslike direction of the teams is provided. That is what he usually does. Then why did he betray himself in the commander's presence?

Modern combat places high demands on radar operators' psychological conditioning. These demands are especially rigid for teams performing operational readiness duty. Leadership of them requires a scientific approach and rational organization, which include the development of the soldiers' emotional-volitional stability. For this reason commanders above all have to learn to control themselves and their behavior and instil in themselves self-control and high military culture.

6904

CSO: 1801/446

ARMED FORCES

MILITARY MOTOR VEHICLE DRIVERS HELP HARVEST CROPS

Moscow KRASNAYA ZVEZDA in Russian 3 Aug 83 p 1

[Interview with R. Gaipov, first secretary of Kashka Darya Oblast Committee of CP of Uzbekistan, Hero of Socialist Labor, by KRASNAYA ZVEZDA correspondent: "Soldiers in the Harvest: In the Karshi Steppe"; date and place not specified]

[Text] The expanses of the Karshi Steppe are truly boundless. The previously lifeless virgin lands now have been turned by the powerful hands of the Soviet citizen into a rayon renowned for high yields of cotton, grain and melon crops. At the request of a KRASNAYA ZVEZDA correspondent, R. Gaipov, first secretary of Kashka Darya Oblast Committee of the CP of Uzbekistan, Hero of Socialist Labor, tells how military drivers are helping rural toilers of the oblast in bringing in the harvest.

"In order for the military reader to gain a better idea of the scope of labor which was put into the rebirth of the Karshi Steppe, in which our oblast is located," Ruzmet Gaipovich began his story, "I'll give an excerpt from a reference work published at the beginning of the century: 'Here only ten per cent of the area can be considered suitable for agriculture. The remaining lands are unfit even for cattle-raising.' At that time it seemed improbable that orchards would bloom, cotton plantations would spread out and grain fields would rustle their ears in a wild, arid desert."

But songs are not sung for nothing about the Soviet citizen capable of working wonders. One of these wonders is the reclamation of the desert lands. Take a look at a map of the Karshi Steppe today. Beautiful cities have been built here and some 50 sovkhoses have been set up with well-planned settlements.

Although there is still much time before the cotton harvest, which is our main crop, this year's harvest is in full swing. Oblast agricultural toilers pledged to gather 550,000 tons of grain, 36,000 tons of potatoes and more than 200,000 tons of vegetables this year. Much credit goes to military motor

transport personnel helping us in the harvest for the fact that Harvest-83 is going successfully. There is a word "khashar" in the Uzbek language. That is what collective labor is called when close friends come to help a person. The subordinates of officers V. Filatov, N. Volin and F. Makolkin are taking part in our "khashar" in a most active manner. They are proving themselves not only to be wonderful toilers, but also people who root for the common cause. The motto "Harvest everything grown without loss!" has become the law for each of them.

I often have occasion to be at the "hot spots" of the struggle for the harvest, such as on the farm where Maj Anatoliy Panov's subordinates are working. With a shipment plan of 90,000 tons of grain for the season, the subunit's military drivers pledged to deliver 10,000 tons more to the elevators and threshing floors. The soldiers' word is backed up by action. An interesting form of competition originated in the harvest: Reserve soldiers at a number of sovkhoses are competing with the military drivers in hauling out the grain. Grain production gains significantly from this. Soldiers working jointly with brigade contract collectives deserve special praise, for the end result on which payment will be made to the rural toilers also depends on the military drivers.

The mobilizing role of party members such as Sr WO [praporshchik] Aleksandr Sapozhnikov, Sr Sgt Bokhadyr Khudoyarov and Pvt Gennadiy Revyakin plays a large part in the vital, selfless work of motor transport personnel in the harvest. A conversation with Lt Col Revva, commander of the motor transport subunit, is memorable for me. When I praised the work of the military drivers Mikhail Sergeyevich responded: "It can't be otherwise. All soldiers are party or Komsomol members. A majority of them serve in outstanding units renowned for combat traditions."

It was pleasing for me as a Great Patriotic War participant to hear this. I remember the feelings generated in us by the exploits of the Panfilov heroes: pride for the unbending will of the Soviet citizen and readiness to give everything for the people and the party. And now came a meeting with worthy heirs of the military glory of those who displayed exceptional courage and heroism in the war years.

Today's defenders of the Motherland have not besmirched the honor of the Panfilov men. There are young lads among the harvest participants who earned the right to take part in the harvest a second time. One of them is frontlinesman's son Pvt Nikolay Markov. Last year he transported 2,730 tons of various agricultural cargoes under a plan of 1,000 tons. The soldier intends to better his achievement in Harvest-83. Many other motor transport personnel are his equal. The military drivers today already have come close to fulfilling the transportation plan for the entire harvest.

It stands to reason that you can't express the military motor transport personnel's help in figures alone although these indicators are ponderable. Can we really discount their influence on the youth? In striving to equal the soldiers our machine operators also try to work to their utmost. In brief

hours of rest the rural toilers attend with satisfaction the lectures and talks given by the officers. For example, I had occasion to hear many good comments in Shakhrisabzskiy Rayon about the presentations of political officer Capt Viktor Kovalevskiy.

Meetings with the soldiers once again persuaded me of the wonderful conditioning the Army provides young people. We have many reserve soldiers on the farm. One of them is Mamarasul Bakhrarov, director of the Gul'bakh Sovkhoz. The successes of this sovkhaz depend to a large extent on the director's ability to find the axis of main attack, as the military men say, and inspire subordinates by personal example. The sovkhaz director acquired these very traits in military service. And isn't there really an indicative example set by reserve soldiers Aleksandr Yakovlev, a brigade leader of the Virgin Lands Sovkhoz imeni ibn-Sina who constantly fulfills norms by 180-200 percent, or Eshmurad Ochilov, tractor operator of the Pakhtaabad Sovkhoz who is renowned throughout the oblast for his vital work? And in speaking words of gratitude to military drivers today we rural toilers are saying thanks to all our Armed Forces for the fact that they are making worthy people out of the young lads, ready both for military and for labor victories.

6904

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ARMED FORCES

UNIFORM NEEDS NOT MET **IN AIR SQUADRON**

Moscow KRASNAYA ZVEZDA in Russian 5 Aug 83 p 2

[Letter to editors by Lt V. Rublev, Lt S. Savolaynen and Lt A. Pstygo and response by KRASNAYA ZVEZDA correspondent Lt Col P. Chernenko, Red Banner Far East Military District: "According to Readers' Letters: Nothing But Assurances"]

[Text] "Did you get the jacket?" "Did you get hold of the boots?" Such questions already have become customary for us. We greet each other with them before each flight section. We are the young pilots of air unit "X."

An uninitiated person who overheard our questions probably would smile as if to say the lieutenants are joking. But we are in no laughing mood. Before flights each of us is worried about where to get the deficient flying uniform, for people aren't allowed to fly without it. And so it's necessary to borrow jackets and boots from colleagues.

We took our problem to appropriate appointed persons and were promised help, but matters have still not gone beyond this.

Lt V. Rublev, Lt S. Savolaynen, Lt A. Pstygo

We acquainted Lt Col V. Uskov, commander of an aviation logistical subunit, with the contents of this letter to the editors.

"The lieutenants are exaggerating!" he hastened to assure us. "There are a few in our garrison who don't have a complete set of the flying uniform, only those for whom there is no clothing of the necessary size at the given moment."

As a check showed, however, Lt Col Uskov was violating the truth. The young pilots were not exaggerating at all. Squadron commander Lt Col V. Pereygin,

captains G. Skvortsov and Yu. Berezyanskiy and many others confirm that they constantly have to loan their clothing to the young pilots.

After this Lt Col Uskov himself also admitted the seriousness of the situation.

"But this is not our fault," he explained. "We are not supplied with clothing of the necessary sizes. We've already sent so many requests to higher headquarters!"

But he didn't show any copies. There apparently had been no such requests.

In short, certain appointed persons in the aviation logistical subunit were taking an unconscientious attitude toward performance of their official duty. The question of receiving special clothing is very important for pilots. A flight can't be made without proper gear.

It is true that at some point in time there may not be clothing of the necessary size at the clothing warehouse, but the clothing service is obligated to order necessary special clothing and provide it to pilots without delay. The necessary clothing has not been here for a long while.

At the end of the talk Lt Col Uskov assured us that the situation would be corrected in the near future and the young pilots would be supplied with everything necessary. Before publishing this letter I phoned the garrison and asked whether or not the officer had kept his word. Alas! Far from fully. Apparently the lieutenants have to await what has been promised for three years, as they say, if of course the appointed persons responsible for providing pilots with necessary clothing do not change their attitude toward matters. Isn't it time to evaluate their irresponsibility in the proper manner?

6904

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ARMED FORCES

LIVING CONDITIONS OF SERVICEMEN'S FAMILIES NEGLECTED

Moscow KRSNAYA ZVEZDA in Russian 5 Aug 83 p 2

[Article by KRSNAYA ZVEZDA correspondent Engr-Col B. Lyapkalo: "According to Readers' Letters: Indifference"]

[Text] I was brought to the headquarters of the railroad unit by a letter concerning shortcomings in everyday living conditions of servicemen's families.

"You know how everyday life is," said Officer A. Skvortsov, after hearing me out. "We try to improve it and are doing everything within our power. But the fact that people are complaining, well there is no getting rid of the complainers now..."

The small military post where the letter's authors live takes shelter on the outskirts of the oblast center. Nature in abundance is roundabout, but here there is desolation. A children's playground had begun to be built in the middle of the post through someone's initiative, but they didn't complete it.

Women's council chairman N. Zhuravleva and other women believe that attention to those who live here relaxed a bit after the battalion commander, his deputies and certain other officers were moved to houses in the city. Acting battalion commander Maj R. Khan asserted that the residents themselves show no activeness in building up the post. Both sides probably are right on some things, but there is no answer to the specific question "Why?" Why is garbage removed irregularly? Why aren't the dilapidated roofs being repaired? Why is the store open at a time inconvenient for working women? And finally, why is the radio broadcasting net inoperative? These and other questions repeatedly were asked of appointed persons in the battalion and unit. They were asked and remained undecided.

For example, there were complaints concerning distribution of apartments. On being checked, they were admitted to be just and new lists were compiled but

the proper order just was not imposed. Today housing commission chairman Maj Khan cannot explain clearly why the lists were compiled this way and not otherwise. There is no document in the subunit by which one must be guided.

A week after my TDY it was learned that drinking water already is being brought in to the post I visited, that roofs are being repaired there and pedestrian walks are being graveled. Maj G. Makarenko announced that as soon as all members of the housing commission assemble, the lists of priority for receipt of housing will be revised once more.

But why didn't they do this before? Is it because of the indifference to people's needs which I sensed in the headquarters?

6904

CSO: 1801/444

ARMED FORCES

CHARACTERISTICS, DUTIES OF REGIMENTAL COMMANDER DISCUSSED

Moscow KRASNAYA ZVEZDA in Russian 6 Aug 83 p 3

[Article by Colonel A. Khorev, Red Banner Carpathian Military District:
"Both On the Job and In His Heart"]

[Text] The steep ladder of an officer's career growth has an especially difficult and honorable step: The duties of a regimental commander (or of a first rank ship). Broad are the duties dictated by responsibilities; multifaceted are the requirements for professional and moral qualities; and great is the responsibility for the regiment's (or ship's) combat readiness, its combat and political training, military discipline and political-moral condition of the personnel, and the status and preservation of weapons, as well as combat and other equipment. Regimental commanders and ship captains have a leading role in maintaining the most fruitful work mode possible among the troops and on ships in order to implement tasks relating to the communist education of servicemen that resulted from the decisions of the 26th Party Congress of the June (1983) Plenum of the CPSU Central Committee.

The formation and experience of regimental commanders (or ship captains) is a regular topic in KRASNAYA ZVEZDA. The editors are planning to discuss this subject of our military personnel in detail in a series of sketches under a new title, "The Regimental Commander: Duties and Characteristics" and "The Ship's Captain: Duties and Characteristics." The first sketch is appearing today.

He and I had to agree about our first meeting, but it seems I just could not do it. I kept calling him until midnight, both in the regiment and at home, but he was never there; he was out at the training grounds. I called him early in the morning, but it turned out that he was once again out in the field. I followed him there. Finally, I caught up with him at one of the training sites, and we became acquainted.

Lt Col Gennadiy Nikolayevich Andreyev was standing on an elevated area, with a microphone in his hands. Before him lay a large map. Preparations were being made for tactical training with combat firing. A motorized infantry regiment of the famous Samaro-Ul'yanovsk, Berdichev, Iron Division was developing plans for a breakthrough of prepared enemy defenses that were saturated with anti-tank devices. After that, it had to cross a water barrier, and take and occupy an advantageous position.

Tall and athletically built, wearing a field jacket with multi-colored ribbons and a deputy's badge on his chest, Andreyev presented the kind of figure that artists usually place in the center of their paintings. He looked calm, even a bit phlegmatic. The presence here of senior officers, the division commander and deputy commander of the district armed forces, did not bother him. He held himself confidently as the master here, which actually befits a commander who is organizing the battle and considers himself the sole commander. But "befits" is really theoretical; in practice, for an officer who has commanded the regiment for a relatively short time, these mannerisms seemed somehow not completely natural and even showy. "I wonder if he is putting on an act?" was the thought that unwittingly crept into my mind.

I have seen this weakness before in some officers who were as successful as he is. However, their acting usually did not last long. One such commander, not unsuccessfully playing the role of a well brought up and socially pleasant person in front of reporters, suddenly, not able to keep to his role, angrily shouted into the microphone to motorized infantry units that had slowed down: "How come you are crawling like ..." - and here he let loose a crude, vulgar little word that he probably was used to uttering every day and which not only cancelled out his attempt to look intelligent, but most importantly, he ruined the combat mood of the troops advancing to attack.

I remembered this incident in contrast to Andreyev, who in a similar situation would from time to time remind his tank troops, drawing in clouds of dust, in a businesslike way:

"Speed ... Keep up your speed ... Do not loose your rhythm..."

His voice was loud and authoritative, but his intonation was even and calm, and perhaps because of this, the atmosphere around was also calm. He indicated errors and shortcomings that commanders had permitted, but did everything without commotion, without irritability and without reprimands.

Many people later told me that Andreyev is always so unhurried and even tempered.

One of his earlier ratings, however, had the notation that he had a "hot temper."

It would appear that it is not his temper that controls him, as happens with some others, but he controls his temper.

"That's the way it is," agreed the officers who have known Andreyev for several years in the service and who did not remember any manifestations of his hot temper. Apparently, this remained irrevocably behind him in his long past youth as a lieutenant. Maj. Aleksandr Vladimirovich Garkusha also shares this opinion. He knows Andreyev better than do others, because they were students together for three years at the Military Academy imeni M.V. Frunze, and now he has been serving under his command in the regiment for nearly two years, first as a battalion commander and now as the regimental chief of staff.

Relations between former classmates, when one of them has become the chief of the other, often do not develop easily. Here, to their credit, everything is proceeding normally. Upon arriving at the regiment, their relationship took on a new aspect, but the old one was not lost. Garkusha immediately accepted Andreyev's superior position without any qualifications whatsoever. He accepted him both on the job and in his heart, because he knows the high professional and moral qualities of the commander and has a great deal to learn from him. On his part, Andreyev behaves correctly and naturally with his former classmate, as well as being demanding but friendly. Learning his new duties are not easy for Garkusha. He makes errors and, under these conditions, especially noticeable is Andreyev's ability to reconcile two qualities that at first glance are not compatible: to be strictly demanding and immeasurably full of good will. Some chiefs would be either uneven in their demands or short on good will. In Andreyev, these qualities manifest themselves in full measure in his relationships not only with Garkusha, but with all his subordinates, from regimental deputy commander to private.

His group of deputies turned out to be friendly, energetic and capable. Actually, "turned out to be" is probably not the best term to use here. It would be more accurate to say "formed." It was formed in a joint and purposeful endeavor, and not without work on Andreyev's part and not without his personal influence, including some of his characteristics, such as his party spirit, directness, orderliness, and his concerned and respectful attitude toward people. Everyone knows how deadly it is for a group to experience all kinds of falsehoods, insincerity, malicious whispers behind a comrade's back about something that had gone wrong for him. Everyone knows this, but in practice, not everyone takes it into consideration. But Andreyev, in his relations with his deputies, battalion commanders and, as far as that goes, with all other subordinates, maintains a good-willed directness and comes out as the enemy of all insincerity and falsehood.

