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**THE SEALIFT READINESS PROGRAM -- THE  
COMMERCIAL IMPLICATIONS OF A MILITARY  
CONTINGENCY CALL-UP OF UNITED STATES  
FLAG MERCHANT SHIPS**

John L. Hazard, et al

National Research Council

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June 1975

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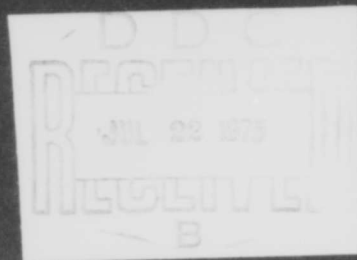
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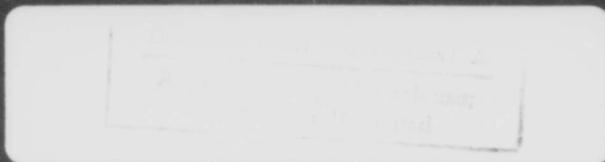
# *The Sealift Readiness Program*

THE COMMERCIAL IMPLICATIONS  
OF A MILITARY CONTINGENCY  
CALL-UP OF U.S. FLAG MERCHANT  
SHIPS

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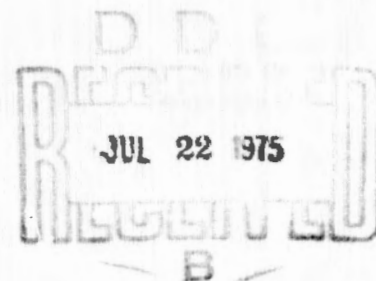
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**THE SEALIFT READINESS PROGRAM**  
**The Commercial Implications of a**  
**Military Contingency Call-up**

**Prepared by the**  
**Panel on Sealift Readiness**  
**Maritime Transportation Research Board**  
**Commission on Sociotechnical Systems**  
**National Research Council**

**National Academy of Sciences**  
**Washington, D.C.**

**June 1975**



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#### ABSTRACT

This report examines the Military Sealift Command's Sealift Readiness Program and the effect of a less-than-full-mobilization (contingency) call-up of privately owned merchant vessels on the competitive position of the U.S. merchant marine. The study is organized into five major parts including an analysis of the past experience of the U.S. merchant fleet in military call-ups and changes in the U.S. liner fleet from 1964-74.

In its appendixes the report contains annual ton-mile capacity calculations for all U.S. flag liner vessels operated by companies participating in the Sealift Readiness Program as well as trade route analyses.

The conclusions of the study treat financial impact, commercial market role, trade route impact, equipment impact, and liner operator roles and attitudes.

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## NOTICE

The study reported herein was undertaken under the aegis of the National Research Council with the express approval of the Governing Board of the NRC. Such approval indicated that the Board considered the problem to be of national significance; that elucidation or solution of the problem required scientific or technical competence; and that the resources of NRC were particularly suitable to the conduct of the project. The institutional responsibilities of the NRC were then discharged in the following manner.

The members of the study committee were selected for their individual scholarly competence and judgment with due consideration for the balance and breadth of disciplines. Responsibility for all aspects of this report rests with the study committee, to whom sincere appreciation is expressed.

Although the reports of our study committees are not submitted for approval to the Academy membership or to the Council, each report is reviewed by a second group of appropriately qualified individuals according to procedures established and monitored by the Academy's Report Review Committee. Such reviews are intended to determine, *inter alia*, whether the major questions and relevant points of view have been addressed and whether the reported findings, conclusions, and recommendations arose from the available data and information. Distribution of the report is approved, by the President, only after satisfactory completion of this review process, and with such explanation and qualifying statements as may be deemed appropriate.

## FOREWORD

This study was conducted under the auspices of the Maritime Transportation Research Board (MTRB), National Research Council, as part of a continuing program of advice to the federal government in the general area of maritime transportation.

The objective of this report is to examine the effect of a less-than-full-mobilization (contingency) call-up of privately owned merchant vessels on the competitive position of the U.S. merchant marine. The study was requested specifically by the Department of Defense to support planning and policy decisions concerning the Military Sealift Command's Sealift Readiness Program.

The Maritime Transportation Research Board was fortunate in persuading one of its members, Dr. John L. Hazard, to serve as Chairman of the small but distinguished Panel that considered the problem.

The private sector of the industry, the Department of Defense and the Department of Commerce cooperated throughout the Panel's deliberations by providing valuable supporting data and background information.

A four-man committee of the Board, comprising Dr. Dantzig, Messrs. Ables, Simat, and Redlich reviewed this report prior to publication.

I extend my thanks to the panel members, staff and review committee for their fine work on this report.



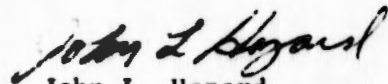
Robert J. Pfeiffer  
Chairman, Maritime Transportation  
Research Board

June 1975

## PREFACE

The Panel initiated deliberations on the likely effects of a contingency call-up on the private liner operators about a year ago. After some hard going initial sessions, the Panel reached a quick consensus on what had to be known and done. We decided to go directly to the liner operators with a questionnaire-interview covering their historical experience in past conflicts, their present operating and economic characteristics, and their expectations in event of future call-ups. The responses were cross-checked and validated, to the extent possible, against secondary aggregate information. It appears clear from both efforts that as the liner operators have moved to high technology, intermodal ships, they have become more capital intensive and less flexible and capable of responding to military contingencies without substantial displacement of services. How much financial sacrifice will be involved depends primarily on the commercial market during and immediately after the conflict. The report covers these issues in considerable detail in accordance with the specific charge of the sponsors. It raises peripherally the other side of the issue--the adequacy of the ships in the private fleet to meet future defense contingencies. The report does not presume to tell the sponsors what to do with the results of this research. It is only a piece of a larger puzzle.

It has been a real pleasure to work with well qualified panelists, highly cooperative liner operators, professionals in the sponsoring agencies, and an expert project manager from the Maritime Transportation Research Board.



John L. Hazard  
Chairman, Sealift Readiness  
Panel

June 1975

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of the

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Panel members serve as individuals, contributing their personal knowledge and judgment and not as representatives of any organization in which they are employed or with which they may be associated. Liaison representatives attend as representatives of their respective organizations to provide information or opinions on issues under discussion.

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\* Director of Research, Transportation Institute (through June 1974).

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## CHAPTER 1

### INTRODUCTION

In November of 1973, the Department of Defense (DOD) asked the Maritime Transportation Research Board (MTRB) to examine the effects of a less-than-full-mobilization (contingency) call-up of privately owned merchant vessels under the provisions of the Sealift Readiness Program (SRP).

The request was considered and approved for inclusion in the MTRB's FY 1974 project agenda. With the concurrence of MTRB's sponsors, the Departments of Commerce, Defense and Transportation, the Board proceeded in January of 1974 to seek a qualified and balanced panel to consider the question. In March of 1974 a small but diverse panel was formed with skills and experience in national transportation policy formulation, business logistics, system analyses, military logistics, ocean transportation marketing, and ocean carrier financing. Care was taken in selecting individuals with industry background to ensure knowledge of both subsidized and unsubsidized operations.

The problem presented to the Panel was "to analyze the Sealift Readiness Program and produce an unclassified report on the effects of various call-up strategies on the ability of the U.S. merchant marine to maintain or regain its pre-call-up position in world trade".

The Sealift Readiness Program is a vehicle used by the Department of Defense, through the Military Sealift Command (MSC), to provide for the acquisition of privately owned ships for a less-than-full-mobilization contingency. The program is effected through the Military Sealift Command's annual procurement of ocean transportation for the supply of U.S. peacetime military forces overseas. In order to bid on a Military Sealift Command Request for Proposal (RFP) for rates covering ocean transportation services, a carrier must commit 50% of his U.S. flag fleet to the program. The commitment of ships to the SRP is considered a pre-condition to bidding. Any carrier committing ships must agree to make one half of its commitment available within 30 days of notice and the remainder available within 60 days. Carriers, in response to the RFP, must submit a schedule of committed ships by type.

The effect of a call-up of vessels under the Sealift Readiness Program is a major unknown in Department of Defense planning. This problem was underscored by Defense Secretary James Schlesinger in his report to Congress in the spring of 1974. The Secretary indicated that while the DOD has 117 merchant ships available for use in lesser contingencies, half of which would be available in 30 days, "a key difficulty in the Sealift Readiness Program is that operators would risk the loss of trade on their regular routes".<sup>1</sup>

---

<sup>1</sup>The commitment of 117 ships was based on RFP 800, second cycle. In RFP 900, first cycle, the commitment was 118 ships. In RFP 900, second cycle, the commitment was 115 ships.

During the course of the Panel's deliberations, analyses were made of all major U.S. liner operators, the major U.S. trade routes and the MSC sealift requirement.

In assembling data for study, MSC provided schedules of ships committed under recent RFP's as well as listings of major U.S. carriers of military cargo. The Maritime Administration provided data on U.S. flag participation on each major trade route. The most significant data, however, were those assembled through a structured interview conducted by MTRB Panel and staff members with 14 U.S. flag liner operators. The interviews provided historical data from previous contingencies, financial information, load factor information, and opinions on the effects of a call-up on operations, costs and services. The interview outline is shown in Appendix II.

Throughout this study, the Panel has limited its work to analyzing the commercial impact of meeting a hypothetical call-up situation and the effects that might follow. No attempt has been made to speculate on the possibilities for, or the locations of, contingencies that might require such a call-up--both variables being beyond knowledge of the Panel.

This study has been organized into an introduction and five major chapters treating past experience, liner structure and performance changes, call-up outlook, call-up effect, and conclusions.

In the activities undertaken by the Panel since its initial meeting in March of 1974, a great many individuals have contributed and participated. Their efforts are gratefully acknowledged in Appendix I.

## CHAPTER 2

### THE PAST EXPERIENCE OF THE U.S. MERCHANT MARINE IN MEETING MILITARY SHIPPING DEMANDS

#### A. Introduction

This chapter examines the previous experiences of the United States in meeting its ocean transportation requirements for military contingencies.

The effect of past experiences upon U.S. vessel operators was assessed. Their responses to the interviews conducted by the Sealift Readiness Panel formed a partial basis for this assessment.

#### B. Prior to and During World War II

A relatively small amount of military cargo moved in U.S. privately owned vessels prior to World War II. Cargoes that were moved were carried under charter agreements or commercial berth-term tariffs.

During World War II, the War Shipping Administration (WSA) controlled the operation, purchase, charter and requisition of all ocean vessels under the flag or control of the United States. The WSA was dissolved in 1946; its emergency planning responsibilities are currently the responsibility of the Maritime Administration.

#### C. Post-World War II

Initially, following the return of the U.S. merchant marine to private control, military procurement of ocean transportation was performed separately by the Army and the Navy with each service administering its own contracts.

In late 1949, coincident with the unification of the armed forces, the Navy was assigned responsibility for all military ocean transportation. The Military Sea Transportation Service (MSTS), now the Military Sealift Command (MSC), was established as the single manager operating agency for ocean transportation in October of 1949.

The first real test of post-World War II military sealift capabilities came with the Korean conflict. The Korean invasion came at a time when the United States was maintaining a large military force in Europe and responding to grain and coal commitments in Europe and India. Approximately 50% of MSTS shipments in 1952 and 1953 was consigned to the Far East. 38% of the Far East sealift was accomplished by liners regularly operating on those trade routes. 12% of the Far East sealift was handled by the MSTS nucleus fleet. The remainder was transported on 160 to 180 victory-type vessels taken from the National Defense Reserve Fleet. Actually some 778 ships were broken out of reserve during the Korean conflict with approximately

600 of these being deployed to carry coal to Europe and grain to India during the winter of 1950-51.<sup>2</sup>

Following the Korean conflict, a memorandum of agreement was effected (July 1954) between the Departments of Commerce and Defense concerning the utilization, transfer and allocation of merchant ships. This memorandum entitled the Wilson-Weeks Agreement is still in effect. Paragraph four of the agreement applies directly to the problem of "ship requirements under conditions short of full mobilization". Paragraph 4-C states:<sup>3</sup>

"(c) All merchant shipping capability required by the Department of Defense, in addition to that provided by the MSTS nucleus fleet, will be obtained, consistent with military requirements and prudent management, in the following order of priority:

- "(1) Maximum utilization of available U.S. flag berth space.
- "(2) Time or voyage charter of suitable privately owned U.S. flag merchant ships to the extent these are voluntarily made available by the maritime industry. Such time or voyage charters will be kept to the minimum necessary to meet requirements which foresight indicates cannot be met by U.S. flag berth operators.
- "(3) Shipping provided by National Shipping Authority under General Agency Agreement or other arrangement, or
- "(4) In the event suitable United States flag shipping is not available under the conditions stated above, the Military Sea Transportation Service may employ foreign flag shipping only to the extent necessary to meet urgent military requirements."

The order of priority established in the Wilson-Weeks Agreement is:

1. Nucleus fleet
2. U.S. flag berth space
3. U.S. flag time and voyage charter
4. General Agency Agreement
5. Foreign flag

Chartering was the primary means of obtaining ships in the Lebanon Crisis of 1958, the Berlin Crisis in 1961, and the Cuban Crisis in 1962. Each of these emergencies demanded immediate action, and the government's response

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<sup>2</sup>Lawrence, Samuel A., *United States Merchant Shipping Policies and Politics*, p. 110.

<sup>3</sup>Department of Defense, *Sealift Procurement and National Security (SPANS) Study*, Part I, p. 24.

avored reliance on chartered private vessels, including foreign flag ships. During the Lebanon Crisis, however, the government requisitioned two privately owned U.S. ships.<sup>4</sup>

The nation's shipping resources were fully tested during the eight-year Vietnam War from 1965 through 1974. Part of the requirement was fulfilled by the Military Sealift Command's (nucleus) fleet. Owned and operated by the government, this fleet (including LST's) consisted of 91 dry cargo ships at the peak of the conflict.<sup>5</sup>

Another supply source during the Vietnam War was the National Defense Reserve Fleet (NDRF); one hundred and seventy-two of these ships were employed in carrying military cargo. Originally built during World War II, these ships were placed in the Reserve Fleet for emergency use. As of March 1974, 130 ships remained in the Reserve Fleet ranging in age from 29-33 years.<sup>6</sup> Despite their age these ships are in relatively good condition, having been operated only during cal-up periods in the early 50's and late 60's. They will be retained at least until the early 1980's or until such time as suitable replacements can be obtained. However, ships that would be suitable as replacements are continuing in commercial operation at the present time and hence are available for eventual NDRF renewal.

Both time and voyage charters were employed extensively by the U.S. government during the Vietnam conflict. Private commercial sources, both tramp and berth-line operators, contributed 172 chartered vessels at the peak of the Vietnam War (July 1967).<sup>7</sup> Both subsidized and non-subsidized berth-line carriers participated. Tramp operations have now practically disappeared because of competition, escalating costs, obsolescence, non-replacement, and changing distribution systems. Operating 107 vessels in 1968, the tramp sector was reduced to only eight ships by June of 1974.<sup>8</sup> The berth-line operators reorganized their fleets after Vietnam by continuing to replace older ships with new, high productivity, intermodal vessels.

The military tonnage distribution by carrying source (world-wide) during FY 1967 (Vietnam War) was as follows:<sup>9</sup>

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<sup>4</sup>Lawrence, *op. cit.*, p. 229.

<sup>5</sup>Fabry, Steven and Dashiell, Robert, *Military Sealift Augmentation Capabilities through 1980*, p. 11.

<sup>6</sup>Schlesinger, James, R., *Report of Secretary of Defense to Congress on FY 1975 Defense Budget and FY 1975-79 Defense Program*, p. 165.

<sup>7</sup>Cook, D. E., Military Sealift Command, Conversation of 21 January 1975.

<sup>8</sup>Military Sealift Command, *Ship Register*, June 1974.

<sup>9</sup>Fabry, *op. cit.*, p. 19.

<u>Carrying Source</u>	<u>Tonnage Distribution</u>
Time Chartered Vessels	40%
National Defense Reserve Fleet	30%
Berth-Line Vessels	22%
Military Sealift Command (Nucleus) Ships	<u>8%</u>
Total	100%

During the 1973 Arab-Israeli War, 75,000 short tons of military cargo were shipped through U.S. aerial and ocean terminals of which 70% went by ocean. The nine ships involved in this movement were all furnished by Israel.

#### D. Contingency Planning

The Sealift Readiness Program was developed during the 1970's to meet shipping needs during less-than-full-mobilization contingencies. The elements of this program were briefly described in Chapter 1.

The Sealift Readiness Program, as explained in Chapter 1, requires a commitment by participating U.S. carriers to provide 50% of their U.S. flag fleet to the government for military contingency purposes. A call-up under the program would be ordered jointly by the Secretaries of Defense and Commerce providing Presidential requisitioning is not indicated. When intermodal ships are committed (roll-on/roll-off, container ships, or barge ships), containers, chassis, and barges are included.<sup>10</sup> Vessel commitments during the program's existence have ranged from 61 to 166 ships. Committed containers during the period ranged from 2,242 to 97,937, while trailer commitments ranged from 1,655 to 61,357.<sup>11</sup>

The change in the character of the U.S. merchant marine has placed new emphasis on the need for effective logistics planning. With new, fast, intermodal ships accounting for an increasing percentage of U.S. ton-mile capacity, it is important to ensure that high speed and fast turnaround capabilities are sustained. Future logistics planning must effect rapid off-loading and fast turnaround to realize the full potential of high productivity ships. Holding vessels for long periods of time in the objective area must be avoided in future contingencies.

