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USSR Report

MILITARY AFFAIRS

AVIATION AND COSMONAUTICS

No. 6, June 1984

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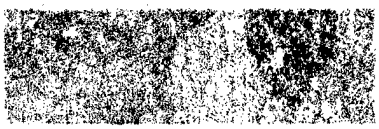

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Except where indicated otherwise in the table of contents the following is a complete translation of the Russian-language monthly journal AVIATSIYA I KOSMONAVTIKA published in Moscow.

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IMPORTANCE OF CONTINUOUS UNIT COMBAT READINESS STRESSED

Moscow AVIATSIYA I KOSMONAVTIKA in Russian No 6, Jun 84 (signed to press 3 May 84) pp 3-5

[Article by Honored Military Pilot USSR Lt Gen Avn A. Borsuk: "Considering the Complex International Situation"]

[Text] Our country actively comes forth with specific initiatives aimed toward preserving peace and preventing another world war. Following the Leninist principles of a peace-seeking foreign policy, the CPSU Central Committee and Soviet Government are doing everything possible to strengthen international security. Today peace-loving peoples see clearly that the militaristic anti-Soviet policy pursued by the current U.S. Administration has led to a sharp aggravation of the world situation, which is seriously threatening the cause of peace. Reactionary imperialist circles are failing to take into account the lessons of history, seek to ignore the realities of our time, and are continuing to demonstrate their readiness and willingness to resolve the historic dispute between the two sociopolitical systems by force of arms.

Suffice it to recall that World War I drew 38 nations into its maw. Over the course of almost 4 years approximately 70 million men were mobilized into the armed forces of the belligerent nations. Sixty-one nations and more than 80 percent of the world's population were drawn into World War II, the largest war in the history of mankind. Military operations were conducted on the soil of Europe, Asia, and Africa,and on the vast expanses of the Atlantic, Arctic, Pacific, and Indian oceans. Over a period of 6 years more than 110 million men were called into the armed forces of the belligerent nations.

In unleashing armed clashes, the imperialists have ignored the fact that it is primarily the civilian population which suffers in the bloody carnage of war. Nor are they concerned today about the consequences of military conflicts. Building up their nuclear potential, including neutron weapons, the imperialists are talking about the possibility of limited use of death-dealing weapons in some local region, concealing from the peoples of the world that a nuclear conflagration will encompass all continents from the very outset. Without question many hundreds of millions of people will be drawn into the maelstrom of such a war. It cannot be compared with any military conflicts of the past.

In conditions of a sharp aggravation of the international situation through the fault of imperialism, strengthening of the defense capability of the nations of the socialist community and ensuring that the combat readiness of their armed forces is at the very highest level is an urgent demand of the times, a guarantee ensuring the reliable security of the Soviet Union and its allies. Our aviators are well aware of this. The professional skills of pilots, navigators, engineers, technicians, and ground maintenance specialists are improved in the course of daily labor and innovative search for unutilized reserve potential. Attained performances are no limit. Military personnel adhere to this principle, studying in the classroom, training on the airfield and the range The combat proficiency and moral-psychological conditioning of air and ground crews improve from class to class and sortie to sortie. Aviation personnel realize that in present-day conditions combat readiness must be maintained at a high level and must be continuously improved, so that no unexpected turn of events catches us unawares.

Today the combat readiness of combined units and units to repel potential enemy attack is a state whereby they are capable at the first alert warning of deploying quickly and in an organized fashion, of repelling aggression, and successfully accomplishing assigned missions.

In the aviation unit under the command of Military Pilot 1st Class Lt Col B. Tumanov, the commanding officer, his staff, and the political workers structure their work specifically and purposefully, specifying in advance measures pertaining to planning and scheduling training of flight, engineer and technician personnel, as well as support subunit specialists. And it is quite logical that the smoothly-functioning outfit invariably scores high marks at every exercise.

The unit headquarters staff, headed by Lt Col V. Terent'yev, works through excerpts from the combat training schedule and regularly revises them The chief of staff constantly concerns himself with improvement in the performance skills of the tower controllers and tactical control officers. Thoroughly prepared documentation faithfully reflects the course of the training and indoctrination process and makes it possible at any moment to analyze the state of affairs in the squadrons and other subunits. This is achieved first and foremost by prompt and timely study of the prevailing situation and capabilities to render effective assistance as quickly as possible if the necessity arises.

During the period of preparation for and during conduct of exercises, staff officers function with smoothness and precision, skillfully utilizing the automatic control system equipment in preparing data for a report to the commanding officer. They are accustomed to operating independently, with initiative, without constantly turning to their superior. Each in his own area does an excellent job of performing his assigned duties and is prepared at all times to stand in for a colleague. Lt Col V. Terent'yev has organized things in such a manner that the headquarters staff has become, as it were, the brain of the military unit, its sensitive nerve, immediately reacting to any situation change. Every adopted decision and instruction is structured on a scientific foundation. This helps efficiently determine within the

organization, command, control and verification chain precisely those links which determine success at the given moment.

At the beginning of the new training year, on the initiative of the unit commanding officer and his staff, principal attention was focused on improving the instructor proficiency of leader personnel of the regiment and squadrons, as well as improvement of their methods and teaching skills. A specific work plan was drawn up, each provision of which was unremittingly monitored by the command authorities and party organization. And results were immediately forthcoming. Today in their daily activities the squadron and flight commanders carry it out with precision and promptness and teach their subordinates to perform with military skill in all conditions, day and night. The outstanding instructor proficiency of the senior officers enables them rapidly to restore in pilots those specific-area skills lost during interruptions in flying, and help them maintain their achieved proficiency level, regardless of prevailing weather.

Experience indicates that a precise rhythm of combat training is maintained wherever adequate attention, in addition to all else, is devoted to maintaining weapons and combat equipment in continuous use readiness and to preventive measures against possible errors and mistakes in equipment servicing and maintenance. As we know, modern aircraft are equipped with highly complex systems which are easy and convenient to use. They make the pilot's job easier, freeing up time for solving tactical problems and assessing a developing situation. But in order for automatic equipment to work with precision in the air, it must be readied fully and comprehensively on the ground. Demands on aviation engineer service specialists increase considerably in connection with this.

Engr-Capt P. Bogatyrskiy, unit deputy commander for aviation engineer service, keeps a constant eye on these matters. Technical training of maintenance specialists is continuously in progress. New things discovered in the process of readying equipment for flight operations are invariably adopted by all services. One might think that nothing new could be devised for improving the hauling and distribution of ordnance on the flight line prior to a flight operations shift. The weapons group specialists, conferring with the regimental engineer, concluded that these operations can be performed much faster, more safely and economically. As a result the time required to make the unit combat-ready has been appreciably reduced, even with intensive flight operations.

Naturally the men's successes have become possible primarily because all work in the unit under the command of Lt Col B Tumanov is grounded on firm, conscientious military and party discipline. In this outfit party members as a rule work in the most critical sectors and bear strict party and military responsibility for their activities. They are in the vanguard in all progressive undertakings.

The intensity of combat training is increasing day by day. Regimental command authorities, party and Komsomol activists are imposing a high degree of demandingness on each and every specialist and are creating conditions for personnel whereby each man can display the finest qualities at his work

station. Training without unnecessary relaxation of demands or unnecessary situation simplification mobilizes the men to innovative activity with initiative and helps improve their level of proficiency and preparedness to engage a crafty, powerful, technically well-equipped adversary. In a situation where the aggressive forces of imperialism are escalating the arms race and rattling sabers, we cannot sit idle. A high degree of preparedness by the armed forces of the Soviet Union and the socialist nations to repel potential aggression has been and will continue to be a guarantee of the security of these countries.

Taking part in socialist competition under the slogan "Be alert, in a state of constant readiness to defend the achievements of socialism!", military aviation personnel, mastering the science of winning, are stinting no effort in military labor. Tactical air exercises are held in coordination with other aviation arms, with ordnance delivery on unfamiliar ranges, and with landing at other airfields. Every pilot, navigator, and maintenance specialist is permeated with awareness of his personal responsibility for defense of the homeland and applies a maximum effort to achieve successful accomplishment of combat training tasks.

In conditions where demands on combat readiness have increased sharply, the method of trial and error is no longer valid or acceptable. Work in the regiment is organized on a scientific basis, and conducted measures are thought out thoroughly. Time is not wasted, with each and every minute of training utilized with maximum effectiveness and return on effort. During drills involving making crews and subunits combat-ready, officers at the administrative level make time and motion studies of the actions of flight and ground personnel and specialists of the supporting services and subunits. Noted deficiencies are immediately corrected and measures are taken to prevent errors and mistakes.

"A responsible attitude toward things," notes USSR Minister of Defense MSU D. F. Ustinov, member of the CPSU Central Committee Politburo, "includes first and foremost party-minded integrity, unity of word and deed, a high degree of follow-through, businesslike efficiency, purposefulness, the ability to rely on advances in military science and line-unit experience and know-how, and sensitive response to requests from the grass-roots level. A responsible attitude toward the job is the ability to find unexploited reserve potential and to appraise one's work performance from the standpoint of accomplishing the main task -- increasing Armed Forces combat readiness." The people in vanguard aviation outfits appraise their activities precisely from such a position, with party-minded strictness and objectivity. This leaves no room for complacency, prospects for forward advance are clearly visible, and combat proficiency increases day by day. The experience and know-how of socialist competition leaders constitute our wealth. To synthesize and disseminate it skillfully, purposefully to incorporate advanced methods of military labor into practical activities, and to publicize examples of exemplary performance of military service means to pull lagging performers up to the level of the leaders and to raise their combat maturity to a qualitatively new and higher level.

The majority of our commanders and political workers correctly understand the importance of this work. Unfortunately, however, there have been cases where certain leaders have neglected things and whose analysis of the activities of a military unit has boiled down to taking note of certain facts. In the unit commanded by Military Pilot 1st Class officer A. Kozinoy, until recently leader personnel did a lax job of delving into the details of organization of combat training. Lt Col N. Vinenko, for example, was doing practically nothing about working up requisite documents and dealing with matters of subunit combat readiness. Mistakes and errors noted in training classes, training flights and drill activities were not being classified and were analyzed in a superficial manner. Measures pertaining to correcting deficiencies were planned and scheduled in an offhand manner and frequently remained on paper. Violators of military discipline and the proper procedures of readying aircraft for sorties were not being adequately punished. Engr-Maj V. Starostin, for example, sometimes would wait an entire month before mentioning gross violations, which should have been addressed immediately, as soon as they occurred, with resolute measures taken.

Lt Col N. Vinenko did not devote himself sufficiently to the work performance of the command post team in the process of making his unit combat-ready. In addition, the command post was poorly equipped with devices for monitoring the work of the specialists in the subunits, and the personnel warning system had not been checked for a long time. As a result it took a long time for aviation personnel to assemble on signal, and specified response times were not being met. In other words, there was a lot of fuss and bustle, with work sometimes proceeding spontaneously, not according to plan or schedule. Headquarters officers whose job included monitoring the training and indoctrination process did not possess adequate knowledge of their job and were not making a particularly strong effort to improve their professional skills.

A question arises: why did this situation arise in an outfit which had every capability to be among the vanguard? I believe that the problem lies primarily in complacency on the part of command personnel as well as lack of initiative by the party and Komsomol organization. The deficiencies noted here were being ignored, violations were being concealed, and of course requisite measures were not being taken against them The people in the unit had forgotten that attention and sensitivity toward personnel should be combined with a high degree of demandingness. Practical experience indicates that the collective exerts the most effective influence precisely on those who violate regulations. Publicity is a very important factor in this.

Naturally we could not simply stand by uninvolved in the face of such a situation. Inspections revealed the causes for lagging performance by the aviation personnel of the unit commanded by officer A. Kozinoy. Specific measures were designated for correcting deficiencies. In particular, they decided to step up work by the methods council to find possibilities of shortening the time required to make subunits combat-ready, especially at tactical air exercises. They revised the procedure and organization of conferences dealing with combat readiness reserve potential and improving the command and control system. They specified that in the very near future they would be setting up command and control of subunits from squadron control

facilities, and they began extensively conducting practice drills on turning aircraft around for repeat sorties on a fast timetable. Party-political work was stepped up to a considerable degree. Activists commenced working more purposefully to mobilize personnel for selfless military labor and arranged party and Komsomol briefing sessions. Gradually the situation in this unit began to straighten out.

In view of the complexity of the international situation, the growing military danger in the world, and all-out preparations by aggressive imperialist circles for a nuclear missile war, our aviators are exerting maximum effort to increase their military skills and to strengthen the combat readiness of units and subunits. They are rallying even more solidly behind the Communist Party, are increasing their vigilance, and are making a worthy contribution toward further strengthening the combat readiness of the Soviet Armed Forces.

3024
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CORRECT WAY TO TRAIN TACTICAL CONTROL OFFICER OUTLINED

Moscow AVIATSIYA I KOSMONAVTIKA in Russian No 6, 1984 (signed to press 3 May 84) pp 6-7

[Article, published under the heading "For a High Degree of Combat Readiness," by Military Pilot 1st Class Lt Col V. Polonskiy: "A Lieutenant Came to the Command Post"]

[Text] As we know, the job duties of an aviation unit navigator include teaching navigator support to tactical control officers.

...I remember once the pilots were reading for a tactical air exercise. Everything had been done as prescribed. Remembering, however, that thorough verification of work performed is a guarantee of success in the air, I decided to check once again correctness of determination of engagement points and fuel remaining with different variations of combat actions. The last combined training drill had shown that the pilots were highly proficient and had revealed weak points in the training of certain command post specialists.

On the whole they performed efficiently, quickly and precisely communicating instructions by radio. But Lt A. Shevchenko, while controlling an aircrew, made an error in determining range to target, gave imprecise commands over the air, and failed to transmit them promptly. On an actual combat sortie this would make the job much more difficult for the combat pilots and would present a certain threat to their safety. In brief, there was food for thought here.

The telephone rang. The regimental chief of staff asked me to come to his office. I knew this officer well. He was a man of integrity and demanded a strict accounting for the slightest errors of omission on the job. When we got together, the lieutenant colonel very thoroughly analyzed the variations of engagement points and sought to make sure that they were accurately placed on the radar screens and that the tactical control officers were correctly placed.

"What shall we do about Shevchenko?" he asked.

"I believe he will be able to do the job, but he must be given support. It would be a good thing to place an experienced officer next to him," I replied.

"Who do you suggest?"

"Senior Lieutenant Lyutyy; he is a qualified instructor."

"We'll do it. But we must bear in mind that the subunit exercise will be a complicated one. There is a great deal of responsibility."

The suggestion to place Shevchenko on the team and entrust a difficult job to him was justified. Some time went by from the combined training drill to the exercise. The command post officer in charge, Capt N. Bagapov, tactical control officer Sr Lt L. Lyutyy, and I took steps to ensure that the lieutenant received a good deal of solid practice. Bagapov and Lyutyy, experienced specialists, held additional training sessions and drills with him and advised him on how to do the job properly.

On the following day, when the signal to assemble sounded and all designated officers reported to the command post, the commanding officer assigned a specific task to each. Soon they reported ready.

As had been decided, Senior Lieutenant Lyutyy was positioned alongside Lieutenant Shevchenko, so that Lyutyy could help him when needed. I managed to free up some time and once again reminded Shevchenko that the more complicated the working conditions became, the calmer he should be. One must be guided by this rule from the very outset. Eventually it will become a habit, which will help maintain one's bearings in the most difficult situation.

At the tactical air exercise the squadron pilots were to intercept high-altitude, high-speed targets at the specified points Navigator calculations indicated that in order to accomplish this mission the fighters had to proceed in advance to the designated airborne alert zone. Barely had the cooperating command post reported passage of targets when the commanding officer ordered the fighters to scramble. The pilots climbed out rapidly, and soon they reported to the command post that they were on station in the airborne alert zone at the designated altitude.

"I see a target entering the edge of the screen," Lieutenant Shevchenko reported to Captain Bagapov, somewhat agitated.

"Vector your fighters. Keep in mind the position of the sun and the peculiarities of the radar display," the command post officer in charge calmly instructed.

"Yes, sir," the young officer replied and proceeded to radio instructions to the airborne alert fighters.

Give the pilots the target's altitude and speed," Senior Lieutenant Lyutyy prompted him. "They must ready their sight and weapon system. Make your instructions concise and transmit rapidly."

The young tactical control officer firmly followed the plan worked out in advance. When the "aggressor" undertook countermeasures to thwart the

interceptor attack passes, he responded with calmness and composure. He reacted promptly and vigorously to all changes in the tactical situation. And only from time to time did Senior Lieutenant Lyutyy offer advice or corrections.

The flight-recorder tapes attested to the high quality of the intercepts. The regimental commander noted at the post-mission debriefing that the tactical control officers and the entire command post team had successfully accomplished the mission. Lieutenant Shevchenko, who was taking part for the first time in such a complex exercise, performed his duties with confidence. Help and advice from more experienced specialists played an important role. They strengthened the young officer's faith in his ability and his endeavor to work even harder to improve his own job skills.

...I shall digress a bit. In an article by Lt Gen Avn I. Dmitriyev entitled "The Command Post Controls Battle" (AVIATSIYA I KOSMONAVTIKA, No 2, 1982), the author addresses in a timely manner questions pertaining to improving the proficiency of command post specialists, their teamwork and cooperation with pilots in the interests of victory over the adversary, for the considerable capabilities of the command post are sometimes utilized far below potential. And yet success and the outcome of aerial combat depend in large measure on reliable, flawless functioning of the "command post-aircraft" link. Who, for example, other than the tactical control officer can promptly warn a pilot (aircraft pair) that the "adversary" is initiating an attack pass or that his formation is opening up to initiate maneuver and deliver a strike?

It is very difficult to master the skills involved. It requires that one continuously work on developing one's memory, reaction capabilities, analytical ability, spatial conception, and ingenuity. As a rule these qualities are characteristic of flight personnel. And it is not surprising that development proceeds faster with those specialists who have flying experience.

The efficiency and quality of work performed by the tactical control officer and his influence on making the correct decision in a developing situation are determined by the ability most fully to picture the air environment. Specialists who have worked for a long period of time at command posts, air traffic control centers and in towers do this expertly. It is as if they can see with their own eyes what is happening beyond the boundaries of the screen.

Not every service school graduate is capable of subsequently developing in himself good spatial imagination. In connection with this, it seems to me that there is a need (and the level of development of modern aviation also demands this) to adopt a unique psychological selection process for future tactical control officers, as is done in the case of enrollment by secondary-school graduates in navigator schools. To approach the problems of training tactical control specialists in a scientific manner means mobilizing the considerable reserve potential for further strengthening combat readiness and improving flight operations safety.

But let us return to the subject of our conversation. Lt A. Shevchenko was timid and shy at first, was unable to defend his point of view, was afraid to

admit mistakes, would make inadvertent errors in determining the parameters of aircraft's movement, and did not always quickly estimate their mutual position for prompt decision-making. The high degree of nervous stress during flight operations tended to exhaust this officer. When he would be informed by the flight operations officer that all aircraft were on the ground, he would sigh with relief. The lieutenant saw that his superiors and comrades took note of his mistakes and attempted to conceal tactically faulty actions with loud and externally correct commands.

Captain Bagapov selected the correct way to educate his subordinate. Analyzing in detail each error he had made, he would give advice, would allow him independently to perform increasingly more difficult guidance calculations in multiple-aircraft engagements, and with increasing frequency have him make decisions in a difficult situation. He merely increased the complexity of the conditions of the training sessions, as if he was providing a forward nudge to the young officer's initiative. Gradually Shevchenko acquired experience working with the screen and developed tactical thinking.

In two years Shevchenko passed the examinations for 2nd class. The exercise demonstrated his increased combat maturity. The officer slowly but surely overcame difficulties. The officer in charge of the command post constantly helped the lieutenant develop decisiveness. There are situations when the tactical control specialist must make an important decision himself, immediately reporting this fact up the chain of command. It is for good reason that a duty officer is sometimes called a night regimental commander: this term indicates his great responsibility for the assigned job.

...A lieutenant reported for duty to the unit command post. Skilled indoctrinators always remember that they too once were novices, with two small stars on their shoulderboards. They too were not immediately capable of doing everything correctly. Experience was acquired through labor, with the aid of their senior comrades. Supervisor personnel are presently doing everything possible to ensure that young officers quickly assume their proper place on the fighting team.

3024
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WEST ACCUSED OF MASSIVE CAMPAIGN OF LIES, SLANDER

Moscow AVIATSIYA I KOSMONAVTIKA in Russian No 6, Jun 84 (signed to press 3 May 84) pp 8-9

[Article, published under the heading "At the Fronts of the Ideological Struggle," by Candidate of Historical Sciences and Docent Col G. Mishurovskiy: "'Radio Voices' of Lie and Slander"]

[Text] "...Recent years," Comrade Konstantin Ustinovich Chernenko emphasized in a speech to constituents on 3 March 1984, "have been marked by a sharp activation of the policy of the most aggressive forces of U.S. imperialism -- a policy of undisguised militarism, claims to world domination, resistance to progress, and violation of the rights and freedoms of peoples."

Attempting to justify these actions to the progressive community and somehow to substantiate their dangerous, misanthropic policy of blackmail and threats, violence and terror, bourgeois ideologues are heaping mountains of slander against the Soviet Union, against socialism as a societal system, and against our Soviet way of life. Various "radio voices" play an important role in spreading these lies. They are the subject of discussion in the following article.

At the end of the 1970's and beginning of the 1980's reactionary imperialist circles, the United States in particular, seeking to achieve military superiority over the USSR and the other socialist nations and to gain world domination, have been increasingly actively resorting to savage ideological campaigns and no-holds-barred "psychological warfare" against them. Bourgeois ideologues have been conducting entire series of anti-Soviet, anti-Communist propaganda campaigns in which the socialist system is distorted and slandered, with the clear intention to undermine the sociopolitical and ideological unity of our society. Shameless lies and foul juggling of the facts are employed for these purposes. Characterizing bourgeois propaganda, V. I. Lenin commented in his work "Alliance of Lies" the method it uses: "Lie, make a lot of noise, shout, repeat the lie -- something will remain."

Ideological sabotage is the principal tactical weapon. On the whole the instigators and organizers of "psychological warfare" today attach no less importance to the war of minds than to preparations for thermonuclear battle. Anticommunist propaganda and "psychological warfare," for example, have been raised to the status of U.S. Government policy and are viewed as a part of Washington's global military policy.