An unfortunate incident occurred on the job to Aleksandr Grigor'yevich Stafiyeveskiy, deputy regimental commander for rear services. At a commander's meeting the incident is evaluated and preventive measures for the future are looked into. If something goes wrong in educational work, Andreyev shares his views with his deputy for political affairs, Maj Yaroslav Vasil'yevich Kuptsevich, about their respective shortcomings. When things like this occur, difficulties in relationships do not arise. Each deputy accepts the commander not only as his direct chief whose orders must be carried out unquestioningly, but also as the senior, more experienced and wiser comrade, with whom one can and should, to one's benefit, discuss the ways, methods and means of carrying out an order, and from whom one can learn

something of lasting value, the ability, for example, to manage people and attract them to one's self and to win their confidence. It is not by chance, after all, that ever since he was a lieutenant, he has always been elected to the party committee staff; during his training at the Academy, he was party secretary of the office for party courses for all three years; and during the last local elections, he was voted in as deputy of the city council [Soviet]. Or because of his creative ability, it would seem that it is not his pattern to think about the seemingly most everyday, commonplace problems.

The deputy for political affairs noted one time, and then once again, that Andreyev receives officers, warrant officers, sergeants and enlisted men at any time, even, as they say, inopportune times, in order to listen to their personal problems. There are office hours that are established by the daily schedule, but Andreyev sometimes sits late in his office with one of his subordinates. And then the deputy for political affairs heard one officer, full of pride and gratitude, remark:

"Our commander will never say, 'Come tomorrow.' His door and his heart are always open."

The political deputy liked and remembered those emotional words. Once, as if by chance, speaking with Andreyev about his receiving personnel on personal matters, he asked if these visits by subordinates at unscheduled times did not interfere with his duties, and would it not be better to direct those people to him, the political deputy.

"No, it would not be better," said Andreyev. "When people turn to me, I have to make the decisions. Although sometimes perhaps it really does add to the difficulty of my job. According to regulations, maybe this is not worth doing. But when there is the smallest opportunity to see a person, it should not be refused. After all, personal problems are often the most critical and touchy subjects. To a young man, even the simplest problem can seem to be urgent, in view of his inexperience with life. In a word, as a poet once said, one should not deny a person either a blanket or love," concluded Andreyev, smiling softly, and Kuptsevich could not but admit that there was logic in the commander's thinking.

Here it should be noted that specific characteristics of young adult psychology had interested Andreyev for several years. He reads and thinks about it a great deal. Of course, this is not idle interest; after all, a military unit is a group of mostly young men. The average age of officers in the regiment is only 27 years, and we are not even including of enlisted men and sergeants. And the social composition of the young men is changing today before our very eyes. The army and navy today are getting a young generation that is the most literate ever in the whole history of our country. It grew up under socialism, under a constant increase in prosperity, and under peaceful conditions. It does not know and has not personally experienced the severe trials of class struggle and wars. We must, as was pointed out in the June (1983) Plenum of the CPSU Central Committee, untiringly work for the strengthening of the ideological-moral, class, and labor consciousness of youth. And the commander, with his deputies, battalion commanders and political commissar is seeking the way to the minds and hearts of his troops.

Once, returning from commanders' meetings, I stopped by to see Kuptsevich and put a youth journal in front of him that had the thoughts of Yuriy Bondarev, a laureate of the Lenin and State prizes, published under the title, "Value Each Day of Your Earthly Time."

"Look, Yaroslav Vasil'yevich, there are interesting thoughts here on the meaning of life, about one's world outlook, about duty Perhaps it would be worth discussing it in the companies. Soldiers today are drawn to such thoughts and value the opinions of authoritative persons."

Andreyev is convinced that today genuine attention and respect toward the soldiers cannot be limited to worries about daily bread. It only begins with that, and then comes serious attention to his spiritual world, his attitudes, and his aesthetic needs. For military life, the regiment has things not only well put together, but also tastefully decorated. The barracks have been redone and aesthetically decorated. The Lenin rooms have colored television sets. The bedrooms of the buildings had decorative room dividers, lace curtains and living areas. The dining room has neat looking tables for six with hygienic covers, and a winter garden with exotic plants, such as palms and magnolias.

All this not only makes the barracks "seem like home," but also has a calming and disciplinary effect on the soldiers' psyches. The beginnings of these improvements of everyday living were laid by Andreyev's predecessors, but he became a worthy successor and continued their endeavors, becoming a strong supporter and defender of these improvements.

It may seem that such an obviously good deed would not need any kind of defense. Oh, no. It is in words that we support new ideas, but in practice we sometimes do not see the sprouts of something new even in front of our eyes. The military district newspaper SLAVA RODINY published an article, "Why Does a Soldier Need a Goldfish?" in which it was asserted that all kinds of aquariums and curtains in barracks "are worthless to a soldier." And although the article concerned another unit in the regiment that Andreyev was about to take over, light clouds began to gather over their canaries and goldfish. There were people who were ready to bury a good beginning and would have been happy to influence Andreyev in this matter. But he was used to looking at the roots of educational matters. He was firm in matters of principle and he took the correct position. The commander of the military district, Col Gen Valeriy Aleksandrovich Belikov, did not allow the spark to die out even on the level of the military district, but helped it grow into a flame. Today there is an inspection competition, "For every garrison - model living," and aesthetic elements have taken their rightful place in it.

The regiment commanded by Andreyev has traveled along a great combat road and has been awarded a combat medal. In the postwar years it has twice earned the Pennant of the USSR Ministry of Defense for courage and military valor. Because of its total scores during the last training year, the regiment again was awarded the rotating Red Banner of the district's military council. Lieutenant Colonel Andreyev, in addition to the medals he had received earlier "For Combat Services," "For Bravery in Fire-Fighting," and other

awards, another award is now shining on his chest, "For Service to the Motherland in the USSR Armed Forces," Third Degree.

In a word, he has achieved notable heights. But at work it is really like in combat: to maintain a height is often no easier than to reach it Commanders and political workers have difficulties, but they are not complacent. They work a great deal, selflessly and amicably.

This is the kind of style that is being followed here.

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CSO: 1801/462

ARMED FORCES

TRAINING EXERCISE INVOLVING CONSTRUCTION OF PONTOON BRIDGE

Moscow KRASNAYA ZVEZDA in Russian 6 Aug 83 p 1

[An article by Senior Lieutenant A. Kluban', Red Banner Kiev Military District: "The Bridge is Ready"]

[Text] Tactical training was being conducted for young servicemen of the pontoon company commanded by Sr Lt A. Demchenko, this was the first real test of combat readiness. And they passed it well.

As twilight came, a boat with pontoon builders secretly pushed off from shore. They had to conduct a reconnaissance of the bridge alignment. The accomplishment of this mission was entrusted to the most experienced servicemen headed by the platoon commander, Sr Warrant Officer P. Koval'. They were backed up by the experience of having built more than just one bridge across water barriers, both in summer and winter. The engineering reconnaissance specialists worked quickly. Each one tried to do his duty the best he could. The most important factor depended on it, and that was the exactness of the markings on this low water bridge. The reconnaissance men had especially carefully prepared data on the characteristics of the current, shores and the soil of the river bed. In a word, they worked conscientiously. This was the tradition in this group: If you have to work, then work so that the end result will make you happy.

Around midnight, trucks with construction materiel came down to the water's edge. Preparations began for erecting the bridge. And the dawn was just barely beginning to break when the shore was turned into a construction area. Gasoline saws buzzed, axes pounded, orders were echoing around Work was going well. A barge for driving piles was put together in less than the allotted time. Immediately, a diesel pile driver went into action. And the thick piles, one after another, were driven into the river bed. A fast current complicated the task, but Jr Sgts G. Chulanov and I. Dikhtyar' did everything to make the course of the barge adhere strictly to the markings. Not a single deviation in the work of the pontoon builders escaped the eyes of the experienced specialists working under Senior Lieutenant Demchenko and Senior Warrant Officer Koval'.

Everything was proceeding according to plan. But suddenly the "enemy," trying to halt the advance of our troops, decided to conduct an air strike in

the crossing area. Aircraft appeared from behind the clouds. The tactical exercise began. Senior Warrant Officer Koval' was put out of action. His place was taken by Jr Sgt S. Sazonov. Several other experienced specialists were replaced by young soldiers because of the action.

The work pace did not slacken for a single minute. It was apparent that the pontoon builders would not get used to this situation, which was as close as possible to combat in a training environment. In practical exercises and training they had mastered not only the basic, but also the related specialties, and learned to work in critical situations and under pressure. And now, when the situation required it, the pontoon builders worked precisely and confidently on building the bridge, facilitated by the competition that had developed among them.

...The first assembled pieces were soon on the water. The company commander, Senior Lieutenant Demchenko, kept looking at his watch impatiently: Combat vehicles would be approaching the shore any minute now. Exactly on schedule came the report: "The bridge is ready!" And soon, tanks and infantry combat vehicles were crossing over the wooden deck. The exercise continued.

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ARMED FORCES

RULES, REGULATIONS AT MILITARY EDUCATIONAL INSTITUTIONS

Moscow KRASNAYA ZVEZDA in Russian 17 Aug 83 p 2

[Article: "Legal Information"; passages rendered in all capital letters printed in boldface in source]

[Text] Commander Training at Military Educational Institutions

THE PROCEDURE OF ORGANIZING COMMANDER TRAINING OF MILITARY EDUCATIONAL INSTITUTION PERMANENT STAFF OFFICERS, GENERAL OFFICERS, AND FLAG OFFICERS HAS BEEN SPECIFIED. It shall be accomplished on the basis of plans drawn up for each academic year, both for the military educational institution as a whole and for faculties, battalions, departments (subject areas), and sections. The academic year shall begin on 1 September and end on 30 June.

Classes shall be conducted on the basis of the groups made up with consideration of position held, area of specialization, and level of military education of the military personnel involved. Progress shall be tested during the course of study, and examinations shall be held and grades assigned at the end of the academic year.

Holding a Second Job in the Personal Services Area

IN ADDITION TO THE EXISTING PROCEDURE OF HIRING PERSONS AS SECOND EMPLOYMENT, IT HAS BEEN SPECIFIED THAT ENGINEERS, TECHNICIANS AND WHITE-COLLAR EMPLOYEES MAY BE HIRED TO SUCH EMPLOYMENT AT PERSONAL SERVICES ENTERPRISES OF THE USSR MINISTRY OF DEFENSE, REGARDLESS OF THE SIZE OF THEIR WAGES AT THEIR PRINCIPAL PLACE OF EMPLOYMENT. The second job for which such persons are hired shall directly involve providing personal services for military personnel, army and navy civilian workers and employees and the members of their families, with work time not to exceed one half the normal work time of a full-time job. Such employment shall be permitted with the written permission of the commanding officer of the military unit (chief or senior official of establishment, enterprise, organization) at the place of principal employment, with the agreement of the trade union committee, and only at one personal services enterprise. Wages for the second position (job) shall be paid on the basis of the appropriate salary figure or wage rate, for work actually performed (time worked).

Navigation in Soviet Territorial Waters

IN CONNECTION WITH PROMULGATION OF THE LAW ON THE STATE BORDER OF THE USSR, THE USSR COUNCIL OF MINISTERS RATIFIED RULES AND REGULATIONS GOVERNING NAVIGATION AND PRESENCE OF FOREIGN NAVAL VESSELS IN SOVIET TERRITORIAL AND INLAND WATERS AND PORTS. During this time foreign naval vessels shall fly their naval ensign or national colors and shall observe navigation, port, customs, and other rules and regulations. Submarines and other undersea vehicles shall remain surfaced. The rules and regulations define the concept and specify the purposes and conditions of innocent passage by foreign naval vessels in USSR territorial waters (territorial sea). Activities contrary to the laws of the USSR, photographing of military installations, lowering of persons or objects onto the water, and any activities under water are prohibited in Soviet inland waters and ports.

3024

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ARMED FORCES

CORRESPONDENT INVESTIGATES COMPLAINTS AGAINST CLOTHING ENTERPRISE

Moscow KRASNAYA ZVEZDA in Russian 18 Aug 83 p 2

[Article, published under the heading "Prompted by the Editor's Mail," by KZ correspondents Lt Col V. Bezrodnyy and A. Perestenko: "Red Tape With Making Clothes"]

[Text] The editors of KRASNAYA ZVEZDA have recently received a great many letters dealing with the unsatisfactory performance of garrison tailoring shops. Writers complain with particular frequency about excessive time taken to make officer's uniforms, poor quality of the product, and rudeness on the part of tailor shop personnel. Correspondents of this newspaper relate the causes of such a situation at certain enterprises of the North Caucasus Military District.

We climbed to the second floor of a small brick building. Housed here were the quarters of Rostov-na-Donu garrison Shop No 3. Major V. Fesenko handles orders for uniform jackets and trousers.

"The first fitting will be in a month and a half," announced acceptance clerk R. Kondrat'yeva. She later said the same thing to Lt Col Yu. Shevtsov and other customers. And yet right there was a schedule indicating how long it would take uniforms to be ready: uniform jackets -- 20 days, trousers -- 15 days. It seems that they regularly fail to meet these schedules.

"We would like to do the job faster, but we cannot," Roza Aleksandrovna explained to us. "We have a great many orders...."

We had not come to this shop merely by chance. We had been brought here by a letter sent to the editors by Col Yu. Sergeyev. On 27 October of last year he had given them material for making him a military overcoat, but the coat was not completed until the end of March of this year, and was also done by Shop No 1. Work on the overcoat was completed here because the other shop was jammed up with work. But here too they did not treat the customer right. Ten different times they postponed fitting dates with various excuses.

A similar "road to Calvary" was experienced by Capt 2nd Rank A. Oleynikov, whose overcoat took exactly 6 months to make, although regulations specify 30 days.

Our inquiry revealed that some customers wait a year and sometimes more for tailoring jobs to be completed.

And even with this slow work pace, the quality of the finished article many times leaves much to be desired. Such a conclusion is warranted even by those facts confirmed by documentary evidence. But when we brought up the matter of complaints, they managed to find all kinds of justifying excuses. They came right out and told Lt Col V. Vazerov, for example, that since he had signed a receipt of acceptance for his uniform jacket, they would not perform any alterations on it, even if the sleeves fell off.

They try to explain away with just one excuse the fact that it takes so long to get a tailoring order completed: for a period of 6 months they had been making uniforms for graduating service school students, and therefore it was taking longer to do all other tailoring jobs. This would seem to be a convincing argument, but we cannot fully concur with it. And here is why. The instances of delay in making uniforms cited in the letters written by officers Sergeyev and Oleynikov, as well as similar instances uncovered by us pertain to a time when they had not yet received any instructions about making new uniforms for the young lieutenants.

The tailors are not making an adequate effort to protect the good name of their enterprise, and the influence of workforces and socialist competition is being little utilized toward this end.

In our opinion various factors are impeding normal work operations at both shops. First of all we should like to state that certain personnel display an inadequate sense of responsibility for the assigned task, and frequently they also are in gross violation of specified rules of conduct. Tailor's cutter Solodenko was fired for this reason. Strong censure was also leveled at master tailor Dvoryaninov and tailor's apprentice Li for poor tailoring work. And although such cases received the attention of administrative authorities, party and trade union activists, things did not improve.

We must state that tailor shop personnel also take a long time to complete jobs because both enterprises are poorly equipped. Shop equipment is rather worn and frequently breaks down. This leads to unwarranted losses of work time and to forced work stoppages. In Shop No 1, for example, we watched them work for almost 40 minutes on repairing two sewing machines which had broken down. As a result two workers failed to accomplish their day's work assignment, and at least two customers will hear the tired excuse: "Not ready for fitting."

People complained to us that they were short of irons, other simple devices and tools, and that there was inadequate lighting in the shops.

As we know, people usually respond with greater labor effort to concern with improving daily living conditions. Inadequate attention is also being devoted to this matter. For example, there is no dining facility where personnel could obtain a hot meal during their lunch break. They should also give some thought to providing a dormitory for young specialists employed at the shops, and they should also provide a kindergarten. What is happening is that certain individuals, who are good workers, see a lack of attention and indifference to their

needs and take employment elsewhere. Recently, for example, experienced seamstresses N. Dryta and N. Feronova were forced to quit their jobs.

We discussed all these matters with the district trade directorate chief, Lt Col A. Shchuplyak. Although he has not held this position long, he is acquainted with the state of affairs and promised to take measures.

The people in the garrison special units political department are also aware of the poor job being done by the tailor shops and the fact that they are failing to complete equipment tailoring orders within the specified time. Unfortunately, however, they are doing little to correct the situation. Nor do measures planned in the political department and directed toward improving quality of servicing military personnel, the members of their families, civilian workers and employees always produce the desired results. It is clearly important to change the attitude toward provision of services on the part of certain officials. Up to the present time they frequently treat the concerns of these tailor shop personnel as matters of minor importance.

We also have words of reproach for certain district rear services headquarters staff officials. They are to blame in part for the fact that in recent years the district's trade and services enterprises have received virtually none of the apartments which they were supposed to be assigned in newly-constructed housing.

Concern about people has been and continues to be a paramount task of our party. The area of personal services occupies an important position in accomplishing specified tasks in this area. Any underestimation of this matter is intolerable. The external appearance of military personnel should be regulation at all times. Therefore one must address this matter with a strong sense of responsibility.

