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REAR SERVICE SUPPORT:

CONCEPTS AND STRUCTURE

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It appears that Soviet planners are already addressing changes in logistical support concepts and service support force structures that are intended to complement strategic planning and maneuver force restructuring. The author offers evidence that these changes may be well underway and warns that they warrant the closest scrutiny of NATO planners and analysts.

THE BROAD structure of the current Soviet rear service system, as well as a number of contemporary logistic support concepts and approaches from strategic to tactical levels, were largely established in the course of World War II.¹ As Soviet military writings explicitly note, the lessons learned in supporting multi-front strategic offensives during the final phases of the war were particularly valuable in educating Soviet postwar logistic planners, and retain their value today.² Throughout the early postwar period, five imperatives shaped rear service force structure and concepts:

- The need for greater rear service mobility;
- The requirement to consolidate and centralize diverse rear service assets into more manageable, responsive units and groupings;
- The need to establish increasingly more powerful logistic resources from lower to higher levels;
- The requirement to create rear service control and management bodies that match those of maneuver units in effectiveness; and
- The need to develop measures designed to ensure survivability of rear service units and resources in the face of increasing threats to rear areas from a variety of strike sys-

Graham H. Turbiville Jr.

REAR SERVICE SUPPORT CONCEPTS AND STRUCTURES



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tems and forces.³

During the early 1960s, when Soviet planning was focused principally on nuclear war-fighting variants, the level of investment in traditional sustainability forces and resources waned. That is, when Soviet planners perceived that future general wars would likely be of short duration and that the virtually certain employment of nuclear weapons would reduce requirements for consumable supplies and rear service transport substantially, they cut back their large logistic force structure associated with the sustainment of successive, multi-front strategic offensives. While the need for rear mobility, responsiveness and control continued to grow in importance in this period, the perceived magnitude of support requirements was, nevertheless, clearly reduced. These perceptions of rear service requirements, however, underwent fundamental change.

Current Soviet Approaches

By the early 1970s, all of those imperatives noted above again came into full play. The prospect of conventional operations of increasing duration and the concurrent formulation of concepts for strategic offensives designed to achieve theater goals with the use of conventional weapons only, dictated the implementation of sweeping logistic preparations and rear service force restructuring.

Many of these rear service preparations were associated with that component of "strategic deployment" which Soviet planners term "preparing the theater of strategic military action," an undertaking further described in the article, "Strategic Deployment: Mobilizing and Moving the Force," which appears in this issue of *Military Review*. These logistic preparations consisted of major programs designed to establish logistic reserves of all types of supplies throughout theater areas, with particular emphasis put on the pre-positioning of ammunition and petroleum, oil and lubricants (POL) stockpiles in Eastern Europe.⁴

Soviet planners understand well that establishing a theater logistic support structure is among the most complex and time-consuming elements of preparing for the conduct of theater strategic operations—a process that to the extent possible they intend to accomplish in peacetime. As a consequence, they have improved transportation systems and facilities with military application—both in Eastern Europe and the Soviet Union—and established stocks of construction materiel for the repair and restoration of war-damaged rail lines, roads and bridges. Special troop units, notably railroad, highway and pipeline troops intended for the construction, repair, management and operation of transportation systems, likewise have been expanded and modernized. Among the many tasks assigned to railroad troops, for example, would be restoring the rail transloading zones along Soviet western borders where broad and narrow gage rail lines meet. As in the latter stages of World War II, these important facilities would fall under the control of Soviet strategic rear service bodies.⁵ Soviet planners expect that these and other transportation facilities throughout theater areas would be subject to heavy and continuing enemy attack. The establishment and improvement of rail ferry links on the Black and Baltic Seas also constitute rear service theater preparations that, in wartime, would supplement other forms of



A huge An-124 Condor transport aircraft belonging to the Soviet Union's state airline, Aeroflot.

A major feature of Soviet and non-Soviet Warsaw Pact rear service support has remained the requirement to mobilize large transport and other resources from the national economy to fully establish a logistic support base. Soviet/Warsaw Pact planners have had to consider what new burdens prolonged withdrawal of such assets would mean for the functioning of the national economies in a conventional war of extended duration.

