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Desert Shield and Strategic Sealift

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In an era when threats may emerge with little or no warning, our ability to defend our interests will depend on our speed and our agility. And we will need forces that give us a global reach. No amount of political change will alter the geographic fact that we are separated from many of our most important allies and interests by thousands of miles of water.

And in many of the conflicts we could face, we may not have the luxury of matching manpower with prepositioned material. We'll have to have air and sea-lift capacities to get our forces where they are needed, when they are needed. A new emphasis on flexibility and versatility must guide our efforts.

President George Bush
The Aspen Institute
2 August 1990

When Iraqi tanks crossed the border of Kuwait, the United States crossed the threshold of a new military strategy—from one of reliance on forward-deployed garrison forces to one of increased emphasis on responsiveness. With the collapse of bipolarity, and without credible U.S. force projection potential, regional powers capable of threatening U.S. vital interests might be emboldened to do so. Desert Shield confirmed that a U.S. force structure designed for the European War scenario lacks the mobility necessary to respond to these more diverse threats. The president's guiding objectives for the evolving military strategy—flexibility and versatility—can be met largely by doctrinal and organizational effort; but the *credibility* of our forces, and thus their deterrent capacity, can only be assured by *mobility*.

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The Iraqi invasion and annexation of Kuwait, despite a creditable strategic lift performance by the Department of Defense, exposed weaknesses in the ability of the United States to move its army. Three months after the invasion, 73 ships had been chartered to support this effort, well over half of them coming from foreign fleets. The specter of Iraqi domination of the Arab world and the oil resources of the Arabian Peninsula brought most other countries' interests into line with those of the United States. Thus, international arrangements for support shipping were able to compensate for some of the deficiencies of the U.S. strategic sealift. Still, the delivery of U.S. combat and support forces did not meet the expectations of the war-fighting commanders.

Saddam Hussein did not attack Saudi Arabia in the early weeks when his army stood along its border, poised to do so. These were the weeks when U.S. forces had just begun to arrive, assemble, and organize into a credible defensive force. The scenario envisioned by defense planners provided three weeks for arrival of the initial heavy combat forces, and eight weeks for five divisions to be in place with their equipment. After the first month, only the marines and the army's lightly equipped 82nd Airborne Division had taken up positions, and public assessments began to extend force arrival dates in terms of months. Fortunately, since the Iraqi troops had assumed a defensive posture, the late arrival of vital equipment no longer mattered quite as much.

Sealift shortfalls should have been expected. Since the Soviet invasion of Afghanistan and the Iranian hostage crisis at the end of the seventies, force projection to Southwest Asia had loomed as a questionably feasible objective. The next decade produced a series of studies which highlighted the inadequacy of sealift to support force deployment strategies to protect U.S. vital interests in that region. However, the weaknesses identified were only partially addressed.

The rapidly dwindling U.S.-flag fleet was a principal source of the problem. The effort of the eighties to increase sealift capacity focused on near-term solutions which rapidly expanded government ownership of merchant ships, but failed to reverse the long-term downward trend of the merchant fleet. This effort also failed to provide sufficient sealift for the most likely scenario that would demand it.

The experience of Operation Desert Shield should serve to focus our attention on the policies and planning that shape U.S. strategic sealift capability and the contingency forces that depend on it. The discussion that follows highlights many of the issues related to strategic sealift, framing them in terms of the actual experience of recent operations.

Sealift Requirements

With 350,000 Iraqi soldiers in Kuwait and facing the oil fields of Saudi Arabia, the United States found itself forced to play out a scenario for which

it had long planned—and one which it had long dreaded. The Southwest Asia scenario was considered to be the most difficult because it assumed that the United States would have to counter a large and well-equipped force over 8000 miles away. The nightmare was *logistics.*

After some 5-6 months, most major U.S. combat forces were finally in place. It is not too early to assess the logistics aspects—more specifically, the ocean transportation requirements—of the forces involved in Desert Shield and its follow-on, Desert Storm. This operation was the largest military effort since Vietnam, and, more importantly for sealift analysis, it was a test of our capabilities against just the type of challenge that strategists see the United States most likely having to face in the future—crises requiring highly mobile forces and the ability to move them quickly on very short notice.

