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INFORMATION REPORT INFORMATION REPORT

Vestnik Protivovozdushnoy Oborony, No 6, June 1962

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IN OUR TROOP CHASTI AND PODRAZDELENIYA

The Squadron Goes Uphill -- by Sr Lt A. V. ZHURBIN (page 2)

Text: When young pilots arrived in the squadron which Lt Col ZHUKOV commands, certain squadron members feared that the squadron s reputation as leading would be damaged. The young pilots, you see, did not have adequate experience in flight work. But the apprehensions proved in vain. The persistence in training, the friendly aid of the experienced pilots and the high demandingness and paternal attention of the squadron commander, Lt Col ZHUKOV, Pilot 1st Class, toward the reinforcements, make it possible to say that: the young pilots rapidly entered operations, attained manhood, and acquired experience.

Not so long ago, Capts KALGANOV and VARFOLOMEYEV; and Sr Lts BOLDYREV and NIKOLAYEV and others successfully took the examination and became pilots 2d class.

The squadron is confidently going upward. Its personnel have set as a goal: for each to become a pilot 1st class.

Signal Troops Are Holders of Transferable Cup of Central Komsomol Committee -- Text and Photograph by Capt Ye. GULAKA (page 2)

Text: For three years consecutively, the signal troops of N-skaya chast held first place in the Moscow PVO District in mass sports work. The achievement of the Komsomol organization in this matter is not small. Komsomol members serve as the spirit of sports work. They actively participate in and engage all troops in, qualifying under rating norms and norms for the GTO (Ready for Labor and Defense) badge. At their

initiative, various sports sections have been created and are operating and competitions are being conducted.

Noting the achievements of the signal troops, the Central Committee of the Komsomol awarded them the transferable prize for the improvement of mass sports work. The signalmen also received a Certificate for a prize position in the competitive review for the best organization of sports work in the Armed Forces.

In the photograph not reproduced here are: Yu. SHRAMKO, chief of the Mass Sports and Defense Work Section of the Central Committee of the Komsomol, with servicemen following the presentation of the transferable prize. Holding the certificate is Pvt M. ZGURSKIY, active sportsman, who is outstanding in combat and political training.

Useful Cause -- by Maj V. A. MIKHAYLEV (page 2)

Text: In meeting the wishes of the officers, our garrison officers club at the end of 1961, organized automotive courses. Many officers and re-enlisted sergeants expressed the desire to undergo the course of training and acquire a driver s license.

A vehicle classroom and vehicle park were assigned for classes; teachers were appointed; and days for theoretical classes, practice driving of the vehicles and consultations, were fixed. The Auto-Tractor Service was concerned about assigning two motor vehicles to the students for training.

Training in the courses proceeded in an organized manner. Most of the officers were engaged with interest and attention. This factor did not delay the following result: in the examinations which took place not

long ago, 30 students qualified as drivers 3d class. Among them were Maj ZDATCHENKO; Capts TYURMENKO, RUBKIN, and KOTOV; Tech Lt VALOVIK; re-enlistee Sgt SHCHURIKHIN and others.

The classes in the courses are highly useful, not only because the officers have acquired a license to drive vehicles. They have acquired the knowledge and skills which make it possible for them to skillfully control the work of drivers assigned to them, and to better supervise the technical maintenance and operation of vehicular transport. And this is one of the indispensable conditions for working without vehicle accidents.

First Candidates of Sciences (page 2)

Text: The first defense of dissertations in the competition for the academic degree of Candidate of Military Sciences recently took place in the training council of the Military Command Academy of PVO. The dissertations of Lt Col P. TUSHEV and Engr-Col V. SHORSHIN represented scientific works which facilitate increased combat readiness and more efficient utilization of equipment by PVO troops.

Having reviewed the dissertations, the council of the academy decided to confer to both competitors the academic degree of Candidate of Military Sciences.

Great attention is devoted in the academy to the training of scientific and scientific-pedagogical cadres. Many teachers and scientific associates are successfully working to prepare new dissertations, and to develop practical themes on problems in the operational art and tactics of PVO Strany Troops.

Be In Constant Combat Readiness -- Editorial (pages 3-7)

Text: Twenty one years ago on 22 June 1941 an unprecedented, treacherous act was executed against our peace-loving country. Fascist Germany, without declaring war, made a surprise attack against the Soviet Union.

At that time Hitler s army was a formidable power which history still had not recognized. Having oppressed almost all western European countries German fascism, by utilizing their economic and personnel reserves mobilized and advanced against the Soviet Union with a multimillion man army armed to the teeth. By utilizing surprise attack, the advantage of their preparation, and the concentration and deployment of their troops, the enemy succeeded during the first phase of the war, in gaining the strategic initiative. Our troops, taken by surprise were forced to undergo difficult struggles and great losses, leaving cities and rural areas to the enemy.

How did it happen that our country, which had great economic, moral and political and combat capabilities, with which to meet the German fascist pirates in an organized manner and render them a crushing blow during the first days of the war, was not ready for such a blow. One of the reasons for this was the error of Stalin in evaluating the situation, which had evolved on the eve of the Great Patriotic War. He ignored the information which had been collected concerning the concentration of German fascist troops at our borders and considered it incorrect and even provocative. This placed our Army in an exceptionally difficult position. Even the border units were not placed into combat readiness in time.

The underestimation by Stalin of the military danger which threatened our country had an adverse effect also on certain problems in the organizational structure and technical equipment of the Soviet Army, including the antiair defense troops. At the beginning of the war, not everything was done to see that their organization completely answered the demands of modern war, and to see that the achievements of science and technology were fully utilized in the creation and mass production of the most effective armament for combatting enemy air forces. As a result, the enemy succeeded in delivering strikes against our troops and important military and industrial centers.

However, in spite of the situation which was unfavorably complicated for our troops, the German fascist invaders in the first days of the war, felt the strength of the Soviet Army. Thousands of examples of mass heroism among our troops in border struggles, in strubbles on lines of defense, in combat within the encirclements and during withdrawal operations, and in conducting counter-attacks and counterstrikes, demonstrated the inflexible will of Soviet servicemen, and their resolute will to fight the enemy unto complete victory.

During the four years of this bloody war, our people experienced many difficult adversities and incredible difficulties. The road to victory was long and thorny. But the Soviet people, guided by the Communist Party, skillfully mobilized their forces, turned the course of the war to their favor, and attained a world-historic victory over German fascism. Soviet Armed Forces not only achieved honor, freedom and independence for their motherland, but also saved the nations of Europe from fascist enslavement.

The victorious outcome of the Great Patriotic War clearly demonstrated to all the world the indisputable advantages of the Soviet social and state structure, the solidarity of our people around the Communist Party, and their deep devotion to the ideas of Marxism-Leninism. Our victory over the strong and cowardly enemy, confirmed, with all confidence, that there is no power in the world which can hinder the progressive development of the socialist society.

The Communist Party has been the organizing and supervisory power of the Soviet people. During the years of the Great Patriotic War, the party converted the entire country into a single combat field, ensured the superiority of our armed forces over the armies of the enemy, encounraged the entire Soviet people to surmount incredible difficulties, and inspired the Soviet people to the decisive defeat of the enemy. In the front and in the rear areas, the Communists advanced forward, leading the masses behind them, and by their example of persistency, courage and endurance inspired the Soviet people to feats of arms and labor.

The victory achieved by the Soviet people in the Great Patriotic War, knows no equal in respect to importance and historic consequences. Owing to this victory the world socialist camp was formed, having decisive influence on the fate of peace.

Our country has traveled a great and glorious route during the post-war period. The Soviet people long ago healed the frightening wounds inflicted by war, restored the enterprises destroyed by German fascist invaders and raised cities and rural areas from ruin. Many new plants and factories, shops and electric power stations, equipped with the

last word in science and technology, were put into operation during this period. Tens of new cities arose, and significant changes occurred in rural areas. Owing to the correct and farsighted policy of the Leninist Central Committee of our Party headed by N. S. KHRUSHCHEV the might of the Soviet state has increased immeasurably during recent years. Now our motherland stands before the entire world as a first-class industrial power, and in the advanced guard of world scientific and technical progress. The launchings of the artificial earth satellites, the launchings of the rockets to the moon and to Venus, the penetration of space by the Soviets constitute very clear manifestations of this progress.

The historic 22nd Party Congress moved our country forward to new and great horizons. The Soviet people, inspired by the decisions of the Congress and under the supervision of theCommunist Party is selflessly struggling to implement the primary economic mission namely, the creation of a material and technical base for Communism; and to put into operation the resolutions of the March Plenum of the Central Committee CPSU concerning the all-round development of agriculture. Each day yields the considerable victories of the inhabitants of cities and rural areas in building Communism.

Our people need lasting peace to implement the great missions outlined by the 22nd Party Congress. The party and government and N. S. KHRUSHCHEV, personally, by following the precepts of the great Lenin, are exerting enormous efforts to strengthen and maintain the peace and to reduce international tension, so that a nuclear-rocket war will not erupt. The struggle for peace, the implementation of the Lenin policy

of the peaceful coexistence at states with different social systems is the general line of the Communist Party and Soviet government.

In the interests of thepeace and security of nations, our government has proposed a ban on nuclear weapons testing, the elimination of the vestiges of World War II -- namely the conclusion of a German peace treaty, and also the conclusion of a treaty on universal and complete disarmament under stringent international control. N. S. KHRUSHCHEV says, "the Soviet government has made its proposal not because its country is weak militarily. We have introduced our proposal under conditions when the Soviet Union has achieved outstanding successes in the creation of nuclear and rocket weapons. The Soviet Union is now the most powerful military power. But we do not want to utilize this advantage. We are ready today to destroy all our weapons if western powers do the same." The broadest masses of people, the progressive forces in all countries, struggling for peace, warmly and unanimously support the peace-loving policy of the Soviet Union and socialist countries, since they know that to this time disarmament has not been implemented, and war is a constant danger.

Our country and other countries of the socialist camp do not need predatory troops either for increasing their riches or for disseminating their ideals. They have everything necessary to implement their high goals by peaceful means. V. I. Lenin pointed out, that victorious socialism exerts its primary influence on the fate of history by power of example and by its economic policy; that we will be victorious in this field; and that we will win with certainty and conclusively on an

international scale. The countries of the socialist camp, entering into economic competition with capitalist states, are advancing forward rapidly. In the course of 10 years, the world socialist system has caught up with and overtaken the capitalist system, since, both in industry and in agricultural production, it is approaching the era of complete abundance - the era of Communism.

The very powerful might of the countries of the socialist camp, and the mighty growth of the forces of peace and progress are causing the angry malice of the imperialists. Possessed by blind hostility to Communism, they are rejecting the peace-loving suggestionsof the Soviet Union and ever more are increasing preparations for aggressive war against us and other countries of the socialist camp. American militarists and mercennary politicians who are sworn enemies of peace and progress, are uniting and heading the black forces of aggression. While participating in the work of the disarmament committee of 18 countries, the US and England, at the same time, are implementing dangerous measures for placing the armed forces of their aggressive bloc in a state of combat readiness. The situation has come to this: recently US President Kennedy announced that under certain situations the US would possible take the initiative in a nuclear conflict with the Soviet Union. Thus the US government has officially declared that it can be the instigator of an aggressive nuclear war.

Disregarding the lessons of the past, imperialists of the US, England and France again are reviving the same German militarism which they revived on the eve of World War II and which gave them the

opportunity to unleash aggression. Having entered into criminal collusion with German revanchists, they are indulging them in every way, thinking to employ them in the struggle against the Soviet Union and other countries of socialism. Now as in the years preceeding World War II, voices of revanchist forces which demand the conquest of "living space," have been raised in Western Germany.

Finally, in the capitalist world, people can be found who have lost their reason and are ready to unleash war. The imperialists still have power. The piratical and aggressive nature of imperialism has not changed and cannot be changed. On the contrary, historical predestination makes it particularly warlike, malicious, and dangerous. But the unleashing by the aggressors of war against the socialist camp will be suicide for them. The fate of the raving Hitler would inevitability fall upon all who attempt to attack the Soviet Union and its allies. If the Soviet Union, in the struggle of one against the other during the years of the Great Patriotic War, destroyed the German fascist army, which was very powerful at that time, then now the balance of forces in the international arena is such that the socialist camp is able to destroy not only the German revanchists, but any other aggressor wherever he may be.

Considering the active preparations for war openly being made against the Soviet Union and other socialist countries by the aggressive military bloc created by the US, the Communist Party and Soviet government, having repudiated the harmful anti-Lenin thesis of Stalin which stated that the aggressive imperialist states are better prepared for war than states which are peaceloving, have done everything necessary to see that the

Soviet Armed Forces have, in adequate number, the most perfect and powerful weapons which are capable of destroying any aggressor who dares to attack our motherland or the friendly socialist countries. Now rockets of various classes constitute the foundation of the combat might of our Armed Forces. Created by the genius of Soviet scientists and engineers, and assembled by the hands of our remarkable workers, they serve the cause of peace. Recently, the motherland armed the Soviet Army with global rockets. They are invulnerable to antirocket systems and can, with a high degree of accuracy, deliver multichannel nuclear warheads to any point on earth. Therefore, the myth of the invulnerability of the US has been conclusively ended.

In preparing for war against the Soviet Union and other countries of the socialist camp, the imperialists are betting on surprise attack. As a result, Soviet military doctrine considers the primary, most important, and most urgent mission of our Armed Forces; to be the maintenance of constant readiness to reliably repel a surprise enemy attack and frustrate his aggressive plans. PVO Strany Troops are to play an extremely important role in this matter. They must display high and boundless vigilance, and maintain mighty combat equipment on alert, so that they can timely detect and destroy the piloted and pilotless weapons of an aggressor at any minute and at any time of the day or year, check enemy aggressive plans, and make it possible for our Strategic Rocket Troops to deliver a crushing blow against the enemy wherever on earth he may be.

Our troops have everything necessary to successfully fulfill the great and honorable mission assigned them. The party and government

are concerned with seeing that their technical equipment, organizational structure, and combat readiness completely answer the requirements of Soviet military doctrine. The troops are armed with formidable rocket equipment, the latest supersonic fighter aircraft and modern radar equipment, which is able to detect aerial targets at enormous distances and altitudes. Day and night our units vigilantly conduct combat duty and are ready at any minute to detect and destroy an enemy air attack weapon. During the winter training period which has been completed, personnel attained great successes in combat and political training. The historical decisions of the 22nd Party Congress caused an unprecedented patriotic growth among soldiers, sergeants, officers, and generals. The socialist competition among units for improved ratings and for the outstanding mastery of new combat equipment and weapons has evolved with new force in chasti and podrazdeleniya. Acquiring great popularity among troops has been the patriotic movement to achieve mastery of related specialties and broad profile specialties; to reduce the time required to transmit warning signals, to detect targets at superlong range, and to work on combat equipment at night under daytime norms; and other undertakings, which are enormously important to the further increase of the combat readiness of our rocket troops, pilots, radarmen, and signal troops. As always the Communists are going forward. They are the cementing force, the personal example for troops in the struggle for the model fulfillment of duty to the motherland.

But whatever the achievements of chasti and podrazdeleniya personnel in mastering equipment and raising their combat skill, they should not rest

on what has been achieved. Antiair defense troops are troops on the forward line of defense of the Motherland and they must not be complacent. In order not to be taken by surprise, we must display a high degree of vigilance, be in constant combat readiness, move forward from day to day, and make new achievements in training and in service. Complacency is not permitted. However, we still have chasti and podrazdeleniya, where not all personnel have high level training in equal measure. In individual podrazdeleniya there are substantial shortcomings in the organization of combat and technical training, and in maintenance of the requirements of military discipline. The mission during the summer training period is this: master new horizons in combat skill and improve the training and combat readiness of troops to a new, ever greater degree, once the successes which have been achieved have been consolidated and existing shortcomings have been eliminated.

Relying on the active support of party and Komsomol organizations, commanders of all grades must organize the training and education of personnel in such a way as to fully and in a highly qualified manner fulfill plans for combat and political training. To do this, a decisive struggle should be conducted against anyone who hinders the growth of combat mastery of the troops and reduces the quality of training.

Naturally, this places high requirements on commanders. Whatever post the officer holds, he must be on top of the situation, constantly increase his military and political knowledge, perfect his tactical training, and master combat equipment in an outstanding manner. At the same time he must constantly conduct educational and organizational work among the troops. The success of the further enhancement of the

combat skill of personnel depends on how much the commander associates with the masses and can direct their efforts to the execution of primary missions. One of the decisive conditions for maintaining a high degree of vigilance and combat readiness among the troops is irreproachable military discipline and organization. The complexity of the combat missions assigned PVO Strany Troops requires that each soldier fulfill the responsibilities assigned him in an examplary manner and that each air defense flight (zveno) operate quickly and efficiently. Commanders, political organs, and party and Komsomol organizations must see that all servicemen, without exception, perform efficiently, since a violation of the requirements of combat discipline, a delya or inaccuracy on the part of one crew member during combat would lead to fatal consequences. It is generally known, for example that slowness in the work of a radar operator station or his carelessness in tracking a target will enevitability result in a loss of time and in the denying fire against the target. The demands of irreproachable efficiency and accuracy in work on equipment apply in equal measure to rocket troops, pilots, and signal troops. Iron military discipline is the foundation of constant high level combat readiness of chasti and podrazdeleniya, and is a reliable guarantee against the intrigues of imperialist aggressors. Experience shows, that where the requirements of military regulations, and the orders and instructions of commanders and chiefs are carried out in a strict manner and where all rules regulating the life of chasti and podrazdeleniya are stringently observed, personnel serve in a model manner and know and employ combat equipment in an outstanding manner.