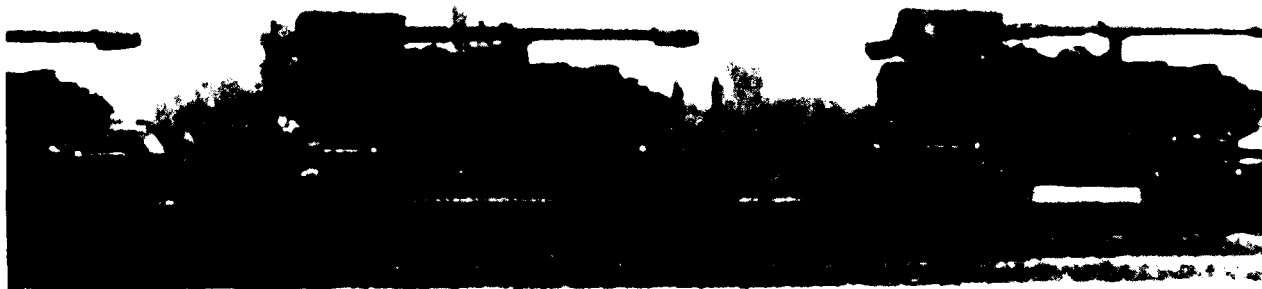
transport for military cargos.⁶ A major feature of Soviet and non-Soviet Warsaw Pact rear service support has remained the requirement to mobilize large transport and other resources from the national economy to fully establish a logistic support base. Soviet/Warsaw Pact planners have had to consider what new burdens prolonged withdrawal of such assets would mean for the functioning of the national economies in a conventional war of extended duration.

The requirement to plan and prepare for the support of theater-wide conventional operations lasting weeks or months shared the development of new planning norms for am-

muniton, POL and other supply consumption; changed rear service deployment and relocation times; substantially increased the requirement for motor transport at all levels; placed new demands on rear service units for the sustained, incremental replacement of losses in maneuver forces and rear service units themselves; and compressed the time which rear service commanders and staffs would have to respond to more demanding support missions. It became clear to Soviet rear service planners that the gap between those support requirements generated by far more capable combat forces, and the capabilities of logistic units to meet these demands,

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152mm self-propelled guns on a rail siding in East Germany

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would necessitate logistic restructuring on a large scale.⁷

Driven by these considerations, in the late 1970s, the Soviet rear services began the most sweeping logistic reorganization of the post-war years. Under this reorganization, new materiel support units were formed at tactical and operational levels, replacing the older unwieldy system of logistic bases, transport units, and fragmented supply and servicing units and resources. This is the component of the Soviet logistic system charged with the receipt, storage, movement and delivery of ammunition, POL and other consumable supply items. New, streamlined "materiel support brigades"—each under a single commander—replaced the loosely coordinated and managed army mobile bases and front forward bases. At division and regimental levels, "materiel support battalions" and "materiel support companies" replaced fragmented transport/supply

entities. This reorganization increased transport lift capabilities, improved rear service responsiveness, facilitated tailoring and allocation of logistic support packages (especially important for the support of deep operations forces) and assigned rear service units increased responsibilities for their own defense.⁸ This logistic reorganization was clearly tied to other force restructuring efforts then underway that were intended in large measure to structure combined armed forces for the conduct of nonnuclear theater strategic operations. Additional rear service restructuring is clearly imminent in conjunction with new weapons technologies and as Soviet planners contemplate—and quite likely have already begun—fundamental restructuring of maneuver forces. This restructuring would be given impetus by—and in turn shape—major Soviet conventional force reductions undertaken for operational reasons or in an arms control context.

Rear Service Dimensions of Changing Soviet Force Structure

Looking first at the rear service preparation of the theater, it is likely that Soviet planners will continue to give high priority to extensive prestocking of consumable supplies and lines of communication (LOC) construction material that has already been accomplished in forward theater areas opposite NATO. That is, with a substantial reduction of forward-based forces, they will dedicate all transportation resources to moving combat and support units back to deployment areas in Eastern Europe in a period of threat or the initial period of war. Even at current force levels, they perceive this extensive prestocking as essential because of competing transportation requirements and the certainty of heavy LOC interdiction. Indeed, as noted in the article, "Strategic Deployment: Mobilizing and Moving the Force," a troop reduction would likely compel Soviet planners to undertake a number of hardening and dispersal measures for pre-positioned supply stocks.