Defense planning interest in sealift began to build in the late 1970s with events in the Persian Gulf and the need for rapid force-deployment capability that these events underscored. The advance of the Soviet Union's nuclear capabilities (which increased the possibility of protracted conventional conflict), the rapid decline of the U.S. merchant marine, and the collapse of merchant shipbuilding in the United States also coincided to focus congressional attention on the sealift issue.

During the last ten years the Department of Defense (DoD) has produced four major studies aimed at determining the requirements for sealift. Within the last year DoD has also conducted a major aircraft review to define airlift requirements for the C-17, and a "Zero-Based Analysis" of sealift requirements to bring earlier studies in line with the latest force design concepts. *All of these studies concluded that additional strategic lift would be required to meet the demands of the several scenarios scrutinized.*

Congressionally Mandated Mobility Study. The first of these efforts aimed at sizing the force components of strategic lift, the so-called "Congressionally Mandated Mobility Study," was completed in 1982. It examined four scenarios: a regional conflict in Southwest Asia; a Soviet invasion of Iran; a Nato-Warsaw Pact conflict; and a regional conflict in Southwest Asia followed closely by a Nato-Warsaw Pact conflict. The study analyzed the effectiveness of the mobility forces then programmed to be in existence in 1986, and compared the benefits associated with additional increments of each lift component for each scenario. The study highlighted the inadequacy of available lift to support current war-fighting strategies and provided the impetus for much of the policy and programs for lift that were executed in the eighties. It also circumscribed strategic planning. Adjustments were later made to threat assessments (expanding warning times in the Southwest Asia case, thereby relaxing sealift requirements). The study also coincided with the navy's inclusion of strategic sealift as one of its four fundamental missions (along with strategic deterrence, power projection, and sea control).

Department of Defense Sealift Study. The DoD Sealift Study, completed in 1984, focused exclusively on the scenario of a Soviet invasion of Iran followed by a Nato-Warsaw Pact conflict. Planning for these two scenarios in sequence resulted in projections of significant shortages in sealift. After this study was completed, Secretary Weinberger decided that, as a matter of policy, DoD would not program sealift to meet requirements in theaters in which U.S. allies could contribute shipping to the common defense, but would instead seek the commitment of allied shipping. This policy change is reflected in current DoD mobility goals, including the requirements for sealift to Southwest Asia.

Revised Intertheater Mobility Study. The Revised Intertheater Mobility Study (RIMS) was undertaken to update the requirements established in the Congressionally Mandated Mobility Study and the DoD Sealift Study. RIMS analyzed four cases defined by varying the mixes of sealift, airlift, and prepositioned capabilities assumed to be available. Each case dealt with the single scenario of a global war following a Soviet invasion of Iran. Like the other studies, RIMS dealt with notional, unconstrained total mobility requirements and employed most-favorable assumptions with regard, for example, to attrition, port and airfield constraints, and infrastructure capacity. In each case considered for the baseline sealift fleet programmed for 1992, that fleet failed to deliver all of its cargo on time. The shortfalls revealed by the study were of such magnitude, and its programmatic implications so great, that DoD never approved the results.

Commission on Merchant Marine and Defense. Between the DoD Sealift Study and the RIMS, Congress established the Commission on Merchant Marine and Defense to conduct the most extensive mobility study of the decade. This effort spanned three years and produced a series of reports and analyses relating to the broader issues of the U.S. maritime industry. With regard to existing war scenarios, the study identified extensive shortfalls in both ships and seagoing manpower. It also projected major deficiencies in future U.S. force-projection capability. On the heels of these reports, in October 1989 President Bush approved a national sealift policy.

In April 1990 an interim sealift requirements analysis was conducted to determine how much sealift would be required in a likely unilateral force deployment. The study examined the scenario of a major intervention in Southwest Asia, and force delivery was simulated by computer. Despite optimistic assumptions, this study also concluded that the available ships would be insufficient to deliver the forces on time.