In the arsenal of weaponry of ideological warfare being waged by imperialist circles against the socialist nations, an important place is assigned to radio propaganda. Broadcast lies and slander, outright brigandage on the airwaves have become a component part of the general "crusade" being waged by the United States and other NATO countries against the socialist nations.

Since the Reagan Administration's advent to power in the United States, that country has been counting even more heavily on utilization of subversive radio broadcasts for the purpose of destabilizing existing regimes and altering the governmental system in the socialist countries and nations unfriendly to the United States in a direction favorable to the White House Administration, as was specified in Presidential Directive 75, which was issued in 1983. In other words, a shifting of ideological contradictions into the sphere of intergovernmental relations is taking place in the foreign policy of the developed capitalist countries, particularly in U.S. policy. This is attested to by the facts.

Recently an interagency commission on international radio broadcasting was formed in Washington. Its mission, just as that of the three other commissions formed on the basis of the "Program For Democracy And Public Diplomacy," consists in expanding "psychological warfare" and escalating acts of ideological sabotage by U.S. imperialism against socialism. A billion dollars has been appropriated for this purpose, money which is to be used to modernize radio broadcast facilities and to pay for lies and slander. At the present time, for example, 40 stations are beaming broadcasts to our country in 23 different languages of peoples of the USSR, a total of more than 200 hours of broadcasting per day. Sixty to 80 percent of the broadcast time is dedicated to vicious antisocialist, anti-Soviet fabrications.

U.S. anti-Soviet propaganda directed against the USSR and the other nations of the socialist community began with Russian-language broadcasts from the Munich branch of Voice of America on 16 February 1947. Incitement to commit acts of sabotage, wrecking, and treachery became their main theme.

Radio Liberty and Radio Free Europe, operating under CIA oversight, appeared at the height of the "cold war." Just as Voice of America, they announced a worldwide "crusade" against communism. The antennas of the British Broadcasting Company, BBC, the West German Deutsche Welle and Deutschlandfunk, as well as certain broadcasting stations in Canada, Sweden, and elsewhere, which are also poisoned with the venom of anti-Sovietism, are pointing in the same direction. Deutsche Welle and Deutschlandfunk alone are currently broadcasting in 34 different languages of various countries of the world, and are beaming broadcasts in 28 languages of the peoples of the Soviet Union and the European socialist countries. American intelligence services have erected 326 radio transmitters and 36 TV rebroadcast antennas along the border between

the FRG and Czechoslovakia for the purpose of beaming massive propaganda against the Eastern European socialist countries.

Considerably stepped-up broadcasting activities by numerous religious radio stations such as Voice of Friendship, Good Friend, Vatican Radio, Radio Monte Carlo, and others have represented an important feature of subversive Western radio propaganda against the socialist countries in recent years. Militant clerical radio propagandists, cynically playing on the feelings of religious believers, seek to drum into their heads the notion that persecution of religious believers exists in the Soviet Union, that scientific knowledge is of an "anti-God" nature, that there has been a traditional antagonism between church and state, etc. The authors of such transmissions aim them primarily against a scientific-materialist philosophical outlook and seek to convince listeners that there is no struggle of ideologies and class contest going on in the world today.

Voice of Israel, radio broadcasting center of international Zionism, is also engaged in subversive activities against the Soviet Union. This "voice," lying about Soviet nationalities policy, attempts to play the role of defender of citizens of Jewish nationality residing in the Soviet Union, urges them to emigrate from our country, and seeks to divert the attention of the world community away from the bloody acts of atrocity and genocide perpetrated by Zionism against the Palestinians and Arabs.

Alongside an increase in the total number of hours of broadcasting beamed at the socialist countries, there is also taking place an improvement and perfecting of the methods of imperialist radio propaganda; new techniques are being developed, tailored to present-day conditions, and greater attention is being devoted to training highly-skilled anti-Soviet cadres. They study at 400 anticommunist centers and "research" institutes which have been artificially incorporated in leading universities or other organizations of bourgeois academic scholarship. There are approximately 150 of these in the United States alone. To mention just a few, they include the Hoover Institute on War, Revolution and Peace at Stanford University, Columbia University's Russian Institute, the Institute on Russian policy in the state of Massachusetts, and the Institute of Problems Of Communism at Columbia University.

Today various "Sovietology centers" play a leading role in drafting recommendations for anticommunist, anti-Soviet propaganda. Their staff members regularly participate in the broadcasting activities of Voice of America, Radio Liberty, and Radio Free Europe. This attests to the fact that anti-Soviet "idea factories" constitute a force supporting subversive Western radio propaganda.

Also typical is the following fact: many professional "Sovietologists" hold government jobs which enable them to exert considerable influence on the content and character of U.S.-Soviet relations, East-West relations, "psychological warfare," and external political propaganda. They function not only as anticommunists but also as specific organizers of ideological and psychological assaults against the Soviet Union and the other nations of the socialist community.

Today, just as in the past, subversive radio-broadcast propaganda is supervised by anti-Soviets, professional agents of the intelligence services, intelligence officers possessing considerable experience in subversion and sabotage in a great many countries.

Rank-and-file employees also engage in daily lying and slandering socialism. These are for the most part turncoats and traitors to the Soviet homeland, persons with a criminal past, renegades and opportunists. They have repeatedly changed their names in the past and continue to do so, in attempts to keep from being exposed. The true countenance of many of them is revealed in materials published in the Soviet and foreign press. Just who is employed at Radio Liberty and Radio Free Europe? Here is a list of a few of them: D. Chaykovskiy -- a die-hard Hitlerite hanger-on, who perpetrated crimes in occupied Belorussia; O. Krasovskiy -- a follower of Vlasov and a CIA employee; I. Repnikov -- a recipient of many Hitlerite medals, who took part in punitive operations against partisans, and a CIA agent; S. Garif -- a traitor to his country and a common criminal; Yu. Semenko -- an active Banderite and murderer; V. Maksimov -- in the past a common criminal, who fled to the West; Victor Gregory, alias Vadim Shelaputin, alias Ivan Romanov, alias Rayts, transformed from an indefatigable lover of pop music and foreign rags into a U.S. intelligence agent and an enemy of his homeland. This is the kind of people who are "gathering facts," sitting in front of microphones and pouring buckets of filth on our societal system and our citizens.

The fact that Western "waves" and "voices" distort and slander the truth about life in the USSR and about socialism is quite obvious, and the propagandists relish all kinds of fabrications about it. And it is absolutely impossible to hear objective broadcasts and comments, about our economic or scientific achievements, for example. Having failed in their attempts to discredit socialism as such, bourgeois ideologues talk about "Western," "Eastern," "national," "pragmatic," and "noncommunist" socialism. They are willing to acknowledge any socialism, but not genuine, already existing socialism.

The ideologues of imperialism seek with the aid of radio propaganda to create in the socialist community a legal "fifth column," the principal mission of which is to wage a campaign against the societal system within one's own country. Toward this end Washington considers it essential to provide the necessary support for various renegades and traitors to their country and to create in the socialist countries, after the Western model, certain antisocialist, anti-Soviet "independent parties," a "free press," and "free trade unions," which would constitute the foundation for such a "column" of traitors. Western "radio voices," for example, beaming broadcasts at Poland around the clock, attempt aggressively to meddle in the domestic affairs of that country, openly call for antisocialist demonstrations, are continuing to exert psychological pressure on certain segments of the population, and transmit instructions to step up the activities of the counterrevolutionary underground. These and other provocational schemes, however, are doomed to failure, for socialism represents the power of the working people, the sole master of their country, and there is no force capable of shaking this power.

Subversive U.S. bourgeois radio centers as well as those operated by U.S. aggressive NATO bloc allies are constantly mounting propaganda and psychological attacks over the airwaves against the listening audience, seeking to drum into them the notion of the "dangerous superiority" of Soviet military might over the armed forces of the United States and NATO, and "about the Soviet military threat." These fabrications and falsifications constitute the principal ideological weapon of the Reagan Administration in Washington, which seeks to utilize them to justify the arms race, the deployment of new U.S. nuclear missile weapons on the soil of a number of West European countries, and disturbance of the military-strategic balance in this region.

The perpetration of acts of provocation and subversion is an organic component part of the policy pursued by the most indefatigable U.S. imperialist circles. The motive force behind their policy is a striving toward world domination and the desire to enslave other peoples. The tenant in the White House announces that the sphere of U.S. responsibility encompasses the entire world. But the meaning he places in the term "responsibility" transforms it into irresponsibility. It is an irresponsible playing with the fate of individuals, peoples, and countries.

In actuality, however, the Soviet Union has been the target of constant aggression from beyond its borders, literally from the first moment of its existence. The Soviet Union has suffered enormous casualties, beginning with the period of foreign intervention during the Civil War and ending with World War II. This fact serves as a convincing explanation of why the USSR is making every effort to avoid war and consistently advocates disarmament.

The United States, which is so loudly rattling its sabers, has virtually no knowledge of what combat on one's own soil means. The United States lost several hundred thousand men in the two world wars. In addition, the United States merely grew richer in the course of the wars. As a result of this, a powerful military-industrial complex was formed in that country. In light of this one can understand the deliberate hue and cry about a "Soviet threat," which is being used as a pretext to expand military spending.

And all kinds of lying fabrications are needed to counteract the growing discontent with worsening conditions of life by the peoples of the Western countries and the filthy manipulation of the public consciousness. They are essential in order to make it easier to shift the burden of military spending onto the shoulders of the working people and to guarantee enormous profits for the military-industrial complex.

The facts convincingly show that in addition to disinformation and slander, subversive Western radio stations extensively engage in intelligence activities and conduct radio intercept operations as well as gathering information throughout the world. The USSR and the European socialist countries are the main target. We should note in particular that in conducting radio and radar espionage against the USSR and the other socialist countries, the United States and the NATO countries utilize submarines, "Liberty" and "Pueblo" class surface vessels, and spy planes. NATO leaders are counting heavily on AWACS aircraft in the conduct of aerial espionage.

Today the sinister activities of NATO's winged spies are being appreciably stepped up.

History persuasively attests, however, that no "radio voices" and no bourgeois propaganda conducted in the guise of a "crusade" will halt the victorious advance of socialism. At the same time the present international situation, as was stressed by CPSU Central Committee General Secretary Comrade K. U. Chernenko in his speech at the April (1984) CPSU Central Committee Plenum, demands of us constant and comprehensive efforts to ensure this country's security and reliable defense of the peaceful labor of Soviet citizens. All this obliges USSR Armed Forces personnel, including military aviators, to perform service-related duties in an exemplary manner, to strengthen discipline, to be vigilant, to keep a watchful eye out for the intrigues of reactionary forces and militant imperialism, and to increase the combat readiness of units and subunits in order to ensure reliable security of the socialist homeland.

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IMPORTANCE ATTACHED TO INSTILLING ETHICS, MORALITY IN PERSONNEL

Moscow AVIATSIYA I KOSMONAVTIKA in Russian No 6, Jun 84 (signed to press 3 May 84) pp 10-11

[Article, published under the heading "Implementing the Decisions of the 26th CPSU Congress," by Lt Col I. Naydenov: "Foundation of Highly-Ethical Conduct"]

[Text] Moral indoctrination of Soviet military personnel is a component part of all the ideological-political and organizational work by commanders, political agencies, and party organizations. Guided by the decisions of the 26th CPSU Congress, subsequent CPSU Central Committee plenums, and the demands of the CPSU Central Committee decree entitled "On Improving Ideological and Political-Indoctrination Work," our commanders, political workers, party and Komsomol organizations are working constantly and purposefully to form in personnel an active experiential posture and are developing a strong moral-psychological readiness and willingness to work with maximum return on effort to master military skills and to strengthen combat readiness.

Positive experience has been amassed in the unit in which officer V. Maley serves as political worker. In this unit activists concentrate efforts first and foremost on publicizing the Soviet way of life, Leninist principles of moral indoctrination of personnel, the points and conclusions contained in the decisions of the 26th CPSU Congress and subsequent CPSU Central Committee plenums. They expose in well-reasoned fashion the misanthropic essence of bourgeois ideology and demonstrate with specific examples its pernicious influence on people's consciousness in the capitalist world, the moral decline of bourgeois society and the lack of individual rights in that society. A prominent place in ideological work is occupied by publicity of the achievements of the Soviet people in building communism. The noble mission of the Soviet Armed Forces in defense of the homeland and the achievements of socialism is persuasively revealed.

In order to give this work a clear-cut directional thrust, to place it on a scientific foundation and to encompass with it a broad circle of activists, the political section organized discussion at party and Komsomol meetings and at meetings of party committees and buros specific measures aimed at strengthening work pertaining to the moral indoctrination of personnel. Implementation of these decisions has made it possible to intensify work and give it greater militance and aggressiveness.

Recently the system of political training and party education has begun to be more fully utilized in the interests of improving the moral indoctrination of military personnel. The methodological aspects of this work are regularly discussed with group leaders at seminars, meetings and conferences. Organization of one of the seminars of political instruction group leaders on the topic "A high degree of military discipline -- a most important condition for troop fighting efficiency and continuous combat readiness" can serve, I believe, as an example.

A talk entitled "V. I. Lenin and the CPSU on Communist Ethics. Soviet Military Discipline -- A Political and Ethical Category" was held with group instructors shortly before the seminar class. They then became acquainted with the Lenin Room and its exhibit of literature on the subject, and they studied newspaper articles entitled "Forming an Active Experiential Posture," "Moral Climate of the Military Collective," and "Soviet Military Etiquette: Unity of Requirements of Regulations and Ethics."

The seminar was held in a lively, interesting and, most important, practically useful manner. Propagandists devoted much attention in their presentations to matters pertaining to forming excellent moral qualities in aviation personnel, dissemination and adoption of advanced know-how in the organization, and conduct of seminar classes within the political training system.

A high degree of ethical conduct by military personnel is directly linked with successful performance of their assigned combat and political training tasks. At the most recent tactical air exercise, for example, aircraft crews displayed a high level of air proficiency. The target for flying hours logged and combat flying is being rigorously met. The number of violations of military discipline has decreased appreciably. The proceedings of the Sixth Armed Forces Conference of Primary Party Organization Secretaries contain a profound analysis of ways to improve all ideological and political indoctrination work and further to strengthen its linkage with practical realities. The report presented by Army Gen A. A. Yepishev, chief of the Main Political Directorate of the Soviet Army and Navy, stressed that party organizations should focus their attention on matters pertaining to patriotic and moral indoctrination, well-reasoned and clearly understandable propaganda on the historical advantages of genuine socialism, with attention focused on the major, impressive achievements of our party and people and on affirmation of lofty moral values.

Guided by these theses, propagandists and agitators seek in their presentations to place emphasis on the moral aspect of military labor, to stress the spiritual elements of military service. A special series of lectures on these topics, for example, was arranged in the unit in which Maj V. Pasternatskiy serves as party committee member. When talking with aviation personnel about increasing combat readiness and strengthening military discipline, agitators always mention the moral aspects of service and training and reveal the ethical motives for people's actions. Flight commander Military Pilot 1st Class Capt S. Manokov, for example, sees his duty as agitator first and foremost in helping each aviator become aware of his role

in accomplishing the tasks facing the subunit and in feeling personal involvement in the great achievements of the Soviet people.

Group senior technician officer A. Saprun, flight technical maintenance unit chief officer A. Magnushevskiy, group technician officer Yu. Metelkin and others conduct agitation work among personnel in an interesting and innovative way. They endeavor to concentrate students' attention on the moral aspect of military labor and on this foundation to develop in them the ability to appraise the affairs of the collective and the actions of individual servicemen from the position of strong moral demandingness. For example, in talks on quality of preparation of aircraft equipment, among the factors which help improve it, Captain Technical Service Magnushevskiy particularly emphasizes the most important element -- the aviator's conscience, which in each and every individual should constitute the main inner verifier.

Combat glory museums and rooms are genuine centers for heroic-patriotic conditioning of aviation personnel. Approximately 200 excursions to these museums and rooms, get-togethers with Heroes of the Soviet Union, combat veterans of the Great Patriotic War, and Air Force veterans have been held in a comparatively short period of time, and approximately 30 young servicemen have been presented their Komsomol cards here.

The combat glory room of the regiment in which Lt Col L. Lizenko serves has been operating actively. All young officers, warrant officers, enlisted men and NCOs who come to the unit visit this room. They are acquainted with the unit's fine combat traditions and the deeds performed by men of this regiment. Each exhibit tells of valor and fighting fame. Solemn ceremonies exert considerable emotional influence on aviation personnel, help develop their social activeness, and teach them boundless love for their homeland and hatred toward its enemies.

When working on instilling strong ethics and morality, one should not forget about creating in each and every military collective a healthy moral climate, which helps establish in all areas of military life a respectful, considerate attitude toward others and a spirit of genuine comradeship, combined with a high degree of demandingness and selfless assistance. An important role in the moral indoctrination of servicemen is played by Lenin readings and lessons, special evening activities, discussions of books and films, and oral magazines conducted in the units.

Good experience in the conduct of such measures has been amassed in the unit in which political worker officer V. Ovsyannikov, participant in the Sixth Armed Forces Conference of Primary Party Organization Secretaries, serves. Lenin readings entitled "V. I. Lenin on Unity of Military Collectives," for example, were conducted in an instructive manner. In commencing these presentations, party member V. Ovsyannikov listed our leader's writings in which are defined the principal traits of the Soviet military collective and the ways to strengthen it. He then briefly presented the demands of the USSR minister of defense, the chief of the Main Political Directorate of the Soviet Army and Navy, and the Commander in Chief of the Air Forces on further unifying military collectives and stressed the importance of friendship and military comradeship in the business of improving the military skills of

servicemen and increasing the combat readiness of subunits and units. Following the presentation, aviation personnel viewed excerpts from the documentary film "Great Victory of the Soviet People."

Presentations by officers A. Yarushchak and V. Simakov were devoted to matters pertaining to enhancing the indoctrinational role of the military collective, the ideological-political and moral conditioning of servicemen. Skillfully utilizing the Lenin theoretical legacy and the proceedings of the 26th CPSU Congress and subsequent CPSU Central Committee plenums, they emphasized that comradeship, mutual assistance, integrity, trust, sincerity, honesty, truthfulness, and mutual respect characterize the moral climate, which in turn unifies and strengthens the collective and develops in aviation personnel a responsible attitude toward military labor.

A special evening event entitled "We Are Strong Through Our Soldier Friendship" was held in the unit in an interesting and content-filled manner. Speakers included veterans of the Great Patriotic War Heroes of the Soviet Union A. Yakimchuk and Ye. Rusinova. They demonstrated with specific examples of combat activities of subunits and units during the war years the significance of friendship and unity of servicemen and told about the courage and steadfastness of the soldiers at the front in critical situations and about their highly-moral actions.

Commanders, political workers, party and Komsomol organizations, improving moral indoctrination of all categories of military personnel, seek to achieve consolidation in the units of an atmosphere of integrity and an attitude of intolerance toward violators of military discipline and standards of Communist morality, toward such immoral phenomena, alien to our system, as selfishness and bourgeois philistinism, indifference toward civic affairs, and a weakness for alcohol.

This work rose to a new and higher level following the Sixth Armed Forces Conference of Primary Party Organization Secretaries. Guided by the points and conclusions contained in the reports presented by the USSR minister of defense and chief of the Main Political Directorate of the Soviet Army and Navy on matters pertaining to boosting the level of guidance of indoctrination of personnel, the command authorities and political section are seeking to achieve absolute observance by all leader personnel of the Leninist principle of unity of word and deed and are developing in them the ability to indoctrinate people and to see the moral aspects of their actions and decisions. Classes, theoretical and scientific-practical conferences, and interviews are being held for this purpose with leader personnel of units and subunits. Leader-Communists A. Borsuk, M. Lebedev, G. Matveyev, P. Perakovskiy, E. Shchukin, and others are taking active part in them. They profoundly and comprehensively reveal the content and method of organization of moral indoctrination of aviation personnel and disseminate advanced know-how of work in this area.

Moral indoctrination is a complex and multifaceted process. In view of this fact, we seek to ensure that commanders, political agencies, and party

organizations of units carry it out in a more substantive manner, utilizing it as an effective means of further boosting the level of combat and political training and strengthening of military discipline, organization, and order.

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INNOVATIONS IN AIRCRAFT ENGINE MAINTENANCE CONSIDERED

Moscow AVIATSIYA I KOSMONAVTIKA in Russian No 6, Jun 84 (signed to press 3 May 84) pp 12-13

[Article by Candidate of Technical Sciences Engr-Lt Gen A. Tikhomirov, USSR State Prize recipient: "New Developments in Powerplant Maintenance"; based on materials published in the foreign press]

[Text] In recent years a search has been in progress abroad for new principles of aircraft engine maintenance and repair for the purpose of reducing costs and developing capability to repair powerplants in the line unit, using the maintenance specialists of the air wings. It is believed that the most promising possibilities include building engines of modular design, extensive use of built-in status test systems, and incorporation of the principle of maintenance based on condition.

Higher demands pertaining to maintainability, repairability, and ease of inspection are today being placed on aircraft engines in development. The design criterion presupposes breaking an engine down into individual, independently replaceable assemblies (modules). As a rule modern gas-turbine engines designed for aircraft consist of from 5 to 8 modules. The F100-PW-100 turbofan engine, for example, consists of eight modules: fan, engine midsection, compressor, high and low-pressure turbines, combustion chamber, reduction gearing, afterburner chamber, and nozzle. Each of these can consist of smaller assemblies.

From the standpoint of maintenance and repair, an engine of this design comprises not a single product item but rather a set of separate, series-manufactured modules. Therefore engine field repair boils down to a simple replacement of a faulty assembly with subsequent engine testing, prior to taking the aircraft up, directly on the aircraft rather than on a test bed. This is why capability to find a malfunction in a separate module is an essential part of the principle of operation of kindred engines.

Engine malfunctions can be subdivided into two categories by their nature: those which cause changes in operating characteristics, and those which affect a module's structural strength. Certain problems (for example, a hole burnt in the engine housing, turbine or compressor blade failure) can affect both operating characteristics and structural strength. Methods of monitoring the

condition of powerplant modules are subdivided into indirect and direct. The former, based on predicting pre-failure state on the basis of certain indirect indications, are usually employed to test module structural strength. They include specified time between overhauls, turbine rotor runout after engine shutdown, unusual noise during engine operation, results of oil spectrometric analysis, etc. In certain instances engine structural strength can also be inspected directly (visually, for example). This method, however, enables maintenance specialists to detect only significant cracks or other noticeable structural damage.