In addition, the Soviets will likely undertake further improvement of local transportation routes and means to facilitate the rapid movement of stocks to field positions. All of these measures would, of course, help ensure the survivability of key logistic resources that would be difficult to replace. Given the large stockpiles already present in the forward area, Soviet planners would probably see little value in increasing them in connection with a troop reduction, if adequate measures could be taken for their protection. Improvement of those Warsaw Pact strategic transportation systems and facilities having military applications would continue apace in the wake of any force reductions, and in the face of the growing threats to lines of communication that Soviet planners perceive from new strike systems and a resurgence in US/NATO special operations forces.

Logistic force restructuring and the application of new technologies to logistic materiel

and equipment have the potential of both streamlining and reducing the size of the forward-based Soviet logistic infrastructure, without substantial loss of sustainment capabilities. As noted above, the materiel support system has already been restructured. Because the new materiel support units at all levels provide a much enhanced framework for incremental reinforcement, a reduction in their active strength could be rapidly reconstituted through: the addition of transport companies and battalions activated from stored equipment sets, transported from the USSR, or mobilized from the East European national economies; the addition of requisite servicing units of various types; and the utilization of pre-positioned supplies. This option would have been far more difficult under the old materiel base system used until the end of the 1970s.⁹

It is clear that both the technical and medical support components of the Soviet theater logistic system are good candidates for pre-

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cisely the kind of reorganization already carried out in the area of materiel support. That is, the creation in peacetime of multifunctional repair and medical regiments and brigades to replace apparently cumbersome and more loosely controlled technical and medical support groupings and bases seems a likely development that responds to the same Soviet



Partially camouflaged
fuel storage site.

The creation in peacetime of multifunctional repair and medical regiments and brigades to replace apparently cumbersome and more loosely controlled technical and medical support groupings and bases seems a likely development that responds to the same Soviet imperatives that drove the reorganization of the materiel support system.

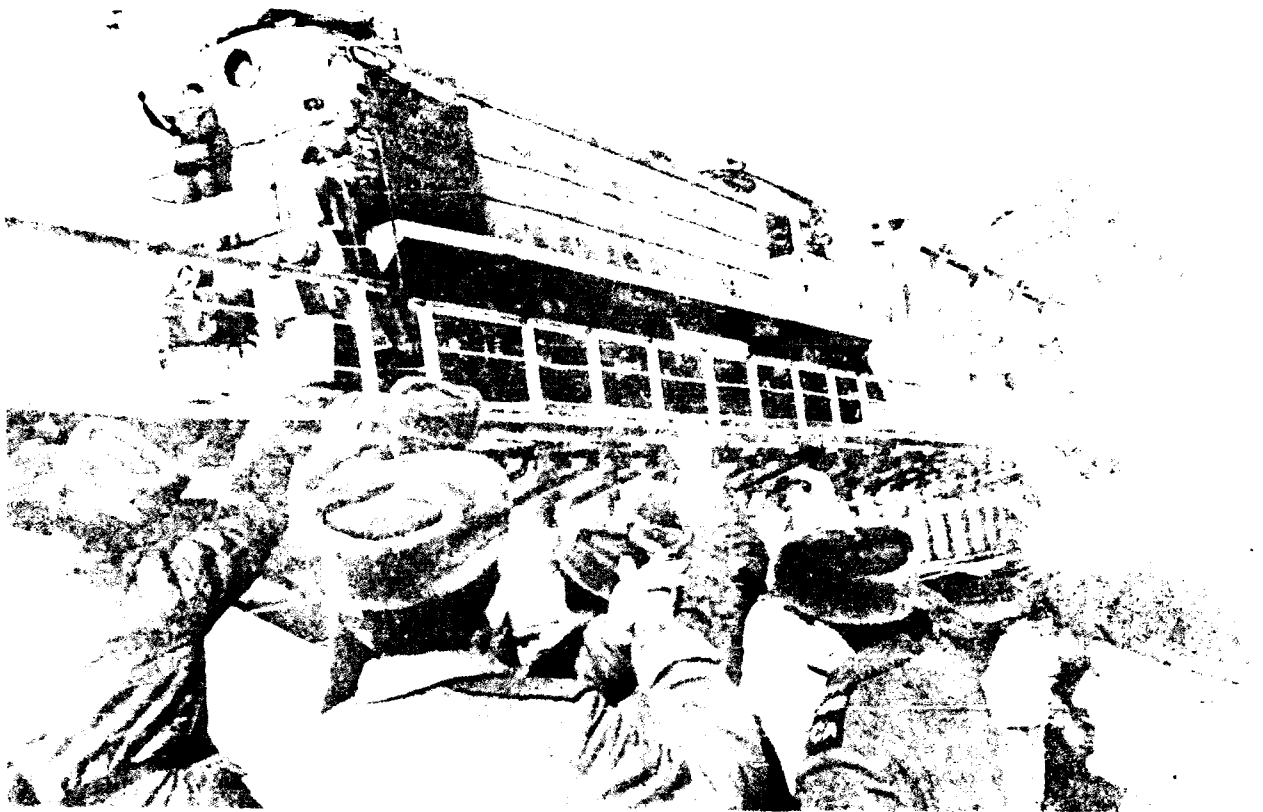
imperatives that drove the reorganization of the materiel support system. This kind of reorganization probably will begin in the near future, if indeed it is not already underway, a development that would have analogous advantages for mobilization and warring.¹⁰

