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Getting Back to Europe: Strategic Lift Needed Now More than Ever

DAVID S. SORENSON

Peace, it would seem, is breaking out all over, and especially in Europe, where the breathtaking pace of change seems to outstrip one's ability to absorb its meaning.¹ The Warsaw Pact has fallen apart, the Soviet Union has turned its security attention inward, and even in a climate of high uncertainty, serious efforts at reducing East-West tension are under way.

Significant changes are clearly taking place in East-West relations, but one cannot be sure that the inviting path beyond the Cold War will not be dotted with pitfalls. After four decades, the post-World War II political status quo in Europe is unraveling in unpredictable ways, creating both new opportunities and new dangers for the United States and the USSR. Political unrest in Eastern Europe has become political upheaval, and unrest within the Soviet Union itself may grow to a point the Soviets find intolerable. The emerging reality of German reunification also generates new uncertainties, particularly in the USSR, where there is enormous apprehension concerning a reunited Germany's relation to NATO. Perhaps most important, the changes that now-President Gorbachev seems willing to accept may well be less acceptable to a successor, and the security of Europe may be a lot to rest on the shoulders of one leader in a nation where leadership change has to date been unpredictable.

Despite such uncertainties, the pressures for extensive force reductions, driven by both arms control and fiscal incentives, are as high as they have been in 40 years or more. The United States is seriously considering substantial military cutbacks, including the elimination of two carrier battle groups, two Army divisions, and the proposed deactivation of more than 50 military bases. Prospective reductions in US forces in Europe begin with the

withdrawal of 30,000 US troops under consideration at the ongoing Conventional Forces in Europe talks. The most recent proposal—as carried in President Bush's State of the Union address—calls for a ceiling of 195,000 US troops in Europe, down from the present 323,000. Such reductions may occur as much for fiscal reasons as for strategic ones, as the Defense Department will doubtless find it difficult to justify the size of the present force in Europe in the face of domestic economic needs and the apparent crumbling of the Soviet empire. In fact, the Army is now discussing plans for a cheaper, more mobile force suitable for counterterrorism, drug interdiction, and regional instability operations.²

Even before these stunning changes, reinforcement capability for conventional forces in Europe was woefully inadequate. But if the reductions come off as planned, that condition will deteriorate further. If the patient is ill now, he may soon be in critical condition. Regrettably, American force planning may have to repeat unlearned lessons from previous instances of European wartime supply. In World War I the United States was able to ship only 65 percent of required military supplies even in the last month of the war,³ and during World War II several major operations in the European and North African theaters had to be postponed because of lift shortages.⁴ Such failings could happen again, especially if similar assumptions are made about the reduced danger of war.

Military Objectives for NATO

For most of NATO's 40-year existence, the alliance's members relied on the threat of escalation to a nuclear response if a Soviet conventional attack could not be stopped quickly by conventional forces, because NATO nations as a whole were unwilling to take on the economic burden of matching Warsaw Pact conventional force levels. Consequently NATO conventional force planning has emphasized wars expected to last no longer than 30 days. Now, there is nothing magic about 30 days, of course, and the figure thus bears a sense of unreality about it.⁵ On the other hand, planners have had to plan for *some* duration, and preparing for 30 days of combat probably represents the limit to which NATO members have been willing to fund the necessary conventional forces and war supplies. But is such planning still realistic today

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and for the next decade, particularly in the aftermath of the INF treaty, which removed the weapons most symbolically linked to nuclear escalation threats? More important, does American force planning for NATO conventional emergencies allow for the reality of increased lift requirements? Retaining a smaller force of American troops in Europe will mean that we will need considerably more lift capacity to get a greater number of American forces back to Europe if war breaks out.

NATO planners have their work cut out for them if the conventional deterrent is to remain robust. Specifically, NATO needs to improve the capacity to stem a Soviet conventional push into Western Europe quickly, before it reaches, say, 100 kilometers. Second, after attacking and defeating Soviet second-echelon forces, the Soviet thrust must be turned back or defeated or weakened to the point where the Soviets become willing to seek a negotiated termination of the conflict. Such a feat will be difficult, especially in the face of US troop reductions, unless adequate prewar supply and trans-Atlantic lift is available.