Utilizing all the varied forms and methods of work, commanders, political organs, and party and Komsomol organizations are called upon to constantly educate personnel in the spirit of strong military discipline, to develop among troops high moral and combat qualities, and to instill in them the constant desire to master new horizons in combat skill. It is necessary to widely rasie the question of popularizing the heroic deeds of antiair defense troops during the years of the Great Patriotic War. It is also very important to generalize and disseminate the experience of leading commanders who skillfully organize the training and education of their subordinates and who carry out combat duty in a model manner.

The historic documents of the 22nd Party Congress should lie at the base of the political and military education of personnel. Concrete missions of the Soviet Armed Forces for the modern phase were established in the decisions of the Congress, in the CPSU Program, and in the reports of N. S. KHRUSHCHEV. The comprehensive study of the documents of the Congress, the education of personnel in a spirit of selfless devotion to their country, and to the affairs of Communism, and in a spirit of courage, bravery, and heroism, and readiness to check a surprise air attack at any moment is the most important mission of commanders, political organs, and party and Komsomol organizations.

The defense of the security of the air space of the country is entrusted to antiair defense troops. Our duty is to carry out this high confidence with honor and dignity, to vigilantly guard the Soviet sky, to be always alert, and to be in constant readiness to detect and destroy the enemy, if he dares to attack our Soviet motherland.

Logical Patterns in the Development of Socialist Consciousness into Communist Consciousness--by Col. A.I. Serchenko (pages 8-16)

Text:

The clarification of the problem of the logical patterns of development of socialist social consciousness and the paths of its development into Communist consciousness is of great social and practical importance for our cadres. This conclusion is all the more true in as much as this very important process in our activity crosses into the complex international situation. As is known, the modern era of development of mankind is a very complex interlacing of various social patterns. It can be said without exaggeration, that no other phase in the historic process has presented such a varied and dynamic picture of public movements infused with "storm and stress," as the one in which modern generations of peoples are witnesses and participants.

However, in spite of the variety, complexity, and contradiction in modern society, we see, that the historic tendency for a progressive, ascending development of mankind constantly prevails. Therefore the new program of our party passed by the 22nd CPSU Congress, correctly called by Communists of all continents the Great Communist Manifesto of the 20th Century, declared: "the modern era, the basic content of which is the transition from capitalism to socialism, is an era of struggle of two opposing social systems, an era of socialist and national-liberation revolutions, the era of the downfall of imperialism, the elimination of the colonial system, the era of transition to the road of socialism by all new nations, and the triumph of socialism and Communism on a world-wide scale. In the center of the modern era stands

the international working class and its first offspring, the world socialist system.

Any intrigues of the bosses of the imperialist camp are unable to halt the inexorable development of these very great factors of our era, as objective logical developments in the natural historical process. The objectivity of such a conclusion does not need detailed arguments. It is clear that now the peoples of the world, and above all the peoples of labor, have been sufficiently convinced by historical experience, that this is genuine progress in society and that it is necessary to ensure its development and its defense. But the behavior of peoples, is as is know, is a decisive factor on the scales of history.

These times did not take root immediately. Only with the appearance in the arena of the development of social Marxist thought as the greatest achievement of human thought and social practice, did the phase of courageous and selfless struggle of the proletarist of all countries against the old world and for the ideals of Communism begin. From that time began the uninterrupted process of the present enlightenment of the masses, and the process of restoring their class consciousness. A truly gigantic road was crossed before Communism became the very great force of modern times, a road of glorious victories and temporary defeats covered with the blood of thousands and millions of fighters for the cause of the people.

In reviewing this road with thoughtful gaze, we speak with very great patriotic pride of our Motherland and the great October Revolution which unveiled a new era in the history of mankind, the era of the downfall of capitalism and the confirmation of Communism. We are elated by the scope of the revolutionary struggle, by the wartime and peacetime heroism of the Soviet people-reformers. We are inspired by the glorious genius of

the great teacher of the workers of the world, Valdimir Il'ich Lenin, creator of our glorious Communist Party, which has raised the banner of Marxism high over the world as the ideological weapon of the revolutionary transformation of society.

Our great feeling of national patriotic pride in the historical progress of the Soviet people and its combat-experienced advance guard, the Communist Party, is fused with the feeling of proletariat internationalism, under the banner of which workers of all countries of the world are struggling for Communist ideals. Therefore in October 1961, when the historical 22nd Party Congress began to work, almost all Communists and party workers of the countries of the world sent their delegations to this great forum of the creators of revolutionary thought and practice. Years and tens of years will go by, but the very sharp page, the 22nd Party Congress which illuminated for mankind the high road to the Communist tomorrow, will never fade in the annals of history.

By analyzing the situation and by correlating the social and political forces in the world arena in a comprehensive manner, the congress exposed the contents of the modern era as a very great triumph of the ideas of Marxism-Leninism converted into actuality. In the advance guard of this objective process goes our motherland, which has already entered the period of development--the building of Communism. Guided by the laws and conclusions of Marxist-Leninist theory, our party developed and confirmed at its congress a concrete program in the struggle for the creation of a material and technical base for Communism, for the development of Communist social attitudes and for the formation of the new man.

The practical execution of these missions brings very comprehensive changes in all spheres of life of our society. It is completely evident, that the unity of economic, social-political, and ideological missions constitutes an objective foundation, which presupposes the need for the close association and activity of all party, state, economic, and public organs in the field of economy and in the field of the education of the Soviet people. This is understandable since it is impossible to conceive of implementing the mission of the Communist education of the Soviet people without the successful creation of a material and technical base for Communism, which incorporates an unforeseen potential for satisfying the spiritual requirements of the people, and since it would be unheard of to have the gigantic development of our productive forces within a very short historical period without selfless labor on the part of all Soviet people. Labor is the most expressive indication of the true consciousness of peoples. The same dialectic unity is characterized in the problem of developing Communist social attitudes in our country.

It should be particularly stressed, that during the period of developing the building of Communism, requirements have grown unusually with respect to the organized expansion, the ideological content, and the worthwhile and practical results in the Communist education of workers.

It is known that in all phases of our heroic history, our party always has been guided by the wise Leninist tenet that the development of the consciousness of the masses must be the main essence of our work. On this basis during the years of Soviet power the socialist social consciousness was formed and the Soviet people--the laborer, the fighter, and the reformer --were educated. Within our activity, developmental patterns in socialist

consciousness which include the moral and political unity of the Soviet people and the community of their political, economic, and spiritual interests which exist independently of their parentage, knowledge, nationality, etc., have also been strengthened. On the basis of socialist reformations, mutual aid and collaboration have been established in labor among equally privileged and free members of society who are comprehensively interested in the development of the national economy and culture and in increasing the economic might and defense capability of the Soviet state, knowing that this development depends entirely on the results of their combined labor.

Highly essential to the development of social attitudes, including the consciousness of people, under socialism in conformity with natural laws in the unity of purpose and activity of people engaged in both intellectual and physical labor. Having long ago finished with the heritage of the past, during which the disunity of intellectual and physical labor gave birth to a conflict of interests between physical laborers and intellectual laborers, our activity has developed new intelligence and opened very broad perspectives for increasing the cultural and technical level of personnel of physical labor, in order to prepare conditions for eliminating essential differences between these two types of labor. The following figures speak well of the achievements of our nation in this field: at the present time in the USSR, 40 percent of the workers have higher and secondary education.

As noted above, socialist social consciousness is characterized also by the unity of the international and national aspects of consciousness and by the union of proletariat internationalism and Soviet patriotism.

There are also other logical patterns in socialist social consciousness, which clearly show that our society has attained great success in the socialist education of the masses, and in the creation of active builders of socialism.

This fact is indisputable: socialist consciousness which has as its foundation Marxist-Leninist ideological has considerably hastened the movement of our society forward. This has been conditioned by the fact that on the one side, the revolutionary theory has always been scientifically founded, and the correct strategic plans and tactical methods of struggle of the party in the interests of the people have been in conformity with the historical situation. On the other hand, Marxist-Leninist theory has aided the party in increasing the consciousness of the masses of peoples to the level of new practical missions on a day-to-day basis.

The importance of Marxist-Leninist theory and the importance of consciousness on the part of the masses of people has grown immeasurably in the modern phase of development of the Soviet state. The new Party Program states, "in the struggle for the victory of Communism, ideological work has become an increasingly more powerful factor. The higher the consciousness of the members of society, the more fully and the more widely their creative activity will be developed in the creation of a material and technical base for the development of Communist forms of labor and new attitudes among people. Consequently, the building of Communism will be executed more quickly and successfully.

In determining concrete missions for the Communist education of workers, the party depends on more than recognition of the enromous mobilizating,

organizing, and reforming role of advanced ideas in social development. It considers also the uncommon complexity of this problem of Communist building. It can be said without exaggeration, that the formation of the man of Communist society is almost the most difficult task in the Communist reformation of the world.

The fact is that in the transition period from socialist to Communism, this sociological development pattern operates and the development of social consciousness lags behind the development of public life. Although social consciousness in socialist society was confirmed in our country almost 30 years ago and is being developed even more on the material and ideological foundation of socialism, this does not quite mean that the consciousness of the people under socialism in all of its forms and manifestations completely conforms to the public life which is being developed and which is growing into communism.

A number of obstacles, difficulties, and contradictions caused by the struggle between the new, socialist consciousness and the vestiges of that which is old, bourgeois, and at times feudal and patriarchal, block the road to the develop ment of socialist consciousness at the lowest phase of Communism. This explains why in the psychology and life of a certain portion of the workers in socialist industry and agriculture and among the intelligentsia, students and individual servicemen in the Army and Navy, there is a disregard for labor, a lack of discipline, wastefulness in production in service and in life, and a violation of the norms of Communist morality.

In order to do away, once and for all, with the shortcomings in our society, it is necessary to completely remove the roots and causes of their origin and development from the lowest phase of Communism. Only under this condition can it be comprehensively understood why our party pays such enormous attention to ideological work, considering it not only the central mission of party organs and of the entire public but also literally speaking the main line of the struggle for Communism.

Considering the reasons for the lag of socialist public consciousness behind the development of public welfare, the primary social foundation of the old consciousness engendered by the capitalist systems must never be forgotten. History has convincingly shown that traditions and habits burdening past centuries prevailed over peoples and succeeding generations as chains. And this was at a time when eras were distinguished one from another only by the method of exploitation of man by man.

Soviet power has always abolished political, economic, and spiritual foundations for the exploitation of man by man, and has created a society which now is struggling to confirm on earth Peace, Labor, Freedom, Equality, Brotherhood, and Good Fortune for all nations. All this is true. But it is also true that in our midst there are still many people who in their time were obstacles during the period of the struggle for liberation, and who not only failed to repudiate certain habits and traditions of the past but who showed a definite negative attitude toward the people surrounding them.

To this must be added those moral and political losses (izderzhki), of a certain portion of Soviet people, resulting from the efforts of bourgeois propaganda. The bosses of the countries of the imperialist camp

have created a grandiose propaganda apparatus for the struggle against the ideas of Marxism-Leninism and against Communist world opinion. The ideological servants of American millionaires and their partners are trying by means of misinformation, lies, and slander to discredit the ideology, the social-political, and economic systems of socialist countries, and are trying to show the charming nonessentials of "western civilization." The pernicious effect of ideological diversion of the capitalist world penetrates certain Soviets by means of bourgeois radio broadcasts, books, journals, and newspapers. For this purpose tourist trips and many other channels of ideological influence are used.

All this does not occur without leaving traces. In our society once in a while one still meets people who often begin their moral downfall with admiration for trousers from "the west" and end with a leacherous act similar to the voyage to the "world of freedom" which GOLUB and VOKHMYAKOV completed in the past year.

How wise our Valdimir Il'ich was when he urged the party "to overcome all resistance of the capitalists, not only military and political, but also ideological, which is the most comprehensive and powerful."

A serious factor which spreads the vestiges of capitalism and of the old consciousness is the presence at the lowest phase of Communism of such antisocial elements as speculators, grafters, hooligans, home brewers, and organizers of gangs of thieves and bandits. Their amoralism and parasitical attitudes bring certain death to our socialist public life. They are harmful elements which affect the immature, morally unstable, and poorly-cultured members of society.

The vestiges of the old ideology flourish particularly in the field of public life and morality. Undoubtedly, the roots of such old habits and non-socialistic views as the patriarchal and feudal attitudes toward women, family -- dowry, prohibition of children and women to work and study, etc. -- are passing into the old way of life, but the vestiges of this life are retained in certain eastern republics of our country. The struggle of state organs and public organizations against the vestiges of the feudal and patriarchal way of life and the non-socialistic views related to them has been unsatisfactory in a number of cases; it has facilitated their preservation, and sometimes their enhancement.

In elucidating the reasons which condition the complexity in forming public socialist consciousness and its lag behind the development of public welfare, it is also necessary to note that the ideas in their development have relative independence. History knows that the instances are not isolated in which advanced ideas considerably outstripped public demands which had not yet emerged. It abounds with contradictory facts and anti-situations in which reactionary ideas were utilized and are still being utilized by classes and parties in the public arena, in their struggle against the progressive development of society. For example, science long ago pointed out the groundlessness of theology, but the religious narcotic continues to possess the minds of many millions of people in modern times.

Still one more essential cause must be added to all that has been stated above on the lag of progress in the formation of social consciousness behind the development of public life. It is known that social consciousness is secondary and a derivative of public life just as the

consciousness of man is derived from eternally changing matter. Consequently, under conditions attending the transitional period from capitalism to socialism and in the era of the development of the building of Communism, the consciousness of man lags behind his public life etc., and sociological developmental patterns which were inherent to other social formations operate within certain bounds.

It would be erroneous to conclude this relatively short discussion of the basic factors which condition the complex formation of Communist consciousness among the Soviet people without talking about the number of conditions which from time to time objectively influence the aggravation of this process. For example the presence of specific difficulties in certain branches of our economy, above all in the production of agricultural products, complicates the timely and complete satisfaction of the needs of the constantly growing reserves of the population. This fact is being used without delay by speculators, grafters, rogues, and other parasites, to deal definite damage to our society.

Or take another example. In our country very rich experience has been stockpiled to implement Leninist requirements to combine in all our conscious work the revolutionary enthusiasm of the masses and the principles of material incentives for the results of peoples' labor. Unfortunately, there are still some supervisors of enterprises and establishments, who do not display true concern for the vital and cultural needs of the workers, and who forget the material stimulants of labor. This inevitably leads to fluctuation in labor and often to undesirable moral and political consequences.

Cases of bureaucracy, red tape, formalism, and officialdom, and violations of socialist legality which have not been entirely eliminated, negatively influence the attitude of certain Soviet citizens. And although these cases are in themselves isolated, their negative effect undoubtedly retards the process of purifying the Soviet society of these evils of the past. There are serious shortcomings in the political and educational work among the population which to this time still have not been overcome. We speak, above all, of that portion of our people which is engaged neither in the sphere of material production nor in the life of industrial or other collectives.

We see that logically-existing peculiarities in the formation of public socialist consciousness, which condition its lag behind the development of public welfare, as the cause of great and practical problems in the day-to-day activities of party and state organs and of the entire public. It is for this reason that V. I. LENIN frequently stressed how difficult this problem of public life was. He said that the building of Communism depends not "on particularly virtuous people bred in special hotbeds and hot houses," but "on the mass of human material, spoiled by centuries and thousands of years of slavery, serfdom, and capitalism..."

At the same time it must be understood that the lag of the consciousness of some people behind public life which is being preserved under the conditions of the lowest phase of Communism, does not represent a universal, insuperable, or spontaneous process. It is absolutely evident, that in distinction from earlier societies, under socialism public attitudes have a conscious and planned character and the efforts of the state and society are directed toward surmounting the lag of public consciousness behind

public life and toward elimination of the vestiges of capitalism in the consciousness and life of peoples. Therefore the primary and leading aspect in the logical development of consciousness under socialism is the conscientious surmounting of the vestiges of reactionary ideology wherever it may be.

Consequently, in the process of developing socialism into Communism and as a result of the struggle against the lag of peoples' consciousness behind their public life, and the struggle against antisocial ideology, the circle of people contaminated with this ideology is constantly being narrowed. The influence within the developmental pattern of the lag in social consciousness behind public life is ever more being reduced and in fact, the influence of the new developmental patterns in public socialist consciousness, about which we spole, is being extended.

The Communist consciousness of the Soviet people, the foundation of which is laid in socialist consciousness, is conclusively established under complete Communism. Its formation is a long and complex process which requires essential changes in the material life of the public, the new and all-around development of culture; and a continuous ideological struggle against bourgeois ideology, no matter how it is disguised, and the vestiges of the old society in the consciousness and life of peoples.

To train the new man, whose consciousness and behavior completely agree with the principles of the moral code of the building of Communism, there is no need for a revolution in the field of ideology and culture such as that which took place in our country and is now taking place in the countries of the people's democracies during the transitional period from capitalism to socialism. However, a new ideological and cultural

revolution is indisputably needed to solve the problem of developing socialist consciousness of all members of society into Communist consciousness. At this point on the historic road all people must develop an inherent and internal need to work to the full measure of their capabilities for the advantage of all society.

This is not all. All members of society, as specified by V.I. Lenin, must in every way be developed and trained as people who are able to do everything, that is, people who can combine intellectual and physical functions. This can be achieved only by combining training with productive labor and by continuously raising the cultural and technical level of all workers. Finally, this new field of cultural revolution must ensure the education of man in the spirit of Communist morality.

Therefore, when we speak of the education of the new man we are not talking about the partial, quantitative changes in the consciousness of one group of people or another, but about the grandiose -- with respect to scale -- social effects of the changes in the consciousness of the entire mass of people who must ensure and consolidate the transition to complete Communism.