3024

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ARMED FORCES

CHEMICAL TROOPS PRACTICE LAYING SMOKESCREENS

Moscow KRASNAYA ZVEZDA in Russian 20 Aug 83 p 1

[Article by Lt Col V. Skrizhalin, Limited Contingent of Soviet Forces in Afghanistan: "Under the Cover of Smoke"]

[Text] The country is semi-arid--cracked earth, smooth as a table-top, hard as stone.... It is humid and dusty and there is no sign of life. Even a breeze is not pleasant. If one springs up, it burns more than it refreshes. The temperature in the sun is above 50.

The training ground is located here in an area bordering the mountain range. The training site for the chemical troops is somewhat off to the side of a moving-target tank gunnery range, where the cannon thunder and machine guns blast off their rounds. They reinforce their skills in defense against enemy weapons of mass destruction here.

Today personnel of the chemical defense subunit have come to the training center to practice the procedure for covering a column on the march with smokescreens. The veteran fightingmen are accustomed to this kind of work. More than once in the combat training they have laid smokescreens over dangerous sections of roads, helping the motor vehicle drivers, motorized riflemen and tankmen to successfully cross them. There are young soldiers in the exercise today, however. Naturally, they are receiving special attention from the exercise director--officer I. Tymchuk, chief of the unit chemical service.

The chemical service chief is concerned about more than just helping the new generation to fit into the formation, however. He is using this regular exercise also to verify once more his calculations and observations for the specific employment of smokescreens under local conditions. It is believed that the climate in Afghanistan is not suitable for the use of smokescreens. They stay in place in the mountains and canyons, but exceptional skill is required for controlling the smoke on the level terrain, where ascending air currents and whirlwinds prevail. The chemical service chief stressed this fact when he assigned the training mission.

Officer A. Korovnikov, subunit commander, begins the drill. Not all of his men are successful, however. On the first run the group representing the enemy "attacks" the column from the left, from the leeward side. Some of the fightingmen

do not get their bearings in the situation right away, however. Several of the young drivers concentrate on the smoke grenades and do not increase their speed as they should, but reduce it, slowing the entire column's movement. The director also notices that the screens have not been laid with equal density, since the grenades have landed in bunches along the road.

The second run would probably have been more successful, had the "enemy" repeated its actions. This time, however, it "shells" the column from both sides. Although the senior member of the column sets an example of resourcefulness, not all of his men perform skilfully.

The chemical service chief rapidly fills his notebook with notes about what should be done and what should be considered first, for teaching the personnel techniques for laying smokescreens around them: work out unified signals, graphic and understandable; use tests for developing in the fightingmen, especially the drivers, the ability to rapidly assess the situation and make decisions; create great smoke density not just by increasing the number of smoke grenades, but also by dispersing them evenly....

Before beginning the next part of the training--creating smoke screens with large smoke pots--the exercise director first listens to what his men have to say. Based on their previous experience, Guards Junior Sergeant M. Golutskov and V. Openyshev suggest dropping the pots on both sides of the road, regardless of the direction of the wind at the time. This is exactly what officers R. Stasilovich and V. Tarandin, among others, do when the commander orders the motor vehicle column be covered with a smoke screen during a march. They fly along the road in a helicopter and lay smoke along one side and then turn and drop the smoke pots along the other. The wind is not blowing in a stable direction at the time, but the road still remains covered by a dense screen of smoke.

Now the atmospheric instability gives the fightingmen another surprise: a sandstorm blows up in the area of the smokescreen. Like the sweep of a radar screen, the column of dust and smoke makes one turn, then a second a third.... It moves slowly at first and then more and more rapidly.... Had the pots been dropped along only one side, some sections of the road would definitely have been exposed in the whirligig of the sandstorm. The effective distribution of the smoke pots, however, and the fact that they have been dropped in adequate numbers prevent the whirlwind and the ascending air currents from sweeping the smoke from the road. The vehicle of Guards Junior Sergeant K. Morozov, which is out of action in accordance with a hypothetical problem, is also reliably concealed from the "enemy" with smoke. It takes his comrades only a few seconds to take the "damaged" vehicle in tow. The column moves rapidly forward once more.

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ARMED FORCES

GORCHAKOV ON BATTLE OF KURSK

Moscow SOVETSKIY VOIN in Russian No 14, Jul 83 (signed to press 29 Jun 83)
pp 6-8

[Article by Col Gen P.A. Gorchakov: "Versts of Valor"]

[Text] Hero of the Soviet Union Colonel General P.A. Gorchakov, presently a member of the Military Council and chief of the Political Directorate of the Strategic Rocket Forces, served during the Great Patriotic War as secretary of the party bureau of a rifle regiment, as a regimental commissar, deputy regimental commander for political affairs and chief of the political section of a rifle division.

He traveled the frontline roads from Yelets to Prague, took part in the fighting at Voronezh and on the Kursk salient, participated in the forcing of the Dnepr and liberated Poland and Czechoslovakia.

In his memoirs he tells about the exciting war events, about the fierce battles fought on the fiery salient, about party-political work experience in the combat situation and about how the communists and political workers inspired the fightingmen with their personal example to perform real feats.

The march of time cannot be halted. We are separated from those wartime events by a period of many years. We have preserved every battle in our memories, however, the name of every person alongside whom we entered into the attack, with whom we shared our last piece of dry bread, whose life in the battle was as dear to us as our very own.

The soldiers and commanders..... I never stop marveling at their courage, steadfastness and heroism. The power of our weapons and the spiritual greatness of the Soviet fightingmen were manifested especially clearly on the Kursk salient. Unforgettable events occurred there.

No one slept on the night of 4 July. Soldiers sat in their trenches, preparing for a fierce battle. Only the scouts led by Captain Kireyko were engaged in combat operations. They managed to capture two German sappers, who were clearing

a passage through a minefield. The sappers confirmed the fact that the German forces would switch to a general offensive at dawn. We seemed to have everything in readiness. Ammunition had been brought up, each fightingman receiving 300-400 rounds and three or four antitank grenades. The regimental commander had made arrangements for the men to be fed somewhere at midnight, since it would hardly be possible to feed them during the battle.

The regimental commander and I inspected the combat formations. We began on the right flank, which was being defended by Aleksey Vasil'yevich Rybalko's battalion.

"How is morale?" the regimental commander asked him quietly.

"Excellent! We are ready to greet the Hitlerites with fire!" Rybalko reported crisply, paused and then added: "I wish they would hurry. Frankly, there is nothing worse than waiting and then rushing to make up for lost time...."

We then went to Captain I.S. Gavrilov's battalion. Everything was in order there as well. The men were alert and expectant, waiting for morning.

From there we went to Captain V.F. Blagodyr's left-flank battalion. We checked the boundary between it and an adjacent regiment cutting off the Orel-Kursk Highway. Things were obviously going to be hot there as well. The terrain was convenient for the movement of tanks, self-propelled guns and motor vehicles. At the division commander's order a training battalion placed under our command was added to our forces on that boundary.

We returned in silence to the regimental command post, which was located on the western edge of a small grove of trees. The regimental commander and I were both satisfied with our inspection of the battle formations of the subunits. We were still worried, though, about what the morning would bring.

Fedor Vasil'yevich Ledkov and I had already gotten to know each other and had even become friends. By nature sociable and easygoing with the men, he was bold and resolute in combat. In 1941, a terrible year for the homeland, the rifle battalion commanded at that time by Ledkov held back an offensive by two fascist regiments for a long time. The highest award, the Order of Lenin, was conferred upon Fedor Vasil'yevich for that brilliantly conducted battle.

We received the order from division headquarters to begin artillery counterpreparation at dawn. We waited patiently. The summer night is short, but it seemed endless to many of the men in the trenches, especially the new men. A narrow strip finally began to glow in the east. The predawn crispness and the excitement brought on by the battle soon to be fought caused the men to shiver slightly. Soldiers and officers wore their heavy overcoats, although it was summer. I was constantly looking at my watch: 0200... 0210... 0220.... And then suddenly lightning flashed in the sky and peals of thunder were heard. From somewhere behind us artillery of all sizes had struck at the enemy positions, and rocket shells flew over. Our troops were making a preemptive strike against the enemy.

The fiery storm raged for more than a half-hour. It was followed by silence. The Germans were silent; we were silent. There was only the trilling of larks

over the green fields, as they greeted the rising sun. There was not a cloud in the sky. It was bright and clear. Everything presaged a fine summer day. How much joy it would have brought to people, if not for the dreadful war!

I looked at my watch. It was approaching 0500. We were surrounded by silence. Our nerves were strained to the utmost. An hour passed, an hour and a half. The fascists were silent. At 0700 I had already decided to leave the observation post for the regimental command post. I approached my horse, which was standing in a shelter, and looked around. What was that? A group of German aircraft was floating out from beyond the forest, dark against the horizon. At that moment enemy artillery struck at the forward edge. The ground began to shake and move beneath my feet. Our artillerymen responded immediately: Shells weighing many pounds swished through the air over my head. The rumble of the fire and the roar of aircraft engines caused my ears to block. The battle had begun....

Naturally, I did not get to the regimental command post. I threw myself into the 3rd battalion's trenches: I wanted to make one more check to see that the battalion was prepared to repel an attack. Everything was ready. The fighting-men now had stern and concentrated looks on their faces. Yes, the agonizing uncertainty which had tormented us all night had ended. The hour for the long-awaited battle had arrived.

The fiery barrages came more and more frequently. The whistling of shells, the howling of bombs and the thundering of the blasts all now merged into an unbroken rumbling. Not only could it be heard: It was also felt by one's entire body. A thick cloud of smoke hung over the regiment. It became difficult to breathe--the air was saturated with burnt powder, with a caustic, sulfurous odor.

"Have the Germans used gas?" I thought aloud.

No one heard me. The gazes of the soldiers and officers were trained on the forward edge, where armored vehicles should appear at any time. We knew that the enemy was using tanks of a new design in these battles, tanks on which the enemy pinned great hopes. They had stronger armor, traveled at higher speeds and were armed with powerful weapons. This kind of information provided by intelligence could have worried the untested fighters at the beginning of the war. Some of them were still afraid of tanks at that time. Now, however, our soldiers had been tested not only by fire but by tanks as well, and had acquired experience in combatting the steel monsters. They calmly awaited the appearance of the "Tigers."

No one doubted that the enemy tanks would show up right away. After all, our division was covering the border between the 13th and 70th Armies. They had blocked the Orel-Kursk Railway and Highway, and we believed that the enemy would make the main thrust right there, at the base of the Kursk salient.

...Dark-gray hulks, squat and broad, rushed toward our trenches, swaying over the rough ground. The roar of their engines seemed to smother the rumbling of explosions. They approached nearer and nearer. The crosses on the sides were now clearly visible. Ricochets left smoky traces: The shells from the "45's"

bounced off any part of the "Tiger" armor like peas. The Soviet soldiers did not flinch, however, but demonstrated amazing steadfastness and fearlessness.

Private First Class I.N. Loktev and Private Yu.V. Dubovetskiy, armed with anti-tank weapons, were the first to distinguish themselves. They stood in a deep trench, calmly observing the approach of six enemy tanks which the Hitlerites had thrown against the boundary between the battalions. The lead "Tiger" was heading straight forward toward the antitank gunners, so as not to expose its side, stern or other vulnerable spots. Loktev took careful aim and fired. The "Tiger" continued to advance, however, ignoring the crack in its armor. The massive barrel of its gun, turning from side to side, would pause for a brief moment--and a shot would ring out. Now the barrel was aimed at the trenches occupied by the antitank gunners. I could see this from my position in a trench next to Lieutenant Myakili Kyamal, platoon commander.

"Fire, fire!" the lieutenant yelled at the private first class, but his voice was swallowed up in the roar of the battle.

Loktev fired. The tank which had been flying over the field suddenly made a 90-degree turn. The shot had broken a track. The tank now stood there with its side exposed to the antitank gunners. Loktev fired again. The "Tiger" began to smoke, tongues of flame danced over the armor and the Hitlerites jumped to the ground through the open hatches. Dubovetskiy cut them down with a submachine gun.

"That was great! That was simply great!" Myakili Kyamal exclaimed with delight.

The excited Azerbaijani also knocked out a fascist tank. Private First Class S.Z. Gerifichenko and Privates A.I. Dukunin and G.K. Kvitko knocked out a tank each. Not one of the six "Tigers" reached our trenches.

It seemed to me that the enemy altered its plans during the operation. Seeing that the regiment's defense sector had not been penetrated, the enemy turned toward Samodurovka. From the observation post we could see the wave of tanks roll toward Molotochevskaya Hill, raising a cloud of dust.

The fighting did not die down in our sector, however. A group of enemy tanks had wedged itself into the defense on our boundary with the adjacent regiment, and the tanks had moved toward the positions of a training battalion in the second echelon. A critical situation had developed. It seemed that in a minute or two the tanks would roll across the last line of our trenches and sweep over the undefended rear services. The tanks were followed by German infantry. I spotted the danger in time, leapt onto my horse and raced toward the training battalion's observation post. Regimental agitator Stepanov followed on horseback, barely keeping up.

"Report the situation! What is your decision?" I demanded of the battalion commander.

It turned out that the battalion commander had lost control of the companies, and he now simply went to pieces. There was nothing to do but remove him as battalion commander.

I summoned the company and platoon commanders and assigned them a specific mission. I ordered them to prepare the fightingmen for a counterattack. By this time antitank gunners of the first battalion and an adjacent rifle regiment had put some of the tanks out of action, and the other tanks turned back. The German infantry was still in the area of our trenches, however.

"Charge! Follow me!" I commanded the training battalion and rushed ahead, without looking back. Stepanov was running alongside me. I could hear the men behind me yelling "Ura!" more and more firmly and loudly.

The Hitlerites did not expect the counterattack. Stunned by the Soviet soldiers' daring, they retreated. The training battalion restored the positions we had lost. The danger of a breakthrough by the Germans had been eliminated.

Dmitriy Grigor'yevich Stepanov took over the battalion, while I returned to the regimental observation post. Communist Stepanov, the political worker, who had been called up from the reserve, demonstrated that he was a capable officer. He distinguished himself more than once in combat and was promoted. This came later, however. That day, 5 July, none of us could foresee his future for even the next 5 minutes. Fighting continued throughout the regiment's sector. There was not a second to rest, not the slightest relaxation of effort by those engaged in the battle. The Germans were actually making no headway. They were suffering enormous losses in a vain attempt to break our defense.

We were also having a difficult time of it. The enemy had a clear superiority in forces. Three enemy infantry regiments were attacking our positions. They were supported by 110 tanks and self-propelled guns of the latest models. When we add to this the fact that the German infantry regiment had almost a triple superiority over the Soviet rifle regiment in numerical strength, it is easy to see the enormous power which the Germans had concentrated on the narrow sector designated for the breakthrough. The attack by infantry and tanks was accompanied by artillery fire and aerial bombing.

The enemy was confident that it would succeed. Its confidence reached the point of brazenness. This can be judged from the following incident alone. Around midday the regiment's antiaircraft gunners shot down a fascist reconnaissance plane. The pilot parachuted from the aircraft and was taken prisoner and brought to the regimental headquarters. He was arrogant, contemptuously uttering one sentence after another through his clinched teeth.

"Yes, I'm a lieutenant. Here are my papers. Yes, I will tell you about my mission. I was to observe from the air as the Russians fled under the onslaught of superior enemy forces and report the site of the breakthrough to headquarters."

Captain L.V. Povzner, instructor with the division political section, translated the conceited ace's tirade. One sensed that the captain was barely restraining his indignation. I too experienced a feeling of deep anger coupled with contempt for the boastful enemy. This is why I asked him, more sharply than I should have:

"Well, just what did you see, 'hero'? Speak up!"

"I could see that no one was running away," the captive lieutenant said, his voice now dispirited. "Our tanks are burning like torches before your trenches. The columns of smoke are visible for dozens of kilometers along the front line. It is a terrible sight...."

Looking over the papers taken from the German pilot, Povzner suddenly burst out laughing. I asked him with surprise:

"What's wrong with you, Captain?"

His laughter struck me as unexpected and inappropriate. Povzner continued to chuckle, however, and handed me a rectangular sheet of pink paper:

"This is two tickets to the Odessa Opera Theater for Mister Pilot and his girlfriend. Notice that the performance begins at 2000 on 5 July. Mister Pilot here is going to have to apologize for being late."

"I didn't think this would take long," the prisoner explained. "I would patrol 30 minutes or an hour over the battlefield, report to command on the breakup of your defense and land at our airfield by the beginning of the performance. I didn't expect this. Who could have thought...?"

We laughed heartily at the Hitlerite warrior, who had lost his arrogance at the end.

During the second half of the day the situation in the regiment's sector became even more difficult.

"Hold out to the last soldier!" the division commander ordered.

And we held out. The regimental commander, his deputy, Captain N.P. Kokhanyy, and I took turns visiting the battalions to familiarize ourselves with the situation at the sites and encouraged the officers and soldiers. The regiment was losing strength, however, and the battle was not diminishing.

The names of many heroes became known that first day of the battle.

