

AU-A138 108

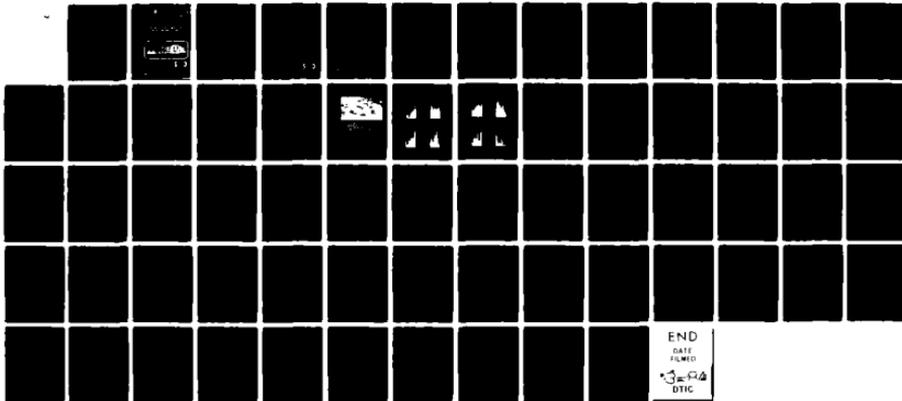
MOBILIZATION AND DEFENSE MANAGEMENT TECHNICAL REPORTS
SERIES THE PRESERVATION OF INDUSTRIAL COLL OF THE ARMED
FORCES WASHINGTON DC D G KELLER ET AL. APR 83
NDU/ICAF-83/042

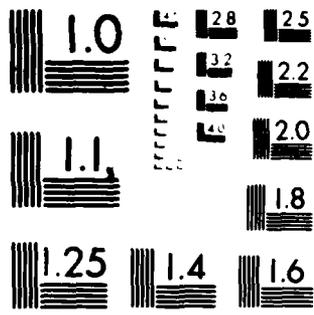
1/1

UNCLASSIFIED

F/G 15/3

NL





MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A

MSD#28

2

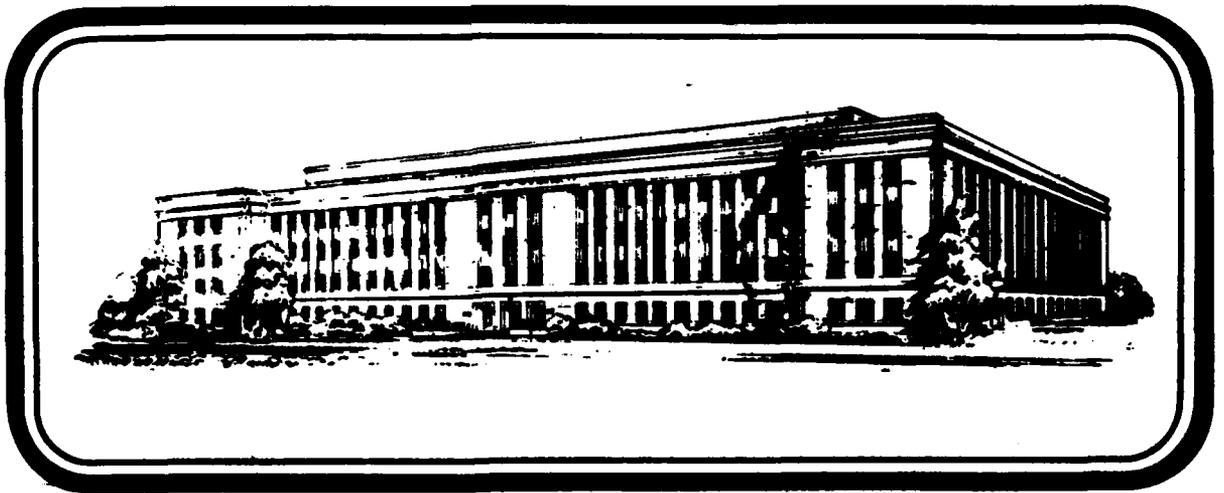


NATIONAL DEFENSE UNIVERSITY

**MOBILIZATION AND DEFENSE MANAGEMENT
TECHNICAL REPORTS SERIES**

**THE PRESERVATION REQUIREMENTS FOR THE
U.S. SHIPBUILDING MOBILIZATION BASE**

ADA138108



DISTRIBUTION STATEMENT A
Approved for public release;
Distribution Unlimited

DTIC
ELECTE
FEB 17 1984
S B D

INDUSTRIAL COLLEGE OF THE ARMED FORCES

DTIC FILE COPY

84 02 16 021

| REPORT DOCUMENTATION PAGE | | READ INSTRUCTIONS BEFORE COMPLETING FORM | |
|--|---------------------------------|--|-------------------------|
| 1. REPORT NUMBER NDU/ICAF | 2. GOVT ACCESSION NO. 83/042 | 3. RECIPIENT CATALOG NUMBER DA-4738 | 4. REPORT NUMBER 128 |
| 4. TITLE (and Subtitle) THE PRESERVATION REQUIREMENTS FOR THE U.S. SHIPBUILDING MOBILIZATION BASE | | 5. TYPE OF REPORT & PERIOD COVERED MSP #28, AY 82/83 | |
| 7. AUTHOR CAPT DOUGLAS G. KELLER, USN; CAPT THOMAS E. KILPATRICK, USN; CDR PAUL R. DYKEMAN, USN; DON CDR JOHN S. BEACHY, USN; MR. ARTHUR T. MCCLELLAND, | | 8. CONTRACT OR GRANT NUMBER(s) | |
| 9. PERFORMING ORGANIZATION NAME AND ADDRESS INDUSTRIAL COLLEGE OF THE ARMED FORCES FORT LESLEY J. MC NAIR WASHINGTON, DC 20319 | | 10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS | |
| 11. CONTROLLING OFFICE NAME AND ADDRESS INDUSTRIAL COLLEGE OF THE ARMED FORCES FORT LESLEY J. MC NAIR WASHINGTON, DC 20319 | | 12. REPORT DATE APRIL 1983 | |
| | | 13. NUMBER OF PAGES 53 | |
| 14. MONITORING AGENCY NAME & ADDRESS (if different from Controlling Office) NATIONAL DEFENSE UNIVERSITY FORT LESLEY J. MC NAIR WASHINGTON, DC 20319 | | 15. SECURITY CLASS. of this report UNCLASSIFIED | |
| | | 15a. DECLASSIFICATION/DOWNGRADING SCHEDULE | |
| 16. DISTRIBUTION STATEMENT (of this Report) UNLIMITED APPROVAL FOR PUBLIC RELEASE | | | |
| 17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report) N/A | | | |
| 18. SUPPLEMENTARY NOTES N/A | | | |
| 19. KEY WORDS (Continue on reverse side if necessary and identify by block number) N/A | | | |
| 20. ABSTRACT (Continue on reverse side if necessary and identify by block number) This paper investigates the factors which have contributed to the decline of the U.S. shipbuilding mobilization base, examines current government plans and policies which impact the industry, and proposes several options to revitalize shipbuilding in the U.S. | | | |