Prospects for Trans-Atlantic Wartime Sustainability

US supply and transportation problems for a conventional conflict in Europe can be divided into at least three categories: prewar supply, trans-Atlantic transportation, and theater mobility. The first two concern us here.

Prewar Supply. As World War II-era supply ships rusted into oblivion in the 1970s, trans-Atlantic military resupply capacity was reduced, and consequently more emphasis was placed on the stockpiling of supplies in Europe. In fact, as US troop strength in Germany was drawn down during the Vietnam War, it became clear that the United States lacked the capacity to rapidly move both men and equipment back to Europe, and so equipment was left on the Continent, stored in ways that would provide for unit needs.⁶ This concept became known as POMCUS (Pre-positioning of Materiel Configured to Unit Sets), and today it forms the basis for rapid reinforcement efforts.

POMCUS levels, though, have lagged behind anticipated needs, particularly if the "ten divisions in ten days" goal is a planning benchmark.⁷ According to a senior staff member of the US European Command, POMCUS levels may be expanded to meet requirements for six additional divisions and 60 fighter squadrons beyond those currently deployed in Europe "presumably before 1997."⁸ It is difficult to determine whether POMCUS stocks can be built to reach these levels. On the one hand, between 1981 and 1986, POMCUS levels were increased by more than 70 percent, though the level of increase varied. For example, aircraft repair parts increased by 83 percent, but ammunition stocks by only 20 percent.⁹ It is difficult to be optimistic about further POMCUS increases in the coming years of defense cutbacks—especially given the recent reports that some defense items have been over-stockpiled.

POMCUS dependence is limited not only by shortages, but also by the vulnerability of the sites themselves to attacks in the early stages of conflict, perhaps even before conflict begins. The range of the Soviet SS-21 missile armed with conventional warheads covers most POMCUS sites in the Federal Republic of Germany, with 770 of these missiles potentially available. *Spetsnaz* units may also seize, damage, or destroy some POMCUS capacity in the first days of the war.

Beyond POMCUS lies a more general problem with shortages of materiel and equipment, which again are likely to become more serious as defense budgets are cut in coming years. Ammunition is a case in point—it is, for the most part, expensive to buy in large quantities, particularly in the era of smart weapons.¹⁰ Moreover, projected American defense budget trends suggest that the FY 88 reductions in the ammunition accounts, along with other sustainability programs, will continue. The Air Force's tactical missile and ammunition budget was reduced in FY 88 by 24 percent over its 1987 request, and the Army's account in this category was reduced by 11.2 percent. Fiscal 1990-91 budgets indicate even more serious shortages, as cancellations or deferrals have been announced for a number of ammunition programs. And the capacity to surge to wartime ammunition levels will be hampered as ammunition plants are shut down or put in layaway status, with a loss of more than 7000 trained workers in the next three or four years.¹¹ Should war break out in Europe and ammunition usage rates there approach those of Vietnam, shortages could develop quickly for American forces.

Repair parts accounts for all three services also have been reduced, though the Air Force has been hardest hit at 33.5 percent.¹² Helicopter spares were reduced by almost half in FY 88 from the original Objectives Memorandum for that year.¹³ This latter area is especially important for wartime planning, as just one case indicates: the Army purchases enough helicopter repair parts to sustain about 75 percent of peacetime flying rates of 14 to 20 hours a month. Combat rates for helicopters, though, are calculated to be a minimum of 76 hours a month.¹⁴ At a time when Army doctrine stresses mobility, one can only hope that the budget for leather boots has not been cut too severely, because more soldiers may be marching and fewer helicopters will be flying troops into battle.