In FY 1990 the Defense Department Appropriations Act resulted in the allocation of $375 million (squeezed down from the original $600 million) for

the construction of sealift ships. After that the navy undertook the Sealift Zero-Based Study to review requirements relative to prospective changes framed in the new Defense Guidance scenarios. More specifically, this study appears to have been an effort to establish a baseline requirement for the eventual programming of those funds which the Congress, responding primarily to pressure from shipbuilding interests, appeared intent on spending.

Desert Shield Sealift Analysis Results. The Naval War College student paper upon which this article is based employs the methodology of the "Zero-Based" analysis just mentioned and is intended to refine that analysis, in terms of lift requirements and capacity, by incorporating assumptions relevant to the Desert Shield experience and the actual forces employed.[1]

The tabulated results of the student paper demonstrate that *in both the planned and actual scenario, shipping assets are insufficient to meet surge requirements for a contingency force the size of that deployed to Saudi Arabia within the postulated 60-day schedule.* While the data is averaged over ship-type categories, and combat support and combat service support requirements are based on "rule-of-thumb" estimates, the results provide a framework within which alternatives to sealift deficits can be discussed.

It is clear in any case that we did not and still do not have the capability to deliver a heavy division and a significant portion of its combat support equipment within three weeks. If private U.S.-flag shipping is not requisitioned and if sealift assets, including chartered shipping, materialize and perform as they did during Desert Shield, then delivery of major combat and support forces will range between two to five weeks late. Furthermore, assuming that commanders desire combat support and combat service support (CS/CSS) forces to move concurrently, or nearly so, with the major combat units, about 5.8 million square feet of unit equipment—or the capacity of 38 notional roll-on and roll-off vehicle transport ships (RO-RO's)—will have to wait for ships to return from their first voyage, delaying total force arrival on station by an additional two months.

However, if combat support and combat service support forces can be deferred, and major combat forces can move immediately in ships as they arrive at the pier, then these combat forces could theoretically reach their destination along a 60-day schedule. The CS/CSS echelons above division (representing about 2.8 million square feet, or 19 notional RO-RO's) would then arrive from two to six weeks *after* their associated combat units were in place.

In Desert Shield, this was apparently the choice made.[2] By the second week after the invasion, the army had committed its lightly-equipped 82nd Airborne Division as a deterrent and as a symbol of resolve. As lift slowly materialized, the army responded with an increased sense of urgency to increase its combat power on the ground in Saudi Arabia.

Prioritizing delivery in this manner produces a force delivery profile closely approximating that actually realized in Desert Shield: major forces arrive two to three weeks behind schedule, with substantial amounts of CS/CSS not arriving until after the eighth week. The remainder of the corps slice and the Marine Corps Afloat Follow-on Echelon (AFOE)—a combined total of about 9 million square feet—arrive over the next two months.

The risks associated with the piecemeal projection of forces without the additional combat effectiveness provided by the supporting elements and higher echelon organizations must be considered in designing the post-Desert Shield/Desert Storm contingency force. If deferring delivery of CS/CSS and AFOE by one to two months does not create unacceptable risks to the initial combat forces, then the Desert Shield case analysis yields a requirement of only about 1.27 million square feet (or 9 notional RO-RO's) in addition to the current (i.e., demonstrated) sealift capability in order to arrive along the notional time-line. Those additional 1.27 million square feet must be either pre-loaded afloat in the United States, or prepositioned afloat or ashore in the theater.[3]

If, on the other hand, associated support structures are considered essential to the contingency force and maximum combat capability must be available within the two-month schedule, then the 38 notional RO-RO's are shown to be *the minimum additional capacity needed for army contingency forces.*

Some Lessons Learned from Desert Shield

Beyond the broad issues raised in regard to the planning process, Desert Shield has highlighted other sealift aspects and assumptions about capabilities that have, in a more specific way, contributed to miscalculations. These details have been at the root of several contentious issues that have retarded policy formulation.

