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SUSTAINING THEATER

STRATEGIC OPERATIONS

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SUSTAINING THEATER STRATEGIC OPERATIONS

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SUSTAINING THEATER STRATEGIC OPERATIONS

Marshal of the Soviet Union N.V. Ogarkov's pronouncement in the summer of 1981, that the basic form of operation in a future war would be the "theater strategic operation," drew close attention from Western defense analysts.(1) Receiving far less attention, however, was Ogarkov's view on what this meant for the logistic support of strategic offensive operations of such size and complexity. The former Chief of the Soviet General Staff, and current Commander-in-Chief of the High Command of Forces in the Western TSMA, went on to note that "in the implementation of complex modern operations," the nation's logistic support system "must make good in a shorter space of time the loss of a huge quantity of combat equipment and weapons, without which it is virtually impossible to maintain the armed forces' combat capability at the necessary level."(2)

Soviet concepts for executing theater strategic operations --the air, anti-air, frontal, naval, and assault landing components--have received detailed attention earlier in this volume. Underlying these concepts, and the USSR's capabilities to implement them, however, is a logistic infrastructure and support base that has been little examined in the West. Rear service support, as Soviet planners term that complex of roles, missions, procedures, and resources intended to sustain military operations by all components of the Armed Forces, has been the object of study, development, and investment by the USSR on a scale at least equal to that of the combat arms. Rear service

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theory and support concepts have been shaped by those same historical and technological developments that have influenced overall Soviet military doctrine and strategy. Rear service support potential has, in turn, played a major role in defining directions and parameters for Soviet warfighting approaches.

Beginning in the 1970's, and continuing throughout the 1980's, the efforts of Soviet rear service planners to develop the logistic infrastructure, resources, and concepts for sustaining a theater strategic offensive have paralleled force modernization programs for the combat arms. These efforts have been reflected in sweeping logistic force restructuring programs, the establishment of echeloned stockpiles of all types of supplies and other materiel in each TSMA, and the creation of theater logistic management and control bodies. They have included improvements in strategic movement and transportation capabilities, and the development of innovative approaches for supplying deep operations forces, reconstituting attrited theater forces, securing and defending rear areas, and providing for the overall support of theater forces for what Soviet planners judge may be protracted periods. Integral to this whole process has been the careful reexamination of World War II strategic combined arms operations and the incorporation of appropriate logistic lessons learned into contemporary rear service theory and practice. This historic experience has substantially supplemented postwar Soviet and foreign logistic developments, numerous rear service and special-experimental exercises, and,

most recently, the Soviet experience in supporting their forces in Afghanistan.

REAR SERVICE ORGANIZATION, RESOURCES, AND CONTROL IN TSMAs: PEACETIME POSTURE

The Soviet logistic support system in peacetime is postured to facilitate its rapid move to a wartime footing. The perceived requirement to support simultaneous, conventional, theater strategic offensives in several TSMA's, and the recognition that escalation to the nuclear level would impose different demands on the system, has clearly shaped this peacetime posture. A few words must be said about the organization, resources, and control of the Soviet logistic establishment in peacetime, before addressing how it would perform in war.

It is instructive to briefly examine Soviet military "logistics", and the sustainment of theater operations, in Soviet terms. That is, those units and resources intended for sustaining military operations are called "rear services," and the process (as noted above) is termed "rear service support."(3) Further, the areas where rear service units and resources are located--to include the Soviet homeland itself and the USSR's national economy and infrastructure--are termed the "rear."(4) For Soviet planners, rear service support is divided into three principal functions: materiel, technical, and medical support. Materiel support includes the storage, transportation, and supply of ammunition, POL, spare parts, food, clothing, water, and other

consumable items. Technical support refers to the maintenance and repair of equipment and weapons as well as other specialized measures associated with preparing equipment and weapon systems for employment. The supply of major end items--tanks, artillery, etc.--is a technical support function. Medical support, of course, includes those many measures required for the evacuation and treatment of combat and non-combat casualties, and for the prevention of disease.(5) Included in all of these functions are a complex of transportation, line of communication (LOC) maintenance and construction, and rear service engineer support measures.(6)

Each of the five services of the Ministry of Defense (MoD)--as well as the two non-MoD components of the Soviet Armed Forces, the KGB Border Troops and MVD Internal Troops--has its own specialized rear service establishment dedicated to performing those functions outlined above. There are, in addition, vast military logistic resources and reserves which in peacetime are under the control of the Ministry of Defense, and held within the national economic sector as well.(7) All of these rear service units and assets are allocated, or are designated for allocation, to any of three levels of rear service support. These comprise the troop (or tactical) rear services which are organic to tactical units from division-level down; the operational rear services which are subordinate to <u>fronts</u>, fleets, and armies; and the central (or strategic) rear services that constitute reserves of the Supreme High Command (<u>Verkhovnoe</u>

Glavnokomandovanie--VGK), and may be allocated to theaters or force groupings at the VGK's discretion.(8)

It was a basic conclusion from World War II that each level of command must possess its own rear service resources. That is, rear service reserves must be established at every level to permit, as one Soviet author put it, "the appropriate command to influence the course of events in time, and maintain the viability of the system of rear support to the army in the field."(9) Soviet planners further concluded that "the higher the rear service level, the more significant the role of its reserves."(10) This tenet influences all contemporary Soviet rear service force restructuring and modernization efforts, and a consequence has been that increasingly larger and substantial logistic resources have been allocated to higher command levels. The Soviet central rear services-- the Soviet designated "highest rear level of the USSR Armed Forces"--are particularly important in this regard. While tactical and operational rear services certainly have their analogs within the armed forces of the U.S., the Soviet central rear services have no precise counterpart. Because of this, and because central rear services are so key to theater sustainability, it is necessary to discuss these strategic resources in a bit more detail than the more familiar tactical and operational level rear services. The central rear services comprise virtually every type of logistic unit and resource. They include large stockpiles of ammunition, POL, spare parts, major end items (tanks, armored personnel

carriers, artillery, etc.), LOC construction material, clothing, and other items. The central rear services also includes motor transport units, highway and railway construction troops, repair units and facilities, medical units and hospitals, and other units and assets. A portion of State Reserves are assigned in wartime or crisis to the central rear services, as are various economic enterprises with military support potential. In peacetime, most of these central stockpiles and units are under the control of the various main and central directorates of the MoD. For example, depots of the Main Tank Directorate (Glavnoe Bronetankovoe Upravlenie--GBTU) hold centrally-subordinated stocks of tanks, armored personnel carriers, and spare parts, while arsenals and depots of the Main Rocket and Artillery Directorate (Glavnoe Raketno-Artilleriiskoe Upravlenie--GRAU) maintain central stocks of ammunition, small arms, artillery, and associated equipment and components.(11) In wartime, central stocks in these and other depots and arsenals would constitute reserves of the VGK, whose distribution--in accord with the decisions of the VGK--would be administered by the appropriate MoD directorates, and overseen and coordinated by the Armed Forces Chief of the Rear (who is also the Deputy Minister of Defense for Rear Services).(12)

Before the start of World War II, it was envisioned that the largely uncoordinated central rear service bodies then existing, would be charged principally with receiving materiel from defense industry and other sectors of the national economy, and simply

storing it until delivery to the fronts and fleets was required. However, from the earliest days of World War II, the central rear services came to play a direct role in supporting operational formations, and enabled the VGK to directly influence the course of military operations logistically. VGK motor transport units delivered all manner of supplies from central depots to Soviet forces engaged in strategic defensive operations early in the war, and accumulated supply reserves for the subsequent strategic counteroffensives in the middle period of the conflict. By the last phase of the war--which was characterized by multi-front, strategic offensive operations of sweeping scale--central rear bases were displaced forward to support advancing operational grouping. Central bases and transport units were moved into Eastern Europe as Soviet forces advanced beyond the USSR's borders, and central rear service agencies were charged with exploiting local, foreign resources of all types to support the Soviet forces deployed on foreign territory. Centrally subordinated LOC repair and construction units restored railways and roads, centrally subordinated technical facilities repaired the most heavily damaged equipment and weapons, and medical resources of central subordination treated casualties of all types.(13) In the Manchurian Campaign, central rear service entities also played a role in supporting the three-front offensive. In this case, as will be addressed further below, what the Soviets termed "intermediate control agencies of the central rear services" were set up in the High Command of Forces

in the Far East.(14) In short, by the end of the war, central rear services of all types were judged essential for the sustainment of theater offensive operations.

Today, centrally subordinated rear service reserves of the VGK have grown in size, diversity, and mobility.(14) These resources, units, and stockpiles of all types, are located throughout the USSR, and quite likely on the territory of the non-Soviet Warsaw Pact countries as well. They constitute resources available for VGK allocation to operational groupings, and a portion of these assets are in peacetime probably designated as "intermediate central rear service resources" assigned to theater High Commands of Forces. Vast resources from the national economy are designated for mobilization and incorporation into the central rear services. As in World War II, these may include the rail network of the country, as well as a substantial portion of "civilian" motor transport, technical support, and medical resources. Assets of the civil air and merchant fleets may also be mobilized and incorporated into the central rear services.(15)

The operational rear services, intended for the support of fronts, fleets, and armies, are located in garrisons and depots generally in proximity to the operational formations they will support. Materiel stocks for the support of these operational formations, i.e., ammunition, POL, technical supplies, etc., are prestocked in peacetime throughout the USSR, Eastern Europe, and Mongolia. With the exception of at least some rear service units

in the Groups of Forces and certain other key areas, however, materiel, technical, and medical support units would require substantial mobilization to reach wartime strength. The planned incorporation of extensive motor, air, and water transportation resources, together with other equipment from the national economy, would be integral to this mobilization process.