I have already told about antitank gunners of Myakili Kyamal's platoon, who destroyed six "Tigers." I then received a report that the platoon commander had also put out of action a "Ferdinand" self-propelled gun and that Sergeant N.P. Kuzoklitov had blown up three tanks with grenades.

Lieutenant P.S. Uvarov, a platoon commander, and Senior Sergeant F.I. Khlusov, commander of a machine gun crew, also set an example of courage and valor. Up to a platoon of enemy infantry covered by two "Tiger" tanks rushed toward the earth-and-timber emplacement in which they were located, firing at the emplacement as they advanced. One of the shells exploded right by the firing slit, and two of our machine gunners were killed by fragments. The tanks stopped for a time. The Hitlerites jumped out of them, planning to encircle the fightingmen and take them prisoners. Uvarov and Khlusov dragged a medium machine gun out of the half-demolished emplacement, set it up on the breastwork of a trench

and opened fire. The fascists were forced to withdraw and took shelter behind the tanks. The "Tigers" again moved forward and began to flatten out ditches and communications trenches. Lieutenant Uvarov permitted a tank to pass over him and then threw a grenade beneath the track. The "Tiger" began to spin in place. The only thing to do was to throw a bottle of inflammable liquid at the tank. This is what the lieutenant did. The tank turret burst into a flaming torch. Senior Sergeant Khlusov took care of the second tank. Having lost their support, the Hitlerite infantrymen were forced to retreat.

The antitank gunners, machine-gunners and submachine-gunners--communists and Komsomol members--fought selflessly, beyond all praise. They destroyed dozens of enemies and did not retreat one step without an order from the commander.

The medical workers also distinguished themselves. I would like to mention Z.B. Bariyeva, who was in charge of a medical party. Zaytuna evacuated wounded from the battlefield under a storm of fire.

Captain Stepanov was the hero of the day, of course. He continued to command the training battalion until late into the night, beating back numerous attacks by the Hitlerites. It was almost morning before Dmitriy Grigor'yevich turned the battalion over to Captain P.S. Kikayev, who had been sent by the regimental commander, and returned to headquarters to begin performing his duties as an agitator.

The soldiers fought selflessly in the battles on the Kursk salient, ignoring fear and scorning death. We can assess their morale from a letter sent by soldier and communist Aleksandr Samoylenko. Covering a group of comrades who were escaping from encirclement, he destroyed 13 fascists but was seriously wounded in the process.

"Rus, give up!" the enemies yelled as they crawled toward the fighter lying motionless on the ground. The communist blew up himself and the enemies pressing upon him with an antitank grenade.

The fighter's fellow soldiers found a letter in his pocket. It was addressed to a girlfrined, who lived in the village of Morozovka, Fatezhskiy Rayon, Kursk Oblast.

"My beloved! The fighting will start in a few minutes. We know that we are going to fight to the very end for our Russian land, for our people, for you, and we will not retreat one step. Remember that your friend Sasha holds high the honor of a Soviet soldier. It is better to die a heroic death than to permit the enemy to defile our country, our native land...."

...During the evening of 7 July we received our regular report from the Soviet Information Bureau, printed on the presses of the division newspaper. It contained the following:

"The Hitlerite headquarters has remained silent about the results of the first day of the large offensive begun by the German forces on the morning of 5 July on the Orel-Kursk and Belgorod axes. On 6 and 7 July the Hitlerite command

decided to 'change from Saul to Paul', to change from an aggressive party into a defender, stating that the offensive was conducted not by the Germans but by the Red Army.

"Why was the Hitlerite headquarters forced to resort to this deceitful trick?

"...The new German offensive did not take our forces by surprise. Fierce fighting has been underway for the third day on both axes, in the course of which our troops have destroyed up to 30,000 soldiers and officers, knocked out of action or destroyed 1,539 tanks and shot down 649 enemy aircraft. Our forces are firmly holding their positions. The enemy has only managed to penetrate our defense slightly on a few sectors of the Belgorod axis, and at enormous cost in losses."

The report on the successes achieved by the Soviet forces in frustrating the Hitlerite plans for the first days of their summer offensive, an offensive for which they had prepared both long and carefully, demonstrated our increased strength and command's firm conviction that the German tank divisions thrown against the Kursk salient would be routed. And they were. The best, select, SS tank divisions, the elite of the Wehrmacht, the "Adolf Hitler," "Grosse Deutschland," "Reich" and "Totkopf"--the entire enormous grouping of forces--proved unable to budge the Soviet soldier.

We received appeals and telegrams from the Military Council of the Central Front, which assigned missions to the fightingmen for a certain phase of the fighting. This helped us political workers to efficiently conduct the indoctrinational work with the personnel. On 9 July, for example, along with its summation of the 4 days of fighting, which essentially determined the outcome of the defensive engagement, the Military Council sent a telegram to the forces, thanking the fightingmen, commanders and political workers for their courage, iron steadfastness and honorable fulfillment of their military duty to the homeland.

Messages, telegrams and appeals to the forces inspired the fightingmen and helped them to selflessly fulfill their soldierly duty. A message from the front's military council to the soldiers and commanders was published in the army newspaper on 10 July. After reading the message, antitank gunner K.T. Nikerin told the company party organizer:

"I am not a party member, but I am with the party heart and soul. I will sacredly fulfill the mandate from the front military council. I will fight the invaders in a manner which will earn me the right to be called a Bolshevik."

And the antitank gunner matched his words with deeds. The very next day, when the enemy was once more attempting to penetrate our defense, Nikerin knocked a tank out of action. This is the way it happened.

Nikerin was in a trench, acting as lookout. A "Tiger" suddenly appeared from a gully 200 meters from him. The soldier fired his antitank weapon. The bullet bounced off the turret, without damaging the tank. The tank responded with a shell, which exploded next to the trench. A duel ensued. To each shot from the tank's cannon Nikerin responded with two. With one of the bullets he succeeded

in piercing the "Tiger's" turret. The tank then approached the trench and turned sharply in order to mash the antitank gunner. The Soviet soldier did not lose his head. He fired into the side of the tank, and the machine burst into flame.

In the meantime another tank had crawled out of the woods. Nikerin selected a position permitting him to fire at the side of the tank. There was another duel. This time the antitank gunner's luck ran out: Nikerin died, fulfilling his military duty to the end.

By 12 July it was already clear that the fascists' offensive would collapse at any time. The Hitlerites were still launching attacks, to be sure, still attempting to penetrate our battle formations. There was every indication that their efforts were weakening, however. A wave of tanks which had rolled up to the foot of Molotochevskaya Hill receded, and the steppe dust raised by the tracks settled back to earth.

The enemy's offensive was completely halted. The next day Soviet forces were rushing forward. A ditty, composer unknown, was highly popular among the soldiers and officers at that time:

At the portals of Kursk
Folks were amazed that day:
The Germans launched an offensive,
Only... turned the wrong way!

The Battle of Kursk, mighty in scope, broke the backbone of the Hitlerite Reich, of course, and destroyed its armored assault forces. It was one of the most important stages on our path to total victory over the enemy.

Inspired by our success, we drove the occupiers westward.

...Each time I recall those wartime events and my combat friends, I automatically compare them with today's soldiers and officers, the sons and grandsons of those heroes.

Modern combat involves different weapons, different equipment, and demands different things. Time has changed a great many things, but the courage, heroism, love for the homeland and loyalty to the party and the people--these qualities of Soviet fightingmen are equally great and strong today.

The homeland's peaceful labor is reliably defended.

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AIR FORCES

STRUCTURE OF AIR FORCES OUTLINED

Moscow SOVIET MILITARY REVIEW in English No 8, Aug 83 p 23

[Text]

The Air Force is a fighting service intended for joint actions with other armed services and independently when carrying out various missions on the continental, ocean and sea theatres of operations. The chief functions of the Air Force are: destruction of the enemy's nuclear weapons, routing (weakening) of his air groupings, air support of the Land Forces and the Navy, air transportations, air reconnaissance, landing and dropping of troops, communication and control support, and air cover of friendly forces and objectives.

In terms of its combat capabilities the modern Air Force is capable of attaining air superiority, delivering powerful blows at the ground and sea targets, destroying the most important military-industrial installations with the aim of undermining the enemy's military-economic potential. By acting against control and communication points the aviation can disorganise the troop control and control over weapons, and disrupt transport.

The Air Force possesses a high mobility and manoeuvrability which enable it to carry out a rapid shift of efforts from some directions of a theatre of operations to others, and the ability to penetrate deep into the enemy rear and to bring influence to bear upon his objectives, to use various weapons of destruction and electronic countermeasures in any weather, time of the day and the year and to deliver surprise and accurate blows from the air at the large stationary objectives and pinpoint moving ones. Carrying out different combat missions, aviation is capable of exerting a great influence on the progress and outcome of combat actions.

The Air Force includes: long-range (LRA), front (FA) and military transport aviation (MTA).

Long-range aviation consists of bomber missile-carrying, reconnaissance and special purpose aviation. The basis of the LRA is supersonic missile-carrying aircraft and bombers of great load-carrying capacity and a substantial action radius. Their main weapons comprise multi-purpose aviation missiles which make it possible to destroy enemy objectives without approaching the zone of action of his AD weapons.

Front aviation is subdivided into bomber, fighter-bomber, fighter, reconnaissance and special-purpose aviation. It is provided with supersonic, all-weather aircraft and also combat and transport helicopters. FA is capable of successfully fighting the enemy aviation both on the ground and in the air.

Military-transport aviation consists of troop-carrier and special-purpose aviation. Armed with modern aircraft, it is able to quickly transport troops and heavy military equipment over great distances, to ensure the manoeuvring of forces within the limits of the theatre of operations, to drop and land troops with materiel (including tanks, artillery pieces, missiles) in the deep enemy rear.

In 1935 the naval air arm left the Air Force and was assigned to the Navy, and in 1941 an air defence aviation also ceased to be under the command of the Air Force.

High combat qualities of the Soviet Air Force became vividly apparent during the Great Patriotic War (1941-45) in the battles of Moscow, Stalingrad and Kursk, in air battles over the Kuban area and in many other operations. As many as 7,500 combat aircraft fought in the Berlin operation — the last of these air engagements. During the war the Soviet pilots flew nearly 3,125,000

combat missions and inflicted heavy losses upon the enemy in manpower and equipment. The Soviet aviation destroyed in air battles and on airfields 57,000 nazi combat planes.

For the successful fulfilment of the combat missions and courage and valour displayed by airmen, 2,420 of them were awarded the title of Hero of the Soviet Union. Sixty-five pilots were honoured with this title twice and two, A. I. Pokryshkin and I. N. Kozhedub, three times.

Selfless devotion to the cause of the Party, heroic traditions, a deep understanding of their patriotic and internationalist duty contribute to enhancing pilots' readiness to fulfil any mission assigned by the Motherland.

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AIR FORCES

FLIGHT SAFETY IN COMBAT TRAINING

Moscow SOVIET MILITARY REVIEW in English No 8, Aug 83 pp 26-28

[Article by P. Bazanov, Lieutenant-General of the Air Force, Hero of the Soviet Union, Merited Military Pilot of the USSR]

[Text]

Combat training of the AF flying personnel is a complicated and multi-faceted process, in which flights figure prominently. To fly without accidents and even without potential causes of accidents is the primary mission of airmen.

Flight safety depends on many factors but the foremost of them, as past experience and the present flight practice have proved, are pilots' high moral, political and combat qualities, and thorough preparation for a particular flying mission.

...The weather in these parts is rather capricious. It seemed that everything had been provided for, but suddenly a snow shower had broken through the nearest mountain ridges and was moving towards the airfield. The same thing happened on the alternate one. A complicated air situation had taken shape. Among the experienced pilots who were at that time in the air there was a young one. At the moment he was flying a wide approach pattern in the area of aerodrome.

He passed the crosswind leg, then turned downwind.

"This is 130. On base leg. Flight altitude — 800. The critical fuel reserve light is on. Request clearance to land..."

The flight control officer hesitated but only a fraction of a second. Not a moment could be lost, otherwise a situation would develop when the only way out would be to eject. But he knew the young pilot's abilities, and was sure that he would cope with the mission and therefore decided to clear the landing.

"130, approach with elevation..."

Such a version of approach is difficult to perform even in simple weather conditions, but in this case the visibility was almost zero and the young pilot could rely only on his instruments. But he did not lose his nerves, correctly estimated the situation, managed to brace himself and precisely rolled the plane into final.

The flight control group rendered the pilot timely assistance by radioing the necessary landing data. The flight ended successfully.

It is a well-known fact that losses in the Air Force caused by the confusion of the crew far exceed those caused by the direct action of unfavourable factors. Hence it follows that every pilot should be always able to mobilise himself psychologically in an emergency situation. It is very important now to cultivate in the pilots the ability to display staunchness in

any circumstances, to quickly and correctly assess the situation, to expand the limits of the possible, and to behave with poise in seemingly hopeless circumstances.

Cultivating these qualities in pilots requires particular efforts. To this end, the units' command popularises advanced experience and courageous and proper actions of pilots and other specialists in emergencies. The attention of the personnel is focussed on the fact that in order to be able to find a way out of a difficult situation, they should have a profound knowledge of the aviation materiel, prescribed aircraft operation rules, practical aerodynamics and theory and practice of flights and should cultivate in themselves self-control, resourcefulness, self-reliance and readiness for handling emergencies.

Of great importance for inculcating necessary qualities in the pilots is teaching them to assess critically their readiness for a forthcoming flight and cultivating a sense of high responsibility for complying with all the requirements contained in documents regulating flight activities.

As is known, modern aircraft are very sophisticated machines as concerns both their design and aerodynamics. The increase in flight speeds has resulted in radical changes in their flight handling characteristics such as stability, controllability and manoeuvrability. The qualitative perfection of aviation necessitated the improvement of forms of organising and conducting the flights and control methods, as well as engineering and other types of support. All these improvements have been duly reflected in the regulations, instructions and other documents which have absorbed the vast experience accumulated by many generations of airmen in the course of combat and training flying practice. These scientifically grounded rules have acquired the validity of law, and the unflinching adherence to them should become a matter of honour and duty for every

pilot, navigator, engineer, technician, junior aviation specialist and all those who service and support the flights.

The achievement of excellent results in combat training and strengthening discipline and organisation depends in many respects on commanders and communists. They must be a model for subordinates and be able to lead them. In the training practice, for example, wide use is made of the principle: "Do as I do." Of course, special demands are placed on the leaders.

Discussing such a component of safety as readiness for the flight, it is necessary to emphasise the importance of the pilot's preliminary preparation for fulfilling a particular task, and simulator training. The purpose of preliminary preparation is to broaden the pilots' knowledge of aerodynamics, equipment, tactics and other flight disciplines as applied to routine flying missions. During pre-flight training the pilots study in detail the forthcoming mission, the procedure and peculiarities of its fulfilment, and train on simulators.

Training with special equipment is an effective method for enhancing the technical level, moral and psychological qualities of both the flying and flight control personnel. Complex and flight simulators make it possible to reproduce situations resembling those that may occur in the air or when controlling flights. But this training equipment can demonstrate its full value only if a search is constantly carried out to use it most efficiently.

The high training standard of airmen is a prerequisite for success in flight activities and for flight safety. The completeness and stability of knowledge depend on the trainee's psychical and physical capabilities and commander's pedagogical skills.

Flight simulation and the forming in the trainees of a conscious automatism in making decisions and determining their actions in complicated and surprise situations also contribute in a large measure to inculcating in the pilots stable skills and habits and to their further consolida-

tion. The more authentically the expected air situation is simulated on the ground, the better the flight itself will be executed, and the fewer flights will be naturally needed to acquire or restore the necessary skills.

The regularity of flights is an important factor for enhancing the pilots' training level. However, the problem of upgrading skills which ensure the security of flights does not boil down only to the above-said. The specifics of each particular case necessitate the redistribution of the pilot's attention and reorientation of his operational thinking. The pilot's timely response to a surprise event, his self-dependency, resourcefulness and initiative are of great importance in complicated situations.

The active and purposeful development of pilot's personal qualities also helps to enhance the training standard. The pilot should be ready to view any unforeseen situation as though he expected it and regard any critical situation as almost a routine one. To this end, it is necessary to work up in advance, while still on the ground, various versions of the mission to be fulfilled.

An imaginary flight in the aircraft cockpit may be highly useful when the pilot reproduces in his mind complicated situations and his corresponding actions, because, the flight, being deeply impressed in memory, consolidates the prepared decisions and acquired skills and helps the pilot regard similar situations in a real flight as already familiar events.

Flights are normally executed in a complicated and dynamic situation, and it is quite natural that their safety depends to a large extent on their correct organisation, skillful control and all-round support. By timely, competent and energetic actions the specialists of the control group maintain, in compliance with the requirements of the basic guiding documents, a strict procedure both in the air and on the ground, and quickly and correctly respond to any changes in the situation.