THE INDUSTRIAL COLLEGE OF THE ARMED FORCES
NATIONAL DEFENSE UNIVERSITY

MOBILIZATION STUDIES PROGRAM REPORT

THE PRESERVATION REQUIREMENTS FOR THE U.S.
SHIPBUILDING MOBILIZATION BASE

by

CAPT DOUGLAS G. KELLER, USN
CAPT THOMAS E. KILPATRICK, USN
CDR PAUL R. DYKEMAN, USN
CDR JOHN S. BEACHY, USN
MR. ARTHUR T. MCCLELLAND, DON

A RESEARCH REPORT SUBMITTED TO THE FACULTY
IN
FULFILLMENT OF THE RESEARCH
REQUIREMENT

RESEARCH SUPERVISOR: CAPT LAURENCE KINDBOM, USCG

THE INDUSTRIAL COLLEGE OF THE ARMED FORCES

APRIL 1983

DTIC
ELECTE
S FEB 17 1984 D
B

DISCLAIMER-ABSTAINER

This research report represents the views of the authors and does not necessarily reflect the official opinion of The Industrial College of the Armed Forces, the National Defense University, or the Department of Defense.

This document is the property of the United States Government and is not to be reproduced in whole or in part without permission of the Commandant, The Industrial College of the Armed Forces, Fort Lesley J. McHair, Washington, D.C. 20319



| | |
|--------------------|-------------------------------------|
| Accession For | |
| NTIS GRA&I | <input checked="" type="checkbox"/> |
| DTIC TAB | <input type="checkbox"/> |
| Unannounced | <input type="checkbox"/> |
| Justification | |
| By _____ | |
| Distribution/ | |
| Availability Codes | |
| Dist | Avail and/or Special |
| A-1 | |

**ABSTRACT OF STUDENT RESEARCH REPORT
INDUSTRIAL COLLEGE OF THE ARMED FORCES**

| | |
|--|--|
| NAME OF RESEARCHER (S) CAPT DOUGLAS G. KELLER, USN CAPT THOMAS E. KILPATRICK, USN CDR PAUL R. DYKEMAN, USN CDR JOHN S. BEACHY, USN MR. ARTHUR T. MCCLELLAND, DON | TITLE OF REPORT THE PRESERVATION REQUIREMENTS FOR THE U.S. SHIPBUILDING MOBILIZATION BASE |
| SECURITY CLASSIFICATION OF REPORT UNCLASSIFIED | REPORT NUMBER M 28 |

ABSTRACT

Problem Statement: This paper investigates the factors which have contributed to the decline of the U.S. shipbuilding mobilization base, examines current government plans and policies which impact the industry, and proposes several options to revitalize shipbuilding in the U.S.

Findings/Conclusions: Preservation of the U.S. shipbuilding industry is a complex problem which will require the joint cooperation and support of the federal government, shipbuilding and shipping industries, and the maritime labor unions to solve. The leaders of government and the American public must be alerted to the danger of permitting the shipbuilding industry to decay any further. A national maritime program is needed which will adequately protect the U.S. shipbuilding industry from further deterioration caused by several factors over the past two decades and aggravated by current economic conditions. The priority of the program should be commensurate with its importance to national security.

Recommendations: A national maritime program is recommended which contains the following provisions:

- a. The U.S. should pursue bilateral and multi-lateral trade agreements which include cargo reservations for U.S. built flag ships.
- b. The U.S. should promote the construction of naval ships for sale to allied nations.
- c. U.S. shipping companies should be required to spend a prescribed percentage of their construction and modernization budget in U.S. shipyards to qualify for operating differential subsidies and cargo reservations.

THIS ABSTRACT IS UNCLASSIFIED

TABLE OF CONTENTS

| Chapter | Page |
|---|------|
| Disclaimer-Abstainer | ii. |
| Abstract | iii. |
| Table of Contents | iv. |
| List of Illustrations | v. |
| Executive Summary | vi. |
| | |
| I Introduction | 1. |
| Purpose | 1. |
| World War II Shipbuilding Base | 1. |
| Current Shipbuilding Base | 4. |
| Trends in U.S. Shipbuilding | 6. |
| Notes | 11. |
| | |
| II Administration, Policy and Legislative Support | 12. |
| Previous Administrative Programs | 12. |
| Administration Policy | 14. |
| Legislative Actions | 15. |
| Notes | 18. |
| | |
| III Free World Shipping Policy | 19. |
| General | 19. |
| Japan | 20. |
| West Germany | 21. |
| South Korea | 22. |
| Brazil | 23. |
| Notes | 26. |
| | |
| IV Options | 27. |
| Build and Charter | 27. |
| Cargo Reservation | 29. |
| Construction/Modernization Policy | 31. |
| Build and Lease/Lay-up | 33. |
| Lay-up & Preservation of Shipyard Facilities | 35. |
| Construction Differential Subsidies | 37. |
| Foreign Military Sales | 39. |
| Other Programs/Incentives | 41. |
| Notes | 43. |
| | |
| V Conclusions | 44. |
| Conclusions | 44. |
| Recommendations | 46. |
| | |
| Appendix A: Evaluation of Options | 47. |
| Bibliography | 50. |