#### E. Effect on Berth-Line Carriers

The previous discussion has shown that the private operators have contributed significantly to the movement of military cargo during past crises or emergency situations.

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<sup>10</sup>The term intermodal is used to describe all U.S. flag commercial berth-line ships that employ loading and unloading systems other than conventional boom and winch. It is recognized that some roll-on/roll-off vessels are not technically intermodal.

<sup>11</sup>Fabry, *op. cit.*, p. 10.

Information about the economic implications of a military call-up was obtained from the management of fourteen U.S. liner operators through the interviews described in Chapter 1. A tabular summary of selected portions of the interviews applicable to past experience is shown in Table 1.

Although the questionnaire and interview process referred to all crises after World War II, the respondents relied almost exclusively on their Vietnam experiences. Most of those interviewed thought that the conditions associated with Vietnam were unique and would probably not be present in future crises or call-ups. These conditions included the following:

1. The escalation was slow and allowed for planning both by industry and government.
2. There were 175 vessels in the NDRF at the start of the Vietnam War. This number has now been reduced to 130 ships. While operation of NDRF vessels presented some problems,<sup>12</sup> they were employed in a manner that was generally satisfactory to the military, industry and labor.
3. There were delays in the off-loading that increased turnaround times drastically. With older, NDRF vessels, this was not a critical factor.
4. The industry was undergoing technological change. New construction was coming on line throughout the conflict. In some cases, companies delayed planned retirements of older vessels and maintained excess capacities for military cargoes.
5. In some potential non-mobilization contingencies, the possibility exists for harassment of U.S. shipping at sea.

#### Extent of Commitment

Thirteen of the fourteen operators surveyed participated in Vietnam. They committed a maximum of 10% to 50% of their fleets for periods ranging from less than 6 months to over 24 months. Both berth and charter arrangements were made during the Vietnam period. Some operators not currently participating in the Sealift Readiness Program contributed significant portions of their fleets for varying periods during Vietnam.

#### Financial Conditions

When asked to evaluate Vietnam in terms of its effect on their corporate financial health, twelve of the fourteen responded with only three indicating any financial hardships. The other nine stated that their corporate financial health during the conflict was either good or improved.

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<sup>12</sup>For example, some operators stated that the general agency agreements under which the ships were operated did not cover the contingency liabilities incurred by the lines for various benefit plans negotiated with the off-shore unions.



### Commercial Cargoes

The experience of thirteen responding companies concerning the level of commercial cargo activity during Vietnam was mixed with three operators reporting increases, six reporting no change, and four reporting decreases.

### Corrective Measures

The liner operators reacted differently in the measures taken to preserve their commercial cargoes. Two operators took no action at all. Two operators chartered ships to replace committed capacity. The remainder employed various combinations of improving existing ship utilization and/or purchasing new vessels.

### Reentering Commercial Trade

The operators generally experienced little additional cost in reentering their commercial trade. Of the thirteen companies active in Vietnam, nine stated that they had no extraordinary costs in reestablishing trade. The remaining four cited various combinations of sales force additions, idle days and repairs as cost items.

Table 1 shows that of the 12 operators responding to inquiries about their share of market following Vietnam, all but two stated that it increased.<sup>13</sup>

Response to questions concerning the time to reestablish the market were similar with six operators indicating that there was no lag time in recapturing pre-contingency commercial market share. However, it was emphasized by those interviewed that two factors contributed to this situation: (1) the relatively slow phase-out of U.S. participation in Vietnam, and (2) the coincident and rather dramatic increase in U.S. exports.

### F. Summary

This chapter reviewed the nation's most recent experiences in meeting military sealift requirements. Salient thoughts flowing from this analysis were:

- The MSC nucleus fleet, the National Defense Reserve Fleet and the U.S. flag tramp fleet have played pivotal roles in previous military contingencies. These resources have been reduced significantly from pre-Vietnam levels.

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<sup>13</sup>The Vietnam War was an extended engagement marked by gradual escalation and de-escalation. The ease with which operators were able to regain commercial business was a function of the special conditions prevailing during and after the War. It is doubtful that operators would regain commercial business so rapidly following contingencies of lesser duration, particularly if commercial market conditions were unfavorable.

- . U.S. flag liner operators have carried significant amounts of military cargo during previous contingencies as a part of their regular service and through time and voyage charters.
- . The Vietnam sealift did not create an unusual financial hardship on U.S. liner operators during the conflict.
- . Vietnam service did not significantly affect commercial cargoes or impair the operators' abilities to regain commercial market shares after the conflict; in fact, market shares improved for many operators. However, most participants think this situation was caused by an unusual combination of circumstances.
- . 75,000 tons of military cargoes were sent to Israel during the 1973 conflict. The total ocean portion of this movement was carried in Israeli procured ships.
- . Improved logistics planning will be necessary for future contingencies to ensure efficiency from new, high productivity, intermodal ships.

## CHAPTER 3

### U. S. MERCHANT MARINE LINER SECTOR CHANGES (1964-1974)

As other alternatives have declined, the Department of Defense has become increasingly reliant on the liner sector of the U.S. flag merchant fleet. It is therefore important to examine this sector--its experience in Vietnam, subsequent changes in its economic and operating structure and its capacity to respond to future contingencies.

As noted in Chapter 2, the Vietnam conflict produced few adverse economic consequences for the participating U.S. lines. During the conflict, most lines found their profits unchanged and exercised measures to improve fleet utilization and replaced obsolete ships with new, high capacity vessels. Start-up costs after the war were nominal and most lines were able to increase their market share of the commercial trades with little delay or transitional difficulty. However, a future contingency is unlikely to be similar to Vietnam. In addition, the lines have undergone some basic changes in the interim. This chapter examines changes that have occurred in liner structure, operations and services in the past decade, and how those changes will affect performance in the event of future call-ups.

#### A. Capital Structure Changes

All of the lines interviewed added to their capital structures in the past decade, but the range of additions varied extensively (Table 2, Column 4). The line with the greatest expansion increased its capital commitment over six times. The smallest capital growth was only 20 percent. The rest of the lines were widely dispersed in between. The 13 lines responding indicated an average absolute increase of 1.81 in long-term capital, or almost doubling during the decade (1963-73). The figure reflects the average company change rather than the overall change in industry investment. But this tends to overstate the capital accrual in the total dry cargo fleet, for a number of lines discontinued service altogether (four subsidized and nine non-subsidized) and others merged with the more successful lines. The aggregate increase in capital investment for all lines was probably closer to the 1.51 increase as drawn from the financial returns submitted by all dry cargo lines to the Maritime Administration for the end of the years 1964 and 1972. Within the types of services, the non-subsidized lines added to capital faster than the subsidized lines and the dry bulk carriers' investments actually declined.

#### B. Sources of Capital

While capital investments in dry cargo shipping operations were rising moderately in the aggregate, the sources of capital were radically altered. At the end of 1964, there were \$1,350 million invested in dry cargo operations compared to over \$2,035 million at the end of 1972. Over 75 percent of the capital in 1964 was equity investment supplied by owners (stock, capital and retained surplus); by 1972 the equity share was down to 58 percent. Equity investments increased only \$157 million and all of the increase was in unsubsidized operations with a reduction of investments in subsidized lines. Long-term debt was the primary source of capital formation in shipping and partially displaced equity investments. As long-term debt increased from less than 25 percent to 42 percent of total capital, debt-equity ratios increased seriously as shown in Table 3.

TABLE 2

**SELECTED FINANCIAL AND OPERATING DATA  
FROM SEALIFT READINESS INTERVIEWS**

Company Designation	General		Financial Data					Operating Data								
	Participating in RFP 900 (1st Cycle)	Subsidized	% Capital Investment Change 1963-1973 *	% Change in Capital Investment Turnover 1963-1973 *	% Capital Investment in Vessels %		% Cost Allocated to Vessel Operations 1974 *	Rates Set At	Service Advantages	Competition Based On	Customer Loyalty			Military Cargo Carried		
					69	74					Present	Cube	Utilization %	69	73	
I.	No	Yes	+353	-57	55	86	100	Conf	E	.	O	50	95	73	01	01
II.	Yes	Yes	+ 20	+76	99	99	95	Conf	S	V	O	75	95	85	24	08
III.	Yes	Yes	+100	+102	100	90	45	Conf	L	V	O	55	95	75	50	10
IV.	Yes	Yes	+ 27	+29	99	98	88.7	Conf	L	R	O	75	87	81	25	10
V.	Yes	Yes	+100	-15	85	90	49	Conf	V	V	N	NA	NA	60	25	7
VI.	Yes	No	+208	-61	91	88	81	Other	E	V	O	NA	92	NA	8	6
VII.	Yes	No	+630	+11	NA	NA	NA	Conf	L	V	O	NA	NA	80	50	15
VIII.	No	Yes	+111	+13	66	74	89	Conf	L	V	N	50	100	75	10	5
IX.	Yes	No	+ 37	-14	90	99	60	Conf	E	V	O	86	100	93	18	13
X.	No	Yes	+ 74	+03	64	37	NA	Conf	L	V	O	NA	NA	85	10	03
XI.	Yes	No	+500	+65	74	55	36	Conf	L&E	V	N	80	97	86	45	25
XII.	Yes	Yes	+110	-08	100	100	54.8	Conf	L&E	R	O	100	100	100	6.6	11.2
XIII.	Yes	Yes	+ 86	-43	18	79	62	Conf	L&E	R	O	100	100	100	71	23
XIV.	Yes	Yes	NA	NA	NA	NA	NA	Conf	L&E	V	O	NA	NA	90	18	18

\*Answers to these questions contain some inconsistencies due to differing interpretations of the questions.

Abbreviations:

- E = Speed
- L = Reliability
- N = None
- O = Important
- R = Rates
- S = Schedules
- V = Service

TABLE 3  
DEBT-EQUITY RATIOS

	1964	1972
<b>Subsidized lines</b>		
Debt	\$ 291 million	\$ 642 million
Equity	\$ 890	\$ 706
Ratio D/E	.33/1	.91/1
<b>Other dry cargo lines</b>		
Debt	\$ 44 million	\$ 221 million
Equity	\$ 124	\$ 465
Ratio D/E	.36/1	.47/1
<b>Combination</b>		
Debt	\$ 335 million	\$ 863 million
Equity	\$1,014	\$1,171
Total	\$1,349	\$2,034
Ratio D/E	.33/1	.74/1

DATA SOURCE: *Combined Financial Statements of Subsidized and Unsubsidized Operations, Year End 1964 and 1972 adjusted for the accounts of one non-reporting carrier in 1972. There are major gaps in these statements and classifications of accounts have changed appreciably over time.*

An increasing ratio of debt to equity is not adverse per se, especially when earnings are high and the cost of money is low. But in a period of uncertain profits and high interest rates, a high debt-equity ratio adds substantially to fixed costs and financial instability. The interest expenses of the combined dry cargo fleet operators, for instance, have escalated almost four times in the past eight years (from \$15.9 million to \$58.2 million) and predictably will continue to increase in the future. Interest expenses rose from 2.2 to 7 percent of total carrier expenses. While the lines may pay no more for borrowed than for equity capital in the long run, the difference is in having to meet fixed annual interest obligations. While dividends may be deferred, interest payments cannot without risking bankruptcy. The necessity to meet these growing interest and bond payments adds an element of financial inflexibility to the lines that has not been present heretofore.

### C. Capital Intensity

Increases in capital investments are only one measure of the changing capital structure of the lines. Capital turnover (operating revenues/capital investment) is a better measure of the intensity of capital utilization. A characteristic capital turnover of one indicates that revenues are just turning capital investments annually. Lower capital turnovers indicate that more of the revenue is required to service fixed capital investment, and higher turnovers indicate a lower share allocated to fixed costs. The 13 lines responding to the questionnaire evidently had some difficulty measuring capital turnovers. Seven reported that capital turnovers had increased during the decade ranging up to 102 percent, while six reported decreased turnovers ranging down by 61 percent (Table 2, Column 5). An analysis of carrier financial returns indicates that the aggregate capital turnovers of dry cargo carriers have declined from .95 in 1964 to .75 in 1972 which is a decrease of

about 27 percent. This dramatic decline was precipitated by increased capital investment (+51 percent), while revenue from shipping operations increased only 21 percent. The outlook is for continued declines in capital turnovers as the lines add more capital intensive ship and shore investments and enter an era of less certainty on operating revenues. This means line costs will become increasingly fixed and hence the lines will become more vulnerable to downward variations in revenue.

#### D. Capital Allocation

The lines were asked how their capital investment was allocated, on the hypothesis that a lower proportion would be invested in ships subject to call-up and a higher proportion in auxiliary equipment and installations ashore as the lines have extended the inland range of intermodal service. The lines' responses were mixed. Five reported that the proportion of their capital investment in shipping had declined; five reported it had increased; and two reported their capital allocations remained unchanged over the 10-year period. Though no absolute figures were provided, the balance of the investment of the larger carriers appeared to be moving toward shore installations and auxiliary equipment. This observation was verified by checking the consolidated balance sheet submissions of the subsidized lines and other dry cargo carriers in 1964 and 1972. The result proved as anticipated. The proportion of investment in ships had declined from 87.5 percent of the total to 70.0 percent. Non-vessel properties and equipment had more than quadrupled in dollar terms, increasing from 12.5 to 27.0 percent of the total investment in property and equipment. There can be little question but that a call-up of committed ships would leave the lines with more property and equipment that is apt to experience lower rates of utilization. The distribution of carrier costs is also shifting away from vessel operations and toward shore and auxiliary operating centers. Seven of the responding carriers indicated an appreciable increase in the proportion of the costs allocated to shore, terminal, feeder, and other operations. Only two had increases in the allocation to vessel operations, and three indicated that cost allocation remained unchanged.

#### E. Profit Experience

Increased fixed obligations are not difficult to cope with if carrier net incomes are stable and increasing. But, in fact, carrier profits (net incomes) have been highly erratic and declining as illustrated in Table 4.

The dangers of increasing debt obligations with unstable earnings can be easily illustrated. In the peak year, 1966, the carriers had a net income of over \$90 million after making interest payments of \$30 million. In the declining years (1970-71), they had deficits of over \$20 million and were making interest payments of \$70 million. Only 7 percent of the long-term capital of the carriers or \$124 million has been raised by capital stock

TABLE 4  
CARRIER NET INCOMES (\$000)

Year	Subsidized	Unsubsidized	Total
1964	\$ 54,641	\$ 10,934	\$ 65,574
1965	38,825	12,914	51,739
1966	70,960	22,650	93,610
1967	19,987	35,050	55,037
1968	25,326	54,760	80,086
1969	29,514	38,636	68,150
1970	-(43,955)	19,571	-(24,384)
1971	-( 8,522)	-(13,225)	-(21,747)
1972	14,276	26,812	41,088
1973	-( 9,729)	8,432	-( 1,297)
10 year Total	\$191,323	\$216,539	\$407,857

DATA SOURCE: *Condensed Financial Statements of Operations, Separate years 1964-1973.*

issues.<sup>14</sup> Clearly, the carriers are increasingly vulnerable to growing debt service obligations.

Other observations may be drawn from the assembled statements of net earnings.

1. Carrier net incomes have not only been unstable, but low, amounting to less than four percent of net worth during the decade. This is lower than any of the regulated carriers, except railroads (3.2 percent), and much lower than the average for industrial corporations (11.1 percent).<sup>15</sup>

2. The trend in earnings is down after reaching a peak in the Vietnam War when both military and commercial cargoes were running high.

<sup>14</sup>Combined Condensed Financial Statements of Subsidized and Unsubsidized Operators from *Annual Report of the Maritime Administration* published April 1974 and the individual financial statement of an operator not included in the MarAd combined statement.

<sup>15</sup>1972 *National Transportation Report*, U.S. Department of Transportation, Washington, D. C., p. 77. Covers 1960-69 net incomes.

3. The non-subsidized lines have made slightly higher and more stable profits than the subsidized lines.

The implications of these observations are several. The overall outlook for new capital investments in general cargo shipping is unfavorable. Net incomes do not necessarily decline during a military call-up and may be increased. At present low rates of return on equity (4 percent), a carrier might gain rather than lose profits on that part of its fleet called up under military time charter agreements. This is because the time charter often covers all costs plus overhead and profit. Net profits of 4 percent have been less than the going cost of capital. The present (cost-plus) time charter arrangements, incidentally, provide no incentive for committing low cost ships to the Sealift Readiness Program.