Our country has every necessary condition to execute this great mission. And the most decisive of these conditions consists in this: on Soviet soil a man has grown and has been raised who can be seen from all corners of the earth, a man of new quality, who has been exposed to the favorable ideas of the Communist reformation of life on earth. Long ago he captured the esteem and affection of all the peoples of the world for his titanic labor for the glorious future of mankind.

The result of the heroic struggle of our Leninist Party in the education of millions of new people who are conscientious builders of Communism has been very important. On this factor has been founded the practicality of all missions in the building of Communism which have been formulated in the new program of our party including those in the field of the education of the new man. The very important processes in spiritual and moral life which are now being perfected in Soviet society demonstrate this fact convincingly. Only in certain of these are we lagging. Let us take a very important problem, namely the forming of the Communist attitude toward labor as an inherent need of man. Already, under socialism, labor for the millions of Soviet citizens, is a foremost and vital need, a matter of honor, glory, and heroism. It is known that now in all spheres of economy and scientific and public life of our country, hundreds of thousands of brigades and collectives are struggling to achieve the most effective activity, and are increasing productive labor toward this goal, namely, to learn how to work and live under Communism. Trained personnel and young patriots are beginning to make an impression on life, in the great construction projects of Siberia, the Far East, and in the extreme north or virgin lands.

Everywhere, our people are creating by their labor a material and technical base for Communism. Our state and Soviet society consider as parasites all who still do not work and who live by means of the work of others. The time has come when the land has burned under the feed of good-for-nothings, speculators, grafters, and other parasites.

The entire theory of life, and everything spiritual that influences man thrives only in labor, physical, or intellectual. Therefore, we must esteem and honor any labor to the advantage of society. This is why our party places the development of the Communist attitude toward labor among all members of society in the center of education work.

The following is addressed to the development of a high level of consciousness among our people: Already under socialism Communist morality is being formed and members of society strictly observe the rules of socialist community life and are beginning to react to violations in an uncompromising manner, relying, at the same time, on the ever increasing activity and combat readiness of our public.

In our activity this notable phenomenon has arisen: There are groups of volunteer peoples' guards which assist organs of state power in the struggle against antisocial elements -- hooligans, speculators, and other criminals.

The role of moral principles in the life of society is increasing in the period of transition to Communism; the sphere of activity of the moral factor is expanding considerably and, correspondingly, the importance of the administrative regulation of interrelations among members of society is being reduced. That is why the new program of our Party has formulated a moral code for the building of Communism which incorporates the basic human moral norms, which have been worked out by masses of people during the thousands of years of their struggle against social oppression and immoral vice. The explanation of the essence of the moral code of the building of Communism and the active confirmation of these

principles in life itself, must constitute the most important aim of all our ideological work, particularly among Soviet youth.

The development of public social consciousness into Communist consciousness will be implemented on a basis of the acquisition by all Soviet people of a truly scientific ideology -- Marxism-Leninism. Already, many millions of Soviet citizens systematically and comprehensively study revolutionary theory as a harmonious system ofphilosophical, economical, and social-political opinions; but this is not enough. The CPSU Program states: "the Party considers as its mission the training of the entire population in the spirit of scientific Communism, by striving to see that the workers comprehensively understand the course and perspective of world development, correctly; examine events within the country and in the international arena; and conscientiously build life in the Communist way. Communist ideals must organically coincide with Communist deeds in the behavior of each person and in the activity of each collective and each organization." Only under these conditions will Communist consciousness be based on the scientific understanding of natural phenomena and public life and exclude any nonscientific ideology, prejudices, or lack of culture. From this it follows, that in the transitional period from socialism to Communism and moreso under Communism all possibilities are opening up for the education of a new man who harmonisouly integrates spiritual richness, moral cleanliness, and physical perfection.

We have dealt only with certain problems in educating the working masses in Communist consciousness, and in the role of the entire population during the development of socialist consciousness into its higher

phase -- Communist consciousness. We have explained that there is no impassible step between socialist and Communist consciousness, as there is none between socialist and Communist economy. The confirmation of Communist views and norms of behavior is today combating the vestiges and influence of capitalism.

But in speaking about the Communist tomorrow where all the best features of Communist consciousness and Communist morality are completely explosed, we cannot simply wait for the time when this just and perfect society sets in, when the character of labor is changed completely, and an abundance of material and cultural advantages is attained in full measure and when the Communist principle of distribution is completely implemented. Even today, we must do everything to hasten our movement forward and to bring the onset of Communism closer.

Therefore, this conclusion must be drawn: the Communist training of all members of our society and particularly the rising generation of our youth on a basis of industrial Communist labor for the material wealth of the society and on an ideological foundation of Marxist-Leninist ideology must constitute the primary content of all ideological work of Party, state and public organizations.

This requirement, in the same degree, concerns commanders and political organs, and party and Komsomol organizations of chasti and podrazdeleniya of our Armed Forces. This is all the more correct since service in the army is an enormous, vital school and since the formation of Marxist-Leninist ideology among young servicemen is an important phase and a decisive foundation for their high combat and moral and political qualities. Therefore commanders and political workers, and party and

Komsomol organizations of chasti and podrazdeleniya of antiair defense troops, who are deeply aware of their responsibility for ensuring the security of the aerial frontiers of our motherland, are successfully implementing the complex and responsible missions assigned the Soviet Armed Forces by the Communist Party and Soviet Government in the contemporary international situation. It is known that the most important burden of all their activity is the ideological and political education of personnel on a foundation of the comprehensive propagandizing of materials and resolutions of the 22d Party Congress.

Great and varied experience in this area has been stockpiled in the soyedineniya, where Officer D'YAKOV is a propagandist of its political organ. Here, in an absolutely correct manner, they began with the organization of work with officer-cadres, on whose ideological, theoretical training depends the scope and ideological content and results of all ideological work among the troops. For this purpose the best-grounded officers have been selected to serve as supervisors of theoretical seminars and groups of Marxist-Leninist training, as lecturers and reporters. All known forms for the theoretical training of officers are supplemented with worthwhile lectures and conferences. For example, in N-skaya chast', two series of lectures were organized in the officers lecture bureau: the first on the 22d CPSU Congress as the congress of the builders of Communism; and the second on the CPSU as the organizer, supervisor and educator of the Soviet Armed Forces. The officers of the chasti' thoroughly discussed actual problems in their work at a theoretical conference devoted to the decisions of the 22d Party Congress

in military development, in increasing the combat might of our Armed Forces, and in strengthening the defensive capability of the Soviet state.

In N-skaya chast', a two-day conference was conducted on the development of Lenin's military-theoretical legacy in the resolutions and materials of the 22d Party Congress.

All this supposedly affects positively the effectiveness of the work of all officers in the training and educating of soldiers and sergeants. It is enough to say that in the chast' of Propagandist IVANOV, officers of the political administration have conducted tens of political classes each, directly in the podrazdeleniya. Here, various forms of agitation work have become more worthwhile and interesting. In a number of chasti, lecturers are successfully propagandizing among the troops, the principles of the moral code of the builders of Communism, military and technical information, natural sciences, and the achievements of our literature and art.

Officers YUROV, GROMOV, BOGDANOV, BOGUSHEVICH and many others take active part in all of this work. Representatives of local Party organs, establishments, enterprises, sovkhozes, and kolkhozes have been enrolled to address the troops.

It is a positive fact that the most politically grounded soldiers and sergeants participate actively in mass agitation work. They speak in lecture bureaus, and give oral readings of periodicals at evening meetings and in youth discussion groups. Sergeant NOVIKOV, Pfc DUBIK, and Pvts GERASIMOV, RUDKOVSKIY, SHURAYEV and others, have proved themselves to be fine propagandists.

The varied ideological work of commanders, political workers, and party and Komsomol organizations provide a serious moral and political foundation for the successful execution of the missions of increasing the combat readiness of chasti and podrazdeleniya and improving the quality of training, and political and military education of personnel.

It is possible to give considerably more examples of the organization of party propaganda among the PVO Strany Troops. However, above all, we must concern ourselves with the unsolved problems in this area. Unfortunately there are still many even in the chasti about which we spoke above. It is known that the quality of all ideological work is measured only by one standard -- the results, that is, the level of combat readiness, the quality of combat and political training, and the status of military discipline. In certain chasti and podrazdeleniya, there are serious shortcomings both in the training and in the education of personnel.

In order to quickly overcome these shortcomings and to raise the combat readiness of all chasti and podrazdeleniya without exception to the level of the requirements of the Central Committee CPSU and the Soviet government, it is necessary to begin with the primary link in the work, namely, the improvement of the quality of ideological and political education of personnel. The level of political zeal and consciousness of servicemen is in direct dependence on the purposefulness and ideological level of each propaganda statement and on how many problems in individual educational work are solved in chasti, a factor which reliably ensures a wide moral and political influence on the consciousness and feeling of soldiers and sergeants. For this purpose,

it is necessary for political organs and party organizations to organize work move carefully with propaganda cadres, more comprehensively study and persistently disseminate positive experiences, and more actively engage supervisory cadres such as commanders and political workers in the conduct of political and educational work directly in the podrazdeleniya.

The forming of a completely scientific Marxist-Leninist ideology among the troops is a great and responsible field of work for our officers, and party, political and Komsomol organizations. It is necessary never to remember that its importance extends far beyond the boundaries of immediate army interests and demands. After undergoing in the ranks of the army a great and vital period of moral and political tempering, thousands and thousands of young people annually return to the national economy, and to groups of workers in cities and villages. They must bear with them the high level of organization, model discipline, and business-like and political activity, created by the entire tenor of army life.

With Honor We Are Justifying the Confidence of the Party; Delegates to the 14th Komsomol Congress Speak (pages 17-20)

Abstract: Prefatory notes to a series of interviews by the editorial board of this journal with PVO Strany Troops delegates to the 14th Komsomol Congress, disclosed that the 4-day congress held at the Kremlin discussed the missions of Soviet youth in implementing the plans for the building of Communism outlined by the 22nd Party Congress. The remarks of the PVO personnel interviewed are summarized below:

Lt FEDORENCHIK, commander of a platoon and secretary of a primary Komsomol organization, spoke of the varied representation at the congress;

the great attention given KHRUSHCHEV's speech at the congress; and the speech of Maj G. S. TITOV, Pilot-Cosmonaut. FEDORENCHIK recalled TITOV's words: "We are devoting all our efforts, knowledge and energy to persistently perfect combat skill; to master formidable combat equipment and weapons; to strengthen conscientious military discipline; and to increase vigilence and combat readiness."

FEDORENCHIK citing the preparations in his battalion for the Komsomol Congress and noted that one third of all Komsomol members became outstanding in combat and political training; the ranks of rated specialists were increased; half of the battalion achieved ratings; and Re-enlisted Jr Sgt GUSINETS, Pfc VOYTENKO, and other soldiers and sergeants reduced, by more than 50 percent, the norms for loading required for the rating of "outstanding." Our rocketeers have learned how to work at night under daytime norms.

FEDORENCHIK disclosed that at the suggestion of the Komsomol members, his battalion commander permitted his troops to work on unfamiliar equipment in a neighboring battalion where they were evaluated objectively by the commander of that battalion. Moreover, at the initiative of Komsomol members, radio and technical courses were created, competitions were organized among crews, evening meetings were held, and the experiences of outstanding personnel were widely propagandized.

/A photograph showed and identified FEDORENCHIK as a platoon commander and secretary of a Komsomol primary organization./

Capt MUKHORTOV, assistant chief of the political organization for Komsomol work, praised Komsomol members in chasti and podrazdelenya.

He disclosed that the number of personnel who are outstanding in combat and political training doubled in the Komsomol organization where the work is supervised by Sr Lt SHUSHUNOV. In many podrazdeleniya, all or almost all the members of the Komsomol are rated outstanding.

The Komsomol members of the organization where Sr Lt ZUBOV is committee secretary, have completely fulfilled their duties. All the young soldiers have become specialists third class. In the Komsomol organization headed by Officer DENEZHKOV, many enlisted Komsomol members have learned to perform the duties of officers, in working on combat equipment.

MUKHORTOV noted that the Komsomol members of the organization where Lt. GORBATYUK is secretary of the Komsomol committee have resolved to struggle for "superlong range detection of targets." As a result of employing the technical capabilities of the radar to the maximum and the fine training of the operators, they have gained this objective. All crews are able to detect targets at ranges 20 percent greater than that certified for the stations.

MUKHORTOV disclosed that in preparing for the Komsomol Congress, Komsomol members struggled to conserve fuel, building materials, electric power, and funds. The drivers of the podrazdeleniya, where the Komsomol work is supervised by Capt ABRAMOVICH, operate on conserved fuel every tenth day.

MUKHORTOV told of the violations of discipline, amoral behavior and poor performance of duty of individual Komsomol members, and the poor ideological, educational, and organizational work in certain Komsomol

organizations. He concluded that the wide propagandizing of the documents of the 22nd Party Congress is the priority mission of all Komsomol committees and bureaus and all Komsomol workers.

Sr Lt KOZLOVSKIY, assistant chief of a political organization for Komsomol work, in discussing preparations begun in November 1961 for the Komsomol Congress disclosed the following information:

All troops in radio-technical chasti followed the example of Komsomol organizations (where Sr Lt GLAZYRIN is secretary of the Komsomol bureau) which began to struggle to achieve a rating for "each Komsomol member of a radar company."

Komsomol-pilots were included in the pre-congress competitions to acquire technical knowledge of the problems of maintaining aircraft at the proficiency level of a rated technician, and the competitions for outstanding squadrons and chasti. The number of outstanding podrazdeleniya and podrazdeleniya with improved ratings increased as well as the number of outstanding personnel and rated specialists were supplemented as a result of these measures.

On the eve of the Komsomol Congress the Transferable Red Banner of the oblast Komsomol Committee was awarded to the chast' where Komsomol work is supervised by Lt ANDRUSIK. Almost all podrazdeleniya of this chast' completed combat firings with the rating of outstanding. Almost all troops including young soldiers, overfulfilled the norms of combat work.

In conclusion, KOZLOVSKIY urged the strengthening of ideological work, and the improvement of propaganda and the dissemination of advanced

training experiences. He named Lt BITMETOV, Sr Sgt MISHUNIN, and Jr Sgt SHALASHNIKOV among the many disciplined, skillful soldiers, sergeants, and officers who are true masters of their work.

Lt DENISOV, commander of a podrazdeleniya and member of the bureau of a primary Komsomol organization, stated the basic mission of army Komsomol organizations, based on the resolutions of the 14th Komsomol Congress, to be the mobilization of Komsomol members and all young servicemen to fulfill their duty, and develop an understanding of their role in strengthening discipline, and in increasing the combat readiness of PVO Strany Troops.

Describing Komsomol activities, DENISOV told of a technical circle that was created, and which operates regularly under the supervision of Lt PANOV, a Komsomol member. He cited the competitions conducted among batteries and crews in the rapid and high quality performance of preventive maintenance work and in unloading and loading. Usually Komsomol members are the victors in these competitions. The Komsomol crew commanded by Sr Sgt CHERNYSHOV, has received letters from former Komsomol-personnel of the unit, now in the reserve.

Pvt VORONKOV, senior operator and member of the Komsomol committee of a chast', referred to a report from his chast' presented at the 14th Komsomol Congress, which included the following information:

All troops, including the young soldiers, were engaged in the socialist competition for the outstanding mastery of equipment. Komsomol members who are outstanding, in their free time voluntarily assist new members who need help. Pvt RUSLICHENKO, who decided to become an operator

first class in his first year and learned to operate equipment in his second year, without sparing efforts and time aided Pvt USACHEV in training. As a result this soldier within 6 months mastered equipment on the level of specialist third class. Sgt MEDVEDEV, a member of Komsomol aided FEOKTISTOV, KURILO and LUSHCH' to become rated operators within 2 months.

VORONKOV described proceedings of the 14th Komsomol Congress.

Heights Are Conquered by the Bold --by Lt Col M. S. LEONOV (pages 22-25)

Summary:

In spite of the opinion of certain pilots who thought it impossible, Maj PRIKHOD'KO decided to test the ceiling and combat capabilities of his aircraft. This was a conventional aircraft, not a particularly light-weight fighter aircraft.

There was much to do, the most important being to select the most effective regimen for the climb of the aircraft, and to consider the most favorable method of conserving fuel through the various stages of flight.

He supplemented his instructions with creative conclusions, based on experience. The flight proved the accuracy of his calculations. PRIKHOD'KO reported to the control tower (SKP) upon completion of his mission. This incident shows the character of Maj PRIKHOD'KO, a squadrom commander, indicates his desire to reach new altitudes and demonstrates his command skill in the training and education of his subordinates.

There is nothing unusual in the biography of PRIKHOD'KO. Formerly a lathe operator at an aviation plant and a one-time student (kursant) of an aeroclub, Komsomol-Member PRIKHOD'KO joined an aviation school, where he demonstrated his ability for flight. He quickly mastered

the training aircraft and dreamed of jet aircraft. He was the first of the officer-candidates to fly a MIG-15 fighter. It was at this time that PRIKHOD'KO decided to be a fighter-pilot, to fly supersonic aircraft, and to master flying.

With this attitude, PRIKHOD'KO entered a chast. . With other pilots, he mastered a new fighter. In classes and on the airfield he laboriously studied the equipment and its combat capabilities. At the same time, he was trained in combat training aircraft. With the help of experienced pilots Maj ARTYUSHIN and Capt ABYSHEV, PRIKHOD'KO, in a short time, completed the re-training program and took his place in formation. In his first flights in the combat aircraft, he displayed the high combat qualities, persistence, and courage which were to ensure his rapid rise. Where several flights were required for the others to master one or another element of flying, only one or two were sufficient for PRIKHOD'KO. This does not mean that he relied only on his own ability. He constantly worked to achieve knowledge of flying. PRIKHOD'KO paid particular attention to preparations for flight.