LIST OF ILLUSTRATIONS

| Figure | | Page |
|--------|---|------|
| 1. | Ships Built in U.S. Shipyards 1 July 1940 to 31 July 1945..... | 4. |
| 2. | Bethlehem Steel Shipyard Sale Advertisement..... | 7. |
| 3. | Number of Vessels Delivered 1972-1982..... | 8. |
| 4. | Tonnage of Vessels Delivered 1972-1982..... | 8. |
| 5. | Vessels Building or on Order 1973-1983..... | 9. |
| 6. | Vessels Ordered 1972-1982..... | 9. |
| 7. | List of Options and Option Ranking..... | 49. |

EXECUTIVE SUMMARY

A strong U.S. shipbuilding industry is a necessary element of the defense mobilization base. However, the capabilities of the U.S. shipbuilding industry have been reduced over the past decade and are projected to decline even further due to foreign competition and the overall reduction in size of the U.S. merchant marine industry. The only constant for the industry has been, and will continue to be, the U.S. Navy shipbuilding and repair programs. Shipyards in the U.S. cannot compete with foreign shipyards in commercial shipbuilding and repair industry due to the high cost of the U.S. shipyards. Current estimates are that it cost two to three times as much to build or repair a ship in a U.S. shipyard as it does in some foreign yards.

If the current trends continue, the U.S. shipbuilding industry may shrink to the point where it is no longer adequate for meeting mobilization requirements. This study examines possible initiatives which could be undertaken by government and industry to ensure that the U.S. retains a sufficient shipbuilding mobilization base. It also reviews the history and status of the industry as well as current administration and legislative initiatives impacting shipbuilding. The incentives and programs used by foreign governments to support their shipbuilding industries are examined with specific emphasis on Japan, South Korea, West Germany and Brazil. Finally, options are developed and evaluated

which might be undertaken to support U.S. shipbuilding. These include:

a. Construction Differential Subsidies. Although costly to the U.S. government, reinstating these recently eliminated subsidies could pay the difference in construction costs when compared to the foreign market and thereby make the U.S. industries once again competitive.

b. Cargo Preference and Construction Modernization Policies. Many countries are supporting their shipping industries with an increasing number of bilateral and multi-lateral trade agreements including cargo reservation clauses. These agreements require that a specified percentage of the cargo be carried in ships flying the flags of the signatories. Actively pursuing such policies could increase the demand for U.S. flag ships and thereby increase shipyard construction and repair work. Construction and modernization policies could be tied to the bilateral trade and preference cargo initiatives, requiring shipping companies to spend a prescribed percentage of their construction and modernization funds in U.S. shipyards to receive operating subsidies, or to qualify to carry preference cargo.

c. Build and Charter, and Build and Lease/Lay-up. Build and charter, and build and lease/lay-up are other means of financing construction of support ships for the Navy or ships for the merchant marine. When construction is complete, the ships could be chartered to the Navy in the case of build and charter, or to private companies in the case of build and lease. If there were no market for a ship constructed under a build and lease program, it would be placed in the Ready Reserve Fleet to be recalled during mobilization.

d. Lay-up and Preservation of Shipyard Facilities. As shipyards

close due to unfavorable overseas practices and accelerated by current economic conditions, critical facilities such as machine shops, piers, drydocks, and building ways will be lost. The government could intervene, purchase a facility which has been designated as critical to the mobilization base and mothball it against further contingencies, either in its entirety or in part. Alternatively, the government could pay a new owner to maintain certain critical portions of the facility.

e. Foreign Military Sales. The U.S. government could increase its pursuit of foreign shipbuilding contracts for surface combatants to be built in the U.S. Because of the excellent reputation of the U.S. and its technical expertise in combatant ship construction, development of small combatants specifically for foreign sale could provide a larger share of the foreign naval market for the U.S. shipbuilder.

Recommendations.

As a result of this research, the authors recommend that a national maritime program be adopted to revitalize the American shipbuilding and shipping industries. Such a national program should include the following initiatives which would preserve the shipbuilding mobilization base:

a. First, the U.S. should pursue bilateral and multi-lateral trade agreements which include cargo reservations for U.S. built flag ships.

b. Second, the U.S. should promote the construction of naval ships for sale to allied nations. An innovative design and prototype development for a small frigate or corvette which could be serially produced in large numbers should be initiated by the Navy.

c. Third, U.S. shipping companies should be required to spend a

prescribed percentage of their construction and modernization budget in U.S. shipyards in order to qualify for operating differential subsidies and cargo reservations.

CHAPTER I

INTRODUCTION

Purpose

America's foremost naval strategist, Rear Admiral Alfred Thayer Mahan, stated more than a century ago that "A nation's maritime commerce strength in peacetime is the most telling indication of its overall endurance during war."¹ A nation's maritime commerce strength consists of its merchant marine, shipbuilding industry, and ports and harbors. This paper will focus on America's shipbuilding industry. In support of mobilization, the nation's shipyards would be required to reactivate ships in the National Defense Reserve Fleet (NDRF), repair battle damaged ships, make voyage repairs, and, if hostilities continued for an extended period, build additional merchant and naval ships. Recently, the U.S. shipbuilding base has been shrinking to the point where it may no longer be able to accomplish its mission during mobilization. The purpose of this paper, therefore, is to recommend actions which could be taken to minimize this risk during mobilization by maintaining an adequate shipbuilding capability.

World War II Shipbuilding Base

While Mahan's maxim is no less true today than it was in the nineteenth century, the maritime commerce strength of the United States has been in a state of decline since the end of World War II when this country was the unrivaled world leader in sea power and maritime strength.