Direct inspection methods are employed primarily to determine indications of incipient failures which affect operating characteristics. They are based on direct measurement of the values of selected parameters of each module: gas temperature, fuel pressure and flow rate, turbine rpm under specified engine operating conditions, etc. Maintenance personnel measure these parameters, using not only built-in (on-board) but also ground automated test systems. Analysis of the obtained results enables maintenance specialists to determine whether a given assembly should be replaced. A specified number of hours of operation is determined for each: time between repairs, and time to major overhaul. Both malfunctioning modules and those which have operated the specified time are removed and sent in for overhaul. The engine is repaired by installing good assemblies.

Considerable attention abroad is devoted to practical adoption of a combination of the two basic principles of aircraft engine maintenance: based on condition, and replacement of modules. Some powerplant modules, the condition of which can dependably be monitored by available means, are run until they are taken down for repairs on the basis of their actual condition. In this case a part life is not designated, but for other parts, inspection of the conditions of which is difficult, duration of operation until removed for repair or overhaul is limited by the specified time between repairs or time to overhaul.

A combination of these two principles of maintenance is also employed when dependable monitoring and inspection of the conditions of all modules is ensured. In these conditions each is sent in for repair or overhaul only on the basis of its actual condition. There is no need to perform a takedown engine inspection after it has logged a specified number of hours.

The rate of module failure varies considerably under actual operating conditions. Maintaining the requisite variety of modules in line units, determined on the basis of analysis of relative frequency of failures, one can ensure that the maximum number of engines are kept in good running order with a minimal number of complete spare engines. Transportation costs are also greatly reduced, since only failed assemblies are shipped off to depot maintenance, not entire engines. Foreign experts believe that when a level of perfection of engine design and construction is achieved which makes it possible fully to realize the advantages of the principle of engine operation based on the condition of modular-design powerplants, the number of modules requiring repair or overhaul will amount to 5-10 percent of the number presently shipped out to overhaul enterprises.

A large network of repair and overhaul organizations at the base (wing) level is being established abroad in order more fully to utilize the advantages offered by the principle of maintenance of modular-design aircraft engines according to actual condition. They are being provided with equipment and tools for taking down and replacing modules, as well as suitable diagnostic equipment.

Thus an essential condition for transitioning to the principle of maintenance of modular-design engines based on actual condition is to ensure a high degree of engine repairability and inspectability, development and adoption of on-board means of inspection capable of providing objective information on the technical condition of the monitored item, as well as the establishment of a network of suitable repair and maintenance facilities. In the estimate of foreign experts, the new principle of maintenance can generate considerable cost savings, while at the same time increasing aircraft combat readiness and flight safety.

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FINANCIAL LIABILITY OF MILITARY PERSONNEL FOR UNLAWFUL MATERIALLY-DETRIMENTAL ACTIONS CLARIFIED

Moscow AVIATSIYA I KOSMONAVTIKA in Russian No 6, Jun 84 (signed to press 3 May 84) pp 14-15

[Article, published under the heading "Dissemination of Legal Information," by Candidate of Legal Sciences Col Just V. Gushchin, assistant chief military prosecutor: "Safeguarding Military and Public Property"]

[Text] At all stages of development of our state, the Communist Party and Soviet Government have devoted and are devoting unabating attention to strengthening the nation's defense capability and increasing the combat readiness of the USSR Armed Forces.

Specific resources and moneys are allocated for the needs of the military. The USSR budget for 1984, for example, specifies defense expenditures totaling 17.054 billion rubles. An economy-minded, thrifty and conscientious attitude toward the public's resources is an official duty of each and every serviceman.

Legislative enactments , the military oath, and military regulations demand of enlisted personnel, noncommissioned officers, warrant officers, officers and general officers that they make every effort to safeguard the weapons, combat equipment, and military property entrusted to them and that they do not permit loss, spoilage, unlawful and uneconomical expenditure of goods and funds.

The overwhelming majority of aviation personnel have a correct understanding of their obligations pertaining to conserving and safeguarding military property and conscientiously carry out these duties. Unfortunately there are some individuals who have a negligent attitude toward carrying out their duty to safeguard socialist property. Guilty of negligence, mismanagement, theft and spoilage of military property, they cause financial detriment to the state and weaken the operational efficiency of military units and subunits. Such phenomena are intolerable in our socialist society.

By an ukase dated 13 January 1984, the Presidium of the USSR Supreme Soviet ratified a new statute on financial liability of military personnel for loss or damage caused to the state. It went into effect on 1 March of this year. It is grounded on the general principles of Soviet laws pertaining to

financial liability for causing loss or damage to the state, proceeding from the requirements of the USSR Constitution.

Pursuant to this Statute, financial liability is borne by military personnel and reservists called up for training activities who are guilty of causing loss or damage to the state in performance of job-related duties specified by military regulations, orders, and other enactments. Military personnel and reservists called up for military training bear financial liability as prescribed for ordinary civilians for loss or damage caused the state not during performance of job-related duties (when on leave, liberty, on a pass, during off-duty hours, etc).

Loss or damage shall be defined as the actual loss caused the state by military personnel by means of loss, spoilage, destruction, damage, and theft of military property and funds, as well as other unlawful actions. The occurrence of loss and its causation to the state are mandatory conditions for charging with financial liability.

Genuine causation of material loss or damage while a serviceman is performing job-related duties, however, is insufficient to hold the guilty party liable for restitution. In each specific instance it is necessary in addition to establish the presence simultaneously of the three following conditions: unlawful behavior on the part of the serviceman causing the loss or damage, expressed in violation or nonperformance of job-related duties, specific requirements of laws, military regulations, manuals, orders and instructions specifying the procedure of storage, utilization and expenditure of goods and funds; a causal relationship between unlawful actions or nonfeasance by a serviceman and the loss or damage which has occurred; fault or culpability on the part of the serviceman who has caused the loss or damage, in the form of criminal intent or negligence. The absence of even one of these conditions precludes holding a serviceman or activated reservist financially liable.

The Statute establishes limited and full financial liability of military personnel. A general standard is specified: for loss or damage caused as a consequence of negligent performance of job-related duties specified by military regulations, orders and other prescriptions, financial liability in the amount of the loss or damage caused (but not greater than) shall be borne by warrant officers, extended-service military personnel, females in active military service as enlisted personnel and noncommissioned officers, plus officers, general officers, and flag officers -- one month's pay; compulsory-service personnel and service school cadets -- 100 rubles; military reservists called up for training -- 150 rubles. Warrant officers, extended-service personnel, officers and general officers shall bear financial liability for loss or damage caused, through their culpability, by railcars, vessels and trucks standing idle, in the amount of the loss or damage caused, but also not to exceed one month's pay.

Command personnel shall bear equal financial liability for loss or damage caused the state by their subordinates when said command personnel, by unlawful instructions, violate the established procedure of record keeping, storage, utilization, expenditure, consumption, and transport of military property and fail to take requisite measures to prevent theft, destruction,

damage, and spoilage of military property and to secure restitution by the guilty parties for loss or damage caused to the state.

Military personnel and reservists called up for training shall bear full financial liability for loss or damage caused to the state through the fault or culpability of said personnel in the following instances: deliberate destruction, damage, spoilage, theft, unlawful consumption or expenditure of military property, or causation of loss or damage by other deliberate actions, independent of whether or not they contain attributes of actions subject to criminal prosecution; false claims of actually unperformed work in work orders and other documents, distortion of report figures and fraud against the state in other forms; shortage, as well as destruction or spoilage of military property placed in their care for storage, transport, issue, utilization, or for other purposes; causation of loss or damage by a person in an inebriated state; causation of loss or damage by an action (nonfeasance) containing attributes of an action subject to criminal prosecution.

The following question frequently arises: can a military official guilty of unlawful discharge or transfer of a civilian worker or employer to a lower-paying job be held financially liable? If so, in what manner and in what amount?

According to Article 14 of the Statute, commanders (officers in charge) of military units and establishments who are guilty of unlawful discharge or transfer of a civilian worker or employee to another job shall make full indemnification for the loss caused in connection with payment for time of absence from work or for time spent performing lower-paid work, but not to exceed three months pay. Such an obligation shall be imposed if discharge or transfer has been effected with manifest violation of the law or if officials have delayed execution of the decision of a court or higher-echelon commander (officer in charge) to restore said civilian employee to his former position.

Proper safeguarding of special clothing and gear is of considerable importance for Air Forces units and subunits. In connection with this, the Statute specifies that military personnel and reservists called up for training shall bear financial liability in a multiple amount of value for loss or damage caused by theft, illegal disposal, or shortage of flight-technical clothing, navigator gear, special clothing and footwear, inventory stocks and other military property. A list of military property falling within this category shall be approved by the USSR minister of defense. The specific multiple shall be established in a manner specified by the USSR Council of Ministers.

Of great importance is that provision of Article 16 of the Statute, which specifies that the amount of loss or damage to be restituted may in exceptional cases be reduced by the commander (officer in charge) of a military unit, combined unit, establishment, or school with the permission of the higher commander, and, where appropriate, by a court, depending on the circumstances under which the loss or damage was caused, the degree of culpability and the material status of the guilty party, with the exception of instances of causation of loss or damage by crimes committed for mercenary motives.

Taking into consideration the specific features of military service, cases may occur where military personnel are not held financially liable in spite of loss or damage caused by them to the state. We shall discuss these.

Every serviceman is obligated to carry out orders issued by superiors unquestioningly, precisely, and promptly. Precisely for this reason the Statute specifies that a serviceman shall not bear financial liability when loss or damage result from conscientious execution of an order from a commander (superior). In addition, for the purpose of developing intelligent initiative in military personnel, the Statute specifies that a serviceman shall not be held financially liable if loss or damage results from job-related risk which was justified in the given specific conditions or was a consequence of lawful actions.

Matters pertaining to determining financial liability shall be settled with strict observance of socialist rule of law. The slightest infringements of the rights and interests both of military personnel and of military units, establishments, and schools shall not be tolerated. In connection with this the Statute, as well as the USSR minister of defense order which brought the Statute into force spell out specific mandatory rules and procedures of investigation of cases of causation of loss and damage and the procedure of imposing penalty.

The commander (officer in charge) of a military unit, upon discovery of material loss or damage, shall immediately order an administrative inquiry to determine the causes of occurrence of said loss or damage, its magnitude, and the guilty parties. The inquiry shall be conducted in writing and shall be completed within one month's time. If necessary this period can be extended by a higher-echelon commander, but not by more than one month. If the causes of material loss or damage, its magnitude and the guilty parties have been established by an audit, check, investigation or by a court, an administrative inquiry may be omitted.

Within one month from the day of completion of an administrative inquiry or the receipt of materials of an audit, check, investigation, documents from the prosecutor's office or court, the commander of a military unit or, when necessary, a higher-echelon commander shall issue an order calling for the amount in question to be docked from the serviceman's pay. If the guilty party has been transferred elsewhere to a new assignment prior to the decision, the materials of the administrative inquiry, investigation, or a copy of the audit (check) document shall be forwarded within 5 days after completion of the inquiry or audit (check) to the place of reassignment, where a financial liability order shall be issued.

An order for restitution of material loss or damage shall be communicated to the guilty party, with the latter signing acknowledgment of receipt, and may be appealed in the manner prescribed by the Disciplinary Regulations of the USSR Armed Forces. A higher-echelon commander, having verified the correctness of determination of liability for caused loss or damage and the amount to be restituted, may reduce it, but to an amount not less than one month's pay for warrant officers, extended-service personnel, females in active military service, officers and general officers. Filing of an appeal

of the order shall not stop pay docking. But if the order is protested by a military prosecutor, docking of pay shall be halted until examination of the protest. If the order is subsequently rescinded, docked amounts shall be returned.

If a warrant officer, extended-service personnel, officer or general officer who has been declared financially liable is transferred to a new assignment location prior to full restitution for the loss or damage caused, his pay shall be docked at the new assignment location on the basis of account book entries.

If a serviceman or military reservist called up for training who has been charged with financial liability has not made full restitution for the loss or damage caused by him to the state by the date of discharge into the reserves or retirement or completion of reservist training, the remaining amount owed shall be collected by a marshal of the court at the person's locality of residence, without legal recourse, on the basis of an endorsement of execution by a notarial official, sent by the commander of the military unit to the locality of residence (place of employment) of the discharged serviceman or reservist called up for training.

The preamble of the new Statute on financial liability of military personnel for loss or damage caused to the state emphasizes that the purpose of the Statute is to help increase responsibility on the part of defenders of the homeland for safeguarding weapons, equipment, and other military property as assets belonging to the nation as a whole and the material foundation of the combat power of the USSR Armed Forces.

It was noted at the June (1983) and special February (1984) CPSU Central Committee Plenums that it is essential to establish an environment of intolerance toward such phenomena as utilization of state, public property for purposes of personal enrichment, profiteering, and all types of taking parasitic advantage of the humanism of our system. In the campaign against these evils we must consistently be supported by the activeness of the masses, the inevitable force of the law, and we must do purposeful work in the area of forming and shaping reasonable requirements and interests of the individual. This demand of the CPSU Central Committee also applies in full measure to all Air Forces personnel.

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BOMBERS CRATER AIRFIELD THROUGH UNDERCAST

Moscow AVIATSIYA I KOSMONAVTIKA in Russian No 6, Jun 84 (signed to press 3 May 84) p 16

[Article, published under the heading "Be Alert, in a Continuous State of Combat Readiness," by Military Navigator 1st Class Gds Col G. Chistyakov: "Weather Is No Hindrance"]

[Text] A group of bombers was assigned a mission at a tactical air exercise: to bomb an "aggressor" airfield situated far to the rear on featureless terrain, to demolish the runway/s, and to destroy aircraft on the ground. The regimental commander instructed the crews on the basic method of locating the targets and bombing. In case the weather changed, however, he gave alternate instructions to the senior navigator, Gds Lt Col V. Dragunov, to devise alternate aiming methods.

Analyzing the situation, the navigator decided to aim on the basis of a field-positioned radar reference point placed several dozen kilometers from the target. This was a complicated method, but it ensured the requisite reliability of accomplishment of the assigned mission. Calculations indicated that they could use this method if necessary.

Aircrews proceeded to prepare for the mission under the supervision of the squadron commander, Gds Lt Col Yu. Makarov, and the squadron navigator, Gds Maj G. Akhmetzyanov. The mission called for rapidly determining, from reconnaissance aircraft photographs, the precise coordinates of the target, aiming points for each aircrew, preparing an en-route flight plan with employment of airborne navigation gear and digital-computer aircraft position correction, as well as formulating the sequence and procedure of combined utilization of all means of navigation, especially while crossing the "line of contact" and flying deep behind "aggressor" lines.

Finally the aircrews were airborne. Crossing the simulated "line of contact" and performing the requisite navigation and bombing system check, the navigators readied their aiming gear for the strike. Soon the leader received readiness reports from the aircraft commanders.

The crew of Gds Lt Col A. Makhotkin is expert-marksman rated. They were assigned the most critical mission: to approach the target undetected and to

bomb the runway/s prior to arrival of the other aircrews, in order to prevent "aggressor" aircraft from taking off.

Military Navigator-Expert Marksman Gds Lt Col A. Libenkov carefully and thoroughly prepared for the mission. He had decided on bombing on the basis of a remote radar reference point (VRO) with utilization of airborne radar in case of deterioration of weather, but he was also prepared to operate at any time in other aiming-navigation system modes.

After setting up on target heading, the navigator quickly located the VRO on the radar screen, made an aircraft position correction and set up preliminary aiming, after which he gave the missile-evasion maneuver command.

The ground was visible from time to time as they approached the range, but ground reference points disappeared after the maneuver.

"Skipper! Solid undercast. I am going to bomb in VRO mode," the navigator reported over the aircraft intercom.

The weather complication did not catch the guardsmen unawares. The assigned mission was accomplished. The reconnaissance aircraft soon arrived with news on the strike results. The photographs clearly revealed dozens of craters produced by bombs exploding on the runway/s and flight line.

The expert-marksman crews of Gds Maj P. Androsov and R. Saberov accomplished their mission on the range with excellence. Navigators Gds Maj N. Titov and Gds Capt V. Pavlenko put their bombs precisely onto the targets.

The aircrews' success was aided by a high degree of professionalism and a feeling of responsibility for the assigned job. Each and every aviator who took part in this mission was thoroughly familiar with his duties and was aware of how much overall success depended on him. In preparing for the mission they also took into consideration the fact that the weather could change at any moment and it would become necessary to use the alternate variations which had been worked out in advance on the ground. And this proved to be a far from unnecessary expenditure of labor.

The guardsmen of the famed red-banner bomber regiment are preparing to honor in a worthy manner the 40th anniversary of the Victory of the Soviet people in the Great Patriotic War. Sixty two pilots and navigators in the combined unit of which this regiment was an element during the war years were awarded the homeland's highest honor -- the title Hero of the Soviet Union, while navigator V. Sen'ko, an expert at delivering bombing strikes on the enemy, was twice awarded this title. Today's generation of aviators is continuing the traditions of the combat veterans. Pilots and navigators are working day by day to strengthen discipline and organization and to increase the combat readiness of crews and subunits. They have plenty of results to report to the veterans.

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PARTICULARS OF SOYUZ T-11 MISSION OUTLINED

Moscow AVIATSIYA I KOSMONAVTIKA in Russian No 6, Jun 84 (signed to press 3 May 84) p 17

[Article by S. Yegupov: "Soyuz-T-11 in Orbit"]

[Text] On 3 April 1984, at 1709 hours Moscow time, the Soviet Union launched the Soyuz T-11 spacecraft, carrying a Soviet-Indian crew: spacecraft commander Hero of the Soviet Union and USSR Pilot-Cosmonaut Col Yuriy Vasil'yevich Malyshev, flight engineer Hero of the Soviet Union USSR Pilot-Cosmonaut Gennadiy Mikhaylovich Strekalov, and cosmonaut-researcher Maj Rakesh Sharma, citizen of the Republic of India.

During the first three revolutions into the mission, the crew checked the condition and operation of spacecraft systems and equipment and checked spacecraft compartment seals; the cosmonauts removed their spacesuits, which they had worn during the launch into orbit.

On the fourth and fifth revolutions they executed a maneuver in the process of which the spacecraft went into a higher orbit. Proceeding in this new orbit, the spacecraft overtook the Salyut 7 - Soyuz T-10 orbital complex, which was located ahead of them on their orbital path. The cosmonauts rested from the 6th to the 11th revolution.

On the 17th revolution the crew performed a maneuver which brought it closer to the target spacecraft, with the aid of self-contained guidance equipment. A hovering mode at a distance of 400-200 meters prior to docking is a feature of docking approach between Soyuz T spacecraft and Salyut stations.

Contact and hard docking between the spacecraft and the orbital complex occurred on the 18th revolution within the line-of-sight zone of tracking stations located in the Soviet Union. The process of closing and docking were monitored by the crew and by Mission Control Center personnel. Contact between spacecraft and orbital complex took place at 1835 hours.

Following docking and check of the seal between the spacecraft and Salyut 7, the crew transferred into the complex and proceeded to conduct experiments and research.

The crew returned to Earth on 11 April 1984. By ukase of the Presidium of the USSR Supreme Soviet, Heroes of the Soviet Union Yu. V. Malyshev and G. M. Strekalov were awarded the Order of Lenin and a second Gold Star Medal for successful accomplishment of the mission on the Salyut 7 - Soyuz orbital scientific research complex, while Rakesh Sharma, citizen of the Republic of India, was awarded the title Hero of the Soviet Union, the Order of Lenin and a Gold Star Medal.

The mission carrying a Soviet-Indian crew was flown in conformity with an understanding between the governments of the Union of Soviet Socialist Republics and the Republic of India.

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INEFFECTIVE KOMSOMOL ORGANIZATION WORK CRITICIZED

Moscow AVIATSIYA I KOSMONAVTIKA in Russian No 6, Jun 84 (signed to press 3 May 84) pp 18-19

[Article, published under the heading "Implementing the Recommendations of the Armed Forces Conference of Komsomol Organization Secretaries," by Maj N. Antonov: "Not For the Sake of Form"]

[Text] At a certain tactical air exercise a group of fighter-bombers was to strike targets behind "aggressor" lines. The group leader, Maj V. Romanenko, and his men, for the most part young pilots, after receiving mission orders studied the target area on the map and en route data, intelligence on air defense weapons, selected a flight profile and maneuver for crossing the simulated battle line and approach to target.

Following the plan devised on the ground, the group divided up upon becoming airborne. The aircraft pair led by Sr Lt S. Kuznetsov was the first to cross the "line of contact." The "aggressor" concentrated principal attention on these aircraft. The combat pilots did not have an easy time of it, but thorough preparation for the mission helped. They now executed with great precision each maneuver which had been calculated and checked time and again on the ground, thus preventing the "aggressor" from effectively employing countermeasures. In the meantime Maj V. Romanenko and the other pilots succeeded in approaching the target undetected, flying nap-of-the earth, and attacking it. After this they provided cover to the Kuznetsov pair and enabled them to deliver just as accurate a strike. The mission was accomplished.

The senior-level commander who was present at the exercise gave high marks to the pilot's performance and cited skilled actions by young officers S. Kuznetsov and V. Semenkov.

An operational newssheet, a radio newspaper, and agitators publicized this successful aviator performance. Some time later the participants in this mock combat sortie, on the recommendation of the command authorities, party and Komsomol activists, shared their experience with the men in their regiment and related how they had prepared for the mission, how they had made maneuver calculations, and what alternate plans they had prepared in case of a situation change. This talk benefited everybody, especially the young combat

aviators. On subsequent sorties they performed with the same precision and planning as their comrades had done.

There are many young people in the unit. Young Communists and Komsomol members are confidently working to master military skills. They deserve part of the credit for the fact that the outfit is maintaining its leadership position in socialist competition with other units.

The exercise discussed above is merely one confirmation of this. There are other facts as well. For example, military aviation school graduates who reported for duty to the unit last year successfully completed the orientation program. Those who had reported for duty the previous year, such as Sr Lt S. Kuznetsov, have boosted their proficiency rating and are confidently climbing the ladder of military expertise. This is a result of their high degree of labor and sociopolitical activeness, conscientiousness, persistence and perseverance, as well as well-planned work by commanders, political workers, and the party organization. Maj V. Romanenko has proven himself to be a skilled methods specialist and indoctrinator. The young aviators learn from him not only to perform assigned missions in a tactically intelligent manner, but also learn integrity, party firmness in evaluating actions, and a conscientious attitude toward every job, be it a job-related task or a volunteer community assignment.