Not many years following his completion of school, the young officer received the badge of pilot third-class. He subsequently became a pilot second-class, and then, pilot first-class. He held first place in the firing competitions of his ob'yedineniye. He was inscribed in the honor book of a military district.

The road to flight skill was not easy. A pilot's profession is laborious as well as honorable. Once, he was to check the operation of the engine in an aircraft. At first all went normally. But at a great altitude, the pilot suddenly felt a loud banging. The revolutions

of the turbine and the temperature of the exhaust gases began to fall sharply. Shortly afterward the engine stopped. The window was frozen, and it was cold in the cabin. PRIKHOD'KO turned off unnecessary objects which burned electric power, leaving on only the radio and the instruments for controlling the engine and concentrated all his attention on piloting the aircraft.

After reporting to the flight controller, the pilot descended to an altitude stipulated by his instructions and tried to turn on the engine, with no results. The fighter-aircraft continued to lose altitude, and neared the ground. The only solution was to jump, but PRIKHOD'KO decided to try to save the aircraft. He turned on the ignition and looked at the instruments. They were alive again. The engine slowly began to turn and PRIKHOD'KO finally reached the airfield. For his courage and skilled actions during the flight, Maj PRIKHOD'KO was awarded a valuable prize.

Flight skill and the skill to work with subordinates are considered in evaluating an air commander. The ability to instruct holds a top place among characteristics evaluated, since instructors play a decisive role in improving the combat skill of flight personnel. There are few instructor-pilots in N-Skaya chast' who are spoken of so frequently and so warmly as Maj PRIKHOD'KO. Many pilots have passed through his hands and remember the 'PRIKHOD'KO method,' which opened for them broad horizons in combat perfection. Among them are Officer KRYLOV, senior inspector in piloting technology; Pilots VORONIN, KLIMOV, and PETROVSKIY, who are successfully mastering new aircraft; and SOKOLOV and NASHIBOCHNIKOV, pilots, who, after one year of individual training, attained a second-class rating.

PRIKHOD'KO did not achieve his instructor's skill at once. At one time when he commanded a flight, there were many difficulties and accidents. One of his first instructor flights was with Sr Lt PAVLOV. In piercing, upward through the clouds, the pilot made an error and the aircraft pitched to an angle of 45°. PRIKHOD'KO did not take over the controls, hoping that PAVLOV would correct his error. The aircraft rolled over on its wing and began to spin. The parachute which PRIKHOD'KO wore got in PAVLOV's way. PRIKHOD'KO has fastened the straps poorly before the flight. With great difficulty, the instructor succeeded in taking control of the aircraft.

PRIKHOD'KO learned serious lessons from this incident. He learned how important it was to prepare for each flight, analyzing in detail his actions and the actions of the students. The "PRIKHOD'KO method" was formulated, the essence of which was to teach quickly and well. This means above all to note in time a pilot's error, determine its cause, and correct it within a short time. The error should be corrected by the student-pilot, under the instructor's guidance.

Capt SOKOLOV, Pilot 3d Class, within one year attained a high level of training owing to the "PRIKHOD'KO method." SOKOLOV, critical of other instructors who feel that with time and coaching students of will acquire all that is required, noted that PRIKHOD'KO believes that the road to mastering flying must be straight, quick, and errorless.

SOKOLOV recalls a personal example. After being "coached" in how to land for a long time by other instructors, SOKOLOV's error was corrected by Maj PRIKHOD'KO after two flights. Among those testifying

to PRIKHOD'KO's capability as an instructor are Sr Lt SIN'KO; Capt CHIZH, who is a friend of Pilot-Cosmonaut G.S. TITOV, and Capt POLUEKTOV.

PRIKHOD'KO while a strict and demanding commander also has a friendly attitude toward people. In a friendly discussion, Maj PRIKHOD'KO can tell a subordinate that he has committed an error which cannot be condoned and advise him not to repeat it. When a discussion is sometimes not enough and PRIKHOD'KO must consult with the offender at a "squadron quorum," PRIKHOD'KO also consults with the flight commanders and with Capt SOKOLOV, secretary of the party organization. One incident which disturbed the entire squadron, involved Capt BABAYEV, an experienced but inadequately re-trained pilot. BABAYEV was rebuked by a flight commander and became coarse in his anger. PRIKHOD'KO took BABAYEV's case to a court. A short while later there was a party meeting. Those who spoke were indignant since BABAYEV violated the traditions of the squadron. Now aware of his error, BABAYEV told the Communists that he would not make a similar mistake again. BABAYEV kept his word. The same group later received Capt BABAYEV into party membership.

The coordinated efforts and work of the group and each of its members independently, have resulted in the successful fulfillment of the combat training plan, and the attainment by all airmen of a level of training of pilot 1st class. PRIKHOD'KO was named squadron commander comparatively recently.

Against Laxity and Simplification in Combat Training -- Col Gen Avn A. I. PODOL'SKIY (pages 26-29)

Text:

In a modern war, should the imperialists unleash it, the personnel of the PVO Strany Troops and all our Armed Forces are required to display maximum moral and combat qualities, exceptionally high physical endurance, and efficient coordination; teams and crews are to act rapidly and troops are to be carefully controlled in a determined manner. In light of the growing requirements placed on troops, their combat training must be organized. Each drill, practical training class, and exercise must be conducted without laxity or simplification, and on a highly organized and methodical level.

At the present time troops are executing new and more responsible missions. Primary among these are the study and further perfection of reliable methods of repelling surprise strikes of enemy aviation and pilotless weapons under conditions in which weapons of mass destruction and radio interference are employed, and the development of efficient coordination of the various arms of service. Commanders, political organs, and party and Komsomol organizations, in executing these missions, are engaged in the enormous work of perfecting the combat skill and increasing the combat readiness of personnel. Antiair defense troops are persistently learning to employ modern combat equipment and weapons in a skillful manner and to conquer the enemy under any circumstances.

A high level of combat skill, courage, and personnel organization, as is known, is formed and perfected through practical training and tactical exercises. During these exercises, commanders acquire strong skills in organizing modern battle and controlling troops in combat. Soldiers and sergeants are learning to overcome difficulties and to develop qualities needed in war. Practice shows that tactical drills and

exercises provide the necessary results and facilitate the raising of the level of troops combat training when an instructive air situation is created for them in which attention is given to problems of mastering new equipment and organizing the coordination and conduct of combat operations under conditions attending the employment of weapons of mass destruction. Therefore, it is necessary that each practical exercise and drill, each training flight, and each firing be conducted most effectively in accordance with a specific situation, which could emerge in the initial phase of war.

Experience shows that where commanders, political organs, staffs, and party organizations have well adjusted to the training process, a high level of organization in training has been attained; shortcomings and weaknesses are being combatted; personnel are successfully mastering knowledge and acquiring needed practical skills and continuously perfecting their combat skill; and podrazdeleniya and chasti are showing outstanding and good results in combat and political training.

In realizing what is required in wartime, many commanders are not lax in teaching their subordinates, and are nipping over simplification in training in the bud. Owing to this, a high level of combat training has been achieved in N-Skaya air chast'. For 10 years, this unit has had no flight accidents while achieving the highly quality fulfillment of the combat training plan. Owing to the fine training of flight and technical personnel in this unit, the annual [total] flying time is constantly being increased; in the past year it exceeded the established norm by more than 50 percent.

Under the supervision of a demanding commander, officers are concerned with the training and education of their subordinates in a purposeful manner. Pilots, engineers and junior air specialists are working with every effort, and are displaying the required initiative and high efficiency in everything. Combat training is being conducted according to plan in the unit, laxity and simplification in training are not permitted, and the requirements of military regulations and instructions are being observed carefully. All this favorably influences the enhancement of the skill of pilots. Thus for example, in the past serious grievances were laid against Sr Lts MYADZEL' and SHADRINA, Pilots. But, owing to the skillfully organized training and education of personnel, they became rated masters of air combat. The friendly work of commanders, political workers and the party organization is the foundation on which are based the successes in the execution of combat training missions and in increasing combat readiness.

Combat firings are a responsible moment in the life and training of podrazdeleniya of surface-to-air rocket troops. They are the result of all the varied work of personnel during the period preceeding the firings and are the most complete and objective means possible of judging the efficiency of these podrazdeleniya and their readiness for executing combat missions. Officers LIPATENKOV and KODOLOV, commanders of podrazdeleniya, well understand this and take it into consideration in practice. In these podrazdeleniya, combat training is well organized, classes are conducted in an instructive and methodologically correct manner. Personnel have mastered combat equipment to perfection and are fulfilling their duties in an irreproachable manner. The precise per-

formance of the members of the crews, the high discipline and organization, and their skill in the timely detection and correction of disorders in the apparatus are positive evidence of the work of these podrazdeleniya commanders. Within a comparatively short time personnel have attained good results in improving their skill. It is not accidental, therefore, that the firings of these podrazdeleniya are rated outstanding.

The performance of Officer KUZIN, commander of a radiotechnical podrazdeleniya, deserves attention. Within the past few years there have been no serious violations in military discipline and exemplary military conduct is being maintained. Personnel have been trained to a level which makes it possible to implement complete interchangeability both in the crews and at the control point (punkt upravlenya). All senior soldiers and sergeants are specialists first class; personnel in their first year of service have been trained to the level of second and third class specialists; seventy percent of the officers of the podrazdeleniye are specialists of a higher class. These achievements are the result of a highly organized training process, good individual training of officers, the demands which the officers place on themselves and on their subordinates, and also correctly organized methodological work.

Unfortunately, we still have podrazdeleniya where the required attention is not paid to the organization and conduct of combat training under situations simulating actual combat to a maximum degree. Individual commanders and staffs are permitting laxity and simplification in the conduct of exercises and drills. In the podrazdeleniye which Officer SHUTAYEV commands, crews of the launch podrazdeleniya trained under simplified conditions, for a long time. When the

podrazdeleniye was placed in a more difficult situation, it showed that it could not cope completely with the mission assigned it and received a low rating.

Certain commanders of fighter aviation had also in a number of cases organized simplified pilot training in the interception of targets during an air battle. When they were required to perform under the conditions of modern combat, they would cope poorly with the tasks assigned.

Incidents of formalism and routine approach still exist in training when equal exercises and missions are assigned to a category of specialists who have varied levels of training. This means that the most prepared and experienced officers are working at less than their capacity and others are assigned missions which are difficult to fulfill.

It is possible to find incidents when conducting tactical training in which unnecessary conventionality is permitted. At one time or another in working out a training plan a simplified situation is programmed in which one or another podrazdeleniye cannot operate at its full capacity or according to instruction. It happens that such important problems as the organization of coordination, maneuver in combat, deployment of the podrazdeleniye, and the conduct of antiatomic and antichemical defense are poorly reflected in the plans and are solved conventionally in the exercises, although in actual combat undoubtedly all these factors would be met. In the exercises a complex and instructive air situation is not always created; flights of aircraft to track targets are sometimes performed according to previously known routes. This excludes tactical surprise from training.

An important role in the struggle against simplification and in creating a high level of effort in exercises belongs to supervisors of exercises and staff officers. Frequently officers, insufficiently trained in tactical matters are named as supervisors of exercises. This leads to laxity and simplification in training. It is impossible to say how much damage is done to the combat readiness of podrazdeleniya in which combat training is conducted in a simplified manner. Certainly, it is not always easy to create in the course of training a situation which simulates a combat situation to a maximum degree. But a lot depends on the methodological skill of the commander who must keep conventionally to a minimum in training. To achieve this, the supervisor of training is obliged to correctly form plans, to work out an instructive plan of training which conforms to modern viewpoints, and successfully put it into practice.

An important element in troop training is the training of combat crew members at a time while functional duties are being performed. Efficiency in the work of personnel is also an important element. In conducting such training the high speed and the length of time in which the work is performed must be considered. Rapid and correct actions of troops must be the goal. It is intolerable that in certain radar companies the training of combat crews is conducted without radio interference and with a small concentrated assault by a simulated enemy. It is impossible to permit crews participating in training know a plan in advance including the number and routes of flights of the targets, their altitudes, the nature of the interference which is being received, etc.

The crewmen who know these factors cannot develop skills necessary in a combat situation. Apart from this, owing to the simplification which has been permitted, commanders can derive an erroneous impression of the actual training of the crews, which could damage the combat readiness of the troops.

Among the individual surface-to-air rocket podrazdeleniya the systematic training of combat crews is not conducted to develop their performance of duty, but practice in the execution of duties is replaced with talk; and simplification in the organization and conduct of training firings is permitted. In a number of cases, they are conducted under simplified circumstances, and without intensive [radar] interference. Crew training to combat targets at low and high altitudes is poorly conducted. All this can lead to a reduction in combat firings effectiveness.

Individual air podrazdeleniya conduct exercises under simplified conditions and the training against maneuvering targets is poorly conducted. Sometimes training under weather conditions which is somewhat higher than the minimum is considered as training under minimum weather. Certain laxity is permitted also in the execution of missions at the low and high altitude limits of the combat capabilities of aviation equipment.

All these and other conventionalities and incidents of laxity must be eliminated from the training of troops. It is necessary to base the planning of combat training on a consideration of the conditions of modern combat. If all our commanders and political workers would see

that personnel carefully observe all regulations and requirements of courses and programs of combat training, and if they themselves would set an example in these areas and conduct a decisive struggle against simplification and indulgences -- the results would immediately show.

The appearance among troops of new equipment and the complication of the forms and methods of conducting modern warfare have given rise to new methods of personnel training. They require, above all, a sharp increase in the knowledge of officers with respect to special and technical training; and also fine organizational abilities and high-level methodological training. Under modern conditions, an officer cannot consider himself knowledgeable in military affairs if he has not mastered combat equipment to perfection. Without this mastery he would not be able to make a correct decision in a combat situation. In his speech at the reception for military academy graduates in the Kremlin in July 1961, N. S. KHRUSHCHEV said: "In our time an officer must have a high level of military and technical training, and must have a broad general theoretical outlook. He can successfully fulfill his duties only if he is in touch with the development of military theory and practice." We cannot forget this important instruction.

Essential shortcomings exist in the work of increasing the military and theoretical knowledge of officers. Often a knowledge of theory which aids the commander to execute this or that combat mission in the best way, in each specific situation, is forgotten. It is not permissible, for example, that certain commanders underestimate the

study of the principles of radioelectronics. It is known that without such knowledge it is unthinkable that the correct exploitation of complex radar apparatus can be organized.

Of great importance to the training and the education of troops is the pedagogical culture of an officer. Experience shows that those commanders and political workers who, possess a foundation of pedagogy, are the most effective and able to train their subordinates in military matters, to improve the political training of soldiers and sergeants, and to instill in them high moral and combat qualities. It is necessary however to note that individual officers still exist, particularly young officers, who having good knowledge of equipment do not have adequate skills in the methods of training subordinates. Guilty of this above all are those commander-supervisors, who do not pay adequate attention to the methodological training of officers and leave this important matter in the background.

Military matters do not stand still. They are continuously being developed and perfected. Therefore commanders are compelled to be equal to the missions assigned them and to constantly increase their knowledge, creatively consider all changes which theory and practice introduce into military matters, and in accordance with these, to conduct the training of troops. It is necessary also to widely utilize the combat experience of the past war and the glorious traditions of the PVO Strany Troops, to study and generalize the combat training experiences of leading chasti and podrazdeleniya and skillfully introduce them in troop training.

The most important mission of commanders and political workers of chasti and podrazdeleniya is to carefully organize and systematically

control the training in podrazdeleniya and struggle against laxity and oversimplification.

Training to Work in Crews -- Engr Col M. K. MASHTANOV (pages 30-33)

Summary:

Success in fulfilling the combat mission of a radar podrazdeleniye depends largely on the level of training of the radar operators and their ability to act quickly as members of a crew under a very complex air situation. The training of highly qualified specialists and the coordination of the crews of radar stations require that officers have solid methodological skills and specific knowledge.

The specialty training of operators is composed of technical and special training classes. They are conducted for a period of one year which is split into 2 periods. The first of these periods is devoted to the individual specialist training of operators. The length of this period of training depends fundamentally on the level of general education of the inductee. A relatively short time is required to train the young soldiers to a level at which they may begin technical training with the senior rated specialists in the crew of the radar station.

During the first phase of technical training the fundamentals of electro-radiotechnology, the general set-up and principles of operation of a radar station are studied. The location and operation of those cells and blocks which they must service in the future are discussed in classes with the future operators in somewhat more detail.

In special training, the young operators in the first phase of training acquire skills necessary in the technical servicing of scopes and in

fulfilling specific duties at their place of work. Each operator must within this time learn how to ready the scope for combat work, engage it, conduct elementary tuning control, detect indications from aerial targets on the radar screen, calculate their coordinates, etc.

The content and amount of the material to be studied, and also the amount of training time for this period are determined by corresponding programs. From a methodological point of view, the training of the operators should be conducted in special groups similar to those of radar stations, and each group should have an individual supervisor.

Classes in technical and special training are conducted simultaneously. Initially the number of training hours devoted to technical training must be greater as compared to those devoted to special training. This is necessary so that the study of the construction of equipment is somewhat ahead of the study of methods of work with it.

The most suitable form of organizing the training of operators in specialized training is the execution of related missions and exercises. Their content and number within the first phase must be sufficient to envelop the entire circle of problems stipulated in the plan. Each subsequent mission should include a repetition of earlier exploited methods of combat work, but under a more complex aerial situation.

The number of classes needed to discuss each mission or exercise performed is determined by the volume and degree of complexity of the training problems. Also considered is the amount of training time available and the level of training of the students.