#### F. Technological and Operating Characteristics

The line technology and operations have undergone dramatic changes in the past decade that have substantially increased their efficiency, but reduced their flexibility. Ten years ago, fleets were composed of large numbers of highly flexible break-bulk ships as shown in Table 5. Investments in each ship were limited (\$8-\$10 million) and daily operating costs were low (\$2,500-\$3,000). Ships served multiple ports to accommodate small aggregations of cargo and spent most of their time loading and discharging cargo. While experiencing high ship-to-shore costs, break-bulk vessels were remarkably flexible, capable of diverting off route, carrying any cargo, and serving any port or need without substantially impairing schedules, disrupting shore operations, or adding to costs. Ships were self-sufficient, interchangeable units. They could readily replace one another in the commercial trades and serve military operations with equal facility. Overhead costs were low, so they could stand by offshore, be stockpiled in the ready reserve, or laid-up by private operators during periods of declining commerce without undue financial burden.

During the succeeding ten years, liner operations have altered substantially. The flexible break-bulk ships have been largely replaced by a generation of more highly specialized container, RO/RO, and barge ships (Table 5). The new intermodal ships accrue substantially higher daily costs but are several times as productive as the break-bulk ships they replaced. Moreover, they enable the lines to multiply ship-to-shore productivity and substantially reduce both vessel time in port and cargo handling expenses. But the new generation of ships require enormous aggregations of cargo for optimum utilization and this necessitated major alterations in the lines' modes of operation. The number of ports directly served by the line-haul ships was severely reduced. (For instance in the Pacific Basin, five to nine ports were served at each end of the route in 1963; this number has now been reduced to one or two.) As ship service became primarily a port-to-port operation, supporting cargo consolidation and distribution services had to be initiated at each end of the route. Supporting operations require large investments in feeder ships, containers and truck chassis, and longer term commitments ashore for heavy lift equipment, marshalling yards, and container stuffing facilities. Some of the lines substantially expanded the inland range of their service and became true intermodal carriers in which the ship was the line-haul component in a tightly integrated through system. This

TABLE 5  
MAKE UP OF PRIVATELY OWNED GENERAL CARGO FLEETS\*  
 (T/M add 000,000)  
 July 1965 and 1974

Item	1965			1974		
	No. Ships	Fleet Capacity		No. Ships	Fleet Capacity	
		T/M	%		T/M	%
Total Ships	557	380,978	100	319	386,451	100
Break Bulk	511	351,410	92.2	157	169,360	43.8
Container (self)				21		
Container (non-self)				90		
RO/RO (vehicle)	35**			14		
Barge ships	0			15		
Other ships	11			22		

\* Absolute T/M capacities omit bulk, reefer, coastal and passenger ships. Broken stowage space has not been considered. T/M = Deadweight ton nautical miles.

\*\* RO/RO figure prior to 1973 include container ships.

DATA SOURCE: *Ship Register*, Military Sealift Command, Washington, D.C., January, 1974.

movement toward through intermodal systems is continuing and carries with it gains in service and economy and offsetting losses in flexibility.

The service gains of the through container, RO/RO, and barge ships have been widely acknowledged. The losses in service flexibility are less apparent. Operationally, most of the container ships are not self-sufficient (do not have on-board lift capability) and can serve efficiently only those ports where the specialized lift capability is available. Even self-sufficient container ships require specialized shore handling equipment, back-up marshalling yards, and stuffing facilities that are available only at the more modern ports. Some of the more successful container systems utilize non-standard containers and noninterchangeable technologies. The RO/RO and barge ships are operationally more dexterous but require some adaptation of ship-to-shore technologies and miscible inland transport systems. Relatively few of these high technology ships can substitute for one another in the commercial trade, let alone serve the specialized military requirements without major adaptation and auxiliary ship-to-shore systems in most contingency theatres. The need for improving DOD ship-to-shore capacity and providing readily available hardware in advance areas will be stressed in Chapter 6.

All of the new, high technology, ships experience high daily costs, which add to their economic inflexibility. As full daily costs have escalated from \$2,500 - \$3,000 up to \$10,000 - \$20,000, the compulsion for higher ship utilization becomes more demanding. The new \$25-million ships must earn more than \$20,000 a day to break even. As a result, these ships cannot be diverted from high density routes to search for small cargo allotments or stand-by for

long periods to await loading or discharge. Furthermore, the new ship cannot be withdrawn from the trade as readily as the break-bulk ship in periods of declining trade. The fixed costs of interest and depreciation alone on a \$25-million ship would be approximately \$10,000 a day while in lay-up. As a result, the operators are compelled to keep ships in service as long as they are able to make some contribution to fixed costs. The rise of full daily and fixed costs may be expected to continue, leaving the lines in a less flexible and somewhat anomalous position.

In periods of increasing commerce and high vessel utilization, operators might regard a call-up as an infringement on their opportunity to exploit the commercial market. In periods of declining commercial cargoes, low utilization, and prospective ship lay-up, operators might welcome diversion at any rate of compensation that exceeds marginal costs and makes a contribution to overhead costs. While such extreme variations in the trade cycle cannot be provided for in contractual agreements, they do underline the necessity for flexibility and negotiation in establishing call-up rates; they also explain the somewhat ambivalent attitudes of the lines toward a potential call-up as indicated in Chapter 4.

#### G. Service Assessment

To provide a clearer view of the commercial vigor and likely resilience of the lines, some questions were posed concerning the character of the competitive market (Table 2). All but one line indicated that their rates were set at conference level. If rates are not a major factor in marketing liner service, what is the basis for competition? Most lines indicated that increased pressure on rates was being exerted by proprietary fleets and non-conference carriers. If these perceptions are correct, and they are in keeping with the findings of the Organization for Economic Cooperation and Development (OECD) and the research community, U.S. trade is not apt to suffer appreciably from discriminatory rate practices during a short-term withdrawal of some of the flag services from the route. Competition between the conference lines is evidently based more on service. Most U.S. lines feel that they still have an advantage based on reliability and speed of service. But a number expressed the opinion that their edge is declining as foreign lines acquire high technology ships and improve services. Asked specifically about the relative importance of competitive factors, most lines ranked service first, rates second, schedule performance third, and other factors lower down. It is noteworthy that in a separate survey of shippers, a number challenged the lines' assumptions about the superior quality of their services.<sup>16</sup> How important is customer loyalty in the marketing of liner service? Most lines believed customer loyalty to be an important consideration in the repeated use of line services, though some mistook exclusive use provisions in dual rate agreements for customer loyalty. Three of the lines expressed the belief that customer loyalty was of nominal importance in continuing use of a line's service and that there would be no carry-over to assist start-up operations after a call-up.

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<sup>16</sup>National Academy of Sciences, National Research Council, Maritime Transportation Research Board, *Toward an Expanding U.S. Merchant Marine*, 1975.

## II. Utilization

The line survey was conducted during a period of remarkably high vessel utilization. Most lines were experiencing between 95 to 100 percent utilization of cubic capacity on outbound sailings and between 75 to 100 percent of the cube on inbound voyages. Only two of the lines were experiencing lower outbound and inbound cube utilization. Most lines were optimistic about the future. Most of them expect trade to increase and their market share and vessel utilization to improve. On the specific measure of cube utilization, most lines expected present rates of utilization to remain unchanged, but two were expecting improvements and two, declines. The lines' five-year outlook appears optimistic in the light of contemporary international events including the petroleum crisis, the accumulation of international reserves in the Middle East, pressures on the international monetary apparatus, and world-wide inflation. The answer to DOD's inquiry about the excess capacity the lines might have to commit to Sealift depends upon the time. At present, (summer of 1974) there is virtually no excess capacity. In the near future limited space may open up. Over the long term even more cargo space may become available as national fleets expand capacity, and trade growth levels off under the influence of declining reserves and monetary problems. In the past, there has been a tendency toward overtonnaging the trades.

### I. Military Cargoes

How much military cargo do the lines carry (see Table 6) and what is the trend? The answer is important because regular military cargoes and sealift commitments are tied together in a number of ways as becomes clearer in Chapter 4. Commercial cargoes have rapidly replaced military cargoes in the post-Vietnam period. Commercial cargoes have increased from 74 to 89 percent and military cargoes have declined from 26 to 11 percent of the lines' cargoes between 1969 and 1973. Some leveling off of military cargoes at around 10 million measurement tons per year is anticipated by MSC. Most lines were still hauling some military traffic. In 1969 military cargoes consisted of 50 percent or more of three lines' traffic, while in 1973 it consisted of only 25 percent of top carrier cargo. Only one carrier experienced an increase in the proportion of military cargoes which moved up from 6.6 to 11.2 percent. The decline in peacetime DOD cargo offerings has a number of implications. Legally, the lines cannot bid on regular DOD cargoes unless they have committed ships to the Sealift Readiness Program. If peacetime DOD cargoes decline, the lines have less incentive to commit ships to the Sealift Program. The economic availability of commercial shipping to meet both continuing and contingency defense requirements depends almost entirely on the variations in the international trade flows. The lines' sealift expectations and preferences will be discussed in greater depth in Chapter 4.

### J. Summary

In summary, as the lines have shifted to more efficient, specialized ships as elements of through intermodal systems, they have become less flexible and available for call-up in several ways:

TABLE 6  
 DEFENSE CARGO ACCRUALS AND PAYMENTS  
 BY CARRIERS  
 CALENDAR YEAR 1973 SAILINGS (BREAK BULK AND CONTAINERIZED)

Carrier	Break Bulk - Percent	Containerized - Percent	TOTAL	Percent
American Export Lines, Inc.	\$ 4,002,973	\$ 22,572,813	\$ 26,575,786	14.0
American Mail Line, Inc.	611,115	3,543,251	4,154,366	2.2
American President Lines, Ltd.	375,597	7,966,007	8,341,604	4.4
Gulf-Puerto Rico Lines, Inc.	140,871	279,149	420,020	0.2
Iceland Steamship Company, Ltd.	234,882	--	234,882	0.1
Isthmian Lines, Inc.	17,261	--	17,261	--
Lykes Bros. Steamship Co., Inc.	7,283,363	1,757,349	9,040,712	4.8
Matson Navigation Company	1,077,599	3,445,636	4,523,235	2.4
Pacific Far East Lines, Inc.	1,665,792	7,871,868	9,537,660	5.1
Panama Canal Company	1,216,510	48,290	1,264,800	0.6
Prudential-Grace Lines, Inc.	4,823,355	2,968,897	7,792,252	4.1
Sea-Land Service, Inc.	550,157	73,974,503	74,524,660	39.2
Seafarin Lines, Inc.	545,546	9,120,904	9,666,450	5.1
States Marine International, Inc.	1,009,491	--	1,009,491	0.5
States Steamship Company	2,538,956	1,963,756	4,502,712	2.4
TMT Trailer Ferry, Inc.	16,015	2,051	18,066	--
Torn Lines Agency, Inc.	15,438	--	15,438	--
Trans American Transfer Transport, Inc.	189,589	556,494	746,083	0.4
United States Lines, Inc.	--	20,109,830	20,109,830	10.6
Waterman Steamship Corporation	7,376,188	16,740	7,392,928	3.9
<b>TOTAL</b>	<b>\$33,690,698</b>	<b>\$156,197,538</b>	<b>\$189,888,236</b>	<b>100%</b>

DATA SOURCE: Comptroller, Military Sealift Command, June 18, 1974.

- . More of their investment is ashore and in auxiliary equipment not subject to call-up.
- . Capital structures have been increased entirely by long-term debt which results in high fixed annual interest and redemption obligations that cannot be deferred or foregone.
- . In the aggregate, net earnings during the past decade are not favorable to additional capital investment in U.S. liner shipping.
- . Ships have become more specialized, less interchangeable, and less self-sufficient. Indeed, they are becoming inseparable elements of a through intermodal system.
- . Daily ship costs have become so high they compel high utilization and make diversion, stand-by, and waiting time economically prohibitive.
- . Fixed ownership costs have increased to the level that fleet capacity can no longer be adjusted to variations in traffic and make the prospect of call-up a mixed blessing, depending upon the trade cycle.

The gap between commercial container technology and Military Sealift requirements and capability appears to be growing wider. However, there are notable differences among the individual lines that warrant examination.

CHAPTER 4

CONTINGENCY OUTLOOK FOR THE U.S. LINER FLEET

This chapter looks ahead to possible call-ups under the provisions of the Sealift Readiness Program. It specifically examines the outlook and expectations of U.S. liner fleet operators in the event of a contingency call-up.

A. Setting

The setting for a future call-up of ships under the Sealift Readiness Program has been covered in Chapters 2 and 3. In summary, the salient considerations are:

- . The vessel call-up provisions of the Sealift Readiness Program have never been exercised.
- . The NDRF and the U.S. flag tramp fleet are at the lowest levels since the end of WW II.
- . The MSC controlled fleet has reverted to its pre-Vietnam strength.
- . There is high probability that some future contingencies which cannot be supported logistically by an ally will require some support from U.S. liner commitment to the Sealift Readiness Program.
- . Liners have become more capital intensive, less flexible and less capable of responding to a call-up without significant financial risk.
- . The load factors for the U.S. liner fleet were extremely high from January through October 1974.

The availability of commercial cargoes is a primary consideration in determining the effect of a call-up on the U.S. flag liner fleet. Considering the current state of the world economy, predictions on the future volume of commercial cargoes must be viewed with uncertainty. However, a recent short-term forecast of U.S. exports speculates that liner trades will continue to grow. The summary conclusion from that forecast states:

"In summary, although the U.S. export trade boom now appears to be over as a result of declines in bulk cargoes, the current market for U.S. manufactured goods, carried by liner vessels, remains strong. Growth in manufactures is projected through 1975, but at rates below recent levels. It, therefore, appears that U.S.-flag liners will not, in the

"short term, be adversely affected by sharp declines in the total volume of oceanborne export cargoes."<sup>17</sup>

#### B. Expectations

Both the Military Sealift Command and the liner operators have certain requirements and expectations with regard to a call-up of vessels under the Sealift Readiness Program.

##### Military Sealift Command

The Panel did not have access to classified material concerning the actual number of vessels that the Department of Defense planners anticipate would be needed in a less-than-full-mobilization contingency. The Panel assumed that the number of vessels offered under RFP-900 (118-115 ships) would meet most limited contingencies.<sup>18</sup> Appendix III contains data on the numbers and types of ships committed under both cycles of RFP 900.

It was further assumed that approximately 50% of deployment equipment and supplies could be carried by container ships. Of that 50%, one half would go on flats and one half in boxes.

##### U.S. Liner Operators

The expectations of the U.S. liner operators concerning the Sealift Readiness Program were determined from the interviews conducted during June to October 1974 (see Appendix II).

Table 7 provides a summary of primary areas of consideration.

##### Reasons for Participating

Because the Sealift Readiness Program is voluntary, the Panel asked each operator why his company participated. Specifically, each operator was asked, "what are the principal incentives and disincentives for participating?"

Of the 14 operators interviewed, three did not participate in the SRP. Their reasons for not participating were the same: no military cargo on their trade route.

Of the remaining 11, 10 cited the desire to carry normal peacetime military cargo as their reason for participating. One operator cited patriotism. Four operators said patriotism was a secondary consideration.

When asked for disincentives, the 11 participating operators cited two primary considerations: (1) the low rates on military cargoes and (2) the uncertainty and disruption that would be caused by a call-up, in that order.

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<sup>17</sup> Temple, Barker & Sloane, Inc., *A Short-Term Forecast of U.S. Oceanborne Exports*, Wellesley Hills, Mass., September 10, 1974, p. I-5.

<sup>18</sup> RFP 900, 1st Cycle committed 118 ships. RFP 900, 2nd Cycle committed 115 ships.

TABLE 7

U.S. LINER OPERATORS' OPINIONS ON  
FUTURE CALL-UP'S UNDER  
THE SEALIFT READINESS PROGRAM

Company Designation	Participating in RFP 900 (1st Cycle)	Subsidized	Estimated Commercial Cargo Loss %		Measures to Preserve Commercial Cargo	Estimated Start-up Cost	How Long to Regain Commercial Cargoes (Mo.)	Trade Route Decisions	Measures to Reduce Costs
			6 Mo.	12 Mo.					
I.	No	Yes	50	50	T&P	M&Y	K	S	F
II.	Yes	Yes	50	50	T	W	12	S	J
III.	Yes	Yes	50	60	T&C	W	12	S	B
IV.	Yes	Yes	25	50	N	W&M	12	S	B
V.	Yes	Yes	30	60	T&C	M	24	X	B
VI.	Yes	No	45	45	T&C	Y	0	Q	C
VII.	Yes	No	50	60	T&C	M&Y	12	X	B
VIII.	No	Yes	50	60	N	M&Y	12	X	B
IX.	Yes	No	50	50	C	NA	12	X	J
X.	No	Yes	50	60	T&C	Y	6	X	J
XI.	Yes	No	50	25	T&C	W&M	12	Q	J
XII.	Yes	Yes	15*	15*	T&P	W&M	K	S	B
XIII.	Yes	Yes	50	60	C	W&M	6	S	F
XIV.	Yes	Yes	50	50	C	M	12	S	F

Abbreviations:

- |  |                               |             |
|--|-------------------------------|-------------|
| B = Ready Reserve                            | N = None                      | Y = Repairs |
| C = Charter                                  | NA= No Answer                 |             |
| F = Draw from Lines serving contingency area | P = Pooling                   |             |
| J = Reduce commitment to 25%                 | Q = Reduce domestic routes    |             |
| K = Unknown                                  | S = Sacrifice some routes     |             |
| M = Sales Force                              | T = Improved utilization      |             |
|  | W = Idle Days                 |             |
|  | X = Reduce each route equally |             |

\* Military got low productivity ships.

