LOGISTICS IN RECENT SOVIET MILITARY WRITINGS

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PREPARED FOR:
UNITED STATES AIR FORCE PROJECT RAND
MEMORANDUM
RM-5062-PR
AUGUST 1986

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This research is sponsored by the United States Air Force under Project RAND—Contract No. AF 49(638)-1700—monitored by the Directorate of Operational Requirements and Development Plans, Deputy Chief of Staff. Research and Development, Hq USAF. Views or conclusions contained in this Memorandum should not be interpreted as representing the official opinion or policy of the United States Air Force.

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PREFACE

This Memorandum is one product of a Project RAND study of Soviet military logistics. On the basis of open publications and public statements, the Memorandum discusses some recent Soviet ideas on military logistics and examines selected Soviet views relating to logistical support in a nuclear war. It should interest U.S. logistics planners and students of Soviet military affairs in government and the academic community.
SUMMARY

Since early 1964, the Soviet military literature has paid increased attention to logistic problems of nuclear war. There has also been a more detailed consideration of specific problem clusters, two of which are examined in the present Memorandum: the scope of logistic activities feasible during a nuclear conflict, and the preferred transportation mix for moving resources during the initial period of the war.

In one sense, recent writings on logistics reflect an attempt to assimilate and extend the ideas of the "revolution in military affairs" to a specialized sector of Soviet military thought. In perhaps a more important sense, these writings break new ground, since the Soviet military press all but ignored logistic questions until the early 1960's. The most pertinent reason for this neglect seems to be past methodological and conceptual shortcomings and inertia, which apparently retarded the absorption of changes in Soviet military doctrine. The state of the art in general, and the academic training of logistics officers in particular, have caused dissatisfaction among senior Soviet officers and lent urgency to their attempts to rectify matters.

The effect of past impediments is evident in the changing views of Soviet defense economists on the type and extent of feasible activities in support of a nuclear war. As late as 1961-62, military economists still relied heavily on industrial conversion after the start of such a war, and the ability to generate substantial new military manpower and production during the war. The relative failure to realize the full implications of a nuclear environment was apparently due to persistence of belief in the lessons of past wars. The chief vehicle for propagating past experience was "political economy" (a system of thought explaining economic processes in a priori ideological axioms), the prefabricated notions of which were extended into the sphere of military doctrine and applied, more or less explicitly, to nuclear war.

Recently, however, there has been a retreat from these notions;
the applicability of "political economy" to analysis of nuclear war has been downgraded, and the ideas of Soviet defense economists are coming into line with the postulates of the "revolution in military affairs." Soviet military economists and logisticians now tend to lay great stress on prewar preparations -- on forces in being and the stockpiling and deployment of resources -- and recognize that logistic activities possible immediately after the outbreak of hostilities are of the essence. They acknowledge that nuclear strikes could damage the economy so severely as to render force buildup and industrial conversion during the war a questionable and uncertain proposition. While the current literature is not too clear on this point, Soviet defense economists seem to be drifting toward consideration of an industrial nucleus that would operate chiefly on accumulated stocks and maintain certain interdependent activities essential to the preservation of Communist power, the sustenance of the surviving population, and the continued support of the war. Thus, while not questioning the possibility of a protracted war, and while casting about for solutions that would contribute to victory in such a war, they now seem aware of the constraints and obstacles involved.

Logistic questions have also come up in a theater context -- specifically, in apparent connection with supporting a Soviet offensive during the initial period of a nuclear conflict. Here, the discussion has partly centered on alternative means of transport. Apparently, there is some uncertainty and disagreement about the worth of the railroad system, in view of its vulnerability and constraints on reconstruction. Nonetheless, railroad utilization seems to have fared somewhat better in recent contributions than in the Sokolovskii book.

Much stress has been laid on the crucial importance of fuel supplies to the rapid advance of Soviet forces. While there has been some suggestion in the literature about the need to increase the fuel self-sufficiency of combat elements, resupply has been the major concern. Here, an evident trend is the growing importance of tactical pipelines. Their employment appears to have passed beyond the stage of experimentation and tinkering, to the point where they are depicted as second in importance to motor transport as a way to move fuel.
A final point worth noting is the attention now being paid to the delivery of fuel by air, with delivery by cargo aircraft, helicopter, and airdrop all receiving endorsement.
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GLOSSARY

Military economics (voennaia ekonomika) -- the Soviet term for defense economics. The scope and content of activities covered by this term are strongly influenced by political economy (q.v.).

Operational rear (operativnyi tyl) -- the area behind front lines under the control of commanders of army groups or armies.

Political economy (politicheskaia ekonomia) -- a system of thought explaining economic processes in terms of a priori ideological axioms.

Rear (tyl) -- a generic term used to describe, depending on the context, the area behind front lines, the entire territory of the country, or zone of interior. Sometimes the term "deep rear" (glubokie tyl) is used in the latter context.

Rear and supply (tyl i snabzhenie) -- the Soviet term for logistics.

Rear services (sluzhby tyla) -- a generic term for the logistic elements of the Soviet armed forces.
I. INTRODUCTION

Soviet military theoreticians face the intricate problem of diffusing and adapting recent major doctrinal changes to specialized sectors and areas of military thought. One such area is logistics. This Memorandum examines some recent views of Soviet logisticians and defense economists on the support of the armed forces in a nuclear conflict, and sketches in the context in which these opinions were expressed. While a number of topics are touched upon, the main discussion concerns two issues: the scope of logistic activities feasible during a nuclear war, and the preferred transportation mix to move resources in a military theater of such a war. Most of the Soviet writings considered here were published between early 1964 and early 1966.