In conducting specialized training classes, the chief of the radar station acts as supervisor. He must compose a plan-synopis. This must include an estimate of training time for repeating /previously/ introducted material; a statement of the content of each problem under the new theme; and a control questionaire. The assignment of students to various posts -- the radar station, the simulator, the film apparatus (fil'moskop); a time chart for transferring students to various work places, and the assignment of sergeant-instructors to work places, must also be stipulated.

Further, visual aids such as schematic drawings, posters, albums with photographs of radar screens, etc., must be selected or prepared. Particular attention must be paid to the selection and study of a training film strip for a mission which is to be executed. An important step is the conduct of instructor-methods classes for sergeants who will be assigned as instructors to training young specialists.

The first class in working out a priority mission is conducted in a classroom. It begins with a repetition of studied material which is conducted in the form of a questionaire. When a supervisor is convinced that all the students have well mastered the content of the previous theme, he proceeds to explaining the new material. Utilizing schematic drawings, posters, and other visual aids, the chief of the station explains to the students the elements of combat work. It is necessary to utilize a part of the training film strips, and to prepare required sketches on the classroom board. At the end of the classes 10-15 minutes is devoted to a question-and-answer period.

The next step is to consolidate information directly at the radar station by employing simulators and training film strips. All students are divided into groups. Generally there are three groups, the first, the radar station, the second, the target simulator, and the third, the film apparatus. The chief of the station is concerned with the operators at the radar station; and sergeant-instructors are concerned with the operators at the simulator and film apparatus.

At the radar station the supervisor explains to the students the conduct of all the methods of combat. Then he commands each of the soldiers in turn to perform the method which is to be mastered several times. He carefully observes the actions of the subordinates and points out their mistakes. Then the first group goes to the simulator and the soldiers who were concerned with utilizing the film strips, go to the work positions at the radar scopes. The operators who were trained at the simulator replace those at the film apparatus.

In subsequent classes, the supervisor sees that all the students of the group correctly and carefully conduct operations at the radar station in the shortest time. The final class is devoted to a review of the exercises and skills of each student-specialist by means of a control questionaire and on the basis of how each performs the methods of combat. Each operator is evaluated, recommendations are made, and further training is given to strengthen acquired knowledge and skills, and further perfect their training.

At the conclusion of the first phase of training, the young specialists take exams in both technical and special training. Those who qualify enter combat crews, where the operators undergo a further

course of training with the senior-rated soldiers. These classes constitute the second phase of training.

The primary mission of this phase is to coordinate the radar station crew and to ready it for operation under various air attack conditions. The basic method of instruction is, as in the first phase, the performance of missions and exercises related to special training. But in distinction from the first phase all missions and exercises in this stage are worked out within the podrazdeleniye.

The coordination of the crew begins with the study by the operators of the organization of work at the radar station and the duties of all the personnel. Particular attention is paid to the efficient fulfillment of the established work program and the cross-training of specialists in the process of fulfilling the established mission.

The chief of the station sees that all operators in the crew can confidently fulfill their duties under the conditions of a simple air situation, that is a small number of targets in the zone of operation of the station. It is then necessary to proceed to the execution of missions which contain complex elements, and to create difficulties in the work of the operators and of the entire crew. These difficulties would include obstruction of the radar screens with various types of interference; a gradual increase in the number of targets, staggered in altitude and operating simultaneously within range of the radar; the appearance of targets at changing altitudes, etc.

Each mission, during the second phase, is worked out in theory and in practice. During the introductory portion of the theoretical classes, the chief of the station must explain to subordinates the content of the

mission, acquaint them the corresponding norms, discuss tactical methods which can be employed by an aerial enemy and the combat capabilities of a given radar station in detecting and tracking various targets.

Practical classes can be conducted with the use of actual aircraft or with the use of simulators and training film strips selected in accordance with the conditions of the mission to be worked out.

Each class begins with the warning signal upon which the crew take their posts and ready the station. If the class is conducted with flights of aircraft, then at the command of the chief of the radar station, the station begins operation. In accordance with commands received from the control center of the podrazdeleniye, the supervisor points to operators, indicating to them the area of probable emergence of training targets. When the simulated air enemy is detected, the chief of the station turns the attention of the operators to the peculiarities in controlling the targets according to the mission, pointing out the rate of data, the changing altitude, etc.

Upon the withdrawal of the targets from the zone of visibility, the supervisor of the class points out to each operator his shortcomings and those problems which must be worked on inthe future with the help of simulators and training film strips.

In organizing a practical class, it is necessary to consider that it is not always possible to create an air situation which satisfies the conditions of a mission. Therefore, individual training programs must be worked out in the course of study of the other missions.

In the second period of training each operator must attain a certain level of training, acquire practical skills necessary for clear-cut and coordinated operation within the crew of the station. Therefore it is very important to carefully follow the progress of the young specialists and to stringently control them. A basic criterion for determining the level of training of an operator in a given period is the number of actual targets detected and tracked by them, and a consideration of the quality with which data is controlled and transmitted under the conditions of varied-type missions. The chief of the station must keep a careful individual account of the number and quality of controls by each operator and together with the control-point duty officer of the podrazdeleniye make corresponding notes in the books of the operators. For this reason before each practical class for special training, the books are given to the duty officer at the control point. At the conclusion of the work, the actions of each operator are evaluated and are written up in the books according to an established form.

Such an account is necessary not only to control the training of operations. This data is also used in solving the problem of awarding ratings to specialists following their qualification under corresponding tests.

[A captioned photograph by F. KONSTANTINOV showed Sr Lt V. ROMANCHENKO explaining to Pvt N. PROKOLCHUK, Jr Sgt P. BABICH and Pvt K. GAVRISHEV, the location and names of radio tubes. The caption also stated that "N-skaya-podrazdeleniye has a circle for studying electroradiotechnology -- which has about 30 soldiers and sergeants as members and which is supervised by Sr Lt B. ROMANCHENKO."]

Training GCI Controllers and Officers -- by Lt Col V. S. POPOV (pages 34-37)

Summary:

The enormous speeds and altitudes of modern aircraft and their powerful weapons and equipment make it possible to operate day and night, under any weather conditions but at the same time, place extremely high requirements on the efficient guidance of fighter-aircraft to air targets. GCI officers must master the theory of ground-controlled interception at various altitudes and the capabilities of modern aviation equipment, radiotechnical equipment, and guidance equipment; master the methods of guidance and correctly allow for developments in the air and meteorological situation; which emerges; and create favorable conditions in which fighter-aircraft may timely detect and destroy an enemy with the first attack on a given line of intercept.

Most of our GCI officers have these qualities. Officer ALEKSEYEV is credited with vectoring more than 1,000 intercept missions under various air and meteorological situations. Once, he simultaneously vectored three fighter aircraft against three different targets, two high altitude and one low altitude. In spite of the difficulty, ALEKSEYEV executed the mission with honor, by ensuring interception and simulated destruction of the enemy at a great distance from the target which was being defended.

Officer LENIN has proved himself a skilled GCI controller. He has comprehensive theoretical knowledge and solid practical skills, and he knows well the individual peculiarities of the pilots which he takes into consideration when vectoring the fighters.

At the same time there are still some GCI controllers and officers who commit errors when guiding fighters which lead either to the interception of targets after they have crossed a given line or to a failure to intercept. This is due to the inadequate experience of some officers and also to their disregard of the correct guidance methods, to their formal analysis of the existing situation and the individual peculiarities of the pilot.

Therefore the training of GCI controllers and officers is of priority importance and must be up to the level of training of pilots and must be conducted without simplification or laxity.

The planning of training is the preliminary stage in the training of GCI controllers and officers. This calls for a continuous increase in the knowledge and skills of officers and is founded on the principle of progressing from the simple to the complex. However, in a number of cases, the planning of training of GCI controllers and officers is left to their immediate chief and the commander and staff are ommitted from this important matter. As a result, the training plans for a new training year or for a training period are sterotyped. Their content does not differ from the plans of previous years and consequently, they introduce nothing new, or creative in the process of training.

The training of GCI controllers and officers includes theoretical training and the perfection of practical skills. Peculiar to the training of this category of officer is the fact that owing to the special nature of the service it is impossible to enroll them all at the same time in command training classes. Therefore a special role is assigned the independent work and training of officers fulfilling

their functional duties under the supervision and control of their immediate chiefs. To check the knowledge of GCI controllers and officers exams, consultations, or seminar classes are organized bi-monthly or monthly depending on the importance or complexity of the theme.

A special place in training is occupied by tactics meetings, designed to strengthen knowledge in special and tactical training and to perfect skills in guiding fighter-aircraft against targets. In our opinion tactics meetings should be conducted each week, directly at the place of work of the GCI controller using guidance equipment and with strict care being given to maintenance of the principle of progressing from the simple to the complex. The meetings must facilitate the development among officers of creative thought, initiative, and independent action in evaluating an air situation and intercepting targets.

In these tactics meetings GCI controllers and officers acquire solid knowledge and skills in the combat employment of fighter-interceptors, in filling out GCI controller records, in employing computers and navigation equipment, in the correct utilization of control and guidance equipment, and in supervising the work of operators and plotters.

Conferences to exchange experiences can play an enormous role in training GCI controllers and officers. However, they are underestimated in places and are conducted only from time to time and are frequently formally. In our opinion such conferences should be conducted regularly twice a year, both during winter and summer training. In

addition to GCI controllers and officers, pilots, staff officers, commanders of radar podrazdeleniya and operators of radar stations should attend.

Pilots of N-skoye podrazdeleniye have attained high results in mastering new equipment. However this was not always the case. The GCI controllers attributed their failures to the work of personnel working with radiotechnical equipment. A check showed that this opinion was erroneous and that the primary reason was the inadequate training of GCI controllers and officers.

After the commander consulted with pilots and GCI controllers, he decided to hold a conference to exchange experiences in vectoring fighters against high altitude targets. GCI controllers and officers, pilots, officers of radar podrazdeleniya, and radar operators were invited to attend. A report was presented by Officer SULABERIDZE. Many valuable suggestions to improving the operation of all guidance and control equipment were offered. Materials of the conference were generalized and distributed to all podrazdeleniya. Within a short time the shortcomings were eliminated and the quality of guiding fighter-pilots to their targets was considerably improved.

Particular attention must be paid to training young GCI controllers in actual guidance. This training should be under the guidance and with the help of, experienced GCI controllers. At first the young controller must perform under simple weather conditions, when the route and altitude of the targets are known. The number of such performances in each case must be determined by the commander; but the number should not be less than that established by the supervisory documents. Then the

young controller must proceed to solving more complex missions, after first being examined by experienced controllers and guidance officers.

It is known that vectoring interceptors against high and low flying targets is very difficult. Therefore, training in intercepts at these altitudes is basic in the training of controllers. First of all, it is very important to see that each officer knows the peculiarities of the aircraft and of guidance under these conditions. Controllers must know that in the stratosphere, owing to the comparatively small amount of air, the capabilities of performing maneuvers are restricted; the ability to bank is reduced and consequently the radius and time of turn-around is considerably increased; the stress on the engine sharply falls; and the search for the target is complicated by decreased visibility. At low altitudes the range radar is reduced; and radio communications between the aircraft and the ground and conditions for pilotage and the maneuver abilities of the aircraft are reduced and impaired.

In perfecting the skill of GCI controllers and officers, critiques of practical guidance exercises with pilots and radar operators participating, have great importance. These should be conducted following each training exercise or target intercept. Careful preparations for these critiques are very important. These critiques facilitate the improved coordination between pilots, GCI controllers, and radar operators.

Simplification and formalism should not be permitted in the training of GCI controllers and officers. Certain commanders feel that if the controllers systematically guide interceptor pilots during planned flights and consequently receive some training, then, this is

adequate and nothing more should be undertaken to perfect their skill. This is incorrect. Also, the controllers concerned with the preflight briefing of pilots know the time of the flight, the altitudes and speed of the target, as well as the takeoff time of the interceptor. Knowing all this it is not difficult to guide the aircraft to the simulated enemy.

We think that at the beginning and at the end of each flight day or night, special flights to perfect the skills of controllers and guidance officers should be planned. Preliminary training of pilots who are flying intercept missions and targets, should be conducted separately and without the participation of GCI controllers and officers. Only in this way is it possible to create conditions simulating actual combat.

Party organizations can and should also help increase the skill of GCI controllers and officers. It is important to note that certain of these organizations are poorly involved in such problems and only show concern when shortcomings in the guidance of interceptors are detected.

Problems in training GCI controllers and officers should be discussed at party meetings and meetings of party committees and bureaus. The experiences of leading officers should be generalized and disseminated and measures should be taken to correct shortcomings which reduce the quality ground controlled intercept.

The activity of commanders, staffs, political organs, and party organizations in improving the training of GCI controllers and officers is an important prerequisite for high-level combat readiness and the

successful execution of combat training missions without flight accidents and without creating dangerous situations.

For an Outstanding Podrazdeleniye -- by Capt M. P. OLEYNIK (Pages 38-41)

Summary:

In the past year the signal company commanded by Capt BELOZEROV achieved fine results in combat training and in the performance of duty. The platoon commanded by Sr Lt BUGURENKO has become outstanding, as has the platoon commanded by Lt PETSYUKH, and the detachment of radiotelegraphers commanded by Sgt AKIMENKO. Other outstanding personnel include Jr Sgts PISHCHULIN and KRYLOVETSKIY and Pvts KRAVCHENKO, CHEREPANOV, TSUKANOV. Their signal equipment has operated faultlessly. It has always been ready.

At the same time the company commander has urged personnel not to rest on their laurels since there are many unfulfilled missions. One of the weak spots is military discipline. Pvt IL'CHENKOV, a telephone operator, for example, sometimes argued with the commander of the detachment. Pvt LUK'YANCHUK has been careless in the performance of his duties and has violated regulations. Some soldiers have sometimes displayed lack of concern in their work. Such a lack of discipline can deal a deadly blow to the combat readiness of the company.

One night at the control center one of the radar companies received a number of training dispatches. They were transmitted for the purpose of training the radiotelegraphers and checking their vigilance. Pvt BONDARTSOV, a radiotelegrapher who was on duty missed

some of the first dispatches. The company commander realizing this, decided to immediately analize what was done. The soldier tried to rationalize. He said in particular that there was interference, and stated that he did not hear the call signs, etc.

Capt BELOZEROV knew that the carelessness displayed by the radio-telegraphers could not be permitted not only in a combat situation but also during ordinary training when fighter-aircraft were in the air. The consequences could be varied.

Pvt BONDARTSOV was punished. His error was evaluated at a Komsomol meeting, and in meetings with agitators of the platoons.

The company commander consulted Sr Lt BOGURENKOV, secretary of the party organization, and they decided to discuss the question of increasing vigilance at a party meeting. Capt BESKARAVAYNY urged Communists to instill among personnel a high sense of discipline, the ability to master combat equipment, and a sense of responsibility.

Almost all the Communists spoke at the meeting. They discussed the importance of high level of vigilance and combat readiness, drew valuable conclusions, and introduced specific proposals. Among the speakers were Pvt KHORIN, an outstanding radiotelegraphers; Lt DZEBAN' and Officer BELOZEROV. Capt BELOZEROV has often talked with Lt POPOV, a platoon commander, who has displayed inadequate demandingness and has inadequately utilized public influence in educating violators of mili-tary discipline. As a result of this Pvt UL'CHENKOV still commits violations in military discipline and Pvt MEL'NICHENKO is slowly being corrected.

The officers of the podrazdeleniya are truly attached to their equipment and have a sense of responsibility for its faultless operation. For example, in the platoon commanded by Lt KOVAL' the receivers operate faultlessly, and at the initiative of Pvt KOTLYAROV each radiotelegraphers has been challenged to learn to operate as a radio mechanic.

The company commander has established a procedure in which during daily, weekly, or monthly inspections, specialists check the operating condition of equipment, adjust difficulties, and learn the construction of the apparatus and the physical processes which take place in them. As a result, the employment of combat equipment has improved and its combat readiness has been increased. The radio station, where reenlisteed Jr Sgt SKLYAR is chief, has studied through two norms up to the level of capital repair and at the present time is rated outstanding. In the platoon commanded by Lt KOVAL', receivers have operated faultlessly through 3 to 4 [maintenance?] periods.

The automatic antenna switch designed by Sr Lt BOGURENKO completely ensures the faultless operation of the radio station during a storm. Now Lt POPOV is designing an electrical signal panel by which the operating readiness of communication equipment may be determined.

Specialists in the company who have propagandized their experiences and who have addressed new personnel arriving in the company include: Pvt KRAVCHENKO, Radiotelegrapher 1st Class; Jr Sgt KRYLOVETSKIY, Pvt CHEREPANOV; Sgt SEMENOV; Pvt KRAVCHENKO; Pvt DUVENCHUK. Through their efforts soldiers have quickly mastered the equipment and acquired ratings.

Work is Proceeding Successfully in the Friendly Group (Page 41)

Abstract:

In a letter to the editors written following a furlough, Engr Lt AGREST describes the activities of his unit in the Far East.

In the Final Stage of the Academic Year -- Lt Col N. P. MOSKOVSKIY (Pages 42-44)

Abstract:

Discussed preparations for state and advanced examinations under way in military educational institutions. The author describes the important role of the party committee at his school in these preparations.

According to the article, the party committee instructed party organizations to hold meetings to discuss measures to ensure the high level progress of officer candidates.

The article described steps taken by the party to improve ratings of officer candidates, including the conduct of a military scientific conference. Emphasized in the articule was the party's concern for development in officer candidates of skills in party-ideological work with subordinates. The article also told of party work to increase the authority and enhance the military and pedagogical skill of school instructors.

