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CENTRAL INTELLIGENCE AGENCY
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28 July 1978

MEMORANDUM FOR: The Director of Central Intelligence

FROM : John N. McMahon
Deputy Director for Operations

SUBJECT : MILITARY THOUGHT (USSR): Basic Problems of Rear Services Support of Combat Actions of Front Aviation in Modern Operations

1. The enclosed Intelligence Information Special Report is part of a series now in preparation based on the SECRET USSR Ministry of Defense publication Collection of Articles of the Journal "Military Thought". In this article, the author discusses the problems and makes suggestions regarding the organization of airfield engineer support and the improvement of the mobility of aviation technical units, saying that their solution should contribute to the maneuverability of front aviation. To avoid the need for the frequent rebasing of front aviation during an offensive operation, the author recommends the use of aircraft that have a tactical operating range of 700 kilometers and more and that can operate off of dirt airfields. This article appeared in Issue No. 1 (62) for 1962.

[redacted]

2. Because the source of this report is extremely sensitive, this document should be handled on a strict need-to-know basis within recipient agencies. For ease of reference, reports from this publication have been assigned [redacted]

[redacted]

John N. McMahon

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MILITARY THOUGHT (USSR): Basic Problems of Rear Services Support of Combat Actions of Front Aviation in Modern Operations

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Summary:

The following report is a translation from Russian of an article which appeared in Issue No. 1 (62) for 1962 of the SECRET USSR Ministry of Defense publication Collection of Articles of the Journal "Military Thought". The author of this article is Colonel General of Aviation F. Polynin. In this article, the author discusses the problems and makes suggestions regarding the organization of airfield engineer support and the improvement of the mobility of aviation technical units, saying that their solution should contribute to the maneuverability of front aviation. To avoid the need for the frequent rebasing of front aviation during an offensive operation, the author recommends the use of aircraft that have a tactical operating range of 700 kilometers and more and that can operate off of dirt airfields.

End of Summary

Comment:

Colonel General Fedor Petrovich Polynin was Deputy Commander-in-Chief for Rear Services of the Air Forces from 1964 to 1971. He also wrote "Prospects for the Development of the Air Forces Rear Services" in Issue No. 3 (79) for 1966 [redacted] He is now retired.

Basic Problems of Rear Services Support of Combat Actions of Front Aviation in Modern Operations

by

Colonel General of Aviation F. POLYNIN

The use of means of mass destruction, the increase in the momentum and depth of offensive operations, and the change in the principles of basing and organizing the combat actions of front aviation have substantially changed the working conditions and demands on the aviation rear services.

This is displayed, above all, by the fact that, in view of the threat of a nuclear strike against airfields, it has become necessary to switch to a dispersed basing of aviation. Now, as a rule, an air regiment is based on two airfields, and in departure position, even on three.

The high momentum of front operations has complicated the organization and support of fighter and fighter-bomber aviation maneuvering that has to be carried out as the ground forces of the front advance. Ever higher mobility and productivity have been required of the units and facilities of the rear services.

In a complex, rapidly changing operational situation and with limited aviation forces, inter-front maneuvering of combat and military transport aviation becomes not a rare exception, but the rule. Organizing rear services support of such maneuvering is a new and extremely complex task of the aviation rear services.

On the whole, it should be stated that as the complexity of aviation technology increases, so do the demands on the airfield and aviation technical support of troops. Therefore, under modern conditions, the rear services acquire importance of the first degree, decisively affecting the combat readiness and combat capabilities of air units and large units.

However, in spite of such obvious dependence, in everyday work and especially in exercises and maneuvers, some commanders and staffs often underestimate the role and significance of the

rear services. In working out one or another decision, they quite often consider only the tactical flight data of aircraft and the relative strengths of their own and the enemy forces, but forget that for the successful utilization of aviation it is necessary to perform much preliminary work: prepare airfields, organize the rear services, establish reserves, etc.

We wish to examine two basic problems, whose solution, in our opinion, should contribute to an increase in the maneuverability of front aviation in modern operations, namely, the organization of airfield engineer support and the improvement of the mobility of aviation technical units.

* * *

The high speeds and great depth of operations, the necessity of dispersed basing, the limited tactical operating radius of the aircraft of front aviation at combat altitudes, and the new required dimensions and surface of airfield landing strips for supersonic aircraft of the SU-7B, MIG-21, YAK-27R, and YAK-28 types have created extremely complex conditions for the airfield engineer support of the basing and maneuvering of front aviation.