Technological innovations applied to logistic support, promise by themselves to reduce in size, and increase in capability, some components of the Soviet rear service system. While the pace at which these innovations will affect Soviet logistic posture will vary, Soviet military literature is beginning to address their implications.¹¹

For example, potential developments include a reduction in the gross tonnage, storage, and transport requirements for conventional ammunition due to advances in caseless ammunition, the increased use of

precision guided munitions capable of destroying targets with far fewer rounds, and the employment of directed energy weapons in place of some small arms/artillery systems. Given that conventional ammunition accounts for about 40 percent of materiel consumed by weight, even modest reductions can make a substantial difference in transport and storage requirements. In this regard, Soviet sources have noted that "caseless ammunition having identical ballistic characteristics, are almost twice as light as conventional ammunition, one third smaller in volume, and four times less expensive."¹²

The development of more fuel efficient engines in all military vehicles will reduce fuel requirements to some extent, while the continued introduction of higher capacity cargo trucks to replace more numerous, less capable

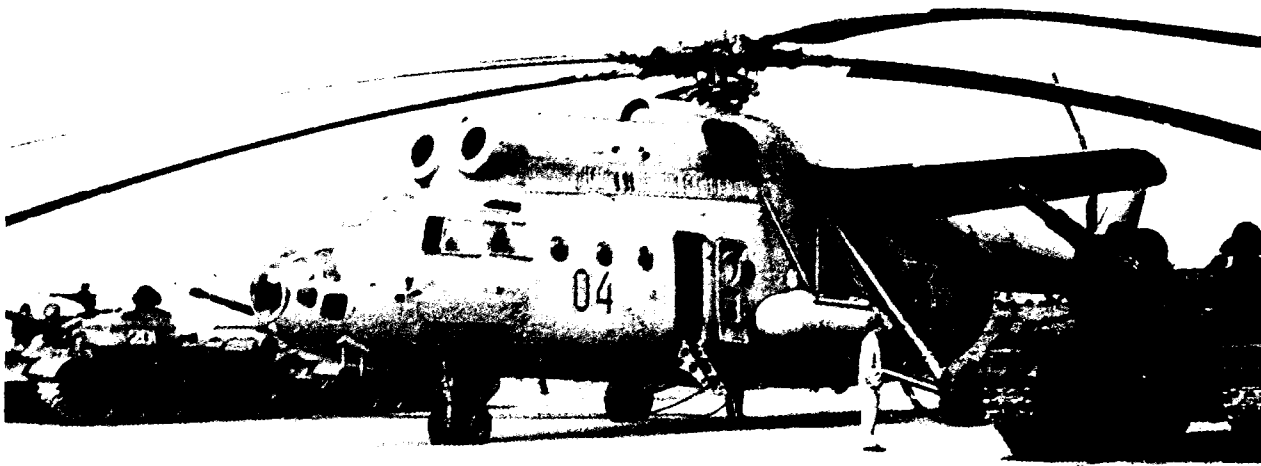


In addition, the Soviets will likely undertake further improvement of local transportation routes and means to facilitate the rapid movement of stocks to field positions. . . . Given the large stockpiles already present in the forward area, Soviet planners would probably see little value in increasing them in connection with a troop reduction, if adequate measures could be taken for their protection.

models, will both lower overall POL consumption and reduce the size of the transport fleet. Fuel efficient wing-in-ground (WIG) vehicles used in a logistic or troop transport role may contribute to this fuel reduction as well.¹³ Like ammunition, POL accounts for approximately 40 percent of Soviet consumable supplies by weight.