The article discussed the aid given by the party committee to the podrazdeleniya commanders, and cited steps taken by company Komsomol bureaus to aid commanders and instructors in mobilizing officer candidates to prepare for the exams. Among the personnel identified in the article were: Sr Lt KHRANOVSKIY, a platoon commander; Officer DITYUK,

chief of the Automatic Equipment and Telemechanics Cycle; and Lt Cols YERMAKOV and SHETIN, and Maj SOGOMONYAN, all teachers.

Increase Combat Readiness with the Creativity of Innovators -- Engr Lt Col N. Ya. KODOLA (Pages 45-46)

Summary:

The all-army competitive review for the best invention and innovation suggestion which was conducted in the armed forces facilitated the development of many suggestions for improving the combat readiness of troops, perfecting combat equipment and increasing its reliability. The suggestions of Capt TECH Serv AVILOV, Sr Engr Lt GONCHAROV were represented in an exhibit of innovations organized in our garrison.

Sr Engr Lt GONCHAROV suggested an effective method of switching /on and off/ the power of the radar site. Engr Capt SINEOK developed a method for increasing the range of a radar station by 10 to 15 percent. MOLODTSOV, a serviceman, designed an apparatus for cleaning the filters in aircraft.

Capt SHUMILIN and LELYUK, a serviceman, developed a means of employing a VK-1 aircraft engine to clean the "artificial surface" of an airfield. Lt SUYETENKO made a statistical analysis of the defects of a radar station on the basis of which, recommendations were made to carefully inspect, clean, and adjust relay contacts and automatic equipment during maintenance.

Sr Lt KNYSH and Pvt VAGANKO suggested an apparatus to reduce the time and increase the quality of maintenance operations and improve the repair of radar. Capt SHENKMAN developed an idea to automatically turn on the voltage light and sound signal apparatus of a radar station.

Many particularly valuable suggestions were presented by the innovators of the chast' where Engr Maj GLADKOV is chairman of the innovation commission. By order of the Ministry of Defense USSR the innovators of this chast' won second place among the PVO Strany Troops and won the All-Army competitive review for the best innovation work. The best innovators in this unit are Capt SAKHAROV, Sr Sgt ZAIKA, and Reenlisteed Sr Sgt SHVEDOV.

Equipment and Its Employment

Important Means to Enhance Technical Knowledge -- by Maj Gen Avn A. V. VYATKIN (pages 47-50)

Abstract:

Discusses the important role of military technical propaganda in mastering and perfecting the employment of equipment now available to the PVO Strany Troops. Shortcomings in military technical propaganda are discussed. Cited as a primary mission of military technical propaganda is the enchancement of troop technical knowledge of the troops, so that personnel may acquire skills in the use and maintenance of equipment and armament. The article discusses the activities of agitation and propaganda groups created to implement this mission. The article praises Engr-Lt PROTASHCHIK and Engr-Maj PEREGUDOV for their efforts in propagandizing military technical information and for conducting a meeting for young soldiers studying radiotechnology. Speaking at the meeting were Jr Sgts MAKSIMENKO and MAL'CHENKO, who are outstanding in combat and political training; and Pfcs VOLOSHCHUK, SERENKO, and KAN'KO. Also praised in the article is the podrazdeleniye commanded by Capt ROPKIN.

The article refers to the efforts of party and Komsomol organizations to mobilize personnel to study military technical information. It also describes technical consultations held in podrazdeleniya, at which deputy commanders for technical affairs of the podrazdeleniya, and other officers speak on advanced work methods of the best specialists, on the use of equipment and armament under various conditions, and on methods of avoiding accidents. The article emphasizes technical conferences, evening meetings, quizzes and discussions, in podrazdeleniya as important propaganda methods.

The article emphasizes the role of innovation and invention work in enhancing military technical knowledge, disclosing that in certain units, innovation clubs have been organized, which assist commanders and political workers in organizing the troops and directing their creative activity.

The article praises engineers and technicians for actively participating in propagandizing military technical information. The article cites Officers LUKANOV and TSYMBAL, recipients of the medal For Combat Services for their mastery of new equipment, who spend their leisure time disseminating military technical information to their subordinates. The article describes visits to podrazdeleniya of technical brigades composed of the best-trained engineers and technicians, which assist personnel in the construction and repair of apparatus, tell of their advanced experiences, and hold classes on new equipment.

According to the article, military technical propaganda is aimed at the economic utilization of resources and maintenance materials.

Recalling that the complexity of modern equipment requires personnel to acquire theoretical training and solid practical skills, the article tells of special meetings which are conducted regularly with chiefs of radiotechnical complexes, at which experienced officers give practical assistance to engineers and technicians. The article describes the case of Officer SHISHENK, who acquired fine practical skills, but did not enhance his theoretical knowledge and thus had difficulty with new equipment. It also discloses that it has become the rule in units to regularly inform personnel on achievements in science and technology.

Concluding paragraphs of the article reiterate missions of military technical-propaganda, and stress that the propagandizing of military technical information is not a short-term campaign, but a day to day activity of commanders at all levels, political organs, and party and Komsomol organizations.

Reliable Station Operation -- by Engr-Maj G. D. DUDKO, (Pages 51-53)

Text:

Experience of rocket equipment use has graphically confirmed that the combat readiness of the equipment depends directly upon normal and reliable operation of the power plants, which supply energy to all working components. It is known that diesel power plants can operate either independently or when connected in parallel. Their continuous and reliable operation, when connected in parallel, is ensured by correct adjustment of the engine RPM governor and of electric circuits.

For uniform distribution of resistive load between two parallel

connected power plants, the regulatory characteristics of the engines must be the same. These characteristics express the dependence of engine RPMs on torque (force) at the axle. They can be static or astatic. The 1D6 engine, which is used on transportable power plants, has a static regulatory characteristic. The static condition is characterized by the degree of decrease of engine RPMs according to the increase of torque (force), which is described in percentages and designated by the degree of non-uniformity of regulating. This degree is defined by the formula:

$$b = \frac{n_1 - n_2}{n_{nom}} \cdot 100\%,$$

where b is the degree of regulating non-uniformity;

n_1 is engine RPM, during idling;

n_2 is engine RPM during rated load;

and n_{nom} is engine RPM at 50% deviation from rated land.

Since tachometers, which are used on power plants, are not always exact, it is better to use a frequency meter to determine the degree of non-uniformity. Then the formula would take on the following aspect.

$$b = \frac{f_1 - f_2}{f_2} \cdot 100\%,$$

where f_1 is the frequency meter reading conforming to engine idle;

and f_2 is the frequency meter reading during nominal power plant load,

b must be equal to 3% on transportable power plants. This value is shown on all power plants when they are delivered from the factory. However the degree of regulating non-uniformity may be changed in operation, the amount of change depending primarily upon the elasticity of the spring. Therefore, it is necessary to periodically (during regular equipment servicing period

vicing periods) check this parameter and adjust it to normal. To determine b, it is necessary to start the power plant and put it under nominal load. After achieving nominal RPM, the load should be cut off and a reading taken of the frequency meter while the plant is in idle. Then b is calculated according to the formula.

Change of the degree of regulating non-uniformity is achieved by moving the regulating spring yoke along the screw. By rotating the screw in a clockwise direction, the yoke of the regulating spring will be raised and b will be increased. By rotating the screw in a counter clockwise direction, the spring yoke will be moved downward and b decreased.

The idea behind this regulation of power plant operation is that the static condition of engine regulatory characteristics will even exist in parallel connected operation.

Figure 1 illustrates the regulatory characteristics of two power plant engines, which are connected in parallel and operating at idle with n = 1545 RPM (f = 51.5 hertz). Further, these power plants are charged with a total active load of, at first $P_{el} = P'''_1 + P'''_2$ (where P'_1; P''_1; and P'''_1 are the effective power supplied by the first power plant; and P'_2; P''_2; and P'''_2 are the active power supplied by the second power plant.

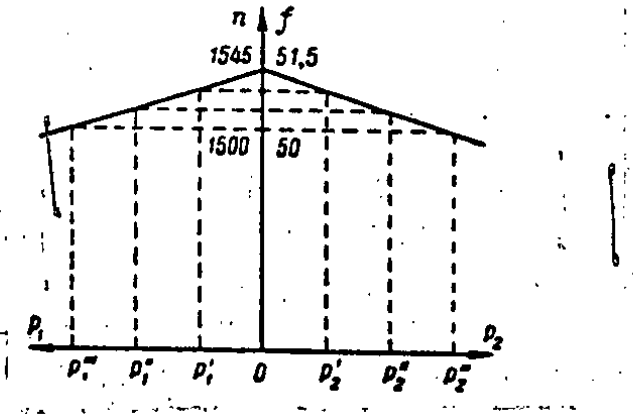


Figure 1.

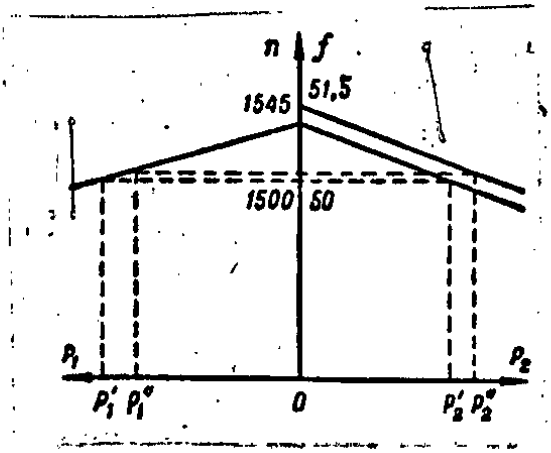


Figure 2.

From the drawing it is evident that $P'_1 = P'_2$; $P''_1 = P''_2$; and $P'''_1 = P'''_2$. Consequently, since there are identical static conditions of regulatory characteristics, the active load is automatically divided equally between the two parallel operating power plants.

The regulatory characteristics of two power plants, which have non-uniformity of regulating characteristics between them, is depicted in figure 2. These stations were also connected in parallel during idle with 1545 RPM (f - 51.5 hertz) and therefore charged with the total active load $P_e = P'_1 + P'_2$.

It is evident that P'_1 is greater than P'_2, i.e., the first power plant is more greatly charged than the second. A further increase of total active load might lead to the first station being overcharged while the second remains not fully charged. An increase of fuel supply to the engine of the second power plant might equalize the load of the power plants (the regulatory characteristic of the second station would be transposed above parallel). However, with a further increase of total active load, the first station would continue to take on a greater part of the total load increase.

Thus, during parallel operation of power plants, which have different regulatory characteristics, it is necessary, each time, with a change in total active load, to adjust the fuel pump levers of the engines to equalize the load of the stations. It goes without saying that this creates a few inconveniences during their usage. But it must be remembered that the value of b cannot be altered more than 3% since with large values of b, frequency oscillations at the power plants, during load changes from 0 to 100%, will be greater than 1.5 hertz, which is intolerable.

A uniform distribution of reactive load between parallel connected power plants depends on the correct adjusting of the electric circuits, of which the basic elements are: a URN-423 carbon voltage regulator, a parallel operation transformer T_{p4}, and a resistance part R_1 which is connected between contacts 63 and 64 (figure 3).

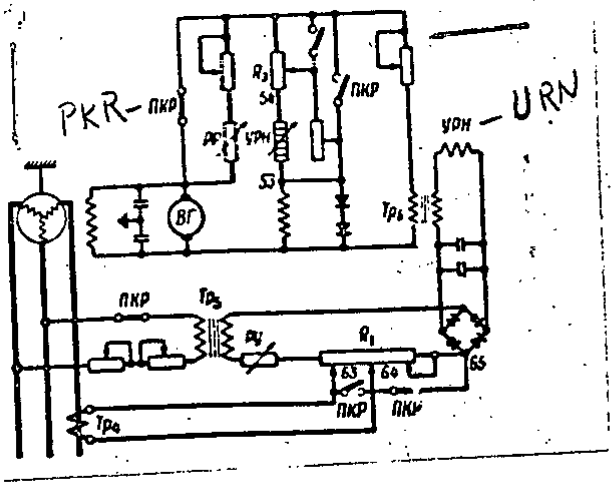


Figure 3.

Adjustment of the URN-423, after changing the carbon pole or after its loss, is presented in the instructions for power plant operation. However, upon termination of carbon pole adjustment after a conditioning change over, in my opinion, the diffusion power of the carbon pole must be checked. Its operating mode depends on this parameter and, if the power, which is emitted at the carbon pole, exceeds the norm, the carbon pole washers will quickly be scorched and the sensitivity of the URN-423 will be decreased.

In order to measure the power of carbon pole diffusion, it is necessary to connect a constant current ammeter with a 5 amp dial to the breaking of contact 54, and to connect a constant voltage measuring voltmeter with a 30 volt dial to contacts 54 and 53. With this, the "positive" voltmeter connection must be connected to contact 53. Two AVO-5M

instruments, designed to measure current and voltage, can be used for the measuring. After this, the power plant is started and is put into nominal load with the value of cos phi = 0.8. After the instrument readings are recorded, the diffusion power of the carbon pole can be determined by multiplication of the current by the voltage. If the power is higher than 37 volts, its introduced resistance might decrease by 35 volts.

Operation of the transformer T_{p4} is checked by measuring the voltage between contacts 63 and 64 at resistance R_1 with the regime operation switch in "Manual", which breaks these contacts. Voltage drop at the given resistance part must be equal to 6 volts. If it departs from the indicated value, then, having transferred clamp 64 to resistance R_1, it is necessary to establish 6 volts; and subsequently to place clamp 65 in such a position that the situation between clamps 64 and 65 will be equal to the situation between clamps 63 and 64.

The characteristics of automatic voltage regulation ARN, which are expressed as the dependence of voltage at the generator connections on its current load, have a static character with a positive static condition.

During voltage drop adjustment at resistance R_1, the degree of ARN stabilization, ie., the static condition of the characteristics is changed by moving the clamp 64. It is evident that, if the terminals of transformer T_{p4} are moved, the characteristics will have a negative static condition, i.e., ARN with a current compensation system.

However, power plants with different ARN systems cannot operate in parallel. Therefore, during connection of the transformer T_{p4}, during maintenance work and repair involving dismantling of the ARN, the terminals must not be moved.

So, to achieve reliable and continuous operation of power plants, when they are connected in parallel, it is necessary to ensure correct adjustment of the RPM regulator and of the automatic voltage regulation system.

Maintenance of Aircraft Radio Equipment -- Capt Tech Serv V. L. IVANNIKOV (pages 53-55)

Abstract:

Concerns the problems of a technical unit in performing maintenance work on aircraft radios. The article discusses in detail preparations prior to and the phases of maintenance work.

The article also stresses the care taken in the unit to the storage of equipment and devotes the concluding paragraphs of the article to the importance of a correctly organized evaluation of the operations of the personnel.

A photograph by K. FEDULOV accompanying the article showed Capt Tech Serv V. SHILO, Technician 1st Class and chief of the technical unit of a squadron.

Coherent-Impulse Method -- by Engr-Sr Lt V. S. YAROSHENKO (pages 56-62)

Summary:

This article is based on material from P. A. BAKULEV's training Manual, Radiolokatsionnyye metody selektsii dvizhushchikhsya tseley

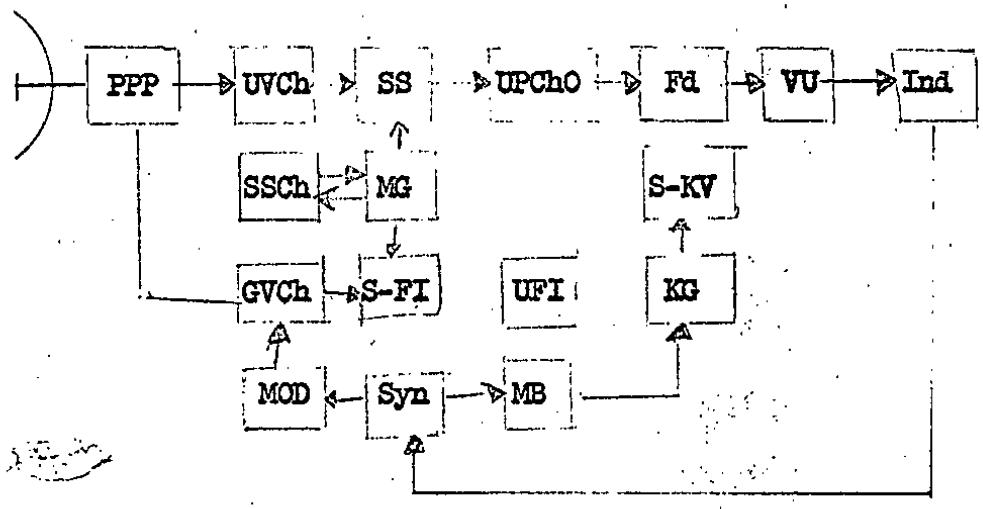
(Radar Methods of Moving Target Selection), Moscow, Oborongiz, 1958:

Text:

A basic difficulty in the configuration of coherent-impulse circuits is that radiated oscillation U_{izl} cannot be used as a reference in view of its misalignment with the reflected signal U_c during time intervals. In order to equalize U_c with U_{izl} at the phase detector, it is necessary to have a device, which fulfills the "memory" function of the U_{izl} during the transmission period. This problem is resolved by a low-power, high-stability generator, which is called a coherent heterodyne and which operates at the transmitter frequency. Since the beginning transmitter oscillation phase in each repetition period is arbitrary, the heterodyne oscillations will be coherent only during conditions conforming to their operation.