Trans-Atlantic Surface Transport. The past several decades have witnessed a chronic decline in military transportation, particularly in the maritime dimension. During these years US shipbuilding capacity has declined considerably, and as World War II-era ships have been retired they have not been replaced. The most noteworthy loss has been in troop transports, as evidenced by the fact that up through the late 1960s the Military Sea Transportation Service (the predecessor of the Military Sealift Command) operated at least twelve P-2 and C-4 transports, most with a capacity to carry

over 3000 troops. Today none are operating and most have either been scrapped or are in storage in such dilapidated condition that only a heroic effort could make them serviceable again.

In the late 1960s, Congress refused to fund replacement programs, including the Fast Deployment Logistics Ship, out of fear that such capacity would be used by future Presidents to make Vietnam-like interventions easier.¹⁵ More recently the Navy has attempted to reduce sealift shortfalls by designating commercial container ships as a part of the Ready Reserve Force, with some success. Sealift reserve increased from 26 to 151 ships between 1980 and 1988, and the Navy projects that combined sealift will be able to carry around 85 percent of the one million ton goal of unit equipment on a single voyage. Today, though, the Navy can accomplish only 60 percent of that objective, though the goal at the end of the 1983 Five Year Defense Plan was 90 percent.¹⁶

Other serious shortfalls remain. The President's Commission on the Merchant Marine and Defense reported that despite an investment of \$7 billion since 1980, the shortage of sealift has *worsened*, with 42 ships fewer than required now, and a 200-ship shortage expected by the year 2000.¹⁷ Forty years ago the United States operated 5000 ships in the Merchant Marine, but today the number is less than 500, of which 20 percent are inactive, leaving a shortfall in dry cargo lift of around 100,000 short tons of cargo. In addition, 20 to 30 new tankers will be required to transport fuels to Europe.¹⁸ Amphibious lift, critical for the Northern Flank of NATO in particular, is also short—in 1987, total capacity stood at 87 percent of troop lift, 78 percent of vehicle lift, 69 percent of dry cargo lift, and 66 percent of helicopter lift. Prospects for improvement remain slim.¹⁹ The consequences are simple—the “ten divisions in ten days” goal cannot now be met; as General Bernard Rogers has asserted, it will take 30 days at best to get ten additional divisions across the Atlantic.²⁰ But General Rogers, of course, made his comments before the reductions in US forces in Europe were proposed—now ten divisions could become 15 divisions by the mid-1990s, and 30 days could stretch to 60 days, or longer.

Things seem likely to get much worse when other problems facing maritime military lift are considered. One is the competing uses for ships designated for logistics purposes, since some ships of the Combat Logistics Force can be used either to supply NATO forces ashore in Europe or to provision US and allied naval vessels in combat or on patrol at sea. Should combat ships be used extensively in the Atlantic, and it is reasonable to expect that they will be, then lift capacity to NATO will be sacrificed. While the Combat Logistics Force is specifically designated for combat support at sea, it still represents an asset that could otherwise support land forces in Europe, and it might even draw from ships slated for trans-Atlantic military supply since the Navy suffers a shortfall of some 34 ships in the best-case scenario.²¹

A second factor is the continuing reduction of the US flag commercial fleet, which is expected to decline from 536 ships to less than 350 toward the next century.²² Indeed, by 2000 there may be as few as 220 ships, as no merchant ships have been built in US yards since 1985 and none are presently under construction. And, of the 536 merchant vessels now in service, many are container ships which pose particular problems for military lift purposes. Container ships make up about 79 percent of total dry cargo vessels, but because much military cargo is too large for containers and their offloading equipment, only 21 percent of such cargo can now be moved by container ships.²³ Moreover, many ports in both North America and Europe are limited in terms of container offloading capacity, and serious bottlenecks will likely develop at both ends of the routes as ships wait for available offloading facilities. Maritime personnel strength also has declined, with a present shortfall of around 6200 even for peacetime requirements.²⁴ This is a very small base from which to build an expanded work force for wartime needs, particularly on a long-term basis. In a mobilization crisis, inexperienced crews would be inevitable, and they would pose serious operating problems in the first and most critical months of a conventional war in Europe. Replacing ships lost in combat is another limiting factor on long-term logistics support through sealift.

