NAVAL WAR COLLEGE
Newport, R.I.

The RRF in Operation Desert Storm: A First Look

by

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A paper submitted to the Faculty of the Naval War College in partial satisfaction of the requirements of the Operations Department.

The contents of this paper reflect my own personal views and are not necessarily endorsed by the Naval War College or the Department of the Navy.

Signature: _____

20 May 1991

SECURITY CLASSIFICATION OF THIS PAGE

REPORT DOCUMENTATION PAGE

1a REPORT SECURITY CLASSIFICATION UNCLASSIFIED	1b RESTRICTIVE MARKINGS
2a SECURITY CLASSIFICATION AUTHORITY	3 DISTRIBUTION/AVAILABILITY OF REPORT DISTRIBUTION STATEMENT A: Approved for public release; distribution is unlimited
2b DECLASSIFICATION/DOWNGRADING SCHEDULE	
4 PERFORMING ORGANIZATION REPORT NUMBER(S)	5 MONITORING ORGANIZATION REPORT NUMBER(S)
6a NAME OF PERFORMING ORGANIZATION OPERATIONS DEPARTMENT 6b OFFICE SYMBOL (If applicable) C	7a NAME OF MONITORING ORGANIZATION
6c ADDRESS (City, State, and ZIP Code) NAVAL WAR COLLEGE NEWPORT, R.I. 02841	7b ADDRESS (City, State, and ZIP Code)
8a NAME OF FUNDING/SPONSORING ORGANIZATION 8b OFFICE SYMBOL (If applicable)	9 PROCUREMENT INSTRUMENT IDENTIFICATION NUMBER
8c ADDRESS (City, State, and ZIP Code)	10 SOURCE OF FUNDING NUMBERS PROGRAM ELEMENT NO. / PROJECT NO / TASK NO / WORK UNIT ACCESSION NO.

11 TITLE (Include Security Classification)

The RRF in Operation Desert Shield: A First Look (U)

12 PERSONAL AUTHOR(S)
CDR John P. Morse, US Navy

13a TYPE OF REPORT	13b TIME COVERED	14 DATE OF REPORT (Year, Month, Day)	15 PAGE COUNT
FINAL	FROM _____ TO _____	20 May 1991	30

16 SUPPLEMENTARY NOTATION A paper submitted to the faculty of the Naval War College in partial satisfaction of the requirement of the Department of Operations. The contents of this paper reflect my own personal views and are not necessarily endorsed by the Naval War College or the Department of the Navy.

17 COSATI CODES		
FIELD	GROUP	SUB-GROUP

18 SUBJECT TERMS (Continue on reverse if necessary and identify by block number)
Ready Reserve Force, RRF, Sealift, Strategic Mobility, National Sealift Policy, Merchant Marine

19 ABSTRACT (Continue on reverse if necessary and identify by block number)

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20 DISTRIBUTION/AVAILABILITY OF ABSTRACT	21 ABSTRACT SECURITY CLASSIFICATION
☑ UNCLASSIFIED/UNLIMITED ☐ SAME AS RPT ☐ DTIC USERS	UNCLASSIFIED
22a NAME OF RESPONSIBLE INDIVIDUAL CHAIRMAN, OPERATIONS DEPARTMENT	22b TELEPHONE (Include Area Code) 841-3414 / 22c OFFICE SYMBOL C

DD FORM 1473, 84 MAR 83 APR edition may be used until exhausted
All other editions are obsolete

SECURITY CLASSIFICATION OF THIS PAGE

U.S. Government Printing Office: 1985—630-012

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CHAPTER I

INTRODUCTION

Operation Desert Storm provided the most intensive test of our nation's sealift capability since World War II. The lift needs, both surge and sustainment, of the forces deployed to SWA were met, although they lagged the campaign planning timeline by 2-3 weeks and were executed only with herculean efforts and with the grace of a benign environment during force buildup. Additionally, strong Host Nation Support (HNS) avoided much of the stress that would normally be placed on POL carriers.