Participation in Future MSC  
Sealift Readiness RFP's

The operators were asked during the interview to rank order the circumstances that would encourage or discourage their participation in future RFP's. The results are shown in Table 8.

A higher flow of peacetime military cargoes, a decline in commercial cargo availability and more liberal financial provisions each received equal emphasis as incentives for bidding on future RFP's.

Reasons for not bidding on future RFP's were an increase in commercial cargo, less liberal financial provisions, and a decline in peacetime military cargo on trade route, in that order.

Table 8 suggests that volume of commercial trade and level of military cargo rates are primary concerns to operators bidding on military cargoes. Under some unlikely conditions of high commercial cargo flow and low military cargo rates, it is conceivable that participants in the SRP could drop.

Commercial Trade Growth

When asked to project the growth of commercial trade for the next 10 years in terms of total cargo, market share and vessel utilization, all but one of the operators predicted increases in total cargo and market share and all but two predicted increases in vessel utilization. However, this has not been reflected so far in contracts for liner construction in U.S. shipyards.<sup>19</sup> As reflected in Chapter 3, the outlook for sustained profitability is not favorable.

There is also some reason to question the operators' ability to improve ship utilization. With load factors running extremely high during the period of the interviews, operators were optimistic about improving utilization. Improved speeds, better scheduling, and vessel alterations were some of the methods proposed for increasing utilization. However, the rising costs of fuel make improved speeds an increasingly unlikely alternative.

Call-up Effect on Revenues,  
Costs and Capital Investment

Table 9 provides the results of interview questions concerning the probable effect of a future call-up on revenues, costs and return on investment. Most operators agree that revenues would go down to a moderate degree, although three operators see a severe reduction in revenues. In terms of costs, 11 of the 14 see costs declining to a moderate degree. In terms of return on investment, three operators see the returns at least the same as prior to the call-up with one predicting slightly higher returns. Seven

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<sup>19</sup>Only 12 of the 71 ships under construction in July of 1974 were for liner trades (8 LASH and 4 RO/RO). Of these, all but three are due for delivery by early 1975. Military Sealift Command, *Ship Register*, July 1974, p. 14.

TABLE 8

INTERVIEW RESULTS OF CIRCUMSTANCES  
THAT WOULD ENCOURAGE OR DISCOURAGE FUTURE BIDDING  
ON SRP RFP'S

	Number of		
	Subsidized Operators	Unsubsidized Operators	Total Operators
<u>Reasons for Bidding on Future RFP</u>			
. Higher flow of peacetime cargoes on trade route (military).	3	1	4
. A decline in commercial cargo available and a prospect of over capacity.	2	2	4
. More liberal financial provisions.	4		4
. Reinstate Wilson-Weeks Agreement.*	1		1
. Restructuring of contract to recognize extraordinary costs.		1	<u>1</u>
Total			14
<u>Reasons for not Bidding on Future RFP</u>			
. Decline in peacetime cargoes on trade route (military).	2	1	3
. An increase in commercial cargo available and a prospect of under capacity.	3	3	6
. Less liberal financial provisions.	4		4
. Continued abandonment of Wilson-Weeks Agreement.*	1		<u>1</u>
Total			14

\*One of the carriers felt that the government was not adhering to the Wilson-Weeks Agreement.

TABLE 9  
RESULTS OF SEALIFT READINESS INTERVIEWS ON THE  
EFFECT OF A CALL-UP ON REVENUES/COSTS/AND RETURN ON INVESTMENT

		<u>Number of</u>		
		<u>Subsidized</u>	<u>Unsubsidized</u>	<u>Total</u>
		<u>Operators</u>	<u>Operators</u>	<u>Operators</u>
<u>Revenues</u>	Much Higher			
	Higher			
	Same	1		1
	Lower	6	2	8
	Much Lower	2	1	3
	Unknown	1	1	2
	Total			14
<u>Costs</u>	Much Higher			
	Higher			
	Same	1		1
	Lower	8	3	11
	Much Lower			
	Unknown	1	1	2
	Total			14
<u>Return on</u> <u>Investment</u>	Much Higher			
	Higher	1		1
	Same	2		2
	Lower	3	1	4
	Much Lower	1	2	3
	Unknown	3	1	4
	Total			14

operators predicted lower return on investment with three of these seeing much lower returns. Most lines expected revenues and profits to decline more sharply than costs.

Decrease in Market Share  
by Trade Route

The operators were asked to indicate those trade routes that they would sacrifice or preserve in the event of a call-up. The interviews indicated, as shown in Table 7, that five of the lines would reduce their capacity equally on all trade routes. The reductions ranged from 50% to 60%.

Where decisions were made to preserve certain routes at the expense of other routes, two primary factors influenced the decisions: (1) flexibility, and (2) comparative advantage. Obviously, unsubsidized operators can exercise the greatest flexibility. Generally, they will concentrate on established high volume routes and sacrifice new market penetration efforts and/or low volume markets. The subsidized operators have less flexibility for they must adjust service on the trade routes they serve. They can be expected to preserve those routes in which they have the greatest comparative advantage.

It is interesting to note that in some instances a route designated to be sacrificed by one operator was selected to be preserved by another.

Generally, high volume trade routes to Europe, the Mediterranean and the Far East would be preserved. Low volume U.S. coastal, intercoastal, Caribbean, South American and African routes have been selected for sacrifice.

One line serves only domestic trade. A call-up of this company's vessels would probably have domestic economic repercussions.

Several companies noted that the ultimate consequences of a call-up would depend on which of its ships were taken and when. For instance, some operators are reluctant to commit new, high productivity, intermodal ships because they represent such a large portion of their total ton-mile capacity. (See Appendix IV.) Others state that their intermodal ships operate as a system with optimum scheduling on a trade route. If one ship is taken from a group of similar ships on a trade route system, the system will be seriously degraded. You cannot, for instance, replace a barge carrier or container ship with a break-bulk ship on an established trade route system.

Time Considerations in a Call-up

Most of the operators interviewed (10) thought that 50% of their commercial cargo would be lost within 6 months. (See Table 7.) Within 12 months, six operators thought that 60% of their commercial trade would have disappeared.

When asked to estimate the time to recapture their commercial trade, the operators were unanimous in saying that market conditions would be the determining factor. With good demand for cargo space, 11 of the 14 thought they could regain their commercial business within 12 months. (See Table 7.)

Cost Considerations During and  
After a Call-up

The operators were asked to provide examples and estimates of costs not covered in the SRP time charter formula for both during and after a 12-month contingency.

For periods during the contingency, the following cost categories were cited:

- . Terminal Operations
- . Terminal Leases
- . Container/Equipment Leases
- . Overhead
- . Wage Guarantees
- . Severance Pay
- . Depreciation
- . Conversion Costs to Chartered Vessels
- . Reposition Cargo Handling Gear
- . Reposition Ships
- . Idle Vessel Time

The estimated costs for each of these categories varied according to the size of the company. The most commonly cited cost categories were terminal leases, container and equipment leases, overhead and wage guarantees. The estimated amounts are not really meaningful unless they can be directly associated with individual operators. However, the following are samples:

Terminal Leases	\$ 195,000 to \$ 12,500,000
Container Leases	600,000 to 1,430,000
Overhead	375,000 to 1,000,000
Wage Guarantees	205,000 to 15,000,000

After the contingency, operators predicted the following types of costs would arise:

- . Recondition Vessels
- . Extra Sales Effort
- . Low Load Factors on Initial Voyages
- . Reestablish Operations in Abandoned Ports
- . Repositioning of Vessels
- . Repositioning of Equipment
- . Reconversion of Chartered Vessels
- . Processing Claims (Litigation Costs)
- . Personnel Transfers, etc.
- . Marketing Consultants
- . Idle Time
- . Retroactive Pay and Benefits

Here again the amounts have little meaning unless they are associated with specific operators; however, the following are typical:

Recondition Vessels	\$ 200,000 to \$ 1,500,000
Extra Sales Effort	200,000 to 1,000,000
Low Load Factors on Initial Voyages	1,640,000 to 20,000,000

Measures to Preserve  
Commercial Cargoes

The operators were asked what measures were available to them for preserving commercial cargoes during a contingency. As shown in Table 7, two operators said there were no measures available. Nine operators cited improved utilization; two referred to pooling arrangements; and nine replied that chartering was a possible measure.

Each of the measures cited for preserving commercial cargoes has its limitations. For instance, pooling arrangements are renegotiated periodically based on immediate past performance in the conference. Obviously, an operator who remains inactive in a conference will have difficulty renegotiating a favorable arrangement. Chartering would also be difficult and expensive in the tight shipping market that would almost certainly accompany a contingency situation. Subsidized operators must charter U.S. flag vessels to operate on their trade routes. The availability of idle liner capacity during a contingency would be extremely limited.

When asked what measures might be taken to relieve the burden, six operators suggested a revitalization of the NDRF. Four other operators favored reducing the contingency commitment to 25% of the fleet. Of the remaining three, two favored drawing initially from the operator serving the contingency area and the remaining operator suggested chartering.

C. Variables Affecting the Impact of a  
Contingency Call-up

There are several important variables that influence the effect of a sealift call-up. These are particularly troublesome in terms of planning because different combinations of variables can result in a large number of sealift scenarios. This subchapter analyzes several of the more significant variables.

Military Sealift Command

The Military Sealift Command requirement for numbers and types of vessels varies with respect to : (1) location of the contingency, (2) port facilities at the location, (3) types of contingency, and (4) speed of the build-up.<sup>20</sup>

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<sup>20</sup>Port facility requirements can be met in some cases with mobile off-loading equipment.

The location of the contingency can affect the call-up in a number of ways. For instance, a Far East contingency, depending on the type, might require predominant load-out from West Coast staging areas. As a result, ships available from West Coast operators would be required at least initially. On the otherhand, a European or Middle East conflict might require East Coast and Gulf Coast load-out. Distance is also a factor of location. Obviously, more ships are required for a long logistical pipeline than for a short one.

Port facilities are a controlling variable as they determine to a great extent whether or not container ships will be employed in the initial stages. Also, it will be a determining factor in the ability to off-load all types of ships and, therefore, control the speed of turnaround and ultimately the number of ships needed. This latter may prove to be the Achilles Heel of the entire Sealift Readiness concept. If new, high productivity, ships are used, it is important that they be off-loaded rapidly if their increased capacity (which is a function of fast turnaround and high speeds) is to be realized. For instance, tying up an SL-7 in the objective area is the equivalent of tying up 14 C3-A2's in terms of annual maximum ton-mile capacity lost. While it is possible to utilize mobile off-loading equipment to ensure rapid turnaround, the necessary equipment has not been procured by the military.

The type of contingency is also a major concern in selecting and employing ships. Is the contingency supporting a U.S. landing force or is it augmenting the logistic pipeline of an ally? Different types of vessels are required for different categories and mixes of supplies and equipment, some of which are not compatible with container ships. Another important factor is whether or not the ocean sector of the supply line will be contested; if so, the attendant precautions will encumber the operation and necessitate the use of more ships. Although submarine action is not anticipated in a non-mobilization contingency, there could be some harassment of U.S. shipping at sea.

The speed of build-up will also be a major factor of concern for the Military Sealift Command. Piecemeal escalation allows for planning in the selection of the most compatible ships. A rapid escalation would require the use of the first ships available regardless of type. It might also necessitate the initial use of high speed vessels, some of which might not be compatible with the types of loads anticipated.

#### Liner Operators

The effect a limited contingency call-up has on operators is also dependent on a number of variables. Predicting which variable will occur in what combination is difficult, if not impossible, to determine. Most carriers interviewed qualified their answers with some statement relating to the location of the contingency and the commercial market condition on their trade route during and after the contingency. The most significant variables were:

1. Location of Contingency.
2. Market Conditions at the Time of the Call-up on the Trade Routes.

3. The Duration of the Call-up.
4. Market Conditions on their Trade Route Following a Call-up.

The location of a contingency is a central consideration to most carriers. For instance, if the contingency is on a given carrier's trade route, it is probable that its normal commercial traffic would be interrupted. Under those circumstances, contingency cargoes on that route would be welcomed. On the otherhand, if the contingency were not on its trade route, it is possible that a call-up would remove ships from a high value market and the carrier's profits and market position would be sacrificed.

The consideration of market conditions at the time of the contingency was also mentioned. For instance, if manufactured exports were running high and U.S. liner operators were sustaining high load factors, it is reasonable to assume that they would be handling a high proportion of high rated cargoes. In that condition, profits would be high. A call-up under these circumstances would mean losses in profits and market position. On the otherhand, if an over-capacity condition existed on the market with heavy competitive pressure from foreign flag vessels, a call-up might actually enhance carrier earnings and strengthen them for post-contingency reentry into the market.

Duration of the call-up was not a major concern. A 12-month call-up might be slightly more significant than a 6-month call-up both in terms of actual impact on the company and prospects for regaining market position.

Market conditions following the contingency are the most salient consideration affecting a carrier's ability to regain its market position. For instance, if there is a sudden upturn in available commercial cargoes coincident with the end of hostilities, chances are the market position will be regained within 6 months to a year, if not sooner. On the otherhand, a sudden downturn in the availability of commercial cargoes and the resultant over-capacity could create a situation whereby carriers could not regain their market within a year, and, in some extreme cases, perhaps ever.

A flow diagram showing carrier decision alternatives is provided in Figure 1.

#### D. Summary

In summary, future contingency call-up's are likely to fall heavily on the operating U.S. flag liner fleet. The following are salient considerations:

- . The carriers participate in the voluntary SRP primarily because they need the cargo. Under certain circumstances of high trade volume and low military rates, some operators might forego Military Sealift Command RFP's, although this eventuality seems unlikely.
- . Liner operators have generally optimistic beliefs that future trade levels will remain high in their sector; these beliefs are shared by some economic forecasters.

Carrier Action at Beginning of Contingency  
After Delivering Ships to MSC

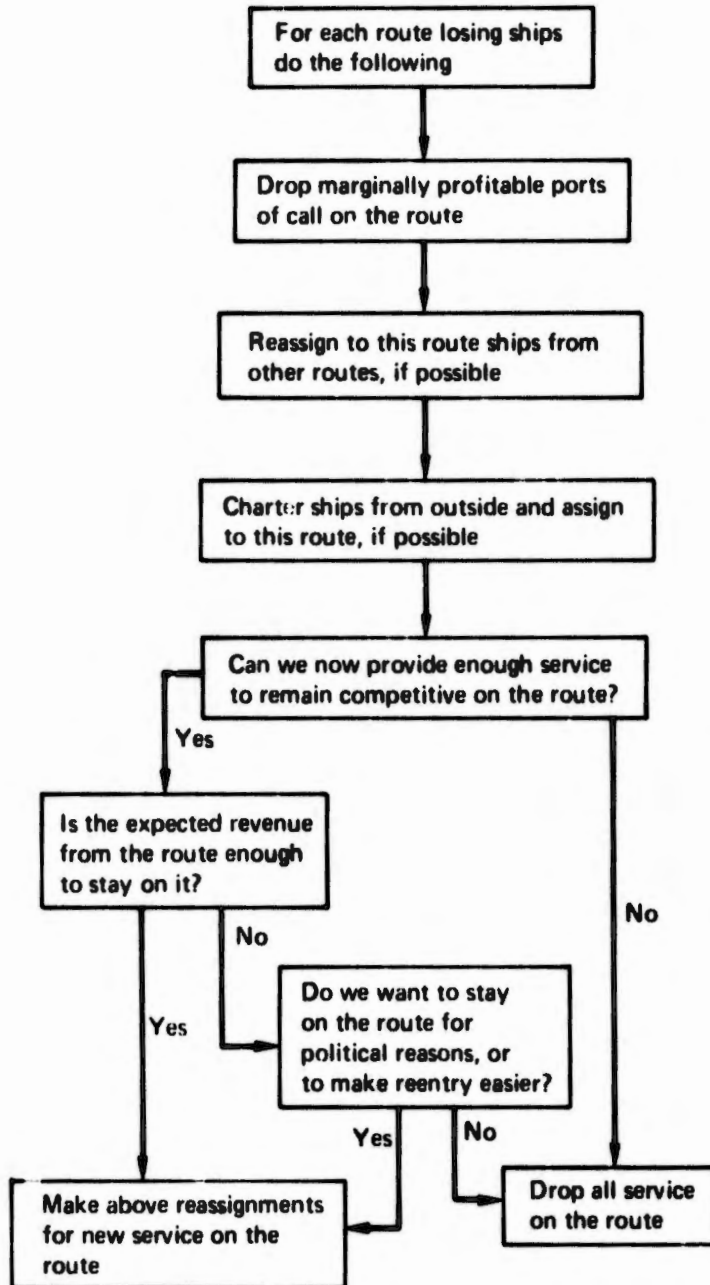


FIGURE 1

FLOW DIAGRAM OF CARRIERS' DECISION ALTERNATIVES

- . Operators generally believe that their total revenues and costs would fall if 50% of their fleets were called up but that revenues would fall more than costs with a consequent loss in profit.
- . Decisions on which trade routes to sacrifice or preserve in a contingency call-up would favor high volume established routes, at the expense of low volume routes or routes with low value cargoes.
- . Most operators see significant costs not currently recognized in the SRP formula for time chartering both during and after a 12-month contingency call-up. Primary among these are terminal leases, container leases, wage guarantees, repositioning costs, reconditioning costs, and ship idle time.
- . A significant number of operators favor revitalization of the NDRF as a means of reducing the loss of commercial cargoes.
- . The major variables affecting the impact of a call-up are:
  - . Location of a Contingency
  - . Port Facilities
  - . Type of Contingency
  - . Speed of Build-up
  - . Duration of Call-up
  - . Market Conditions at the Time of Call-up
  - . Market Conditions Following the Call-up

CHAPTER 5

THE EFFECT OF A SEALIFT READINESS CALL-UP

The purpose of this chapter is to analyze the material presented in Chapters 2 through 4 to develop conclusions concerning the effect of a call-up under the provisions of the Sealift Readiness Program. The conclusions are contained in Chapter 6.