Until the late 1970s, Soviet planners envisioned that the materiel support of combined arms formations--the most manpower and resource intensive portion of the Soviet rear service system--would be provided by rear service assets which in wartime would be loosely grouped into logistic bases comprised of stocks, servicing units, and transport resources. That is, combined arms and tank armies would be supported by "mobile army bases" and fronts would be supported by "rear front bases" "forward front bases," aviation rear service bases, and deployed base sections of various types. These rear service bases were to be loosely administered by a base commander, though direct control of its assets were fragmented among army/front deputy commanders for rear services and various supply and technical service officers.(16) A major rear service reorganization begun in the late 1970s, however, created "materiel support brigades" to replace the mobile army and forward front base components of what was clearly a fragmented and cumbersome system.(17) Possessing a streamlined command and control structure that placed all materiel support assets under the direct control of single brigade commander, together with increased mobility and lift,

these new, more mobile, materiel support brigades were considered more capable of meeting the kinds of logistic requirements generated by combined arms forces operating in a theater strategic offensive. Under the new structure, logistic assets can be more rapidly task-organized and allocated to support operational groupings and units. In addition, by creating materiel support brigades in peacetime, even if at reduced strength, the framework for rapidly constituting a full-strength materiel support infrastructure in wartime would be facilitated.

The troop rear service system, as noted, comprises those materiel, technical and medical support units and assets organic to tactical units at division level and below. Mobilized equipment and personnel would be required to bring the rear service complement of many tactical units up to full strength, though there are a number of units in the Groups of Forces and other areas whose rear service structure is largely in place. In a sweeping reorganization of the materiel support system of tactical units, analogous to that undertaken at operational levels, materiel support battalions have been formed in tank, motorized rifle, and airborne divisions to replace the former motor transport battalions, supply stocks, servicing units, and other materiel support elements present in divisions.(18)

Rear service units and resources at all levels--central, operational, and tactical--are deployed in peacetime in accord with perceived requirements in each TSMA. That is, it is a current Soviet goal, and an explicitly cited lesson learned from

World War II, that rear service resources capable of supporting forces in each TSMA be established beforehand, without depending excessively on the transfer of resources from other theaters.(19) Determinations of specific rear service requirements in each TSMA, driven by Soviet assessments on the nature of future war, are based on identified military objectives and associated contingency plans, existing LOCs and transportation resources, assessments of enemy forces and capabilities, geographic and climatic considerations, mobilization plans and potential in each TSMA to include the national and regional economic base, and similar factors.(20) Thus, preparing a TSMA for the conduct of military operations has a substantial rear service component, which the Soviets and their Warsaw Pact allies have translated into extensive plans and preparations.

The Western TSMA provides a particularly good illustration of Soviet/Warsaw Pact rear service preparation. Within this theater, echeloned logistic resources have been established from tactical to central/strategic levels. Ammunition and POL stocks capable of supporting a three-front theater force for 60-90 days of conventional operations have been positioned in depots and units from the West German border into the USSR's western military districts.(21) This 60-90 day period has been cited as the time required for defense industry to mobilize and begin to meet the consumption requirements of engaged units.(22) In addition to prepositioned reserves comprising more than 3 million metric tons (mt) of ammunition and over 9 million mt of

POL, stockpiles of bridging material, fuel pipeline, and other resources are dispersed throughout the Western TSMA. The most important military lines of communication from the western USSR through Poland and Czechoslovakia have been identified and improved, and those Warsaw Pact civilian industrial facilities and hospitals are designated for military use by TSMA forces.(23) These kinds of preparations, which by no means are inclusive of the many peacetime measures carried out, are replicated in the four other continental TSMAs around the Soviet periphery.(24)

The control of rear service forces and means in peacetime has increasingly come to resemble the wartime logistic management structure. As noted earlier, the Armed Forces Chief of the Rear and Deputy Minister of Defense for Rear Services (Marshal S.G. Kurkotkin) is at the top of the Soviet logistic hierarchy. In time of war, he would probably be a member of the VGK. Through his Main Rear Staff, he controls vast transportation, special troop (railway, highway, and pipeline), medical, and supply resources. The position of "chief of the rear/deputy commander for rear services" is found at every level of command down through regiment. These officers are directly and immediately subordinate to their commanders at each level, and subordinate in a special sense to the rear service deputy at the next higher level. Not only does this officer control most elements of materiel and medical support at each level, but he is responsible for overall rear service planning, coordination, and rear area security. When Stalin established this position at

central, front, and army levels in the summer of 1941, he declared that the chiefs of the rear were to be "dictators of their rear areas," a phrase that essentially describes the scope of their responsibilities and authority.(25)

Technical support, the major rear service function over which chiefs of the rear do not exercise direct control, begins at the highest level in the main and central technical directorates of the MoD (e,g., the GBTU, GRAU, etc.), and is controlled at operational and tactical levels by "deputy commanders for armament."(26) Under the direction of the armament deputies, and in accord with their plans, technical support is carried out by the repair units and resources of the Rocket and Artillery Armaments Service, the Armor Service, and repair units of other technical services.(27) At each level, though, the chief of the rear is the principal logistic planner and coordinator and his directives and decisions guide the execution of rear service plans in all their aspects.

In 1985, it became clear that the Soviets had begun the process of setting up High Commands of Forces in at least four of the continental TSMAs.(28) In undertaking this effort, Soviet planners drew heavily on their experience from the 1945 Manchurian Campaign, where a High Command of Forces directed a three-front strategic offensive that in so many respects resembles a contemporary theater strategic offensive. As they had done in the Far East 40 years earlier, Soviet planners included in the composition of the new High Commands, powerful

rear service control and planning bodies.(29) That is, a High Command of Forces would include a deputy commander for rear services and a deputy commander for armament together with associated staffs.(30) These two officers and their staffs would manage the rear service support of forces in the given TSMA in all their dimensions. They would formulate rear service plans for theater forces to include the use of national economic resources located on the territories of allies. They would exercise control over materiel, technical, and medical support resources allocated to the TSMA commander, and plan and direct the military utilization of transportation resources. These deputy commanders would facilitate the shifting of resources between fronts and axes, as directed by the TSMA commander or the VGK. It is a virtual certainty that deputy commanders and principal rear service staff officers in a TSMA High Command of Forces would be Soviet, though representatives from the appropriate non-Soviet Warsaw Pact rear service directorates and agencies would probably be present on these staffs as well.(31)

Overall, the system of materiel, technical, and medical support is directed and planned by analogous rear service bodies from tactical through strategic levels. At each of these levels, rear service planners control substantial logistic resources that are employed in accord with the operational plans developed by unit and formation commanders. Further, the system in peacetime now more closely approximates that which would operate in war. Recent developments are clearly intended to speed the transition

from a peacetime to wartime footing, and to improve Soviet/Warsaw Pact capabilities to sustain theater strategic operations for periods that could be protracted.

REAR SERVICE DEPLOYMENT FOR WAR

The deployment of rear service forces and means intended to support Warsaw Pact combined arms forces in the three TSMAs facing NATO, is a military logistic task of vast--and perhaps unprecedented--scale.(32) The sequence and actions taken to prepare the Soviet/Warsaw Pact rear services for war, can be envisioned in a number of variants. That is, they can be carried out in a lengthy pre-hostility period--perhaps weeks or even months--in which covert means would play a principal role, and the development of an extensive logistic infrastructure could be accomplished in a relatively measured, incremental fashion. Under other Soviet assumptions, the complex of measures associated with constituting a developed rear service system in a TSMA could take place in a far more compressed period of time, with rear service deployment undertaken perhaps a few days before hostilities commence. And in the worst of all cases, from the Soviet planner's perspective, rear service deployment would have to be carried out after hostilities had begun. It is this latter variant--epitomized by June 1941 events burned into the perceptions of contemporary Soviet planners--that the Soviets most fear, and which they clearly recognize as a variant that they must be prepared to meet.

Under most variants, as Soviet planners see it, they are faced first of all with the need for speed. The consequence to field forces and the national economy of a partially or maldeployed rear service establish has been examined in great detail in Soviet rear service literature, and in military assessments generally. Soviet military analysts believe that U.S. and NATO conventional strike systems will attempt to destroy logistic resources in depots and garrisons, and destroy key LOCs over which both combat units and rear services must move. The threat of nuclear use by NATO is a constant consideration.

Upon the order to mobilize, understrength rear service units at all levels would be filled out with personnel and equipment, much of it mobilized from the national economy.(33) One of the most important immediate tasks of the rear services would be to support the mobilizational deployment of combat forces, to include their movement to forward attack positions or other designated locations by all forms of transportation. At the same time, ready and recently mobilized rear service units and resources must be moved to designated areas, and there organized, grouped, and concentrated in accord with rear services plans. Tactical and operational-level rear services must be prepared from their earliest deployment to support the combat groupings with which they are associated.

Logistic stocks, whether for the immediate support of combat forces or their later resupply, would be moved from peacetime depots to field locations to avoid destruction by enemy strike.

In the Western TSMA alone, this effort would involve the relocation of millions of metric tons of materiel. In addition, a parallel effort would be carried out within other TSMAs, and the interior of the Soviet Union as well, in an attempt to ensure the survivability of essential logistic resources. Though there are clearly limitations and priorities in this kind of undertaking, Soviet emphasis on the dispersal of logistic stocks and facilities would probably generate a substantial investment of men and equipment. In both the Soviet Union and on the territories of the Warsaw Pact allies, tens of thousands of motor transport, engineer, repair, and other vehicles--together with drivers and operators--would be drawn from the civilian economies to augment rear service units at all levels.(34)

The national transportation systems of these countries would be militarized and controlled in the TSMAs by theater-level representatives of the Military Transportation Directorate (Upravlenie Voennykh Soobshchenii--or VOSO, as the Soviets abbreviate it). This important body, with representatives subordinate to chiefs of the rear at operational, operational-strategic, and strategic levels, would at theater-level control and coordinate all military transportation in accord with the directives of TSMA commanders and the VGK.(35) In the expectation that rail, roads, and bridges, as well as military and civilian airfield facilities, would be subject to heavy and continuing enemy strikes, deployed highway, railroad, and airfield construction troops would prepare for restoring key

routes throughout Eastern Europe and the Soviet Union.(36) Selected components of the civilian hospital systems and industrial facilities suitable for repairing military vehicles and performing other functions, would also fall under the control of the TSMA rear service and armament deputy commanders and their staffs.(37) It should be emphasized that this whole process is facilitated by the establishment rear service planning and management bodies at the TSMA High Command-level, and by the authority High Commands in general have in essentially by-passing issues of national sovereignty and directing the actions of operational forces and major components of the support infrastructure.