A key element of the nation's strategic sealift capacity resides in the Ready Reserve Force. Once activated, planners, Merchant Mariners, the Shipbuilding and Repair industry as well as warriors from all the Services found themselves in uncharted waters, faced with the execution of paper plans that had never been operationally validated. Most of the RRF is still operating today, and the data on its contribution are considered preliminary by planners and agencies that have an interest in the future course of strategic sealift. This paper will examine the contribution of this force to Operation Desert Shield and why its continued vitality is an important national security concern.

CHAPTER II

THE CHANGING FACE OF A MARITIME NATION

That the United States considers itself a maritime nation seems incongruous with the present state of our maritime industry. Key indicators and trends suggest that the United States is more than ever dependent on the sea and on its trading partners to transport both imports and exports. A look at commerce statistics, the inventory of US Flag merchant ships and seamen, and shipbuilding and repair infrastructure reveals an unsettling picture.

In terms of waterborne commerce since 1950, US trade has increased from 117 million tons to 718 million tons.[1] The value of exports has increased from $28 billion to $126 billion and imports have jumped from $24.8 billion to $255.8 billion.[2] This dramatic change and reliance on trade by sea are even more striking when examining how the cargoes were carried. In 1960, over 50% of US maritime trade was carried in US bottoms. In 1990 that figure is less than four percent and is projected to decline to about two percent by the year 2000.[3] Though one would expect that the US percentage would decline as trade volume increased, one widely-held projection gives the bottom line: 98% of our seagoing trade will be supported by foreign-flagged vessels in the year 2000.

In terms of hulls, in 1950 the US inventory of merchant

vessels numbered more than 1400. Today that number is nearly 1000 less, with the prospects still gloomier: a total of 200 US Flag merchants is forecast for the turn of the century.[4] The US has declined in the maritime world to 14th in number of vessels and 8th in terms of total tonnage.[5]

In a similar manner, the US Merchant Marine that operates these vessels has declined. The number of merchant seaman on union roles has suffered a 60% reduction since 1970 and will be further cut in half by the year 2000. Employed mariners have dropped from a total of 37,600 in 1970 to 10,700 in 1990.[6] Specific skills related to the RRF are in short supply, particularly qualified steam engineers. Age is yet another concern. The average age of Merchant Mariners sailing the RRF in Desert Shield has been widely reported as 55 years. With the maritime trades not attracting young people interested in making a career at sea, the question of who will man these ships in a future conflict takes on a new dimension.

The shipbuilding, conversion and repair trades that support the maritime industry have shown a serious downturn that questions their capacity to maintain the few commercial ships in the US inventory and to perform the necessary breakout work for mobilization. In the last nine years, 76 shipyards or repair facilities and 38 drydocks have ceased operating and 52,000 production workers have been laid off.[7] One containership is currently under construction in a US shipyard, the first since

1987. With the projected decline in US Navy ships and the change in Navy repair philosophy from time-based to need-based, the US shipbuilding industry may be in a death spiral. Today it relies on US Navy work for more than 90% of its construction and repair volume.[8]

In sum, while the US is still a maritime nation, it must rely on others to maintain the lifelines on which we are so dependent.

CHAPTER III

OVERVIEW OF DOD REQUIREMENTS

The National Security Sealift Policy was signed by the President in October 1989. Among its provisions are the stated aim to rely on US-owned commercial ships for sealift, direction to create legal and procedural mechanisms to ensure availability of Flag of Convenience or Effective US Control (EUSC) shipping, assignment of responsibilities for specific sealift issues to DOD/DOT, recognition of the competitive arena that includes foreign government-approved subsidies, and development of specific future programs. Most striking is the provision for a 'go it alone' capability: 'we must be prepared to respond unilaterally to security threats in geographic areas not covered by alliance commitments. Sufficient US-owned sealift resources must be available to meet requirements for such unilateral response.'

Strategic lift capability has been the focus of four major studies in the 1980's and, at this writing, the Congressionally-mandated Mobility Requirements Study is underway with the classified *Joint Chiefs of Staff Interim Response* released in March 1991. In all the studies, though specific scenarios, methodology, measurement parameters (i.e. Tons, Mtons, cubic feet, square feet) and assumptions are wide-ranging, the results

are strikingly similar--there are significant shortfalls in strategic lift, both for initial force closure and sustainment. DOD's goal for sealift is to move one million tons of equipment in a single sailing.[9]

Each of the cited studies has been persuasive, yet actions to remedy the problems have been mired in a complex bureaucracy that has speeded the decline of our Merchant Marine instead of revitalizing it. However, the initiatives of the 1980's i.e. purchase and conversion of the MPS/APS to support the Rapid Deployment Force, acquisition of the eight Fast Sealift Ships, and expansion of the Ready Reserve Force, proved their worth in Desert Shield.