A. Military Sealift Command Requirements

The Panel was not provided with detailed scenarios for military sealift requirements because of its desire to keep its work unclassified. However, it did make some educated assumptions concerning the requirements.

The Panel assumed that for purposes of this study the 118 ships offered in RFP 900 (1st cycle) would be sufficient for a less-than-full-mobilization contingency.<sup>21</sup> It further assumed that the desired mix of these 118 vessels would be: 91 break-bulk (C-4 equivalents) and 27 intermodal ships (C-5 equivalents). Of the intermodal ships, at least 15 should be self-sustaining.<sup>22</sup> These assumptions would lead to a total annual ton-mile capacity requirement of 105,225 million ton-miles break-bulk and 46,760 million ton-miles intermodal, for a total annual requirement of 151,985 million ton-miles.<sup>23</sup>

Appendix V shows that liner operators have committed 57 break-bulk ships and 61 intermodal ships (23 self-sustaining) to the SRP under RFP 900 (1st cycle). The total annual ton-mile capacity is 179,953 million.

Thirteen break-bulk ships and one intermodal ship would be available in from one to ten days. In other words, 11% of the committed ships and 8% of the capacity would be available in ten days.

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<sup>21</sup>Both 1st and 2nd cycle commitments for RFP 900 are contained in Appendix III. All calculations of available and committed ships and tonnage are based on the 1st cycle.

<sup>22</sup>It should be noted that mobile off-loading equipment necessary for employing non-self-sustaining ships has been developed. However, none has been procured by the military for contingency purposes.

<sup>23</sup>For calculations on maximum annual ton-mile capacities see Appendix IV. For C-4 equivalents see Appendix IV, page 81 (C-466 design); for C-5 equivalents see page 78 (C-573 design). Calculations in Appendix IV are annual maximum deadweight ton nautical miles with no reductions for stowage or for operation at less than maximum speeds.

Within 20 days, 28% of the ships and 21% of the capacity would be available. This consists of 28 of the 57 break-bulk ships and 5 of the intermodal ships (none of which are self-sustaining).

By the end of 30 days, 77% of the ships and 64% of the capacity would be available with some 20 self-sustaining container ships becoming available during the 20-30 day period. This includes 4 large barge carriers.

The remaining capacity consisting of the very large ships (SL-7's and SL-18's) would come on line during the 30 to 60 day period.

Break-bulk vessels, although they are available early in the contingency call-up period, are not provided in the numbers required. In fact, only about 63% of the break-bulk requirement is met in the RFP 900 (1st cycle) commitment. Where off-loading facilities are available, intermodal ships can replace the deficiency.

Tables 10 and 11 provide a projection of commitments to the SRP and projections of total fleet subject to the SRP program. These projections are based on continued participation in the SRP program by most major operators. Table 10 shows that the committed break-bulk fleet may reach 61 by 1975 and then decline. Table 11 indicates that there is sufficient break-bulk capacity available in the overall U.S. fleet to meet the Panel's assumed 91 vessel requirement. Note that there are some 30 break-bulk vessels currently in the fleets of subsidized operators who are not participating in the SRP program. These companies do not bid because there are few if any military cargo shipments on their trade routes. Most of the break-bulk vessels in the U.S. commercial fleet are owned by subsidized operators. They are not included in either Tables 10 or 11.

The projections in Tables 10 and 11 show a steady decrease in the number of self-sustaining intermodal ships through 1984 in both the committed and total available categories.

It appears that the SRP can provide adequate overall ton-mile capacity to meet less-than-full-mobilization contingencies. This overall ton-mile capacity, precluding a drop in voluntary participation in the SRP, should be available from SRP commitments through 1984.

However, it is extremely doubtful that the ships provided will meet military requirements for flexibility. As stated in previous chapters, high productivity ships must be in constant shuttle service to take advantage of their high ton-mile performance. Also, high productivity vessels are lucrative targets in a contested ocean line of communication.

While the ton-mile capacity exists, it is probable that the Military Sealift Command will want to look beyond the Sealift Readiness Program for other sources of break-bulk vessels, particularly where the lack of off-loading equipment and ship-to-shore logistics planning preclude effective use of intermodal ships. As an alternative, DOD could acquire quick reaction, expeditionary, off-loading equipment for intermodal ships to facilitate their use.

TABLE 10  
PROJECTED COMMITMENTS TO SEALIFT READINESS PROGRAM

	1975	1979	1984
Break bulk			
Slow Speed	30	24	24
Fast Speed	<u>41</u>	<u>26</u>	<u>24</u>
Total Break bulk	61	50	48
Part Container (PC)			
Slow Speed	4	7	7
Fast Speed	<u>-</u>	<u>-</u>	<u>-</u>
Total PC	4	7	7
Non-Self-Sustaining Container (NSSC)			
Slow Speed	7	5	4
Fast Speed	<u>18</u>	<u>16</u>	<u>35</u>
Total NSSC	25	21	39
Self-Sustaining Container (SSC)			
Slow Speed	16	14	3
Fast Speed	<u>2</u>	<u>3</u>	<u>3</u>
Total SSC	18	17	6
Total Container	43	38	45
LASH	2	4	4
SeaBee	-	-	-
RO/RO	-	2	2
GRAND TOTAL	110	101	106

DATA SOURCE: Maritime Administration  
 Office of Policy and Plans  
 May 13, 1974

TABLE 11

PROJECTED TOTAL FLEET OF CARRIERS SUBJECT TO  
SEALIFT READINESS PROGRAM

	1975	1979	1984
Break bulk			
Slow Speed	34	25	25
Fast Speed	<u>64</u>	<u>51</u>	<u>48</u>
Total Break bulk	98	76	73
Part Container (PC)			
Slow Speed	13	13	13
Fast Speed	<u>7</u>	<u>7</u>	<u>7</u>
Total PC	20	20	20
Non-Self-Sustaining Container (NSSC)			
Slow Speed	26	18	4
Fast Speed	<u>47</u>	<u>51</u>	<u>90</u>
Total NSSC	73	69	94
Self-Sustaining Container (SSC)			
Slow Speed	17	14	3
Fast Speed	<u>3</u>	<u>3</u>	<u>3</u>
Total SSC	20	17	6
Total Container	93	86	100
LASH	12	12	12
SeaBee	3	3	3
RO/RO	7	8	8
GRAND TOTAL	233	203	214

DATA SOURCE: Maritime Administration  
Office of Policy and Plans  
May 13, 1974

In the long term, more effective steps must be taken to meet contingency requirements. Consideration should be given to renewing and strengthening the NDRF.

#### B. U.S. Flag Liner Operators

An evaluation of the effect of an SRP call-up on U.S. flag operators must cover several factors such as: the actual commitment of the companies, the time frame involved, the flexibility of the companies to preserve commercial cargo, market conditions during and after the call-up and the financial structure of each company.

##### Levels of Commitment

Table 12 is a comparison of the various levels of commitment by the companies participating in the SRP. The most salient point made by this table is the fact that committing 50% of an individual company fleet does not necessarily commit 50% of the ton-mile capacity. In fact, in terms of cube capacity, the commitment ranges from 33% to 72%. Obviously, a call-up will have the most serious effects on the commercial trades of the companies committing the greatest percentages of their ton-mile capacities.

##### Contingency Duration

Whether the contingency lasts 6 months or 12 months does not appear to be of great concern. It is less burdensome and obviously less costly in the long run to lose the ships for 6 months rather than 12. However, duration of the contingency is not a controllable variable. The contingency will not end in six months because that is the most desirable economic time period. It must be concluded that the duration of the contingency (6 months or 12 months) is not a major factor influencing the overall effect on the operators. It is doubtful that significant competitive inroads would be made during a 12-month period, particularly if world-wide vessel availability is tight. Contingencies of over 12 months duration were not considered.

##### Flexibility of Operators

Flexibility is a major concern and, as in the area of vessel commitments, not all operators are governed by the same rules. Unsubsidized operators can adjust service, schedules and equipment to optimize the utilization of their remaining ships. Subsidized operators, on the otherhand, unless waivers are granted, must maneuver within their assigned trade routes and can augment their fleet only with U.S. flag charters. These latter are likely to be in very limited supply during a contingency period.

The results of the interviews and common sense suggest that the carriers would concentrate on high volume trade routes offering the highest value cargoes in order to maximize revenue from their remaining ships. The Panel is precluded from revealing specific strategies because of the privileged nature of the interviews. However, it is apparent that most of the operators would concentrate on routes currently enjoying a high percentage of U.S. flag service. (See Appendix VI and Table 13.)

TABLE 12

SEALIFT READINESS CAPACITY COMMITMENT  
COMPARISONS BY U.S. FLAG LINER OPERATORS

RFP 900 (1st cycle) Commitment				
	% Cube Committed*	% DWT Committed*	Annual Max. Ton-Mile Ca- pacity in Total Fleet	Percentage of total U.S. Fleet Capacity
AEIL	42	40	31,030,267,200	08.
APL-AML	39	42	54,245,640,000	15.
Central Gulf	--	--	9,083,712,000	02.
Lykes	42	41	50,874,912,000	14.
Matson	38	38	21,334,288,000	06.
Prudential	37	34	24,788,649,600	07.
PFEL	50	50	23,360,304,000	06.
Sea Land	72	69	89,334,960,000	24.
Seatrain	50	50	5,170,176,000	01.
States	51	56	10,450,440,000	03.
U.S. Lines	42	40	32,017,920,000	09.
Waterman	33	37	19,582,728,000	05.
			** 371,273,996,800	100 **

\* See Appendix IV

\*\* Does not include capacity of vessels not in SRP.

It may be desirable, during an SRP call-up, to allow equal freedom in trade route flexibility and chartering privileges to all participants.

It is probably more desirable to allow individual companies to charter foreign flag ships than to allow the MSC to charter them directly for two reasons: (1) by allowing U.S. operators to charter foreign, the operators can take constructive steps to preserve their commercial trade; and (2) U.S. flag ships are more reliable for MSC contingency purposes than foreign manned ships. Such action would require legislative changes. The potential availability of foreign intermodal ships has not been investigated in this study.

#### Market Conditions

Market conditions, as described in Chapter 4, both during and after a call-up, are major factors affecting the impact of a call-up on liner operators.

Currently operators tend to rely less and less on regular peacetime military cargoes. Chapter 3 indicates that in 1969 on the average 25% of the operators' cargo was military; by 1973 this average had dropped to 11%. However, the responses to demand for military cargo are price sensitive. Less than compensatory rates will also have the effect of reducing interest in future RFP's.

Market conditions during the first half of 1974 were excellent. Table 2 in Chapter 3 shows that outbound cube utilization ranged from 87% to 100%. During periods such as these, a call-up would probably be burdensome to the liner operators. They would be forced to forego high load factors and significant volumes of high value cargo. Opportunities for high profits would be lost and in that regard some permanent economic damage would be done to the industry.

On the otherhand, if commercial market conditions were depressed, military contingency cargo at rates above out-of-pocket costs might be welcomed. This possibility is fully explained in Chapter 3. There have been instances during past contingencies when military cargo improved revenues and return on investment.

Market conditions also control success in regaining lost commercial trade after a call-up. Improving market conditions coincident with the end of a contingency period provide ideal circumstances for regaining former commercial market shares. On the otherhand, declining commercial market conditions at the end of a contingency period might prolong market share recapture indefinitely.

Market conditions may differ for individual operators. It is possible, for instance, for an operator to suffer an immediate decline in commercial cargoes if a contingency occurs on his trade route.

It should be concluded that market conditions are a major uncontrollable variable affecting U.S. liner operators in the event of a call-up.

### Financial Structure

As described in Chapter 3, U.S. liner operators have become much more inflexible from a financial point of view. Their operations are becoming increasingly capital intensive. The outlook is for continued lower capital turnover as more ships and shore equipment are acquired. This will increase fixed costs, particularly if they are debt funded, and will make operators more vulnerable to variations in revenue.

Generally, operators with high productivity ships will be more vulnerable to reductions in revenue. Citations of cost areas in Chapters 3 and 4 should be given careful consideration. For instance, if a capital intensive operator is required to reposition vessels to optimize route and revenue considerations during a call-up, the repositioning time may be non-revenue producing. In a high fixed cost environment, such activities if not properly compensated might cause permanent economic damage.

The same conditions prevail at the end of the contingency. Capital intensive operators are extremely vulnerable to idle vessel time, idle space on voyages, and non-revenue producing repositioning costs for ships and equipment.

It can be concluded that U.S. operators have moved into an era of delicate financial balance. Contingency call-up plans must be effected efficiently in order to cause the least possible disruption to the lines. Communications should be established between MSC and affected operators as early as possible when contingency conditions are anticipated. Also, MSC planners should give careful consideration to terminal operating and lease costs, wage guarantees, repositioning costs, and idle vessel time and space costs resulting from a disruption caused by a contingency.

### C. Effects on Major U.S. Trade Routes

The operators were asked to estimate their market share decreases resulting from a contingency call-up on various trade routes. This information was taken during the interviews in confidence and cannot be divulged. However, in the Panel's opinion, some operators were far too optimistic. One major carrier predicted very little market share loss on major routes on the theory that capacity losses could be replaced with charter vessels. The projected ton-mile capacity loss for that operator in the event of a call-up is high and it is extremely doubtful that enough charter vessels could be located, altered and put in service during a 6- to 12-month contingency period to meet the requirement.

Appendix VI shows the major U.S. trade routes, operators, commodities carried, and the U.S. flag share of U.S. imports and exports on those routes. Table 13 gives an estimate of the impact of an SRP call-up on various trade routes.

It is apparent that a call-up would substantially affect those trade routes having low volume and/or low value cargoes. Some portions of Africa, South America, the Caribbean, India-Malaysia, Australia, New Zealand and the United States would receive limited service. On the otherhand, service to northern Europe, the Mediterranean and some portions of the Far East would be continued.

TABLE 13

U.S. FLAG CARRIER ESTIMATES OF  
THE IMPACT ON MAJOR U.S. TRADE ROUTES DURING  
A SEALIFT READINESS CALL-UP

<u>Trade Routes</u>	<u>Effects</u>
N. Atlantic - N. Europe, Scandinavia, Mediterranean	Limited
S. Atlantic & Gulf - N. Europe, Mediterranean	Limited
Atlantic - Caribbean, West Coast, S. America	Limited
Pacific - Far East, Australia, India, Persian Gulf	Limited
S. Atlantic & Gulf - Far East, India, Persian Gulf	Limited
Atlantic & Gulf - East Coast, S. America	Limited to Moderate
Atlantic - Far East	Moderate
Gulf - Caribbean, West Coast, S. America	Limited to Severe
Atlantic & Gulf - Africa, Australia	Severe
Pacific - Caribbean, S. America	Severe
Pacific - N. Europe	Severe

It should be concluded that major disruptions would occur in U.S. flag service to some areas of the world. U.S. flag presence in underdeveloped areas would be particularly restricted.

A unique situation applies to one company which is currently engaged primarily in servicing the Hawaiian trade with little or no U.S. flag competition. It is highly unlikely that 50% of Hawaiian trade ships could be withdrawn from that route without causing economic repercussions.

It is possible under some pooling arrangements or future bilateral agreements that operators withdrawing ships from some trade routes could experience difficulty reclaiming their pre-contingency cargo share. It is also possible that some operators removing vessels from trades covered in future bilateral cargo sharing agreements could find themselves in violation of international treaties. These possibilities have not been explored in this study but would be of interest should the U.S. begin to participate more actively in bilateral cargo sharing agreements.

D. Summary

In summary, a call-up of U.S. liner vessels under the Sealift Readiness Program would meet the current military requirements for ton-mile capacity but would not meet the requirements for break-bulk types and, in the

next decade, may not meet the requirements for self-sustaining container ships. Requirements for break-bulk ships presumably would be revised if DOD procured equipment and established procedures for more effective utilization of non-self-sustaining ships. The following are additional considerations:

- . The operators would be affected in different ways and to different degrees depending on their specific situations and on market conditions. Some operators have committed substantially more than 50% of their ton-mile capacity, while others have committed substantially less.
- . Unsubsidized operators have more operational flexibility than subsidized operators.
- . Market conditions are a critical and uncontrollable variable affecting the financial health of U.S. flag operators both during and directly after a call-up.
- . The lines have become economically less flexible than they have been in the past decade. They have become more capital intensive and more vulnerable to revenue fluctuations because of high fixed costs.
- . U.S. trade routes would suffer during a call-up with low volume routes being sacrificed in favor of high volume routes with high value cargoes. The Hawaiian domestic trade must be given special consideration in a call-up.