The main difficulty lies in the fact that, with an increase in the momentum of an operation, fighter aviation units and fighter-bomber aviation units, in order not to fall behind the ground troops, are forced to change basing airfields considerably more often then formerly. In addition, it is necessary to take into consideration that aircraft of the MIG-17, MIG-19, SU-7B, SU-9, and MIG-21 types, even with the use of suspended fuel tanks during flights at an altitude of 10,000 to 12,000 meters, have a tactical operating radius limited to 400 to 600 kilometers. In flights at lower altitudes, the tactical radius is sharply reduced.

Let us examine the possible time periods required for basing air units having these types of aircraft.

At a rate of offensive operations of 80 to 100 kilometers per day, aircraft with a tactical operating radius of 400 to 500 kilometers and based on an airfield located 70 to 150 kilometers from the departure line of the front, will be able to offer effective support to the forward units of tank large units for

altogether only three to four days after the start of the offensive, and aircraft with a tactical operating radius of 600 to 700 kilometers, for five to six days.

During an offensive, the time needed to base aircraft on one or another airfield is reduced by the number of days necessary for the selection of a sector to use for the airfield, the approach and deployment of the airfield engineer unit, the construction of the airfield, the approach and deployment of the komendatura of the separate aviation technical servicing battalion and the separate communications and radiotechnical support battalion, and, finally, for the transfer of the air unit. This time averages two to three days. Even when utilizing airfields seized intact from the enemy, the time involved in inspecting and checking them out and the time required for the approach and deployment of the komendatura of the separate aviation technical servicing battalion and separate communications and radiotechnical support battalion amount to not less than one to 1.5 days from the moment the airfield is captured.

On the basis of these calculations, we list the possible time required for the basing of aircraft (in days), given a troop rate of advance of 100 kilometers per day.

	With the tactical operating radiuses of aircraft as follows (in kilometers)			
	300	400	500	600
On departure position airfields	2-2,5	3-3,5	4-4,5	5-5,5
During operations:				
On captured enemy airfields	1-1,5	2-2,5	3-3,5	4-4,5
On newly constructed airfields	---	0,5-1,0	1,5-2,0	2,5-3,0

From the table it is evident that aircraft with a tactical operating radius less than 400 kilometers, such as the MIG-17AS, will be able, during the operation, to offer effective support to the advancing troops only on the first two to three days of the

operation and will then fall behind if they cannot be rebased in time.

Aircraft with a tactical operating radius of 500 to 600 kilometers and more will fulfil their combat tasks for a longer time; accordingly, when the depth of the operation is 800 to 900 kilometers, they will have to be rebased two to three times, in spite of all the complexity of this measure. Therefore, it is extremely important that front aviation include aircraft with a tactical operating radius of not less than 700 to 800 kilometers at combat altitudes. In this case, it will have to be rebased only one to two times during an operation.

A no less important quality of front aviation is its ability to operate off of dirt. The present-day aircraft, especially the SU-7B and the YAK-27R, do not have these qualities. Having very hard tires, with a pressure of 11 to 12.5 atmospheres, they quickly destroy the surface of dirt airstrips and even of strips with simplified surfaces such as those that are dirt-macadamized (treated with bitumen by the method of mixing on the spot) and those put together from old model pierced steel planking (type MP-1-53).

While for aircraft with a tire pressure of five to six atmospheres, the non-flight period because of wet ground was 15 to 20 days a year (under the conditions of the central zone of the European part of the USSR), for aircraft with a pressure of eight to nine atmospheres, it has risen to 1.5 months, and with a pressure of 11 to 12 atmospheres, to two to three months.

Flights of SU-7B, SU-9, and YAK-27R aircraft from a dense loam type of ground are possible only in the dry period of the year and, of course, in winter. With the slightest overwetting of the ground, and also on sandy loam and sandy soils, flights are very often altogether out of the question.

Moreover, the engines on these types of aircraft are situated very low, which leads to the excessive generation of dust and the sucking in of dust by the running engines.

Thus, as a result of insufficient consideration by aircraft designers of the conditions and actual possibilities for basing front aviation, its normal utilization, as is the case with the

fighters of the Air Defense of the Country, has come to be possible only on airfields equipped with special landing strips.

What, then, are the capabilities of an air army in the construction and restoration of airfields and what are the typical ways of accomplishing the tasks of airfield support of front aviation during modern operations?

Now most of the air armies, in accordance with the peacetime T/O, include two to three separate airfield engineer battalions, and, in accordance with the wartime T/O, up to four. The number of separate airfield engineer battalions included in air armies operating on main axes may be brought up to six to eight.