Among other problems of flight-operations support, those relating to flight safety are given top priority. Flight safety measures include introduction of changes in the procedure of aircraft servicing according to the kind of a particular exercise, especially group ones, studying of the weather forecast, detailed drawing-up of flight routes and profiles, specification of the procedure and organisation of radar control of a crew (group) when airborne. Besides, concrete measures are mapped out to be taken in the event of changes in the air or meteorological situation, and instructions are given on the use of ranges and alternate airfields, preparation of the runway for flights, etc.

As aircraft become more and more sophisticated, the reliable operation of the aviation materiel acquires ever greater significance for raising flight safety. It is ensured by carrying out a wide range of measures, including the observance of the prescribed operating and maintenance rules, continuous heightening of the efficiency of maintenance operations, timely realisation of various modifications, and the development and introduction of preventive measures aimed at eliminating equipment failures and errors in the activities of the personnel.

Trouble-free operation of the aviation materiel greatly depends on the carefulness of the personnel. For example, after the flight all the switches should be set to their initial positions so that the pilot who will fly next is sure that all the equipment is in good repair. Or, if the pilot has noticed some malfunctioning of any instrument he should report it in detail to the specialists and inform the pilot who is to perform the next flight on the aircraft about it.

A major role in enhancing flight safety is played by timely and careful critiques of flights with the use of flight monitoring equipment, as this makes it possible to prevent deviations in pilots' actions and to appropriately organise their training for subsequent flights. The records of the test instrumentation also help to analyse the functioning of the aviation materiel.

The advanced role of Communists in, first of all, strengthening discipline as a whole and self-discipline of the flying and ground personnel is always in the focus of air force commanders, political workers and Party activists.

Specialists of the flight safety service make their worthy contribution to fulfilling the main requirement — accident-free flying. Their scientifically grounded, meticulously planned and carefully fulfilled work promotes the upgrading of pilots' skills.

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GROUND FORCES

INFANTRY FIGHTING VEHICLE ON DEFENSE

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[Text] In a defensive battle the correct use of an infantry fighting vehicle (IFV) makes it possible to organise a stable defence and to successfully repel the advance of superior enemy forces. A defence is based on the prepared fire system of tanks, guns, ATGMs and machine guns in combination with the life of motorised infantry, on the skilful employment of the protective features of the ground and its organisation with engineer works, and on correct manoeuvring with fire and IFVs.

IN ORDINARY CONDITIONS

Taking into consideration IFV's great fire power, a section is assigned a 100 m frontage. The personnel jointly with neighbouring sections can destroy the enemy before the front and on the flanks of the platoon strong point. In this case an IFV as the main fire weapon can be deployed near the motorised infantry in the middle of the section's position, behind it at a distance of 50 m or on one of the flanks. Several alternate positions are organised alongside the primary position. After the IFV takes up its position the section leader assigns to the gun layer operator a primary and additional sectors of fire.

If a duty IFV is detailed for repulsing attacks of the small enemy groups and his reconnaissance subunits, it is usually located on a temporary or alternate position.

The section leader usually stays in a trench (foxhole) in a place convenient for controlling the section and the IFV and observing the terrain and the platoon commander's signals.

A platoon defends a strong point 400 m in frontage and up to 300 m in depth. Its strong point consists of section positions, positions of IFVs and attached fire weapons. IFVs are sited in it along the front and in the depth with intervals up to 200 m. Positions for them are chosen to make it possible to observe the enemy, to deliver direct fire at the maximum range with guns, machine guns and ATGMs. The necessity of mutual fire support and the possibility of carrying out concentrated fire before the forward edge and on the flanks of a strong point are taken into consideration here. IFVs are well camouflaged.

When organising a fire system on the de-

On the defensive a platoon commander determines the probable lines of opening fire with ATGMs, from tanks located in a platoon strong point, IFV guns, hand antitank grenade launchers and small arms. When the enemy passes over to the offensive he indicates the most important targets to be destroyed in the first place. When the attackers approach the distant borders of the zone of fire from IFVs and tanks, the platoon commander assigns missions to destroy armoured targets first with ATGMs and then with artillery guns. When the attackers approach to a distance of 500-300 m fire is brought to the highest intensity.

When the enemy penetrates the defences, IFVs take up alternate positions and destroy tanks and APCs with artillery fire, and motorised infantry with machine-gun fire.

A Mts Inf Pl in combat security defends a position with a frontage of up to 500 m. In these conditions the gaps between subunits reach 100 m, while IFVs are sited up to 250 m along the front and up to 200 m in depth.

A Mts Inf Pl mounted on IFVs can be detailed on the defensive as an ambush. Organising it the Pl commander defines the positions of sections (IFVs, personnel and fire weapons) and their missions and signals. Having allowed the enemy to approach to a short distance, the platoon inflicts losses upon him with fire from all types of weapons, and vehicles change fire positions right away.

A company mounted on IFVs is capable of defending a strong point. It is organised for a perimeter defence. Depending on the character of the ground and the expected enemy actions,

platoons assume a linear, wedge, vee, echelon right or echelon left formation.

A vee formation is the most expedient. On the one hand it makes it possible to create a killing ground, and, on the other, the best possibilities for a perimeter defence, while the depth of a strong point increases. As to the gaps between platoon strong points they may be up to 300 m and more. While not reducing defensive stability, it weakens the effectiveness of the enemy's using mass destruction weapons and secures advantageous conditions for manoeuvre.

IFVs in a company strong point are well camouflaged and dispersed so as to be able to deliver fire at the maximum distance, to defeat the enemy by flank and cross fire of high density, to have a mutual fire connection and to create killing grounds. The linear formation for IFVs is inadmissible.

The company commander exercises control over organic and attached means staying, as a rule, behind the platoon strong points of the first line.

IN SPECIAL CONDITIONS

In a town a Mts Inf Pl defends a strong point which can include one or two buildings while a section, a floor or a building.

In this case the defences are organised so that all approaches are shot through with flank and cross fire. In this case the greater part of the personnel of the platoons and the attached means are located on lower storeys and semi-basements.

Buildings are prepared for a perimeter de-

fence. The system of fire is based on a combination of the flank and cross fire of IFVs and other weapons. Tanks and artillery guns detailed for direct laying fire are usually located behind stone fences and walls in which embrasures are made. Defensive fighting in a city is carried out for each building even in conditions of complete encirclement.

The enemy, having rushed into a defended building, is destroyed by point blank fire, grenades and in hand to hand fighting. IFVs and other fire weapons, located beyond the building, prevent the movement of the enemy reserves.

In mountains a platoon can defend a strong point separately from the other subunits.

Positions of sections are chosen in places excluding the possibility of falls, landslips and floodings in order to ensure the enemy's defeat by multi-tier, flank, cross and sword fire and at the same time excluding the presence of dead areas. Fire weapons are located in tiers and the fire system is so organised that sections are in fire connection with each other and ensure a perimeter defence. IFVs are camouflaged and disposed on positions from which they can deliver fire at a maximum range.

The most intense fire is used to cover roads, exits from gorges, passes, convenient crossings across rivers and passages across canyons as well as directions which can be used by the enemy for a turning movement.

Depending on the importance of the defended direction and character of the terrain the frontage of subunits mounted on IFVs may be different. For a battalion it is broader on difficult mountainous terrain where defences consist of separate platoon strong points with sufficient gaps between them. In this case the frontage of defence may be increased. As far as a platoon is concerned, it occupies the same strong point in size as in usual conditions.

IFVs are normally concentrated in difficult directions which are covered with antitank obstacles. It is expedient to locate some of them on hills.

In wooded areas a strong point of a Mts Inf Pl usually controls a road, a cutting or defile between swamps and lakes.

The fire system is organised so that all roads, clearings and glades along which the enemy can approach and to advance are under the fire of subunits in defence.

Profuberances in a wood are used for organising a flank and cross fire. In the directions of the contemplated enemy offensive a concentrated fire is prepared. IFVs, attached tanks, guns and ATGMs take up fire positions for firing along the roads, cuttings, clearings and areas of sparse wood, covering them with obstacles.

When on the defensive in a desert particular attention is paid to ensuring stability of flanks and gaps between subunits.

In this connection fire positions for IFVs are organised in places permitting direct fire at maximum range. Open even ground makes it possible to site positions of some fire weapons at a considerably greater distance than usual. Therefore the aggregate depth of the Bn's defence and company and platoon strong points is increased.

In view of low densities of men and equipment on the defensive, the zones of continuous fire from all types of weapons are created only in separate directions most accessible for the enemy. Manoeuvre with IFVs, tanks, artillery and its fire, antitank weapons and reserves in the threatened directions is envisaged for making up a lack of fire weapons.

It is particularly important to conceal the system of fire and the type of defence. For this purpose dummy areas are organised inside it, in the gaps and on the open flanks. It is also expedient to organise fire positions around water sources if the enemy breaks through to these objectives.

Courageous and resolute counterattacks of the motorised infantry are instrumental to the success of a defensive battle. They are usually launched in case of enemy penetration into friendly defences with limited forces on a narrow sector when there is a possibility of cutting them off from approaching reserves and to destroy them piecemeal.

In conclusion, it should be stressed that the defence of subunits mounted on IFVs differs from that of subunits using other types of combat equipment. It is of a more active character. Possessing high mobility, IFVs can sharply change the character of their actions: to pass over to a counterattack, to fill a gap, to withdraw to an advantageous line.

Such are the main possibilities of using IFVs in defensive fighting.

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CSO: 1812/273

GROUND FORCES

TANK OPERATION IN HOT, DUSTY CLIMATE

Moscow SOVIET MILITARY REVIEW in English No 8, Aug 83 pp 34-35

[Article by Lieutenant-Colonel Engineer V. Moskalyov]

[Text]

Tank operation in hot climates necessitates a daily check-up of the coolant level in the power plant. With the cooling system filled to capacity, the level of the coolant in the expansion tank and the cooler should be within 65-70 mm (see Fig.), which is measured with an ordinary ruler, the readings being taken from the filler neck tops.

It is noteworthy that when the coolant heats to 65-70°C its level in the expansion tank and the cooler rises by 15-20 mm.

Used as a coolant, water is mixed with a three-component additive consisting of potassium bichromate, sodium nitrate and trisodium phosphate. The additive reduces considerably the amount of scale in the cooling system and corrosive wear of the pipeline. Small portions of the additive at a ratio of 50 g of each component per 100 litres of water are added to water heated to 60-80°C and mixed thoroughly. The coolant thus prepared is poured into the cooling system through a funnel provided with a mesh.

The cooling system may be topped up with 3 to 5 litres of pure water (without the

three-component additive). In this case care should be taken to keep the system free of dust, fuel and lubricants.

One of the reasons for the decreasing level of the coolant in the system (apart from a leaky pipeline) is a maladjusted pressure-and-vacuum relief valve, which should be adjusted periodically, at prescribed intervals, with the use of a special instrument. It should be borne in mind that the pressure relief valve must open at an excessive pressure in the cooling system of 2.1 ± 0.1 kgf/cm², and the vacuum relief valve, at a rarefaction of 0.05 to 0.15 kgf/cm².

At an ambient air temperature exceeding 30°C, when the resultant coolant and lubricant temperature hampers tank motion, the fan is switched over to a heavier operating duty. For this purpose, the slot on the gear reduction unit lever is set against letter B.

The fan clutch slippage moment requires a systematic checkup. If it is below the rated value, i.e. 18-50 kgf-m, the amount of air sucked through the oil and water coolers is decreased, which is likely to cause engine overheat. An excessive slippage moment may result in breakage of the fan drive components.

Utmost care should be taken to protect the surfaces of the coolers against oil, fuel and other liquids conducive to accumulation of dust. Dusty surfaces should be blown through with compressed air and flushed with water.

Prior to starting the engine the driver should make sure that the tank louvers are free of foreign objects. Operation of the power plant is monitored by the measuring instruments and pilot lamps. Incidentally, engine speed with the vehicle running should be 1,600-1,900 rpm, oil pressure in the lubrication system 5-10 kgf/cm², and oil temperature in it within 70 to 100°C (a rise to a maximum of 115°C is permissible).

With an ambient air temperature exceeding 35°C, the temperature of outlet oil should not be higher than 120°C; otherwise, shift to a lower gear and reduce engine speed.

The recommended temperature of the coolant with the engine lubrication system filled with water should range within 70 to 100°C, with a maximum permissible temperature of 115°C.

The temperature of an operating engine is adjusted with the aid of louvers. Closed louvers create a considerable vacuum in the engine compartment, which makes it difficult to open them. To facilitate their opening, it is practicable to decelerate to 1,000-1,200 rpm.

When the coolant temperature exceeds the maximum permissible value, which is indicated by the pilot light located to the driver's right, it is necessary to open the inlet and outlet louvers and to shift to a lower gear and increase engine speed.

If these measures fail, stop vehicle immediately and wait till the coolant temperature drops to 70°C (90°C as an exception). In the meantime the engine should be idling at a high speed. The engine is then shut off and the coolant temperature measured. If the latter does not lower in spite of these steps, check up the fan clutch slippage moment.

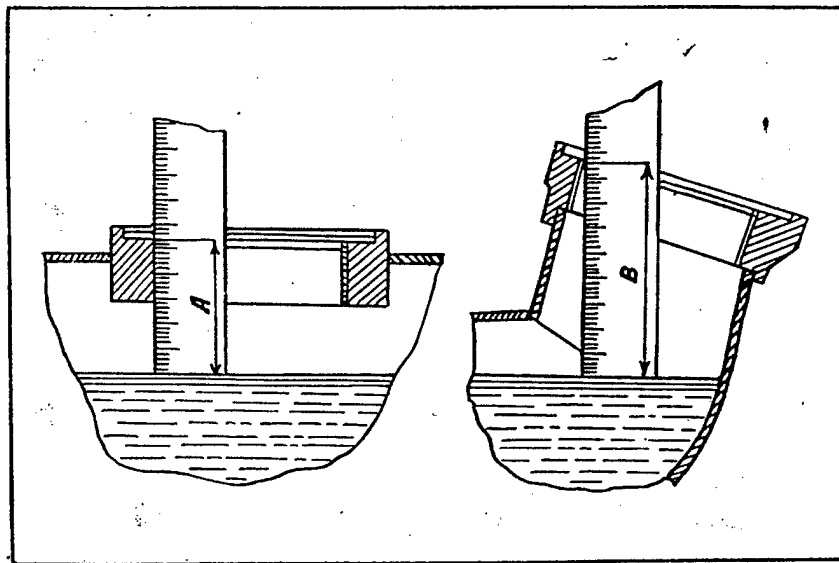
To keep dust off the engine cylinders, care must be exercised to examine thoroughly the tightness of the engine air supply system during checks. Inleakage of air at joints between the air cleaner and the engine is impermissible.

Impaired air cleaning generally results from loose joints between the air cleaner and the supercharger branch pipe, air cleaner housing and cover, and between the pipes sucking dust from the dust collector and the ejector. Faulty operation of the air cleaner may also be caused by a greasy cyclone tube, which is evidenced by dark exhaust. In this case the engine fails to develop full power, and the vehicle speed drops accordingly.

The air cleaner is cleaned during Maintenance No. 1 and No. 2, and also in the event the resistance to the air flow becomes higher than the rated value. In the latter case a corresponding pilot light on the driver's instrument panel comes on. It is permissible to run the vehicle with the light

Measuring coolant level in the expansion tank (left) and cooler (right);

$\frac{A+B}{2}$ —arithmetic mean level



on for five hours with medium dust content, and for two hours if the air is heavily laden with dust.

During scheduled maintenance carried out after 6,500-7,000 km of the vehicle run, sediments should be drained from the inner fuel tanks and the oil tank. Prior to doing this, allow the fuel settle for 3 to 5 hours after returning to the park and drain it in the amount of 3 to 5 litres through the drain valves in the left bow tank and in the rack tank. If water is found in the sediment, the oil must be renewed completely. Before filling the system with fresh oil the former should be thoroughly washed. A minimum of 45 litres of fresh oil is poured into the system, the engine is started and run at 1,600-1,900 rpm until the oil temperature reaches 70°C. Following this, the washing oil is drained from the oil tank and the engine crankcase, and the lubrication system is filled with fresh oil again.

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NAVAL FORCES

HISTORY OF SOVIET EMBARKED HELICOPTERS

Moscow KRSNAYA ZVEZDA in Russian 20 Aug 83 p 2

[Article, published under the heading "In Response to Readers' Request," by Commander of Naval Aviation Col Gen Avn G. A. Kuznetsov (article prepared by A. Grigor'yev): "Helicopters on the Decks of Ships"]

[Text] Who was the first to suggest the idea of employing helicopters for naval needs and when? Were attempts made to design and build a special rotary-wing aircraft? What was the first Soviet embarked helicopter, and what role do these aircraft play today?

Readers A. Balakirev, N. Berezovskiy, Yu. Sviridenko and others asked these questions of the editors. The editors asked Commander of Naval Aviation Col Gen Avn G. A. Kuznetsov to reply.