While the size of the deployed Soviet materiel support system may well be smaller and more mobile for future Soviet forces, technical support requirements will certainly increase as Soviet equipment continues to grow in sophistication and complexity. New weapon systems and equipment, such as directed energy weapons, target acquisition and communication systems will dictate new technical support approaches and, quite likely, new kinds of repair and maintenance units.

A growing body of evidence suggests that a major Soviet reorganization of maneuver forces may now be underway or undertaken soon.¹⁴ Given increased attention to conventional arms control, such a reorganization could well be coincident with a conventional arms reduction agreement. Limited or more sweeping force structure changes carried out for a combination of reorganizational, operational and arms reduction reasons would present Western analysts with a variety of difficult assessment problems. Such a situation would be analogous in some respects to the 1945-1948 period when Soviet forces were simultaneously reorganized, reduced and redeployed at the conclusion of World War II.¹⁵ If, for example, Soviet force reductions were concurrent with the reorganization of Soviet ground maneuver divisions (based on regi-



T-62 tanks being refueled from a Mi-6 Hook.

Force restructuring may change the "mix" of armor, artillery and—most significantly—helicopter aviation in maneuver units and operational formations. Substantial changes in this regard will directly affect the size, composition and planning norms of rear service units to an extent that cannot yet be predicted with any precision.

ments) into corps (composed of brigades with battalions of various composition including air assault), changes in logistic support would be an integral part of the process. The recent and potential changes in logistic force structure described above, since they are intended to support more mobile combined arms operations by maneuver forces, would be applicable and adaptable to the support of corps/brigade operations. For example, tailored materiel support regiments or brigades would be well suited for the support of new corps, while materiel support battalions would be appropriate in size and capability to support brigade-size maneuver units. The experimental "new army corps" have, in fact, included materiel support units in their composition.¹⁶

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helicopter aviation in maneuver units and operational formations. Substantial changes in this regard will directly affect the size, composition and planning norms of rear service units to an extent that cannot yet be predicted with any precision. At a minimum, it appears clear that the rear services of rotary wing aviation will be an increasingly important part of the logistic structure of combined arms organizations and will be more closely integrated into the overall materiel, technical and medical support system.

These are just a few of the potential rear service changes and considerations Soviet planners are already addressing, and which to some extent are already altering Soviet logistic force structure and support concepts. These developments, collectively, may fundamentally change, the Soviet calculus of what

While the size of the deployed Soviet materiel support system may well be smaller and more mobile for future Soviet forces, technical support requirements will certainly increase as Soviet equipment [such as directed energy weapons, target acquisition and communication systems] continues to grow in sophistication and complexity.

constitutes adequate theater logistic support in the next decade. This, in turn, will set parameters on what Soviet planners judge would be required to maintain or rapidly reestablish a logistic force structure capable of sustaining

theater strategic operations under a range of conflict variants. These potential developments deserve the closest attention from Western analysts while the process is still unfolding. \square

NOTES

1. Many Soviet military articles and books have pointed to the effectiveness of the rear service organizational structure and support concepts adopted and improved during the war years. See, for example, I. M. Golushko, "Iz opyta raboty shtaba Tyfa Sovetskoy Armii v gody Velikoy Otechestvennoy voyny," [From the experience of staff work by the rear of the Soviet Army in the Great Patriotic War], *Voyenno-istoricheskii zhurnal* (Military-Historical Journal) (October 1985), 37-44; and S. K. Kurkotkin, ed., *Tyf Sovetskikh Vooruzhennykh Sil v Velikoy Otechestvennoy voynе, 1941-1945* [Rear of the Soviet Armed Forces in the Great Patriotic War, 1941-1945] (Moscow: Voenizdat, 1977). Then, as now, rear service support comprised three principal components—materiel support concerned with the supply of ammunition, petroleum, oil and lubricants and other consumable supply items; technical support concerned with maintenance, repair and the supply of major end items; and medical support in its various forms.

2. Kurkotkin, particularly 484-521. Rear service lessons learned are contained in extensive classified Soviet war experience studies published during and after World War II.

3. These enduring areas of concern to Soviet logistic planners have been addressed in many Soviet military publications (including Kurkotkin) and continue to shape Soviet rear service force structure and concepts.

4. Graham H. Turbiville Jr., "Sustaining Theater Strategic Operations," *The Journal of Soviet Military Studies*, vol. 1 (April 1988):82-89, for further discussion of Soviet peacetime rear service posture in continental theaters of strategic military action.