Sealift Execution: What Went Right. Very few aspects of the deployment itself appear to dispute the assessment of Vice Admiral F.R. Donovan, Commander of the Military Sealift Command, that, *given the assets available,* sealift went very well. In fact, the Defense Department can cite several successes that appear to validate some of its investments over the past decade:

- Four Diego Garcia-based Maritime Prepositioning Ships arrived in Saudi Arabia ten days after call-up, delivering U.S. Marine Corps unit equipment. By the first week of September, all nine of the activated Maritime Prepositioning Ships had off-loaded.
- Eight of twelve Afloat Prepositioned ships (located in Diego Garcia and loaded with army and air force equipment and ammunition) were off-loaded by 6 September. These ships were on long-term Military Sealift Command charters.

- Eight fast sealift ships were loaded out and sailed by 22 August. The first, U.S.N.S. *Capella*, was activated, moved to Savannah, loaded with 24,000 tons of equipment, and sailed within 6 days and 6 hours. The first two fast sealift ships arrived in Saudi Arabia on 27 August.
- Two 1,000-bed hospital ships were activated and sailed. The first arrived in the Persian Gulf on 8 September.

There were of course failures, but the scope of the deployment effort renders them episodic and inconsequential. Early in the crisis, when planning called for immediate, first-tier, rapid ocean transport, all but one of the eight fast sealift ships associated with this lead lift echelon completed the transit.[4] And of the 17 Ready Reserve Force Ships initially requested, all but one completed the transit after activation—a truly remarkable feat considering the age and condition of most of these ships.[5] About the first group of Ready Reserve Force activations, Vice Admiral Donovan remarked that it "had gone well—better than . . . expected": "If someone said I was going to break out 17 RO-RO's and get them going, I'd have said maybe 12 or 13."[6] Of the 17, one was undergoing an engine overhaul and could not be activated. Of the others, 15 were in service at the time of this statement. It is significant to note that none of Admiral Donovan's scepticism, which was shared by his predecessor, Vice Admiral Paul D. Butcher, was ever reflected in contingency force projection planning.

Sealift Execution: What Went Wrong. The responsiveness and readiness of the Maritime Prepositioning Ships and Afloat Prepositioned ships are unquestionably significant for the future sealift force structure. However, for the fast sealift contingent and the Ready Reserve Force there is significance as well, but on the side of their limited successes.

Fast Sealift Ship Activation. The fast sealift ships are maintained in an inactive status with a skeleton crew of nine contract merchant mariners, and kept on a four-day steaming notice. According to navy sources, the average availability was really six days.

The uncertainty of the civilian crew manning quickly became an issue, particularly in light of the urgency of the mission and the value of the cargo. Reports of irresponsible and arbitrary behavior on the part of key crew members—such as refusal to sail with the ship—are cause for concern, and highlight the questionable caliber of some of the crews.

Another aspect of fast sealift that has significant planning implications is transit speed. The ships are designed for a maximum speed of 33 knots.[7] This speed, coupled with assembly and on-load/off-load times, should have permitted these ships to deliver their cargoes (in this case the combat and combat support equipment for the 24th Mechanized Infantry Division) to the Persian Gulf area in about three weeks. However, the seven ships that arrived in Saudi Arabia actually averaged only 23.1 knots.[8] Some of this difference

in transit speed can be attributed to weather factors and navigation considerations (e.g., slow transit speeds through the Suez Canal), and some to draft and trim problems caused by imperfect cargo loading. However, the rest appears to reflect engineering problems that affected the ships' speed. These problems suggest inadequate maintenance and warrant further investigation.