The selective approach pursued here, as well as the time frame, is imposed largely by the characteristics and limitations of source material. Generally speaking, logistics was a neglected topic in the Soviet military press until the early 1960's. The publication of Sokolovskii's Military Strategy marked a turning point; thereafter, articles on selected doctrinal aspects of logistics began to appear in the periodical literature. The Memorandum is substantially based on these articles. To avoid reiterating generally known tenets and opinions, this study examines only those writings that carry forward certain ideas expressed in the Sokolovskii book, or indicate current conceptual difficulties.

It should be recognized that Soviet writings on logistics are an integral part of a broader doctrinal framework. The main lines of this framework have been delineated in a series of RAND publications on Soviet military strategy, a number of which are cited in the footnotes.
II. BACKGROUND AND CONTEXT OF RECENT WRITINGS

Over the past decade Soviet military thought has undergone a series of innovations and alterations which the Soviets themselves refer to as a "revolution in military affairs." In its beginnings, this revolution was compelled more than fomented. It took the combined impact of changing weapons technologies and political necessities to bend Soviet military theory into line with the realities of the nuclear age. The adjustments have taken place against a background of continuing discussion and debate, some of the central issues of which are still unresolved.

The architects of the Soviet "revolution in military affairs" strove to obtain an overview of the broad strategic landscape, leaving the detailed exploration of subsidiary problem areas to later writers. One such area was military logistics -- the activity by which a military force is built up and supported through the provision of supplies, equipment, transport, maintenance, and an evacuation capability. Logistic questions have taken on new importance in Soviet strategic thinking on nuclear war: the Soviet rear is depicted as being in a qualitatively new and different situation, with greater demands than ever being placed on support of the armed forces. The advent of nuclear weapons is said to have eliminated the boundaries between "front" and "rear", changed the composition and deployment of the armed forces, and altered the spatial and temporal constraints for support of military operations.

These and other changes have been peripherally noted by numerous writers, chief among them being Colonel General A. I. Gastilovich, who contributed Chapter 7 on the "preparation of the country" for war, to the two editions of Sokolovskii's Military Strategy. Some of the broad logistic problem areas that Gastilovich sketched in were singled out for exploration in two subsequent series of Red Star articles (1964-66) oriented toward the general theme of the "revolution in military affairs." In one sense this may be regarded as an extension and adaptation of the ideas of the weapons revolution to a
specialized sector of Soviet military thought; as will be shown below, several problems of theater logistics discussed in the Red Star articles bear on questions raised by Gastilovich.

In another sense, however, these writings broke new ground. Except for Gastilovich's contribution, logistics was an ill-defined, poorly articulated, and marginal topic in the open Soviet military literature until the early 1960's. To be sure, it would be incorrect to speak of a complete absence of previous writings by Soviet logisticians. During the late 1950's a number of pamphlets on "rear and supply" were issued, but they seem to have been intended for popular consumption and were largely devoid of substantive content.\(^1\) Logistic problems were also treated in the sole major work on military economics of this period: Colonel (later Major General) A. Lagovskii's Strategy and Economics. Lagovskii's book was published by the USSR Ministry of Defense in 1957, followed by a revised and enlarged edition in 1961. In retrospect, this work is chiefly noteworthy for a number of surprising omissions. In speaking of the buildup and support of the armed forces, Lagovskii related Soviet needs and capabilities to a nuclear war, but his image of the war itself was outdated. In 1961 he still envisaged a future nuclear war as being essentially a World War II fought with nuclear weapons, and his observations about logistics reflect this assumption.\(^2\) Evidence of similar conceptual shortcomings also occurs in the writings of other defense economists, who around this time sought to identify the relationships of economics to strategy and to define the scenario for logistic issues.\(^3\) All in all,

\(^1\)For representative examples, see M. N. Kolachev, Role and Significance of the Rear in Modern War, Obschestvo po rasprostraneniiu politicheskikh i nauchnykh znaniy, Kiev, 1957, and V. K. Vysotskii et al., Forty Years of Soviet Army Rear, Voenizdat, Moscow, 1958.


\(^3\)This problem is discussed in the next section.
the state of Soviet writing on logistics up to the early 1960's was succinctly summarized by Rear Admiral V. I. Andreev, who in 1963 called logistics a set of "questions, which up to the present time have received almost no illumination in the Soviet press."^4

THE RECENT UPGRAWDG OF LOGISTICS

While it may be unprofitable to speculate in detail on why the Soviet Union scanted logistics research, certain broadly relevant considerations do deserve mention. To begin with, it would have been difficult for Soviet writers to discuss broad policy issues without coming to grips with problems of allocating resources among alternative uses and over time, and such problems in the USSR are decided by the central political authorities. This consideration alone would constrain legitimate inquiry. Another consideration pertains to the evolving nature of the Soviet military debate. Logistic questions could hardly have been treated separately from such issues as the length of the war, the "decisiveness" of its initial period, the question of mass armies, and so forth. Consequently, it is not difficult to imagine the unwillingness of lesser lights -- Soviet logistics and defense economists -- to set themselves up as innovators, and their preferring to wait for some sort of tentative consensus to emerge on the major issues. The Sokolovskii book in many ways represented a compromise view, and the appearance of logistic topics in Soviet military literature is distinctly a "post-Sokolovskii" phenomenon. Finally, the Soviets sometimes tend to attribute past omissions to conceptual and methodological difficulties and bureaucratic inertia; these considerations are outlined below.