The remarkable success of the American shipbuilding industry in meeting the demand for merchant and naval ships during World War II serves as an appropriate background for considering the importance of preserving the shipbuilding base in the 1980's. Fortunately for the Allies, expansion of the shipbuilding industry in the United States had begun prior to the outbreak of war. Under the Merchant Marine Act of 1936, a program was adopted to build 50 ships a year over a period of 10 years to renovate the dry cargo fleet.² Actual mobilization of the shipbuilding industry began in 1938. President Roosevelt proposed and Congress approved a program to expand the naval fleet by 70 percent by the mid 1940's.³ Mobilization was further stimulated when the Battle of the Atlantic produced a growing demand for merchant ships from the British to replace those sunk by Axis U-boats. In order to meet this demand, a relatively austere cargo ship design was adopted for large scale production in U.S. shipyards. Those ships, which were later known as Liberty Ships, became the backbone of the logistic bridge across the Atlantic and Pacific Oceans.⁴

While the naval shipbuilding program relied primarily on existing Navy and private shipyards, the merchant shipbuilding program depended on nineteen new shipyards which were built during the mobilization period. Nine of the new shipyards were devoted exclusively to the construction of Liberty Ships.⁵ The cooperation between the Navy and the Maritime Commission in allocating resources for naval and merchant shipbuilding was a critical factor in achieving maximum productivity during this rapid expansion period. The shipbuilding industry was second only to the aircraft industry in the value of output during the war years. From July

1940 through August 1945, the United States built 127,255 ships of all types.⁶ Figure 1 lists these ships by category.

The production of the large number of Liberty Ships was the result of standardization, modular construction, and zone outfitting (methods which have been adopted and perfected by Japanese shipyards after the war). As a result of these innovative shipbuilding techniques, a critical crossover point was reached by May 1942 when tonnage of merchant ship construction first exceeded that sunk by the enemy during the same month.⁷ At peak production, Liberty Ships were being launched within seventeen days after the keel was laid.⁸

By the end of the war the U.S. owned 4,861 seagoing merchant ships with a combined displacement of 35,363,598 gross tons, or about half of the world merchant ship tonnage. In order to dispose of the excess tonnage, ships were sold for a limited time to citizens as well as foreigners under the Ship Sales Act of 1946. Liberty Ships, for example, were sold for less than one-third of their estimated prewar cost.⁹ As a result of this over-supply of merchant ships, several of the forty-one major U.S. shipyards which had been essential to the wartime production were closed soon after the end of the war.¹⁰ The U.S. continued to rely on its large fleet of merchant ships which were built during the war for many years and maintained insufficient commercial shipbuilding to replace many of these ships with more modern designs.

Although the total output of U.S. shipyards during World War II was truly amazing, it must be remembered that shipbuilding expansion and mobilization began several years prior to Pearl Harbor. It is no longer realistic to assume that a similar period of time will be available for

SHIPS BUILT IN U.S. SHIPYARDS
1 JULY 1940 TO 31 JULY 1945¹¹

| Naval Ships | <u>Number</u> | <u>Displacement (000's Tons)</u> |
|---------------------------|---------------|----------------------------------|
| Combatants | 1201 | 3560 |
| Landing Vessels | 64546 | 2905 |
| Patrol & Mine Craft | 2761 | 532 |
| Auxiliaries | 678 | 820 |
| | | |
| Maritime Commission Ships | <u>Number</u> | <u>Dead Weight Tons (000's)</u> |
| Standard Cargo | 479 | 4701 |
| Liberty Ships | 2686 | 28947 |
| Victory Ships | 351 | 3809 |
| Other Dry Cargo | 297 | 1395 |
| Standard Tankers | 700 | 10747 |
| Attack Transport (APA) | 174 | 941 |
| Attack Cargo (AKA) | 84 | 495 |
| Other Military | 351 | 1377 |

Figure 1

mobilization of the American shipbuilding industry prior to any future major war. The shipbuilding base must be maintained during peacetime to provide endurance during war, to paraphrase Admiral Mahan.

Current Shipbuilding Base

Currently, there are twenty-nine ships in the Ready Reserve Fleet (RRF) and 171 ships in the National Defense Reserve Fleet (NDRF). Ships in the RRF are maintained at a sufficient level of readiness so that they can be activated within five to ten days.¹² Although ships in the NDRF are supposed to be available within thirty to ninety days of the first demand, their age and material condition significantly diminishes the probability of meeting this requirement.

It has been stated that twenty-six major shipyards in the U.S. form a sufficient industrial base to satisfy this country's mobilization and wartime requirements.¹³ But, as a national industry, shipyard capabilities have been drastically reduced over the past decade and are

projected to contract even more in the future due to foreign competition and the reduction in the size of the U.S. merchant marine industry. The only constant throughput for the industry has been, and will continue to be, the U.S. Navy shipbuilding and repair programs. As currently planned, increasing the size of the U.S. Navy will provide adequate new construction for only ten or twelve shipyards in this country. Also the full impact of this expansion will not be felt by the industry for another two to three years. Based on current budget deficits, the probability of this program being fully implemented is in doubt.

Meanwhile, the U.S. merchant fleet has dwindled to below 600 ships, less than half the 1,300 vessels steaming in the early 1950's. Although the U.S. is the world's leading trading country, the U.S. merchant fleet carries less than four percent of its trade. The shrinking U.S. merchant marine has been a major factor in the decline of the U.S. shipbuilding and ship repair industry. Without the ships, how can shipyards survive?

A strong national defense posture requires (1) a powerful naval fleet, (2) a merchant fleet composed of the proper type ship mix capable of satisfying various sea-lift scenarios, and (3) an adequate shipbuilding and ship repair industrial base to support the first two items. The preservation of an adequate shipbuilding and ship repair industrial base is substantially dependent upon orders for new ship construction and enough ships in the U. S. naval and merchant fleets to provide an adequate repair workload during periods of peace. These prerequisites are not being fulfilled. If no action is taken in the near future to reverse these trends, the U.S. will be at a distinct disadvantage in the event of war. One picture is worth a thousand words