The experience of the Great Patriotic War and the research of the postwar period indicate that the average volume of earthworks in the preparation of one Class II dirt airfield (with airstrip dimensions of 2,500 x 150 meters) in the Western Theater of Military Operations is 15,000 to 20,000 cubic meters. Moreover, included in the volume of the works of top priority, besides the airstrip, is the construction of a number of structures (command posts, shelters), roads, taxi lanes, and parking areas for aircraft.

The preparation of a modern airfield in short periods of time measuring several days is an extremely complex technical engineering task requiring accelerated investigation and planning, the use of powerful and diversified mechanical means, and the precise organization of the works. Considering that all these works must be carried on round the clock and under conditions of possible enemy action, airfield engineer units must have the means for carrying out construction at night, as well as camouflage and defense means.

Repeated exercises conducted in the air forces with the task of the rapid construction of airfields have made it possible to establish realistic calculation standards.

Thus, while participating in exercises, one separate airfield engineer battalion, fully manned and equipped according to the wartime T/O&E and with well trained personnel, constructed in 57 hours (2.4 days) an airfield with an airstrip measuring 2,500 x 120 meters, producing in this time 18,500 cubic meters of

earthworks. This same battalion, in other exercises, built an airfield with 16,000 cubic meters of earthworks in 54 hours (2.3 days) and an airfield with 24,400 meters of works in 53 hours (2.2 days). Only in one case, where the volume of works was small -- 5,000 cubic meters altogether -- did it manage to build an airfield in 34 hours (1.4 days).

Consequently, under favorable conditions, one separate airfield engineer battalion can build an airfield with an average of up to 20,000 cubic meters of works in two to 2.5 days; it is only with a very small volume of works (up to 6,000 to 8,000 cubic meters) that this time can be reduced to one to 1.5 days. It must be noted that the indicated works were carried out in the summer, at a sufficiently dry time, in an unmined and uncontaminated sector. The battalion worked at full strength, having all the technical equipment authorized by the T/O&E.

In calculating the time for the construction of an airfield, it is also necessary to keep in mind the time that will be spent on the selection and inspection of the sector; at a minimum, this comes to 0.5 day. In addition, in order to arrive at the place of work not later than 0.5 day after the forward units of our troops, the battalion must move immediately behind the first echelon of the ground forces of the front.

Thus, during the course of an operation, the overall time for the preparation of a dirt airfield with the forces of one separate airfield engineer battalion will be, on the average, not less than two to 2.5 days, figuring from the moment of liberation of the given territory from the enemy.

A complex task is the relocation of the separate airfield engineer battalion, equipped with rather cumbersome technical equipment, over front roads occupied by combat units. Let us note, in this connection, that doing this successfully will depend not so much on the battalion itself as on the situation existing on the roads and on the attitude toward the engineer unit on the part of the ground troop command. Thus, for example, the average relocation speed of a separate airfield engineer battalion moving independently by organic means comes to 12 to 15 kilometers per hour (with the average speed of movement of technical equipment on the march being 18 to 22 kilometers per hour). However, when, in one of the exercises, the battalion had

to move in the columns of the second echelon of a motorized rifle division, its average relocation speed came to only 3.7 kilometers per hour altogether.

In sum, it may be considered that the average relocation speed of a separate airfield engineer battalion moving by its organic means is about 200 kilometers per day; however, under unfavorable conditions, obviously, it is close to the rate of movement of troops, that is, 100 to 120 kilometers per day. Consequently, the battalion will be unable to get to the sector of airfield construction earlier than a day after the time of the liberation of the territory from the enemy.

With the capture of enemy airfields by troops or special landing forces, the times needed to ready airfields during an offensive operation may be shortened to 0,5 to one day from the moment of their capture.

On the whole, the requirements and capabilities of an air army for constructing and restoring airfields may be evaluated in the following manner.

An air army that includes two to three fighter air divisions, one to two fighter-bomber air divisions, two to three bomber air regiments, and two reconnaissance air regiments, in departure position, with the basing of a regiment on two airfields, must have 30 to 40 airfields. During the operation, to rebase three to four times the 12 to 15 air regiments of fighters and fighter-bombers will require preparing (a regiment to an airfield) not less than 40 to 50 airfields, or four to five per day. This task can be accomplished by 12 to 14 separate airfield engineer battalions. But there are only two to three battalions in the initial period of war and four to six after mobilization.