The Mobility Requirements Study will examine the first use of strategic sealift since Vietnam. One unclassified preliminary conclusion is that the shortfall in surge sealift ranges between 29-34 ships. This equates to 4.5 million square feet or the equivalent of 30 MPS ships. Regardless of the final study outcome, funding a shortfall of this magnitude is unlikely based on the $7 billion spent on sealift in the 1980's and the current pressure to reduce defense spending.

However, with this recent experience in Desert Shield and with the clear message contained in the National Security Sealift Policy, it seems that there could not be a better time to address the sealift forces that we'll need in the next contingency.

CHAPTER IV

MEETING THE SEALIFT REQUIREMENTS

> 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 pre-positioned 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
> August 2, 1991

How prescient the President's remarks appear today. There were few surprises when the available numbers and types of sealift ships were quickly overwhelmed with requirements. Sealift quickly became a newsworthy subject as the US played a fast and risky game of catchup. On 10 August, the RRF was activated and the first US charter contracted. A day later, the first foreign charter was hired. By mid-September, MSC had 10 US Flag and 35 Foreign Flag charters from 11 nations working the same routes as the 33 RRF ships at sea.[10]

The MSC Commander defended the foreign charters on the basis

that US Flag sealift was inadequate to meet the DOD surge requirements and RO/RO capability was the most urgent need. This statement quickly raised questions because only 13 of the foreign flag ships were RO/RO's, and there were 56 US Flag ships in the RRF that had not been called up. Neither had the US Flag merchants in the Sealift Readiness Program.[11]

The following snapshot of the ships committed to Desert Shield as of 22 February 1991 reveals the size and complexity of the effort:[12]

Number	Type
23	Prepositioned Ships 13 MPS 10 APS
8	Fast Sealift Ships (FSS)
73	Ready Reserve Force (RRF) 17 RO/RO: Roll-on/ Roll-off 4 LASH: Lighterage Aboard Ship 5 TACS: Auxiliary Crane Ships 2 OPDS: Offshore POL Discharge System 37 BB: Breakbulk 3 SEABEE 2 SEATRAIN 2 TAVB: Aviation Logistic Support Ship 4 TANKERS
152	Charters 49 US Flag 70 Foreign Flag 7 Foreign (No cost) 6 MSC Control 20 Tankers

Of the total of 256 ships committed to Desert Shield, 104 were solely government-owned. What this boxscore clearly shows is that our strategic sealift policy cannot be supported today. There are simply not enough US hulls. Major sources of sealift

include Government-owned (MPS/APS, FSS, RRF, and National Defense Reserve Fleet), US Flag, Effective US Controlled (EUSC), Allied/Coalition (depending on the contingency), and Foreign Flag charter. Each of these sources is to be tapped on a need basis and in the priority established in the Navy's strategic sealift planning doctrine, NWP-80. Vessels are limited in numbers and further constrained by the definition of "militarily useful" in terms of size, displacement, cargo access, and tank coatings. Further, those that do not fly the US flag may be restricted from specific regional contingencies by political, economic, or domestic concerns.

Among the potential sources of sealift, the coalition contribution to Desert Shield was modest by any measure. To a large extent, coalition shipping supported national forces deployed to the region. What is interesting to note is not what was provided but what countries having large merchant fleets did not provide. Using Desert Shield as a model, one can see the actual sources of shipping and get some sense of the level of the contribution. While this operation did not exhaust the inventory of free world shipping by any means, it did reveal limitations that should be addressed up front in strategic sealift planning.

For example, sealift for a NATO scenario is the sole purpose of the NATO Planning Board for Shipping (PBOS) that maintains a list of some 400 militarily useful vessels designated for use in reinforcing Europe. The strength of this dedicated planning

effort is that it is on the shelf and being frequently updated and tested for validity.