Ready Reserve Force Activation. There are 96 ships currently in the Ready Reserve Force, maintained in a 5, 10, and 20-day readiness status by the Maritime Administration. Of these, 45 were activated during the first four months of the operation, and 42 were actually turned over to the Military Sealift Command for operational control.[9] The remaining three proved to be inoperable and were returned to the Maritime Administration. Since, as it turned out, more ships were needed than were available, the conclusion to be drawn is that the remaining 51 ships in the RRF either could not be made ready in time to contribute or were not considered useful.[10]

Of the 17 Ready Reserve Force ships initially requested, "only 3 were ready within the 5-day response time."[11] The Shipbuilders Council of America, whose members are in part responsible for repairing those ships, reported that for the 11 ships on which data was available, the average time in the shipyard was ten days. (All of these were on the five-day response list.) Only three were out of the yard within five days, and six of the eleven were in for ten or more days. In all, *only 14 of the 45 ships reached their loading ports on time*: seventeen ships were one to five days late, six ships were six to ten days late, and four ships were ten to twenty days late.[12] In almost every case of delay, the shipbuilders blamed the poor material condition of the propulsion or auxiliary machinery.[13]

In FY 1990 the Maritime Administration requested $239 million for Ready Reserve Force Funding, but Congress approved only $89 million. Secretary of Transportation Samuel Skinner points to such reductions as indicative of the way the Ready Reserve Force has been "shortchanged by the Congress in the appropriation process for a number of years."[14] "Funding has been kept so low," Skinner said in a recent speech, "that the readiness status of many Ready Reserve Force ships is not realistic."[15] One major impact of the underfunding, according to Skinner, is that test activations and sea-trials of many ships in the Ready Reserve Force were not conducted.[16] According to Robert E. Martinez, deputy maritime administrator, more than half of the RRF ships that were activated had not been tested since becoming a part of the reserve fleet.[17]

These readiness problems could be rooted in the management arrangement. In 1986, at the navy's direction, the management contracts for Ready Reserve Force ships shifted from cost-plus General Agency Agreements to low-bid, fixed-cost Ship Management contracts. The structure of this contract and bid

evaluation process encouraged contractors to bet on the prospect that the ships would *not* be activated. As a consequence, maintenance and readiness suffered.

Ready Reserve Force Manning. Had all the ships of the Ready Reserve Force in fact been maintained to required levels of readiness, could they have been manned?

The 42 Ready Reserve Force ships that were used were less than half of the current Ready Reserve Force (a force programmed to grow to 142 ships by 1995). To man these 42 ships, the Maritime Administration had to "comb union halls and retirement rolls to round up civilian crews to run them."[18] In addition to the "tremendous market strain resulting from demanding nearly 1,400 crewmembers almost overnight," the Maritime Administration's Mr. Martinez also cited the crews' unfamiliarity with the vessels to which they were assigned as a related problem.[19]

Secretary Skinner stated that "putting less than half of the emergency fleet in service has nearly exhausted the nation's supply of merchant mariners."[20] The problem stems both from the broad decline of the merchant marine, and from policy issues which Martinez sees rooted in the "rigid, outdated regulations" that burden the maritime industry.[21] It is exacerbated by an aging mariner workforce (the average merchant mariner is 55) and a decline in skills, as commercial shipping companies have converted from steamers to more efficient, less labor-intensive, diesel-powered ships.[22] The average age of the Ready Reserve Force ships is 24 years, and 83 percent of these ships have steam propulsion plants (16 percent diesel; 1 percent gas turbine). If the ships acquired for the Ready Reserve Force in the future continue to be their owners' candidates for scrapping, as they are likely to be as progress toward the goal of 142 ships continues, experience with the complicated pressurized boiler systems that typify these older ships will continue to erode, with attendant consequences for sealift when it is needed.

This manning problem can presumably be discerned in the high number of charters required to make Desert Shield deliveries. While maintenance-related availability problems were also likely factors in charter decisions, a fully crewed charter, at a time when crews are scarce, presents an attractive option.

Cargo Growth. Another problem that had not been sufficiently addressed in lift planning before Desert Shield was combat-ready loading and what is termed "residual equipment." Planning had been based on administrative rather than on tactical or combat loading concepts. Administrative loading allows for some equipment disassembly to maximize the use of space. Combat loading focuses on ensuring that what will be needed first by the combat forces will be the first to be off-loaded.