5. Kurkotkin, 238-40.

6. See, for example, Hans Frank, "The Significance of the Eastern Sea Routes and the Possibilities of Theater Defense," *Marine-Rundschau* (September-October 1986), 265.

7. B. Bugrov and L. Morozov, "Otdel'nyy batal'on materiel'nogo obespecheniya," [Separate materiel support battalion] *Tyf i snabzheniye Sovetskikh Vooruzhennykh Sil* [Rear and Supply of the Soviet Armed Forces, hereafter cited as RS] (October 1984), 19-22 and I. M. Golushko, "Tyf v usloviyakh primeneniya protivnikov vysoko-tochnogo oruzhiya," [Rear services when the enemy is employing precision weapons], 13-17.

8. See Graham H. Turbiville Jr., "Soviet Logistics Support Concepts Change," *Army Logistician-ALOG*, March-April 1987, 2-7; and Turbiville, "Sustaining Theater Strategic Operations," for a more complete discussion of this reorganization at tactical and operational levels.

9. The structure of materiel support units was quite clearly designed to facilitate the rapid augmentation or detachment of unit elements to create tailored logistic support packages, a capability that has advantages for both mobilization and the rear service support of forces tasked to operate in isolation from the main body of troops, e.g., forward detachments, air assault units and operational maneuver groups.

10. Articles in the Soviet military press have continually called for the better control and coordination of all rear service components. Deputy commanders for rear services from tactical to operational-strategic levels are directly responsible for materiel and medical support, with a deputy minister of defense for rear services found in the Ministry of Defense itself.

Technical support, however, is the direct responsibility of deputy commanders for armament (deputy commanders for technical matters), whose activities are coordinated with rear service deputy commanders at each level and shaped by the rear service deputy's responsibility for developing and overseeing overall rear service plans and his direct control of transportation.

11. See, for example, I. Golushko, "Tyf: vchera, segodnya, zavtra," [The Rear Services: yesterday, today, tomorrow], RS (February 1988), 9-10, which points out that "tomorrow's rear services will apparently differ substantially from today's" in light of new technology, restructuring, and the "new defensive strategy" adopted by the Communist Party of the Soviet Union's Central Committee for the Soviet state. In this regard, the "qualitative 'boom' [bum] in the expenditure and accumulation of [supply] reserves will diminish," among many other developments. In addition, M. M. Kir'yan, *Voyenno-tehnicheskii progress i vooruzhennyye sily SSSR*, [Military-technical progress and the Armed Forces of the USSR] (Moscow: Voenizdat, 1982), surveys a number of these developments in the context of overall military organizational development and technological change, with the newest developments often ascribed to US or other "foreign" research and development.

12. Kir'yan, 271. Kir'yan (260), also noted, in regard to "foreign" work on laser weapons, that such a weapon could "be used repeatedly" and would "not be constrained by the requirement to transport ammunition."

13. *Ibid.*, 292, pointed out the high speed and low energy consumption associated with wing-in-ground craft, as well as their effective performance over land as well as water. The first public official US acknowledgment of Soviet work on WIG craft took place in US Department of Defense, *Soviet Military Power*, 5th edition (Washington, DC: Government Printing Office [GPO], 1986), 93. As *Soviet Military Power* indicated, WIG technology "takes advantage of the increased aerodynamic lift that occurs when a wing operating near the surface experiences a reduction in induced drag."

14. Over the last several years, the Soviet military press has reflected a growing interest in operations and combat actions by Soviet World War II tank and mechanized corps and brigades under various circumstances. Virtually every aspect of corps/brigade employment and support has been addressed. Together with reports of the limited formation of "new army corps," based on maneuver brigades, the employment of combined arms brigades in Afghanistan, the recent reorganization of the Hungarian Ground Forces into a corps/brigade structure, and an operational rationale laid out by Soviet military theorists for the employment of smaller, more balanced maneuver forces with greater autonomy, these developments collectively suggest imminent Soviet force structure changes that may be substantial.

15. For an excellent account of Soviet demobilization and its significance for current mobilization capabilities, see Albert Z. Conner and Robert G. Poiner, "Soviet Ground Force Mobilization Potential: Lessons of the Past and Implications for the Future," to be published in a future edition of *The Journal of Soviet Military Studies*.

16. US Department of Defense, *Soviet Military Power*, 6th ed. (Washington, DC: GPO, 1987), 100.