The Komsomol organization greatly assists the command authorities and party committee in breaking in new flight-crew and technical personnel replacements. The Komsomol committee and buro devote a great deal of attention to ideological indoctrination work and constantly focus on matters pertaining to aviation personnel job training and effectiveness of socialist competition. A good deal of experience has been amassed in this area, and they have shared this know-how repeatedly with comrades from other subunits and units. At a meeting of activists, for example, Komsomol committee member Sr Lt S. Kuznetsov told how the committee and Komsomol buro organize competition among young aviators for mastering equipment rapidly. He stressed that patronship by older comrades, transfer of know-how and experience in performing a given task, scientific-practical conferences, lecture series, quizzes, and other work forms are utilized in these efforts. Nor did the officer fail to mention the difficulties which one sometimes encounters and told how they are surmounted. In the unanimous opinion of the activists, this exchange of experience and know-how was beneficial to them, because it addressed problems of concern to everybody and pointed out ways to solve them. Many people said at the time that there should be more such practical consultation sessions.

It is very important to be able to see the new and advanced and to disseminate it. It is for good reason that V. I. Lenin devoted considerable attention to this. In his well-known writing "Great Undertaking" he emphasized how essential it is to speak and write about precisely what is "achieved with /exemplary Communist work/ [in boldface], what can be achieved, and what can be disseminated throughout society, to all working people." Lenin's statements are relevant today as well. They have been further developed in the decisions of the 26th CPSU Congress and subsequent CPSU Central Committee plenums. This idea has also been reflected in the proceedings of the 19th Komsomol Congress and the Armed Forces Conference of Komsomol Organization

Secretaries, where it was stressed that Komsomol workers at all echelons must thoughtfully and innovatively approach dissemination of advanced work know-how by Komsomol organizations, involving work directed toward developing courageous, steadfast, skilled, disciplined young armed defenders of the socialist homeland who are totally dedicated to the homeland and to the party cause. Stock phrases, excessive attention to form with detriment to content, indifference and unconcern cannot be tolerated here.

Specificity, diversified work forms and methods, syntheses and conclusions -- this is what young activists are seeking in the disseminated know-how and experience of their comrades. Komsomol workers S. Khor'kov, F. Dovzhenko, N. Mochanskiy, N. Chebotarev, and S. Kuznetsov skillfully synthesize and disseminate the work experience of Komsomol organizations. And they are doing this for the sake of increasing effectiveness of training and dissemination of the finest and most advanced developments. This greatly assists them.

But sometimes things also work out differently. The activities of commanders, political workers, and the party organization are directed toward concentrating the efforts of personnel on accomplishing the difficult and critical tasks facing the collective, while Komsomol leaders display passivity, complacency, do not endeavor to focus the attention of young people on the main items, ignore useful undertakings, and fail to support valuable initiative. Such complaints are leveled at Comrades V. Stel'makh and V. Shevchuk.

Sometimes a Komsomol worker schedules a conference, seminar, meeting of activists, and decides to organize presentations by activists with exchange of know-how. No sooner said than done. And a Komsomol buro or committee secretary is given an assignment: to report how young people are participating, for example, in efficiency innovation work. The specific features of the given subunit are such that this area is not so typical of its activities. And yet a great deal of useful things can be obtained in organization of socialist competition on tasks and performance standards. However, in place of demonstrating experience and know-how, which would certainly benefit a great many, the assembled personnel engage in lengthy, useless conversations on something which they grasp only in the vaguest terms. And yet in the audience there are those who could share a wealth of experience precisely in efficiency innovation work. As a result some fail to be satisfied with what has been said, and others with what they have heard.

There are many variations of a formalistic approach to synthesis and dissemination of advanced know-how in the area of Komsomol organization work. I once read the text of a speech by Komsomol committee secretary Sr Lt Yu. Rusakov on the subject "Work Experience of the Unit Komsomol Organization in Preparing to Honor in a Worthy Manner the Armed Forces Conference of Komsomol Organization Secretaries." The presentation, encompassing all areas of this work, was accommodated on just a few pages. Several lines dealt with ideological indoctrination work, socialist competition, dissemination of technical innovations, etc. The names of the best performers were not listed, nor did it contain examples of their work performance, nor did it state what problems existed in the outfit and how they were being solved -- there was nothing of this. There was not a single word about what kind of an outfit it

was: an aviation regiment or rear services subunit? And the activist took to the lectern with this "experience" to tell about the activities of his Komsomol organization and to encourage others to honor in a worthy fashion an important event in the life of the military Komsomol organization. As a result, in place of a clear, well-planned presentation, there was phrase-mongering. Strange as it may seem, this did not serve to alert the Komsomol worker from higher-echelon headquarters, Capt P. Gerashchenko. On the contrary, the report text was printed, attractively formatted, and is being stored in a file cabinet as proof of a conducted activity, while the completion check mark has been placed in the corresponding column of the work plan.

I wanted to find out more detail about the kind of outfit in which Sr Lt Yu. Rasakov serves, what tasks are being successfully accomplished, and where they are lagging. Capt P. Gerashchenko was unable to answer these questions. Staff officers helped out. Maj V. Soloshenko discussed this signal subunit knowledgeably and in detail. Its personnel perform all tasks with marks of good and excellent. The specific features of their work are such that many young aviation personnel must master not only a principal occupational specialty but a related one as well. As an example the officer cited Pfc K. Bardzaytis. He is a driver-electrician, and when necessary can also perform other duties. And there are many such men in the outfit like Bardzaytis. In the opinion of Major Soloshenko the Komsomol organization greatly assists the commanding officer in training highly proficiency-rated specialists.

He is correct. Engr-Lt Col V. Semykin and political worker Capt V. Klevtsov confirmed that there are many good performances to the credit of the subunit Komsomol members. Many of the compulsory-service personnel have been trained to the performance level of radio unit personnel in charge, and almost half of them can perform duties in two or more related occupational specialties. Komsomol members use their own manpower and resources to repair equipment and trucks, have spruced up the stadium, boiler house, parking lot, and have built a greenhouse. They have amassed experience in rapid and high-quality training of replacement personnel, and they are effectively implementing the slogan "We shall teach you everything we know, young soldier!"

In short, there are many good things, although there are deficiencies as well. In the past, for example, violations of military discipline occurred in the outfit with some frequency. Today there are considerably fewer serious offenses. In this area as well, as the commanding officer and deputy commander for political affairs report, effective measures taken by the Komsomol organization have been indispensable.

Why is it that Sr Lt Yu. Rusakov was unable to communicate to his comrades the positive work experience by the subunit Komsomol organization or to tell about specific work forms which have proven effective? Evidently because he was not fully aware of the significance of this important activity and had taken the path of excessive attention to form with detriment to content. He wrote up several pages, attended a conference and, following the example of some of his senior comrades, put a completion check mark on the schedule.

There is no need to argue the need for an innovative, thoughtful approach to synthesis, dissemination and adoption of all valuable, progressive additions, just as it is unnecessary to argue the pernicious effect of indifference, excessive attention to form, and procrastination. The point is to ensure that words do not remain merely words, even on paper, but are embodied in concrete deeds.

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BOMBER REGIMENT MAINTENANCE CREWS STRIVE TO IMPROVE WORK PERFORMANCE

Moscow AVIATSIYA I KOSMONAVTIKA in Russian No 6 Jun 84 (signed to press 3 May 84) pp 20-21

[Interview, published under the heading "Marching in the Vanguard," with regimental deputy commander Gds Lt Col V. Karpov by a correspondent of the journal AVIATSIYA I KOSMONAVTIKA: "Reaching New Performance Levels"]

> [Text] This past period of combat training has not been an easy one for the men of the guards bomber regiment in which officer V. Karpov serves. There were instances of violation of flying discipline in the outfit. But the regimental commander and party organization succeeded in promptly determining the causes of the negative phenomena, mobilized the men for a determined campaign against indifference and complacency, and properly organized the training process. The measures taken have enabled the guards aviators to achieve new milestones in performance. As a result the unit's combat readiness has been boosted to a higher level.
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> A correspondent of the journal AVIATSIYA I KOSMONAVTIKA met with regimental deputy commander Gds Lt Col V. Karpov and asked him to respond to a number of questions.

[Question] Valeriy Anatol`yevich, with what performance results in combat and political training has regimental personnel entered the new training year?

[Answer] Continuing the heroic traditions of their regiment, the majority of pilots, navigators, engineers, technicians, and other specialists approached the end of the training year with good performance results. Two squadrons and the regimental technical maintenance unit were given ratings of excellent. More than half the aviation detachments, crews and service groups also became excellent-rated. The average mark on piloting technique, bombing and aerial gunnery was 4.68, 4.7 for navigation and 5.0 for live missile gunnery. The time required to make subunits combat ready was reduced by 5 percent. All regimental and squadron tactical air exercises received marks of excellent. Just as during the preceding 10 years, the regiment operated without air mishaps, with no near-mishap situations during the summer period. Mass sports activities also improved significantly in the outfit. Eighty-seven percent of

personnel are category-rated athletes. While duly noting achievements, we are far from complacency. Command authorities and the party organization realize that those setbacks which dogged us during the first training period were a consequence of our shortcomings. Typical in this respect is an incident which happened to officer Shcherbina during one of the flight operations shifts. A near-mishap situation almost occurred through the fault of this aviator. We concluded that it is important to prepare seriously on the ground for every training sortie and scrupulously to observe all requirements. Any departure from prescribed procedures inevitably leads to mistakes and violations, at times very serious ones. Not only the young combat pilots but the experienced ones as well must be constantly monitored and held strictly accountable. A frank, forthright discussion was held at a party meeting held later, at which the causes of errors of omission were objectively revealed and the specific guilty parties named. Communists Korolev, Repin, and Senyakin stated that in certain subunits there is no real verification of quality of preparations for flight operations, progress in competition, and moral incentives are little utilized. The leader-Communists rigorously appraised their labor and self-critically noted that they must begin with themselves, being held strictly accountable for the state of affairs in the assigned area. The subject of follow-through was sharply addressed at the meeting. But it is not enough to reveal shortcomings. The main thing is to take effective measures to correct them. Officers from higher headquarters and the political agency helped us a great deal in this. Considerable attention was devoted to improving the entire oversight system. We addressed the problem of increasing the effectiveness of every measure conducted in the regiment. Job performance analyses and receiving of party member reports have become more substantive. Matters pertaining to training and indoctrination of aviation personnel at meetings of the unit methods council were examined more energetically. Troublemakers were punished without the slightest consideration for past accomplishments. Thorough study of documents governing flight operations and unswerving observance of their requirements has become a fundamental element in the regiment. Performance testing was made highly rigorous. In my opinion the introduction of special Saturday activities has proven effective. They would be devoted to various subjects -- the art of navigation, flight discipline, more thorough mastery of the equipment, establishment of relations among crew members as prescribed by regulations, etc. On these days officer-leaders, and particularly regimental deputy commanders party members Okrestin, Karpov, and Zhuravkov, would work with the young aircraft commanders. I also visited all crews. I spoke with people, elucidated various matters, and sought to ensure that each and every officer and warrant officer was aware of his responsibility for the success of the entire outfit. I as a commander learned a great deal in the relaxed, informal atmosphere and in the frank discussions. Later this helped us do a better job of structuring training and indoctrination of the men and helped us in a more practical manner focus the party and Komsomol organizations on accomplishing current tasks.

[Question] There was a time when you were outscored by your competition rival -- the regiment under the command of Colonel Demidov. How did this happen and why?

[Answer] One night a large group of aircraft took off on a missile-firing training sortie. They were to hit "aggressor" naval targets. The leader was

absolutely confident in the proficiency of every aircraft commander and navigator. Perhaps it was for this reason that he failed to utilize all means of checking the performance of the crews. Suddenly a report came in: an aircraft had become "lost" en route! The leader was really upset. After their return it was ascertained that after taking off, Guards Major Chizhov's crew had taken a heading directly opposite to that by which the entire group was proceeding toward the target. The aircraft navigator, Guards Senior Lieutenant Drozdetskiy, was to blame. He had made the mistake not out of ignorance or inability, but entirely through his own negligence. This is unquestionably a most unusual case. But it brought a great deal of grief and unnecessary problems to the command personnel and the entire regiment! I must state that the aviators responded correctly to the incident. The men mobilized all their efforts for the campaign for new successes, in order to regain the regiment's past fame. This has been fostered in large measure by improvement of political indoctrination work in light of the demands of the 26th CPSU Congress and subsequent CPSU Central Committee plenums. Party activists succeeded in inspiring aviation personnel to full utilization of latent reserve potential. Aircrews specified new and more ambitious performance targets in combat and political training. We saw our task in instilling in each and every serviceman pride in the regiment's honor and in increasing a feeling of personal responsibility for further strengthening of combat readiness, for flight safety and for maintaining strict observance of regulations. We once against reminded the guardsmen that in conditions of a serious deterioration of the international situation, when the current U.S. Administration is rushing from one military adventure into another, it is our sacred duty to the homeland tirelessly to increase vigilance and combat proficiency and to be prepared at all times to carry out our assigned combat mission. We have also begun devoting more attention to psychological training of aircrews, as well as taking an interest in the work performance of each and every officer, and mutual relations within the collective. And the men have begun carrying out their duties with a stronger sense of responsibility.

[Question] Your regiment, Valeriy Anatol'yevich, is rich in fine fighting traditions. How are they being utilized in training and indoctrinating aviator personnel?

[Answer] During the Great Patriotic War the men of our regiment fought courageously against the enemy. They added a great many bright pages to the heroic chronicle of the Air Forces. Almost 40 years have passed since the day of our Great Victory. But the military deeds of the men of our regiment are at the forefront today as well, and we are constantly armed with their experience. Many regiment veterans, who are in the reserves or retired, maintain close contacts with us, frequently visit their regiment, get together with personnel, and take active part in youth military-patriotic indoctrination. Can one forget the names of those who on that August night in 1941 flew their formidable aircraft to the capital of Hitlerite Germany and carried out a bombing raid, the names of those who in savage battles earned the regiment the guards appellation and who added to its combat fame by their deeds? Eleven winged heroes of this unit have been awarded the title Hero of the Soviet Union. Some of them are no longer among the living but our memory of them is sacred. There are special display boards in the regiment's combat glory museum with newspapers from the front and archival materials relating

heroes' exploits. Here in the museum, where priceless mementos of the war years have been gathered, one senses particularly strongly a feeling of responsibility for carrying on the tradition, and one perceives with great seriousness the behest of the war veterans to the present generation of guardsmen to continue the veterans' cause in a worthy manner. The force of combat traditions and their enormous emotional effect on people's consciousness are extraordinarily great, and one must skillfully disseminate them.

[Question] What can you tell us about the contribution by aviation engineer service personnel to the regiment's overall success?

[Answer] In this past training period the unit aviation engineer service worked at full effort. Time and again the specialists were faced with complex technical problems. And on every occasion the men led by Engineer-Lieutenant Colonel Nosach have solved these problems successfully. I remember how on the eve of a tactical air exercise four engines were delivered, which were to be installed on aircraft on a priority basis. But little time remained. What was to be done? Technical maintenance unit supervisors spoke with the maintenance specialists and explained to them the importance of this job. And the men, as they say, outdid themselves: they worked without sleep or rest until they had fully readied the aircraft. On this occasion a particularly distinguished job was done by the specialists of the maintenance groups led by Guards Captain Technical Service Oleynik and Guards Lieutenant Technical Service Marunkevich. Aviation engineer service personnel have done a great deal to maintain aircraft in a continuous state of combat readiness. Incidentally, more than 70 percent of our aircraft are maintained in an exemplary condition, and the mark of Excellent can be seen on their fuselage. The men worked hard, with a great deal of enthusiasm. The crews contain for the most part top proficiency-rated specialists, and more than 20 percent have earned the master rating. Aviation engineer service specialists have suggested a great many interesting initiatives and unique devices for helping maintain a high aircraft equipment combat readiness factor! Recently there has been a change in the appearance of our classrooms and aircraft flight lines. A new aviation engineer service command post has been built to replace the old one, on the initiative of the regiment's engineers. This is a unique aviation engineer service headquarters, equipped with an entire aggregate of modern electronic gear, which helps the duty engineer direct the operations of the maintenance specialists with precision in the course of flight operations shifts. Guards Engineer-Lieutenant Colonel Nosach, Guards Engineer-Major Aleksandrov, and other of the regiment's innovators took active part in setting it up. Engineer-supervisors boldly utilize advanced methods in maintaining aircraft systems. Scientific organization of labor is being increasingly more vigorously adopted, and maintenance specialist work stations are being improved.

Gds Lt Col V. Karpov stated in conclusion: "The personnel of our aviation regiment are working in a good frame of mind. People profoundly understand the entire complexity of the present international situation and are vitally

concerned with further increasing combat readiness and boosting the number of excellent-rated crews and servicing teams. We are doing everything possible to confirm this year the lofty title of excellent regiment."

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WRITERS URGED TO EXTOL MILITARY PROFESSION

Moscow AVIATSIYA I KOSMONAVTIKA in Russian No 6, Jun 84 (signed to press 3 May 84) p 22

[Article by Col Ye. Besschetnov: "Celebrate the Courage of the Winged Ones"]

[Text] In connection with an approaching illustrious date -- the 40th anniversary of the Victory of the Soviet people in the Great Patriotic War, the Air Forces Military Council and Political Directorate held in Moscow at the end of March a get-together with writers and journalists working on this heroic-patriotic theme. Writers whose works, which have reflected the noble countenance of this country's courageous defenders, have won wide reader acclaim came to discuss with heroes of the terrible war years and working days of peacetime pertinent questions pertaining to their future writing. They include I. Stadnyuk, G. Semenikhin, R. Rozhdestvenskiy, V. Karpov, Ye. Vorob'yev, L. Vasil'yeva, and others.

The gathering was addressed by the commander in chief of the Air Forces -- Deputy Minister of Defense USSR Chief Mar Avn P. S. Kutakhov, and Col Gen Avn L. L. Batekhin, member of the military council and chief of the Air Forces Political Directorate. They noted that the 26th CPSU Congress, subsequent CPSU Central Committee plenums, and speeches by Soviet leaders and get-togethers with veterans of the party, labor, and the Armed Forces opened up before Soviet writers and journalists broad prospects in the area of creating works on a heroic-patriotic theme and inspired them to new creative quest. Today, in conditions of sharp aggravation of the international situation and acute ideological confrontation between two opposing societal systems, the role of literature and art in ideological-political and moral-indoctrination of Soviet citizens, particularly the younger generation, has grown immeasurably.

It was noted at the get-together that the solid ties between the creative intelligentsia, the army and the Air Forces have a long tradition. It has become a customary thing for wordsmiths to serve on press teams at large-scale field exercises and maneuvers, to visit military units, and to discuss matters of combat training on the pages of the Central newspapers and magazines. Last year about 40 writer teams visited a great many aviation garrisons and met with readers. Such field trips are fruitful, enriching the intellectual world of our servicemen on the one hand and expanding writers' knowledge about

military life on the other. Creation of a number of memorable works of military-patriotic resonance, which have taken a solid position in the treasure house of Soviet literature, has constituted a result of creative ties which have grown stronger year by year.

This present get-together, held within the framework of preparations to celebrate the 40th anniversary of Victory, it was emphasized in the addresses, not only sums up certain results of the activities of writers who have dedicated their writings to a heroic-patriotic theme. They are called upon to focus them toward creation of new writings on men in uniform, including our aviators. Clear-cut points of reference in this matter were pointed out at the June (1983) CPSU Central Committee Plenum, at which it was noted that an individual, especially a young man, needs an ideal which embodies nobility of goals in life, ideological conviction, industriousness, and courage.

Such heroes do not have to be invented. They are right here beside us. They include those who experienced the crucible of the Great Patriotic War, and they include those who, inheriting the fame of the combat veterans, are carrying out their patriotic and international duty with dignity and honor, who in days of peacetime have been awarded coveted government decorations. One need only have the ability to penetrate into their life and spiritual world, to understand the sources of their nobility, courage, military expertise, and outstanding fighting qualities, to reveal their unique countenance on the pages of books in a persuasive and graphic manner, in images which are not forgotten.

Unfortunately one rarely encounters among new titles an interesting, profound, content-filled work about aviators. Some authors, instead of addressing the problems of the job of commander and flier, instead of showing the most important elements in the work of the people of this courageous profession, become carried away with emphasis on domestic life, focusing on made-up petty intrigues and passions, reducing the principal content of their books to revealing the troubles of a romantic triangle which sets one's teeth on edge. Triviality of subject matter, a superficial approach to examination of the root problems in the lives of pilots, engineers, and technicians, to presenting their rich spiritual world frequently ruin a serious theme and cause annoyance and refusal to accept the ideas presented in works.

In his address the commander in chief of the Air Forces, speaking about today's Air Forces, which are equipped with highly complex aircraft systems, stressed that not only solid physical conditioning but also, and primarily, solid ideological conviction and excellent moral-psychological qualities are demanded of a person who flies or maintains formidable combat equipment. There is nothing else like serving in the Air Forces. The finest qualities of people of truly heroic professions are particularly clearly revealed here as in no other branch of the Armed Forces. Every one of these individuals is a person with an interesting destiny, a unique and distinct character, who has experienced a stern school of combat maturing. The life and combat training of aviation personnel can serve as a source of profound artistic syntheses and creation of moving images which embody the traits of faithful sons of our homeland, patriots and internationalists, worthy inheritors and continuers of the fine revolutionary and fighting traditions of the Soviet people.

It was noted in the speeches that writers could reveal the unique romance of service in the Air Forces, could display broadly and fully, throughout an entire diversity of life manifestations, the persons of those who fly the powerful supersonic aircraft and ready them for flight, thrilling youth with the beauty of ideals, helping them, by their vivid, persuasive word, in choosing a career to see more clearly the prospects offered by service in military aviation. The speeches by the commander in chief of the Air Forces and the chief of the Air Forces Political Directorate contained an appeal to writers to extol the courage and heroism of pilots, who experience enormous speeds and altitudes, and their reliable assistants -- engineers, technicians, and specialists of the various services, depicting their valiant military labor.

It was emphasized at the get-together that principal attention should be focused on showing the heroism of the working days of peacetime, the highly moral conduct of men guided by great and lofty aims, who display steadfastness and firmness of character in a difficult situation. It is important that the created images have the ability to inspire the reader to good deeds, serving as an ideal and model of conduct. It is essential to focus Soviet youth toward deeds not in the distant future but today: today, right now there is opportunity to perform deeds and exploits. Precisely this is indicated by the heroic deeds of many of today's aviators who have been awarded coveted government decorations.