The process of matching beginning phases of radiated and reference oscillations is called phasing or coherent heterodyne phase synchronization. Depending upon its characteristics, methods of extracting and comparing coherent oscillations at the phase detector can be different, for example, either phasing of the high-frequency generator from the coherent heterodyne or vice versa, according to the phasing direction. The first is used in radar sets where the high-frequency generator is the power amplifier, the second in radar sets with the transmitter at the power autogenerator. According to operating regime, coherent generators are pulsed and continuous. In the first case, the high-frequency generator is pulsing, in the second, the coherent heterodyne, itself. Comparison of U_c and U_{izl} at the phase detector can be accomplished at high or low frequency.

Figure 1.



Block Diagram of a Coherent-Impulse Circuit

PPP	transmit-receive switch
UVCh	receiver high frequency amplifier
SS	signal mixer
UPChO	intermediate frequency amplifier with limiter
Fd	phase detector
VU	reading device
Ind	indicator
SSCh	frequency stabilization circuit
MG	local heterodyne
S-KV	compensation circuit for wind static rates
GVCh	transmitter high frequency generator
S-FI	phasing impulse mixer
UFI	phasing impulse amplifier
KG	coherent heterodyne
Mod	modulator
Syn	synchronizer
MB	recording multivibrator

It should be emphasized that three considered phasing features allow eight variants of radar set circuits. Abroad, wide usage has been achieved of a moving target selection circuit with oscillation phasing and comparison at intermediate frequencies. In this case, the phasing direction is from the transmitter. With this operation regime, the coherent heterodyne is pulsing. Of course, this is completely arbitrary, since the pulse duration of such a generator is a thousand times greater than that of the transmitter and approximately equal to the radar set repetition period.

A block diagram of a coherent impulse circuit, used in foreign equipment is shown in figure 1.

The operation of the circuit is accomplished in the following manner. When the radar set is turned on, the synchronizer, at the same time, starts the indicator and the transmitter. A portion of the power impulse goes from the transmitter high-frequency generator to the phasing impulse mixer where the frequency is reduced to an intermediate level. However, the beginning phase relations of the phasing impulse and the transmitter high-frequency generator impulses are retained. The phasing impulse (figure 2c), after amplification at the phasing impulse amplifier, is supplied to part or to the whole coherent heterodyne circuit for positive phasing of its oscillations. Therefore, the fundamental coherent heterodyne oscillations, built up in the circuit, coincide with the phasing impulse according to their own phase.

For improvement of the phasing condition, the coherent heterodyne is closed by a negative recording from the multivibrator for 50 to 100 microseconds until the arrival of the next phasing impulse. The coherent

heterodyne is opened only during the period of action of the phasing impulse or immediately after its termination. The moment of the coherent heterodyne opening is usually selected experimentally, according to the best phasing, by selecting the amount of trigger action impulse delay which arrives at the recording multivibrator.

During circuit operation, signals, which are reflected from stationary objects, arrive at the phase detector where they are stored with coherent voltage in a corresponding phase condition during all adjacent repetition periods (figure 2e). Consequently, if the influence of the factors, which change the amplitude of the reflected signals to the phase detector, is disregarded, a coherence of impulses of identical amplitude is received at the detector output (figure 2f).

The phase of the signals, which are reflected from the target, is changed from period to period (see figure 2e). This leads to coherence amplitude modulation at the phase detector output with the frequency f_m, which in virtue of the strobe-effect is equal to the Doppler frequency, only with $f_d \gtrsim \frac{F_p}{2}$, where $F_p = \frac{1}{T_p}$.

During operation on a target, which is moving in an interference level, the impulse modulation coherence at the phase detector output will have constant components (U_o). When they are greater, the level of the signals, which are reflected from the interference, will be greater. It must be held in mind that the coherence of the impulses, which are reflected from the targets and traveling outside of the interference, also can have constant components; but they are removed by the use of the balanced phase detector.

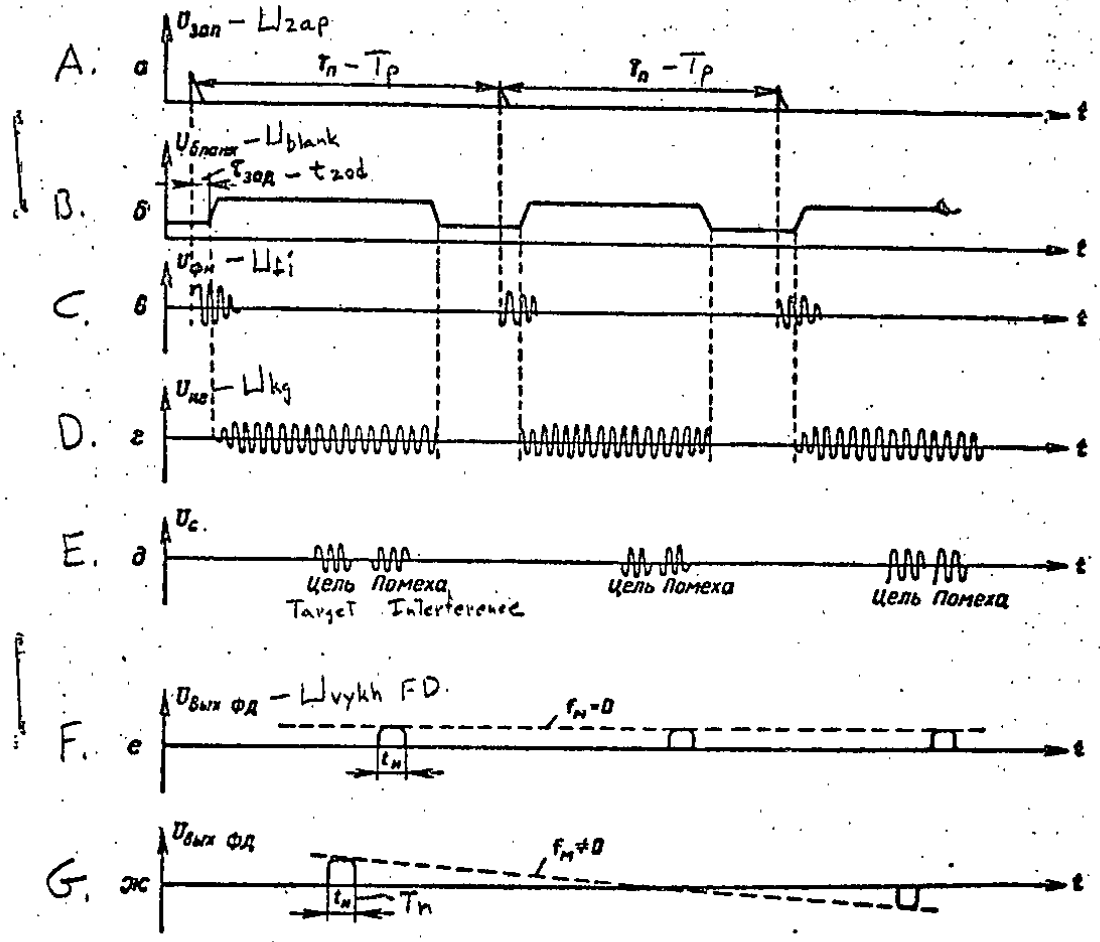


Рис. 2. Эпюры напряжений.

Figure 2. Voltage Diagrams

The compensation circuit for wind static rates is intended for compensation of the frequency doppler shift during electromagnetic wave reflection from interference which is moved by wind.

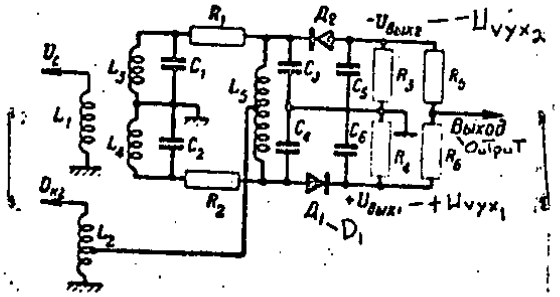


Figure 3. Balanced Phase Detector Circuit:

L_3C_1 and L_4C_2 are circuits of U_c; C_2 and C_4 together with L_5 are circuits of U_{kg}; R_1 and R_2 are bypass resistances between circuits U_c and U_{kg}; D_1 and D_2 are crystal diodes; R_3 and R_4 are load resistances; C_5 and C_6 are voltage divider resistances.

Let us consider the operation principle of a phase detector, by employing the best type, the balanced phase detector. A balanced phase detector circuit is shown in figure 3. Usage of signal limiting in the intermediate frequency amplifier of the given circuit has essential advantages. It prevents overload of subsequent amplifiers with recording from the coherent heterodyne, and increases transconductance of phase detection. There is no beginning constant voltage at the output of the balanced circuit.

The emitted voltage, in such a phase detector, is equal to half of the total of the emitted voltage of two unbalanced detectors at diodes D_1 and D_2. Coherent voltage U_{kg} is supplied to both detectors in identical phase, and U_c with a 180 degree displacement. This is provided for by calculation of the distribution of coils L_3 and L_4. The detector at diode D_1 creates at the output, only positive voltage U_{vyx1}; and D_2 - negative U_{vyx2}.

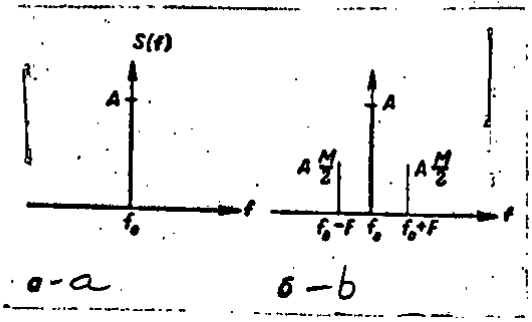


Figure 4. Color Response Curves of Radar Signals

Usually U_{kg} is taken as equal to 1 to $4U_c$. In the given case, let $U_{kg} = 3U_c$. Then, at the moment when $U_c = 0$, voltage at the outlet will be such that $U_{vyx1} = 3U_c$; $U_{vyx2} = -3U_c$, and $U_{vyx} = \frac{1}{2}(U_{vyx1} + U_{vyx2}) = 0$.

According to Ohm's law, $U_{vyx2} - IR_5 = IR_6$, but $R_5 = R_6$. Consequently,

$$I = \frac{U_{vyx1} + U_{vyx2}}{R_5 + R_6} = \frac{U_{vyx1} = U_{vyx2}}{2R_5}, \text{ and}$$

$$U_{vyx} = \frac{(Uvyx_1 + Uvyx_2)R_5}{2R_5} = \frac{Uvyx_1 + Uvyx_2}{2}.$$

The impulses of intermediate frequency U_c can have any phase correlation with U_{kg}.

In order to understand the operation of a phase detector, let us consider the next example. When phi = 0 degrees, voltages U_{kg} and U_c will be in phase at input D_1 and in antiphase at input D_2. This means that $Uvyx_1 = U_{kg} - U_c = 3U_c - U_c = 4U_c$;

$Uvyx_2 = U_{kg} - U_c = -3U_c + U_c = -2U_c$.

Detector D_2 conducts during the negative half-cycles of U_{kg}, which coincide with the positive half-cycles of U_c when phi = 0. Then,

$$U_{vyx} = \frac{4U_c - 2U_c}{2} = \frac{2U_c}{2} = U_c.$$

When phi = 90 degrees, U_{vyx1} is decreased up to $+3U_c$, and U_{vyx2} is increased up to minus $3U_c$, so that $U_{vyx} = 0$.

When phi = 180 degrees, U_{vyx1} reaches the minimum:

$U_{vyx1} = 3U_c - U_c = 2U_c$.

In this case $U_{vyx2} = -3U_c - U_c = -4U_c$,

and the resulting $U_{vyx} = -U_c$. In this way, the phase detector transposes the phase change of impulses to the change of their amplitude with

the frequency which is determined by the Doppler frequency which depends on the radial rate of the target V_r.

It has been noted in the press that it is necessary to thoroughly know spectral discrimination of signals, which are reflected from targets and interference, for a deep understanding of the essence of coherent-impulse equipment operation and for ability to evaluate its tactical and technical characteristics. When speaking of the continuous harmonics of frequency oscillation f_o, it must be kept in mind that they can contain no other frequencies. Consequently, all power is lumped into f_o. Therefore, the spectrum S (f) of such oscillation at the frequency axis is portrayed in the point $f = f_o$ of one line, the magnitude of which is determined by the amplitude of oscillation A (figure 4a).

During modulation of oscillation f_o with the other low frequency F, a party of the energy, depending on the coefficient of modulation M, is distributed at two new components $f_o + F$ and $f_o - F$. In this manner, modulation leads to the expansion of the spectrum i.e., the appearance of new lines (figure 4b).

What is the appearance of the spectrum of radar coherence of unmodulated and modulated impulses?

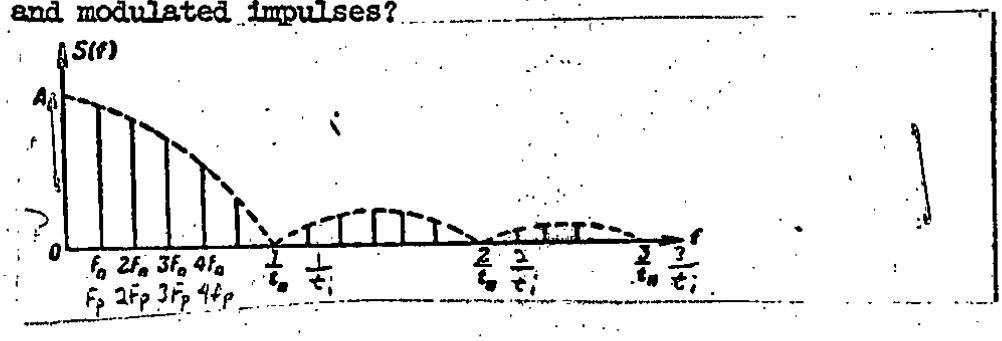


Figure 5.

A spectrum of a long coherence of unmodulated videosignals is portrayed in figure 5. Here, the law of change of envelope functions

S (f), which in the given case is taken according to absolute magnitude, is determined only by impulse shape. The position of the first zero is the magnitude $f = \frac{1}{t_1}$, i.e., the impulse duration, and the quantity of repetition frequency components in each lobe is the duty factor.

It is evident from the drawing that all the coherence unmodulated energy is concentrated in narrow spectral lines at the frequencies which are multiplied by the repetition frequency, i.e., F_p, $2F_p$, $3F_p$, $4F_p$ and etc.

In the impulse modulated coherence spectrum (figure 6), near the repetition frequency components, secondary modulation components appear: $0 + f_m$; $F_p = f_m$; $2F_p = 3F_p = f_m$. The greater the frequency of f_m modulation, the greater will be the intervals where the secondary components from corresponding repetition frequencies are located.

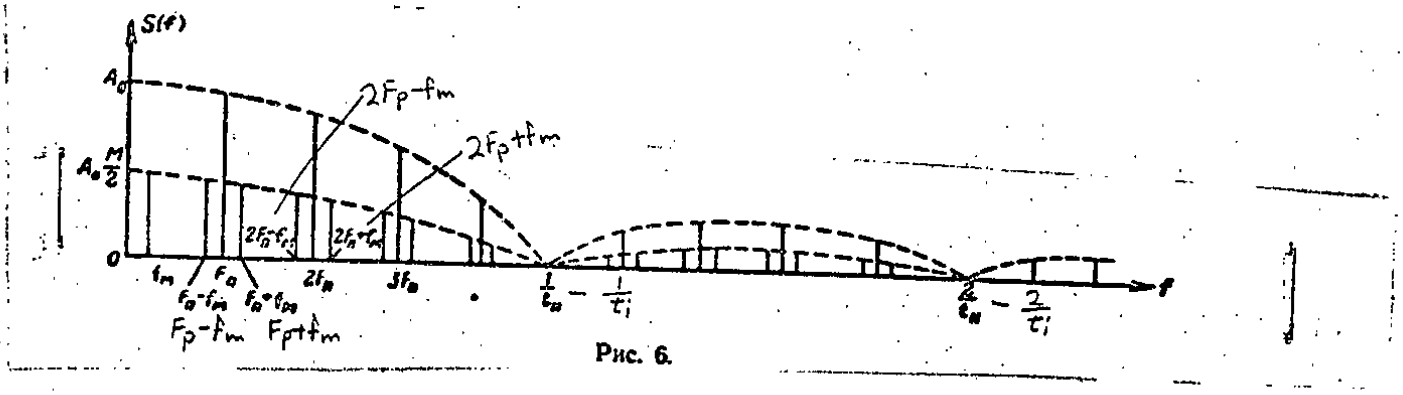


Рис. 6.

Figure 6.

Comparison of the spectra, which are shown in figures 5 and 6, may give rise to the deduction that suppression of signals, which are reflected from interference, and separation of moving target signals are accomplished by cutting from the spectrum the repetition frequency components F_p, $2F_p$, $3F_p$...and by conservation of the secondary components: $0 + f_m$; $F_p \pm f_m$; $2F_p \pm f_m$, which are received during moving target calculation.

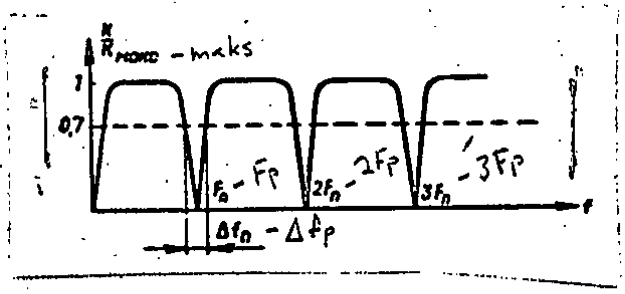


Figure 7. $\frac{K}{K_{maks}}$ is the corrected coefficient of transmission of the subtracting device; Delta f_p is the band width of the suppression at a given level.

The subtracting device, which is the cutting frequency filter nF_p (where n = 1, 2, 3...), has the frequency characteristic which is shown in figure 7.