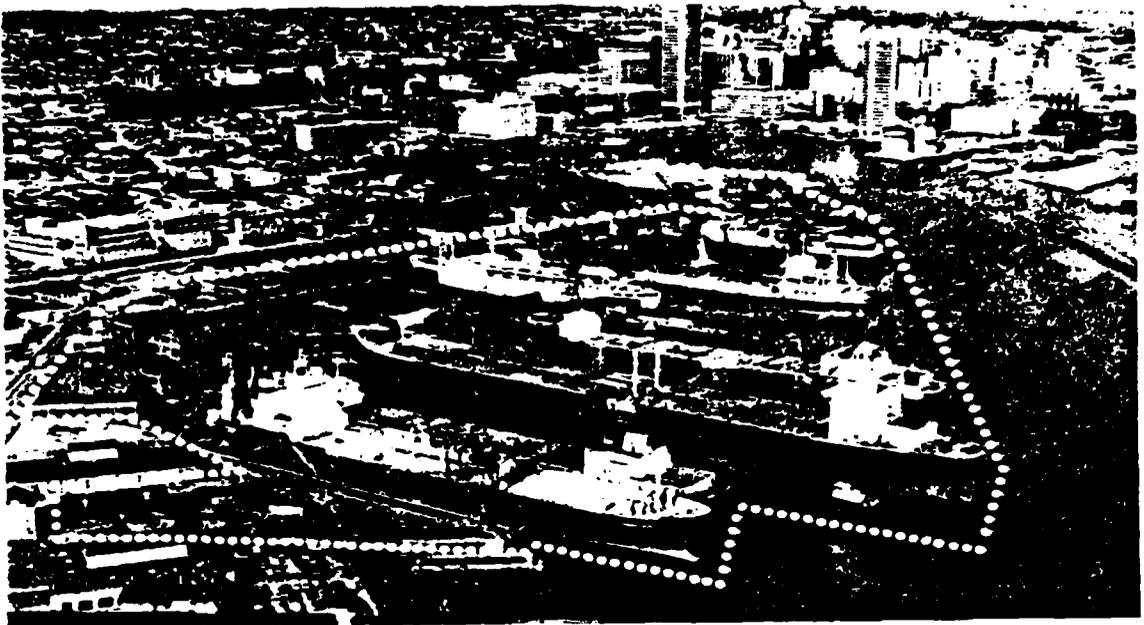
and figure 2 clearly depicts the current state of the ship repair industry in this country. Bethlehem Steel's Baltimore yard was one of the major ship repair yards on the east coast. Our shipbuilding and ship repair industry is in trouble: a fact that has been known for several years.

Trends in U.S. Shipbuilding

After the Vietnam War, naval ship construction contracts were reduced to a minimum level. The commercial merchant ship market rapidly dwindled as foreign shipbuilders offered prices significantly below those prices offered by American shipyards. The 1970's was a devastating decade for the U.S. shipbuilding industry which suffered a major decline from once being one of the world leaders in shipbuilding. The trends in the U.S. shipbuilding industry for naval and merchant vessel construction and shipyard work force are clearly shown in figures 3 through 6.

Many reasons can be hypothesized for the reduced shipyard requirement in the United States, but the primary reason is that the United States cannot compete economically with the foreign market for construction and repair of our merchant fleet. Currently, a new merchant ship can be constructed in the foreign market for approximately one-third to one-half of the U.S. cost, and repair contracts show equivalent savings for the shipping companies. In addition, foreign registry enables owners to build ships abroad at lower prices and to benefit from low interest loans from foreign governments. The ships can be manned by less expensive foreign crews, and the vessels are not subject to either American tax laws or strict American safety standards. A crucial question is whether the U.S. can depend upon these foreign flag ships in the event of war.

BETHLEHEM STEEL SHIPYARD SALE ADVERTISEMENT



**For sale:
Bethlehem's
Ship Repair Yard on
Baltimore's Inner Harbor.**

Bethlehem's Key Highway Shipyard, in Baltimore Harbor, is offered for sale to persons desiring to continue to operate the facility as a ship repair yard. This facility is not for sale at this time as property for real estate development. Inquiries to purchase on a going-concern basis should be made no later than November 30, 1982.

Source: Maritime Reporter and Engineering News, 15 November 1982. p. 49.

Figure 2.

NUMBER OF VESSELS DELIVERED 1972-1982

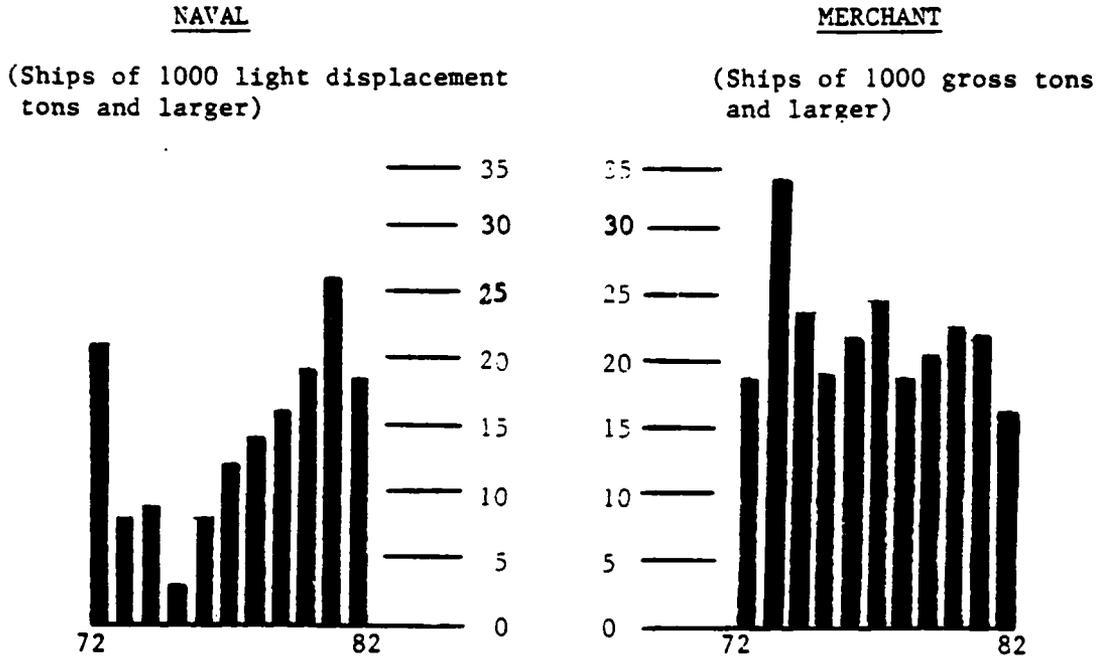


Figure 3.