There were also weight increases. These were mainly attributable to the load-out by individual army units of fuel, ammunition, and additional spare parts that they thought might be required soon after deployment. The addition

of this combat load for an M1 tank, for example, could increase its weight from 60 to 71 short tons, or 20 percent. Planners had also failed to anticipate what turned out to be a significant amount of residual equipment, such as personal electrical convenience and entertainment items.

Logistics analysts estimate that cargo growth increased lift requirements by about 25 percent in some major combat units and over 100 percent in others. (In terms of the fast sealift ships, for example, 10 voyages—instead of the planned 8—were required to lift the 24th Mechanized Division.)

Sealift Execution: What Didn't Go At All. The planners had clearly anticipated shortfalls for the Southwest Asia scenario, but for the reasons just given the magnitude of those shortfalls was much worse than they expected. In short, while the requirements had suddenly grown, the ships needed to move them had shown up more slowly than expected. Some conclusions can be drawn from a look at the lift that *never* materialized—the lift that did not go.

Ready Reserve Force. In the Ready Reserve Force, 100 percent of its RO-RO and heavy-lift ships were activated during the first four months of Desert Shield. On the other hand, only 29 percent of its 52 breakbulk ships were called up, and only 9 percent of its product tankers.[23] The ships called were probably selected because they were considered the most useful. It is likely that they were the ships that had been *best maintained*, occasionally tested, and believed reasonably capable of meeting prescribed readiness requirements.

A factor contributing to the reliability of some ships (as opposed to the unreliability of others) was the frequency of their activations for military cargo and exercise requirements. Cost, of course, is always a concern of the commander who requires the shipping. The large RO-RO ships haul several times as much as the smaller breakbulk ships can, they sail faster, and can be loaded and unloaded much more speedily. Since these ships offer the most cost-effective option for the commander, they benefit from more frequent activations.

Unfortunately, the structure of the Ready Reserve Force emphasizes breakbulk freighters and tankers, the two types of ships used *least* in Desert Shield. To be sure, handy-sized tankers would provide the intra-theater lift capacity required for scenarios where fuel would have to be transported to the actual area of operations. But for Desert Shield, high grade fuels were readily available, obviating the need for such tankers.

Breakbulk ships are the most numerous category in the Ready Reserve Force. Like the rest of the force, they have maintenance and skill-intensive steam engineering plants, but unlike the other ships, when the emergency came, the breakbulk vessels demonstrated they had less utility. They had become available to the Ready Reserve Force because industry had discarded them. An argument could have been made when they were bought as a hedge against diminishing U.S.-flag dry lift cargo capacity that they were "better

than nothing." Now, however, even that argument may have been undercut by the Desert Shield experience. Any money devoted to their berthing and maintenance as an element of sealift is money probably better spent elsewhere in the program.

National Defense Reserve Fleet. Although the National Defense Reserve Fleet theoretically represents a pool for attrition replacement and would conceivably support conflicts at higher levels of mobilization, it too should be scrutinized for viability. This fleet of World War II ships is not only a drain on funds, but it also provides planners with the illusion of viable assets. In light of recent experience, apart from their obsolescence, there is no manpower available to operate them.

Sealift Readiness Program. No active U.S. flag ships were taken by the government under the provisions of the Sealift Readiness Program. This was not entirely a surprise. Because of the impact that a Sealift Readiness Program call-up would likely have on the transportation industry, the Maritime Administration estimated that only about 10 percent of the Sealift Readiness Program fleet would be reasonably available. Some 26 U.S.-flag ships were chartered for the early phase of Desert Shield, of which six would have been Sealift Readiness Program call-up candidates. According to Military Sealift Command officials, other ships in the Sealift Readiness Program would not have been available in time to contribute to sealift flow. The vast majority of these ships are ungeared container ships, that is, they depend on facilities ashore to unload them. To deal with this, the government has spent over $100 million to convert old breakbulk ships to crane ships that theoretically could discharge these container ships at their destination. Moreover, it bought thousands of "sea-sheds" and "flatracks" to provide container ships with the capacity to handle breakbulk cargo. Yet, during the entire Desert Shield operation, none of this capability was used, raising serious questions about its utility in contingency force operations.