To illustrate the rear service deployment process, it is useful to look more closely at how rear services are constituted in a theater like the Western TSMA, and what linkages there are to higher levels. The Voroshilov General Staff Lectures give considerable insight into many facets of this process, and the following discussion is based principally on this material.(38) This discussion focuses principally on the establishment of a theater materiel support network, since this complex undertaking well-illustrates the parallel approaches taken in the technical and medical support areas that will be addressed in less detail.

The territories of East Germany, Poland, and Czechoslovakia, as well as the Soviet Baltic, Belorussian, and Carpathian Military Districts would constitute a theater rear area for Warsaw Pact forces undertaking offensive operations into Central

Europe. As indicated above, substantial logistic reserves and units prepositioned in the theater, as well as some mobilized assets of the national economies of these regions, would be under the direct control of the TSMA High Command and staff. Despite these large holdings, and while TSMA rear service assets would be replenished from strategic holdings, it should be emphasized that a TSMA High Command does not constitute an intermediate supply echelon between the central rear services and the fronts. Rather, fronts would be supplied directly by the central rear services, while theater-level logistic resources would give the TSMA commander the capability to influence the course of operations logistically by rapidly allocating or shifting critical assets under his direct control to theater areas where they are most needed. Stockpiles of consumable supplies under direct control of the TSMA commander--ammunition, POL, technical supplies, clothing, food, and other items--would probably include both Soviet and non-Soviet Warsaw Pact materiel.(39)

Owing to asymmetries in equipment and weapon systems among Pact member states, engendered in part to the varying pace of force modernization, it seems likely that some national level logistic assets would be used principally to support the national armies they are associated with. These would probably be drawn from the central rear service establishments of each nation. By directly controlling at least portions of these assets as his own logistic reserves, the TSMA commander would be able to deal with some of the difficult problems of supporting coalition

formations. That is, he could supply operational groupings of multinational composition from stocks under his immediate control, when those resources remaining under the control of national MoDs were unavailable or inadequate.

Also located on theater territory, and available for direct support of theater forces, are logistic assets of the Soviet central rear services--that is, rear service reserves of the VGK. Some of these resources are located within the three Soviet western military districts, while others would be moved, and, indeed, may be prepositioned already, on East European territory. At the VGK's discretion, these ammunition, POL, and other stocks, as well as transport and special troop units, will support Western TSMA force, or be shifted to other theaters.

All of the above assets constitute the most immediately available logistic reinforcements for the theater commander, though not the only ones. Central rear service units and stocks from the interior military districts of the USSR, replenished by the output of defense industry, are intended for the support of all TSMAs, in accord with their requirements and the priorities established by the VGK.(40) Thus, the 60-90 days of theater stocks immediately available in the Western TSMA may be augmented substantially.

As in the forward area, enormous Soviet efforts would be made to maintain the operation of strategic LOCs linking the theater to the central rear service base and components of the national economy. Particular attention would be given to

maintaining the operation of the railroad transloading zones located along the Soviet borders with Poland and Czechoslovakia. It is at these rail complexes in the Western TSMA, that the Soviet broad gauge lines meet the narrower European track systems, and where most rail cargoes must be transloaded onto different trains. It is over these links that the Soviets would have to carry out the bulk of rail reinforcement to engaged theater forces--and they judge that some 75% of supplies to the fronts would arrive by rail.

Under most assumptions, there would be 3-4 first echelon fronts, and 1-2 reinforcing fronts deployed in the Western TSMA. A substantial portion of the logistic units and resources that would comprise the rear services of the fronts are already prepositiond in the theater, though some redeployment of units and materiel from the USSR's western military districts would certainly be required. Front rear services are mobilized and moved simultaneously with the combat elements of the front. For a first echelon front in the Western TSMA, the establishment of a front logistic support infrastructure would involve principally the local movement and regrouping of units and resources. These rear service elements--the materiel, technical, and medical support components--would be deployed in a defined rear area in two echelons. This rear area is delimited laterally by the boundaries of adjacent fronts (or body of water/geographic feature); at the rear by the designated rear boundary of the front; and at the forward edge by the rear boundaries of the army

rear. The deepest area of the front rear could be located, before the offensive began, some 300-400 kms from the forward edge of battle area and extend laterally up to about 400 kms.(41)

Materiel support at the front level is centered in a large base complex called a Rear Front Base (Tylovaia Frontovaia Baza--TFB). This base, and its associated units, are included in the second echelon of the front rear services. Depending on the size of the front (as well as geographic, transportation, and operational considerations), 1-2 of these complexes would be found in each front. A TFB would maintain supplies of all types capable of sustaining the front for some 10 days. In addition, units assigned to the RFB would repair specialized equipment (e.g., fuel, clothing, and food preparation equipment), reprocess oil, and bake bread among other tasks. The base is assigned a motor transport battalion for the movement of supplies within the base, and to assist in its relocation. In addition, to signal support, the base has engineer and servicing units for the preparation of field positions and the loading and unloading of materiel. The complex is administered by a base commander subordinate to the front chief of the rear, with individual field depots and facilities controlled by representatives of the various services. The TFB, far from constituting a tight concentration of logistic resources, is dispersed over a large area in the front rear --up to several thousand square kilometers. It is served by 2-3 main rail lines from the theater and strategic rear, and 2-3 lateral lines. The capacity of the

lines is to be some 60-70 pairs of trains (i.e., round trips) per day, with each main rail line having a daily capacity of 20-30 pairs of trains. In this regard, the Soviets have recently established a broad gauge rail line running from Eggesin, East Germany to Mukren on the Baltic coast. This East German port is linked by rail ferry to the Soviet port of Klaipeda, thus providing a means of moving military cargo to the forward area without crossing Poland or Czechoslovakia.(42) Military roads and pipelines will also link the TFB with the theater and strategic rear. In addition to the 75% of supplies that move to the front by rail, about 15% arrives by motor vehicle, and up to 10% by pipeline. In some cases, water routes will also be used. Materiel entering the front would pass through front regulating stations and be dispatched to designated unloading areas for pick-up or storage. Also located in the TFB area would be a number of materiel support airfields, which would dispatch critical supplies to subordinate front units by transport aircraft and helicopters assigned to the front.

The forward echelon of the front rear services concerned with materiel and materiel-technical support includes the mobile rocket technical bases and depots which support front surface-to-surface missile units; pipeline brigades (one or two) which would transfer fuel from permanent POL depots to field storage/distribution areas and establish refueling points for operational forces on major axes; and the largest (and newest) elements of the forward logistic echelon, the front materiel

support brigades (brigada material'nogo obespecheniia). These brigades perform functions analogous to the former "forward front bases" (peredovaia frontovaia baza) described in the Voroshilov lecture materials. A front would be assigned 2-3 materiel support brigades depending on the number of armies subordinate to the front. Each brigade, would support 1-2 armies. and maintain materiel stocks capable of sustaining these armies for 3-4 days.(43) A materiel support brigade would consist of rapidly relocatable depots holding all types of supplies; motor transport battalions and companies dedicated to the delivery of specific supply items to the armies and the relocation of brigade assets; engineering and servicing units; specialized rear service equipment repair units similar to those of the TFB; mobile field bakeries; and other elements.

Brigade elements would be grouped and deployed behind those armies they are designated to support, in an area of perhaps 150 square kilometers or more. Before the offensive begins, the brigades are located from about 80 kms to more than 200 kms from the TFB, and some 80-100 kms from the army rear services. Where longer distances from the TFB are dictated, the TFB may deploy intermediate forward base sections to bridge the gaps. Assets from the brigades may be moved closer or ached, to the armies as well. When possible, materiel support brigades will be located near rail lines. However, in recognition of the likely destruction of railroads and the fact that lines may not be properly located, Soviet planners expect that only about 15% of

materiel would move from the TFB to the brigade by train. Some 75% of supplies would move from the TFB by motor transport over designated military roads; 10% by pipeline; and about 5% by air to materiel support airfields in the brigade deployment area. One or more front motor transport brigades, subordinate to the front chief of the rear, is principally responsible for moving materiel from the TFB to the front materiel support brigades. (It should be noted that deep operations forces--notably operational maneuver groups-- would rely heavily on air resupply. This will be addressed further below.)

The next link in the materiel support chain is the army-level materiel support brigade. One brigade is assigned to each tank and combined arms army. This unit replaces the former, less capable, "mobile army base" (podvizhnaia armeiskaia baza) which is described in the Voroshilov lectures. The brigade closely resembles the front materiel support brigades described above, and is capable of sustaining its subordinate divisions for 2 days. Army materiel support brigades are linked to the front rear services almost entirely by motor transport--90% of materiel or more moved by this means--with about 5% of materiel arriving at the army rear by air. Army materiel support brigades deploy initially about 60-80 kms from the rear areas of the divisions they support, with components of the brigade positioned far closer to the divisions as required. The army materiel support brigades are thus postured to resupply tactical maneuver units through, most immediately, the divisions' materiel support

battalions. Within each tank and motorized rifle division, there are 4-5 days of supply, a substantial portion of which are carried by the divisional materiel support battalions, and regimental materiel support companies. With the exception of a relatively small amount of critical supplies delivered by air, nearly all materiel would be delivered to the divisions by road. (The special case of army and front operational maneuver groups will be discussed below.)

Overall, the deployment of the materiel support system in the Western TSMA would create an echeloned materiel support base with the potential of sustaining theater forces with major supply items for 60-90 days. Working from tactical level up, each division would posses 4-5 days os stocks, each army an additional 2 days, front materiel support brigades some 3-4 days, and at the TFB level, 10 more days of supply. Thus, each front in the Western TSMA would have a supply reserves capable of supporting frontal forces for about 20 days. An additional 40-70 days would be available to the TSMA High Command, or prepositioned in the theater under VGK control and rapidly available for TSMA use.