The idea of employing helicopters in naval service was first stated by B. N. Yur'yev in 1910, when this future academician patented his helicopter design on 26 September of that year. In an explanatory note appended to the design he stated that his aircraft was capable of landing on the very smallest vessels. Incidentally, the word "vertolet" [helicopter] did not exist in the Russian language yet at that time. This term appeared later, introduced by N. I. Kamov.

The name of gifted aircraft designer Hero of Socialist Labor Nikolay Il'ich Kamov is famous both in this country and abroad. He is rightly considered to be the founder of Soviet embarked helicopter aviation. N. I. Kamov first became interested in problems of naval aviation in 1927, when he joined D. P. Grigorovich's design office. He later worked on designing the so-called TOM-1 open-sea torpedo bomber and directed the flight testing of this aircraft. In Sevastopol Nikolay Il'ich became acquainted with naval aviation pilots and engineers, which greatly contributed toward determining his aircraft design career.

Nikolay Il'ich Kamov was one of the designers of the first Soviet autogiro, which made its maiden flight on 25 September 1929. Following successful tests of the KASKR-1 and its subsequent modification, the KASKR-2 (KASKR -- an acronym incorporating the names of the designers of this aircraft, Kamov and Skrzinskiy), Kamov decided to build an autogiro specifically for the navy. All

aspects of employment of an autogiro on ships and in shore subunits were discussed on 21 September 1931 at a conference at Black Sea Fleet headquarters. At this conference officers of the Black Sea Fleet made a number of valuable suggestions on utilization of rotary-wing aircraft.

Everyone is familiar with the attempt to use the A-7 autogiro, designed by N. Kamov, to rescue the Papanin Arctic Expedition. The aircraft was placed on board the icebreaker "Yermak," but the vessel arrived too late, and they were unable to test the autogiro. Later the AK "jumping" autogiro was built. This aircraft was supposed to take off vertically, with a "jump," rather than with a takeoff roll, as was the procedure with autogiros.

The Ka-10 was the first embarked helicopter. Its history is as follows. The experience gained in designing and building autogiros enabled N. Kamov, leading a team of enthusiasts, to build and test the Ka-8 single-seater coaxial-type helicopter, powered by an M-76 engine. This aircraft took its maiden flight on 12 October 1947, and took part in the 1948 Tushino air show. Test pilot M. Gurov demonstrated a takeoff from the bed of a ZIS-5 truck, followed by a landing on the truck bed. The aircraft's maneuverability and excellent controllability attracted the attention of naval aviators. A team of designers led by N. Kamov was commissioned to build a single-seater embarked aircraft for reconnaissance, communications, and observation. This aircraft was the Ka-10.

This helicopter was powered by an AI-4G engine specially designed for this project by A. G. Ivchenko. This helicopter brilliantly confirmed the excellent performance characteristics of coaxial-type helicopters and successfully passed a series of the most diversified tests, in the course of which takeoffs from and landings onto the decks of various ships were executed, from a cruiser to a motor gunboat.

7 December 1950 can be considered the birthday of embarked helicopter aviation, when a Ka-10 helicopter flown by naval test pilot Capt Ye. Gridyushko first landed on the deck of the cruiser "Maxim Gor'kiy" on the Baltic Sea.

Subsequently ASW helicopters bearing the designation Ka have become standard sights on the decks of Soviet naval ships. They conduct reconnaissance, submarine search, and perform other combat training missions.

3024

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NAVAL FORCES

OFFICER TRAINING IN NAVAL MISSILE EXERCISE DESCRIBED

Kiev PATRIOT BAT'KIVSHCHYNY in Ukrainian 31 Jul 83 p 3

[Article, published under the heading "Glory to the Men in the Military," by Warrant Officer A. Tambovtsev: "Missiles Attack the Target"]

[Text] They were to put out to sea late that morning. Sr Lt V. Borshchov had been working for several hours on the weapons and equipment. The crew of the fast attack craft had been assigned a tough mission. They were to detect an "aggressor" surface ship at maximum range and hit it with a missile strike. The officer knew quite well that accomplishment of this mock combat mission required of him and his men a high degree of specialized, weapon and tactical training.

Sr Lt V. Borshchov is a native of the hero-city of Sevastopol. He made his first acquaintance with naval affairs at DOSAAF marine school. He later enrolled at a naval higher school. And for 2 years now Viktor Viktorovich has been weapons officer on a fast attack craft. The combat department commander clearly understood that there is no easy way to master the heights of combat expertise. This is why he had worked hard from the first day in his new duty assignment, and when he found himself facing a serious problem, he was not ashamed to turn for assistance to his more experienced shipmates.

For a long time he had difficulty with organizing missile loading and unloading. This is a tedious job, which requires profound and diversified knowledge. It cannot be mastered in a day or two. Borshchov turned to the flag specialist. The latter readily agreed to work with him. The process of practical, persistent study commenced. The young combat department commander acquired the experience necessary for unsupervised performance of his duties. Time and again the flag specialist shared with the combat department commander his wealth of experience in organizing tests to demonstrate readiness to fire missiles. Viktor Viktorovich learned a great deal from this knowledgeable expert.

The training was to culminate with a brief tactical exercise. The combat department commander for the most part did everything correctly. At the decisive moment, however, when the attack craft's commanding officer was to determine his engagement plan, a delay occurred. Working in haste, he was unable to separate the main items out of the heavy flow of information. This led to miscalculations in determining the performance characteristics, maneuver capabilities, and weapons capabilities of the opposing force.

Persistent study continued until the officer had mastered his job. Soon Borshchov successfully passed the tests allowing him to advance to unsupervised command of BCh-2 [Combat Department 2]. Some time later he earned the title of highly-proficient missile weapons specialist. Viktor Viktorovich is now a vanguard officer. His men have also achieved success in their training. All the men in the subunit have mastered one or two related occupational specialties and ready their weapons for combat faster than the required standard. BCh-2 has been declared the best on the entire craft.

The combat department commander's duties involving devising techniques of readying weapons and combat equipment for action are complex and diversified. The officer received continuous support in this important matter from his dependable assistant, WO Anatoliy Mochalov. They prepared with innovative enthusiasm for the forthcoming engagement of the "aggressor."

Warrant Officer Mochalov displayed a high degree of efficiency in his work. In charge of a missile launcher crew, and having mastered two related specialties to the performance level of a specialist 1st class, he was a leader in performing the difficult task of training a cohesive missile launcher crew. He taught his men to work at their stations intelligently, with precision, without unnecessary relaxation of demands or situation simplifications, just as in actual combat.

It was not easy to achieve this. Warrant Officer Mochalov had considerable complaints, for example, against Sn S. Mamatkulov. By his lack of composure and failure to appreciate the fact that a missile launcher is a crew-served weapon and that in readying it for action it is necessary to work in strict coordination with his comrades, the inexperienced seaman was several seconds late in making his action station ready. Sn V. Boytyakov was performing everything accurately and skillfully, but was also slow in reporting his area ready for action.

The commander of BCh-2 explained to his men that it is necessary to perform in a combat manner on combat equipment. If you do not learn to work without mistakes, you will not avoid them in actual combat. Particularly since today's combat is highly dynamic. You can never correct mistakes during combat. There is simply not enough time. It is for good reason that they say save a second, win the battle.

The officer increased demandingness on his men. When Mamatkulov and Boytyakov achieved certain success with time, the officer introduced an element of competition during training. Gradually Seaman Boytyakov pulled ahead. Mamatkulov wanted very much not to fall behind him, worked hard in his training, borrowed efficient devices, and improved the quality and reliability of readying equipment for combat. Today he is a competition leader, a specialist 1st class, and has mastered a related occupational specialty.

...The attack craft had entered the combat training area. PO 1st Class V. Katok, who was in charge of the radar operators, was standing by the surveillance radar screen. When he is conducting the search, the target will be spotted regardless of conditions and at maximum range.

Katok noticed that the radar sweep line was illuminating an elongated blip which differed somewhat from the other returns on the screen. It was becoming increasingly brighter, and the parameters of its movement indicated that this was the target they were to destroy. The operator proceeded to track it. The navigator computed course and speed. They proceeded to feed the data into the computer, and from there into the missile system instruments. The commanding officer, analyzing the situation, gave targeting instructions. The craft maneuvered, took an advantageous position, and proceeded on attack course.

While target identification and classification were in progress, Warrant Officer Mochalov and seamen Mamatkulov and Boytyakov, working in a closely coordinated rhythm and pace, readied missiles and the launcher equipment.

Missile attack! Swift and sure. All crewmen were functioning like a well-oiled mechanism. The "aggressor," taking skillful concealment behind a screen of artificially generated radar jamming, was attempting to evade the strike, but in vain. Petty officer 1st Class Katok is thoroughly familiar with evasion techniques. He continued firmly tracking the target. Whenever necessary, he would switch to manual tracking, in order to prevent the maneuvering "adversary" from escaping the "clutches" of the radar.

Combat department commander Senior Lieutenant Borshchov performed knowledgeably. He closely monitored the situation. Of course he was a bit nervous, but he was performing like in real combat. As soon as the indicator lights flashed on: "Launcher Covers Removed" and "Ready to Fire," he selected the optimal variant and pressed the firing button. With a thunderous roar, a missile shot from the launcher and flashed skyward, toward the "enemy"....

The men waited, nervous and concerned, for the report on the firing results. Finally the message came that the missile had reached the target and destroyed it with a direct hit.

These men of the Black Sea Fleet received the highest mark on this live-fire exercise. This was a culmination of the crew's hard work, a result of joint, harmonious efforts by the subunit commanders, party and Komsomol activists, who succeeded, working in combination with specialized training, specific organizational, political-indoctrination work and explanation of the proceedings of the June (1983) CPSU Central Committee Plenum, in mobilizing all personnel, in preparing for and carrying out the assigned task in excellent fashion.

3024

CSO: 1811/53

NAVAL FORCES

UDC 631.115.71(470.1/.25)

NORTHERN FLEET'S AUXILIARY FARMS DESCRIBED

Moscow ZHIVOTNOVODSTVO in Russian No 7, Jul 83 pp 15-16

[Article by Col P.S. Plakhotnikov, rear services department chief in the Northern Fleet: "The Fleet's Auxiliary Farms"]

[Text] The Communist Party and the Soviet government concern themselves constantly with enhancing the defense strength of the Soviet Armed Forces, including that of the Navy.

Concern for the living conditions of the soldiers and sailors is one of the essential conditions for maintaining the forces in a state of constant combat readiness. Implementing recommendations coming out of the All-Army Conference on Living Conditions for the Personnel, the Northern Fleet is **paying a lot** of attention to the development of subsidiary farms. Our sovkhoses grew out of the subsidiary farms of the war years. When the sovkhoses were created it was admitted that they might not be profitable. They had to be created, however, since fleet personnel, as well as the children of sailors living in the remote garrisons, greatly needed the natural milk, eggs, fresh meat and produce. In the polar situation these things are not just food products but also a means of maintaining good health. All year long the sailors' diet now includes green onions, and natural milk and eggs are supplied **without interruption** in the established rations. The sovkhoses are located so near that their output can be delivered directly to the consumer within 2 hours.

Everyone in the fleet, from the commander to the seaman, knows and appreciates his fleet's agricultural operation. Since the March 1965 Plenum of the CPSU Central Committee the total herd of cattle on our sovkhoses has increased 2.2-fold. The number of milk cows has increased 2.5-fold, hogs 2-fold and chickens 7-fold. Milk production has increased 3.2-fold, meat 4.2-fold and eggs 53-fold.

Despite the fact that there is only the sea to the north of us and until quite recently it was considered impossible to keep livestock or poultry in these areas, the livestock raisers have achieved fairly good results. The milk yield per cow for the fleet's agricultural enterprises as a whole averaged 3,300 kilograms annually during the 10th five-year period, and the yield was over 4,000 kilograms on the best farms.

The main purpose of the sovkhoses is to produce the maximum possible amount of fresh natural milk. Our farms are successfully coping with this task. For several years now the fleet's agricultural operation has produced enough milk to provide the fleet's complete planned supply and to provide milk for all the children's institutions at the remote garrisons. The planned quantity of eggs is produced. The fleet no longer receives this product out of the state stocks. The subsidiary farm operation is also going a long way toward providing the fleet with fresh meat.

We do not produce our own feed, of course, and are totally dependent upon the feed suppliers. Our sovkhoses receive good rough fodder from many oblasts, but there are large disruptions in our supply of hay from some of them, and the quality is poor. The system of hauling in feed for our livestock operations makes it highly important for us to use each kilogram of feed efficiently. We have not yet eliminated all feed losses. None of the feed is fed to the animals before it has undergone preliminary processing. It is run through a straw chopper, a crusher and a mixer. Some of the feed is flavored, steamed, fermented and irradiated with ultraviolet light. The grain is always allowed to germinate. During certain times of the year bread kvass is prepared for the cows from bread scraps.

During the brief polar summer, under a sun which never sets, grass grows especially rapidly along the banks of small streams, lakes and swamps, and at the bottoms of hills. Several thousand tons of green fodder is laid in each year with the help of sponsoring organizations. This is almost a monthly ration for the milk herd. Sorrel is laid in for fattening the sows up in winter, 30-50 kilograms per head.

During the polar night the livestock, particularly the cows and calves, are irradiated with ultraviolet light.

The materials and equipment base has been improving at a rapid rate on the fleet's subsidiary farms in recent years, and greater attention is being given to social and cultural matters and living conditions. The blue- and white-collar workers on the sovkhoses and subsidiary farms live in modern settlements in houses with all the conveniences, with hot and cold water, electricity and gas. Each settlement has a store, a dining facility, kindergartens, a club, a medical center, a post office, a savings bank, clothing and shoe repair shops and a barbershop.

We keep close track of achievements in agricultural science. The magazine ZHIVOTNOVODSTVO and other specialized periodicals and books serve as handy references for workers with the fleet's agricultural enterprises. Agitators bring the published articles to the attention of every livestock worker, and the most useful articles are studied in the zoology and veterinary training system. This organization of agricultural propaganda makes it possible to rapidly disseminate progressive experience. By switching from the system of letting the chickens run loose on the ground to the cage system, for example, we increased the capacity of each poultry yard from 8,000-10,000 to 21,000-36,000 birds. In doing so we practically created a new poultry complex without any capital construction.

Ten years ago we specialized one sovkhos in Arkhangelsk Oblast for raising heifers for all of the fleet's subsidiary farms. Heifer calves from the most productive cows are raised to the age of 3 months on the farms and then sent to the specialized sovkhos. They remain there and grow for two summers and a winter. Four to six months after they have been bred these heifers are returned to the polar farms. Despite the shipping costs, the basic cost of raising the heifers on the specialized farm has turned out to be 10-15 percent less than it costs to raise them locally.

Our cattle are of the Kholmogorskaya breed. The animals respond well to any improvement in their feed or care. We breed the heifers at the age of 16 months, after they have reached a weight of 340-360 kilograms. We attach great importance to the milk yield from the cows. The bulk of the herd is descended from the cow Serebryanko, which produced 8,642 kilograms of milk with a butterfat content of 3.8 percent during her eighth lactation in 1971. Her granddaughters and great granddaughters are now producing milk on all the farms, and her grandsons and great grandsons, obtained through her son Serebryanchik and two daughters, are used as breeding animals.

We replace the flock of layers each year. We do not raise our own chickens. Chickens are specially raised for us on certain sovkhoses and poultry farms and are flown in to us at the age of 130 days. Some of the subsidiary farms obtain their young chickens from local poultry farms.

For the fleet's agricultural enterprises as a whole we obtain 92 calves for every 100 cows and heifers we have at the beginning of the year. The outstanding specialists achieve even better results. As many as 113 calves have been born for every 100 cows in some years on the farm directed by T.Ye. Rymkevich, for example. This was achieved by totally eliminating barrenness, increasing the calving rate and the fertility of the cows.

The average milk yield per cow was 3,812 kilograms on the fleet's sovkhoses in 1982. Preventive medical work is performed well on the sovkhose's separate farms, where V.F. Pavlov, holder of the Order of the Labor Red Banner, is the veterinarian. In recent years there has not been a single loss from epizootic murrain in the herd, which numbers around 1,000 head. A high level of breeding work is performed by livestock specialists I.G. Nechayev and L.P. Berezkina.

Senior livestock specialist L.A. Purgina has done a great deal to increase pig production. Our farms raise hogs of the large white breed. Good results have been achieved from crossing them with boars of the Landrace and Estonian bacon breeds. The sows produce litters of 7-9 pigs and feed them well. The taste of the pork obtained by fattening up the hogs with food scraps is perfectly satisfactory. We butcher hogs when they reach a weight of 80-120 kilograms.

The breeding of Azerbaijani and Cuban Brahman hybrids is considered to be an important achievement of the breeders. Some of the hybrid cows are highly productive. The cow Kal'dera, for example, produced 5,823 kilograms of milk during her first lactation and 6,245 kilograms during her second, with a butterfat content of 4 percent. The butterfat content of the milk is as high as 6 percent for some cows.