Whatever the causes for past shortcomings, the Sokolovskii book was the first compendium on military strategy to devote attention to the broad logistic problems posed by nuclear weapons. Further hints of quickening Soviet interest in logistics are provided by the issue of a number of translations of Western treatises on logistics and

defense economics, and the appearance of handbooks on hitherto neglected topics, e.g., on the use of computers in supply. Indeed, there appears to be a backlog of publications, with "scientific tomes" on military economics being circulated among Soviet specialists, but not much being done to ensure their orderly and systematic publication.

In June of 1964 Marshal Ivan Bagramian, Chief of the Rear of the Soviet armed forces, issued a call for military periodicals to "write more about rear services personnel and their outstanding deeds and to raise questions in connection with improving the work of rear services organs." Bagramian's request coincided with the initiation of the previously mentioned sequence of Red Star articles on logistics, and for the first time logistic topics were prominently featured in Soviet discussions of military theory.

The authors of these contributions, by training and inclination, fell into two groups. One group of officers with academic backgrounds in economics sought to identify and define the general problem-setting for support of a nuclear war. The other group, composed chiefly of senior officers who held commands in the rear services, directed their attention to the question of theater warfare under nuclear conditions; the problems explored here related to supporting a sustained offensive by combined Soviet forces.

In view of the previous dearth of writings, the above changes, as well as the manner of their initiation, suggest that logistic issues are being upgraded in Soviet military thought. Additional evidence on this point is provided by indications that the needs and requirements for instruction and research in logistics are being reexamined. It is

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5. S. A. Abramov and V. S. Batrakov, Electronic Computers and the Supply of Troops, Voenizdat, Moscow, 1964. For popular discussions of the uses of computers, see Tyli snabzhenie sovetskikh vooruzhennykh sil.


8. The sequence of articles on logistics was part of a series of communications on the general topic of the "revolution in military affairs."
to these developments that the discussion now turns.

**INDICATIONS OF METHODOLOGICAL SHORTCOMINGS**

Bagramian's exhortation to "raise questions" in connection with improving the work of rear services organs found response in a spate of communications to the editors of *Red Star*, pointing out certain areas of difficulty and suggesting means for their elimination. Most of such observations were made by senior officers who stressed the need for rear services personnel to understand the principles of combined-arms combat, and declared that the idea of logistic support being the business of "mere suppliers" was obsolete. The criticisms levied also noted that logistics officers at times were not being adequately prepared to understand the conditions of modern war, and therefore, being captives of outmoded views, tended to become confused during maneuvers.⁹

It is interesting to note that the quality and type of instruction given students at the Academy of Rear Services and Transport received rather low marks. Colonel V. Rodin, for example, wrote as follows:

Students still often think in the categories of past wars. They abide in the captivity of earlier views. For instance, the students of one training section expressed the idea that the unleashing of a war will be preceded by a more or less extended period of mobilized deployment of the armed forces. It is not difficult to see that this is a tribute

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At the same time there were indications that efforts were being made to correct this state of affairs. Thus, for example, in a January 8, 1966 communication to *Red Star*, Major General A. Martynenko noted that much had been done recently to improve the attitudes of rear services officers in regard to inculcating them with knowledge of combined-arms combat. Martynenko added, however, that "it is too early to rest easy on this point. Everything is not yet going smoothly and there are still unresolved problems."
to the past. Some students still allow cliches to enter their opinions when speaking of the question of the beginning period of a future war. Sometimes there is not sufficient flexibility of thought... The whole complex of connections and relations between phenomena is not visualized. 10

Criticism along similar lines was expressed in a July 1965 article by Chief Marshal P. Rotmistrov, who spoke in his capacity as Assistant Minister of Defense USSR for higher military educational institutions. The gist of his remarks indicated that the fault lay in the omissions of the academy's teaching and research staff, rather than in the mistakes of "some students." Rotmistrov declared that certain instructors and chiefs of academic chairs at the Rear Services and Transport Academy were so enfeebled by age that they could no longer work at full strength. Moreover, he added, a number of instructors had been out of touch with the practical work of the troops and did not have the necessary qualifications for understanding modern war. 11

In a somewhat broader context, the question of research and training was also raised in connection with proposals to overhaul the curricula of military engineering academies (which train maintenance officers). A point of concern to Soviet observers was the lack of courses in applied economics and management techniques. In November 1965, Lieutenant Colonel A. Cherginet, a military economist, surveyed the courses given to military engineers and found that "courses in applied economics are not given to the students all," and that "in fulfilling course requirements and theses economic analysis is not required of the students." 12 Cherginet argued for the need of such courses and in this he was backed up by Rear Admiral S. Orlov, Inspector-Admiral attached to Rotmistrov's office. 13

These statements not only revealed dissatisfaction with the conceptual and methodological underpinnings of training and research in logistics, but also served notice that changes were in the offing. The hints at housecleaning, when taken in conjunction with the Soviet declaratory position on the increasing importance of logistics and the appearance of a spate of writings on selected topics in the field, indicate that an assimilation of the ideas of the "revolution in military affairs" is indeed under way.
III. SUPPORT OF NUCLEAR WAR: A NEW PROBLEM SETTING

One category of problems treated in recent Soviet writings concerns logistics in the broadest and most general sense; it relates to the issue of whether the Soviet Union should count on the forces in being and the resources stockpiled and mobilized before the war, or whether it should rely on generating additional military manpower and production during the course of the war.

In terms of the main lines of Soviet strategic thought, no clear answers have been forthcoming on this issue. It is part of an interlocking complex of such unresolved questions as the length of the war, the "decisiveness" of its initial period, the question of mass armies, and so forth. All participants of the Soviet strategic debate seem to be in agreement, however, on the importance of peacetime preparation and readiness of the armed forces and the economy in order to maximize the Soviet Union's capability to wage nuclear war, be it short or protracted.