A festival of literature and art dedicated to the 40th anniversary of Victory is being held in aviation units. There was voiced at the get-together an appeal to writers and representatives of other unions of creative artists to take active part in this festival, to utilize it further to strengthen bonds with the military, with the Air Forces.

Yu. Verchenko, secretary of the board of the USSR Union of Writers, Hero of the Soviet Union V. Karpov, chief editor of the journal NOVYY MIR, and V. Gol'tsev, head of the military department of the newspaper IZVESTIYA took part in discussing the problems which were raised. They warmly thanked the Military Council and Political Directorate of the Air Forces for the useful, interesting get-together and related what is being done by the USSR Union of Writers and Union of Journalists to prepare for the 40th anniversary of Victory, and they shared impressions on their visits to line units and plans to strengthen creative ties with servicemen. In summary, Chief Mar Avn P. S. Kutakhov, commander in chief of the Air Forces and USSR deputy minister of defense, expressed his conviction that this get-together would serve as an important stimulus for writers and journalists in creating new works about people of a heroic profession -- military aviators, who are honorably carrying out their duty to the homeland.

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GLIDER FLYING SUGGESTED FOR TEACHING BASIC PILOT SKILLS

Moscow AVIATSIYA I KOSMONAVTIKA in Russian No 6, Jun 84 (signed to press 3 May 84) p 27

[Article, published under the heading "In Response to Our Articles," by A. Zubov, instructor, Department of Aerodynamics and Dynamics of Flight, Syzran Higher Military Aviation School for Pilots: "Encouraging the Development of Soaring"]

[Text] In an article entitled "Undeservedly Forgotten" (AVIATSIYA I KOSMONAVTIKA, No 6, 1983), writer V. Kazakov drew the reader's attention to the development of glider flying, which he considers to be the most economical and efficient means of initial pilot training and increasing pilot skills. The author acquired a great deal of flying experience in the period of development of Soviet aviation during the first five-year plans and the Great Patriotic War. Citing statistics on pilot training abroad, he sees the following as the principal sequence of efficient pilot training: hang glider - sailplane - airplane.

We must agree with many of the arguments he presents in favor of glider flying. Indeed, soaring helps form basic flying skills and helps reveal the abilities and individual peculiarities of student pilots. A sailplane can also be used as a trainer aircraft for working on various training and special problems.

At the same time, proceeding from the arguments presented in the article, it is no easy matter to give an unequivocal reply to the question: "Will a sailplane be effective in basic training of pilots at aviation schools of the Air Forces and Civil Aviation?" Modern medical and psychological examination and testing methods make it possible to a sufficient degree to reveal in secondary-school graduates qualities which preclude mastering the flying profession. On the other hand, changing training programs, providing training on sailplanes and reducing training time on modern aircraft demands thorough analysis and experimentation. It seems to me that success in such an endeavor will depend in large measure on the type of aircraft which the student pilot will subsequently be proceeding to master. In my opinion the different coordination of movements in taking off and landing in a helicopter and sailplane could produce a negative effect.

Development or, stated more accurately, mass revival of soaring as a sport in DOSAAF flying clubs would be fully in keeping with the party demands articulated in the decisions of the June (1983) CPSU Central Committee Plenum and the aspirations of our young people. One must agree that young secondary-school graduates would be hard put to resist the offer to learn to fly on a sailplane. But nobody is offering....

I can see practical embodiment of the ideas which V. Kazakov presented for discussion in the following. We must expand the network of flying clubs, soaring and hang-gliding clubs within the DOSAAF system, utilizing aviation school facilities for these purposes. There would be obvious benefit to be derived from such a move, both as regards saving the state money in training sport glider pilots and in selecting candidates for enrollment in aviation schools.

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IMPORTANCE OF PILOT-INSTRUCTOR CONTRIBUTION NOTED

Moscow AVIATSIYA I KOSMONAVTIKA in Russian No 6, Jun 84 (signed to press 3 May 84) pp 28-29

[Article, published under the heading "Military Educational Institution Affairs," by Honored Military Pilot USSR Maj Gen Avn I. Zheleznyak: "The Instructor Is an Educator"]

[Text] The Order of Lenin Red-Banner Kacha Higher Military Aviation School for Pilots imeni A. F. Myasnikov is our country's oldest military pilot training institution. Since its establishment it has provided the homeland with a great many winged defenders. By their heroic deeds in peacetime and during the harsh years of the Great Patriotic War, the school's graduates have built upon the fine fighting traditions of our Air Forces. Three hundred and eleven of its graduates have become Heroes of the Soviet Union, and 14 of these were twice awarded this title. The deeds of twice Heroes of the Soviet Union Amet-Khan Sultan, I. Stepanenko, B. Safonov, D. Glinka and other famed air aces of the Great Patriotic War constitute a worthy example for our winged youth.

Today Kacha graduates are vigilantly guarding our country's vast blue skies. Many are commanding aviation units and combined units, are passing on their experience and knowledge to the younger generation of military pilots, while some have been given the honor of teaching those who are taking their first steps in mastering the flying profession.

There is a folk saying that eagles are born in eagle's nests. Service school pilot instructors stand at the headwaters of the professional expertise and subsequent service successes of school graduates. These are people who are totally dedicated to their homeland and to the noble cause of training pilot cadres. Kacha has always been proud of them. The names of famed pilots M. Yefimov, K. Artseulov, G. Gorshkov, S. Trofimov, and A. Zhabrov stand permanently inscribed in the school's history. Flight training methods were formed and shaped under their influence, and they personally trained dozens of outstanding combat pilots and patriots of the socialist homeland. During his tenure at Kacha, pilot-instructor Sr Lt Pashkov trained 122 pilots, while Lieutenants Kalinin and Butskiy trained 80 apiece. Their pupils fought on the battlefronts of the last war, successfully demonstrating in aerial combat with

fascist flying aces the science of victory which they had learned at the school.

Pilot-instructors are experienced teachers and indoctrinators. They have been given the right to say to their pupils: "Do as I do." Gradually, step by step, they lead their charges to flying expertise and instill in them a love and respect for their profession.

Lt Cols V. Korobchenko and O. Chernyshov, Majs P. Bezyayev, V. Popov, V. Zykov, A. Chuprov, P. Legotin, A. Isakov, and V. El'bakyan, and Capt Yu. Labuzin have proven themselves experts at their job in training highly-skilled pilot cadres who are dedicated to the party and people. Young pilot-instructors Sr Lts M. Derzhavskiy, M. Mikhaylov, V. Sokolov, S. Molotkov, and V. Kurochkin, and Lt V. Timofeyev are successfully mastering flying methods expertise. Together with the instructors of the flight training section, they work purposefully and painstakingly with each individual pilot cadet. These are specific features of training pilot cadres at aviation schools.

Training of flight instructor personnel constantly occupies the center of attention of the administration, political section, party and Komsomol organizations. A great deal of experience has been amassed at our school in forming moral-political, psychological and educator qualities in pilot-instructors. This work is highly goal-directed and is conducted in a consistent manner. Initially the young aviators are given a special orientation program. There is another program for pilots who already have experience in flight instruction activities. As a result of all these measures, the instructor should have the ability to teach a young man to fly with skill and instill in him excellent moral-political, fighting, and psychological qualities. And although training and indoctrination constitute a unified pedagogic process, these areas have their own characteristic features.

Each year yesterday's school graduates replenish flight instructor ranks. Young officers who possess the best abilities in flying technique and the greatest knowledge in the social, general technical and specialized sciences are selected to be flight instructors. We try to identify young men with inclinations for flight instruction work while they are still at the earlier stages of their own training. As a rule these are the best students, cadets who are disciplined and actively involved in volunteer activities.

Of course it is impossible to say upon initial acquaintance that a person is a born instructor. But Lt Yevgeniy Oblakov, a 1983 graduate, is suited in every way to be an instructor. He is knowledgeable, smart in appearance, cool and composed. He has been repeatedly elected to executive Komsomol bodies. He was awarded a stipend by the Volgograd Oblast Komsomol Committee for excellent grades and activist Komsomol work. He is totally dedicated to aviation. He prepares carefully and thoroughly for every flight, and therefore he easily mastered the flight curriculum. And a very important factor -- he has the ability to exert a positive influence on student pilots.

There is a certain type of person for whom it is not enough to be a vanguard performer himself. They always want others to do well also. They are pleased

at the success of their comrades, they help them if there are any problems, and they have the ability to speak frankly if a person is doing something wrong. Lt Ye. Oblakov is such a person. And it is not surprising that his superiors directed attention to him in making selections for instructor slots. We must state that flight and squadron party and Komsomol activists, with whom the administration conferred, took part in determining his future.

Experience has shown that enlisting as instructors persons who have been directly involved in indoctrinating pilot cadets helps avoid many mistakes. One can be absolutely confident, for example, that last year's graduates Lts Sergey Voloshin, Sergey Kruglikov, and Vladimir Baranov will in time take their place in the ranks of the school's finest instructors. But to accomplish this it will be necessary to work a good deal with them, in order comprehensively to prepare them for teaching activities.

Breaking in young instructors is a painstaking job, requiring constant attention on the part of commanders, party and Komsomol organizations. This work is planned and begun from the very time graduates begin their new assignments. The school's best methods experts hold classes with them in aerodynamics, aircraft equipment, navigation, and other subjects in the commander training curriculum. Special importance is attached to a series of lectures and seminars on flight instruction science. Last year they were conducted by Candidate of Psychological Sciences and Docent Col D. Gander, who has devoted decades to flight instruction.

The young officers derived much benefit from the concluding seminars, which dealt with pilot-instructor teaching expertise. The instructor skillfully lead the lieutenants into a discussion on what traits possessed by their mentors they would like to emulate, and which ones they would not. There were no indifferent individuals at the seminar. Lts S. Panasiy, V. Stulov and others stated that Majs V. El'bakyan, V. Vorontsov, and Yu. Prikhod'ko would always be an example for them, for they not only flew fighters with great skill and possessed excellent knowledge of the equipment, but also had the ability to reach the heart of each and every student. It was also stated that respect for the pilot-instructor as an indoctrinator and mentor would be diminished if he displayed rudeness, tactlessness, and arrogance, if he indulged favorites in his group of student pilots and tried to give them special breaks, if he lacked the ability to cheer up a student before a training flight and was unable thoroughly to analyze a flight and find the cause of student's mistake.

A young pilot-instructor's subsequent development takes place in the training squadron. Here he is given the opportunity to work independently.

The joyous day arrives -- initiation into the profession of military pilot-instructor. A person remembers this day his entire life, just as he remembers his first solo. Party and Komsomol activists have devised an initiation ceremony. Each young officer is presented a certificate. Words by the poet N. Dorizo appear on the first page: "We need no better field for takeoff than this holy ground of Stalingrad." It also contains a message to the person being initiated, stressing the importance of the honorable profession of pilot-instructor, who opens up a new world to student pilots, who equips them

with knowledge, indoctrinates and enriches them spiritually and intellectually. The pamphlet-certificate contains methodological advice and recommendations.

Thus the young officer has become a pilot-instructor. But work with him continues. And it will continue as long as he is teaching and indoctrinating future combat pilots.

Indoctrination of the indoctrinators is a most important element of military pedagogic activity. Commanders and political workers, party and Komsomol organizations are constantly concerned with the ideological conditioning of flight instructor personnel and growth of their professional and pedagogic skills. Officers of the flight methods and flight training sections take part in this important, critical work. Recently, for example, the question of participation by officer-instructors in improving the professional training of flight instructor personnel was specially discussed at a meeting of the flight training section party committee. The school's methods council and party organizations focus attention on these matters. Analysis of comments about graduates from past years enables us more clearly to see both positive elements and weak points in work with pilot cadets.

In the school's flying subunits there is constantly in progress a search for new forms of developing excellent moral-political, fighting and psychological qualities in pilot-instructors. Competition for the title "Landing Champion" and for the privilege of flying a training sortie in the place of a Hero of the Soviet Union have firmly become training and indoctrination practices. For example, in the subunit in which Maj V. Basyuk serves as party organization secretary, last year young pilot-instructors Sr Lt V. Stratan and Lts A. Fonov and A. Nikolayev flew training sorties in place of Hero of the Soviet Union Georgiy Kuz'min. Last year's graduates A. Sayenko and V. Rogozin, when they were fourth-year cadets, also earned the privilege of making a flight in place of a Hero of the Soviet Union. They are now pilot-instructors at their alma mater.

Party organizations are concerned with ensuring that measures conducted by pilot-instructors, flight and squadron commanders are distinguished first and foremost by lofty ideological content. All officers have personal ideological-theoretical advancement plans, and reports by Communists and Komsomol members are periodically presented at meetings of the appropriate buros.

As a rule excellent moral-political, psychological and pedagogic qualities are developed at our school in a combined manner. A university of psychology knowledge is operating at the school for this purpose, at which pilots are given lectures on psychology of flying labor and the military collective. Reader conferencess on books written by Soviet military aviation commanders who are veterans of the Great Patriotic War, debates and conferences on military education science, and particularly on flight training, are very popular. Exchange of experience and know-how of leading instructors is regularly conducted in the squadron in which Lt Col V. Mayorenko serves as deputy commander for political affairs. Thorough preparations are made for such an event, especially during transition to new flight training categories.

The squadron devotes considerable attention to publication of operational newssheets, which present information on the best indoctrinators.

In working with flight instructor personnel, commanders and political workers utilize examples of competent actions by instructors in difficult situations, training films, talks on the history of aviation and on the heroic spirit of wartime and peacetime. For example, the Communists in the air squadron in which excellent rated pilot-methods specialist Maj V. Vorontsov serves as party buro secretary prepared an album reflecting the history of the squadron from the day it was established. Soviet pilot-cosmonaut V. Shatalov earned his wings in this subunit, later becoming an instructor in the squadron. Several test pilots and officers who today are successfully commanding combined units and units also gained their wings in this squadron. An honored place in the album was given to the best methods-specialist pilots of all generations.

Our school follows the practice of honoring vanguard pilot-instructors. This unquestionably enhances the authority of the pilot-educator and the prestige of this profession.

Of course not all problems have been resolved, however. One still encounters pilot-instructors who dream of being assigned to a line unit, to a test-pilot job, or to the space program. And the point lies not in the difficulties of the instructor's job. It has been ascertained from conversations that some individuals believe that the flight instructor job is impeding their professional advance as pilots. Of course regular intensive flights with student pilots reduce the time available for personal flight training, and a certain monotony of flying activities diminishes interest. It has been determined, however, that this is an entirely correctable situation. We now devote greater attention to organization and conduct of instructor flying involving complex combat training maneuvers. They are enlisted to participation in live-fire tactical air exercises. Results are encouraging. The instructors themselves learn the skills essential in war. They enjoy greater prestige with the pilot cadets, and a larger number of graduates desire to remain at the school in instructor jobs.

Pilot-instructors represent a special detachment of educators in military aviation. Their work possesses characteristic features, and they must master qualities which are not always developed even by an aggregate of measures. In our opinion students should be selected for this work from their early years at school, and their student promotion fitness report should specify qualities which can be developed in the future. We also feel that considerable benefit could be derived by establishing (even if on an experimental basis) a faculty of pilot-instructors, in which future pilot-instructors would be trained beginning with the third or fourth year, expanding the flight training methods and education science curriculum, putting them in the rear seat during a portion of flight training. In the final analysis, constant concern with improving the moral-political, psychological, and pedagogic qualities of

pilot-instructors will help accomplish the important tasks of the military higher aviation school.

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INVESTIGATION OF SOLAR WIND, MAGNETOSPHERE PLASMA REVIEWED

Moscow AVIATSIYA I KOSMONAVTIKA in Russian No 6, Jun 84 (signed to press 3 May 84) pp 30-32

[Article, published under the heading "The Space Program Serving Science and the Economy," by Candidate of Physical and Mathematical Sciences T. Breus: "Natural Laboratory for Scientists"]

[Text] With the advance of the space program, scientists working in the fields of plasma physics and astrophysics have had an immense natural laboratory placed at their disposal for research activities. In April it was announced that 1984 Lenin prizes in the area of science and technology have been awarded to Soviet scientists R. Sagdeyev and A. Galeyev. Their classic studies in the field of plasma physics have been confirmed in space. This article discusses some of this research.

The age of the Earth -- a unique planet of the Solar system -- is approximately 4.5 billion years. Intelligent life has existed on our planet for only 2-3 million years. One can state that mankind is young. And with the curiosity characteristic of youth, man does not cease to be interested in the puzzling and engrossing world around him. Successes in gaining knowledge of this world are achieved thanks to the solid foundation of many sciences, including the natural sciences to a substantial degree.

The path of advancement of a contemporary ideology in the field of the natural sciences has been a thorny one: from literally fantastic hypotheses and conclusions to the accumulation of experience and intelligent experimentation, increasingly more complex, which swept away fantasy and untenable theories, which discovered the laws governing nature. We should emphasize that the correctness of ideas on laws of nature are confirmed by the immense technical achievements and successes of the applied fields of knowledge, which are achieved with application of these laws.

It is correct to state that the entire history of the natural sciences is inseparably linked with study of the universe. The very term [kosmos] has had various content at different stages. For a long time the universe and space were equated with one another, while "celestial" phenomena were considered the realm of astronomy. In the last decades, when the solar system has been

explored with the aid of spacecraft, a certain demarcation of these terms has taken place. Space has begun to be restricted to that region of the universe which is accessible to direct investigation. In connection with this we should like to discuss one of the most important areas of space research, which emerged at the dawn of the space age -- plasma physics.

The roots of plasma physics extend back to gas electronics. In 1929, Irving Langmuir used the term plasma to designate matter produced as a result of an electrical discharge in a gas. This term began to be equated with the term "ionized gas." As was later ascertained, however, in actuality the matter was much more complex.

The entire universe, the stars, including our sun, the interstellar and interplanetary medium, the upper layers of planetary atmospheres (ionospheres) -- in short, approximately 99 percent of the matter in our galaxy -- consists of plasma. As a rule this is magnetized plasma, and in the interplanetary and interstellar medium it is in addition highly rarefied. Planets, the nuclei of comets, interstellar dust, and pulsars are the sole exception.

How did it happen that right up to the 1940's astronomy got along without the concept of "plasma"? The fact is that astronomy was grounded on static concepts, and astronomers were interested primarily in such problems as the internal structure of stars, for which consideration of the role of magnetic fields was unimportant. In recent decades scientists began to turn their attention toward transient processes, and radio astronomy developed, for which propagation of radio waves in a plasma (the Earth's ionosphere) is of great significance. It was determined that transient processes can be understood proceeding from the concepts of plasma physics.

Plasma physics became established as an independent field of science for the most part in the last 30 years, when intensive research was conducted on "hot" laboratory plasma for the purpose of accomplishing controlled thermonuclear reactions. With the development of space exploration, however, plasma physics and astrophysics had at their disposal a gigantic natural laboratory, which was far beyond what was possible in terrestrial conditions. This natural laboratory lacks "walls," which often distort laboratory experiments.

The experimental approach began with investigations by Birkeland, who was the first to attempt to link physics of laboratory plasma and plasma in space. Observing aurora borealis and magnetic storms on Earth, he endeavored to understand the nature of these phenomena with the aid of his famous experiments with a terella -- a metal sphere possessing a magnetic field, immersed in plasma. He identified glowing plasma rings detected in the vicinity of the sphere's poles with the aurora borealis regions on the Earth and, as we now know, this conclusion essentially proved correct.

At the beginning of the 1960's it was discovered with the aid of spacecraft that all interplanetary space is filled with highly tenuous streams of hydrogen-helium plasma, flowing out from the sun at supersonic speed. This is the so-called solar wind. It is magnetized in such a manner that the sun's magnetic lines of force "adhere," as it were, to the ionized gas, "frozen" into it. All the planets are immersed in this stream. Its interaction with

them is determined by whether the planets have their own magnetic field (Earth, Jupiter, Saturn, Mercury), or whether they do not (Venus, for example).

The magnetized solar wind can roughly be viewed as a fluid. A shock wave is formed when it streams past a planet, similar to a supersonic aircraft in air. It is called a collisionless bow wave. The solar wind was first measured by the Soviet "Lunnik" vehicles. It was ascertained that its interaction with the Earth's magnetic field is manifested in a number of plasma phenomena, the largest-scale and most substantial of which are the formation of a bow wave in the vicinity of the Earth, the magnetosphere with its extended plasma-magnetic tail extending beyond the orbit of the Moon, radiation belts, a plasma and neutral (in the sense of absence of magnetic field) layer (Figure 1).

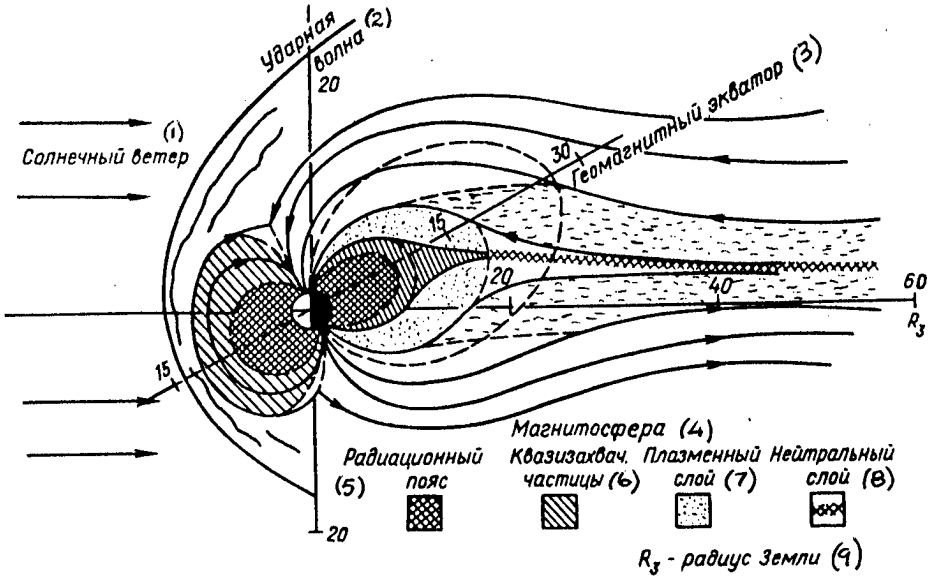

Figure 1. Diagram of interaction between the solar wind and the Earth's magnetic field. Plasma-magnetic structures within the magnetosphere, which form when the solar wind streams past the Earth, are designated by various hatchings.