Having such forces available for an operation eight to nine days long, it is possible to prepare:

-- up to ten airfields, or an average of about one airfield a day, when there are three separate airfield engineer battalions available;

-- up to 18 to 20 airfields, or about two airfields per day, when there are six separate airfield engineer battalions in the air army.

Consequently, during an operation with the basing of an air regiment to an airfield, in the first case the effective operation of aircraft can be guaranteed, without additional maneuvering, from only two to three airfields altogether, and in the second, from five to six. These actual capabilities should be taken into consideration in planning the use of front aviation in modern operations.

Becoming clear from what has been said is the necessity of including in the air army of a border military district in peacetime not less than three to four separate airfield engineer battalions and of sharply increasing their productive capabilities. Moreover, in the standard complement of the rear services of the air army there must be six to eight battalions. Then the overall number of separate airfield engineer battalions will make it possible to strengthen considerably the air armies in the initial offensive operation.

Extremely important also is the question of the technical equipping of the airfield engineer battalions. Now they have production-line national economy technical equipment produced by the road construction and motor transport machinebuilding industry. The base for most of the engineer construction machines are caterpillar tractors with a power up to 100 horsepower (S-100, S-80, DT-54). With the tractors work scrapers, bulldozers, stump pullers, compactors, ditch diggers, mixers, etc., that is, all the leading machines that do earthworks and are used to build airfield and road surfaces. All this technical equipment is slow-moving and not suitable for work under war conditions; it is transported from installation to installation with the use of a large number of heavy-duty vehicles and trailers that are insufficiently mobile and extremely cumbersome; and its productivity on the base of slow-moving tractors is not very high.

In our opinion, the most advisable way of increasing the mobility and strength of the separate airfield engineer battalions is to equip them with technical equipment constructed on the base of wheeled prime movers of great power. The weight of such a prime mover is in all 1.5 times as great as the S-100 tractor, while the power is 3.75 times as great, and the road speed is five times as great. In this case, for instance, the productivity of a scraper with a capacity of nine to 11 cubic

meters will reach 80 to 75 cubic meters per hour. This is almost twice as great as the productivity of a scraper of equal capacity with an S-100 tractor.

Thus, replacing tractors with an equal number of wheel-type prime movers will permit almost doubling the productive capability and mobility of the separate airfield engineer battalion; moreover, it will be possible to eliminate from the T/O&E trailers and heavy-duty vehicles for the transportation of technical equipment and somewhat reduce the number of personnel.

However, because of the insufficient persistence of the scientific and technical committee of the Motor Vehicle Tractor Directorate of the Ministry of Defense and of the engineer troops, there has been a delay in the development of wheeled prime movers needed not only for airfield construction units but also for the whole Soviet Army.

The above-mentioned standards and calculations of the times required for preparing front airfields pertain to dirt airfields. Construction during an operation of airfields with an improved surface for modern aircraft is, in our opinion, a task that is unrealizable for the time being. An unrealistc task, in our opinion, is laying surfaces on dozens of airfields in two to three days during an offensive operation, that are almost equivalent to concrete and that are capable of supporting the load from aircraft with high-pressure tires.

In practice at home and abroad, several basic constructions of airfield and road surfaces are known:

-- concrete and reinforced concrete;
-- blacktop (asphalt, macadam);
-- sectional metallic of light alloys and plastics;
-- dirt stabilized with binding materials -- cement, bitumen, or various chemical agents.

Most of these surfaces, in view of the great amount of labor involved in their construction, the duration of construction, and the enormous quantity of materials, are absolutely unacceptable under front conditions. For example, if constructed with a concrete or blacktop surface, one landing strip measuring 2,000 x 50 meters requires bringing in over 50 thousand tons of cement,

crushed stone, sand, etc.

In building surfaces of dirt stabilized with binding agents, the materials required are considerably less (from 2,000 to 5,000 tons). However, even in this case, there are needed to deliver them to only one airfield several hundred special vehicles (cement carriers, bitumen carriers, tank trucks for delivering chemicals, etc.), many depots for the preliminary concentration of materials coming in from industry by rail, special means of mechanizing the loading and unloading, and so forth.

It should also be taken into consideration that, in treating the soil with binding agents, it is necessary to fine-crush it carefully to the full thickness of the surface, which is possible only when there is a definite amount of moisture in the soil. A little overwetting by rain is enough for the fine-crushing of the soil to become impossible and the treating process to be interrupted. The hardening of soil treated with cement or chemical agents lasts several days.