The scope of the problem is not easy to determine, since different studies have reached different conclusions. One study concluded that "foreseeable initial mobilization requirements could be met despite the declining industrial base."²⁵ The report goes on, however, to note that the most efficient way to build new tankers and dry cargo vessels would be to rely on "highly specialized yards using the latest technology . . . and . . . there are no such private yards building commercial ships at present."²⁶ In fact there are fewer yards in general. Twenty-one yards in the United States have closed just since a 1982 survey of yard capacity was done, and five more have lost certification due to inadequate facilities.²⁷ Thus it is not surprising that the National Defense Shipyard Study was pessimistic in its estimates of yard capacity, projecting work force shortages in 39 percent of existing yards, including seven private and three Navy yards on the East Coast.²⁸ For logistics purposes, the shortfall may be even more critical, since repair and replacement of battle-damaged combat ships may take priority over supply ships.

Several improvements are either under way or being contemplated which may help address these problems—one being the acquisition finally of eight new Fast Sealift Ships which have been on hold since 1980 (the residue of the programs mentioned above that were killed by Congress). These ships are capable of 30 knots and feature roll-on/roll-off cargo loading and discharge. There are also proposals for a surface effects ship that would reportedly be capable of speeds sufficient to reduce the transit time from the United States to Europe from the present 10 to 19 days to around *three* days.²⁹ Fuel

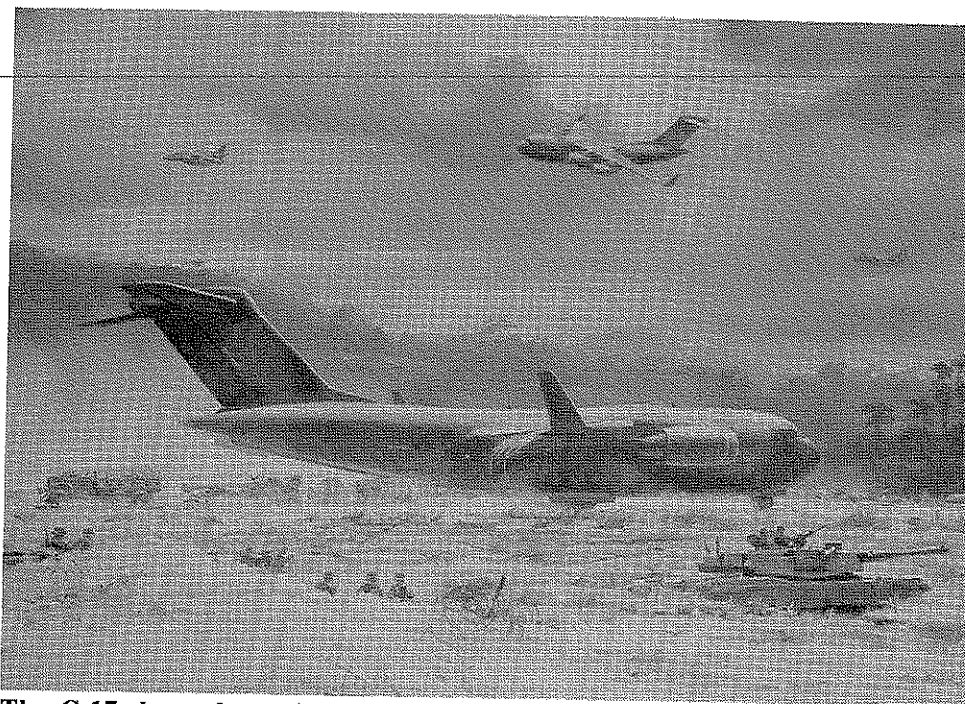
offloading capacity has also been improved through the Offshore Petroleum Discharge System, which will allow tankers to offload from up to four miles offshore, thus alleviating port congestion. Development of a causeway system also should make it easier to offload containerized cargo.³⁰ Finally, 13 Maritime Prepositioned Ships are in operation in three squadrons of the Military Sealift Command, one of which is stationed in the North Atlantic and carries enough equipment and supplies to support a Marine Expeditionary Brigade for 30 days in the Northern Flank. These vessels, coupled with eight Military Sealift Command vehicle cargo ships acquired from Sea-Land Services, do modernize the sealift capacity of the United States somewhat, though much more needs to be done.³¹ And it should be remembered that these improvements were funded largely during the first Reagan term, a period of defense spending not to be seen soon again.