Key: 1 -- solar wind; 2 -- bow wave; 3 -- geomagnetic equator; 4 -- magnetosphere; 5 -- radiation belt; 6 -- quasi-captured particles'; plasma layer; 8 -- neutral layer; 9 -- Earth's radius

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The formation of a collisionless bow wave in plasma, and in particular in the solar wind streaming past a planet, proved to be a totally new effect. Because the solar wind is very tenuous, plasma particles collide extremely rarely, and their mean free path (the distance traveled by a particle from one collision with a like particle to the next) frequently exceeds the dimensions of such gigantic bodies as a planet. But if this is so, how do the solar plasma particles "learn" about an obstacle long before they collide with it, why do they not slip past it, and what is the mechanism of their interaction

with planets, for example? Why is it that a shock wave arises by the Earth and the other planets, similar to the shock wave which develops with an aircraft flying at supersonic speed in the atmosphere, where a substantial role in its formation is played by collision of particles of atmospheric gas?

Of fundamental significance for understanding this and other phenomena in physics of space plasma were basic studies and laboratory investigations of collisionless shock waves in plasma, begun at the end of the 1950's by a group of Soviet plasma physicists, headed by Academician R. Sagdeyev. Subsequently he, his colleagues and students extended the results of these investigations to physics of space plasma. The notion of a magnetic plasma trap which they developed played a determining role in gaining an understanding of the physics of the Earth's magnetosphere and radiation belts. It made it possible to understand to a considerable degree the mechanisms of pouring of particles from the magnetosphere and its radiation belts into the dense layers of atmosphere, as well as such phenomena as the aurora borealis, ionospheric and geomagnetic disturbances.

In recent years thousands of experiments have investigated the properties of plasma, the magnetic fields of planets, and the interplanetary medium. Large-scale international projects have been conducted in the laboratory of space. Physicists have not simply engaged in observations and measurements but have endeavored to reproduce various plasma phenomena, that is, have conducted active experiments. They include the Soviet-French "Araks" experiment, carried out in 1978. During this experiment streams of electrons were "injected" into the Earth's magnetosphere at the southern end of the magnetic tube of force of the terrestrial dipole field. Captured in a magnetic trap, they propagated along the tube of force toward its opposite end, interacting with dense layers of atmosphere and causing an artificial aurora borealis.

Concepts on the Earth's magnetosphere changed as scientific experiments became larger and more complex. As we know, the geomagnetic field impedes the solar wind flow and forms a gigantic cavity in it -- the magnetosphere. At first it was believed that the solar wind can penetrate it only through "funnels" in the region of the geomagnetic poles, where intensity is close to zero. This means that the daylight region of the magnetosphere is absolutely impermeable to solar wind and the plasma structure of its boundary (magnetopause) is extraordinarily thin -- in the order of hundreds of kilometers.

This has proven not to be so. It was discovered as a result of experiments conducted on Soviet Prognoz satellites and the Soviet-French "Arkad" project, carried out on the Oreol 1 and Oreol 2 satellites in 1974-1975, that solar plasma can infiltrate through the day-side magnetosphere. Soviet physicists specializing in plasma theory explained that this phenomenon is caused by reconnection, by adhesion of opposite-direction force lines of the terrestrial and interplanetary magnetic fields under the effect of the onrushing stream of magnetized solar plasma on the Earth's magnetic field. As the point where adhesion occurs, the magnetic field disappears (annihilates), forming "holes" in the magnetopause, through which plasma freely penetrates both into and out of the the Earth's magnetosphere.

An analogous phenomenon -- reconnection and adhesion of opposite-direction force lines of the Earth's magnetic field proper in the midplane of the magnetospheric tail or neutral layer (Figure 1) -- can lead to rupture of the bundles of force lines of the tail and the occurrence of accelerated plasma streams ejected from the region of the rupture toward the Earth and into the tail. As Soviet physicists have shown, it can cause considerable variables in the Earth's magnetic field (magnetospheric substorm).

All this and a great deal else remains to be carefully investigated with interesting projects in the area of space plasma which are in the planning stages.

The possibility of taking simultaneous measurements by identical equipment at separated locations in space is of great significance for the space laboratory, just as it is, incidentally, for a terrestrial laboratory. Simultaneous satellite and ground investigations conducted within the framework of the MIM -- "International Magnetosphere studies" -- program made it possible comprehensively to study various properties of one and the same phenomenon.

Prognoz satellites have already begin carrying out the Soviet-Czechoslovak "Intershok" project. Its aim is to investigate the structure of interplanetary and circumplanetary collisionless shock waves (Figure 2).

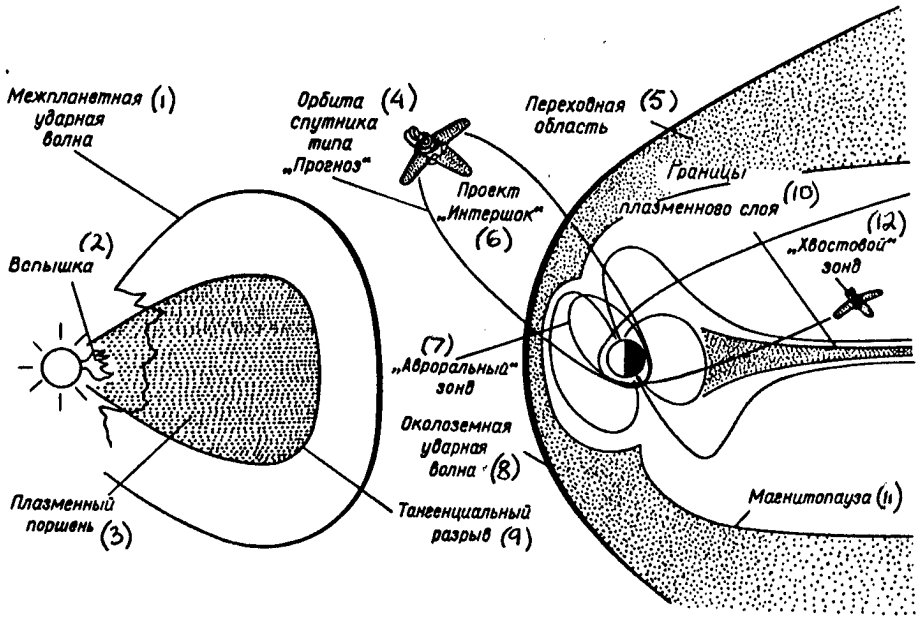

Figure 2. Schematic diagram of execution of two international projects on Prognoz satellites -- "Intershok" and "Interbol." Those phenomena in interplanetary space which will be investigated are also shown.

Key: 1 -- interplanetary shock wave; 2 -- solar flare; 3 -- plasma piston; 4 -- orbital path of Prognoz satellite; 5 -- transitional region; 6 -- "Intershok" project; 7 -- "Avroral'nyy" [auroral] probe; 8 -- Earth bow wave;

9 -- tangential burst; 10 -- boundaries of plasma layer; 11 -- magnetopause; 12 -- "Khvostovoy" [tail] probe

A specific feature of this project is investigation of the fine structure of the boundaries existing in near-planet space: the near-Earth shock wave front, the boundary of the magnetosphere -- the magnetopause, gaps in the parameters of the interplanetary medium connected with ejections of matter during solar flares. The orbital parameters of the Prognoz satellite enable it to intersect all target regions of circumterrestrial space and to enter the interplanetary medium. Since the target boundaries are 100-1,000 km thick and frequently move at a velocity of 1,000 km/s, the equipment should be first and foremost high-speed and high-resolution. The special on-board data recording and processing system makes it possible automatically to measure the rate of recording of various parameters in relation to the situation.

Another, no less interesting international project, "Interbol," is being prepared by the USSR, Czechoslovakia, Poland, the GDR, Cuba, France, and Sweden. Its principal objective is to investigate dynamic processes in the magnetospheric plasma -- acceleration of particles in its various regions (including during magnetic storms), as well as problems of transmission of solar wind energy to the magnetosphere. Two satellite systems are to be launched, consisting of a main satellite and a subsatellite. One pair of satellites will intersect the tail region of the magnetosphere -- a "tail probe," while the other will investigate the properties of the plasma and energetic particles in the polar, auroral regions of the Earth's magnetosphere ("auroral probe"). Simultaneous measurements by the satellite and subsatellite will enable scientists to trace spatial changes in the properties of the medium. Thus we shall better understand the physical nature of the investigated phenomena. Satellite pairs in different regions of the magnetosphere (polar and tail) will help interlink the processes taking place there, establish causal relationships, and understand the mechanisms of their interaction.

We shall touch upon one additional item. Is investigation of "near space" of fundamental significance for mankind's basic philosophical concepts? Without question it is. One can enumerate a great many problems in astrophysics and radio astronomy which require solution utilizing the knowledge and methods obtained from the already investigated field of space plasma. The experience of working with "wallless" in contrast to laboratory plasmas is proving to be highly pertinent and valuable.

In this regard the brilliant confirmation by space experiments of those hypotheses on the structure and properties of the solar system which were stated by astrophysicists on the basis of terrestrial observations convince one that scientists are on the right track in investigation of as yet inaccessible regions of space.

3024
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SUGGESTIONS FOR FASTER FIGHTER-BOMBER WAYPOINT, TARGET COORDINATE PLOTTING

Moscow AVIATSIYA I KOSMONAVTIKA in Russian No 6, Jun 84 (signed to press 3 May 84) pp 34-35

[Article, published under the heading "The Reader Suggests," by Military Pilot 1st Class Maj A. Zastrizhnyy: "Assisting the Navigator-Programmer"]

[Text] When third-generation fighter-bombers became operational in the Air Forces, effectiveness of strikes on ground targets increased. The navigation system took over the job of solving the problem of precise en-route navigation, enabling the pilot to devote primary attention to readying for ordnance delivery and precise aiming. Successful accomplishment of the mission today depends in large measure on how accurately the fighter-bomber hits its en-route checkpoints and to what extent the coordinates fed into the system correspond to their actual values. The job of taking coordinates from the chart and feeding them into the system is handled by the navigator-programmer. If he makes a mistake, it will unfailingly affect accuracy of coming over the target on the first pass.

Usually coordinates are taken from a special chart prepared in advance, onto which a geodetic grid has been placed. This method is subject to errors within tolerable limits. Less frequently one determines the coordinates of any en-route point analytically, with spherical trigonometry formulas. This method requires rather precise digital computations and considerable time. In addition, errors are possible when working with unwieldy numbers. Therefore the programmer resorts to it when the flight path extends beyond the boundaries of the geodetic coordinate grid.

But how does one proceed if it is necessary to redeploy considerable distances and immediately commence flight operations along various routes? In this case there is no special chart, while computations by analytical method require considerable time. What is the optimal solution? In my opinion it consists in using coordinates on Gaussian-projection charts. Large-scale charts use precisely this projection.

The entire surface of the Earth is divided into 6-degree zones by longitude. Each zone is depicted on a cylinder of a tangent globe along its central (axial) meridian (Figure 1a). There are a total of 60 such zones. The Greenwich meridian is the principal meridian of the first 6-degree zone, and

consequently the third meridian is the central meridian. The longitude of the central meridian can be determined with the following formula: $L_c=6n-3$, where n is the zone number.

One peculiarity of a Gaussian projection lies in the fact that in developing a cylinder into a plane, the central meridian and the equator are represented by mutually perpendicular lines (Figure 1b), and therefore one can use a zone's central meridian as the X axis and the equator as the Y axis. Kilometer lines are placed on all large-scale maps (scale=1:200,000 and larger). The vertical lines are parallel to the X axis, and horizontal lines to the Y axis. Lines are placed at a certain kilometer interval, depending on scale. The values of their coordinates in kilometers are indicated at the ends of these lines, at the map margins. The outermost lines are inscribed with the two last numbers, the coordinate values in a larger typeface. Numbering is done along the X axis northward from the equator with a plus sign, and southward with a minus sign. In order to avoid negative values for ordinates in the Northern Hemisphere, in the USSR an ordinate value equal to 500 km is adopted as 0. Then, in order to show in what zone the coordinates are located, the zone number is placed before the value of the ordinates.

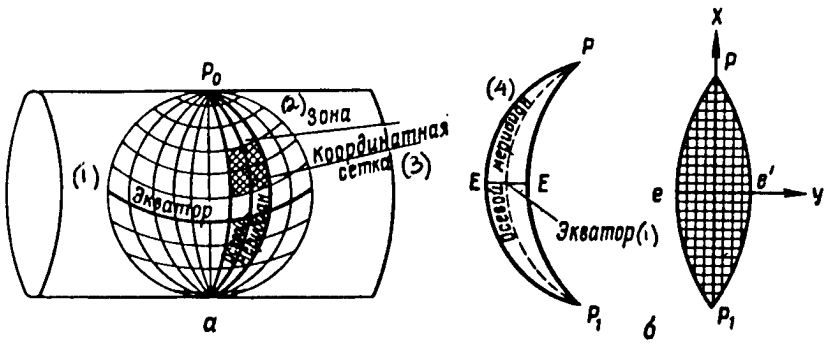

Figure 1.

Key: 1 -- equator; 2 -- zone; 3 -- coordinate grid; 4 -- central meridian

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For example, the coordinates of a landmark or reference point are $X=_{4}238$; $Y=_{17}50$. This means that the landmark of interest to us is located in the first zone at a distance of 4,238 km from the equator and (750-500)=250 km to the right of the central meridian. To determine the geodetic coordinates, one selects on the central meridian the abscissa of the point of origin of the geodetic coordinates, conforming with the location of the airfield and the en-route waypoints (preferably to whole hundred kilometers for ease of calculation).

For example, the abscissa of an airfield is $X_a=4,238$, the abscissa of the northernmost en-route point is $X_1=4,456$, and the southernmost -- $X_2=3,890$. The optimal selection variant will of course be $X_0=4,000$, $Y_0=500$, since all central meridians are designated -- 500. Knowing the coordinates of the points and airfields or taking them directly from the charts, we determine the difference between them and the calculation point of origin. In this instance we directly obtain the geodetic coordinates.

Let us assume that we must determine the geodetic coordinates of an airfield and two waypoints with the following Gaussian grid coordinates: X_a=4,238, Y_a=1,750; X_1=4,456, Y_1=1,384; X_2=3,890, Y_2=1,573.

We determine the difference between them and the point of origin of geodetic coordinates X_0=4,000, Y_0=500, AIR-X=X_a-X_0=4,238-4,000=238, Y=Y_a-Y_0=750-500=250; WPT_I-X=X_1-X_0=4,456-4,000=456, Y=Y_1-500=384-500=-116; WPT_{II}-X=X_2-X_0=3,890-4,000=-110, Y=Y_2-Y_0=573-500=73. We shall place the obtained values into an initial table:

	AIR	WPT_I	WPT_{II}
X	238	456	-110
Y	250	-116	73

The method of utilizing Gaussian coordinates is convenient, simple, and does not require great time expenditure or laborious calculations. It suffices to have a chart with route marked and correctly to select a point of origin for calculation, and any waypoint is programmed with a high degree of accuracy. Maximum error along the edges of the zone in the vicinity of the equator would be 0.14 percent. This means that aircraft error in reaching any point will not exceed plus over minus 200 meters.

Determining angle of convergence Delta for introducing into the system when programming an RSBN [Local Radio Air Navigation System] beacon, one must note angle of convergence gamma (angle between the meridian of a point and the X axis): gamma=(lambda-mean lambda) x sine phi, where lambda and phi are the longitude and latitude of the point for which the angle is being determined; mean lambda -- longitude of the mean meridian of the given zone.

As we see, gamma is numerically equal to Delta, and therefore in order to determine the convergence angle we must add 360 degrees to the meridian convergence angle, that is, Delta=gamma plus over minus 360 degrees. We shall note that the convergence angle is indicated at the southern edge of the chart or the sheet's central meridian.

In determining coordinates a situation may arise where the airfield and some of the waypoints are located in one zone and some in another. Since the kilometer lines are parallel to the central meridians, which converge at certain angles, when joining the chart sheets at the zone boundaries, the lines of the coordinate grid also intersect at a certain angle.

In order to avoid difficulties in determining the coordinates of reference points located in adjacent zones, the extended lines of the coordinate grid of the neighboring zone, with their numbering (above the heavy line at the chart edge) are placed in a 2 degree longitude spread. In connection with this, in order to determine the coordinates of points located in the second zone, in the system of zone 1 one must find the kilometer lines extended of this zone on the chart sheet with waypoint marked, and according to the opposite lines extended near the point place a penciled line connecting the traces of lines with the same X coordinate. From the obtained line we run a perpendicular to the determined point and extend it to the chart edge. We take the coordinates

relative to it and a line placed according to the coordinates of the kilometer lines extended of zone 1 (Figure 2). For example, we have determined: X=4,467, Y=876. The point's geodetic coordinates in this case will be: X=4,467-4,000=467, Y=876-500=376.

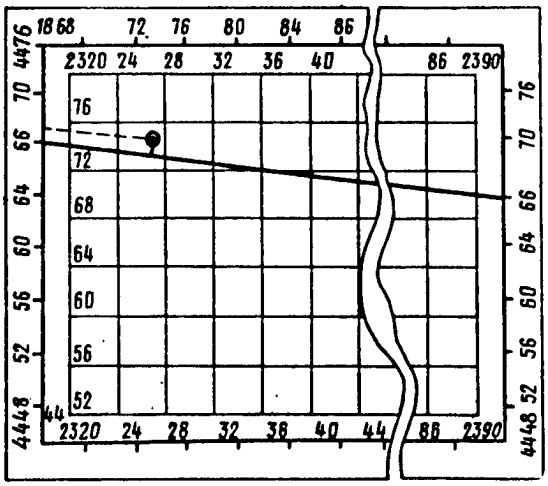

Figure 2.

If the target, however, is on a chart which does not contain neighboring-zone extended line markings, one proceeds as follows. Select a chart on the edge of the zone of a waypoint at the same latitude, determine its abscissa, and run a line on the basis of extended lines from zone 1. Then determine the difference between the ordinates of the point being determined and that determined on the edge of the zone (distance of point from zone edge). On the basis of this value plot the point on an ordinate running through the abscissa of the waypoint in the system of zone 1 in such a manner that the distance to it from the edge of the chart is a multiple of the distance of the sought waypoint from the edge of the zone. Run a perpendicular line to this point from the plotted line. Now determine the distance from the chart edge line to the point of contact between the perpendicular and the plotted line in the system of zone 1 and the amount by which the abscissa of zone 2 exceeds its value in the zone 1 system (height of the perpendicular line). Multiply the obtained figures by the quotient obtained from dividing the distance from the waypoint to the edge of the zone by the distance of the point of placement of the perpendicular line in the zone 2 system. These will be the sought quantities X and Y.

In order to obtain a clearer picture of this process, let us examine Figure 3. It contains similar right triangles OAB and Oab, the legs of which are the ordinate and extension of the abscissa in the zone 1 system on the charts of zone 2, while the hypotenuse is the distance from the waypoint to the zone edge. Here OA is the distance of the point on the ordinate in the zone 1 system from the boundary between the zones; OB -- its distance on the ordinate in the zone 2 system; AB -- the amount by which the zone 2 abscissa exceeds

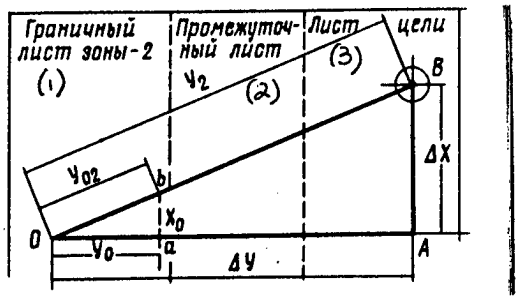

Figure 3.

Key: 1 -- boundary chart of zone 2; 2 -- intermediate chart; 3 -- target chart

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the zone 1 abscissa; Oa -- distance from the point of placement of the perpendicular line in the zone 1 system from the chart edge at the boundary between zones; Ob -- distance from the point of placement of the perpendicular line in the zone 2 system from the chart edge; ab -- amount by which the zone 2 abscissa exceeds its value in zone 1, at the point of placement of the perpendicular line (height of perpendicular line). Triangles OAB and Oab are similar, and therefore:

$$OB/Ob=AB/ab=OA/Oa,$$

and consequently, AB=ab x OB/Ob and OA=OB/Ob, that is, AB=DeltaX=X_0 x Y_2/DeltaY_{02}, AO=DeltaY=Y_0 x Y_2/DeltaY_{02}.

For example, the waypoint coordinates are X_2=4,285, Y_2=2,565; coordinates of point on edge of zone: X=4,285, Y_{01}=1,746 (zone 1), Y_{02}=2,210. We shall determine distance from the target to the zone edge: Y_2=Y_2-Y_{02}=565-210=355. From this value, a multiple will be DeltaY_{02}=35.5. We shall determine Y_0 and X_0:Y_0=34, X_0=1.5, DeltaX=1.5 x 355/35.5=15 km. Thus DeltaY=34 x 355/35.5=340 km. Consequently, the geodetic coordinates of the waypoint will be: X=(X_2-X_0)+DeltaX=(4,285-4,000)+15=300. Y=(Y_1-Y_0)+DeltaY=(746-500)+340=586.

A special programming plotting board must be used in order to ensure that the navigator-programmer has no difficulties in determining the coordinates of waypoints beyond the boundaries of several zones. It consists of a sheet of clear plastic measuring 1,205 x 1,205 x 5 mm, on which two mutually perpendicular lines intersect precisely in the center (Figure 4). A square measuring 1,200 x 1,200 mm is placed on its perimeter. There is a slot along the upper and lower edges, along which a clear plastic rule moves freely (Figure 4a). There are slots along the sides for a cursor. Attached to it is a circular transparent protractor rotated 180 degrees (a heading of 180 degrees corresponds to north). A ruler 1,700 mm in length turns freely on the axis of attachment. There are numbered scales at the top and bottom of the plotting board: at the top running from -600 to +600, and on the bottom running from 0 to 600. The ruler runs from 0 to 850 on the left, and from 0 to 1,700 on the right.