It may be instructive to consider the evolving opinions of a small group of Soviet officers who by training are military economists and by inclination followers rather than opinion leaders or innovators. On one hand, these people have carefully reiterated the usual hedges and reservations about either/or possibilities, and as a rule have hewed close to such generally accepted concepts as the infeasibility of a counterforce strategy. On the other hand, by virtue of being military economists, they have been obliged to pay closer attention to the substance of matters.

THE RETREAT FROM "POLITICAL ECONOMY"

The ideas of Soviet defense economists are evidently in a state of flux, with a number of old notions apparently being downgraded and modified, and the construction of a new and suggestive problem-setting under way. Major General A. Kornienko expressed the situation as follows:
The military-technological revolution has placed new tasks on the economy. First of all, it has been accompanied by an unheard-of increase in the complexity and cost of military hardware. Second, it has immeasurably increased the demands on the level of economic readiness, raised the role of the time factor in the logistic support of the war. Third, the growing capabilities of modern weapons, able to strike objects in the deep rear, with the utmost clarity have announced the problem of the survivability of the economy itself, as well as of preservation of manpower and increasing the viability of production and transportation centers.

The military-economic capabilities of states are currently characterized not only by the ability to successfully carry out a given quantity of military production, but also how mobile is the economy itself, what strain it can bear, what is the degree of its survivability.14

With minor variations, Kornienko's ideas were reiterated by a number of his colleagues, all of whom spoke of the "fundamentally new significance," "new role," and "new foundations" of the economic factor as applied to nuclear war. It was noted, for instance, that "the concept of the economic potential itself is essentially changed,"15 that "a new approach to the solution of the question of the economic support of the war is needed,"16 that the "higher and more complex demands on the economic rear" had "extraordinarily complicated the problem of manpower resources," and that it was impermissible to think of the support of the war as a repetition, either in form or in content, of World War II experience.17

The tremendous damage wrought on the economy by nuclear strikes, with the consequent danger of economic imbalances, was underscored by

15 Ibid.
many writers. Colonel G. Tkachenko put it as follows:

Utilization of nuclear weapons with unlimited possibilities of directing them to various targets within the very first hours of the war turns the rear of the combatant states into arenas of violent, destructive battlefields with all the consequences following therefrom to the support of the war and the population. This means that the economy of the country, together with the armed forces, becomes a primary object of war, and the new tasks of securing military-technological superiority over the enemy will be decided in conditions of threatened disorganization of the economy. This is the main thing, which determines not only the increased role, but in many ways the fundamentally new significance of the economic basis for achieving victory in modern war. 18

While the content of the above declarations is significant in itself, the salient point is the emphasis on the novelty of the ideas advanced and the air of almost fresh discovery and concern surrounding them.

At first sight such an attitude seems somewhat puzzling. After all, the main lines of the military debate indicate Soviet awareness of the destructiveness of nuclear war and its implications for the support of the armed forces; indeed, the problem of viability has been mentioned by various Soviet authors over a number of years. 19 But closer examination reveals that such awareness primarily appears in writings of military theoreticians who are not economists. The small tributary stream of discussion by Soviet defense economists up to the early 1960's only feebly reflects the implications of the nuclear milieu.

Many of the conceptual building blocks employed by Soviet military economists as late as 1961-62 seem to have derived from the

18 Loc. cit.
historical experiences of past wars, rather than from demands of the nuclear environment. A common denominator in past writings is the great reliance apparently still placed on industrial conversion after the start of the war and consequent ability to generate new military manpower and production during the course of the war.

A case in point is the set of ideas outlined in 1961 by Major General A. Lagovskii, a senior rear services officer and author of the sole major treatise on economics and strategy thus far issued in the Soviet Union. Lagovskii in 1961 continued to think in terms of a nuclear war being a lengthy war of attrition, requiring a maximum effort by industry to support military operations, which would proceed along fixed and continuous fronts. Thus, he declared that "the length of fronts, the distance of separate theaters of military operations from each other and from the main food and economic bases, leads, in the course of the war, to continuous movement of huge masses of people and materiel within and between theaters," and that "in the initial period of the war, even in the first half-year or year, strategy has to foresee its prospective needs as regards the type, as well as the quantity, of technical means and armaments." While Lagovskii did take occasional note of the new demands the nuclear milieu placed on the support of the armed forces, these comments look like afterthoughts sandwiched in between notions of the type cited above, which form the basic theme of his book.

A similar odd juxtaposition of concepts is found in the Sokolovskii book. Colonel General Gastilovich's contribution to this compendium (see p. 2 above) contains a sober evaluation of the main tasks posed by the nuclear milieu to the buildup and support of the armed forces. In contrast, Chapter 1's discourse on the role of the economy in war takes scant note of the nuclear environment. Although the section on "strategy and economics" is part of a chapter that purports to outline

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20 He also spoke of the question of foreign trade during a nuclear war, the problem of reducing long hauls of vegetables and potatoes to frontline troops, etc. See Lagovskii, Strategy and Economics, 2d ed., Voenizdat, Moscow, 1961, pp. 55-56, 72, 119, 179.
the conceptual underpinnings of Soviet military doctrine and introduces a volume devoted to the analysis of nuclear conflict, it substantially repeats the ideas of Major General Lagovskii. Thus for instance, it is said that "strategy must furnish the economy with accurate information on the requirements of at least the first year of the war, as well as the expected rates of supply and losses and replacement of material and technical equipment," and that "in order to wage war, each state puts its economy on a war footing," which, "as war experience has shown, must include" a number of measures under the general heading of restructuring of the economy--e.g., the reorganization of economic administration, the reorientation of foreign trade, the construction of new military industrial enterprises, the institution of financial measures, etc. 21 Similar oddities are evident in attempts around 1961 to identify and define the Soviet Union's "economic defense potential." 22