In a manner analogous to that used to constitute the deployed materiel support network, a theater technical and medical support system would be constituted. This technical and medical support infrastructure would extend similarly from strategic to tactical levels, and incorporate selected resources of the Soviet, East German, Polish, and Czechoslovak national economies. In the area of technical support, repair units and

facilities under the control of the TSMA High Command and the Soviet central rear services would be deployed in deep theater rear areas with the task of performing the most complex repair actions. Both fixed facilities and field sites would be used. These assets would play a major role in the reconstitution of badly attrited units withdrawn from combat. An extensive, echeloned field technical support system comprising repair, recovery, and evacuation assets at front, army, and division level would be deployed and grouped along major axes in preparation for dealing with projected levels of combat attrition to all types of weapons and equipment.

Theater medical support is based on fixed military and civilian hospitals in deep rear areas of the TSMA, as well as on the deployed field medical facilities and units at operational and tactical levels. There would be an extensive system of deployed field hospital bases at front level. These would comprise as many as 6 "forward front hospital bases" (peredovaia frontovaia gospital'naia baza), each dispersed in several locations to support first echelon armies, and 2-3 "rear front hospital bases" (tylovaia frontovaia gospital'naia baza), dispersed and deeper in front rear areas. Each of these bases would consist of various kinds of field hospitals--surgical, triage, internal medicine, contagious disease, psychiatric, evacuation, etc.. Specialized medical support elements (e.g., blood, oxygen, x-ray, etc.) are also found at these bases, and evacuation support is provided by separate ambulance battalions

and a front air ambulance regiment. Helicopters would be used extensively in a medical evacuation role (as evidenced in Afghanistan), often delivering supplies or personnel to a unit, and carrying wounded out on the return trip. Armies would deploy independent medical detachments and ambulance units to closely support first echelon divisions, and the medical battalions of each division (together with medical elements at lower levels) would be prepared to perform direct care and evacuation functions. This network of medical units and facilities would provide medical support from tactical levels to permanent facilities deep in Eastern Europe or the interior of the Soviet Union.

All materiel, technical, and medical support units and facilities, together with all transportation, servicing, special troop and other rear service elements associated with these resources, are controlled and coordinated centrally at each level. The deputy commanders for rear services and armament and the chiefs of the various services would carry out these functions from rear command posts established as part of the overall troop control system.(44) These rear command posts would be key to the effective operation of the TSMA logistic network, with rear service staffs responding to the orders of commanders at each level, and receiving special directives and support from their counterparts at higher levels.

REAR SUPPORT OPERATIONS

The comprehensive rear service support of theater forces in the Western TSMA, and other theaters as well, is specified at each level of command in a "rear service plan."(45) These documents, prepared by deputy commanders for rear services and armament and their staffs, are an integral part of overall operations plans and formulated jointly with them. The rear service plan sets out the basic missions and composition of the logistic elements, the disposition of these elements initially, and their subsequent deployment. The plan designates LOCs that will be employed for rear service support and specifies measures for their repair or construction.

Relocation times and routes, stockage levels, anticipated equipment losses and casualties, and rear areas security approaches are outlined. Those measures intended to provide for rear area defense and security are also set out, and the organization of rear service control of the offensive is specified. Such rear service plans are formulated from strategic to tactical levels, and become more specific at the lower echelons. Annexes to the operations and rear service plans will often specify actions to be taken by the rear services which require special attention. For example, the "plan for restoring combat effectiveness" will set out that complex of measures needed to reconstitute the combat capabilities of attrited units, a process that would require heavy participation by the rear services. Rear service plans are modified and sometimes radically changed as operations progress and new situations are

presented to Soviet commanders and staffs. To the extent possible, likely variants to the plan are considered in advance, though it is recognized that major unanticipated changes are a condition of war.

Certainly, a major planning consideration will be the measures required for the rear service support of theater operations should nuclear weapons be employed. It is a primary tenet of Soviet rear service theory and practice that the logistic establishment must be prepared to provide effective support to the Armed Forces in nuclear and nonuclear war.(46) While many Soviet rear service plans and preparations are applicable to both variants, the Soviets believe that nuclear war would place far heavier stresses on the support system at all levels. As Soviet planners see it, a nuclear variant of the rear service plan would presuppose the requirement to relocate units and bases more often to keep pace with forces advancing more rapidly (e.g., 80-100 kms per day in contrast to 40-60 kms). Widespread destruction of LOCs by nuclear strikes would require extraordinary repair and reconstruction efforts by special troops and rear service engineering units, and the heavier use of LOC reconstruction materials prestocked in the theater. Nuclear strikes would cause far heavier, and more sudden, losses, of personnel and equipment. Thus, in a nuclear environment, medical, repair, and recovery bases and units must rapidly concentrate their efforts on those areas where the greatest attrition has occurred, and where commanders determine combat

capabilities should be most rapidly restored. To be sure, medical facilities would be expected to do this under conventional conditions as well, though the problems of dealing with nuclear contamination and, most of all, the enormous and suddenly occurring losses, would place extraordinary stresses on hospital capacities and capabilities. Soviet planners have developed casualty and equipment loss projections that reflect attrition differences in nuclear and nonnuclear operations. These figures in themselves point to a major reason that Soviet planners would seek to achieve theater objectives without weapons of mass destruction being employed.(47) Restoring the combat effectiveness of the rear services themselves would be a major consideration in rear service planning. For this purpose, logistic reserves of all types at higher echelons would be designated for the replacement of destroyed resources at lower levels, and particular emphasis is placed on the restoration of disrupted rear service control. To the extent possible, rear service plans would meet the requirements of nuclear and nonnuclear operations. However, given the kinds of considerations noted above, it is likely that rear service plans are prepared with nuclear variants which, like the nuclear and conventional fire planning conducted by rocket, artillery, and aviation components, are updated and modified as operations progress.

As a basic lesson from World War II, which has been reaffirmed by postwar experience and exercises, Soviet logistic

support is based on the principle of higher units supporting lower units though the employment of organic transportation means and materiel resources.(48) That is, front motor transport would be responsible for delivering supplies from front depots to subordinate armies, and in some cases directly to divisions. Variations to this general rule are certainly recognized, and there are a number of cases when, for example, army motor transport would travel to front units to pick up materiel or even assist in the relocation of front rear service assets. Nevertheless, the rule is most often "delivery and support forward," with rear service assets from higher levels directly supporting lower levels or augmenting them through the attachment of resources.

In a theater offensive, for which Soviet planners postulate the continuing and rapid advance of theater forces, adequate rear service support of combined arms units would depend on the periodic relocation and redeployment of many components of the logistic support structure described earlier. Soviet rear service force modernization efforts over the last 10 years have resulted in substantial increases in rear service mobility, a precondition, the Soviets say, for effective logistic support in modern war.

For materiel support, this periodic relocation is predicated on nonnuclear rates of advance of 40-60 kms per day, with variants for more rapid nuclear advance rates planned as well. As noted, fronts receive materiel principally by rail from

theater and central rear service stocks which to a great extent are prepositioned in the TSMA. While some forward or lateral relocation of theater-strategic resources may take place, the principal effort at theater-strategic level would be to maintain the rail lines that service the RFBs where front supply assets are concentrated.

A front would possess stocks adequate to conduct a front operation of 12-15 days with a reserve of at least several days. However, it is a primary tenet of Soviet rear service theory that an operational or operational-strategic formation must constitute--in the course of an offensive--those materiel reserves that would enable it to undertake a subsequent operation without a substantial pause.(49) As a consequence, Soviet planners judge the continuing resupply of engaged fronts from the theater/central level to be essential, since a theater-strategic operation may require participating fronts to conduct several sequential offensive operations.

Rear front bases relocate in their entirety only at the end of a front offensive, though elements of these bases may displace forward to ease the motor transport turn-around time problems imposed by increasing distances to forward supply elements. The incremental relocation (and the subsequent move of the entire base) would be undertaken largely by rail, and depend upon the construction or reconstruction of rail- lines by front railroad troop brigades. According to planning factors from the mid-1970s, two front railroad brigades are capable of laying

40-45 kms of track a day under nonuclear conditions, or 20-25 kms when nuclear weapons have been employed.

Front materiel support brigades would, like their forward front base predecessors, relocate every 3 days with conventional advance rates, or every 1 or 2 days at the more rapid nuclear rates of advance. The goal of this forward relocation is to ensure that the distance separating front and army materiel support brigades became no greater than 150 kms--about one-half day's trip for front motor transport. Front materiel support brigades will relocate incrementally, with their principal resources directed to axes requiring the highest priority of support. Since the distances between the front materiel support brigades to the RFBs would become progressively greater during the course of a 12-15 day front offensive operation, the incremental relocation of RFB sections, noted above, would be required. In any event, the distance between the front brigades and the nearest elements of the RFB may exceed the 300 km daily trip distance norms for front motor transport, a consideration built into Soviet resupply calculations.

Highway troop and traffic control support, along with railroad troop support, would be extensive throughout the front rear area. Pipeline troops (one brigade of which could lay 65-75 kms of pipe daily) ease the burden on other forms of transport. According to norms from the mid-1970s, a 100 mm pipeline could supply 800 tons of fuel every 24 hours, while a 150 mm pipe could carry 2,000 metric tons a day.

Army materiel support brigades follow the divisions they support at distances that should not exceed 125 kms--a half-day's trip for army motor transport. With nonnuclear advance rates, this would require major elements of an army materiel support brigade to relocate forward every 2-3 days, and more often when advance rates were faster. Divisional materiel support battalions, which are to be resupplied daily from army level, would themselves move forward once or twice a day behind first-echelon regiments, consolidating major battalion elements at the end of each 24-hour period.(50)

Special materiel-technical support units (e.g., the mobile rocket technical units and depots of fronts and armies) would deploy periodically behind the surface-to-surface rocket units they support. Front mobile rocket technical bases, for example, move in bounds of 150-200 kms, along with rocket fuel depots. Since the aerial delivery of missile-associated items is envisioned in Soviet planning, mobile rocket technical bases may be located near materiel support airfields to facilitate the delivery of warheads, missile airframes, and other items.