## CHAPTER 6

### CONCLUSIONS

This chapter establishes the Panel's major conclusions on the effect of a sealift call-up on U.S. flag commercial service. The findings have been separated into (A) Conclusions and (B) Further Implications.

#### A. Conclusions

##### 1. Financial Impact

U.S. flag operators have become increasingly more capital intensive in recent years, meaning more capital investment is required to generate revenue. This condition makes them extremely vulnerable to revenue fluctuations. Costs are more fixed and spread ashore over items not subject to call-up. As a result, uncompensated expenses resulting from idle ships or voyage space, terminal operations, and equipment and vessel repositioning can cause significant financial hardship in terms of fixed and contractual debt obligations. The increased reliance on debt capital accentuates the problem. These investment and expense changes should be considered in contingency planning.

##### 2. Commercial Market Role

The major factor determining whether or not a call-up will have a beneficial or harmful effect on U.S. liner operators is the condition of the commercial market for U.S. liner services during and directly after a call-up. Good commercial market conditions during a call-up may necessitate financial sacrifice on the part of affected U.S. operators. On the otherhand, a call-up during a period of poor commercial market conditions could prove beneficial to the operator. Following a contingency, improving commercial market conditions might enable operators to regain their previous market shares with little sacrifice. Poor market conditions could delay market share recapture indefinitely and result in permanent financial damage to some or all of the lines. This most important variable is essentially uncontrollable and unpredictable.

##### 3. Trade Route Impact

A call-up of U.S. flag liner vessels would disrupt some U.S. flag operations on some trade routes and could result in discriminatory rates and services where competitive alternatives are lacking. U.S. liner services to lesser developed countries and to small volume ports would be the most severely curtailed.

##### 4. Liner Operator's Role

In future contingencies, DOD reliance on the liner fleet will be greater than it has been in the past. The tramp fleet has virtually disappeared, the National Defense Reserve Fleet has been reduced to 130 Victory ships, and the Military Sealift Command controlled fleet has been reduced to its pre-Vietnam strength.

## 5. Operator's Attitudes

Liner operators participate in the Sealift Readiness Program primarily because they need the cargo. They recognize their commitment and would respond to a call-up. They believe that a call-up would result in lost profits because revenues would be reduced more than costs. They also believe that there are significant costs not currently recognized in the Sealift Readiness Program formula for time chartering.

## 6. Equipment Impact

Requiring each liner operator to commit 50% of his ships to a Sealift Readiness Program call-up does not necessarily result in equal commitment of capacity. Under Request for Proposal 900 (1st Cycle) one line committed 72% of its ton-mile capacity, while another committed only 33%.

## B. Further Implications

1. The Sealift Readiness Program has resulted (per Request for Proposal 900) in enough ton-mile capacity to support a U.S. less-than-full-mobilization contingency. However, it has not provided the number of break-bulk ships considered necessary and in fact may fall short of ton-mile requirements if provisions are not made for rapid turnaround of intermodal ships.

2. New intermodal ships will be more lucrative targets for enemy action than conventional ships because of their high productivity.

3. Break-bulk ships and self-sustaining container ships are declining in numbers from the U.S. flag fleet. These types of vessels are useful in military contingencies until such times as efficient ship-to-shore adaptive systems are procured for non-self-sustaining container ships in anticipation of military contingencies.

4. Alternative plans for restocking and upgrading the National Defense Reserve Fleet should be considered. Upgrading military capabilities for better utilization of new advanced shipping concepts should also be studied.

5. Means should be sought (including waiver of existing law) to encourage carriers to charter, improve utilization and pool traffic during a contingency in order to minimize uncovered costs and to sustain service on trade routes. Some alternatives, such as the ability of subsidized operators to charter a foreign ship, are not now possible under existing law.

6. The Department of Defense should develop plans and systems to marshal and control military supplies and equipment effectively within the objective area so that intermodal ships can be turned around rapidly.

7. Steps should be taken to develop and stockpile the necessary ship-to-shore unloading and materials handling equipment that would be required for off-loading intermodal ships.

8. Joint Maritime Administration/Department of Defense evaluation committees should be established to ascertain the adequacy of the ships available under the Sealift Readiness Program and other sources to meet defense contingency requirements and to develop means for providing flexible, responsive, through systems where deficiencies appear likely.

9. Many of the findings of this study were based on a unique survey of liner operators. Interchange of this type with all U.S. liner operators should be continued as a means of ensuring that military planning remains compatible with the changing character and capabilities of the liner fleet.

**APPENDIX I**

**ACKNOWLEDGEMENTS**

APPENDIX I

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The study could not have been possible without the advice and counsel of a great many individuals from a broad spectrum of the maritime industry. The Chairman and members of the study panel gratefully acknowledge the time, cooperation and assistance of the following individuals:

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**APPENDIX II**

**INTERVIEW/QUESTIONNAIRE  
SEALIFT READINESS-IMPACT EVALUATION**

**APPENDIX II**

**INTERVIEW/QUESTIONNAIRE**

**SEALIFT READINESS-IMPACT EVALUATION**

**Sealift Readiness Panel**

**Maritime Transportation Research Board**

**National Research Council/National Academy of Sciences**

The Maritime Transportation Research Board of the National Research Council/National Academy of Sciences has been asked by the Department of Defense to examine the Military Sealift Command's Sealift Readiness Program, and to advise on the probable effects of a call-up of committed U.S. vessels.

As you know the Sealift Readiness Program requires that all participating U.S. berth line carriers must commit 50% of their fleets for military contingencies.

There has never been a call-up of ships under the Sealift Readiness Program and the Department of Defense is seeking an outside objective opinion on the possible consequences of such action, particularly as it might affect the market position of the participating lines. In other words, in a call-up situation what would be the effect on the competitive position of the participating lines and what economic factors might have to be considered in reestablishing these lines to their original position?

The Panel considering this question is Chaired by Dr. John L. Hazard, Professor of Transportation, Michigan State University, and consists of several distinguished authorities with experience in subsidized and unsubsidized berth line operations, transportation and distribution theory and modeling, and military logistics.

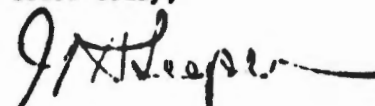
The Panel's study plan calls for an input from each of the U.S.-flag berth line operators. This input will be in the form of an interview between a designated company executive and the Panel's project manager and/or a member of the Panel. The interview will be based on the enclosed questionnaire.

This questionnaire was designed to avoid any specific financial or market information that might compromise proprietary material. Instead, it deals with aggregate or percentage values.

Please read the questionnaire and complete it to the best of your ability. Use estimates where exact information might not be available. The designated executive will be contacted and arrangements will be made for an interview to discuss the enclosed questionnaire in the near future.

Your cooperation will be greatly appreciated and will contribute substantially to the resolution of the many difficult issues involved in the Sealift Readiness Program.

Yours truly,



**John H. Leeper  
Project Manager  
Maritime Transportation  
Research Board**

**In  
Enc.**

INTERVIEW/QUESTIONNAIRE  
SEALIFT READINESS-IMPACT EVALUATION

The purpose of this questionnaire and the follow-up interview is to determine, as objectively as possible, the economic consequences of a call-up of vessels under the Sealift Readiness Program. Please answer all questions as accurately as possible. Where specific data are not available use estimates.

A. Historical Experience in Post World War II military contingencies:

1. Prior participation:

- (a) Check the military contingency in which your line was most heavily involved ( None,  Vietnam,  Korea,  Berlin,  Other \_\_\_\_\_.)
- (b) Check the primary terms of the commitment ( Charter,  Berth,  Requisition,  Other \_\_\_\_\_.)
- (c) Indicate the maximum proportion of your fleet capacity committed (% of ships) committed. ( \_\_\_\_\_ % of ships)
- (d) Check the average time the ships were committed to exclusive military service (months) ( Under 6 months,  6 to 12 months,  12 to 24 months,  Over 24 months)

2. How would you evaluate the impact of your firm's past military commitments in terms of:

- (a) Financial Health \_\_\_\_\_  
\_\_\_\_\_
- (b) Competitive Position \_\_\_\_\_  
\_\_\_\_\_
- (c) Share of Market \_\_\_\_\_  
\_\_\_\_\_

3. Impact during military commitment:

- (a) Commercial cargoes and revenue (  Declined,  Unchanged,  Increased)
- (b) Net earnings on ships committed to military (  Declined,  Unchanged,  Increased)
- (c) Overall net profits from shipping operations (  Declined,  Unchanged,  Increased)

- (d) Overall commercial market share (  Declined,  Unchanged,  Increased)
- (e) What measures were taken to preserve commercial market share (  Chartered additional ships,  Improved utilization of existing fleet,  Acquired new ships,  Other \_\_\_\_\_ )

4. Impact after military commitment (1st year):

- (a) What types and levels of costs did you incur in reestablishing commercial trades: \_\_\_\_\_
- (b) Total revenues from shipping operations (  Declined,  Unchanged,  Increased)
- (c) Overall net profits from shipping operations (  Declined,  Unchanged,  Increased)
- (d) Overall commercial market share (  Declined,  Unchanged,  Increased)
- (e) Time required to reestablish market share (  6 months,  12 months,  Over 12 months,  Never)

B. Present line structure and service

This section attempts to determine the present capital structure, operating characteristics, and flexibility of the line.

1. Capital investment:

- (a) How much has your capital investment (equity, debt, present value of long-term leases, etc.) increased?  
From 1963 \$ \_\_\_\_\_ to 1973 \$ \_\_\_\_\_. Percentage increase \_\_\_\_\_
- (b) What has been the change in your capital investment turnover (ratios of gross revenue/capital, excluding subsidy revenue)?  
From 1963 \$ \_\_\_\_\_ to 1973 \$ \_\_\_\_\_. Percentage change \_\_\_\_\_
- (c) How much of your capital investment is in the following types of installations and equipment?

	<u>1/1/74</u> (Percentage)	<u>1/1/64</u> (Percentage)
Vessels (at sea components - containers & barges)	_____ %	_____ %
Shoreside & inland installations and equipment	_____	_____
Feeder Services (vessels, equip., terminal commitments)	_____	_____
Other operations & capital investments	_____	_____
	100 %	100 %

2. Operating characteristics and services:

(a) How have you allocated costs for the following activities:

	<u>1/1/74</u> (Percentage)	<u>1/1/64</u> (Percentage)
Vessels (at sea components - containers & barges)	_____ %	_____ %
Shoreside & inland installations and equipment	_____	_____
Feeder Services (vessels, equip., terminal commitments)	_____	_____
Other operations & capital invest- ments	_____	_____
	100 %	100 %

(b) Service considerations:

Are your rates generally set (  At conference levels,  
 Lower than conference levels,  Higher than conference levels.

Your distinct service advantages include: (  Speed,  Reliability,  
 Other (describe) \_\_\_\_\_

Trade competition is based primarily on: (Rank order 1,2,3,4)  
Rates \_\_\_\_\_, Service \_\_\_\_\_, Sailing schedules \_\_\_\_\_, Others \_\_\_\_\_  
(Describe) \_\_\_\_\_

Customer loyalty as a consideration is:  Nominal,  
 Important,  Other (Describe) \_\_\_\_\_

C. Outlook on a sealift call-up:

This section attempts to obtain your estimate of the impact of a Sealift  
Readiness Program call-up.

1. (a) What are the principal incentives for participating?

\_\_\_\_\_  
\_\_\_\_\_

(b) What are the principal disincentives for not participating?

\_\_\_\_\_  
\_\_\_\_\_

2. What set of future circumstances would be most favorable to your line's committing ships under future Sealift Readiness RFP's? (Rank order 1, 2, 3, etc.)

- \_\_\_\_\_ a. A higher flow of peacetime defense cargoes in your trade areas.
- \_\_\_\_\_ b. A reduction of international tensions and prospects of call-ups.
- \_\_\_\_\_ c. A decline in commercial cargo availability and prospect of over capacity.
- \_\_\_\_\_ d. A reduction in period of call-up or percentage of fleet committed.
- \_\_\_\_\_ e. More liberal financial provisions in future RFP's.
- \_\_\_\_\_ f. Other circumstances (describe) \_\_\_\_\_

3. What set of future circumstances are least favorable to your line's committing ships under future Sealift Readiness RFP's? (Rank order 1, 2, 3, etc.)

- \_\_\_\_\_ a. Decline in peacetime military cargoes in your trade areas.
- \_\_\_\_\_ b. An increase in international tensions and prospects of call-ups.
- \_\_\_\_\_ c. An increase in commercial cargo availability and prospect of under capacity.
- \_\_\_\_\_ d. Prospect of increase call-up time or percentage of fleet committed.
- \_\_\_\_\_ e. Less liberal financial provisions in future RFP's.
- \_\_\_\_\_ f. Other circumstances (describe) \_\_\_\_\_

4. What is your present cube utilization \_\_\_\_\_ %? Do you expect cube utilization in the next 5 years to:  Increase,  Unchange, or  Decline.

5. How much of your line's cargo volume consisted of military shipments as a percent of total traffic?

	<u>1969</u>	<u>1970</u>	<u>1971</u>	<u>1972</u>	<u>1973</u>
Military	_____	_____	_____	_____	_____
Commercial	_____	_____	_____	_____	_____
	100%	100%	100%	100%	100%



(e) What managerial measures would you take to preserve commercial cargo market share? ( Charter,  Pooling agreements,  Better utilization of ships,  Other \_\_\_\_\_)

(f) How much of your established commerce would you expect to lose during the call-up (estimate as percentage of total traffic and explain).

First 6 months \_\_\_\_\_ X \_\_\_\_\_

First 12 months \_\_\_\_\_ X \_\_\_\_\_

(g) What types of costs would you expect to incur, if any, during the call-up that are not covered by the SRP formula for time chartering? (designate the type of cost and explain or estimate the amount).

<u>Cost Item</u>	<u>Explanation</u>	<u>Est. 12 month Amount</u>
Examples:		
Wage guarantees	Labor contract commitments	\$ XXXXX
Long-term terminal commitments	Lease and contractual agreements	\$ XXXXX
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
	Total uncovered costs during call-up	_____

8. After return to commercial service

(a) How long do you estimate it would take your line to recapture the precontingency share of the commerce on your trades?

6 months       12 months       24 months       Longer

(b) What special measures are available to assure re-entry into the trades? ( Conference quotas,  Pooling agreements,  Customer loyalty,  Shipper arrangements,  Other \_\_\_\_\_)

APPENDIX II (Cont.)

(c) What abnormal costs would you expect to incur to accomplish a successful start-up? (Explain and estimate how much.)

<u>Cost Item</u>	<u>Explanation</u>	<u>Amount</u>
Examples:		
Ship readying costs	To prepare ships for comm. service.	\$XXXX
Extra sales costs	To acquire and train additional sales force.	\$XXXX
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
Total start-up after contingency		_____

(d) Which of the following measures do you think would reduce the costs and commercial burden the most:

- \_\_\_ 1. Reduce the period of call-up to 6 months.
- \_\_\_ 2. Reduce the ship commitment to 25% of capacity.
- \_\_\_ 3. Draw primarily from a ready defense reserve or charter foreign vessel.
- \_\_\_ 4. Initially draw from lines serving trade routes in close proximity to contingency theatre first.
- \_\_\_ 5. Other (Specify) \_\_\_\_\_

Thank you for cooperating in this study. Summary results will be sent to respondents by January 1975. Comments of individual lines will remain confidential.