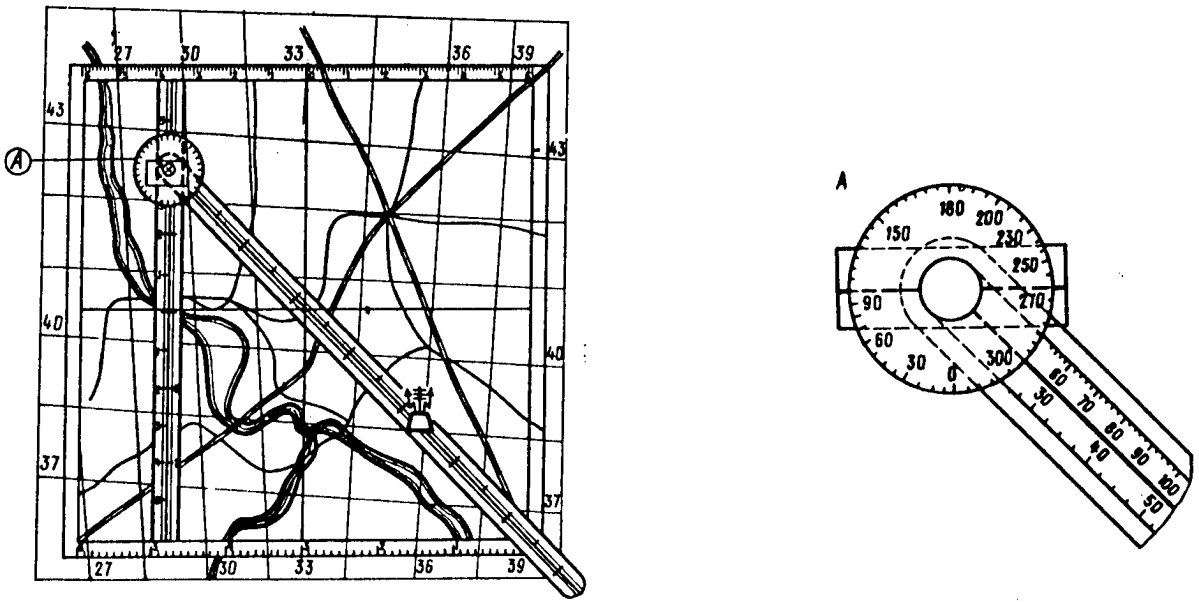

Figure 4.

Let us say that we are to take figures for a program from a chart on a scale of 1:1,000,000. Choosing a point from which to make calculations, we place the center of the plotting board on it and line up the vertical line with the meridian. We move the sliding scale to the waypoint, run the cursor along it and superpose the disk mounting aperture on the slide on the waypoint. We read off the ordinate value on the upper scale along the central line of the ruler, and take the abscissa from the ruler scale on the slide. We then place the sliding ruler onto the airfield RSBN siting point and determine distance from the ruler scale. After this we read off the azimuth on the circular protractor against the ruler central line.

When taking coordinates from a map on a scale of 1:500,000, the plotting board is placed in relation to the square in which the point is located. Not the central line but the side of the plotted square is lined up, and the reading is taken from the lower and right-scale.

As we see, using the plotting board simultaneously with taking the geodetic coordinates of landmarks or reference points makes it possible to determine azimuth and range. I believe that the proposed method will help speed up preparation of programs for navigation systems, which will significantly reduce the time required to ready an aircraft for a sortie.

3024
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NEW CIVIL AVIATION VERTICAL SEPARATION STANDARDS ADOPTED

Moscow AVIATSIYA I KOSMONAVTIKA in Russian No 6, Jun 84 (signed to press 3 May 84) pp 36-37

[Article, published under the heading "Responding to Readers' Questions," by Engr-Maj I. Ryzhov: "Vertical Separation of Aircraft"]

> [Text] The Soviet Union has adopted a new system of vertical separation of aircraft effective 1 March 1984. Readers Engr-Majs Yu. Nikitin and I. Glukhov, Capt Tech Serv V. Barmin, and Sr Lts A. Mozgalevskiy and A. Kozyrev ask what standards of vertical separation are applied by ICAO, how the new system differs from the previous one, and in what ways they are identical.
>
> Engr-Maj I. Ryzhov replies to these questions.

Vertical separation of aircraft involves dispersing them along airways by flight level. The barometric method of vertical separation consists in an aircraft strictly maintaining the assigned altitude on the basis of isobaric surfaces (isobars). It flies at an altitude corresponding to equal values of atmospheric pressure.

As we know, pressure between isobars changes according to a standard atmosphere distribution pattern, and therefore some common base level for calculating altitude is required for flight operations with altitude separation. A constant-pressure surface with a pressure of 760 mm Hg (1013.25 gPa) was selected, corresponding to zero altitude (Figure 1).

After takeoff the pilot, upon passing through the transition altitude, sets his altimeter to 760 and subsequently flies at true altitude H_{tr}.

In 1970 the Soviet Union joined the International Civil Aviation Organization (ICAO), which uses the following system of vertical separation: DeltaH=1,000 feet to an altitude of 29,000 feet, and DeltaH=2,000 feet from 29,000 to 51,000 feet, which in the metric system of measurements corresponds approximately to DeltaH=300 meters to an altitude of 9,000 meters and DeltaH=600 meters from 9,000 to 15,000 meters respectively. Up to 1 December 1977 aircraft employed the following vertical separations in this country:

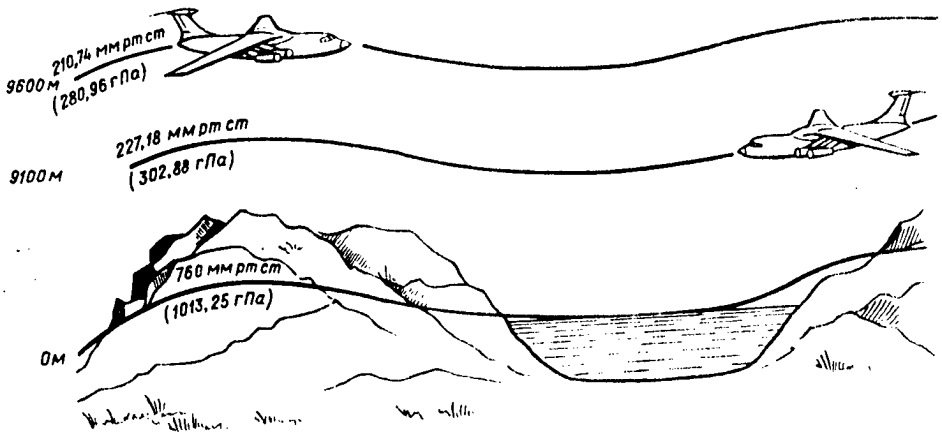

Figure 1.

DeltaH=300 m to an altitude of 6,000 m, DeltaH=600 m from 6,000 to 9,000 m, DeltaH=1,000 m from 9,000 to 15,000 m.

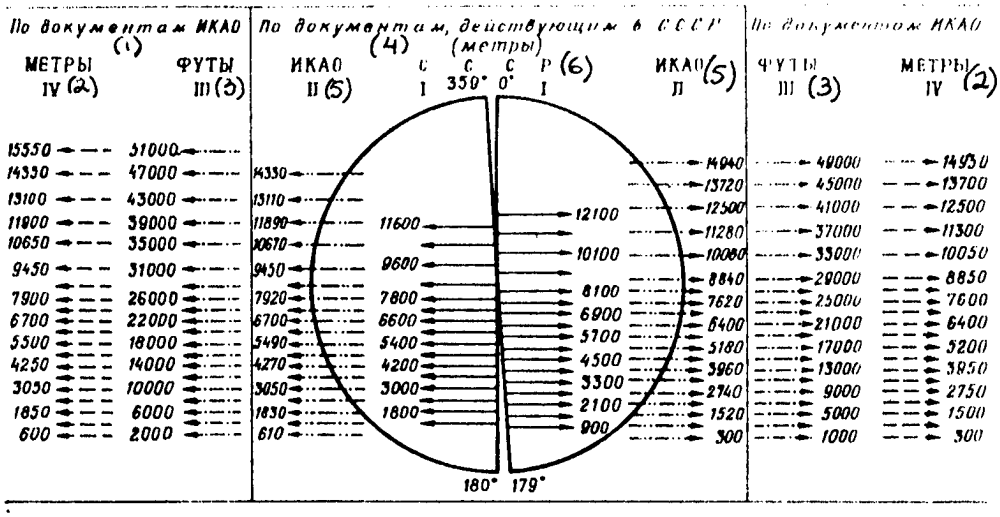

Figure 2.

I -- metric separations used in the USSR; II -- during flights by Soviet aircraft in countries which have adopted ICAO separations in feet; for metric-scale altimeters the corresponding flight levels in feet are maintained at altitudes converted from flight levels in feet multiplied by 10; III -- flight levels in feet (basic), adopted by ICAO; IV -- metric flight levels adopted by ICAO, converted from flight levels in feet, with a multiple of 50, used in the GDR and People's Republic of Bulgaria.

Key to Figure 2 on preceding page: 1 -- according to ICAO documents; 2 -- meters; 3 -- feet; 4 -- according to documents in effect in the USSR (meters); 5 -- ICAO; 6 -- USSR

Traffic on the airways is becoming heavier year by year. This problem is most acute abroad, where small countries have a very high density of air traffic.

The principal way to increase the traffic capacity of airspace at the present time is to increase the number of flight levels by reducing vertical separation. In addition, packing flight levels closer together will make it possible to assign more aircraft to the most economical altitudes (9,100 meters and above). In connection with this, ICAO is presently considering the possibility of further reducing vertical separation at these flight levels.

The basic safety standard in the new system is an allowable 2×10^{-6} probability of aircraft becoming critically close during encounters per flying hour (the ICAO standard). It is determined by the accuracy characteristics and reliability of pitot tube plus altimeter, flight stabilization devices, and to a large degree by accuracy of maintaining assigned flight level by aircrews.

In this country it was planned to transition to the new system in two phases. The first phase began on 1 December 1977, when vertical separations between flight levels were reduced from 1,000 to 600 meters in the range 9,000-12,000 meters, and the following system was adopted: DeltaH=300 m to an altitude of 6,000 m, and DeltaH=600 m from 6,000 to 12,000 m. This made it possible to obtain two additional flight levels at more economical altitudes and to free up flight levels below 9,000 meters.

The second phase commenced on 1 March 1984. The following vertical separations were adopted: DeltaH=300 m to an altitude of 8,100 m and DeltaH=500 m from 8,100 to 12,100 m.

This resulted in five additional flight levels. The new system contains seven more flight levels than the old one, and has one more than the existing ICAO system. Figure 2 shows vertical separations.

3024
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AIR-FORCE COMMUNICATIONS PERSONNEL SEEK FIELD PROFICIENCY

Moscow AVIATSIYA I KOSMONAVTIKA in Russian No 6, Jun 84 (signed to press 3 May 84) pp 38-39

[Article, published under the heading "Be Alert, In a Continuous State of Combat Readiness," by Lt Col P. Klebanyuk, unit deputy commander: "Signal Troops Field Proficiency"]

[Text] Competing under the slogan "Be alert, in constant readiness to defend the achievements of socialism!", our men in uniform are persistently studying the laws governing modern warfare and are perfecting their technical knowledge and tactical skills. They are endeavoring fully to utilize each and every trip into the field in order further to improve coordination of crews and subunits and to ensure stable communications between command authorities and aviators in conditions of jamming and "aggressor" employment of weapons of mass destruction.

Concerned with ensuring adequate survivability and mobility of signal subunits, the command authorities, headquarters staff and party organizations devote special attention first and foremost to increasing the vigilance of personnel and combat readiness of men and equipment. A persistent search has made it possible to devise special methods of taking down and setting up equipment and to adopt original and unique technical solutions and devices which reduce the time required to redeploy teams to a designated area. At field drills and tactical exercises our men learn to execute maneuvers, work on mastering related occupational specialties, and practice mutual interchangeability. As a result the subunits have learned to perform mock combat missions at reduced strength.

Recently we took part in a tactical exercise on unfamiliar terrain. It was intensive and was held with heavy electronic countermeasures and in inclement weather. Suffice it to say that wind velocity reached 20 meters per second, sometimes gusting higher. There were frequent periods of heavy rain. This made it difficult to ready the communications equipment for operation.

In spite of this fact, the men under officers A. Osadchuk, S. Toropov, and V. Dem'yanenko promptly readied their equipment for combat use. The radiotelegraph operators received the first messages and transmitted them to the designated destinations. Soon the situation became more complicated.

Messages began flooding in with a sharply increasing intensity, and radio communication conditions deteriorated significantly.

On one of the radio links the "aggressor" was employing selective jamming, but the radio operator did not lose his composure. He skillfully performed the requisite switching procedures on the radio panel and confidently continued receiving messages. Communications operated precisely and without interruption.

Experienced specialists WOs N. Sazhenko, V. Kirilov, V. Zhikharev, and other communications personnel distinguished themselves at that memorable exercise. They were forced to perform their duties for an extended period of time in a heavy jamming environment and to retune equipment. Every one of them proved up to the task and displayed thorough knowledge of his job and the requisite moral-political and psychological conditioning.

It is quite understandable that the factors involved included not only the men's combat skills and excellent specialized training, but also their tactical maturity, resulting from thorough preparation for the exercise. Such training drills are usually organized as follows.

Communications personnel practice in the field setting up and taking down standard equipment, perform training tasks wearing individual protective gear, practice meeting performance standards in engineer-equipping communications centers, and hone their skills in communications security. In order to ensure that the men not become accustomed to working with the same operator on the other end, the makeup of the communicating pairs is changed from time to time. In addition, at each field drill the specialists are given unexpected scenario instructions, and on each occasion the men work on training problems against a new tactical environment.

Of course it is essential to prepare conscientiously and thoroughly for such field training drills. Officer personnel acquire tactical maturity, for example, within the commander training system and enhance it at command and staff and tactical exercises. In our unit such forms of training as lectures, seminars, group drills and brief tactical exercises are most commonly employed in commander training classes and training conferences. Brief training exercises are intended to develop solid professional skills in personnel, enabling them to make well-grounded decisions quickly and with limited information available, and to execute them consistently and persistently, displaying determination, ingenuity, initiative, stick-to-itiveness, and composure.

In the alert-duty signal subunits the unit command authorities practice one of the most acceptable forms of such training -- short tactical exercises. They are valuable in that the communications personnel officers do not receive any tasks in advance but are briefed on the mock combat situation at the very beginning of the training drill. The exercise is held in a limited period of time, with the men working on several training items, as a rule connected with performing tasks pertaining to command and control, coordination, as well as efficient utilization of crews and subunits both during organization for and conduct of combat operations.

The subunits commanded by officers A. Kalashnikov, V. Dem'yanenko and others innovatively approach the conduct of brief tactical exercises and communications personnel field training as a whole. They not only unswervingly observe requirements imposed on tactical training of specialists but also promptly adopt all progressive items suggested by practical experience and which promote rapid familiarization of officers, warrant officers, and their subordinates.

Playing a specific role at such training drills, an officer solves tactical problems without the aid of an instructor or fellow officers. We consider the principal method to be the drill for platoon and company commanders as well as other persons in authority, with a subsequent detailed performance critique by the instructor. In this instance a principal objective is pursued -- increasing the professional knowledge of officers, as well as warrant officers in charge of radio and radio room teams, arming them with skills of independent analysis, predicting the air and ground situation and possibilities of enemy employment of electronic countermeasures, as well as teaching them to make correct decisions and to assign tasks to their men with clarity and precision. In addition, such drills serve as an effective means of testing whether personnel have assimilated key points of the tactical training program, as well as knowledge obtained in the course of independent preparation in carrying out individual assignments.

We also employ the following method: we diagram on the board organization of communications in a specific tactical environment, deliberately making an error. The officer is to find that error quickly, intelligently explain it, and state the correct solution.

We work on training items at such drills with maximum possible detailing. When preparing training methods documents, the instructor in charge of the field drill determines its tactical content and environment, the air and ground situation, as well as presumed weather conditions. Before proceeding to draw up training methods documents, he selects and studies in detail the appropriate instructions and manuals on the subject and thinks through the methods to be employed in conducting the drill.

Serious attention is devoted to devising and formulating scenario instructions, as is done, for example, by one of our experienced methods specialists, Capt V. Dem'yanenko. The scenario instructions he gives his men are distinguished by clarity and precision, specificity, are formulated concisely, but at the same time reflect the combat work performance of the communications personnel at the most important and complex phases of a field drill, and organization of stable communications. The officer seeks to obtain from his subordinates precise and concise responses, teaching them not only to formulate replies concisely and accurately, but first and foremost to see beyond them their actions, which should be vigorous, intelligent, precise, and purposeful, for there is simply no time to deliberate and confer in today's dynamic combat.

Unfortunately even in our military one encounters commanders, more frequently among young officers, who have not yet learned thoroughly to analyze the

tactical situation, who sometimes make unsubstantiated decisions, and do not utilize in full measure the performance characteristics of communications gear in carrying out mock combat missions far from their regular base.

These shortcomings sometimes attest to the fact that some lieutenants at times underrate the importance of signal troops field proficiency, and in particular one of its components -- tactical training. Of course one cannot accept this, for in assimilating professional knowledge and advanced know-how and increasing his technical competence, every communications personnel officer should at the same time daily study the enemy's operational methods in present-day conditions, modes of organizing combat against the enemy, and acquire skills in competent and efficient performance of one's job-related duties in conditions of nuclear missile combat. Therefore we devote particular attention to matters pertaining to subunit command and control, various types of maneuver, teamwork and coordination, and skilled utilization of intelligence.

In this connection we are also continuing further to improve all forms of combat training, and particularly the most important -- tactical exercises. As a rule they represent for our servicemen the concluding stage of subunit and unit training for a specific period or training year. We try to plan each exercise in advance and with the requisite quality. We work out in detail the most important items to be studied and synthesized, especially those of an experimental, research nature. At the same time we seek to ensure that an exercise is conducted in a complex, instructive tactical environment and in a difficult field situation.

In preparing for each exercise we devote considerable attention to determining the training objective and problem, the overall tactical concept, and the composition of the subunits involved and the body of umpires. In addition, we specify measures pertaining to safeguarding state and military secrets, observance of the requirements of communications security and secure troop command and control.

Experience indicates that with such preparations the senior-level officer and umpires will be able to achieve successful accomplishment of the stated objectives and will be able to create conditions close to actual combat. During the exercise proper, without imposing his will on his subordinates, he will guide their actions, proceeding in conformity with the developing situation. If an officer makes a mistake, the exercise director or umpire will prompt him to a more advisable decision by means of scenario instructions.

As practical experience indicates, it is very important on a daily basis to teach personnel to operate in conditions of enemy employment of mass destruction weapons. First and foremost we endeavor to work on items pertaining to conduct of radiological and chemical reconnaissance and warning, and measures to ensure the survivability of communications equipment and the subunit, combat readiness, and neutralization of the consequences of a nuclear or chemical attack.

Moral-political and psychological preparation of signal troops is of considerable importance for victory in modern combat. For that reason we organize their training in such a manner that the men are prepared for harsh ordeals and are able to carry out assigned missions with reduced-strength crews and even individually. During field training activities and in communications training areas we create all conditions for rapidly establishing communications contact, for a high coefficient of communications reliability, precise and prompt transmission, skilled receiving of messages and instructions in conditions of jamming and poor audibility. A good example is shown by officers A. Osadchuk, S. Toropov and other subunit commanders, who rehearse procedures in a practical manner with their men as reduced-strength radio operating teams and mobilize the men to master related occupational specialties and to achieve total interchangeability at duty stations.

There still are unresolved problems here, however. Unfortunately some commanders sometimes fail to attach importance to the fact, for example, that radio sets are positioned at too close a distance for practical operations or that a communications operator has spent 2-3 seconds beyond the standard performance requirement to transmit a radio message. As a result, precisely such minor but annoying errors lead to a substantial gap in training specialist personnel. Sometimes this leads to a situation where an individual who has a fairly high proficiency rating but who has been trained in "hothouse" conditions, when tested proves to be prepared for practical operations no better than a recent conscript. This is the logical result of various indulgences and unnecessary situation simplifications. And yet the campaign against lack of originality, departure from realism and unnecessary relaxation of demands, for strengthening organization and communications discipline is the correct way to increase the fighting efficiency and combat readiness of specialist personnel.

The combat performance of our branch of service is greatly affected by the quick pace of situation change and the fast-moving pace of combat. Therefore the time factor is of paramount importance for communications personnel (just as it is for other Air Forces personnel). We must consider this fact and count time not only in minutes but even in seconds. Hence the constant and persistent campaign to increase the speed and reliability of transmission of information and for immediate readiness of communications gear and specialist personnel to transmit heavy-volume radio messages.

Our men are presently filled with the aspiration to achieve new performance levels in improving combat skills, and particularly in field proficiency. They are successfully meeting ambitious socialist pledges adopted for the summer period of training. The younger men are endeavoring the master their occupational specialty faster than scheduled, while the veterans are seeking to boost their proficiency rating and master related occupational specialties.

It is quite understandable that accomplishment of these critical tasks demands of communications personnel considerable exertion of moral and physical energy, further enhancement of the organizing role of officer-leaders and

subunit party organizations, and flawless performance by all communications personnel of their constitutional duty.

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U.S. MILITARY SPACE PROGRAMS REVIEWED

Moscow AVIATSIYA I KOSMONAVTIKA in Russian No 6, Jun 84 (signed to press 3 May 84) pp 42-43

[Article, published under the heading "Imperialism -- Enemy of Peoples," by O. Mikhaylov: "Orbits of Militarization"; based on materials published in the foreign press]

[Text] Washington's increasingly more militaristic and aggressive course of policy, aimed at accelerated deployment of qualitatively new nuclear weapons, is evoking understandable concern and alarm throughout the world. At the same time the present U.S. Administration is continuing to push at a priority pace the development of space systems for the conduct of combat operations in space and from space. Alongside increase in the Pentagon's space aspirations, there is taking place militarization of the activities of NASA, which is still generally considered a civilian agency. For example, while there has been a considerable reduction in the number of NASA civilian personnel at agency headquarters and at its space centers, since the beginning of the 1980's there have appeared more and more people in military uniform. Today there are expanded possibilities of direct transfer of NASA know-how, research and development results to the Pentagon and subsidizing of military space programs from the agency budget.

With NASA participation in military programs, research and development in a direction favorable to the Pentagon are expanding to an ever increasing degree. As a result more than 75 percent of the NASA budget, not including classified budgetary items, can be directly or indirectly utilized to finance various activities of a military nature. Subordination of NASA to Pentagon interests is becoming an increasingly realistic possibility.

Research and development appropriations and technical information flowing from NASA to the space industry divisions of corporations are being utilized by them as scientific and technological advances and know-how in filling military contracts. More than 40 of 100 primary NASA contractors are also leading contractors for the Pentagon.

The tone in militarization of space research and exploration is being set by the big military-industrial corporations, in which the manufacture of space hardware is concentrated. The biggest orders are placed with companies in a

small number of states, the leaders among which are California, Florida and Texas. California contractors, led by Rockwell International, account for approximately 43 percent of all NASA contracts distributed among industrial firms in 1981. That same year TRW, Vought, Boeing, Hughes Aircraft, and Avco secured 59 percent of contracts for development of new weapons in the "Space Defense" program.