TONNAGE OF VESSELS DELIVERED 1972-1982

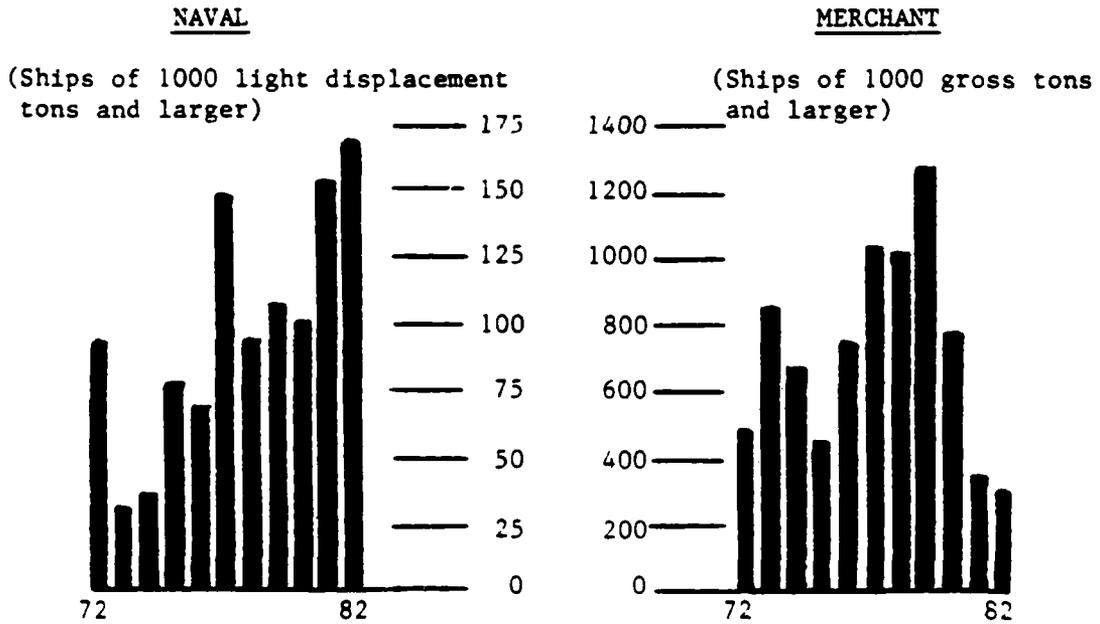


Figure 4.

(Source: Shipbuilders Council of America)

VESSELS BUILDING OR ON ORDER 1973-1983

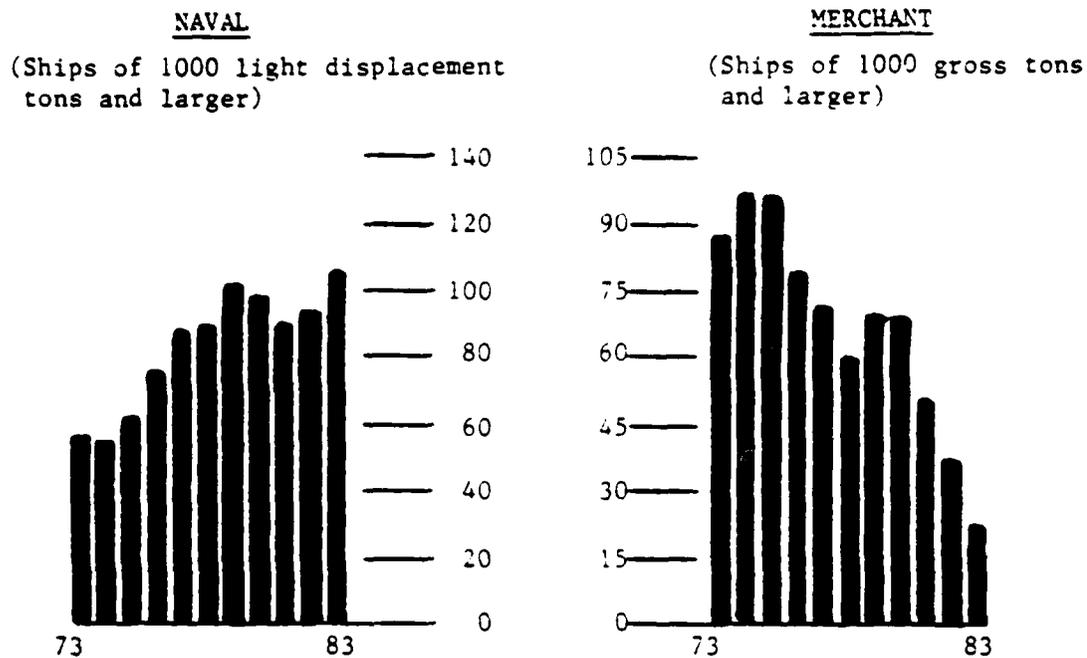


Figure 5.