Title \_\_\_\_\_

Company \_\_\_\_\_

**APPENDIX III**

**MILITARY SEALIFT COMMAND  
REQUEST FOR PROPOSAL 900  
(First and Second Cycles)**

APPENDIX III

RFP 900 COMMITMENT  
(First Cycle)

WORLD WAR II BREAK-BULK SHIPS

<u>Operator</u>	<u>Type</u>	<u>Availability (Days)</u>
American Export Lines, Inc.	3 C-3	1 - 21 to 30
		2 - 31 to 60
Waterman Steamship Corp.	4 C-3	1 - 1 to 10
		1 - 11 to 20
		1 - 21 to 30
		1 - 31 to 60
	2 C-4	1 - 1 to 10
		1 - 11 to 20
Total	<u>9</u>	

POST WORLD WAR II BREAK-BULK SHIPS

American Export Lines, Inc.	6 C-3	1 - 11 to 20
		3 - 21 to 30
		2 - 31 to 60
American President Lines, Ltd.	4 C-4	4 - 1 to 10
	5 C-5	5 - 11 to 20
Lykes Bros. Steamship Co., Inc.	13 C-3	5 - 1 to 10
		5 - 11 to 20
		3 - 21 to 30
	8 C-4	2 - 1 to 10
		2 - 11 to 20
		4 - 21 to 30
Prudential Grace Lines, Inc.	5 C-4	5 - 21 to 30
States Steamship Company	5 C-4	3 - 21 to 30
		2 - 31 to 60
Waterman Steamship Corp.	2 C-4	1 - 21 to 30
		1 - 31 to 60
Total	<u>48</u>	

CONTAINER SHIPS AND ANCILLARY EQUIPMENT

<u>Operator</u>	<u>Type</u>	<u>Availability (Days)</u>
American President Lines	2 C-4*	2 - 21 to 30
	3 C-6	3 - 21 to 30
American Export Lines, Inc.	3 C-5	1 - 1 to 10
		1 - 21 to 30
		1 - 31 to 60
Matson Navigation Co.	1 C-3	1 - 11 to 20
	3 C-4	1 - 11 to 20
		2 - 21 to 30
	3 T-2	1 - 11 to 20
		1 - 21 to 30
		1 - 31 to 40
Prudential Grace Lines, Inc.	4 C-4*	4 - 21 to 30
Pacific Far East Lines, Inc.	1 C-4	1 - 21 to 30
Sea-Land Service, Inc.	4 C-2C*	3 - 21 to 30
		1 - 31 to 60
	4 C-2X	4 - 21 to 30
	2 C-2L*	2 - 21 to 30
	4 T-3*	2 - 21 to 30
		2 - 31 to 60
	3 C-4JC*	3 - 21 to 30
	2 SL18	2 - 31 to 60
8 SL7	8 - 31 to 60	
Seatrain Lines, Inc.	2 C-4	1 - 11 to 20
		1 - 21 to 30
United States Lines, Inc.	8 C-6	4 - 21 to 30
		4 - 31 to 60
Total	<u>57</u>	

\* Indicates self-sustaining ships.

BARGE SHIP SYSTEMS AND ANCILLARY EQUIPMENT

<u>Operator</u>	<u>Type</u>	<u>Availability (Days)</u>
Central Gulf Lines, Inc.	1 C-9 (LASH)	1 - 21 to 30 (Available in November 1974)
Pacific Far East Lines, Inc.	3 C-8 (LASH)	3 - 21 to 30
Total	<u>4</u>	

RFP 900 COMMITMENT  
(Second Cycle)

WORLD WAR II BREAK-BULK SHIPS

<u>Operator</u>	<u>Type</u>	<u>Availability (Days)</u>
Waterman Steamship Corp.	2 C-4	2 - 1 to 10
Total	<u>2</u>	

POST WORLD WAR II BREAK-BULK SHIPS

American Export Lines, Inc.	6 C-3	1 - 11 to 20 3 - 21 to 30 2 - 31 to 60
	3 C-4	1 - 21 to 30 2 - 31 to 60
American President Lines, Ltd.	5 C-5	5 - 21 to 30
Lykes Bros. Steamship Co., Inc.	13 C-3	5 - 1 to 10 5 - 11 to 20 3 - 21 to 30
	8 C-4	2 - 1 to 10 2 - 11 to 20 4 - 21 to 30
Prudential Grace Lines, Inc.	6 C-4	6 - 21 to 30
States Steamship Company	5 C-4	3 - 21 to 30 2 - 31 to 60
Waterman Steamship Corp.	6 C-4	2 - 11 to 20 2 - 21 to 30 2 - 31 to 60
Total	<u>52</u>	

CONTAINER SHIPS AND ANCILLARY EQUIPMENT

<u>Operator</u>	<u>Type</u>	<u>Availability (Days)</u>
American President Lines, Ltd.	2 C-4*	2 - 31 to 60
	5 C-6	5 - 21 to 30
American Export Lines, Inc.	3 C-5	1 - 1 to 10
		1 - 21 to 30
		1 - 31 to 60
Matson Navigation Co.	1 C-3	1 - 11 to 20
	3 C-4	1 - 11 to 20
		2 - 21 to 30
	3 T-2	1 - 11 to 20
		1 - 21 to 30
	1 - 31 to 40	
Prudential Grace Lines, Inc.	4 C-4*	4 - 21 to 30
Pacific Far East Lines, Inc.	1 C-4	1 - 21 to 30
Sea-Land Service, Inc.	5 C-2C*	5 - 21 to 30
	1 T-2*	1 - 21 to 30
	2 C-2L*	2 - 21 to 30
	4 T-3*	2 - 21 to 30
		2 - 31 to 60
	3 C-4JC*	1 - 21 to 30
		2 - 31 to 60
	1 FSX	1 - 21 to 30
	8 SL7	8 - 31 to 60
	1 MIV	1 - 21 to 30
Seatrains Lines, Inc.	1 C-4	1 - 21 to 30
United States Lines, Inc.	8 C-6	4 - 21 to 30
		4 - 31 to 60
Total	<u>56</u>	

\* Indicates self-sustaining ships.

BARGE SHIP SYSTEMS AND ANCILLARY EQUIPMENT

<u>Operator</u>	<u>Type</u>	<u>Availability (Days)</u>
Central Gulf Lines, Inc.	2 C-9 (LASH)	1 - 21 to 30 1 - 31 to 60
Pacific Far East Lines, Inc.	3 C-8 (LASH)	3 - 21 to 30
Total	<u>5</u>	

APPENDIX IV

FLEET TON-MILE COMPARISONS FOR U.S. FLAG OPERATORS  
PARTICIPATING IN THE SEALIFT READINESS PROGRAM  
BASED ON RFP 900 (First Cycle)

APPENDIX IV

FLEET TON-MILE COMPARISONS FOR U.S. FLAG OPERATORS  
PARTICIPATING IN THE SEALIFT READINESS PROGRAM  
BASED ON RFP 900 (First Cycle)

Appendix IV develops annual maximum ton-mile and cube-mile capacities for each operator in the Sealift Readiness Program.

The calculations are made for comparison purposes and are based on the formula:

- TM/CM = S x T x K x C
- TM/CM = Deadweight ton nautical miles/cube nautical miles
- S1 = Seadays (165 per year per conventional ship)
- S1 = Seadays (220 per year per container ship)
- T = Time, 24 hours
- K = Maximum nautical miles per hour
- C1 = DWT Capacity
- C2 = Cube Capacity (based on gross tons)

No reductions have been calculated for stowage factors and the highest designed speeds have been used.



**AMERICAN PRESIDENTS AND  
AMERICAN MAIL LINE**

No. of Ships	Type	Desig.	Spd. App.	Gross Tonnage	DWT	Com. Vessels mitted	Time Com. Vessels Available	Annual Max. Cube/Mile Capacity (Gross Tons)	Annual Max. Ton/Mile Capacity By Ship Design	Annual Max. Cube/Mile Capacity (Gross Tons) By Fleet	Annual Max. Ton/Mile Capacity By Fleet	Annual Max. Cube/Mile Capacity (Gross Tons) of Committed Ships	Annual Max. Ton/Mile Capacity of Committed Ships
3	Cont/Seif	C-100	20	6,800	17,400			1,774,080,000	1,837,440,000	5,322,440,000	5,312,320,000		
13	"/BSelf												
	S-C6	C669	23	17,800	17,500	Cont	3-21 to 30	2,161,632,000	2,125,230,000	10,808,161,000	10,226,000,000		
	S-C6	C685	23	21,400	20,700			4,598,516,000	2,513,808,000	10,393,474,000	10,055,232,000		
	S-C6	C61x	20	16,500	19,800			1,742,400,000	2,090,880,000	6,969,600,000	8,363,520,000		
9	C-4												
	2 CA	C410	20	13,200	14,200	Cont	3-21 to 30	1,393,920,000	1,499,720,000	2,787,840,000	1,990,040,000		
	4	C41P	20	8,900	13,800	11B2-C4	3-1 to 10	2,044,800,000	4,092,480,000	2,819,520,000	4,171,840,000		
	3	C41R	20	9,000	13,400	11B2-C4	3-1 to 10	2,124,800,000	1,061,280,000	2,118,400,000	3,181,840,000		
	5	C575	20.8	13,400	22,200	11B5-C5	3-11 to 20	1,309,431,200	1,828,369,000	6,250,136,000	9,127,840,000		
30									total's	27,781,280,000	34,245,640,000	18,648,352,000	22,816,968,000
									Percent	Capacity	Committed	39	52

\*Approved for sale to American Export

CENTRAL GULF LINES, INC.

No. of Ships	Type	Vesig. No.	Desig. No. of Vessels	Gross Tonnage	Age	Speed	Time of Crew	Annual Max. Capacity (Gross Tons) By Ship Design	Annual Max. Ton Mile Capacity By Ship Design	Annual Max. Capacity (Gross Tons) By Fleet	Annual Max. Ton Mile Capacity By Fleet	Annual Max. Capacity (Gross Tons) of Committed Ships	Annual Max. Ton Mile Capacity of Committed Ships
2*	LASH	C981	22	74	32,000	89,100	Barge	1-C9	21 to 30	9,717,120,000	4,514,846,000	7,434,240,000	9,083,711,000
2									Percent	Capacity	Committed	Open	Open

\*in service November 1974.  
 \*\*Not in service during full period of 900 (U.S. Tons)

LYKES BROTHERS STEAMSHIP CO.

No. of Ships	Type	Desig.	Type	Spec.	Age	Gross Tonnage	No. of Com- mitted Vessels	Time Com- mitted Available	Annual Max. Cube/Mile Capacity (Gross Tons) By Ship Design	Annual Max. Ton/Mile Capacity By Ship Design	Annual Max. Cube/Mile Capacity (Gross Tons) By Fleet	Annual Max. Ton/Mile Capacity By Fleet	Annual Max. Cube/Mile Capacity (Gross Tons) of Committed Ships	Annual Max. Ton/Mile Capacity of Committed Ships
3	SEABEE	C882	20.0	72/73	21,600	36,300			2,280,960,000	4,055,040,000	6,862,480,000	12,165,120,000		
13	C5	C537	18	60/62	11,800	14,200*			81,104,000	1,012,176,000	10,934,352,000	13,138,288,000		
12	C6	C466	20	65/68	10,700	14,600	PA 11 S C BB	2-1 to 10 2-11 to 20 4-21 to 30	87,440,000	1,156,220,000	10,169,280,000	13,875,840,000	6,776,520,000	9,250,560,000
13	C3	C337	18	63	9,300	12,600	PA 11 13 C3 BB	5-1 to 10 5-11 to 20 8-21 to 30	662,904,000	898,428,000	8,617,752,000	11,675,664,000	8,617,752,000	11,675,664,000
41									Totals		36,564,264,000	50,874,912,000	15,397,272,000	20,926,224,000
									Percent		Capacity	Committed	42	41

MATSON NAVIGATION CO.

No. of Ships	Type	Devic.	Spd.	Age	Gross Tonnage	MAT Approx.	No. of Com- mitted Vessels	Time Com- mitted Available	Annual Max. Cube/ Mile Capacity (Gross Tons) By Ship Design	Annual Max. Ton/ Mile Capacity of Committed Ships	Annual Max. Cube/ Mile Capacity (Gross Tons) By Fleet	Annual Max. Ton/ Mile Capacity of Committed Ships	Annual Max. Ton/ Mile Capacity of Committed Ships
2	Cont/ M-S	--	33	70	33,700	27,000	3-11 to 3-21	2,875,128,000	1,028,880,000	3,236,226,000	6,372,760,000	880,624,000	2,382,336,000
2	RO/RO	--	35	73	33,200	34,100	3-11 to 3-21	2,096,480,000	1,861,000,000	4,012,800,000	3,772,490,000	880,624,000	2,382,336,000
4	Cont M-S	x C6	37	44/46	17,000	18,000	3-11 to 3-31	1,525,920,000	1,615,680,000	6,103,680,000	6,372,760,000	880,624,000	2,382,336,000
1	Cont M-S	x C3	36.5	44	32,500	31,400	3-11 to 3-31	1,089,000,000	880,624,000	1,089,000,000	1,089,000,000	880,624,000	2,382,336,000
1	RO/RO	--	37	72	31,100	34,800	3-11 to 3-31	996,336,000	1,128,448,000	996,336,000	1,128,448,000	880,624,000	2,382,336,000
3	Cont M-S	x 1 2E 3b	36	44	7,600	9,400	3-11 to 3-31	671,048,000	794,112,000	1,976,144,000	2,187,139,000	880,624,000	2,382,336,000
13							Totals	10,884,216,000	11,334,288,000	21,334,288,000	21,334,288,000	7,992,904,000	8,110,000,000
							Percent		Capacity	Committed		36	36

PACIFIC FAR EAST LINES, INC.

No. of Ships	Type	Design	Age	Gross Tonnage	Approx. DWT	No. of Vessels Committed	Time of Availability	Annual Max. Capacity By Ship Design		Annual Max. Capacity By Fleet		Annual Max. Capacity of Committed Ships	
								Cube/Mile (Gross Tons)	Ton Mile Capacity	Cube/Mile (Gross Tons)	Ton Mile Capacity	Cube/Mile (Gross Tons)	Ton Mile Capacity
6	LASH	CB-1	22.5	26,400	29,700	3-CB	3-21 to 30	4,136,320,000	3,328,360,000	18,817,920,000	21,170,160,000	9,408,960,000	10,585,080,000
2	Cont N/S	Ext's	17	11,600	12,200	1-C6	3-21 to 30	1,023,264,000	1,095,072,000	2,406,528,000	2,190,144,000	1,023,264,000	1,095,072,000
8								Totals		20,864,448,000	23,360,304,000	10,432,224,000	11,680,152,000
								Percent		Capacity	Committed	50	50

PRUDENTIAL GRACE LINES, INC.

No. of Ships	Type	Design	Mo. of Vessels	Time Committed	Annual Max. Capacity (Gross Tons)	Annual Max. Capacity (Gross Tons) By Fleet	Annual Max. Capacity (Gross Tons) of Committed Ships	Annual Max. Capacity (Gross Tons) of Committed Ships	Annual Max. Ton/Mile Capacity By Fleet	Annual Max. Ton/Mile Capacity of Committed Ships
3	LASH	C8S1	22.5	70/71	29,800	1,340,240,000	9,408,460,000	10,620,720,000	2,440,479,600	4,989,600,000
2	C4	C4A5	20.0	66	23,600	1,120,200,000	1,812,074,000	2,440,479,600	5,487,520,000	4,989,600,000
6	C4	C4A5	20.0	66/67	23,600	997,920,000	1,439,860,000	1,439,860,000	3,687,940,000	4,989,600,000
4	Cont S	C4A9	20.0	63/64	8,700	1,177,160,000	1,487,640,000	1,487,640,000	3,674,880,000	3,674,880,000
2	C4	C4A9	20.0	62/63	14,300	99,920,000	1,495,840,000	1,495,840,000	2,263,120,000	4,688,640,000
17						Totals	22,324,896,000	24,788,659,600	Committed	8,464,460,000
						Percent	Capacity	Committed	37	34

\*\* CLASS Cellular

SEA LAND SERVICE, INC.

No. of Ships	Ship Type	Design.	Spd.	Avs.	Gross Apprx.	G.T.	No. of Vessels Committed	Time of Vessels Committed	By Ship Design		By Fleet		Annual Max. Capacity of Committed Ships	
									Annual Max. Capacity (Gross Tons)	Annual Max. Ton Mile Capacity	Annual Max. Capacity (Gross Tons)	Annual Max. Ton/Mile Capacity	Annual Max. Capacity (Gross Tons)	Annual Max. Ton/Mile Capacity
11	Cont/N-Sea	8 SL 7	13	73	11,100	27,000	8	31 to 60	4,809,024,000	57,490,112,000	38,472,192,000	57,490,112,000	38,472,192,000	57,490,112,000
		3 SL 18	23.0	73	23,700	27,000	2	31 to 60	3,428,880,000	8,639,184,000	9,836,140,000	5,756,256,000	6,557,760,000	
16	Cont SeaIF	2-C2L	15	44	10,400	7,600	2	21 to 30	586,080,000	1,647,160,000	1,172,160,000	1,647,160,000	1,172,160,000	
		4-T3	15.5	41-42	14,400	15,700	4	21 to 30	1,284,880,000	5,368,704,000	5,139,552,000	5,368,704,000	5,139,552,000	
		3-C4JC	17	44-45	18,000	15,900	1	21 to 30	1,427,184,000	4,847,040,000	4,281,552,000	4,847,040,000	4,281,552,000	
		6-C2C	15.5	43	9,000	7,800	4	21 to 30	638,352,000	4,419,160,000	3,830,112,000	2,946,240,000	2,553,408,000	
		1 T2	14.5	43	7,800	9,300	1	31 to 60	712,008,000	597,168,000	712,008,000	597,168,000	712,008,000	
25	Cont/N-Sea	6 C4J	17	44-45	17,900	15,900	6	21 to 30	1,427,184,000	4,740,224,000	8,563,104,000	8,563,104,000	8,563,104,000	
		8 C4 JZ	17	44	11,500	9,300	8	21 to 30	834,768,000	8,257,820,000	6,678,144,000	6,678,144,000	6,678,144,000	
		1 C4K	17	45	11,300	10,000	1	21 to 30	897,600,000	1,014,188,000	897,600,000	897,600,000	897,600,000	
		4 C2K	15.5	43-44	8,600	10,800	4	21 to 30	883,872,000	2,813,296,000	3,535,688,000	2,813,296,000	3,535,688,000	
		3 T2W	16.0	44	11,600	13,000	3	21 to 30	1,098,240,000	2,939,404,000	3,294,720,000	2,939,404,000	3,294,720,000	
		3T2/C	14.5	43	11,400	8,700	3	21 to 30	666,072,000	2,618,352,000	1,998,216,000	2,618,352,000	1,998,216,000	
1	30/80	Exc3	16.5	40	10,300	10,600	1	31 to 60	923,472,000	897,336,000	923,472,000	897,336,000	923,472,000	
53								Totals	110,992,448,000	89,334,960,000	80,671,008,000	80,671,008,000	61,712,112,000	
								Percent	Capacity	Committed	Committed	72	69	

SEATRAN LINES, INC.