Shipping Provided by Foreign Governments. While there was some foreign-flag volunteer shipping involved in Desert Shield, its contribution was minimal.[24] Indeed, what "did not go" highlights the validity of cautious, "go-it-alone" assumptions with regard to foreign participation in U.S.-led military operations. Particularly noteworthy was the early absence of any Japanese or German-flag ships as charter shipping, much less as voluntary support of the deployment. Reportedly, the question of Japanese and German contributions to the sealift effort was raised on several occasions, but shipping assistance materialized very slowly.[25] This slow response provides a particularly telling comment on foreign assistance when one considers that the Japanese have 426 RO-RO ships and 439 general cargo ships in their fleet of over 2,500 ships, and most importantly, both Japan and Germany depend more than the United States does on oil exported from the Gulf.

U.S.-Flag Shipping. The relatively large number of foreign-flag ships chartered for Desert Shield (47 of the 73 commercial ships used in the first three months) highlights the issue of the absence (in both type and quantity) of U.S.-flag lift. Besides underscoring the need for RO-RO-type shipping and the inadequacy of existing U.S.-controlled and U.S.-flag assets to meet it, the number of foreign-flag ships among the charters raises the issue of risk in incorporating such ships into future planning. The coalition against Iraq was broad. But against some other threat to U.S. vital interests, it could be narrow enough to preclude the general availability of foreign-flag ships for U.S. charter.

Policy Considerations

When the dust settles, policymakers must begin anew to focus on future force structure and force employment concepts. Desert Shield highlighted the fragility of the sealift system on which these concepts hinge. The circumstances of the deployment tolerated weaknesses in U.S. sealift readiness which, under different conditions, could have caused failure:

- International support for the U.S. position assured commercial access to the foreign ships required to supplement the inadequate U.S.-flag fleet and the problematic RRF.
- Host-nation support was extensive, making available locally much of the subsistence and fuel which otherwise would have required extensive sealift, and would have exposed as well the inadequacy of the U.S. tanker fleet.
- Saudi Arabia's superb and secure port facilities permitted reasonably efficient discharge operations, thereby reducing the ship days (and probably ships) that would have been lost in a more hostile environment or one with a less developed infrastructure.
- The absence of combat during Desert Shield also mitigated the failure of most Ready Reserve Force vessels to make their activation target dates.

These aspects of Desert Shield must be kept in mind when evaluating sealift programs, along with the fact that the forces deployed to Saudi Arabia are of the size and capability which U.S. strategists envision employing in similar scenarios in the future.

The deficiencies highlighted argue for meeting surge requirements by near-term acquisition of more afloat prepositioned assets. Furthermore, they suggest the need to better tailor the Ready Reserve Force and to maintain it at higher levels of readiness. The experience also demands consideration of providing a means of rapidly expanding lift requirements without depleting the skilled manpower pool.

Desert Shield moved theory into practice and clearly demonstrates that in order to match force requirements to lift assets, contingency force

requirements must be reduced or lift capacity increased. Reconciling those two factors is the central dilemma for defense planners. As Admiral Butcher (deputy commander of the U.S. Transportation Command) remarked, "Hopefully out of this will come some raised awareness of an effort we may have to repeat in the future."[26] The hand-in-glove relationship between sealift and contingency force deployment has been made palpable, and the forces of the next decade need to be tailored with greater understanding—and with a better fit in mind.

Notes

1. Commander Jacob L. Shuford, U.S. Navy, "Strategic Sealift in the Context of Operation Desert Shield," Unpublished Research Paper, Naval War College, Newport, RI, November 1990.