Trans-Atlantic Airlift Capacity

Transport aircraft also are in short supply despite efforts to add capacity during the Reagan Administration. At present, 1094 aircraft are assigned to the Military Airlift Command, but 746 of these are turboprop C-130s with limited range and cargo capacity. The burden of ferrying military cargo and troops across the Atlantic will fall to 89 C-5s and 250 C-141s, together capable of moving 42 million ton-miles daily (MTM/D), which is only 64 percent of the 66 MTM/D requirement.³² Indeed the requirement of 66 MTM/D may represent what was politically possible in 1983 when it was set—the real combat requirement could be as high as 100 to 125.³³

In the face of the airlift shortfall the Air Force has ordered the new C-17, but this craft faces an uncertain future. The first C-17 is expected to be delivered in July 1990, and if the full order of 210 is filled, the C-17 will be able to absorb 20 MTM/D, or 46 percent of the airlift goal.³⁴ Moreover, the plane allows shorter runways, and thus more airfields would become available (132 fields for the C-17 versus 47 for the C-141 and C-5 in West Germany). The C-17, however, often appears on the short list of new military projects that could be sacrificed in the name of federal budget deficit reduction, and the prospect of reaching the full 210 originally planned is dubious over the next decade. In fact, the FY 91 budget amount for the C-17 has already been reduced by Congress by more than \$400 million.³⁵ And even if the plane is built in the requested numbers, there may not be enough pilots to fly them—pilot shortages are becoming critical. In 1988, 114 of the Military Airlift Command's C-141 pilots left the service, and the retention rate overall for the command dropped from 79 percent in 1983 to 34 percent in 1988.³⁶

There is, of course, a contingency plan to use commercial aircraft under the Civil Reserve Air Fleet, now at 387 aircraft. Most of these aircraft are passenger planes, which could augment troop lift but could not be of much



Military Airlift Command

The C-17, here shown in an artist's conception, could operate from shorter runways. If the full order of 210 is built, it would meet 46 percent of the airlift goal.

assistance in cargo lift, particularly for the outsized items that are likely to have high replacement requirements. Moreover, the airlines flying these planes have modified very few of them with the necessary communications, deck, and door changes.³⁷ In addition, this contingency plan to activate the Civil Reserve Air Fleet has never been fully tested, and it is quite likely that confusion and congestion would be the primary results if suddenly large numbers of civilian planes flown by civilian pilots converged at a few military airfields in the United States to fly troops to Europe, where they would face the prospect of being shot out of the sky. Finally, landing space would be at a premium, and most commercial planes are not designed for the unprepared surfaces that the C-17 can land on.

Both airlift and sealift face an additional problem—the forces they are to move have gotten larger and heavier since lift requirements were last set in 1980. As Benjamin Schemmer of *Armed Forces Journal International* reports:

Army mechanized divisions are 40-percent heavier—the 101st Air Assault Division 90-percent bigger, the 82d Airborne 29-percent heavier than in 1980. . . . Even the light divisions now require about five percent more than the Army envisioned in 1985. . . . The Army now wants to convert the 9th Motorized Infantry Division into a mechanized division: that would increase its lift requirements by 66 percent, from 730 C-17 sorties to 1,209.³⁸

Do Changes in Conventional Doctrine Require Changes in Logistics?