VESSELS ORDERED 1972-1982

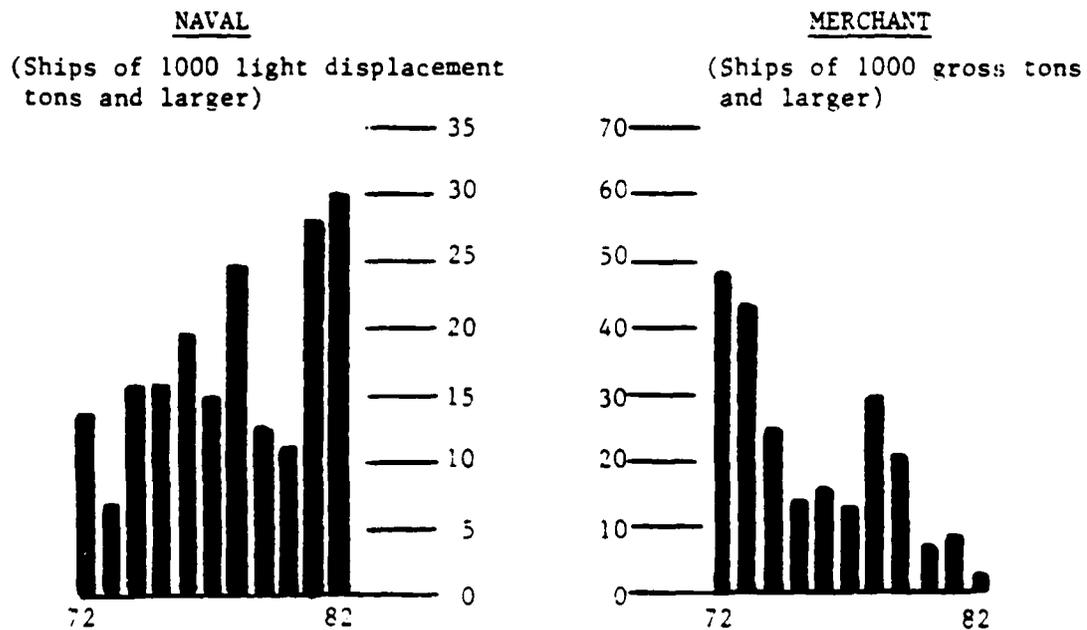


Figure 6,

(Source: Shipbuilders Council of America)

It is the opinion of the authors that such a policy in a world of fast changing political alliances, where today's allies may not be prepared to assist during tomorrow's crises, presents too great a risk and should not be a cornerstone of U.S. defense policy.

FOOTNOTES

CHAPTER I (Pages 1-10)

¹John F. Lehman, Jr., Statement before the House Armed Services Committee, 8 February 1982.

²"Commission on American Shipbuilding, Report", Commission on American Shipbuilding, Washington: October 1982, Vol II, p. 21.

³Robert L. Gustavson, "Comparative Industrial Capabilities of Major Combatants During World War II", National Defense University, Washington: 26 November 1982, p. 179.

⁴Kevin Lewis, Speech before Merchant Sealift and Shipbuilding Working Group, 1982 Mobilization Conference, Industrial College of the Armed Forces, Washington, 29 November 1982.

⁵Gustavson, "Comparative Industrial Capabilities of Major Combatants During World War II", p. 179.

⁶Ibid., p. 181.

⁷Kevin Lewis, Speech before Merchant Sealift and Shipbuilding Working Group, 1982 Mobilization Conference, Industrial College of the Armed Forces, Washington, 29 November 1982.

⁸Raymond Ramsey, "A Time for Shipbuilding Renaissance," Unpublished paper presented at 1982 Technical Symposium of the American Society of Naval Engineers, p. 25.

⁹Commission on American Shipbuilding Report", p. 19 - 21.

¹⁰Interview with Mr. Raymond Ramsey, Naval Sea Systems Command, 22 October 1982

¹¹Gustavson, "Comparative Industrial Capabilities of Major Combatants During World War II", p. 182.

¹²Richard M. Thomas speech before Merchant Sealift and Shipbuilding Working Group, 1982 Mobilization Conference, Industrial College of the Armed Forces, 29 November 1982.

¹³Shipbuilders Council of America, 1981 Annual Report, (Washington: March 1982), p. 2.

CHAPTER II

ADMINISTRATION, POLICY AND LEGISLATIVE SUPPORT

Previous Administrative Programs

When campaigning for the Presidency in 1980, President Reagan pledged support for the maritime industry which would preserve the shipbuilding mobilization base through naval and commercial shipbuilding programs. Whereas the naval building program has been expanded, other actions have weakened the shipbuilding industry. The Construction Differential Subsidy (CDS) and the Operating Differential Subsidy (ODS) programs, which compensate shipowners for the higher costs of building ships in U.S. shipyards and operating ships with U.S. crews respectively, are undergoing changes not conducive to strengthening U.S. shipyards. While other nations are increasing their subsidy programs, the U.S. is reducing or eliminating its subsidy programs. Congress approved a trial program in Fiscal Year 1982 that allowed ship owners to build ships in foreign yards without loss of their operating subsidies. The administration has said that it supports an extension of this change.¹⁴ Under this policy, the Maritime Administration has approved operating subsidies for ships, which six U.S. shipping lines plan to build overseas at a combined cost of more than \$600 million. This was in addition to previously approved plans by subsidized U.S. flag carriers, including U.S. Lines, to purchase fourteen new container vessels from South Korea yards for \$780.5 million.¹⁵

The bottom line is money. It is more expensive to build a ship in the U.S. and more expensive to man ships with American crews. Action must be initiated to revitalize the U.S. shipbuilding and ship repair industry. A primary reason for the lack of cost competitiveness on the part of the U.S. shipbuilders is often stated as the failure of the industry to keep abreast of modern shipbuilding techniques. It is true that when a company cannot foresee that a profit can be made through capital investment, they do not undertake modernization. Because of the slumping commercial market, it is undoubtedly true that many shipbuilders have facilities which need to be upgraded. But, it is also true that over \$2.3 billion has been spent by U.S. shipbuilders since 1971 upgrading facilities, equipment, techniques and procedures, much of it in the larger shipyards which depend to a great extent on the U.S. Navy where a continuing profit can be anticipated.¹⁶ Also, several U.S. shipyards have worked closely with the Japanese to determine how they can benefit from Japanese methods. Therefore, simply saying that U.S. shipbuilders are not competitive because they have failed to modernize, or that if they would increase plant productivity business would return, will not solve the problems of the industry. Aggressive government and industry actions are needed if an adequate U.S. shipbuilding base is to be retained to meet mobilization requirements. The necessary industry actions will not occur unless the government acts first through establishment of a comprehensive policy committed to the retention of a strong merchant marine and shipbuilding capability. Such a step is possible. As Dr. H. Shinto, a Japanese shipbuilding engineer and executive said, "Only America has the resources to surpass Japan in

shipbuilding, I mean large numbers of intelligent people."¹⁷

It is known that the Navy will require significantly fewer than the existing twenty-six shipbuilding yards and that more yards would be required to support mobilization.¹⁸ The purpose of this study, however, is not to quantify the number of U.S. shipyards necessary to support mobilization; therefore, no attempt will be made to define an exact number, as other more detailed studies are currently in progress within the Department of Defense which have this as their primary purpose.¹⁹ Rather, the thrust of this study is to suggest ideas for both legislative and industry enactment which can be used to stimulate and hence preserve the U.S. shipbuilding industry.