Effective US Control Shipping (EUSC) is another potential source. Of the current inventory of about 240 ships, there are 23 cargo and 57 tankers that are militarily useful. The countries that register these largely US-owned vessels and the lucrative trade routes that these lines have carved out make their availability complicated unless requisitioned by Presidential authority, i.e. general war. In the initial phase of Desert Shield, one such vessel was used.

Though much effort and money have been expended in developing technology enhancements that will permit US Flag merchants to carry unit equipment (i.e. container modifications that use sea sheds or flatracks) the Sealift Readiness Program (SRP) that provides US Flag shipping from companies that bid on MSC contracts was not used to support Desert Shield. There are currently 122 militarily useful vessels in the SRP: 99 dry cargo, of which 58 are containers and 23 tankers meeting military tank coating requirements.

The reasons for non-utilization center on potential loss of profitable trade already contracted and no agreement that the Government would either reimburse lost revenues or promise future contract preference.[13] Of interest is that the callup of aircraft under the Civil Reserve Air Fleet (CRAF)[14] did not entail any such agreement by the government. Not using the SRP

illustrates two key points: one, the US Maritime industry is so fragile that disruptions of any sort pose great risk, and two, the industry will not respond unless a bona fide emergency exists. Desert Shield was not such a case.

Clearly, the 'go it alone' strategy has been adopted without the means to execute it. To guarantee the dedicated lift that the US may need in the future hinges on the reality that there's simply no other source that we as a nation can reliably depend on.

CHAPTER V

PROFILE OF THE READY RESERVE FORCE

Established in 1976, the RRF today consists of 98 ships (though most of the literature and data related to Desert Shield is based on the August 1 1990 inventory of 96 ships) that are considered outmoded for commercial shipping because of container technology, automated diesel-powered propulsion, and cargo handling systems. For the military however, these ships serve a vital role in the surge delivery of unit equipment and can readily handle sustainment shipping needs as well.

The average ship in the RRF is 24 years old, fitted with steam turbine propulsion and capable of sustained speeds of about 20 knots. Managed by the Maritime Administration (Marad) and now funded by the Navy through the Department of Transportation, the ships constitute the highest readiness ships within the 234 ship National Defense Reserve Fleet (NDRF). They are maintained by civilian mariners and crews under contract with Marad.

The RRF is projected to increase to 142 ships by 1994. Additional ships will be purchased on the open market or refurbished from existing NDRF assets. These paper plans all already under review and internal point papers within TRANSCOM and the Navy point towards additional RO/RO's as the first order of business: 'we simply cannot charter a fleet of the right kind of ships in a timely manner to meet the warfighting Commander -

in-Chief's (CINC's) requirements to close the force. Roll-on/Roll-off (RO/RO) capability is particularly important...to project heavy armored divisions.'[15] Whether this will mean restructuring the existing inventory of ships is not clear. That the RRF has too few RO/RO's and too many breakbulk cargo ships is a common assertion; however, budget realities may force a tradeoff between types of RRF ships and total assets.

RRF ships are maintained in a 5, 10, and 20 day readiness posture in three regions: East (James River), Gulf (Beaumont), and West (Suisun Bay). The status is defined as the length of time in which the ship must be available to load after breakout.[16] Two major factors necessarily impact this level of readiness: funding and contractual requirements. Funding for RRF maintenance, testing and repair is viewed in some quarters as discretionary: the FY 1990 $239 million request was trimmed to $89 million by the Congress as strategic sealift competes with other line items in the Defense budget. Sealift lacks the emotional appeal of new high tech weapon systems and does not have a broad unified constituency within the government.

So too has RRF maintenance suffered because management contracts were changed from General Agency Agreements to low bid Ship Management Contracts in 1986.[17] This action allowed low bidders into the contract arena betting on the likelihood that the ships would never get underway.

Validating RRF readiness has consisted largely of paper exercises. In a recent statement to the House Armed Services Seapower Subcommittee, the Commander of the Military Sealift Command cited lack of maintenance funds and difficulty in crewing the ships with qualified steam engineers. One ship had been in the RRF since its inception without ever having its engines lighted-off.[18]

A 1989 study examined RRF readiness and concluded that "multiple, no-notice activations are required...maintenance procedures are insufficient".[19] Since 1977, there have been 34 total activations.[20] An activation consists of breakout, inspection and repair, crewing and a 24 hour sea trial, and finally restoration to a laid-up status. These activations tested only a portion of the force as one ship was activated five times, another three. Single activations do little to test the surge capacity of yards.