No. of Ships	Type	Desig.	Svl. Age	Gross Tonnage	DMT	No. of Vessels Committed	Time Committed	Annual Max. Capacity (Gross Tons) By Ship Design		Annual Max. Ton/Mile Capacity of Fleet	Annual Max. Capacity (Gross Tons) of Committed Ships	
								Cube/Mile Capacity	Ton/Mile Capacity		Cube/Mile Capacity	Ton/Mile Capacity
2	Cont N/S	Exc 4	17.0	46	14,400	Cont 2	1-11 to 20 1-21 to 30	1,292,344,000	4,811,136,000	5,170,176,000	2,403,568,000	2,283,088,000
4								Percent	Capacity	Committed	50	50

STATFS STEAMSHIP CO.

No. of Ships	Type	No. of Vessels	Gross Approx. MT	Desig. No. of Vessels	Time Committed	Annual Max. Capacity (Gross Tons) By Ship Design	Annual Max. Ton/Mile Capacity By Ship Design	Annual Max. Capacity (Gross Tons) By Fleet	Annual Max. Ton/Mile Capacity By Fleet	Annual Max. Capacity (Gross Tons) of Committed Ships	Annual Max. Ton/Mile Capacity of Committed Ships
2410		20	17,900	62	14,300	1,021,680,000	1,132,560,000	4,086,720,000	4,530,000,000	4,280,760,000	5,920,200,000
2409		23	9,400	68	13,000	896,152,000	1,114,040,000	4,280,760,000	5,920,000,000	4,280,760,000	5,920,200,000
							Total	8,367,480,000	10,450,000,000	4,280,760,000	5,920,200,000
							Percent	Capacity	Committed	51	56

UNITED STATES LINES, INC.

No. of Ships	Type	Design	Sp. No.	Age	Gross Tonnage	MT	No. of Vessels Committed	Time Committed	Annual Max. Capacity (Gross Tons) By Ship Design	Annual Max. Capacity (Gross Tons) By Fleet	Annual Max. Ton/Mile Capacity By Fleet	Annual Max. Capacity (Gross Tons) of Committed Ships	Annual Max. Ton/Mile Capacity of Committed Ships
16	Cont-N-Sea						8	4-21 to 30	1,676,240,000	13,147,840,000	13,009,920,000	13,147,840,000	13,009,920,000
	B-C6				15,400	8,400	4	31 to 60	2,469,080,000	18,152,640,000	19,008,000,000		
	B-C7				14,100	8,000							
16									Totals	31,500,480,000	32,017,920,000	32,147,840,000	32,017,920,000
									Percent	Capacity	Committed	42	40

WATERMAN STEAMSHIP CORP.

No. of Ships	Type	Desig.	Spd. AGE	Gross Tonnage	DWT	No. of Vessels Committed	Time of Availability	By Ship Design		By Fleet		Annual Max. Ton/Mile Capacity of Committed Ships	Annual Max. Ton/Mile Capacity of Committed Ships
								Annual Max. Cube/Mile Capacity (Gross Tons)	Annual Max. Ton/Mile Capacity	Annual Max. Cube/Mile Capacity (Gross Tons)	Annual Max. Ton/Mile Capacity		
11	CA	EMC*	17	10,500	15,500	11	1-1 to 10	1,043,660,000	1,413,720,000	2,086,920,000	2,086,920,000	2,086,920,000	
2						BB	1-11 to 20						
6		C61A	20	12,500	13,400	11	1-21 to 30	1,061,280,000	5,940,000,000	6,367,680,000	1,980,000,000	2,122,560,000	
3		C61F	20	12,400	14,300	BB	1-31 to 60	1,132,560,000	2,946,240,000	3,397,680,000	1,934,064,000	3,188,592,000	
4	C3	C3A2	16.5	7,400	12,200	11	1-1 to 10	797,148,000	1,934,064,000	3,188,592,000	1,934,064,000	3,188,592,000	
						BB	1-11 to 20						
10	LASH	C981	22	30,000	39,100		1-31 to 60	4,541,856,000	3,484,800,000	4,541,856,000			
15								Totals	15,718,824,000	19,582,728,000	5,327,784,000	7,398,072,000	
								Percent	Capacity	Committed	33	37	

not yet in service.

**APPENDIX V**

**VESSEL AVAILABILITY  
UNDER SEALIFT READINESS PROGRAM  
(First Cycle)  
RFP 900, 10 July 1974**

APPENDIX V

VESSEL AVAILABILITY  
UNDER SEALIFT READINESS PROGRAM  
(First Cycle)  
RFP 900, 10 July 1974

Number	Company	Designation	Speed	Gross Size	Annual
					Max. Ton Mile Capacity (DWT)
		<u>1-10 Day Period</u>			
1	AEIL	C573 Cont N/S	20	17,900	1,731,840,000
2	APL	C41P PW BB	20	8,900	2,185,920,000
2	APL	C41H PW BB	20	9,000	2,122,560,000
2	Lykes	C466 PW BB	20	10,700	2,312,640,000
5	Lykes	C337 PW BB	18	9,300	4,490,640,000
1	Waterman	EXC4 WW BB	17	10,500	1,043,460,000
1	Waterman	C3 WW BB	16.5	7,400	797,148,000
14	TOTAL	13 Break-bulk, 1 Intermodal Ship (0 Self-sustaining)			14,684,208,000

<u>11-20 Day Period</u>					
1	AEIL	C346 PW BB	18.5	10,600	923,076,000
5	APL	C575 PW BB	20.8	15,900	9,142,848,000
2	Lykes	C466 PW BB	20	10,700	2,312,640,000
5	Lykes	C337 PW BB	18	9,300	4,490,640,000
1	Matson	XC4 CONT N/S	17	17,000	1,615,680,000
1	Matson	XC3 CONT N/S	16.5	12,500	680,624,000
1	Matson	XT2 CONT N/S	16	7,600	794,112,000
1	Seatrain	XC4 CONT N/S	17	13,400	1,292,544,000
1	Waterman	XC4 WW BB	17	10,500	1,043,460,000
1	Waterman	XC4 WW BB	16.5	7,400	797,148,000
19	TOTAL	15 Break-bulk, 4 Intermodal Ships (0 Self-sustaining)			23,292,772,000

<u>21-30 Day Period</u>					
1	AEIL	C573 CONT N/S	20	17,900	1,731,840,000
3	AEIL	C346 PW BB	18.5	10,600	2,769,228,000
1	AEIL	C3SA3 WW BB	16.5	6,400	627,264,000
3	APL	C669 CONT N/S	23	17,800	6,375,600,000
2	APL	C41Q CONT S	20	13,200	2,990,040,000
1	Cent. Gulf	C981 Barge	22	32,000	4,514,856,000
4	Lykes	C466 PW BB	20	10,700	4,625,280,000
3	Lykes	C337 PW BB	18	9,300	2,694,384,000
2	Matson	XC4 CONT N/S	17	17,000	3,231,360,000
1	Matson	XT2 CONT N/S	16	7,600	794,112,000
3	PFEL	C881 Barge	22.5	26,400	10,585,080,000
1	PFEL	EXC4 CONT N/S	17	11,400	1,095,072,000
5	Pru-Grace	C465 PW BB	20	9,300	4,989,600,000

21-30 Day Period Cont

4	Pru-Grace	C449 CONT S	20	11,100	3,674,880,000
2	Sea Land	C2L CONT S	15	10,400	1,172,160,000
2	Sea Land	T3 CONT S	15.5	16,400	2,569,760,000
3	Sea Land	C4JC CONT S	17	18,000	4,281,552,000
3	Sea Land	C2C CONT S	15.5	9,000	1,915,056,000
4	Sea Land	C2X CONT N/S	15.5	8,600	3,535,488,000
1	Seatrain	EXC4 CONT N/S	17	13,400	1,292,544,000
3	States	C469 PWV BB	23	9,400	3,552,120,000
4	U.S. Lines	C61W CONT N/S	20	15,800	6,504,960,000
1	Waterman	C41A PWV BB	20	12,500	1,061,280,000
1	Waterman	C3A2 WV BB	16.5	7,400	797,148,000
<u>58</u>	<b>TOTAL</b>	21 Break-bulk, 37 Intermodal Ships (20 Self-sustaining)			<u>77,380,664,000</u>

31-40 Day Period

1	Matson	XT2E CONT N/S	16	7,600	794,112,000
<u>1</u>	<b>TOTAL</b>	0 Break-bulk, 1 Containership			<u>794,112,000</u>

31-60 Day Period

1	AEIL	C573 CONT N/S	20	17,900	1,731,840,000
2	AEIL	C346 PWV BB	18.5	10,600	1,846,152,000
2	AEIL	C3SA3 WV BB	16.5	6,400	1,254,528,000
8	Sea Land	SL-7 CONT N/S	33	41,100	38,472,192,000
2	Sea Land	SL-18 CONT N/S	23	23,700	6,557,760,000
2	Sea Land	T3 CONT S	15.5	16,400	2,569,760,000
1	Sea Land	C2C CONT S	15.5	9,000	638,352,000
2	States	C469 PWV BB	23	9,400	2,368,080,000
4	U.S. Lines	C61W CONT N/S	20	15,800	6,504,960,000
1	Waterman	C41A PWV BB	20	12,500	1,061,280,000
1	Waterman	C3A2 WV BB	16.5	7,400	797,148,000
<u>26</u>	<b>TOTAL</b>	8 Break-bulk, 18 Intermodal Ships (3 Self-sustaining)			<u>63,802,052,000</u>

<u>118</u>	<b>TOTAL</b>	Ships 57 Break-bulk 61 Intermodal Ships (23 Self-sustaining)			179,953,808,000
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APPENDIX VI  
LINER SERVICE  
(General Cargo)  
TRADE ROUTE ANALYSIS

APPENDIX VI

LINER SERVICE  
(General Cargo)  
TRADE ROUTE ANALYSIS

District	T.R. Number	Operator	Participating Sealift		Subsidized	Sailings Required		Major Liner Export Commodities by Weight	Major Liner Import Commodities by Weight	U.S. Flag U.S. Flag by Weight by Weight	U.S. Flag U.S. Flag by Weight by Weight
			Readiness	Subsidized		Min.	Max.				
U. S. Atlantic/ East Coast South America	1	Moore-McCormack	No	Yes	Yes	50	80	Iron & Steel Plates (132)	Coffee (342)	43	25
U. S. Atlantic/ West Coast South America	2	Prudential-Graeco	Yes	Yes	Yes	48	62	Motor Vehicles & Parts (162)	Copper & Copper Alloys (252)	26	25
U. S. Atlantic/ Caribbean	4	Pro-Grace Sea Land Seatrain	Yes Yes Yes	Yes No No	Yes No No	24 -- --	34 -- --	Paper & Paperboard (92)	Coffee (162)	15	02
U. S. North Atlantic/ Western Europe	5-7-8-9	Seatrain Sea Land U. S. Lines American Export	Yes Yes Yes Yes	No No No a	No No No a	-- -- -- --	-- -- -- --	Synthetics Plastics, etc. (92)	Iron or Steel Bars (132)	26	26
U. S. North Atlantic/ Scandinavia & Baltic	6	Sea Land American Export U. S. Lines	Yes Yes Yes	No a No	No a No	-- -- --	-- -- --	Tobacco (82)	Paper & Paperboard (272)	6	5
U. S. North Atlantic/ Mediterranean	10	American Export Prudential-Graeco Sea Land	Yes Yes Yes	Yes Yes No	Yes Yes No	76 34 --	102 43 --	Petroleum Products (92)	Vegetables (142)	31	23
U. S. South Atlantic/ Western Europe	11	Seatrain Sea Land American Export U. S. Lines	Yes Yes Yes Yes	No No a No	No No a No	-- -- -- --	-- -- -- --	Paper & Paperboard (262)	Iron & Steel Bars (302)	9	4
U. S. Atlantic/ Far East	12	American Export American President Waterman U. S. Lines Sea Land Seatrain	Yes Yes Yes Yes Yes Yes	Yes Yes Yes No No No	Yes Yes Yes No No No	24 -- -- -- -- --	30 -- -- -- -- --	Coal, Coke, etc. (42)	Iron & Steel Plates & Sheets (132)	26	11
U. S. S. Atlantic and Gulf/Med.	13	Lykes American Export Prudential-Graeco Sea Land	Yes Yes Yes Yes	Yes Yes Yes No	Yes Yes Yes No	42 -- -- --	48 -- -- --	Paper & Paperboard (122)	Iron & Steel Bars, Rods, etc. (122)	18	07

Description	T.B. Number	Participating Sealift Readiness		Operator	Subsidized	Sailings Required		Major Liner Export Commodities by Weight	Major Liner Import Commodities by Weight	U.S. Flag U.S. Flag	U.S. Flag U.S. Flag
		Yes	No			Min.	Max.				
U. S. Atlantic & Gulf/N. Africa	14			Delta Farrell	Yes	Yes	20	Wheat, unmilled (192)	Coffee (332)	?	?
U. S. Atlantic/S. & East Africa	15A			Farrell Moore-McCormack	Yes	Yes	20	Road Motor Vehicles (132)	Coffee (302)	?	?
U. S. Gulf So. & East Africa	15B			Lykes	Yes	Yes	18	Rice (362)	Coffee(292)	?	?
U. S. Atlantic & Gulf/Australia & New Zealand	16			Farrell	No	Yes	16	Crude Minerals (072)	Wheat (512)	13	09
U. S. Atlantic Gulf & Pacific/Indonesia, Malaysia, & Singapore	17			American President	Yes	Yes	12	Rice (172)	Rubber (562)	31	15
U. S. Atlantic & Gulf/India Persian Gulf & Red Sea	18			American Export Waterman	Yes	Yes	24	Fertilizer(242)	Textiles (472)	20	15
U. S. Gulf/Caribbean	19			Delta Lykes Farrell	No	Yes	--	Inorganic Chem. (172)	Coffee (312)	06	07
U. S. Gulf/East Coast South America	20			Delta	No	Yes	43	Inorganic Chem. (152)	Coffee (372)	17	23
U. S. Gulf/West Europe	21			Lykes Sea Land Seatrain FF Waterman	Yes	Yes	24	Paper & Paperboard (112)	Iron & Steel Bars (132)	13	12
U. S. Gulf/Far East	22			Waterman Lykes Central Gulf Seatrain FF Sea Land	Yes	Yes	18	Fertilizer (342)	Iron & Steel (302)	17	08
U. S. Pacific/Caribbean	23			Prudential-Grace	Yes	Yes	25	Pulpe & Waste-paper (212)	Coffee (402)	25	01

Destination	T.R. Number	Participating Sealift Readiness		Sailings Required		Major Liner Export Commodities by Weight	Major Liner Import Commodities by Weight	Export by U.S. Flag		Import by U.S. Flag		
		Operator	Subsidized	Min.	Max.			by Weight	by Weight	by Weight	by Weight	
U. S. Pacific/ East Coast SA	24	Prudential-Grace	Yes	Yes	25	42	Pulps & Waste-paper (29%)	Coffee (66%)	43		29	
U. S. Pacific/ West Coast Mex. Cent & SA	25	Prudential-Grace	Yes	Yes	25	42	Pulps & Waste-paper (12%)	Ores & Concentrates (Nonferrous) (30%)	36		36	
U. S. Pacific/ West Europe	26	Seatrain Sea Land U. S. Lines	Yes	No	--	--	Fruits & Nuts (12%)	Iron & Steel Bars (11%)	21		02	
U. S. Pacific/ Aust. New Zealand	27	Pacific Far East	Yes	Yes	12	16	Wood Shaped (30%)	Wool (30%)	17		34	
U. S. Pacific/ India Persia, Red Sea	28						Fertilizers (11%)	Textiles (54%)	16		08	
U. S. Pacific/ Far East	29	American President Pacific Far East U. S. Lines Seatrain Sea Land	Yes	Yes	32	54	Fertilizers (09%)	Iron & Steel Plates (14%)	26		27	
U. S. Gulf/ West Coast, S.A.	31	Lykes	Yes	Yes	30	36	Wheat (19%)	Feeding Stuff for Animals (37%)	33		16	
								Weighted Average		18	12.1	

A. U. S. Department of Commerce, Maritime Administration, Essential U.S. Foreign Trade Routes, December 1969.  
 B. U. S. Department of Commerce, Maritime Administration, Annual Report 1973.  
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\*Subsidized but not on that route. If foreign flag \*\* limited service.

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