While the paucity of the Soviet literature does not permit consideration of all the reasons for the persistence of such notions, the main vehicle for propagating the experience of past wars can be readily identified: the methodology employed by Soviet military economists. It may be remembered that the "revolution in military affairs" overturned certain "laws" of war developed and codified by Stalin. But Stalin also constructed a set of economic "laws," which in a somewhat amended form are still current. Around these "laws" grew up "political economy," a system of thought explaining economic processes in terms of a priori ideological axioms. 23 Many of the past writings of Soviet


23 An updated version of Stalin's "laws" on economics will be found in Fundamentals of Marxism-Leninism, Foreign Languages Publishing House, Moscow, 1961, pp. 703-729.
defense economists are reiterations of the prefabricated axioms of "political economy," extended into the sphere of military doctrine and applied not only to war as such, but also, more or less explicitly, to nuclear war. For example, the notion of equating economic capacity with military strength, and assertions that the virtues of superior Soviet political and economic organization are of critical importance to the state's defensive might in time of peace, and provide it, vis-à-vis capitalist states, with a margin of superiority during war, are extensions of economic "laws" originated by Stalin.

Without pursuing this line of inquiry any further, it suffices to suggest that the applicability of "political economy" to problems of nuclear war is highly dubious. And recent declarations by Soviet defense economists seem to reflect a growing awareness of the shortcomings of the conceptual framework employed in the past. While not

24 Major General A. Kornienko recently confessed (Red Star, September 10, 1965) that "formerly" the concept of economic defense potential was understood to mean simply maximum production "of everything needed for the armed struggle." And this is how Khrushchev defined it (Pravda, August 27, 1959): "I assess power not by the number of weapons or divisions, but by the level of economic development. This is the main thing. Whoever has a strong economy has also the ability, if he so wishes, also of creating a strong army."

25 A summary of such assertions would run approximately as follows: "The Soviet system assures a more perfect organization of society, which is of critical importance to the state's defensive might in time of peace, and provides it, vis-à-vis capitalist states, with a margin of superiority during war: First, the existence of Communist power assures a unity of will and action distinguishing the USSR from capitalist states, which are torn by class antagonisms. Second, the absence of unhealthy and chaotic competition and the presence of public ownership of the means of production and the system of centralized economic planning enable the Soviet state to base its calculation on precisely known capabilities and clearly defined prospects of economic development. Hence, the state is able to integrate strategic requirements into its economic plans. Finally, the continuing primacy of heavy industry guarantees the continued existence of this margin of superiority."

This statement is a direct extension of the axioms of "political economy," in particular of the following three "laws": the "basic law of socialism," the "law of planful, proportional development of the economy," and the "law of preferential growth of output of the means of production." Without going into detailed explanation of these "laws," it suffices to say that their economic meaning is marginal.
flatly denying the notions of "political economy," which would have been injudicious on ideological grounds, they have tended to modify and downgrade them. Now it is said that the social order existing in the USSR only "to a certain extent will be of decisive significance even during a nuclear-missile war," that "in a military conflict of two sides the one with the stronger industry does not always win," etc. Instead, Soviet theoreticians in their search for links between strategy and economics are looking outside the confines of "political economy." Indeed, it may have been this change in outlook Lieutenant Colonel S. Bartenev had in mind when he wrote:

The military-technological revolution has substantially changed our ideas about the subject matter and themes of such a sector of science as military economics. The scope of problems to which it pertains has increased extraordinarily and its relevance has grown sharply. It can be said that new "points of contact," new areas of interrelationships and influences have appeared between economics and military affairs. From a particularly narrow sector of knowledge military economics has turned into one of the most important sectors of science for the practical arming of strategy and politics.

The common denominators in recent Soviet commentary are a recognition of the severe damage that nuclear war could inflict on the economy, and an admission of uncertainties surrounding alternative courses of action. While the new scenario has remained vague, it does seem to be in accord with the main postulates of the "revolution in military affairs."

A REQUIREMENTS-ORIENTED APPROACH

If the more realistic evaluations of the effects of nuclear war on the Soviet Union jeopardized the comfortable assumptions of


27 Bartenev, "Economics and War."
Major General Lagovskii and others of like persuasion, it also confronted military economists with the question of what logistic activities were feasible in the new and uncertain milieu. Since all Soviet theoreticians, economists and noneconomists alike, seemed to agree that readiness for a nuclear war was of the essence, then preparations made before the war--forces in being, accumulated stocks of resources and their deployment--and logistic activities possible immediately after its outbreak, were said to be of key importance and deserving continuing attention and review. Not unexpectedly, however, Soviet authors tended to be close-mouthed about particular policies and generally were content with hammering at the importance of readiness.  

Yet it was the problem of supporting a protracted nuclear war which now posed the real dilemma. While a protracted war may not be a preferred solution, it was one of the alternatives that military economists were obliged to reckon with: in Soviet strategic thought, it should be recalled, the length of a nuclear war is a question to which no clear answers have been forthcoming. Soviet military literature on the whole has tended to stress the "decisiveness" of the initial period of the war, while also recognizing the possibility of the war being protracted. Similarly, while the importance of the peacetime preparation of the economy has been emphasized, it has also been admitted that the forces in being would be inadequate to attain all the goals of the war. The logical way out of this impasse would seem to be to assume a necessary force buildup and industrial conversion after the initiation of hostilities--but this again raises the issue of the "decisiveness" of

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28 Thus, in the opinion of Lieutenant Colonel G. Miftiev, Red Star, June 4, 1965: "Presently, the task of realizing secret mobilization and deployment of the armed forces is becoming more and more difficult. . . . Changes in the material-technical basis and characteristics of modern war have led to serious changes in the organizational structure of the armed forces and a re-examination of their supply with manpower. The mobilization deployment of the armed forces will be realized by somewhat different means than in the past." Miftiev did not indicate what such means would be.
the initial period and presupposes the feasibility of mobilization and deployment of additional resources.