The bottom line is that in the 12 years from its inception until Desert Shield, 75 % of the RRF had never been activated, and the reported readiness of the force was based solely on observable component problems with no systems testing. The lack of systems testing led to almost overwhelming problems during activation. Common problems include topside winches, integrity of pressure components in the boilers and piping, auxiliary systems that include electrical generation, fuel, water and sewage, and ship control equipment such as steering gear and monitoring

panels. Replacement parts were often not in stock and no longer made. Some of the ships cannibalized other RRF or NDRF ships to fix broken equipment. The brief history of ship activations does not appear to support any specific readiness levels. Incredibly, nearly two-thirds of the RRF are maintained in the highest readiness category as 5-day ships.[21] Without a systematic test and evaluation program, readiness is valid only on paper.

Maintaining the RRF costs an average of $384,000 per ship per year. Based on a limited sample of 14 observations, a simple regression analysis reveals that each additional year in the RRF will increase activation costs by $214,000. The cost of full activation was estimated to be $1.5 million which includes the costs to breakout, test and to return the ship to inactive status.[22] However, the inactivation costs for ships that operated in support of Desert Shield are likely to be much higher because equipment deficiencies that emerge during steaming will require correction prior to lay-up.

The total budget line for the Ready Reserve Force is modest when compared to the unit price of new military ships and aircraft. Even at the projected FY 94 level of 142 ships, the total Navy budget requirement is only $305.9 million.

Some view strategic sealift as if it were a whole life insurance policy. The analogy is sound when one considers that there are no term policies that can be written by any single company to achieve the desired level of coverage.

CHAPTER VI

RRF PERFORMANCE

The RRF response to Desert Shield can be evaluated on several scales: breakout performance, marginal contribution to the overall lift, and the usefulness of the type and number of ships. The initial RRF activation was ordered for 41 ships on 10 August. Following the order to deploy US Forces, USCINCTRANS assumed the role of a supporting CINC and took charge of strategic lift. For sealift, the Military Sealift Command (MSC) served as his executive agent.

Data on RRF performance vary according to source, time, interpretation of readiness criteria, and agency. However, minor variations in data do not distort evaluation at the macro level. For the initial activation of 41 ships, 12% were on time, 41% 1-5 days late, 15% 6-10 days late, and 10% 10-20 days late.[23] The average time to activate ships in breakout yards was nine days.

Early in 1991, at the point of 71 activations, the overall figures reveal that 20 ships (29%) were on time, 41 ships (59%) were late, 7 ships (10%) were returned, 2 ships (3%) returned and redelivered, and 1 ship (1%) was canceled. These data reflect at least three factors: first, once activated, the steam ships exhibited a high degree of operational readiness (approaching 95%); second, given the mediocre performance in the initial activation record, there was likely additional

maintenance/readiness attention given to the ships without activation notices, and third, the readiness criteria are not realistic given the funding level and contract features. Even if these factors were fully rectified, the readiness criteria is still considered unattainable. Active US Navy steam ships need four days to prepare a propulsion plant for routine operations.

In terms of the RRF marginal contribution to sealift, the clock is still running and the data only expressed 'as of' specific points in time. However, there are some descriptive comparisons that appear to be useful.

First, as far as overall deliveries in support of Desert Shield, US Flag vessels (including FSS, RRF, MPS, APS and commercial charters) have totaled 42% of total shipping but have delivered 63% of the cargo (44% by Government-owned vessels and 19% by commercial US Flag). However, the fact remains that the US relied on foreign shipping for nearly two-thirds of its sustainment cargoes.

Second, the RRF has delivered roughly 34% of total Phase I[24] cargo needs in Desert Shield. This equates to about 3.5 million square feet, roughly equivalent to that delivered by all the charters hired to support the operation.