Three times in recent years the Challenge Red Banner of the USSR Ministry of Defense and the Central Committee of the Agricultural Workers' Trade Union has been awarded to sovkhozes of the Northern Fleet, and more than 100 people have been awarded orders. They include chief livestock specialist Z.K. Kislyakova and milker A.V. Balashova.

The results of the farm operations are summed up each month at a production conference, the results of the socialist competition among the sovkhozes are announced, and those who have distinguished themselves are rewarded.

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11499

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MILITARY SCHOOLS AND ACADEMIES

SUVOROV, NAKHIMOV MILITARY SCHOOLS PROFILED

Moscow SOVIET MILITARY REVIEW in English No 8, Aug 83 pp 38-39

[Text] Forty years ago, on August 21, 1943 a resolution was adopted on the establishment of the Suvorov and Nakhimov military schools.

Once on the 7th of November, during the celebrations of an anniversary of the Great October Socialist Revolution, I happened to be watching a military parade in Moscow's Red Square. When ranks of boys wearing perfectly fitted black overcoats with scarlet shoulder straps and collar tabs and wide scarlet stripes on black trousers appeared in the square marching past smartly, the Muscovites and the capital's guests watching the parade cheered up at once. The column approached the centre of the square, and the Suvorovites, except the right flankmen, simultaneously turned their heads towards the Lenin Mausoleum.

Every time I see a formation of the youngsters with scarlet shoulder straps I cannot help remembering the distant year of 1943. At this moment too I recall the gloomy November day when an overcrowded train carrying me and other boys was approaching Kursk. Traces of the great battle which had been fought on that soil a few months before could be seen all around like wounds that refused to heal; there were destroyed railway stations and villages reduced to ashes and abandoned by the inhabitants. For me, a nine-

year-old boy whose father had been killed fighting nazi invaders, nine long years of studies at the Kursk Suvorov Military School lay ahead.

Two difficult years still separated us from the long-awaited Victory Day. But although the enemy had not yet been entirely driven out of the Soviet territory, the authorities were already active removing the consequences of nazi occupation. They showed deep concern for the children who had lost their parents in the war. On August 21, 1943 the resolution "On Urgent Steps to Rehabilitate the National Economy in the Liberated Areas" was adopted. Among other things, this document envisaged the founding of Suvorov* and Nakhimov** military schools to provide instruction and education for the children of servicemen of the Soviet Army and Navy, partisans and Party activists, wor-

* Generalissimo Alexander V. Suvorov (1730-1800) was a great Russian military leader and one of the founders of Russian military art.

** Admiral Pavel S. Nakhimov (1802-1855) was an outstanding Russian naval commander who had particularly distinguished himself during the defence of Sevastopol in 1854-1855.

kers and collective farmers who had been killed during the Great Patriotic War.

The pupils of these schools were completely supported by the state and wore a special military uniform. While fierce battles were still being fought, experienced teachers and educators were recalled from the front and sent to work at the Suvorov and Nakhimov schools. The Soviet state offered all the necessary facilities for our studies. On December 1, 1943 the first lesson was given. The classrooms were light and clean, we were well fed and dressed, and slept in warm and comfortable dormitories. The majority of the boys had no fathers, and some of them, even mothers. Therefore, the school became a second home for them, with officer tutors replacing the parents.

Initially, the boys were admitted to the first through fifth forms. The first groups of Suvorovites graduated in 1948. By the mid-fifties the instruction and education of children of war victims was in the main completed. The schools began admitting the sons of servicemen of the Soviet Armed Forces, retired officers and generals and reservists, and also workers, collective farmers and employees. Beginning in 1969 the schools switched over to a two-year term of instruction (9th and 10th forms).

Today there are eight Suvorov schools and one Nakhimov school (in Leningrad). The pupils receive a general secondary education and acquire basic military knowledge and skills indispensable for their future profession of officer of the Soviet Army or Navy.

Many graduates of Suvorov and Nakhimov schools have

become generals, command formations, work at headquarters and central agencies of the USSR Ministry of Defence, or teach at military academies and schools.

One day, while leafing through the Front Illustrations (now the Illustrated Supplement to the Sovetsky Voin magazine) for 1943, I came across a picture story devoted to the beginning of the academic year at the Kalinir Suvorov Military School. One photo showed a group of smiling boys who had not yet got used to their spick and span uniforms. Among the boys was Viktor Gastello, the son of Hero of the Soviet Union Captain Nikolai Gastello, who directed his aircraft at an enemy column, grandson of Vasily Chapayev, a legendary hero of the Civil War, and son of Hero of the Soviet Union Kashuba.

When I asked Colonel Viktor Gastello, Cand. Sc. (Technology), about the destinies of those boys, he answered that Colonel Valentin Chapayev served at the Ministry of Defence of the USSR, and Bronislav Kashuba and himself were on the teaching staff of military academies.

The curricula at Suvorov schools have been drawn up in such a way as to enable the boys to acquire versatile knowledge and skills and grow up highly educated and cultured people. There are most favourable conditions for those who are keen on sports, music, literature, painting and so on. Therefore, quite a few former Suvorovites have distinguished themselves not only in the military field. Among them are writers, journalists, scientists, artists and painters. Yuri Vlašov, a famous weight-lifter and champion of the

Rome Olympic Games, is a Suvorov graduate. Now he is a scientist and member of the USSR Union of Writers. Oleg Mikhailov, Cand. Sc. (Philology), my comrade at the Kursk Suvorov School, is now a well-known writer, and member of the Board of the RSFSR Union of Writers. The books he has written include the historical novel "Suvorov."

This list could go on and on. It is true that a person's successes and achievements largely depend on his talent and personal qualities. However, these qualities are shaped and perfected under the impact of the environment in which he is brought up and under the influence of the collective in which he lives and works. The political-educational work carried out at Suvorov schools is quite invaluable in this respect. This work is aimed at inculcating upon Suvorovites and Nakhimovites boundless devotion to the Socialist Motherland and developing a deep awareness in them of their social and military duty, and love for military service and the officers' profession.

Suvorovites and Nakhimovites of the first enrolments studied for seven and even ten years, so it was there at the schools that they came to know friendship, comradeship, collectivism and mutual assistance. And although today's boys wear their uniforms for only two years, the fine traditions which originated in those remote years live on and augment. That is why when he sees a badge bearing the image of Suvorov or Nakhimov on somebody's chest a former pupil is sure to ask him what school gave him a start in life and when.

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MILITARY SCHOOLS AND ACADEMIES

BAKU HIGHER COMBINED-ARMS COMMAND SCHOOL CELEBRATES 50 YEARS

Baku VYSHKA in Russian 24 Jul 83 p 1

[Report: "Good Luck to You, Lieutenants--Anniversary Graduating Class of the Baku Combined-Arms School"]

[Text] The Baku Higher Combined-Arms Command School imeni Supreme Soviet of the Azerbaijan SSR is fulfilling the honorable and responsible mission of preparing highly skilled officers. During the last war thousands of its graduates were awarded orders and medals for valor and heroism, and 24 of them were awarded the Gold of Star of the Hero of the Soviet Union.

The present generation of cadets try to emulate those frontline soldiers, adding to their heroic traditions by training persistently and determinedly. Many of them wore the shining lieutenant's stars on their shoulder-boards for the first time on 23 July. They came to the Square imeni V.I. Lenin that day, where the graduation of the 50th anniversary class of the Baku Higher Combined-Arms Command School was held in a formal setting.

The graduation ceremony was attended by members and candidate members of the Bureau of the Azerbaijan Communist Party Central Committee K.M. Bagirov, F.A. Aliyev, O.A. Bagirov, G.A. Gasanov, A.V. Kovtunov, V.N. Konovalov, I.A. Mamedov, G.N. Seidov, Z.M. Yusif-zade, R.E. Mekhtiyev, D.M. Muslim-zade, L.Kh. Rasulova, G.Sh. Efendiyev and by Colonel General V.K. Kirilyuk, deputy commander and chief of staff of the Red Banner Transcaucasus Military District.

The heirs to the Soviet people's combat glory stood motionless in neat formation at the foot of the grand monument to the leader of October. Gold-medalists Guseyn Kasimov, Yuriy Pavelko and Aleksandr Prishchepov stood on the right flank, trim in their brand-new officer's uniforms. They donned the shoulder-boards at the age of 15 years, when they entered the Suvorov school and decided to link their lives forever with the heroic profession of Soviet officer.

Several dozen of the cadets received diplomas of special merit. They included M. Morozov, and E. Kasimov, who are continuing the army tradition of their fathers, Sh. Guseynov, I. Matevosov and others. Also entering the officer corps were 18 former students of the Specialized Boarding School imeni Dzh. Nakhichevanskiy.

An order from the USSR minister of defense awarding the officer rank to graduates of the Baku school was read and amplified by loudspeakers over the square. Stepping sharply, the former cadets left the formation one by one, and members of the Bureau of the Azerbaijan Communist Party Central Committee presented diplomas to the school's graduates.

Congratulatory telegrams from Marshal of the Soviet Union D.F. Ustinov, member of the Politburo of the CC CPSU and the USSR minister of defense, and Marshal of the Soviet Union V.P. Petrov, commander in chief of the Ground Forces, were read at the end of the ceremony.

A formal meeting began. It was opened by Lieutenant General V.E. Varshatly, chief of the school.

K.M. Bagirov, first secretary of the Azerbaijan Communist Party Central Committee, was given the floor.

Speaking for the Azerbaijan Communist Party Central Committee, the Presidium of the republic's Supreme Soviet and the Council of Ministers, he heartily congratulated command, the political section, the professors and instructors and the graduates, the entire glorious school collective, on the 50th graduating class and wished them much success in their continued service for the benefit of our homeland.

The peaceful labor of the Soviet people and the pure skies over us, K.M. Bagirov said, are reliably guarded by the Armed Forces of the USSR. The profession of defender of the socialist homeland is a responsible and honorable one. To be active agents of party policy among the personnel, agent and continuer of the Soviet Army's glorious traditions, to do their utmost to strengthen the combat readiness of the Soviet Armed Forces for the sake of reliably protecting the homeland's security--this is the great calling of the Soviet officer.

Comrade Bagirov commented on the great and glorious path traveled by the school and its contribution to the defeat of the German fascist invaders. Today the Baku Higher Combined-Arms Command School is a first-class training facility, with everything required for the quality preparation of real masters of military affairs. There can be no doubt that the cadets of this military educational institution, one of the oldest in the nation, will continue to be worthy of the feats performed by their fathers and grandfathers and to justify the great trust of the party and the people.

We would like to express our confidence, he said to the graduates, that you will use the knowledge acquired during your years of training to achieve practical mastery of the complex art of training and indoctrinating the fightingmen, that you will learn to use the new equipment and weapons to perfection and will honorably add to the glorious military traditions of the legendary Soviet Armed Forces.

Speaking for the graduates, gold-medalist Lieutenant Yu.N. Pavelko assured those present that the young officers will apply all their strength and energy to honorably fulfill their sacred duty and will vigilantly guard our homeland's borders. N.I. Petrova, a worker at the Voronezh SK[Synthetic Rubber?] Plant and

mother of one of the graduates, read a cordial parental mandate to the lieutenants. Vagif Yakubov, graduate of the Boarding School imeni Dzh. Nakhichevanskiy and currently a first-year cadet at the Baku Higher Combined-Arms Command School, spoke for the new students, giving his word to hold high the baton of the older generations.

Lieutenant General V.K. Kirilyuk addressed the meeting. He sincerely congratulated the school's staff and the young officers on the anniversary graduation and expressed his wishes that the lieutenants will become skilful commanders and justify the trust vested in them by the party and the people. He expressed his sincere gratitude to the Central Committee of the Azerbaijan Communist Party and the republic's government for the great attention they give to the staff of the Baku school and to its continued development.

The exciting moment arrived--the parting with the colors. The school's sacred banner sailed by in front of the formation of graduates kneeling on bended knee.

The young officers placed flowers at the foot of the monument to V.I. Lenin.

The brass band started up. The young lieutenants passed through the square in ceremonial march, entering into the large and glorious family of officers.
(Azerinform)

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PERCEPTIONS, VIEWS, COMMENTS

OVERVIEW OF CHANGES IN U.S. AIRCRAFT CAPABILITIES

Aircraft Wing Design

Moscow KRASNAYA ZVEZDA in Russian 27 Jul 83 p 3

[Article, published under the heading "Military Technical Review," by Doctor of Technical Sciences and Professor Engr-Maj Gen M. Nisht: "Aviation at the Threshold of Change"; based on materials published in the foreign press; first of three parts]

[Text] At one time the shape and dimensions of aircraft were pre-determined in advance.

With the development of computers, new materials, and more sophisticated manufacturing processes, it became possible to implement both new engineering ideas and those which had long been known but which had encountered technical difficulties, and to carry out comprehensive research programs aimed at developing future aircraft of various designation as well as aircraft of unusual appearance.

In this article we shall examine the principal directions being taken in improvement of aerodynamic layout, specifications and performance characteristics of future aircraft.

I. The Wing

A wing has been an indispensable attribute of aircraft from the very beginning. On the first experimental craft (powered aircraft, gliders) it was to a significant degree a copy of the shape of a bird's wing and performed primarily two functions -- generation of lift and lateral control. The first wings were close to rectangular in shape. An aircraft would be equipped with one or two pairs of wings and, depending on their number and span relationship, would be called a monoplane, biplane, or sesquiplane. Gradually the wing was becoming more complex, motors and weapons were being mounted on it, fuel tanks were being placed in it, and spaces were provided for retractable landing gear and other equipment. But the wing's principal functions remained unchanged.

Tactics required a substantial increase in aircraft speeds. To reduce drag it was necessary to abandon the strong, lightweight biplane design and employ a monoplane structure. As speeds approached the sound barrier, the traditional

straight wing became an obstacle to the further evolution of aircraft -- the so-called drag "sound barrier" appeared.

It seemed that aviation had reached an impasse. But scientists and design engineers found a solution. Jet engines were developed to replace piston engines, producing high power with less weight. For transonic and supersonic aircraft the straight wing was replaced by the swept wing, which made it possible to reduce shock-wave drag.

The problem was finally solved: the wing would be swept, and the greater the speed, the greater the sweep and the shorter the wingspan. Here too, however, there developed a sharp conflict between the trend to increase aircraft speed and the desire to provide good performance characteristics in all flight modes. In particular, the swept wing proved to generate insufficient lift on takeoff and landing, requiring increased takeoff and landing speeds. But this makes aircraft operation more hazardous and requires considerably longer runways. To a certain extent it was possible to compensate for the inadequacy of the swept wing by employing mechanical devices (flaps, leading-edge flaps, etc). A paradox was becoming increasingly obvious to the experts, however: the wing should be at the same time both straight and swept.

A solution was found in the variable-sweep wing (Photo 1) [not reproduced]. Such wings have a fixed wing inboard section and a movable outboard section, which can turn in flight on a vertical axis. When the outboard section turns rearward, its degree of sweep increases while wingspan and thickness ratio decrease, and vice versa.

Thus when the outboard section rotates tailward, a variable-sweep wing is transformed from a fat, large-span straight wing, optimal for low flying speeds, and particularly for takeoff and landing configurations, into a thin, short-span swept wing which is aerodynamically advantageous at transonic and supersonic speeds.

A variable-sweep wing, however, has a significant drawback: it is complicated in design, is insufficiently rigid, and is very heavy. Therefore recently there has been noted a return to wings of fixed complex plan shape (to so-called hybrid wings).

The principal distinctive feature of variable-geometry wings of complex plan shape is the fixed wing inboard section, which is highly swept and of extremely short span in comparison with the outboard sections. Therefore such wings harmoniously combine the properties both of large-span subsonic straight wings and short-span highly-swept supersonic wings.

The fixed wing inboard section plays a stabilizing role in providing the necessary aerodynamic characteristics at subsonic, transonic, and supersonic speeds. It provides less increase in shock-wave drag and pitch stability during transition from subsonic to supersonic speeds.

During flow across a wing of complex shape (Photograph 2) [not reproduced], air passes from the lower to the upper surface of the fixed wing inboard section across the tapered leading edge, flow separates from this leading edge, and

strong vortices form above the wing -- two leading-edge vortices. A significant underpressure develops in them, causing a suction effect. Wing lift increases as a result.

It would seem that a felicitous wing shape has been found. Tactics, however, are placing more and more new demands on aerodynamics experts. A combat aircraft must combine such contradictory qualities as speed and maneuverability. It seems that swept wings, including those of complex plan shape, have an important drawback -- when maneuvering at high angles of attack stability and controllability characteristics deteriorate sharply due to wingtip stall. In their search for a solution to the problem, experts have turned to designs which at first glance might seem unusual. One of these is the forward-sweep wing (Photo 3) [not reproduced].

This is actually not a new idea. Aerodynamicists long ago suggested a forward-sweeping wing. We also are familiar with its advantages over a conventional swept wing: more favorable distribution of lift along the span and smaller bending moment, less drag, and absence of wingtip stall, which enhances aircraft stability and controllability at high angles of attack.