Thus, stabilizing the soil is possible only when there is enough time (for instance, a preparatory period), suitable soils, good weather, and railroads near the installation.

Currently, in a number of institutes, scientific research work is being conducted to find new effective chemical agents to stabilize the soil and also agents to strengthen overwet soils.

Should these tasks be successfully accomplished, it will subsequently be possible to count on the partial use of chemical stabilization of the soil on airfields during the course of operations, primarily to strengthen small sections of airstrips that have overwet or poorly bound soils and to build start-finish areas.

The only type of surface presently suitable for use during offensive operations is a sectional metal one. Laying a metal landing strip of type K-1-D planking 2,000 x 50 meters in size requires about 1,400 man-days. Consequently, one wartime separate airfield engineer battalion will be able to lay a landing strip in three to four days, and with some reinforcement of its personnel, in 2.5 days.

Under front conditions, the task of transporting the surface is extraordinarily complicated. The weight of type K-1-D planking for one landing strip (2,000 x 50 meters) comes to 3,300 tons, and for an airfield altogether, counting taxi lanes and parking areas, the delivery of 4,500 to 6,000 tons of planking is required. To transport it will require 600 to 700 heavy-duty vehicles with trailers; with a smaller number of vehicles, merely delivering the planking a distance of 200 kilometers in two trips over the crowded front roads will take more than four days.

At the present time, most of the air armies have reserves of metal planking sufficient to lay metal landing strips on three to five airfields; however, the problem of transporting it during operations has still not been solved in a practical manner.

Most realistic, evidently, is the laying of planking on departure position airfields. But during an operation, apparently planking can be used only to build start-finish areas, which, when available, improve the conditions for the run-up of engines for the start, reduce the generation of dust on the initial acceleration leg, and facilitate the moving of aircraft from an area when the ground is too wet. The laying on one airfield of two start-finish areas measuring 150 x 30 meters each will require 300 tons of planking altogether. In individual cases, narrow landing strips 20 to 25 meters wide can be laid. With landing strip dimensions of 2,000 x 20 meters, 1,400 tons of planking will be required in all, and together with small taxi lanes and parking places for a squadron of fighters, 1,800 to 2,000 tons of planking.

Obviously, it is necessary to investigate the possibility of introducing narrow landing strips and start-finish areas and to conduct the appropriate training of flight personnel.

Unfortunately, it is still impossible to lighten the sectional metal surfaces since they are functioning at the limit of their strength and even need some reinforcement. Meanwhile, the structural elements of lighter sectional surfaces, for instance, those made of aluminum alloys, are 40 percent lighter than steel, and those made of fiberglass, 50 percent lighter than steel, however, because of the shortage of raw material, they are still not being mass-produced by industry.

Thus, it is most correct during operations to plan the basing of front aviation mainly on dirt airfields. On the other hand, the aviation industry and, primarily, designers must fully take into consideration the operating and servicing conditions of aircraft during offensive operations and develop machines that have high mobility on dirt.

In the course of accomplishing what, in our opinion, is a first-priority task, it is very important to develop ski undercarriages more quickly and to speed up the development of arrestors for the braking of aircraft during landing. Arrestors, in combination with powerful boosters for takeoff from short sectional landing strips of aluminum planking, will ensure the basing of aircraft on airfields with a landing strip 600 to 900 meters long.

But a fundmental solution of this problem requires serious structural changes in combat vehicles and maintenance equipment and research into new ways of airfield engineer support.

In the guides on the conduct of operations and combat actions, in our opinion, we should legitimize the requirement for the ground forces to make use of every opportunity to capture enemy airfields, and also the priority right of movement of airfield engineer battalions on front roads. It is necessary to accelerate the assimilation of methods of laying start-finish areas instead of metal landing strips for the entire length of the landing strip and to organize training in flights from such airfields. And it is necessary to construct reserve airfields beforehand in order to support the maneuvering of aviation in the most crucial and intense first two to three days of the operation.

And, finally, in organizing the maneuvering of aviation, it is advisable, beginning with day three or day four, to use two to three airfields (captured in good condition or with a small amount of restoration) as forward fields for all units of the army ("staging" airfields).

* * *

Included as the second factor determining the success of aviation maneuvering should be the capabilities of the aviation

technical units, i.e., their organization, technical equipping, and mobility. The manuevering of aviation, to a considerable extent, also depends on the combat qualities of the aviation engineer service of the regiment and of the communications and radiotechnical servicing units.