US Army doctrine for NATO has put more emphasis in recent years on mobility and quick-strike operations, and these changes may complicate resupply problems. Depots for POMCUS, for example, may have to be made smaller and more decentralized to shorten potential supply lines to forces on the move. More trucks, barges, and small transport aircraft will be needed, and in the latter category US capabilities are actually declining, one of the few areas to do so during the Reagan Administration.³⁹ Fuel requirements in particular will increase dramatically if regular divisions are used in more mobile roles, and fuel is even more difficult to move on the battlefield than is ammunition.⁴⁰

Light divisions may reduce resupply problems because they require lower levels of supply, but not necessarily by much. Light infantry divisions are expected to operate for 48 hours without resupply in low-intensity situations where regular infantry divisions can hold for 72 hours. Thus, while light divisions may consume less, they would also require supply lines to be reestablished in less time.⁴¹

Finally, if NATO doctrine is aimed at expanding conventional deterrence in the wake of the INF treaty, conventional forces face the real probability of having to remain in combat longer than has been anticipated in the past. No longer can deterrence depend so heavily on the threat of nuclear escalation in a matter of a few days. NATO must now be prepared to defeat an enemy whose logistical lines run over much shorter routes and are far less complicated.⁴²

Conclusions

Can the United States provide trans-Atlantic supply for NATO? To answer that question, a number of factors must be weighed carefully in consideration of both requirements and risks. Despite the dramatically favorable march of events, the volatile nature of European politics and East-West relations will always threaten the peaceful status of the European political landscape. War remains a possibility, even if the risks of it breaking out may now be lower than at any time since the start of the Cold War. It is also possible that such a war could become protracted, given the reduced likelihood of either side playing its nuclear card. Should a war start, remain conventional, and last more than a month or so, it is unlikely that the United States could move the resources needed to fight such a war effectively.

NATO must be prepared to survive a Soviet breakthrough, and to challenge the Soviets by outlasting them on the field of battle. To do that, US forces, as a part of NATO, must be able to supply troops and materiel swiftly and to sustain those resources for much longer than 30 days. Unfortunately, it appears that the United States has insufficient stores and lift capacity to fulfill this vital role, particularly in view of the impending removal of substantial US forces from

Europe. In years past, the United States has relied on sufficient wartime delays to permit emergency buildups to compensate for a lack of prewar preparation. Given the current deficiencies in both supply and lift, however, that extra time may no longer be available should war come once again to Europe.