Technical and medical support resources in deep theater rear areas will, for the most part, be located at fixed facilities and thus not subject to relocation. Those mobile technical and medical support reserves of the TSMA High Command of Forces CINC, will be dispatched to directly support or augment frontal forces as required. Within the fronts, technical and medical bases and units will relocate frequently in accord with the developing

operation. While this relocation is influenced directly by rates of advance, it is also shaped by attrition rates and the areas in which medical casualties and damaged equipment are concentrated. The substantial differences in projected nuclear and nonnuclear losses is a major planning consideration for Soviet rear service staffs.

It is a goal of Soviet technical support to repair damaged equipment of all types as far forward as possible, and to return this equipment to the battlefield rapidly. Damaged equipment that cannot be repaired at the level of the using unit, is recovered and concentrated at damaged vehicle collection points (sbornyi punkt povrezhdennykh mashin--SPPM). This equipment is then either repaired at these SPPM sites by deployed higher level maintenance units capable of undertaking a greater volume of, and more complex, repairs, or removed to rear area sites for subsequent repair. The technical support system envisioned for deployment in the Western TSMA is intended to provide echeloned repair, recovery, and evacuation resources from the lowest tactical levels to the strategic rear. Defined technical support channels have been established though the deputy commanders for armament and the chiefs of technical services (rocket and artillery, armored, engineer, motor transport, signal, etc.) at each level. This combination of technical planning and resource allocation is intended to partially off-set the effects of combat attrition that is expected by Soviets planners to be of

extraordinarily high levels under both conventional and nuclear conditions.

Medical support goals are analogous to those of the technical services--treating combat and other casualties as far forward as feasible, and returning them to combat if possible. Thus, army and divisional medical resources would be directly supported by the deployed hospitals and units of forward front hospital bases. These bases would be deployed in the regions of greatest casualties at a distance of some 40-50 kilometers from the forward edge of battle area. The evacuation of more seriously injured personnel, or those casualties otherwise beyond the capabilities of forward deployed medical resources to care for, are evacuated to rear front hospital bases (which would redeploy in their entirety only at the end of the front operation), or deeper to fixed facilities in Eastern Europe or the USSR. Thus, like other components of the rear service system, echeloned medical resources and planning bodies are constituted from tactical to strategic levels.

The rear service infrastructure established in each TSMA is to be capable of supporting theater strategic operations employing only those military and mobilized civilian resources under the control of the Soviet Union and Warsaw Pact allies prior to the outbreak of hostilities. Nevertheless, Soviet planners have long recognized the immense value of exploiting captured foreign materiel. In 1942, the Soviets established what was called the "Trophy Service" (Trofeinaia Sluzhba) under rear

service chiefs at central, front, and army levels to plan and direct the use of captured resources of all types.(51) The Trophy Service played an important role in off-setting Soviet supply and transportation shortages in that difficult period, and continued to provide Soviet operational formations with valuable materiel throughout the war.

The widespread and often brutal exploitation of resources on the territory of the East European states and eastern Germany was a feature of advancing Soviet armies and the Soviet occupation forces.(52) A similar focused effort to exploit foreign materiel (fuel, food, engineer equipment, economic resources, etc.) and transport under the auspices of rear service management bodies will clearly be a component of rear service activity in any future Soviet military operation in Central Europe. A major effort would probably be made to use broad gauge rail lines on NATO territory, and to incorporate them into the theater transportation system. This kind of undertaking is one in which the Soviets enjoyed considerable success in World War II.(53) In addition to the railroad construction brigades that would be a part of Soviet fronts, the railroad exploitation regiments also assigned to fronts would provide the cadre forces for this effort. They, along with other Soviet rear service specialists, would be augmented by theater/central rear service management entities and resources.

Three areas of rear service support have been receiving particularly close attention from Soviet planners since the late

1970s, highlighting the importance they are perceived to have for the support of theater-strategic operations. These are theater force reconstitution; rear area security and defense; and the logistic support of operational maneuver groups. All three areas are the target of historically-based studies, and are reflected in Soviet exercises and training programs. In some cases, the continuing Soviet military Afghanistan experience appears to be shaping the development of Soviet approaches to these areas as well. Given the extent of Soviet attention to these topics, a few words on each are in order.

Theater Force Reconstitution

Soviet interest in developing a range of theater force reconstitution options suitable for various intensities of combat, is a consequence of the USSR's renewed focus on the conduct of conventional combined arms operations. Contrary to the assertions made in some assessments of Soviet operations, the USSR has every intention of maintaining the combat effectiveness of engaged units though a variety of replacement approaches, as well as restoring the combat capabilities of severely attrited formations. That is, the widely asserted Western view that the Soviets will "fight a unit until exhausted" and then replace it with another like unit, is a judgement that is probably based on an incomplete understanding of nuclear warfighting approaches described in Soviet military literature now twenty years out of date. Thus, when works in the 1960s like Marshal

V.D. Sokolovsky's Military Strategy emphasized the replacement of entire units and formations, the collective authorship of that important work were postulating a battlefield in which nuclear strikes would be massive and continuing.(54) Even at that, other approaches to restoring combat effectiveness were not ruled out, as may be judged by the Military Strategy statement that "it would hardly be feasible to limit ourselves" to the replacement approaches employed in World War II.(55) As noted in the Sokolovsky work, whatever method was employed, detailed peacetime planning would be required.(56) That evolving Soviet perceptions of future battlefield requirements were shifting the focus in this planning process, became apparent a few years later.

By the 1970s, contemporary military theorists were examining ways to effectively conduct conventional operations and drawing heavily on Soviet World War II experience concerned with replacing losses. They began to describe a range of replacement and reconstitution approaches applicable to extended conventional operations, as well as operations involving nuclear weapons.(57) These approaches made use of the defined materiel, technical, and medical support channels discussed above for the flow of personnel and equipment to all command levels; echeloned rear service resources and reserves of all types to deal with equipment repair and replacement, casualty treatment and the return of personnel, and replenishment of materiel stocks and logistic losses; and combined arms and special reserves from tactical to strategic levels for small and large unit

replacements and tailored replacement packets. These command and technical channels, and echeloned units and resources, give Soviet planners the potential to replace losses by a number of means. These include replacement by individual personnel and equipment items to off-set light losses; replacing by small, tailored personnel packets or crews; dispatching command cadre replacement groups when leadership groupings and staffs have been heavily attrited; allocating weapon systems with crews to provide combat-ready systems that can be quickly integrated into units; replacing by small units of squad, platoon, company, and battalion size; and replacing very heavy, and rapidly inflicted losses by large units of regimental and division size or even larger. All approaches have been described in contemporary Soviet writings, and proven themselves historically. In addition, the Soviets have long had, and exercised, approaches for dealing quickly with extremely severe attrition through the formation of composite units.(58) That is, a severely attrited battalion, for example, may be formed into a combat effective, reinforced company through the rapid restoration of control, designating and protecting a composite unit formation area, performing emergency medical treatment, quickly repairing equipment with the least damage, and assigning the smaller force a modified combat mission.(59) Collectively, these replacement and reconstitution options provide Soviet commanders with a spectrum of approaches that will be employed in accord with the types of attrition suffered, rates of advance, and other

operational considerations. Some of the measures are clearly better suited to combat in which weapons of mass destruction are employed, while other approaches are best suited to the measured, steady losses often associated with some conventional operations. Clearly, however, Soviet military literature has stressed that new conventional weapon systems are blurring the distinction between nuclear and conventional war.(60) Soviet planners explicitly recognize that "conventional" losses may be heavy, sudden, and demanding of resource-intensive reconstitution efforts involving many components of the materiel, technical, and medical support systems, together with operational and organizational measures.

Rear Area Security and Defense

Increased Soviet attention to "rear area security and defense" issues has been reflected widely in the Soviet military press. The complex of measures incorporated in this term is designed to ensure that the operation of rear areas are not disrupted by enemy actions of any type.(61) It includes the actions of air defense forces assigned to protect rear targets; camouflage and dispersal measures to conceal rear units and facilities from enemy strikes or prevent their massive loss if they are located; and defense against enemy sabotage, reconnaissance, airborne/air assault, and other strike groups on the ground. Particular concern has been expressed recently about the threat posed to rear area targets by precision guided

munitions, and the rear service leadership has addressed itself to specifying extensive camouflage and dispersal measure to deal with this danger.(62) In addition, the perceived resurgence of U.S. special forces and ranger units has focused Soviet attention on the danger to LOCs and rear facilities, a view that has been reinforced again and again by successful mujahideen attacks on convoys and bases in Afghanistan. Soviet approaches to dealing with the rear area threat as it is now seen, have drawn on historical lessons learned, contemporary exercises, and, of course, the approaches developed in Afghanistan.

The defense and security of deep theater rear areas falls to a combination of Soviet and non-Soviet Warsaw Pact border troops, internal security forces, paramilitary militia, police, national air defense, and line combat units assigned to, or available for rear area duties. These forces would guard military, government, economic, and other rear area targets of all types, secure LOCs, exercise population control functions, defend against enemy airborne and amphibious landings, destroy sabotage and reconnaissance groups. While it is beyond the scope of this chapter to discuss these numerous and varied forces, and the mechanisms for controlling them, it should be noted that the overall coordination of rear area defense and security efforts would fall to the High Command of Forces in the TSMA generally, and the TSMA rear service staff in particular.(63)

Within the <u>fronts</u>, as the Voroshilov lectures have set out, a rear security division would be constituted.(64) Historically,

these units were composed of Border Troops or Internal Troops, and probably would be so constituted today. The rear security division would be assigned to secure and defend key LOCs and rear installations. They would seek out and destroy enemy reconnaissance-sabotage groups and identify and recover abandoned or lost military equipment. The division would be responsible for controlling the civilian population in frontal rear areas, and preventing their trespass into military restricted areas. Security division personnel would be responsible for establishing POW camps, guarding prisoners, and, while not mentioned in the Voroshilov lectures, would certainly be tasked to round up and deal with Soviet/Warsaw Pact deserters and stragglers. In World War II, this included their frequent execution.(65) The rear security division may be organized into 3-4 security regiments, a convoy guard battalion, signal, engineer, and training companies, a chemical defense platoon, POW centers, and other elements. In World War II, these kinds of rear security forces varied greatly in composition depending on front structure, missions, and location.(66)

Regular combat maneuver units intended for actions against ground and air enemies will also be allocated for rear area security and defense duties, depending on the perceived threat. These units may be specifically designated and prepositioned to perform specific rear area duties, or combat units located in rear areas may be called upon to meet suddenly arising problems. Particularly notable in regard to the former, are what the

Soviets call anti-landing reserves. These are motorized rifle or tank units, often reinforced, of company, battalion, or regimental size designated in advance to respond to enemy airborne assault operations. They are deployed near expected enemy landing areas and tasked to destroy these forces before they can attack their assigned targets.(67)

Increasing emphasis is being placed on rear service units, particularly materiel support units, defending themselves. The rear service leadership has stressed the need for logistic personnel to receive combined arms training, and rear service exercises now frequently feature repelling attacks by enemy special operations units.(68) Articles discussing Soviet World War II rear area security and defense issues set out approaches that are clearly being incorporated into contemporary training programs, and applied in Afghanistan as well.(69) The complex of measures introduced into Afghanistan to protect convoys--security posts, quick reaction forces and roving patrols, convoy escorts and movement support detachments, etc.--clearly owe much to the Soviet World War II lessons that the "limited contingent of forces in Afghanistan" has been so busy relearning.