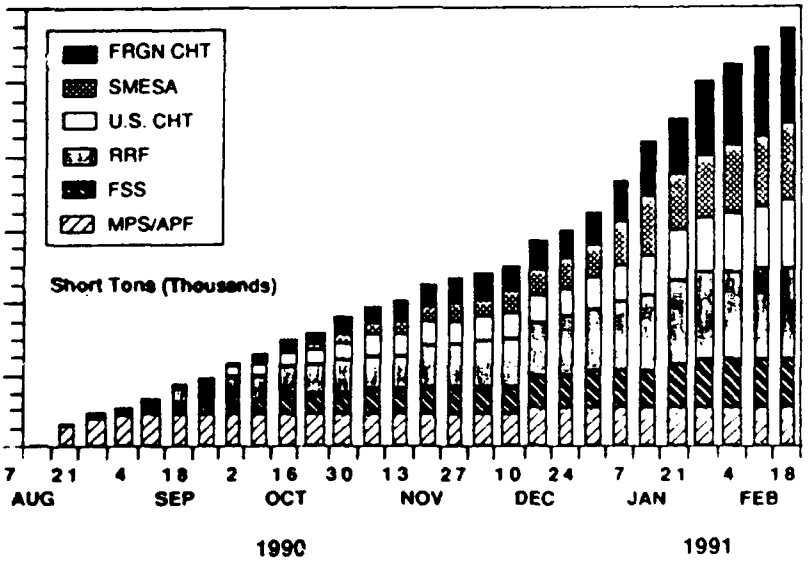
Third, in January when it reached a level of 66 ships, the RRF did carry as much as the 23 larger, faster MPS/APS and FSS. At first glance, this might prove a convincing argument to purchase additional MPS/APS/FSS. However, as one recent study

concluded, the port facilities in Saudi Arabia are among the best in the world.[25] Other areas of potential conflict do not have the pier space, draft, and staging areas that would permit larger sealift ships to operate in other than a shuttle capacity from the US to an intermediate transshipment point.

The graph that follows accounts for the all important element of time. The reliance on shipping from other sources for surge and sustainment reveals a shortfall that could have terrible costs in a shooting war.

FIGURE I

Desert Shield Sealift Deliveries



Source: Logistics Management Institute

Note: SMESA (Special Middle East Shipping Agreement)-a group of five privately-owned container lines that are managed by MSC and provide sealift to the Middle East under a prenegotiated tariff.

The overall contribution of the RRF is perhaps best assessed by posing the question, what sources could have been tapped to deliver 34% of the cargo to the Persian Gulf? Sourcing additional cargo carriers to transport unit equipment or combat support would have complicated the planning effort, lengthened the campaign timeline, and could have entailed compromises in other areas of National concern such as human rights, democratic reform, and drug trafficking, etc. While all the data are not in, there is little question that the RRF played a critical role in Desert Shield and must be viewed as a major component of the 'go it alone' strategy for the outyears.

CHAPTER VII

FUTURE ISSUES FOR THE RRF

Activating the RRF has raised some key issues that will impact the size, composition, and readiness levels of the force and has once again focused attention on the continuing decline of the maritime infrastructure on which its relies.

The organizational relationship between the Navy, MSC, TRANSCOM, and Marad worked and, despite the finger-pointing that attended the initial breakout, worked well. With the Navy's assumption of strategic sealift as a formal mission in 1984 and the creation of TRANSCOM in 1988, the organizational and budget authority for sealift have become more diffused. Add to this the bureaucratic recalcitrance of the shipbuilders, operators and unions, and you are presented with an intractable situation that needs national attention, particularly if alternatives for the future might include creation of a Sealift CRAF or cadre manning RRF ships with Merchant Marine or US Navy reservists.

The size and composition of the RRF needs to be examined. Among the current mix, there are few ships capable of easily handling unit equipment, a few specialized ships of scenario-dependent usefulness, and a large number of utility ships that could be employed in most contingencies. The size and composition of the force is now under review, but it is clear that additional RO/RO ships are a common denominator among force planners. Many

studies have addressed the variables of size, speed, numbers, cargo growth, attrition and closure requirements. All these factors must be considered when tailoring the RRF and assessing its specific role in the nation's strategic sealift inventory.