The exercises conducted in recent years, as well as an analysis of the composition and equipping of the separate aviation technical servicing battalions, the aviation engineer service of the regiment, and the communications and radiotechnical servicing units and subunits show that they are all capable of supporting the basing and conduct of combat work only on two airfields, but that even in this case, not all the means of technical servicing and repair will be employed on one of them. And, although in a period of threat or immediately before an operation it is advisable to disperse an air regiment on three airfields, still, on two of them there will be possible only the reception, refueling, and takeoff of serviceable aircraft without a check-out and repair of their technical equipment.

All this comes about because the organization and capabilities of the aviation technical units do not correspond to the requirements for the support of aviation maneuvering in a high-speed troop offensive. For instance, using T/O&E motor transport, an aviation technical battalion is not capable of rebasing in one trip all T/O&E property and the minimum reserves of materiel. But the return of a transportation unit along the overloaded front roads to complete a second trip during an operation is, as a rule, out of the question.

In our opinion, everything necessary should be done immediately so that the entire complement of the separate aviation technical servicing battalion of front aviation can be rebased in one trip together with the ground echelon of the regiment and reserves of materiel for two days of combat activity (that is, for three to four sorties of a fighter or fighter-bomber regiment).

This task is best accomplished by further lightening the separate aviation technical servicing battalion, by replacing metal containers with soft packing, introducing suspended fuel tanks, equipping the battalion with heavy-duty vehicles, and by

using trailers and containers. As regards the ground echelon of the air regiment (staff, technical engineer personnel, ground equipment), in our opinion, it is necessary to use transport aviation and helicopters to rebase it.

It is necessary to note that the aviation technical servicing battalions of the air regiment, even according to the existing T/O&E, are not now fully equipped with conventional trailers and have no trailers at all for transporting fuel. What is more, there is not even a production-line model of a trailer for aviation fuel in the air forces.

The reliability of the support of the maneuvering of air units in modern operations is, to a considerable degree, conditioned by the availability of a reserve of aviation technical units. Yet, we will hardly have this reserve in the initial period of a war. Therefore, already in peacetime, it is necessary to do everything possible to significantly strengthen the existing battalions.

To support the rebasing of the ground echelons of air units and the stable delivery of materiel to forward airfields, it is also necessary to strengthen the transportation units and subunits available within the air armies and aviation technical divisions, equipping them with heavy-duty vehicles and trailers.

What has been set forth by us, of course, does not exhaust all the questions of the support of aviation maneuvering, since there are in the air regiments ground means of support mounted on automotive chassis, which does not provide the capability of transporting the ground echelon of the regiment in aircraft.

In our opinion, for a full solution of the problem it is necessary to exclude from the T/O&E of wartime air regiments all wheeled vehicles, transferring them to the separate aviation technical servicing battalions, to standardize the ground equipment of aircraft and the monitoring and measuring equipment, and to develop means of checking and preparing aircraft equipment that are easily transported by aviation.

On the whole, it is necessary to acknowledge that at the present time the technical level of the means of technical support lags considerably behind the level of the development of

aviation equipment. Such a situation has come about because industry does not always fulfil the resolution of the Central Committee of the CPSU and the Council of Ministers of the USSR that obliges, simultaneously with the production of aircraft, the development of new improved means of ground support. The old ones have to be adapted, and this inevitably has a negative effect on the quality and timeliness of servicing new equipment. For instance, to date, in spite of the acute necessity, there is no mass-produced airfield vacuum cleaner and conditioner, no special prime mover for towing aircraft, no centralized refueler for bomber aviation. Nor do we have at our disposal a trailer to deliver fuel with an interior anticorrosion coating -- which reduces the mobile fuel reserve by 30 percent. A full array of air-transportable ground support means has not been developed for moving subunits of the separate aviation technical servicing battalion by air transport.

And, finally, it is impossible to guarantee high mobility and precise, uninterrupted supply of air units in the complex situation of modern operations without well equipped and organized communications of the rear services. Therefore, it is surprising that the complement of the rear services of an air army does not include a communications company, which was acknowledged as necessary even in the period of the Great Patriotic War.

In the present article we have dwelled upon only two of the most important problems of the aviation rear services on which, in our opinion, the support of aviation maneuvering depends. Even such a short examination of them testifies to the complexity of the working conditions and tasks of the aviation rear services, which require study, discussion, and the adoption of firm, decisive measures. Everything not worked out in matters of support lowers the basic combat characteristics of aviation -- its high maneuverability and combat readiness.