NOTES

1. Previous versions of this article were presented to the 1989 International Studies Association conference and the 1989 International Security Studies Section conference.
2. Michael R. Gordon, with Bernard E. Trainor, "Army, Facing Cuts, Reported Seeking to Reshape Itself," *The New York Times*, 12 December 1989, p. 1.
3. James A. Huston, *The Sinews of War: Army Logistics, 1775-1953* (Washington: US Army, Office of the Chief of Military History, 1966), pp. 352-68.
4. Richard M. Leighton and Robert W. Coakley, *Global Logistics and Strategy—1940-43* (Washington: US Army, Office of the Chief of Military History, 1955), esp. pp. 205, 296, 318, 345, 384, and 633; Leighton and Coakley, *Global Logistics and Strategy, 1943-1945* (Washington: US Army, Office of the Chief of Military History, 1968), pp. 116, 385.
5. One example of the 30-day syndrome may be found in ammunition planning, where Army policy is to procure weapons only if they can be provided with a combat ammunition load and a 30-day war reserve supply. See US Congress, Senate, *Department of Defense Ammunition Requirements and Production Base*, Hearings before the Subcommittee on Preparedness of the Committee on Armed Services, 99th Cong., 1st sess., Part 2 (Washington: GPO, 1986), p. 10 (emphasis supplied). Another example is the post-1982 Army and Air Force definition of the C-1 readiness level, defined as "fully ready" and therefore equipped to fight for 30 days. See Lawrence J. Korb, "Did Readiness Get its Fair Share of the Defense Buildup in the First Reagan Administration?" in *Defense Policy in the Reagan Administration*, ed. William P. Snyder and James Brown (Washington: National Defense Univ. Press, 1988), p. 413.
6. Daniel J. Nelson, *A History of U.S. Military Forces in Germany* (Boulder, Colo.: Westview Press, 1987), p. 90.
7. US Army, *United States Army Posture Statement, Fiscal Year 1989* (Washington: GPO, 1988), p. 26.
8. Testimony of Major General C. Norman Wood, US Congress, Senate, *Alliance and Defense Capabilities in Europe*, Hearings before the Subcommittee on Conventional Forces and Alliance Defense of the Committee on Armed Services, 100th Cong., 1st sess. (Washington: GPO, 1988), p. 35. POMCUS designated for US Marines in Norway may present a special problem in that it may deemphasize the Corps' amphibious role. Also, because of the particular cold-weather orientation of the equipment, it would prevent the flexibility of transfer to other NATO areas. See Kenneth A. Myers, "U.S. Power Projection in the Northern Flank," in *Projection of Power: Perspectives, Perceptions, and Problems*, ed. Uri Ra'anana, Robert L. Pfaltzgraff, Jr., and Geoffrey Kemp (Hamden, Conn.: Archon Books, 1982), p. 197.
9. Statement from Major General Thomas L. Craig, Director, Plans and Policy, US European Command, in US Congress, Senate, *Department of Defense Authorization for Appropriations for Fiscal Years 1988 and 1989*, Hearings before the Committee on Armed Services, 100th Cong., 1st sess., Part 2 (Washington: GPO, 1987), pp. 365-66.
10. David C. Hendrickson, *Reforming Defense: The State of American Civil-Military Relations* (Baltimore: Johns Hopkins Univ. Press, 1988), p. 95. Hendrickson argues that this fact will mean that ammunition levels for NATO will be exhausted in the first few days of a conventional war in Europe.
11. US Congress, Senate, *Department of Defense Authorization for Appropriations for Fiscal Years 1990 and 1991*, Hearings before the Committee on Armed Services, 101st Cong., 1st sess., Part 3 (Washington: GPO, 1989), p. 314.
12. US Congress, Senate, *Department of Defense Authorization for Appropriations for Fiscal Years 1988 and 1989*, Hearings before the Committee on Armed Services, 100th Cong., 1st sess., Part 1 (Washington: GPO, 1987), p. 41. Information on the FY 90-91 budget is from Mark E. Morrow and Glenn W. Goodman, Jr., "SDI, Rail M-X, ATF Get Boost Under Final Reagan Budget Request," *Armed Forces Journal International*, February 1989, table, p. 11.
13. US Congress, Senate, *Department of Defense Authorization for . . . 1988 and 1989*, p. 105.
14. G. Michael Muller, *Choppers Grounded: The Supply-Demand Problem* (Washington: National Defense Univ. Press, 1988), p. 15; Michael Moodie and Brent Fischmann, "An Action Plan for NATO," *NATO Review*, 36 (February 1988), 21.