As experts note, all this will make it possible appreciably to improve the performance characteristics of an aircraft with a forward-swept wing: to improve takeoff and landing characteristics, to increase range, decrease aircraft weight and cost, and improve flight safety. With such obvious advantages, why is it then that the forward-sweeping wing has not yet been extensively employed?

The fact is that this wing has a greater tendency toward divergence (warping): when bending under the effect of aerodynamic load in flight, it warps, increasing the angles of attack of the wing sections, loads increase, etc. To prevent divergence it is necessary to increase wing stiffness and consequently weight, as a result of which, when conventional materials are employed, the advantages of a forward-swept wing are nullified.

But a solution has been found to this problem as well. New, composite materials have appeared in aircraft engineering, lightweight materials with great strength. Foreign experts believe that their employment will make it possible to use a forward-swept wing. And this will make it possible to reduce aircraft size by 20 percent in comparison with fighters of conventional design.

Another unconventional idea is wing asymmetry. Such a wing is capable of turning as a complete unit in flight relative to the fuselage. Such manipulation can also be observed in nature. Birds in flight, for example, draw one wing back and advance the other forward. Why do they do this? As a rule, to control lateral movement.

The idea of employing an asymmetrical wing on an aircraft involves solving totally different problems. As we know, both a conventional swept wing and forward-swept wing have a common feature, namely wing edge discontinuity at the juncture of the left and right wings. This adversely affects wing characteristics. An asymmetrical wing can vary its degree of sweep in flight without wing edge discontinuity and to a certain degree combines the advantages of swept wings and

variable-sweep wings. Such a wing has less drag than a conventional swept wing, is simpler in design and is lighter in weight than a variable-sweep wing. Rotating the wing does not disturb pitch trim, since the rearward swing of one half of the wing is compensated for all practical purposes by the forward swing of the other half. The asymmetry in airflow across the left and right halves which occurs thereby is easily compensated with a slight deflection of the controls.

Again returning to bird flight, one readily notes such a property as flexibility -- change in curvature of wing section in relation to flight mode. Can this feature of bird flight not be accomplished on an aircraft wing? Yes, it can. We are dealing here with a so-called adaptive wing (Photo 4) [not reproduced].

The term adaptive is applied to a wing which has smoothly deflectable (without disrupting surface smoothness) leading and trailing sections in order to change wing section curvature in accordance with flight mode. This produces a wing configuration which is practically optimal for any given flight mode. The main purpose of this adaptation is to ensure the least possible aerodynamic drag.

Employing an adaptive wing will make it possible to reduce weight and significantly to improve aircraft performance characteristics.

We have examined here only a few of the directions being taken in seeking optimal wing shapes. Some of them are already being employed on combat aircraft, others are currently in the development stage, while still others are being investigated in laboratories by scientists. At the same time new ideas are constantly being advanced. Time will judge their viability and effectiveness. One thing is sure: aerodynamics has far from exhausted its potential in the search for new, more optimal wing shapes for combat aircraft. (To be continued)

Aircraft Control Surfaces

Moscow KRASNAYA ZVEZDA in Russian 3 Aug 83 p 3

[Article, published under the heading "Military Technical Review," by Doctor of Technical Sciences and Professor Engr-Maj Gen M. Nisht: "Aviation at the Threshold of Change"; based on materials published in the foreign press; second of three parts]

[Text] II. Controls and High-Lift Devices

The arrangement of controlling an aircraft with conventional elevators, rudder, and ailerons proved to be a highly viable arrangement and for many years enjoyed a monopoly status in aviation. The increased loads imposed on combat aircraft led to a worsening of their takeoff and landing performance characteristics and demanded that special measures be taken to increase load-carrying properties on takeoff and landing. A solution was found in employing lift devices, that is, in deflecting the trailing edge of the wing on takeoff and landing and in altering its curvature. Thus wing flaps were developed.

An increase in wing sweep, decrease in span, thickness ratio and wing area, characteristic of today's supersonic aircraft, led to a substantial decrease in aircraft lifting capabilities, effectiveness of flaps and increased takeoff and landing speeds. This was the reason for the development of extending (they not only deflect but extend backward, increasing wing area) or multiple flaps (double, triple, etc), which provide smoother change in wing curvature.

The effectiveness of high-lift devices increases with such designs, but at the same time there is a danger of leading-edge flow separation, which not only reduces lift but also worsens aircraft stability and controllability. In order to prevent flow separation when lowering flaps on takeoff and landing, modern aircraft employ high-lift devices on the leading edge as well -- leading-edge flaps. They ensure smooth flow across the wing in takeoff and landing mode and enable aircraft to retain high lift and improve their stability and controllability.

With an increase in sweep and a decrease in wing and tail assembly span, control surfaces (elevators, rudder, ailerons) becomes less effective. In addition, control effectiveness drops off sharply when transitioning from subsonic to supersonic speeds. A simultaneous increase in wing sweep, tail sweep and fuselage length and a decrease in thickness ratio have led, as is noted by the magazine FLIGHT, to increased aircraft structural deformations in flight, especially at low altitudes in dense layers of atmosphere, which are used for air combat operations. These deformations diminish rudder, elevator, and aileron effectiveness. Experts agree that variable-sweep wings experience the greatest elastic deformations in flight, with aerodynamic loads being transmitted from the variable-sweep to the fixed section through the wing yoke.

All these factors demanded a search for new control devices. On supersonic aircraft, for example, it was necessary to eliminate elevators and shift to an all-flying tailplane. And ailerons proved ineffective on a variable-sweep wing and were replaced by combined roll control: with differential stabilizer deflection and wing spoilers.

The differential tailplane is in some measure similar to the wing twisting employed on the first aircraft. Spoilers are plates mounted as a rule on the top of the left and right wings which sequentially deflect upward. When a spoiler deflects, the airstream forward of the spoiler is impeded, pressure increases on the top of the wing, wing lift decreases, and the aircraft banks.

The French Air Force for example, extensively employs "tailless" aircraft (Mirage-5, Mirage-2000, etc), which lack a horizontal stabilizer, and which employ elevons mounted on the wing for pitch control (Photo 1) [not reproduced]. They can be deflected both to identical and different angles and combine the functions of elevator and ailerons.

As a consequence of the inadequate effectiveness of ailerons, some foreign aircraft also use differential flaps for lateral control. These aileron-flaps have been dubbed flaperons.

Modern aircraft carry powerful engines. Enormous quantities of gas pass through operating turbojet engines. Could they not be used for producing additional aerodynamic forces? Yes, they can. Power methods of improving aircraft aerodynamic characteristics are based on this.

Their operating principle consists not only in generating reactive forces, which have long been extensively utilized in rocketry, but also and primarily in their positive effect on the mainstream flow and airflow across the surface of the wing, tail assembly, and fuselage ("supercirculation" effect). The incremental aerodynamic force on a streamlined surface can exceed by a full order of magnitude the reaction force of the jet proper.

If thin jets of gas taken from the engine are blown from the trailing edge of the wing at an angle to the wing surface, they generate additional aerodynamic forces similar to elevators or flaps. This is the operating principle of jet-type high-lift devices and controls, the possibilities of utilization of which on aircraft are presently being studied by designers in various countries.

The United States, for example, was testing the Grumman A-6A light embarked bomber, on the wing of which a jet-type high-lift device was employed (blowing thin jets from the trailing edges). Tests indicated that this made it possible substantially to decrease takeoff and landing speeds and rolls (almost by half) and to boost combat payload by more than one third.

Direct control of forces is another innovation in aircraft control. The traditional control principle was as follows: to alter an aircraft's flight path in the vertical or horizontal plane, it is necessary to change its spatial orientation, that is, angle of attack or slip angle. The pilot deflects the controls and generates moments which turn the aircraft relative to its center of mass. As the aircraft turns, the angle of attack or slip angle changes, and additional lift or lateral force is generated, which alters the aircraft's flight trajectory.

Aircraft turns relative to its center of mass needed to alter the flight trajectory require a certain amount of time and diminish the intensity of aircraft maneuvers. The pilot may also lose his target in air combat, lose ground reference points during landing, etc. This can be avoided by employing direct control of lift and lateral force. It boils down essentially to the following.

Additional controls are placed on an aircraft in addition to the traditional control surfaces located, for example, on the tail assembly (to the rear of the center of mass) or in the nose section of the fuselage (forward of the center of mass). Main and auxiliary controls deflect simultaneously to alter the flight trajectory. The aircraft displaces in space translationally (upward-downward or left-right) without changing its angular position (without rotation).

For direct lift control flaps, flaperons, spoilers, powered forward canard-type winglets, control jets, etc can be used together with elevators, and an additional powered nose vertical stabilizer can be used alongside the rudder

for direct control of lateral force. Incidentally, interceptors which can be deflected synchronously on the left and right wings to comparatively small angles to alter aircraft lift are called spoilers.

As is noted by the magazine FLIGHT, direct control of forces makes it possible to execute unusual maneuvers in combat. It increases the intensity of traditional maneuvers, improves the performance characteristics of an aircraft in terrain-following mode and in weapons employment. It becomes possible, for example, to hit ground targets from level flight rather than from a dive, as is the case with traditional control.

The concept of direct control of forces is currently being studied on a number of foreign aircraft -- AFTI-15, AFTI-16, and others (Photo 2) [not reproduced], while a direct control of lift and lateral force system has been tested on the F-104 Starfighter CCV (Photo 3) [not reproduced]. New aircraft control principles and systems are being developed which are based, for example, on adaptive wing deformation, employment of jet thrusters, etc. In short, the aircraft is becoming more and more like a bird, whose practically every feather can be used to control aerodynamic loads. (To be continued)

Aircraft Design Configuration

Moscow KRASNAYA ZVEZDA in Russian 10 Aug 83 p 3

[Article, published under the heading "Military Technical Review," by Doctor of Technical Sciences and Professor Engr-Maj Gen M. Nisht: "Aviation at the Threshold of Change"; based on materials published in the foreign press; last of three parts]

[Text] III. Airframe Configuration

Aerodynamic configuration is usually defined as the external forms and dimensions of the parts of an aircraft and their mutual placement. The forces and moments acting on an aircraft as a whole cannot be obtained by simple addition, for they are in a complex interaction. Herein lies the essence of so-called aerodynamic interference. Interference between different parts of an aircraft can be positive or negative, and thus can either improve or worsen an aircraft's overall aerodynamic characteristics. Is it possible to improve an aircraft's aerodynamic characteristics by altering the shape and mutual placement of the wing and fuselage? Aircraft designers reply to this question in the affirmative.

As has already been mentioned, at transonic speeds an aircraft's drag increases due to the occurrence of shock-wave drag. Studies indicate that this drag is determined not only by the shape and dimensions of individual parts of an aircraft (wing, tail assembly, fuselage) but also their mutual influence when combined into a unified aerodynamic configuration. The fact is that the shape and area of an aircraft's cross section change abruptly at the points where wing and tail assembly join the fuselage, and this causes shock-wave drag to increase.

Comparing the flow across models of aircraft and projectiles, scientists found a way to reduce this harmful interference. Herein lies the essence of the so-called "transonic area rule."

Aggressive maneuvering not only at subsonic but also at supersonic speeds is being increasingly demanded of new generations of fighters. An aircraft's shock-wave drag increases considerably during maneuvering, however. It has been established that this increase depends on distribution of the aircraft's vertical distribution of cross sectional area. It is noted that in order to reduce shock-wave drag it is advisable to reduce this area in the upper half-plane (above the wing), where the airstream accelerates as it flows along the aircraft, and to increase it in the lower half-plane (under the wing), where it decelerates. As a result the fuselage takes on a "pear-shaped" form. Thus was born another rule, the "differential area rule," used in designing the F-18, for example.

Until recently a clear-cut "specialization" of the different parts of an aircraft existed. For example, the wing served to produce lift, the tail assembly was for stabilization and control, the fuselage was for accommodating engines, crew, fuel, equipment, various cargo, etc. But this is inefficient. It is appropriate to include all elements of an aircraft in the process of generating lift.

This idea found embodiment in the aircraft "integral design." By smoothly linking wing, tail assembly, fuselage, engine inlet and exhaust, one can not only increase lift but also reduce aerodynamic drag. Aircraft useful space is increased, airflow surface and friction drag are reduced, as is an aircraft's shock-wave drag due to smooth contours. The F-16, B-1 and other aircraft were designed on an "integral configuration." As the magazine AVIATION WEEK AND SPACE TECHNOLOGY stresses, such a configuration makes aircraft less "noticeable" due to elimination of abrupt connections between surfaces, which act as corner reflectors of electromagnetic waves.

A twin tail is becoming increasingly more typical of modern supersonic aircraft. This is due to the following. First of all, at high supersonic speeds a single tail fin is insufficient to provide an aircraft (F-14, F-15, SR-71) with the requisite directional (weathercock) stability.

Secondly, on aircraft with variable-sweep wings the vortices which form at the wing leading edges can pass close to the tail assembly, substantially alter flow and worsen lateral stability and controllability characteristics. This effect can be particularly harmful at high angles of attack during a slip, when the tail fin enters the zone of one of these vortices. Loss of aircraft directional stability occurs, the aircraft stalls, and it enters a spin.

Placement of two tail fins (Photo 1) [not reproduced] is an effective means of increasing the directional stability of such aircraft at high angles of attack. During a slip one of the tail fins enters the vortex zone and is out of operation, as it were, while the other leaves the vortex zone and recovers its effectiveness.

There exists the so-called effect of adhesion of gas streams on a streamline surface, generating additional aerodynamic forces. Can this not be utilized on an aircraft? In connection with the development of STOL aircraft, this problem attracted the keen attention of scientists and design engineers. Theoretical and experimental studies indicate that lift, aerodynamic drag, and the momentum characteristics of aircraft can be altered across a broad range with the aid of engine exhaust flow. Blowing engine exhaust across the wing and flaps is currently being utilized on the A-10, UC-14, UC-15, and other aircraft (Photo 2) [not reproduced].

We know that being dependent on regular airfields greatly reduces the potential for employing aircraft in combat operations. This resulted in the development of a new type of aircraft -- VTOL. Their main distinctive feature lies in the fact that in VTOL and hovering modes the required lift is generated by the thrust produced by a special engine. After gaining altitude a cruise propulsion engine is fired up (lift is generated as on a conventional aircraft). In normal flight the vertical takeoff engine must be "carried" as freight. This of course is inefficient. A solution was found -- in an aircraft with vectored thrust.

On this type of aircraft the thrust vector can turn to angles up to 90 degrees -- from a direction corresponding to the aircraft's longitudinal axis to a direction perpendicular to it. Thus the engine's entire thrust can be utilized as lift, such as on takeoff and landing, or part of the engine thrust. Swinging the thrust vector not only provides aircraft vertical takeoff and landing capability but also capability to improve maneuver characteristics, directly control lift, and perform other tasks.

In recent years specialists have been displaying heightened interest in "canard" configuration aircraft (horizontal stabilizer positioned forward of the wing), as well as normal configuration aircraft with additional forward horizontal stabilizer (Photo 3) [not reproduced].

In both cases the forward stabilizer makes it possible directly to control lift and facilitates aircraft trim. In particular, in configurations with a forward horizontal stabilizer there occurs the positive effect of interference with the vortices which form as the airstream flows across the stabilizer and wing. The magazine FLIGHT notes that as a result of interaction of the vortices generated by the forward horizontal stabilizer with the vortices forming on the leading edge of the wing, they combine, increasing intensity and stability. This leads to an appreciable increase in lift during maneuvering.

The Swedish Viggen fighter has a canard configuration (Photo 4) [not reproduced], and the Kfir (Israel), Mirage-4000 (France) and other aircraft have an auxiliary forward horizontal stabilizer.

Until recently all aircraft were built with a certain longitudinal stability margin. What does this mean? The wing and horizontal stabilizer were placed relative to the center of mass in such a manner that with a random deflection of the aircraft, it would tend to return to a stable attitude. But in sustained flight this moment must be eliminated. For this the elevator or

stabilizer is deflected, and drag increases. Thus with a longitudinal stability margin, aircraft trim worsens its characteristics -- trim losses occur. The greater the margin of stability, the greater these losses; they increase during maneuvering as well as when transitioning from subsonic to supersonic speeds.

Therefore in recent years there has been developed the concept of an aircraft with a reduced, neutral, or even negative margin of stability. Aircraft stability in flight is provided by deflecting the elevator (stabilizer) with an automatic control system.

In trimming an aircraft with a reduced margin of stability, its aerodynamic resistance decreases (by as much as 20 percent according to the estimates of foreign experts), and its weight also decreases. Such an aircraft has better range and endurance figures, a substantially improved sustained rate of turn, and improved aircraft controllability. Several aircraft with a reduced margin of stability are currently being tested abroad, such as the F-104G Starfighter, while the F-16 fighter, which is unstable in certain flight modes, is in regular production.

The above problems of course do not exhaust the extent of all research and development being conducted in various countries in the area of aircraft engineering and the search for new aerodynamic solutions. Time will tell how promising they are.

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