The new milieu outlined by defense economists did not help resolve this impasse; if anything, it tended to reduce the feasibility of supporting a protracted nuclear war.

Under the pressure of these circumstances, Soviet military economists have been casting about for new policies to fit their altered image of war. While no clear solutions have emerged, recent opinion seems to be drifting toward consideration of an industrial nucleus that would provide certain interdependent essential activities to preserve Communist power, sustain the surviving population, and continue the support of the war. Despite the connection between protracted nuclear conflict and the economy now being somewhat nebulous, it is not envisaged merely as an elemental attempt to survive, but as a set of centrally guided activities for the achievement of necessary and desirable goals. Perhaps the most interesting aspect of the new approach is the apparent substitution of emphasis on the use of accumulated stocks for restructuring the economy for military production. These ideas have been implicitly rather than explicitly noted, and it may be useful to delineate the context in which they were expressed.

Lieutenant Colonel G. Miftiev is a military economist who, shortly before the fall of Khrushchev, urged the Party to adhere to the principle of maintaining a regular cadre army and argued for a war-oriented peacetime economy. In 1964 he noted that "it is difficult to say how large a part of the demands of the armed struggle will be covered by efforts carried out during the war itself. One thing is clear: as distinguished from former wars, current production can play only an auxiliary role as a source of supply." Miftiev's idea of the "auxiliary role" was as follows:

29"Criteria for Economic Victory in Modern War." The article also seems to represent a plea against the further troop cuts Khrushchev was then considering; see T. W. Wolfe, Impact of Khrushchev's Downfall on Soviet Military Policy and Détente, The RAND Corporation, P-3010 (DDC No. AD 609682), November 1964, pp. 8-12.
In order to secure the elementary conditions of life, and the productive and social activity of the people in the period of the war, it is necessary to carry out a whole complex of measures to increase the viability of the economy. . . . Utilization of resources in a lengthy war assumes the timely creation of well-hidden and well-defined production reserves. 30

Miftiev returned to the same point in a 1965 article on nuclear war and manpower resources. Again noting the necessarily auxiliary role of wartime production, he nevertheless went on to mention the importance of "previously created capacities of military industry." 31

In a different context, the question of productive activities of the population during a nuclear war was mentioned in a March 1965 article by Marshal V. I. Chuikov. After an unusually somber evaluation of the effects of nuclear weapons, Chuikov added, "The preservation, during the course of the war, of the population, since it is the primary productive force, the preservation of stability, and the vital operations of the economy and material-technical resources is now a mission of paramount, national importance." 32

Closer to the traditional viewpoint stood Colonel A. Tkachenko, who, after noting the "tremendous destruction" wrought on the economy by nuclear strikes and offering the customary hedge about the possibility of the war being decided in the initial period, went on to state: "Nevertheless, the tasks of the economy--in case of necessity to rapidly convert the economy to a war footing and to produce military output according to war plans--are not reduced." In this case the situation would be "complex" and "difficult" owing to economic imbalances that would arise as a result of "huge production capacities" being knocked out. A maximum mobilization of material and human resources would be necessary to overcome them. 33

30Miftiev, op. cit., p. 46. The Russian word translated here as "hidden" is ukryt'yje, which may also mean "hardened" or "sheltered." Thus an alternative translation would read, "well-sheltered and well-defended production reserves."
31Idem, "War and Manpower Resources."
Tkachenko's views were shared by Major General A. Kornienko, who thought in terms of a wartime "logistic economy":

In current conditions, with the start of the war the entire economy is put on a wartime footing and subordinated to the interests of conducting war. Thus, there appears a military economy which funnels materiel, weapons, and other necessities for the conduct of war to the armed forces. Undoubtedly, the military economy cannot be considered as somehow divorced from the entire economy of the country. . . . 34

What sets Kornienko's statement apart from the ideas of such men as Lagovskii is first of all his explicit acknowledgment of the destructiveness of nuclear conflict. Further, Kornienko--virtually the sole Soviet contributor to these questions to hold the degree of Doctor of Economic Sciences--is conversant with Western literature in his general field and has followed the writings of U.S. defense economists on the viability issue. 35

34 "The Economic Basis of Military Might of States."
35 Kornienko translated and wrote an introduction to C. J. Hitch and R. N. McKean, The Economics of Defense in the Nuclear Age (Voennaia ekonomika v iadernyi vek), Voenizdat, Moscow, 1964. He evidently is also familiar with the writings of Oskar Morgenstern.
IV. LOGISTICS IN A THEATER CONTEXT

NEW TASKS OF THE REAR SERVICES

Introducing a sequence of articles relating to logistic problems in a theater context, Major General N. Safronov declared:

The modern rear of the armed forces should be provided with the same qualities possessed by a modern army. Consequently, before us stands a wide variety of tasks: great speed of transporting materiel; massive evacuation of the wounded; high mobility of field depots; capability to rapidly reconstruct destroyed roads and lay new ones; the uninterrupted supply of troops with the key necessities; rapid, reliable repair and servicing of equipment; the successful overcoming of barrier areas in the transportation network; accuracy of all logistic planning operations; the preservation of viability of logistic organs; and, finally, effective control of rear formations and units in battles and operations. 36