2. Certainly some selected, critical combat support elements were delivered with or soon after their associated combat forces. In some cases CS/CSS elements provide a force multiplier effect that would argue they be lifted with an even higher priority than some combat elements. The granularity of this analysis does not distinguish these forces to this degree, however, and treats them in the aggregate.

3. In Operation Desert Shield, only prepositioned sealift clearly met the delivery time requirements imposed by the notional schedule assumed in the Naval War College student paper. This requirement also assumes that additional fast sealift ships are not available in the near to mid-term.

4. The *Antares*, pulled out of corrective maintenance for the operation, experienced boiler problems and was towed to Rota, Spain, where her cargo was transferred to another fast sealift ship returning from Saudi Arabia.

5. Associated Press, wire report, 19 September 1990. The 11,367-ton *Gulf Banker* experienced major boiler problems about 350 miles off Florida. After repairs in Port Arthur, Texas, the ship suffered additional boiler casualties, a clogged sewage system, and an air conditioning system casualty, forcing it into Port Everglades for repair. Two days after repairs in Port Everglades, the ship again suffered a major boiler casualty and was towed back to port and down-loaded. While the reasons for these casualties have not been detailed, it may be assumed that much of the responsibility lay with the contractor responsible for maintaining and crewing the vessel. (The Maritime Administration recently cancelled this contractor's contract.)

6. William Matthews, "Sealift Feels Strain to Meet Commitment," *Navy Times*, 24 September 1990, p. 6.

7. U.S. Army Dept., Military Traffic Command Transportation Engineering Agency, *Logistics Handbook for Strategic Mobility Planning* (Newport News, Va.: 1989), p. 30.

8. U.S. Navy Dept., Office of the Deputy Chief of Naval Operations (Logistics), Strategic Sealift Division, unpublished point paper.

9. Shipbuilders Council of America, *Talking Points* (Washington, D.C.: 1990), p. 1.

10. Shuford, pp. 20-25.

11. "Ready Reserve Force Found Not So Ready for Gulf Crisis," *Navy News & Undersea Technology*, 27 August 1990, p. 1.

12. Eric Schmitt, "U.S. Cargo Fleet is Found Wanting," *New York Times*, 27 September 1990, p. A10.

13. Shipbuilders Council of America, p. 2.

14. Don Phillips, "Skinner May Seek Aid for Maritime Industry," *Washington Post*, 11 September 1990, p. A12.

15. Schmitt, p. A10.

16. Phillips, p. A12.

17. Craig Dunlap, "Marad Official: Desert Shield Shows Need for More Mariners," *Journal of Commerce*, 9 October 1990, p. 5B.

18. Matthews, p. 6.

19. Dunlap, p. 5.

20. Matthews, p. 6.

21. Dunlap, p. 5.

22. Matthews, p. 6.

23. Shipbuilders Council of America, p. 2.

24. Korean vessel *Samsu Honour*, Kuwaiti vessels *Kubbar* and *Danah*. Garage space on Danish Maersk' line shipping on a space-available basis. By mid-September Japan had offered 3 breakbulk ships.
25. Thomas Friedman, "NATO Members to Weigh Adding Troops to Gulf Force," *New York Times*, 11 September 1990, p. A16; and William Drozdiak, "U.S. Seeks European Contingents," *Washington Post*, 11 September 1990, p. A7.
26. David F. White, "Officials Say US Sealift Passed Test in Gulf Mobilization," *Journal of Commerce*, 10 October 1990, p. 3B.

The first step to improve military arrangements in the gulf . . . was secretly taken early in August when the Defense Secretary [Cheney] met with King Fahd of Saudi Arabia to persuade him that American troops were needed to defend his country against a possible Iraqi attack.

Mr. Cheney assured the King that any American forces sent would leave when they were no longer needed, but he also said that steps should be taken to make future American deployments easier . . . This was a reference to an Administration proposal to store large quantities of American military equipment in Saudi Arabia. The proposal was driven by deep concern within the Bush Administration that it took too long to transport American forces to Saudi Arabia under existing plans, leaving the initial deployments very vulnerable to enemy attack.

Michael R. Gordon
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