15. US Congress, Senate, *NATO Defense and the INF Treaty*, Hearings and Meetings before the Committee on Armed Services, 100th Cong., 2d sess. (Washington: GPO, 1988), Part 1, p. 41.
16. US Congress, Senate, *Department of Defense Authorization for . . . 1988 and 1989*, p. 382, 387.
17. Scott C. Truver, "Crisis in US Strategic Sealift Capability," *Jane's Defence Weekly*, 21 January 1989, pp. 90-91; Andrew Rosenthal, "U.S. Panel Warns of Transport Ship Shortage," *The New York Times*, 19 February 1989, p. 33.
18. US Congress, Senate, *Department of Defense Authorization for . . . 1988 and 1989*, Part 7, p. 3581.
19. *Ibid.*, Part 7, p. 3577.
20. US Congress, Senate, *NATO Defense and the INF Treaty*, Part 2, p. 142.
21. *Issues and Options for the Navy's Combat Logistics Force* (Washington: Congressional Budget Office, April 1988), pp. 14-16; US Congress, Senate, *National Shipbuilding Industrial Base Act of 1985*, Hearings before the Subcommittee on Sea Power and Force Projection of the Committee on Armed Services, 99th Cong., 1st sess. (Washington: GPO, 1986), p. 12.
22. US Congress, Senate, *National Shipbuilding Industrial Base Act of 1985*, p. 12.
23. US Congress, Senate, *Proposed Integration of the Military Traffic Management Command and the Military Sea Lift into a Unified Command*, Hearings before the Committee on Armed Services, 97th Cong., 2d sess. (Washington: GPO, 1982), p. 16. Changes are under way to improve container handling through the Sealift Enhancement Program; see US Congress, Senate, *International Security Environment (Strategy)*, Hearings before the Committee on Armed Services, 101st Cong., 1st sess. (Washington: GPO, 1989), p. 538.
24. US Congress, Senate, *Department of Defense Authorization for . . . 1988 and 1989*, Part 7, p. 3581. Crew requirements, though, are smaller; for example, the C-10 cargo ship requires a crew of 14, compared to crew requirements of 35 for a similar ship ten years ago.
25. US Navy, *The Relationship Between Price Competition and Mobilization Capability in Naval Shipbuilding and Repair, A Report to the United States Congress* (Committees on Armed Services of the Industrial Base for Construction, Overhaul, and Repair of Naval Vessels), January 1986, p. 3.
26. *Ibid.*, p. 21.
27. *Ibid.*, Appendix B, pp. B-1, B-3.
28. Office of the Assistant Secretary of the Navy (Shipbuilding and Logistics), *National Defense Shipyard Study (NADES)* (Washington: Department of Defense, February 1985), presentation copy, pp. 19, 21 (the full study is classified).
29. US Congress, Senate, *NATO Defense and the INF Treaty*, Part 2, p. 173.
30. US Congress, House of Representatives, *National Defense Authorization Act for Fiscal Years 1988/1989, HR 1748 and Oversight of Previously Authorized Programs*, Committee on Armed Services, Seapower and Strategic and Critical Materials Subcommittee, 100th Cong., 1st sess. (Washington: GPO, 1987), p. 575.
31. *Seapower*, January 1988, pp. 185-86.
32. US Congress, Senate, *Department of Defense Authorization for . . . 1988 and 1989*, Part 5, p. 696.
33. Thomas D. Cohoon, "Airlift—Reinforcing Europe," *Airlift*, 11 (Winter 1989), 10.
34. Jeffrey P. Rhodes, "The First C-17," *Air Force*, August 1988, p. 54.
35. Benjamin F. Schemmer, "Airlift, Sealift in Short Supply at Very Time Need Grows Fastest," *Armed Forces Journal International*, May 1989, p. 66.
36. US Congress, Senate, *International Security Environment (Strategy)*, p. 525.
37. James I. McBride, "USTRANSCOM: A Modern-Day David Versus Goliath?" *Airlift*, 11 (Winter 1989), 7. McBride also notes that the number of Civil Reserve Air Fleet cargo planes has declined from 126 in 1982 to 75 today.
38. Mark E. Morrow, "DoD/Congress Relationship will Improve in '90s," *Armed Forces Journal International*, December 1989, pp. 9, 12.
39. From 1980 to 1988, intra-theater airlift declined from 594 aircraft to 513. US Congress, Senate, *Department of Defense Authorizations for . . . 1988 and 1988*, Part 2, p. 387.
40. Richard K. Betts, "Dubious Reform: Strategism versus Managerialism," in *The Defense Reform Debate: Issues and Analysis*, ed. Asa A. Clark et al. (Baltimore: Johns Hopkins Univ. Press, 1984), p. 75.
41. US Congress, Senate, *Army's Light Division*, Hearings before the Committee on Armed Service, 99th Cong., 1st sess. (Washington: GPO, 1985), p. 48.
42. Soviet supply lines do not run over water, and do not pose the on-load/off-load requirements that supplies from the United States do. There are fewer bottlenecks facing the Soviets, since there are fewer transfer points for Soviet supplies and equipment. Soviet lines are vulnerable to deep-strike attacks from air, but are likely to be defended with a robust air defense system.