Overall, its clear that the Soviets perceive a substantial danger to the rear areas of operational formations. As a consequence, they assign dedicated rear area security and defense forces to deal with a variety of enemy--and potential internal--threats. They augment these dedicated forces with regular combat units that are assigned specific rear area

missions, or are drawn upon on a contingency basis. In addition, rear service units are now receiving intensified training in self-defense, a development given considerable impetus by heavy rear service losses incurred in the "highway war" in Afghanistan. Soviet planners intend that this combination of measures will allow the enormously complex operations going on in their rear areas to proceed without decisive disruption by enemy forces.

Sustaining Operational Maneuver Groups

Beginning in the late 1970s, the Soviet military press began to address in some detail, the operations of tank and mechanized corps and tank armies employed as "mobile groups."(70) As subsequent developments soon indicated, this focus on "mobile groups" was associated with the emergence of a Soviet concept for employing mobile deep exploitation and raiding forces called operational maneuver groups (OMGs). By the 1980s, Soviet historical articles were addressing specific components of "mobile group" support and sustainment, with articles in the Polish press in particular dropping all pretense of a theoretical historical inquiry.(71) What emerged from these writings was that Warsaw Pact specialists were seeking innovative ways to support large armored forces whose rear service links to parent formations would be very tenuous.(72) Examined in these articles were ways in which ground supply links could be maintained to forces separated from the main body of troops; what kind of logistic tailoring of the rear service units accompanying the force would

best provide for its sustainment; and how aviation could contribute to maintaining the mobile group/operational maneuver group deep in enemy rear areas.(73)

This historically-based study of OMG support approaches is continuing apace, and highlights areas of continuing concern to contemporary planners. For example, the logistic support of encirclement operations is an extraordinarily complex undertaking, given that there are considerable differences in the kind of support given to the forces achieving the inner and outer encirclement perimeters. In World War II, forces tasked to establish the outer perimeter were the most mobile, e.g., tank and mechanized corps or tank armies acting as mobile groups. In contemporary theater strategic operations, it is likely that OMGs will in a number of cases be assigned missions of completing the encirclement of enemy groupings. As a consequence, the rear service requirements of World War II armored and mechanized forces used to achieve outer encirclements, the approaches used to meet these requirements, and the optimum allocation of rear services forces and means between forces on the outer and inner perimeters of encirclement, are today areas of close Soviet study.(74)

It appears that while Soviet planners do not entirely rule out the possibility that a land link to deep operations forces could be maintained in some circumstance, OMG sustainment will be based principally on tailored rear service units included in the

composition of the OMG, and on the resupply of these mobile armored forces by helicopter and fixed-wing aviation. The use of resources "acquired by conquest" is a recognized source of support as well. Rapid tailoring is clearly facilitated by the creation of materiel support battalions and brigades, since the composition and control of these units lends itself to the creation of task-oriented logistic support packages. That is, a division materiel support battalion, army materiel support brigade, or the new combined arms corps materiel support regiment, could be augmented rapidly and effectively by transport companies and battalion as well as additional supply reserves allocated by the materiel support units of higher headquarters.(75) The need to create tailored logistic support packages for a variety of missions clearly contributed to the creation of materiel support units in the late 1970s.

The Soviets apparently intend to establish what is sometimes referred to in their military press as a helicopter "air bridge" (vozdushnyi most) to supply airborne, air assault, and deep operations forces.(76) It is quite likely that Soviet experience in supplying isolated forces and remote garrisons in Afghanistan by helicopter has given Soviet planners growing confidence in their ability to move large quantities of supplies by air on a more or less sustained basis. The Soviet military press if filled with accounts of helicopters being used in an aerial resupply role in Afghanistan.(77) In addition, the introduction of the Mi-26 HALO helicopter, capable of carrying as much cargo

as an AN-12 transport aircraft, has substantially increased Soviet resupply capabilities.(78) The capture of airfields in enemy rear areas would afford additional aerial resupply opportunities, and cargo delivery by parachute is a well developed Soviet skill as well.

Some insight into how helicopters would be used to support OMGs was given in a series of articles appearing in the Polish military press.(79) These articles indicated that multiple helicopter landing and support areas would be located in the OMG mobile rear service base area. These landing areas would be relocated with some frequency every day to avoid enemy identification and attack. Each area would serve a number of functions to include helicopter refueling, rearming, and repair; sites for the delivery of materiel supplies to the OMG; and evacuation centers for wounded personnel. It was noted that since land evacuation of casualties would not be possible, and air evacuation not always feasible, casualties might have to be transported with the OMG for later evacuation, or in extreme cases left behind "under the protection of medical personnel."(80)

Helicopter landing areas will clearly be key to the successful operation of the OMG, and there is a Pact expectation that losses to enemy weapon systems will be heavy. The Polish articles reveal that aviation rear service components assigned to and OMG have well-defined missions. This quite likely reflects the kind of detailed attention given to the overall rear service

support of OMGs. For example, the clothing service of OMG aviation units will supply only those most basic clothing items required, while devoting most of its attention to providing tents and field accommodations for flight and aviation support personnel in enemy rear areas. Of particular note is the guidance that the food service of OMG aviation units must have the resources to store and transport provisions for from several days up to "several tens of days of combat operations."(81) The latter figure suggests an OMG may be tasked to operate in enemy rear areas for a far longer times than some analysts have postulated. In any event, it is clear that the early search for workable OMG support approaches has progressed considerably, and that there is considerable focus on both supporting OMG aviation units, and using helicopter aviation to supply the combined arms complement of OMGs.

CONCLUSIONS

Soviet concepts for the conduct of theater strategic operations in a TSMA envision that the entire territory and resources of the theater will serve as a support base focused on the sustainment of theater forces. Within the TSMA, prepositioned military rear service units, facilities, and supplies will be augmented by mobilized resources from the national economies of the Warsaw Pact coalition. The transition of the theater support system from a peacetime to a wartime footing has been facilitated by the creation of logistic management and planning

bodies within TSMA High Commands. Theater materiel, technical, and medical support resources--which by any standards would have to be characterized as vast--are themselves backed up by further echeloned rear service resources of the Soviet central rear services and the USSR's national economic base. A military manpower base numbering millions of recently discharged reservists is available for the expansion of combat and support units.(82) Defined rear service channels--integrated into the command structure--have been established from tactical to strategic levels.

Given this resource base, the sophisticated operational and rear service concepts governing its utilization, and the control system linking and integrating its components, even the most casual observer must reach the conclusion that Soviet planners recognize the requirement to prepare for sustained combined arms operations. Recent military writings and exercises have made more explicit the Soviet desire to achieve theater objectives quickly using conventional weapons only, while remaining prepared for protracted, conventional war that could at any point escalate to the nuclear level. That least desirable of conflict variants--general nuclear war--is one Soviet planners have prudently attempted to prepare for as well, though the many uncertainties associated with such a conflict, they realize, must make the adequacy of such preparations problematical.

The rear service support of a single theater-strategic operation would be a military undertaking of enormous complexity.

The support of several simultaneous strategic offensives--which Soviet planners envision as likely in a future war--probably would involve the integrated employment of military logistic resources on an unprecedented scale. While the Soviets did conduct strategic offensives in the latter stages of World War II that approached contemporary strategic operations in scope and scale, the requirements of technically equipped armies and the destructive power of modern weapons place demands on rear service support systems that have never had to met. Certainly, the often poor Soviet logistic performance in Afghanistan, even recognizing all of the special conditions of that undeveloped theater, raise questions about the capabilities of tens of thousands of mobilized Soviet and East European reservists and civilians to effectively execute the many complex tasks associated with theater logistic support. Soviet logistic columns have with some frequency been thrown into confusion and destroyed by lightly armed Afghan freedom fighters. Because of the threat from manually laid mines, Soviet columns routinely move at the speed of "sniffer" dogs led by Soviet sappers afoot with mine probes. This kind of performance--and it characterizes logistic support in Afghanistan-- must be considered when assessing the impressive resource base, innovative support concepts, detailed rear service planning process, and centralized control mechanisms at each level of command. This should suggest to NATO military planners charged with developing theater targeting plans of all types, that the Warsaw Pact's rear service system may be more vulnerable

than is immediately apparent. Each component of the system discussed above is worth examining in detail, because the key to halting a Soviet theater-strategic offensive may lie within the rear areas of Warsaw Pact units and formations.

ENDNOTES

1. N.V. Ogarkov, "Za nashu sovetskuiu rodinu: Na strarazhe mirnogo truda" (For Our Soviet Motherland: On Guard for Peaceful Labor), Kommunist, No. 10, 1981, p. 86.