Safronov's assessment of the tasks facing Soviet logisticians was shared by his colleagues, 37 and indicated that an assimilation of the changes produced by the "revolution in military affairs" was under way. The consequent exploration of a number of problems of the operational rear was dissimilar to the casting about of Soviet military economists described earlier. To begin with, the treatment of logistics in a theater context, unlike the loose assemblage of notions on military economics, seemed to be based on a fairly clear image of military operations: a theater offensive by Soviet combined arms forces, carried out in nuclear conditions, the presumed objective of which is a rapid occupation of Europe. Further, the main problems singled out for attention appear to be extensions of and elaborations on questions raised in the two Sokolovskii editions, particularly


Gastilovich's Chapter 7. Soviet writings on logistics in the theater context thus fall within a definite conceptual framework. On the other hand, as in the case of military economics, their detailed exploration in the open Soviet military press appears to have begun only in 1964, and it is noteworthy that these issues—the tasks "before us," to recall Safronov's phrase—were not considered earlier.

While the general impression given by the Soviet literature is that a whole spectrum of concepts and policies was being reexamined, only a few issues have been discussed at some length. Of these, the questions of streamlining management procedures and cross-training personnel fall outside the scope of this Memorandum. Other issues discussed pertain to the rapid deployment of military forces to the theater of operations and the support of their operations during the initial phase of a nuclear conflict; the latter problem has occasioned the most comment. Of particular interest to Soviet logisticians seems to be the choice of transportation mix to move personnel, equipment, and such war-consumables as POL. It is to these questions that the discussion now turns.

THE EFFICACY OF RAILROAD TRANSPORT

In speaking of alternative types of transportation systems to move supplies during the buildup prior to initiation of hostilities, and during the initial period of the war, Soviet logisticians tend to stress the necessity of a flexible approach. Usually this tendency finds expression in enjoiners to keep in mind the needs and constraints of the moment and be prepared to use all modes of transportation simultaneously. As to the relative importance of these, air transport is usually noted in conjunction with moving personnel and critical items, while water transport is thought of as a backup measure. In regard to the relative advantages of the two major modes of transport, road and rail, there appear to be some differences of opinion and a degree of uncertainty as to the vulnerability of the railroad system. It is interesting to note that railroad utilization seems to have fared better in more recent contributions than in the two Sokolvskii editions.
Colonel General Gastilovich, who contributed the relevant chapter in the Sokolovskii volumes, tended to downgrade the importance of rail transport both in theaters of military operations and, to a lesser extent, within the Soviet zone of interior. In previous wars, railroads were the principal means of transport both in the theaters of operations and in the interior of the country, Gastilovich noted, but in the future the role of railroads in the interior of the country would be less important, albeit still substantial. In theaters of operations, however, motor transport would be "decisive," while truck, pipeline, and air transport in combination would play the "dominant" role. Railroads, because of their greater vulnerability, loading constraints, and the necessarily slow restoration of destroyed trackage, would be of secondary importance. Thus, in the opinion of Gastilovich, "the peacetime development of a railway network in theaters of operations has... lost its former significance, since railways no longer serve as the main type of transportation for the operation of the ground forces." Somewhat inconsistently, however, Gastilovich then went on to say--in an apparent force-buildup context--that movement "from the interior of the country to the military theaters will have to be primarily carried out by rail," and that "there are no reasons to assume that the armed forces requirements for railway transportation would decrease under the present conditions.

Major General Safronov, writing in July 1964, took a somewhat different tack. Referring to the logistic problems of the Soviet operational rear, he declared that

with the present-day tempos of advance it will be difficult to move thousands of tanks, artillery, motorized infantry, ammunition, and other items of supply along one or two vehicular highways... In present-day

38 Gastilovich thought that military theaters would include "part of our own country," as well as areas outside the USSR (Sokolovskii I, p. 445; Sokolovskii II, p. 423). In addition, he spoke of the "interior" of the country, without, however, defining the particular meaning of the term.
39 Sokolovskii I, pp. 443, 455; Sokolovskii II, pp. 420, 433.
40 Sokolovskii I, p. 455; Sokolovskii II, p. 434.
conditions only the complex utilization of all means of transportation can insure success. In this connection railroad transporation acquires significance. For the repair of track and bridges, the railroad troops must be equipped with machinery that can lay sections of track and restore bridge spans and other structures in a matter of hours. 41

Colonel General P. Kabanov, chief of Soviet railroad troops, made a more eloquent defense of railroads in 1964. In a defensively worded argument he insisted on the continuing efficacy of railroad transport, and in his choice of examples seemed to take issue with Gastilovich. Kabanov asserted that in current conditions, the role of railroad transport was "not reduced," and railroads possessed the advantages of around-the-clock operation, independence of weather conditions, the possibility of mass transport of bulk items, and cheapness; further, since the rail network was fixed and known in advance, the problem of deployment was made easier. 42

At this point Kabanov rebutted possible counterarguments regarding the railroad network's vulnerability to nuclear interdiction, and the problem of speedy repair of destroyed segments. Drawing on historical examples, he averred that the U.S. Air Force was unable to knock out the North Korean railroad system with conventional bombs, and that train movement at Hiroshima had been re-established only 18 hours after the U.S. atomic strike. In any case, nuclear interdiction, while creating barrier areas and perhaps even "cutting the railway network into separate and isolated sections," could not destroy the entire system, traffic could be rerouted, and even NATO had assigned importance to railroads. 43 Soviet railroad troops, whose number had tripled in the past ten years, Kabanov wrote, "will have to move often, cover great distances, moving from one destroyed object to the next, and have to work away from existing rail lines."