Shifts of personnel between corporations, the Pentagon and NASA helped strengthen in the 1970's formal and informal ties within the military-industrial group which sought to intensify militarization of space activities in the United States. Between 1970 and 1979 approximately 2,000 persons shifted jobs between the Pentagon, NASA, and the eight biggest companies, which were awarded one fourth of all contracts with the military and 36 percent of NASA contracts. The current director of NASA served as vice-president of General Dynamics for the aerospace industry from 1974 up to his most recent appointment. A former NASA director headed a specially formed committee (DTSO) to draft future laser and beam weapon projects. The economic position of this group within the U.S. military-industrial complex is rapidly being strengthened by generous financial injections on the part of the present U.S. Administration.

Utilization of technically civilian systems in the United States for military and intelligence purposes is appreciably intensifying. The magazine FLIGHT reported that LANDSAT satellites are being used to photograph military installations on the territory of the PRC. The Soviet press has reported utilization of the MARISAT satellite communications system by the first secretary of the U.S. embassy in the USSR, Osborn, who was taken into custody in Moscow on 7 March 1983 while in the act of passing espionage information. More than one third of the total volume of long-distance communications of the U.S. Department of Defense is handled by leased channels in commercial satellite systems. Presidential Directive 37 in 1978 specified utilization of civilian space systems by the Pentagon and the U.S. intelligence agencies.

U.S. military satellite reconnaissance, communications, and navigation systems were designed primarily for the purpose of achieving qualitative development of offensive strategic nuclear weapons and improving their utilization. The Reagan Administration has additionally encouraged development of space systems for armed forces C^3I. The modern FLEETSATCOM and DSCS-II satellite communications systems, the new DSCS-III system, and the Milstar system, which is presently under development, are designed to improve communications with remote military installations, to transmit intelligence, and for command and control of strategic forces. The SDS and AFSATCOM systems, with enhanced protection against jamming and nuclear bursts, were designed specifically for armed forces command and control.

U.S. satellites are now regularly overflying the territories of the socialist countries for the purpose of surveillance scanning and detailed photoreconnaissance. Electronic intelligence satellites are designed to intercept radio communications, radar emissions, etc. The United States no longer conceals the fact that reconnaissance satellites are being used to detail the characteristics of an increasingly large number of targets, especially antimissile and air defense systems. The Pentagon needs such

information to make computations of maximum target damage/destruction in a nuclear attack.

Since the 1970's the United States has been sharply increasing the manufacture of equipment for users of military satellite systems (terminals), equipment designed for utilization by an increasing number primarily of nuclear weapons delivery platforms and launch sites. Since 1978 not only strategic bombers and ICBM launch control centers have been equipped with AFSATCOM communications system terminals, but also fighter-bombers, cruise missile and Pershing II launch facilities, and nuclear-armed artillery battalions. The NAVSTAR global satellite navigation system will become operational in 1987. It was initially planned to employ up to 6,000 NAVSTAR system backpack units in U.S. Army subunits alone, for accurate computations of range to targets, adjustment of bombing strikes and artillery fire, airlift delivery of troops and supplies. Utilization of this system is also being expanded in the armed forces of other NATO countries.

Mobile installations in all branches of the armed forces, including "rapid deployment forces," are being equipped with satellite terminals. At the same time utilization of terminals in combat operations is being developed. According to reports in the foreign press, modern mobile stations for receiving information from weather satellites were used in the recent Bright Star exercise, which involved deployment of U.S. tactical forces to the Egyptian Desert. Such stations have been ordered for U.S. Marine Corps assault detachments, and all attack aircraft carriers are to be equipped with similar terminals. Thus acceleration of U.S. manufacture of these terminals is for the purpose of ensuring maximum coverage by satellite systems of all military subunits performing subversive, aggressive, and police functions, scattered throughout the world.

U.S. space systems have been employed since the 1960's in virtually all focal areas of international tension created by imperialism, including the war in Vietnam. Following the revolution in Iran navigation (NAVSTAR), weather (DMSP), photoreconnaissance and communications satellites were utilized to support espionage activities and the failed military operation which involved incursion by U.S. airplanes and helicopters into an area 400 kilometers southeast of Tehran.

U.S. satellites have also been used to support aggressive actions by U.S. partners. Intelligence gathered by these satellites on the countries of the Near East was utilized by Israel as early as the 1967 war. Signing of a U.S.-Israeli memorandum on strategic cooperation, as well as a visit to the U.S. in August 1981 by the Israeli prime minister, who insisted on obtaining ground stations for direct receiving of intelligence from U.S. satellites, fostered this to an even greater degree.

Great Britain also actively utilized U.S. satellites in the conflict with Argentina over the Falkland (Malvinas) Islands. Information obtained from weather satellites helped in planning the date of invasion at Port San Carlos. Like information was being received from U.S. civilian weather satellites, for the quality of which the Pentagon even thanked the National Oceanic and Atmospheric Administration.

KH-11 and Big Bird reconnaissance satellites were used by Great Britain to maintain surveillance of the conflict areas, to determine the precise location of Argentine warships, and to make a detailed evaluation of future targets. According to a candid statement made by U.S. Navy rear admiral Ramsey, Great Britain owes its successes in missile employment to U.S. satellite intelligence gathering. The British Navy's flagship "Hermes" alone processed a daily average of 800 satellite messages during the time it was in the conflict area. During the fighting on the Falkland Islands proper, British Marines carried backpack units for communications via U.S. satellites.

Changes in the existing structure of military space systems being planned by the U.S. Administration were a consequence of revision of U.S. strategic doctrines, and making them more aggressive. We are talking about accelerated development of U.S. space weapons aimed at undermining the approximate strategic balance established between the USSR and the United States. The pace of development of a U.S. antisatellite system and other space weapons is substantially outstripping the pace of development of means of protecting space systems within the framework of the so-called comprehensive "space defense" program which has been in progress since the mid-1970's.

The antisatellite system proper does not conform to defensive purposes, as the people in Washington attempt to claim, but rather the Pentagon's aggressive strategic aims. Aggressive plans to provide the capability of first-strike surprise and to weaken a retaliatory strike are obvious. Launching of antisatellite missiles at predesignated targets is to be carried out in coordination with the employment of strategic and other weapons. The development of an antisatellite system, as is the case with antimissile systems, has become for the United States a major component of development of offensive strategic arms. This is why the present U.S. Administration is seeking accelerated development of a new antimissile system. Thus it is not the publicly-stated questionable arguments by the U.S. President about defense against an alleged threat but rather plans to gain superiority in all possible areas which stand behind the present acceleration of development of new U.S. space systems.

Design variations of small unmanned and piloted maneuverable spacecraft (Mini-Shuttle, Cruiser, Spaceplane) are being considered specifically for the conduct of military operations. The Pentagon's generously financed projects extend even to the development of "military space forces" with orbital fighters and bombers, and new space systems employing laser, nuclear, and beamed-energy weapons.

Naturally the USSR will not stand by idly in the face of basic changes in the strategic situation which are being aggressively planned by the United States in the field of space. Soviet leaders have warned time and again that under no circumstances will we permit military superiority over the USSR and the other nations of the socialist community.

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U.S. SPACE COMMAND DESCRIBED

Moscow AVIATSIYA I KOSMONAVTIKA in Russian No 6, Jun 84 (signed to press 3 May 84) p 43

[Article by L. Tkachev: "Space Commands"; based on materials published in the foreign press]

[Text] As has been reported, the U.S. Air Force has established a space command. What are its functions and structure? The command is headed by Lt Gen J. Hartinger, who serves simultaneously as commander of NORAD. Lt Gen R. Henry, commander of the AFSC Space Division, serves as his vice commander. Personnel of this organization totals approximately 7,000 men.

The command consists of a headquarters and four U.S. Air Force bases: Peterson (Colorado), Clear AFS (Alaska), Thule and Sondrestrom (Greenland). The CSOC and SPADOC centers are also subordinate to it. The CSOC Center is being built 15 kilometers from Peterson AFB. It will have 2,000 personnel when it becomes operational. This center will have the mission of controlling supporting satellite systems, as well as planning, managing, and controlling Department of Defense Space Shuttle flights. The SPADOC Center is tasked with surveillance of the space environment.

The Space Command has responsibility for operating ballistic missile launch early warning satellites, weather satellites, as well as Earth-based space surveillance facilities.

The U.S. Air Force, pursuant to instructions of a presidential directive, has formulated a doctrine, as is reported in the Western press, which defines the Space Command's primary missions: securement of freedom of action in space for U.S. space hardware, development of antisatellite systems, and enhancement of the effectiveness, combat readiness, and survivability of satellites in use.

A U.S. Navy Space Command became operationally effective 1 October 1983, headed by former astronaut Captain Truly. Its organizational structure has not been made public, but observers believe that it is similar to the structure of the Air Force Space Command.

Recently the Western press reported that the Pentagon is dissatisfied with the structures of the Air Force and Navy space commands. The U.S. Joint Chiefs of

Staff feel that a joint or combined space command should be established in 1985 for all branches of the U.S. armed forces. Initially it is to be tasked with planning, management and control of military satellites, future space programs, and establishment of antimissile and space defense systems.

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LYAKHOV DESCRIBES SOYUZ T-9 MISSION

Moscow AVIATSIYA I KOSMONAVTIKA in Russian No 6, Jun 84 (signed to press 3 May 84) pp 45-47

[Article, published under the heading "Reminiscences of a Space Mission," by twice Hero of the Soviet Union Pilot-Cosmonaut USSR Col V. Lyakhov: "One Hundred and Fifty Days in Orbit"; first of two parts]

[Text] First entry in the spacecraft's mission log: "Soyuz T-9. Liftoff at 1312 hours Moscow time on 27 June 1983."

The launch into orbit was uneventful. We inspected the craft. Everything seemed to be in order. We went to work....

This was my second space mission and once again it was brought home to me that the launching of a spacecraft into orbit is the most emotional phase of a mission. Incidentally, docking with the station is just as exciting. Just as there are no two identical missions, there are no two identical dockings.

Preparations for docking take 24 hours. The final phase -- the most difficult and stressful -- takes about half an hour. But the final approach and actual docking take even less -- about 15 minutes. But what unforgettable minutes!

Docking consists not only in bringing two vehicles together in space and coordinating their orbits. It is no less important to dampen the shock of collision between vehicles weighing many tons. While the former is no easy matter, the latter requires a jeweler's precision.

Docking is accomplished in automatic mode. It would seem that our job is simple: to monitor and observe. And, of course, to be prepared to take over control at any moment if the automatic docking system malfunctions. But the simplicity of our job is highly relative.

We have entrusted a great many control functions to automatic systems. They do a magnificent job of guiding a spacecraft into orbit, accomplishing maneuvers, descent from orbit and return to Earth. And generally speaking, automatic systems are of course indispensable in any monotonous job, when something must be done with precision, sequentially, omitting nothing in a

sequence of operations. They freed the cosmonauts for productive activity, which in fact is the reason why man went into space in the first place.

Space robots are capable of self-learning, have flexibility, and to a certain degree are "resourceful." They are invaluable in routine situations. Even in nonstandard situations a robot will look through "in its mind" everything which has been fed into it. But if a given situation is not contained in its memory, its electronic "brain" will work in vain.

...Orbital adjustments were completed. The automatic systems were operating without a hitch. The docking revolution was beginning -- the final revolution which would bring us to Salyut 7. A pity that one cannot observe from a spectator's vantage point how two man-made celestial bodies meet in space. It must be an impressive sight!

Numbers were changing on the visual display. Our attention was riveted to the instruments.

The Mediterranean Sea lay below us. We were now over the Balkans. A panoramic view of the Black Sea coast was opening up before us. But there was no time to admire the view. We were 110 meters from the station. We were drawing 90 centimeters closer each second.

We switched on the color video camera. I could imagine how the station with the docked Kosmos 1443 spacecraft-satellite would now appear in all its splendor on the big screen at Mission Control Center. This Kosmos had practically doubled the mass and size of the orbital complex. We would be the first to dock with such a huge structure.

We fired the spacecraft maneuvering motor. The station was two marks high on the crosshairs. We once again adjusted range and closing rate. The lateral swings were diminishing. The target was coming up on the crosshairs.

The station's docking assembly was just about on us. We felt a gentle impact.

"We have contact!"

Another second passed.... The guide pins entered the docking ring recesses.

"We have coupling!"

The damping system actuated. Twenty seconds passed, and the bar retraction drive kicked in. The power system electrical connectors mated.

"That's it. Docking completed!"

The tension and impatience were replaced with anticipation. It would be two more revolutions, or 3 hours, before we could transfer to the station. In the meantime we checked the docking seal. Pressure was equalized in the compartments. Telemetry data on everything taking place on board was being transmitted to Earth, to Mission Control.

We were waiting for permission to open the transfer hatch cover. We had already traveled hundreds of thousands of kilometers in space, had executed precisely computed maneuvers and performed hundreds of highly complex operations for the sake of this moment. There was a great deal of nervousness! And not only on the part of the crew.

Mission controller Valeriy Ryumin radioed a warning: "'Protons', it is colder in the station than in your spacecraft, so bundle up."

We donned our insulated boots.

Finally we heard the long-awaited: "Cleared to open transfer hatch!"

I heard Aleksandrov's joyous voice: "Hatch opening!"

And the flight engineer drifted into the Salyut 7.

It was 13 hours 49 minutes 15 seconds. The calendar read 28 June 1983. Our tour of space duty on board the orbital scientific research complex was commencing.

* * *

The lights came on again and voices sounded in the Salyut 7, following an extended period of vacancy. During a communications session the flight engineer joyously exclaimed: "There's so much room here, and things are so comfortable! All the right conditions for our work. We are becoming accustomed to weightlessness. The skipper is holding me back for the present, however...."

The first days were filled with priority tasks. We had to bring the station back to life: switch on the life support system consoles, heat water, set out the scientific instrumentation and ready it for operation, and transfer all our baggage from the spacecraft -- biological experiments, additional food stores, tools and instruments for replacement and repair operations, and spacesuits. We also had to shut down and button up the craft which had carried us into orbit. One of our first operations on board the Soyuz T-9 was to "punch in the descent sequence," that is, ready the craft for an emergency return to Earth. This was not an unnecessary precaution, although our cosmonauts have never had to make use of it.

* * *

We were settling into our unusual space home. We had never lived and worked in such a domicile. This fantastic scientific research complex functioned in orbit as a single integrated whole. It included not only the Salyut 7 and our transport craft, the Soyuz T-9, but also the new Kosmos 1443 orbital spacecraft. The combined mass of this orbital aggregate totaled 47 tons, and it was almost 35 meters in length.

Kosmos 1443 was only slightly smaller than the station proper in mass and size. It was designed as a multirole craft. At present two of its

capabilities were being used -- that of a freighter and an orbital transfer vehicle. The satellite is continuing to perform these functions at the present time. In contrast to the Progress automatic freighter, which is a dependent or parasite of the orbital station, as it were, it contains its own power supply system and in principle can supply power to the Salyut. It also has a returnable module, which can be used to deliver up to half a ton of cargo to Earth.

The Kosmos 1443 satellite had docked with the station prior to our arrival. It had carried approximately 3 tons of cargo into orbit -- everything needed for continued operation of Salyut 7: food supplies, water, regenerator units, medical equipment, athletic training units, and film for movie and still cameras. It had even brought a guitar. Therefore unloading the Kosmos 1443 was one of our principal tasks for the immediate future. After that we would have to ready cargo for sending back to Earth. It would include not only scientific experiment results but also used-out instruments, units and equipment assemblies, and fairly large ones. We had not had a previous opportunity to return them to their designers. And the latter wanted very much to examine their equipment after it had been operating for many months in space!

* * *

We proceeded to unload Kosmos 1443. They warned us from Earth: "Take your time about entering the craft. It has been on automatic mode for several months, and the air may be stale. Do you smell any odors?"

We sniffed. Nothing seemed amiss.

"It smells like paint," I replied. "The normal smell of equipment...."

"Then switch on the lights and familiarize yourselves with the craft! Do you see the TV camera? No? It has been watching you for quite some time."

The new craft was spacious. It was good to receive almost 50 cubic meters of additional living space. The comforts of domestic routine on an extended mission are far from unimportant. But this was not the only factor of importance: now more cargo could be boosted into orbit, and rather large payloads at that.

We found a note: "Welcome. Don't exhaust yourselves, happy unloading." Yes, there was indeed plenty of work here. Aleksandrov was more optimistic: "Think about it, 3 tons in a state of weightlessness! This is not like on Earth. Let's haul it over!"

Would he change his tune after 3 or 4 days?

* * *

The first week was behind us. We were settling into a regular routine.

The mission controller inquired how the loading and unloading work was progressing. We reported that things were moving right along.

"Would you like to take a rest?"

"In space work is the best rest," replied the flight engineer.

"We know," they broke out laughing at mission control. "That is one of Lyakhov's aphorisms."

"It fits our situation perfectly," commented Aleksandrov. "This aphorism did not simply appear out of thin air."

...It would seem that the period of adaptation to weightlessness was over. Everything had assumed its proper place -- overhead, walls, and deck.

We had worked many months at the Training Center reviving the station and both spacecraft. We could find any instrument and remove any panel in them with our eyes closed. But spatial orientation changes in a state of weightlessness. It takes time to become accustomed to the new conditions.

"A strange sensation: a surprising feeling of lightness combined with very considerable stress," said Aleksandrov.

But my muscles quickly "remembered" my previous mission. And without particular effort. It is somewhat akin to a situation where you take the wheel of an automobile after a long absence. Your hands and feet begin to "remember" how they drove the vehicle. Naturally a certain amount of caution is necessary at first, but the skills return rather quickly.

* * *

A siren sounded, signaling that it was precisely 0800, time to get up. I opened the blinds on the viewing ports. Blinding sunlight flooded the station.

"Good morning," greeted the Capcom from Mission Control. "What do you see out the window?"

"Mountains," I replied.

"Correct," he confirmed. "You are over the Pamirs."

Today the orbital complex would pass over BAM [Baikal-Amur Mainline]. We would be photographing the route and adjacent areas. We therefore were readying cameras and spectrometers. The picture-taking session would take place if the weather forecasters gave the go-ahead. The previous day they had reported scattered cloud cover with good conditions for photography. We were waiting for confirmation of the forecast, but the final decision was up to the crew -- we had a better vantage point from space.

While the flight engineer checked the equipment, I took up position at the viewing port. I had to determine photography conditions and to enter into the visual observations log data on the state of the forests in this region.

We would be engaged in taking pictures almost the entire month of July. We would be conducting comprehensive studies with the aid of the MKF-6M and KATE-140 cameras and the spectrometers built in Bulgaria and the GDR.

...We had already taken more than 1,500 frames. Subjects included the Caspian Sea, Stavropol Kray, the Crimea, the Ukraine, Siberia, and the Amur region. We had taken photographs of Mongolia as part of the Interkosmos program.

* * *

Medical personnel would frequently talk with us. Initially they were interested in the crew's adaptation to weightlessness. Now they were reminding us about drills and physical exercises, and monitoring the work load volume on various muscles. On medical examination day we would monitor the state of our cardiovascular system while engaged in physical exercises on the stationary resistance bicycle.

We had completed another series of combined studies of the Earth's surface. We had been photographing reclaimed land in the Amu Darya and Syr Darya basins, around the Kara Kum Canal, the Tsymlyansk Reservoir, in the Georgian SSR, the Armenian SSR, as well as forest tracts in the Carpathians and the Caucasus.

* * *

We bid farewell to Kosmos 1443. Through the viewing port we photographed it with its engines burning -- for the experts to use in their analysis, and as a memento for us. It had done a good job, first as a supply carrier, and later as a tug. Firing its engines, it had helped raise our orbit.

Finally we had loaded into the recovery module materials from experiments conducted over the past month and a half, as well as a number of instruments which were being retired from service (including heavy, bulky air regenerators), analysis of which on Earth would enable the designers to determine what improvements they needed.

After seeing off Kosmos 1443, we redocked the Soyuz T-9. On the previous day we had checked out its engines, loaded the requisite gear, and partially mothballed the station -- in case we were unable to return.

The Soyuz slowly backed off about 200 meters. As soon as the Igla radar lock-on unit triggered, the station turned toward us the docking assembly from which Kosmos 1443 had departed 2 days previously.

We did not have long to admire our space laboratory. It was necessary to dock without delay. And although we were separated from the station only a short time, it was necessary thoroughly to carry out all operations (mechanical

capture, electrical connection, seal check), as if we had just arrived from Earth. We finally were back in our space home late that evening. (To be continued)

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MANNED SPACECRAFT EMERGENCY RESCUE SYSTEMS

Moscow AVIATSIYA I KOSMONAVTIKA in Russian No 6, Jun 84 (signed to press 3 May 84) p 47

[Article, published under the heading "Responding to Reader's Questions": "But What If There Is an Emergency?"]

[Text] Many people give thought to the question of saving the booster in case of failure in the powered phase of a mission. But a practical solution to the problem has not yet been found. The situation is different regarding a manned spacecraft. Several emergency rescue systems (SAS) have been developed.

In the Soyuz T booster-spacecraft unit the SAS consists of two parts, which go into operation when the manned vehicle is in the atmosphere phase of a flight. The first -- the emergency rescue system propulsion unit (DU SAS) -- consists of a single unit of three solid-propellant motors: main, separation, and attitude control (see photo) [not reproduced]. It is positioned in the nose portion of the booster-spacecraft assemblage and is secured to the nose fairing. From booster liftoff until the DU SAS is jettisoned, the spacecraft (descent module, orbital module, part of the nose fairing), carrying the cosmonauts, in case of an emergency situation would be brought to safety with the aid of the main propulsion engine and attitude control motors. If an emergency situation occurs on liftoff, they are also assisted by a separation motor, which on a normal mission accomplishes jettisoning of the DU SAS at the time specified in the flight plan.

We should note that the sooner the massive DU SAS is jettisoned, the heavier the payload which can be boosted into orbit. A compromise is made, however, for safety's sake: they wait until drag becomes less than the thrust of the additional propulsion unit, at which time the DU SAS is jettisoned. For several dozen seconds after this, rescue of the spacecraft and cosmonauts in case of an emergency would be handled by the second part of the SAS -- the additional propulsion units attached to the nose fairing.

Finally the nose fairing is also jettisoned. An SAS is not needed once out of the atmosphere. There are adequate regular means of separation available to separate the spacecraft from the booster in case of an emergency.

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