2. Ibid. Published that same year, was a two part article by Colonel General I.M. Golushko, Chief of Staff of the Rear Services of the Soviet Armed Forces, who took a clear operational-strategic focus in discussing the development of Soviet logistics in World War II and in drawing retrospective lessons from this experience. See I.M. Golushko, "Razvitue sistemy upravleniia tylom" (Development of the Rear ControlSystem), Tyl i snabzhenie sovetskykh vooruzhennykh sil (Rear and Supply of the Soviet Armed Forces--hereafter cited as RAS), May 1981, pp. 14-17, and June 1981, pp. 13-17. This two-part feature highlighted a number of issues key to supporting theater strategic operations that have subsequently been addressed by Golushko and other military authors.

3. See, for example, the entries in S.F. Akhromeev, ed., Voennyi entsiklopedicheskii slovar' (Military Encyclopedia Dictionary --hereafter cited as MED) (Moscow: Voenizdat, 1986), pp. 758-759, particularly the entries "Tyl vooruzhennykh sil" (Rear of the Armed Forces) and "Tylovoe obespechenie" (Rear Support).

4. Ibid.

5. Ibid.

6. Ibid., particularly the entry "Tyl" (Rear), p. 758.

7. See Ibid., "Tyl vooruzhennykh sil" (Rear of the Armed Forces), p. 758, and the longer entry under this same heading in N.V. Ogarkov, ed. Sovetskaia voennaia entsiklopediia, (Soviet Military Encyclopedia--hereafter cited as SME), Vol. 8 (Moscow: Voenizdat, 1980), pp. 152-156.

8. Akhromeev, MED, p. 758, and Ogarkov, ed., SME, pp. 152-156.

9. S.K. Kurkotkin, ed., Tyl sovetskikh vooruzhennykh sil v Velikoi Otechestvennoi voine, 1941-1945 (Rear of the Soviet Armed Forces in the Great Patriotic War, 1941-1945) (Moscow: Voenizdat, 1977), p. 509.

10. Ibid.

11. A substantial portion of the equipment items and weapon systems described in U.S. Department of Defense, Soviet Military Power (hereafter cited as SMP) (Washington, D.C., 1986, pp. 100-

101, are probably under the direct control of such main and central directorates.

12. A useful, concise Soviet definition for the strategic/central rear services is found in Ogarkov, SME, vol. 7, 1979, p. 554, under the entry "Strategicheskii tyl" (Strategic Rear). For an excellent discussion of the establishment of centrally subordinated rear service reserves early in the war, (components of the strategic rear service system that were to play an important role in supporting large combined arms operations), see S.N. Skriabin, "Sozdanie baz snabzheniia Tsentra" (Creation of the Supply Base of the Center). Voenno-istoricheskii zhurnal (Military Historical Journal--hereafter cited as MHJ), October 1986, pp. 54-60.

13. Kurkotkin, Rear of the Soviet Armed Forces, pp. 508-509.

14. Ibid., p. 517.

15. Ibid., p. 534, points to the growing capabilities of the central rear services, while U.S. Department of Defense, SMP, 1987, pp. 97-100, indicates that mobilized air and sea lift remain a key military resource.

16. See Lecture Materials from the Voroshilov General Staff Academy, "Rear Service Support in Front Operations," for a discussion of these bases and their components.

17. U.S. Department of Defense, SMP, 1987, p. 100.

18. See Ibid., and Graham H. Turbiville, Jr., "Soviet Logistic Support Concepts Change," ALOG: Army Logistician, March/April, 1987, pp. 2-7.

19. Kurkotkin, Rear of the Soviet Armed Forces, pp. 505-506.

20. Lecture Materials from the Voroshilov General Staff Academy, "General Concepts On Theaters of Strategic Military Action, and Methods of Studying Their Strategic Characteristics," addresses the problem of assessing TSMAs in detail.

21. U.S. Department of Defense, SMP, 1987, p. 101.

22. Ibid., 101-102.

23. Ibid., 102.

24. See Ibid., pp. 16-18 for a brief discussion of continental TSMAs, in addition to the more detailed descriptions and sources appearing earlier in this volume.

25. A.V. Khrulev, "Stanovlenie strategicheskogo tyla v Velikoi Otechestvennoi Voine"(Formation of Strategic Rear Services in the Great Patriotic War), MHJ, June 1961, pp. 64-80, is a particularly useful account of the formation of rear service control bodies in the early period of the war. Decisions made at this chaotic time largely proved themselves effective in subsequent military operations, and continue to be reflected in contemporary Soviet rear service control structure. See also, S. Skriiabin and N. Medvedev, "O tyle frontov v nachale Velikoi Otechestvennoi voina" (On the Rear Services of the Fronts at the Beginning of the Great Patriotic War), MHJ . April 1984, pp. 32-38.

26. The duties of this officer in combined arms units and formations were formerly assigned to the Deputy Commander for Technical Matters, a position still found in organizations which are not of combined arms composition. While the armaments position, with an incumbent and staff responsible for all kinds of technical support, was instituted in the 1970s, the requirement was apparent much earlier. For example, a good case is made for centralized control in the comprehensive repair/supply of various types of armor and associated weapons and equipment by different technical branches--and by implication the need for an armaments deputy--in V. Syropiatov, "Sposoby kompleksnogo remonta bronetankovoi tekhniki" (Methods of Complete Repair of Armored Equipment), MHJ, July 1982, pp. 58-63. This article looks at the coordinated repair/supply of armor and their integral weapons and equipment in World War II, a task that fell to several technical service components.

27. Headquarters, Department of the Army, The Soviet Army: Specialized Warfare and Rear Area Support, FM 100-2-2, (Washington, D.C.: U.S. Government Printing Office, 1984), p. 13-15, summarizes the roles and relationships of some entities involved in technical support.

28. One of the first official discussions of TSMA High Commands appeared in appeared in U.S. Department of Defense, SMP, 1985, pp. 16, 19.

29. Kurkotkin, Rear of the Soviet Armed Forces, p. 387.

30. U.S. Department of Defense, SMP, 1987, p. 102.

31. For insight into the sweeping authority given to the Soviet Supreme High Command and General Staff in exercising control of non-Soviet Warsaw Pact forces, as well as useful background materiel on the establishment of TSMA High Commands, see Ryszard Jerzy Kuklinski, "Wojna Z Narodem Widziana Od Srodka" (The War

32. It needs to be kept in mind that theater rear service infrastructure will incorporate and integrate large portions of the national economies of Soviet and Warsaw Pact nations in addition to enormous resources already under military control. For an excellent discussion of the kinds of war-supporting forces and means in one Warsaw Pact nation that will support--and in some cases be directly controlled by--TSMA commanders and staffs, see Michael Sadykiewicz, "Wartime Missions of the Polish Internal Front," Rand Note No. N-2401-1-OSD, July 1986.

33. The Soviet invasion of Czechoslovakia illustrated this process on a relatively small scale. The then-Deputy Minister of Defense for Rear Services, Army General Mariakhin, gave a useful overview of the rear service mobilization process during exercise Neman, the large logistic exercise that preceeded and established the support infrastructure for the subsequent invasion. In a 14 August 1968 article in Krasnaia zvezda (Red Star--hereafter cited as RS), Mariakhin pointed out that thousands of transport vehicles were mobilized from the civilian economy at the very time that the harvest was taking place.

34. The mobilization systems of the East European Warsaw Pact states are close analogs of the Soviet system. Sadykiewicz, "Wartime Missions," gives useful insight into elements of the Polish mobilization system.

35. See Akhromeev, MED, p. 679, under the entry "Sluzhba voennykh soobshchenii" (Military Transport Service), for a brief Soviet discussion of this entity, and Kenneth M. Keltner and Graham H. Turbiville, Jr., "Soviet Reinforcement in Europe," Military Review, April 1987, pp. 34-43, for more on VOSO's transportation coordinating role in the employment of strategic heavy equipment transporter units. Informative articles by the current VOSO chief, which point to the scope of VOSO responsibilities, include A. Klemin, "I plan, i kachestvo" (Both the Plan, and the Quality), RAS, April 1987, pp. 64-68; "Sovershenstvovat' transportnoe obespechenie voisk" (Improve Troop Transportation Support), RAS, April 1982, pp. 56-61; and "Voennye soobshcheniia v godi Velikoi Otechestvennoi voini" (Military Transport in the Years of the Great Patriotic War), MHJ, March 1985, pp. 66- 74.

36. U.S. Department of Defense, SMP, 1987, pp. 101-102.

37. Ibid., p. 102.

38. Unless otherwise noted, the specific planning factors and norms associated with Soviet rear service deployment and operation are drawn from Lecture Materials from the Voroshilov General Staff Academy, "Rear Service Support in Front Operations," and from a selected compilation of planning norms drawn from the Lecture notes in their entirety.

39. U.S. Department of Defense, SMP, 1987, p. 102.

40. It should be recalled that central rear services played this kind of role in World War II, and had a major impact in sustaining those force groupings engaged in operations that the VGK determined were critical.

41. These planning norms are, of course, subject to substantial variation, depending on the military-geographic conditions in a given TSMA and specific organizations for combat, among other issues.

42. Hans Frank, The Significance of the Eastern Sea Routes and the Possibilities of Their Defense," Marine-Rundshau, September/October 1986, p. 265.

43. Estimated planning norms for materiel support brigades at front (and army) levels are based on the assumption that they would be roughly analogous to those that governed the stockage levels, deployment areas, and relocation times associated with the materiel support bases they replaced.

44. See the entry "Tylovoi punkt upravleniia" (Rear Command Post), in Ogarkov, SME, 1980, p. 158. Soviet attention to "rear control" parallels that directed at troop control for combined arms forces generally. Rear control is a frequent theme for Colonel General Golushko (as in the earlier cited "Development of the Rear Control System"), and other Soviet rear service specialists. For example, K.K. Eremenko and V.V. Ovsiannikov, "Nekotorye voprosy upravleniia tylom armii v nastupatel'nykh operatsiiakh Velikoi Otechestvennoi voiny" (Several Questions on the Rear Control of Armies in Offensive Operations in the Great Patriotic War), MHJ, October 1986, pp. 37-41; N. Kozlov, "Upravlenie tylom v boiu" (Rear Control in Battle), RAS, February 1987, pp. 23-26; and V. Arkhipov, "Uprablenie dvizheniem kolonn na rubezhe krupoi vodnoi pregrady" (Control of Convoy Movement On the Edge of Large Water Obstacles), RAS, October 1984, pp. 60-64, address rear control issues ranging from the broad to the specific.