Referring to the mechanized equipment available to the troops, Kabanov

41Safronov, op. cit.
42"Railroad Troops," in Grechko, op. cit., p. 152.
43Ibid.
underscored the speeds of reconstruction possible today, and noted that underwater and even surface bridges could be laid at the rate of up to 150 meters per day; yet this particular example, which Kabanov mentioned approvingly, had been cited by Gastilovich in a negative sense.\textsuperscript{44}

Subsequent Soviet comments do not indicate whether other military theoreticians share Kabanov's prognosis about utilization of "front-line" (frontovye) railroads during the initial period of the war. It has been mentioned, however, that railroad transport is too slow to insure the timely delivery of POL to advancing Soviet forces.\textsuperscript{45}

THE QUESTION OF FUEL SUPPLY

A number of authors point to the fact that present rates of fuel consumption exceed World War II rates by tens of times. They repeatedly stress that the rapid advance of Soviet forces crucially depends on their timely and uninterrupted supply with fuel. The development and improvement of fuel transportation and servicing techniques thus are placed in the forefront of the current tasks of the rear services.

At the same time, Soviet comments imply that fuel supply is also a complex and vexing problem requiring continuing experimentation and adjustments. Two aspects of the problem are distinguished, one being the self-sufficiency of lower-echelon units, and the other the question of resupply.

The issue of self-sufficiency of combat elements has cropped up occasionally in Soviet writings, but usually in context of mentions of such simple and traditional solutions as increased utilization of auxiliary fuel tanks on weapons and personnel carriers.\textsuperscript{46}

\textsuperscript{44} Ibid., pp. 156-157; cf. Sokolovskii I, pp. 442-443; Sokolovskii II, p. 420.

\textsuperscript{45} See next section.

\textsuperscript{46} Soviet armored formations utilized auxiliary fuel tanks in World War II.
The emphasis, both in specific articles on POL and in occasional mentions of the topic, has been on the problem of resupply.

Recent Soviet writings have elaborated on comments found in the two Sokolovskii editions. There it had been recognized that while specific conditions might require the use of all types of transport in conjunction, railroads could not be counted on to ensure the timely delivery of fuel, and the use of fleets of tank trucks was a cumbersome method. The problem of resupplying troops on the offensive with fuel from main underground pipelines, it was said, "can be solved only by using field pipelines. These are laid down behind advancing troops and extend also to airfields and naval bases." By referring to pipeline utilization in a future sense, the Sokolovskii volumes may have been noting problems of poor transportability and heaiveness of pipeline components, which seemed to have plagued Soviet experiments with tactical pipelines around this time.

The question of tactical pipelines was again taken up by Major General N. Safronov. Writing in July of 1964, Safronov noted that "in some types of supply operations, for example, fuel, vehicles are not the most effective means of transport." Safronov went on to emphasize the advantages of tactical pipelines, which would ensure greater operating rates, were relatively cheap, and "can be quickly assembled and dismantled and moved from one area to another." However, despite assurances that "our logistics has such means," Safronov talked of tactical pipelines in the sense of future need and indicated that at the time of his writing trucks were still the "basic means" for fuel transport. To heighten the efficacy of truck transport, he recommended a variety of simple expedients, such as using mechanized equipment for loading fuel drums on trucks, and "soft" fuel containers made from plastics and rubberized material.

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47 Sokolovskii I, 443; Sokolovskii II, 420-421.
49 Safronov, op. cit.
A more recent appraisal of the pipeline question is to be found in an article by Lieutenant General V. Nikitin, chief of the Soviet fuel supply service. Nikitin viewed tactical pipelines as an auxiliary system of growing significance. Commenting on the increased importance of maneuver and the concentration and dispersal of combat elements, Nikitin took pains to note the need for flexibility in supplying the "tremendous quantity" of fuel needed. "It has to be recognized," he wrote, "that possibilities of utilizing railroad transport in wartime are limited. Therefore the brunt of [fuel] supply falls on motor vehicles," including such variants as "truck trailers." Yet, while recognizing the continuing primacy of vehicle transport, Nikitin went on to underscore the growing importance of tactical pipelines. "In a number of instances," he said, "it is more convenient to connect stationary pipelines to large tactical pipelines, and extend them behind advancing troops, as well as to airfields, forward fuel depots, or refueling points on the main highways, along which vehicles are proceeding at their own speed." The main point in any case was to secure the uninterrupted advance of combat elements:

A primary requirement for the rapid advance of tanks, armored personnel carriers, artillery, various types of special vehicles, and trucks is readiness for the timely and fast servicing of equipment in field conditions. In connection with this it is necessary to have mechanized filling equipment with off-road capability equal to that of combat vehicles. Military fuel depots should follow advancing troops without breaking off contact with them, making only brief halts for issuing and receiving fuel.50

The particular advantage of large tactical pipelines, he added, would be that they "could be laid down immediately after the advancing troops, almost without breaking off contact with them."

Another apparent change of importance noted by Nikitin concerns the delivery of fuel by air. Previously, Soviet military literature had mentioned such measures of delivery only in connection with

supplying fuel to the missile forces.\textsuperscript{51} Nikitin allotted a substantial role to air delivery, specifying that "transport aviation can be of great assistance in delivering fuel. If it is not possible for aircraft to land, then delivery can be organized by using helicopters and airdrops."\textsuperscript{52}


\textsuperscript{52} "Modern War and Fuel."