Readiness depends on money. The total commitment to sealift must include adequate funding for maintenance and periodic activation testing. Some have suggested scrapping a portion of the NDRF force that is being maintained ostensibly as a pool of attrition hulls for a general mobilization scenario and plowing the funds back into the RRF. Also, certain categories of ships can likely be relaxed from 5 to 20 days without too much concern. The fact that less than half the ships in inventory were initially called indicates some planning flexibility.

The outlook for the maritime infrastructure that includes yards and docks to repair, maintain and breakout the ships and the merchant mariners to crew them is bleak. Radical surgery is required to ensure that the necessary capability does not wither away completely. Where to begin the cut is beyond the scope of this paper. The question of how we will man 142 RRF ships looms on the horizon with no easy answers.

A strong merchant marine would resolve many issues that confront strategic sealift planners. However, there is little hope of revitalizing this fourth arm of National Defense to the extent that planners can count on government-owned sealift. Until then, the RRF remains the best and most affordable option.

CHAPTER VIII

CONCLUSIONS AND RECOMMENDATIONS

For next week's contingency, there are no alternatives to the RRF to support our sealift needs. While additional bridges can be built to the commercial sector with initiation of Sealift CRAF, technology enhancements, and perhaps an expanded SRP, there are no alternatives in the water today. Designing and building a sealift ship is a ten year proposition entailing significant cost. Any additional purchases of FSS or MPS/APS-type ships will provide better closure but at a much higher cost. The capabilities mix of the RRF should be examined to ensure that we acquire the best suited ships for the likely scenarios of the future. In the short term, we will surge and sustain with what we've got, and strategic sealift will only be as good as we can make the RRF. The next contingency, like this one, will be a come as you are affair. However, there are some ways to husband this national asset to ensure its capability and to garner its clear deterrent value.

First, fully fund maintenance requirements and set a standard of 20% activations each fiscal year. Activations should be no-notice and should validate the surge capacity of supporting yards. Based on 142 ships and the historic data base, the total incremental cost of this effort would be about $40 million per year.

Second, upgrade the likely high demand ships to Reduced Operating Status (ROS) and man with a cadre crew of merchant mariners in a manner similar to the FSS. Estimated annual cost would increase by a factor of four. However, these selected ships would be maintained in a readiness posture that could be counted on and the difficulty of crewing the ships would be obviated.

Third, tailor readiness of RRF based on anticipated need and the enhanced readiness gained with cadre manning of selected ships. Perhaps the readiness gradations could be modified to ROS-5, 10, and 20 days. The percentage of ships in specific categories could be altered on the basis of the likelihood of use.

Fourth, examine current capabilities mix versus sealift planning scenarios and balance the force accordingly. Future acquisitions should be based in part on what we needed in Desert Shield and also on the port conditions and limitations in other potential hot spots of the world. Buy smart.

Fifth, assign strategic sealift to a warfighting CINC as part of his contingency responsibilities. Fence the budget for these strategic resources to eliminate the rice bowl issues and tortuous command structure that now includes over 30 agencies.

In the wake of Desert Shield, there are opportunities to improve the capabilities and responsiveness of the RRF. It's a national resource that is not renewable and for which there are no substitutes. Let's not learn again what not to do.

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14. The CRAF was developed 40 years ago to provide additional airlift to the military without unduly disrupting the air transportation system of the US. Activation of Stage I CRAF brought 38 jets with four crews each within 24 hours of callup.

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16. Daniel C. Mach and Edward S. Cavin, An Assessment of Activation Testing for the Ready Reserve Force, Center for Naval Analyses (Alexandria, VA: 1989) p.5.

17. Jacob L. Shuford, "Strategic Sealift in the Context of Operation Desert Shield", U.S. Naval War College (Newport,RI:1990) p.35.

18. Inside Washington Publishers, Inside the Navy, (Washington, February 25, 1991) p. 3.

19. Daniel C. Mach, p. 2.

20. Ibid. Table B-1.

21. Actual numbers of ships in each readiness level as of 01 August 1990 is: 65 (5 day), 28 (10 day), and 3 (20 day).

22. Daniel C. Mach, pp. 11, G-1 to G-3

Chapter VI

23. Norton, p. 44.

24. Phase I of Desert Shield includes the period of time from commitment of forces until 8 November when force levels were ordered to be dramatically increased.

25. Center for Naval Analyses, pp. 9-11.

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