The most obvious means of reception of the characteristics, which are shown in figure 7, appears to be the establishment of a device which represents a filter choice and which does not allow the passage of frequency nF_p. But in asmuchas there is $\frac{T_p}{t_i} + 1$ components of repetition frequency in the first lobe of the spectral characteristic from 0 hertz to $f = \frac{1}{t_i}$, it is evident.that to establish such a device is exceedingly difficult.

A simpler and more prevalent means for reception of a frequency characteristic, which is closer to that required, is the method of cross period compensation. A simplified cross period subtracting device circuit (figure 8) includes a delay line at T_p and subtracting cascade.

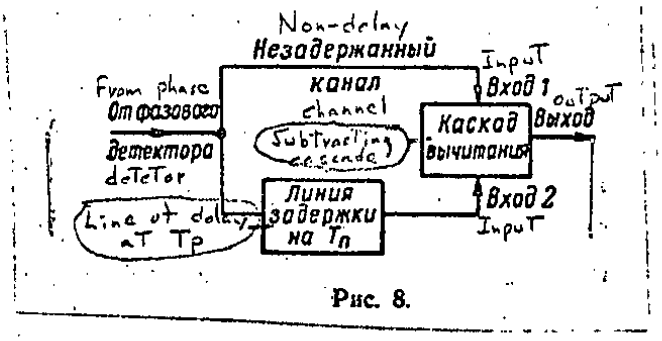


Рис. 8.

Figure 8.

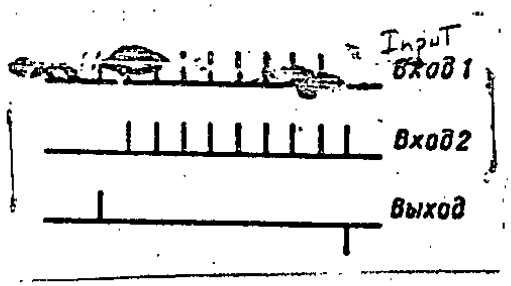


Figure 9.

The process of suppressing impulses of constant amplitude is easily understood, after having subtracted the pack from input 2 from the pack from input 1 (figure 9). The signals from the moving target have various amplitudes in adjacent repetition periods. During subtraction, they produce a residue which goes to the indicator after increasing.

The frequency characteristic of the subtracting device (figure 10) is called the amplitude-velocity since the Doppler frequency is the linear function Vr. Its analytical expression has the aspect

$$\frac{K}{K_{maks}} = \sin \frac{\pi f_d}{F_p} .$$

The difference of this characteristic from that shown in figure 7 is that, besides the suppression of the components nf_p, there is a reduction of other frequencies which are distant from $\frac{nF_p}{2}$. And this is undesirable, since the target may be moving at a speed close to "blind reading" so that the emitted signal of the coherent-impulse selector may be too weak and the target will not be observed.

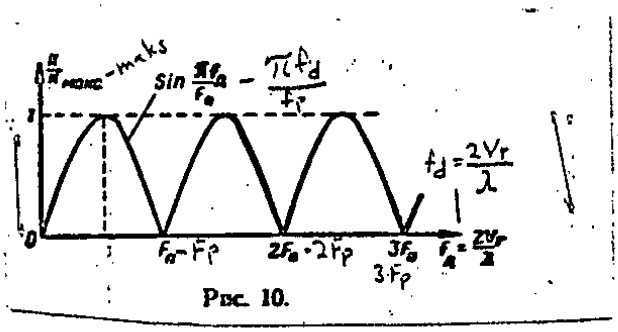


Рис. 10.

Figure 10.

It must be remembered that signal interference always has amplitude fluctuation at the subtracting device input. The reasons for this are: instability of station operating components, changes in the condition of the passive interferences reflecting structure in time, and the amplitudes of impulses in the pack during calculation of its modulation with the diagram of antenna directivity.

The first reason is determined first of all by the stability of the local heterodyne frequency, which is achieved by means of a frequency stabilization circuit (see figure 1). The stability of the coherent heterodyne, which operates on intermediate frequencies, is accomplished much more easily. Transmitter frequency drift also impairs the quality of the operation of the moving target selection circuit system. Consequently its presence in a radar set demands the utilization in transmit-receive equipment of perfected devices for automatic alighment of transmitter high-frequency generator and local heterdyne frequencies. The circuit for stabilization of transmitter high-frequency generator frequency is not shown in figure 1.

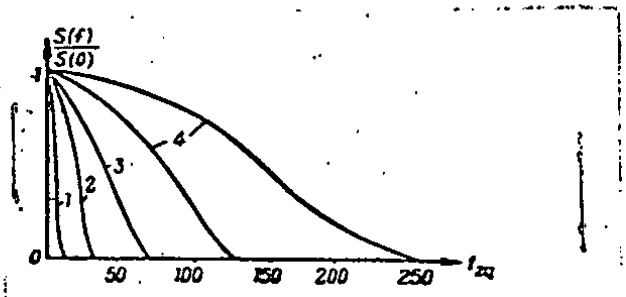


Рис. 11.

Figure 11.

The natural fluctuations of interference signals is caused by the majority being reflected from dipolar interference and from local objects which have complicated structures. They present themselves as the vectored sum of a significant quantity of small signals from different reflections (houses, rocks, trunks, branches, and leaves of trees, rain drops, metallic regions, and wave crest etc). From the movement of branches and leaves of trees, from the circular and up and down movement of metalicized dipoles, from the movement of clouds under the influence of wind, the reflected signal fluctuates both in amplitude and phase.

Various reflections, depending upon conditions, have different amounts of fluctuation. Distribution of their energy, according to frequency, has the aspect of an exponent which diminishes with increase of frequency. Spectra of natural passive interference are portrayed in figure 11.

The width of the dipolar interference spectrum is compared to the width of the spectra of local objects, which are water surfaces and clouds. But it is much narrower than the spectra of signals which are reflected from residue.

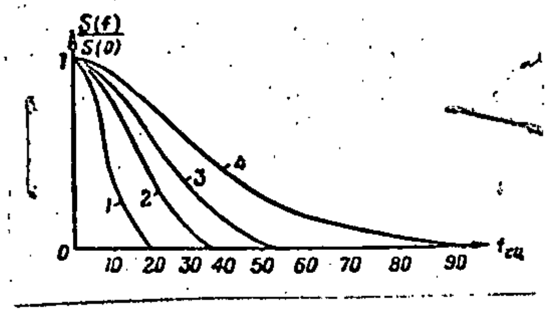


Figure 12.

Curves 1, 2, 3, and 4, which are shown in figure 12, represent various conditions of dipolar faults and wind speed.

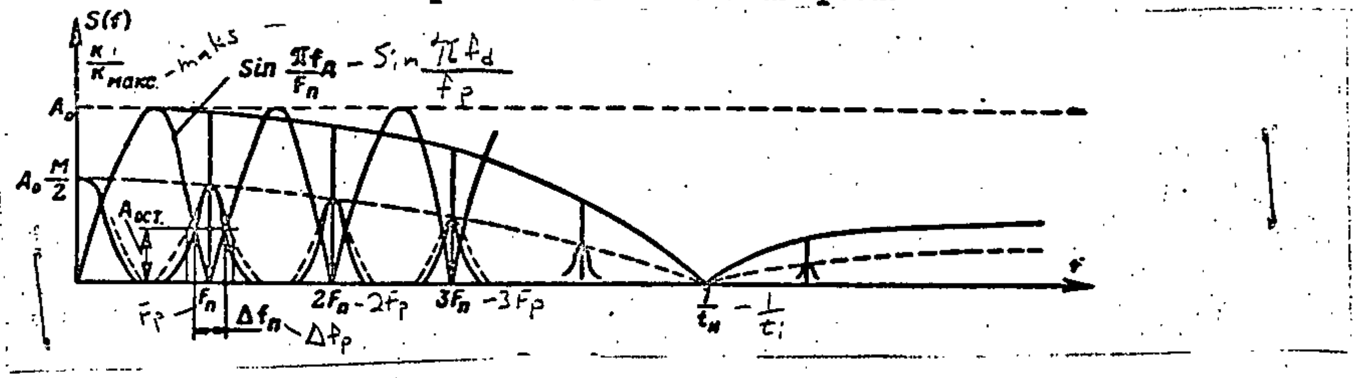


Figure 13.

The considered spectral characteristics have a significant influence on the choice of a subtracting device. The spectrum of the interference impulse coherence with the calculation of their natural fluctuation will now appear as shown in figure 13. By combining the amplitude-velocity characteristic of a single-stage subtracting device with the interference spectrum, it can be seen that the filter does not guarantee full interference signal suppression when the interference spectrum is sufficiently wide. This comes about because the width of the suppression band Delta f_p at the level A_{ost} is clearly insufficient since A_{ost} is too great. With widening of the interference spectrum (shown by the dotted line), the required width of the band Delta

f_p is increased. In this way, the width of the interference spectrum, for the abatement of which the moving target selection circuit system is designed, determines the necessary subtracting device filter suppression band.

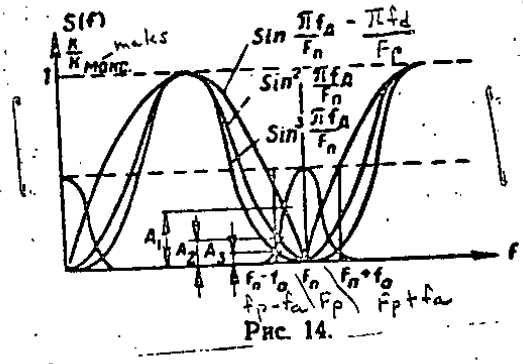


Рис. 14.

Figure 14.

Expansion of the band Delta f_p is achieved by successfully switching on several subtracting steps. Thus, the successive switching on of two steps creates the sinequadratic characteristic $\sin 2 \frac{Pf_d}{F_p}$, and of three and four cascades - respectively $\sin 3 \frac{Pf_d}{F_p}$, $\sin 4 \frac{Pf_d}{F_p}$ and etc. In figure 14, is shown the residual interference signals (A_1, A_2, A_3) during one-, two-, and three-stage subtraction.

The greater the quantity of steps to support the subtracting device, the better will the interference signals be suppressed. But, with this, the zones of "blind reading" of target velocities are expanded, which leads to a significant suppression of useful signals in the vicinity of frequencies nF_p. This is why for any coherent-impulse circuit, depending upon its wave band and purpose, an optimal number of subtracting steps is selected. This increases the reliability of the set operation. True, the employment of many-stage subtraction (more than two steps) makes sense only with an alternating frequency of impulse succession. The

alternating period, as change of repetition frequency, is a means of controlling "blind reading" velocities.

Let us consider how modulation of impulses in a pack with a diagram of antenna directivity comes about.

It is known that a signal pack, which is reflected from any object, because of antenna rotation, has an envelope according to the law of the antenna directivity diagram. The spectrum of such a pack, except for the components nF_p, also maintains the secondary components $nF_p \pm$ Ia.

Residue appears during the processing of impulses with various amplitudes in a subtracting device. In radar stations with high-directional antennae and a small quantity of impulses in a pack, the (residue) has a completely inadmissable magnitude and creates an effect of target movement. In order to combat this, the pack of signals is amplified and confined to a chosen level. Such a method is only possible during single-stage subtraction. With large interference levels, there is a signal loss with pack confinement. Also, in exact tracking radar, this increases error in determining angular coordinates.

The harmful effect of modulation of a pack by directivity diagram may be significantly lessened by an arrangement of a corresponding quantity of subtracting cascades. It is evident from figure 14 that even with two-stage subtraction, the magnitude of the secondary components $F_p \pm f_a$ is reduced 2.5 times in comparison to signal-stage; and with three-stage subtraction, this residue practically disappears. The frequency of modulation f_a can always be calculated for any concrete circuit,

if it is assumed that a pack envelope roughly approximates a half-wave sinusoid, i.e., $f_a \approx \frac{L}{2Ta} \cdot T_a$ (pack duration) is found according to the number of impulses in a "pack" and the repetition period T_1.

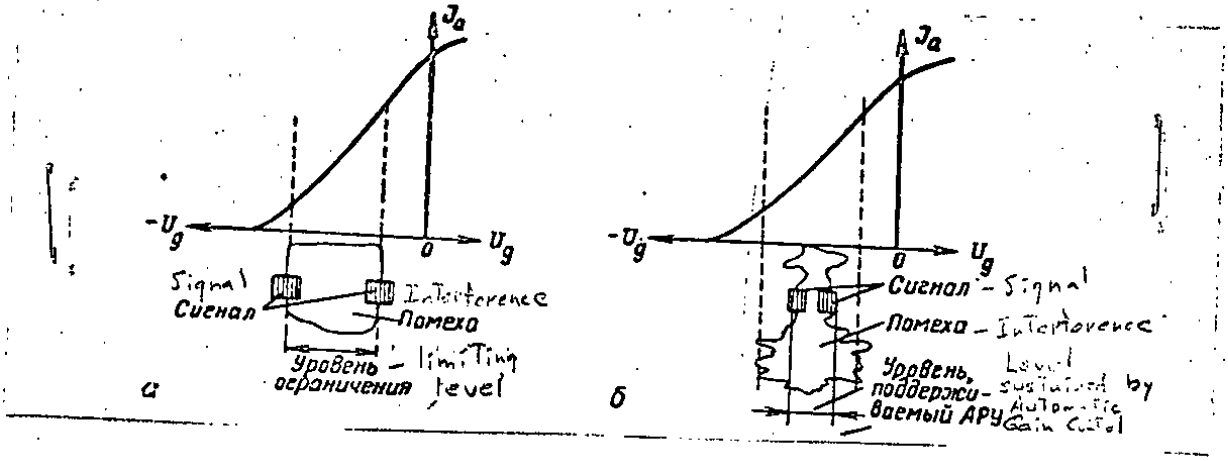


Figure 15.

What is the influence of any target, which is adapted to automatic gain control, on the compensation capability of the moving target selection circuit? We have already mentioned that the residue gives a greater spectrum width than local objects. However, their residue reflection is often more critical since they have a great intensity of fluctuation. The mean square value of interference amplitude fluctuation Delta U_{ef} is proportional to the amplitude of a reflected signal, ie.,

$$\text{Delta } U_{ef} = U_{ef} K \frac{Tp}{\text{Lamda}},$$

where K is the coefficient, which depends on interference character and wind velocity. Consequently, with even spectrum width, that interference, which has great reflection amplitude, becomes more critical. Therefore, it is necessary to attempt to "depress" it before it is fed to the phase detector.

Arrangement of an automatic gain control which decreasss amplification for strong interference signals in an intermediate frequency amplifier, enables the reduction of U_{ef}, but this is not its basic value. An ARU-1 automatic gain control in the channel of an intermediate frequency amplifier is especially necessary when an amplitude limiter is used for decreasing the strength of amplitude fluctuations of interference signals at the output of the intermediate frequency amplifier. The limiting of a target signal due to a large interference level during non-operation of the automatic gain control is shown in figure 15 a. When it is switched on, it supports a constant average voltage value, signal plus interference, and with a large interference level, prevents the transgression of the signal in the limiting realm (figure 15 b).

For very large interference signals due to amplitude limiting, the size of the fluctuation range is essentially decreased, which leads to a decrease of uncompensating residue at the subtracting device outlet. The limiting level is chosen so that it is a little higher than the level which is maintained by the automatic gain control.

How does the automatic gain control operate? It is known that a target signal, after processing in the subtracting device, goes to the amplifier, and then to automatic tracking devices, if they are present. When there is interference of great density in the target region, the automatic gain control decreases the amplitude of the intermediate frequency amplifier and maintains a constant total level of interference signals. The greater the interference level is at the input of the

receiver, the smaller is the target signal at its output. This leads to the signal from the target, after the subtracting device, possibly being too weak, so that an operator can conceivably miss it. Besides, due to a change of ardial velocity according to the flight of the target, the signal level at the receiver input, that is at the output of the moving target selection circuit, may be changed several times.

Automation in the Preparation of Air Equipment for Flight -- by Engr-Col N. Ye. ZHOVINSKIY, Candidate of Technical Sciences (Pages 63-66)

Abstract:

Based on material from the foreign press, describes how aircraft equipment can be checked for flight readiness by the use of automatic equipment. The article was accompanied by two block diagrams of a voltage analyzer and a "go-no go" automatic checking device which is based on evaluation of the signal-response of an object.

Monopulse Method of Determining the Angular Coordinates of Targets -- by Engr-Lt Col V. A. SANKIN (pages 67-71)

Abstract:

Based on material from foreign press sources, discusses theory, construction, and operation of monopulse radar circuits.

Solution of the Problem Published in Journal No. 4, 1962 (Page 71)

This problem concerned navigation.

Antirocket Defense

With the Aid of Laser Systems -- by Engr-Capt V. I. ZHURAVLEV (Pages 72-76)

Abstract:

Based on material from US press sources, discusses possible uses of laser in antirocket defense and considers contemporary laser developments. Sources, used for the article, include Aviation Week, October 1960, May and October 1961; Electronics, Nos 14, 16, 41, 45, 47 1961; Electronics Design, No. 22 1961; and Bell Laboratory Record, No. 8 1961.

From the History of PVO Troops

Bravery and Skill -- by Col V. M. MIKHAYLOV (Pages 77-79)

Abstract:

Describes World War II aerial combat over Leningrad and relates the exploits of Pilots Lt CHIRKOV and Sr Lt PODRYSHEV "who is now a lieutenant general of aviation."

The Last Battle -- Maj V. S. SHUMIKHIN (page 79)

This article praises the World War II aerial exploits of Maj TROITSKIY who was killed in action and posthumously awarded the title, Hero of the Soviet Union.