45. In addition to detailed data in the Voroshilov materials, see Ogarkov, SME, Vol. 6, 1978, under the entry "Plan operatsii" (Operations Plan), p. 347, for a brief discussion of other planning components of an operation.

46. Kurkotkin, Rear of the Soviet Armed Forces, p. 529, made this point, as did the Voroshilov materials, "Rear Service Support in Front Operations."

47. The Voroshilov materials indicate that losses to a front in

the course of an operation could greatly exceed half of its personnel and comprise up to half of its materiel.

48. Kurkotkin, Rear of the Soviet Armed Forces, pp. 507-508.

49. Ibid., p. 507.

50. See Turbiville, "Soviet Logistic Concepts Change," for further discussion of materiel support battalion deployment and operations.

51. For one of the best discussions of the formation and achievements of the Trophy Service, see Kurkotkin, Rear of the Soviet Armed Forces, pp. 373-385.

52. Ibid. gives a benevolent account of some of these activities conducted under rear service direction, that, nevertheless, reflects the scope of the Soviet effort.

53. Ibid., pp. 238-242, discusses the role of rail transport and its management after Soviet troops entered Eastern Europe in 1944. Golushko, "Development of the Rear Control System," p. 15, indicates that the transloading zones established at the border areas, as would be expected, were under central rear service control.

54. V.D. Sokolovsky, Voennaia strategiia (Military Strategy) (Moscow: Voenizdat, 1968), as translated in Harriet Fast Scott, ed., Soviet Military Strategy, 3rd ed. (New York: Crane, Russak and Company, Inc.,1975), pp. 311-312.

55. Ibid. (Emphasis added).

56. Ibid., p. 312.

57. This spectrum of approaches is discussed in Graham H. Turbiville, Jr., "Soviet Approaches to Dealing With Battlefield Attrition," Review of the Soviet Ground Forces, August 1983, pp. 13-18. Typical of the Soviet effort to identify historical reconstitution approaches of contemporary relevance was the article, O. Kudriashov, "O povyshenii i podderzhanii boesposobnosti voisk" (On Increasing and Maintaining Troop Combat Effectiveness), MHJ, November 1978, pp. 26-31.

58. Turbiville, "Soviet Approaches," pp. 15-18, addresses a typical Soviet scenario for composite unit formation.

59. There was clear Soviet enthusiasm some years ago for composite unit formation through radical reorganization in a nuclear conflict, a view well illustrated in works like Iu. Galitskii, "Restoration of Combat Effectiveness of Troops and Elimination of the Effects of Enemy Nuclear Strikes During an Offensive,"

Voennaia mysl' (Military Thought), August 1967, pp. 42-48, as translated in Foreign Press Digest, No. 0125/68, 26 August 1968, and the heavily nuclear oriented A.A. Sidorenko, Nastuplenie (The Offensive) (Moscow: Voenizdat, 1970), in the edition published and translated under the auspices of the U.S. Air Force, p. 61. However, the more recent--and authoritative--V.G. Reznichenko,ed., Taktika (Tactics) (Moscow: Voenizdat, 1984), p. 68, indicates that restoring combat effectiveness is "usually carried out within the previous organizational," and appears to assign a secondary importance to composite unit formation. This approach is certainly commensurate with conventional operations, where the existing unit structure would ordinarily not be so disrupted that radical reorganization methods were necessary.

60. F. Dmitriev, "Precision Weapons of the U.S. and NATO," Zarubezhnoe voennoe obozrenie (Foreign Military Review), August 1984, and translated in JPRS, USSR Report, Military Affairs, JPRS-UMA-85-023.

61. Ogarkov, MED, p. 531, under the entry "Okhrana i oborona tyla" (Security and Defense of the Rear);" V. Aleshinskii, "Zashchita voinskogo tyla" (Protection of the Troop Rear), RAS, June 1984, pp. 16-18; E. Dema, "Zashchita, okhrana i oborona tyla" (Protection, Security, and Defense of the Rear), RAS, January 1981, pp. 16-18; and N. Madera ans I. Khanin, "Zashchita, okhrana i oborona avtomobil'nykh kolonn" (Protection, Security, and Defense of Truck Columns), RAS, January 1983, pp. 24-26, address a number of rear area protection, defense, and security issues of current concern to Soviet planners.

62. I.M. Golushko, "Tyl v usloviiakh primeneniia protivnikom vysokokotochnogo oruzhiia" (The Rear Services When the Enemy is Employing Extremely Accurate Weaponry), RAS, July 1984, p. 15.

63. This is inferred by the sweeping responsibilities given to the TSMA High Commands, and the rear area security roles of the chiefs of the rear at other levels.

64. Kurkotkin, Rear of the Soviet Armed Forces, p. 519, briefly discusses also the role of the security units in World War II, and the role played by other elements.

65. For an excellent discussion of Soviet security forces, to include the many missions they were assigned against Soviet soldiers/citizens, see James T. Reitz, "The Soviet Security Troops--The Kremlin's Other Armies," in David R. Jones, ed., Soviet Armed Forces Review Annual, (Gulf Breeze, Florida: Academic International Press, 1982), pp. 279-327.

66. U.S. War Department, Handbook on U.S.S.R. Military Forces, War Department Technical Manual, TM 30-430, Washington, D.C., November 1945, pp. IV-4 to IV-5, points to a number of the

organizational forms that rear security forces took in World War II.

67. Akhromeev, MED, p. 596, under the entry "Protivodesantnyi rezerv" (Antilanding Reserve), indicates the formal existence of these forces, whose actions have been discussed frequently in the Soviet military press.

68. A good example of this is G. El'chishchev, "Osobennosti ucheby otdel'nogo battal'ona material'nogo obespecheniia" (Training Features of a Separate Materiel Support Battalion) RAS, November 1983, pp. 20-23.

69. A good illustration of this is V. Arkhipov and M. Stepanov, "Okhrana i oborona voenno-avtomobil'nykh dorog" (Security an Defense of Military Highways), RAS, August 1982, pp. 58-60, which describes security measures that, while drawing on historical precedent, suggest the current system of road security employed in Afghanistan. Iu. Piliugin, "Okhrana sukhoputnykh kommunikatsii v khode voiny" (Security of Land Lines of Communications in the Course of the War), MHJ, September 1983, pp. 31-36, discusses World War II rear security approaches that in a number of respects also resemble the measures imposed to protect roads and convoys in Afghanistan.

70. For example, I. Skorodumov, "2-i gvardeiskii tankovyi korpus v Belorusskoi operatsii" (The 2nd Guards Tank Corps in the Belorussian Operation), MHJ, June 1979, pp. 27-33.

71. Many useful insights are drawn from these early Polish articles in Phillip A. Petersen and John G. Hines, The Soviet Conventional Offensive in Europe, (Washington, D.C.: Defense Intelligence Agency, 1983), DDB-2622-4-83.

72. While Soviet interest in the investigation of logistic support approaches for deep operations forces are associated closely with OMG sustainment, it clearly extends to the rear support of forward detachments, airborne, air assault, and other combined arms units and formations tasked to operate in isolation from main forces as well.

73. V. Odintsov and V. Obsiannikov, "Tylovoe obespechenie podvizhnykh grup" (Rear Support of Mobile Groups), MHJ, March 1983, pp. 43-49, and A. Krupchenko, "Tekhnicheskoe obespechenie tankovykh i mekhanizirovannykh korpusov, deistovavshikh v kachestve podvizhnykh grup" (Technical Support of Tank and Mechanized Corps, Acting as a Mobile Groups), MHJ, June 1982, pp. 27-33, constitute two particularly good articles in this regard.

74. K.N. Abramov, "Material'noe obespechenie frontov v operatsiiakh na okruzhenie" (Material Support of Fronts in

Encirclement Operations), MHJ, June 1986, pp. 31-38 identifies a number of the special rear service support considerations associated with encirclements. It should be noted as well--to underline the importance assigned to the conduct of encirclement operations--that the list of approved military-historical research topics for the 1981-1990 period, included: "The experience of preparing for and conducting encirclement operations in the years of the Great Patriotic War, and its significance for working out the contemporary theory of military art," [in M. Kir'ian, "Perspecktivnaia tematiks voenno-istoricheskikh issledovanii na 1981-1990 gg." (Perspective Topics for Military Historical Research in the 1981-1990 Period) MHJ, May 1981 (Part 1), p. 46], and "Party-political work during the conduct of military encirclement actions." [in Ibid., June 1981 (Part 2), p. 60].

75. U.S. Department of Defense, SMP, 1987, p. 100.

76. S. Tulekov, "S pomoshch'iu verteletov" (With the Help of Helicopters), RAS, November 1986, pp. 26-28.

77. A. Oliinik, "Goriachee nebo: O muzhestve i masterstve sovetskikh vertoletchikov v Afganistane" (The Hot Sky: About the Courage and Skill of the Soviet Helicopter Pilots in Afghanistan," RS, 3 August 1985, is a good example.

78. U.S. Department of Defense, SMP, 1987, p. 79-80.

79. Romauld Mankowski, "Zabezpeiczenie tylowe lotnictwa wojsk ladovych dzialajocego w skladzie i na korzysc operacyjnych grup manewowych" (Rear Support of Ground Force Aviation Acting as Part of, and for the Benefit of, an Operational Maneuver Group), Przeglad Wojsk Loticzych I Wojsk Oborny Powietrznej Kraju (Air and Air Defense Forces Review), April 1985 (pp. 35- 39), May 1985 (pp. 56-59), and June 1987 (pp. 51-56).

80. Ibid. (June 1987), pp. 54-55.

81. See Ibid. (June 1987), p. 55.

82. U.S. Department of Defense, SMP, 1987, p. 97, and Graham H. Turbiville, Jr., "Soviet Military Planning and the Role of Reserves," National Guard, July 1981, pp. 8-11.