Administration policy

Based on comments made by President Reagan prior to entering the White House, the slumping U.S. shipbuilding industry anticipated improved market conditions under the new administration. In 1980, Mr. Reagan stated:

"It is essential that sufficient naval and commercial shipbuilding be undertaken to maintain the irreplaceable shipbuilding mobilization base. Without this nucleus of trained workers and established production facilities, we can never hope to meet any future challenge to our security....Should our shipbuilding capability continue to decline, America's mobilization potential will be seriously undermined because a large reduction in a skilled shipbuilding workforce today makes any increase tomorrow very difficult. This is a dangerous threat to our national security, jobs and a key U.S. industry."²⁰

After two years of the Reagan administration, the initial industry optimism has not only faded, but it has also been replaced by a feeling of despair within large segments of the industry. Although there has

1

been an increase in the naval ship construction program as the Navy plans for 600 ships, administration policy and legislative initiatives supportive of U.S. shipbuilding have not been forthcoming. Rather, the thrust, has been supportive of U.S. ship owners and operators and generally detrimental to the shipbuilder.

Legislative Actions

Several specific examples of policies and legislative actions which have been detrimental to the U.S. shipbuilding industry are considered worthy of note:

- a. Construction Differential Subsidies (CDS) were deleted from the FY 1982 budget and are not expected to be reinstated.
- b. In Section 1610 of the Omnibus Budget Reconciliation Act of 1981, Congress authorized U.S. operators to build or rebuild ships in foreign shipyards while retaining operating differential subsidies. This action was effective through September 30, 1982.
- c. Senate Bill S-2336, considered during the "lame duck" session of the 97th Congress, would have extended the authority to build or rebuild ships in foreign yards for two years, and would have extended operating differential subsidies to existing vessels acquired abroad and reflagged in the U.S. Although recommended in the Joint Conference Report, this measure was not passed. Similar measures are expected to be reintroduced during the 98th Congress.
- d. Senate Bill S-2336 also would have permitted the use of tax-deferred Capital Construction Funds in conjunction with overseas construction. Previously, these funds could be used for U.S. construction only. This measure was not recommended by the Joint

Conference; however, similar proposals are again expected during the present session of Congress.

e. The Reagan administration is firmly committed to the support of "free trade" and opposed to entering into trade agreements which contain cargo reservation schemes under which a set percentage of cargo would be required to be carried in U.S. flag ships. In this regard, the U.S. is not expected to sign the United Nations Conference on Trade and Development (UNCTAD) Code of Liner Conduct which allocates trade at forty percent for each of the two parties to a bilateral trade agreement.²¹ Therefore, although "There is the myth of open markets in international shipping, the U.S. is alone in extending free access to its trade routes."²²

f. House Bill HR-5777 introduced during the 97th Congress, although not enacted, would have limited the imposition of the fifty percent duty on U.S. flag ship repairs and improvements accomplished in foreign shipyards, except those of an emergency nature.

One piece of legislation favorable to and supported by U.S. shipbuilders, was introduced during the 97th Congress by Congresswoman Lindy Boggs of Louisiana and over forty co-sponsors. This was the Competitive Shipping and Shipbuilders Act of 1982, HR-6979. This Bill would have required that five percent of all bulk commodities imported or exported from the U.S. be carried in U.S. built vessels in 1983, and would further increase this percentage by one percent per year to a minimum of twenty percent. Unfortunately, the session ended with this bill still in the House Committee on Merchant Marine and Fisheries, but it is expected to be reintroduced during the present session of

Congress. Chances for passage will probably be less during this session than they were during the 97th Congress because of House rules changes which will bring the measure for consideration to the Ways and Means Committee instead of to the more sympathetic Merchant Marine and Fisheries Committee.

The frustration and sense of betrayal felt by members of the U.S. shipbuilding industry was recently expressed by Mr. E. M. Hood, President of the Shipbuilders Council of America, when he stated, "Administration officials speak with a forked-tongue: there is no uniformity or cohesion in the postulation of national policies affecting the maintenance of a shipbuilding base which is an unquestioned essential national asset."²³ Currently there has been no official policy statement by the administration regarding the U.S. shipbuilding industry, and it appears that no action is planned in the near future to support retention of the shipbuilding mobilization base.

FOOTNOTES

CHAPTER II (Pages 12-17)

¹⁴"Shipbuilding Industry in U.S. Flounders as Federal Aid Ebbs and Navy Orders Lag," The Wall Street Journal, 25 May 1982, p. 54.

¹⁵"Ship Lines Plans to Build Abroad Approved by U.S.," The Wall Street Journal, 4 October 1982. p. 28.

¹⁶Shipbuilders Council of America, 1981 Annual Report, (Washington: March 1982), p. 10.

¹⁷Edwin M. Hood, "U.S. Merchant Shipbuilding," Maritime Reporter and Engineering News, 1 June 1982, p. 59.

¹⁸Robert E. Kuenne, Mark S. Perry, John N. Fry, James H. Henry, John D. Wells, and Harry Williams, The Shipbuilding Industries of the U.S. and USSR As Bases for National Maritime Policies: Current Capabilities And Surge Demand Potential. Vol. I., IDA Report R-260. Arlington, Va.: Institute for Defense Analysis, 1981, p. S4.

¹⁹This study is being jointly conducted by the Maritime Administration and the Department of the Navy under the auspices of the Assistant Secretary of the Navy (Shipbuilding and Logistics). This study is expected to be completed around June 1983.

²⁰Shipbuilders Council of America, 1981 Annual Report, (Washington: March 1982), p. 2.

²¹"Overhauling the Merchant Fleet," Business Week, 1 February 1982, p. 62.

²²"Flabby Maritime Muscle: A Military Weakness," Nations Business, p. 37.

²³Edwin M. Hood, speech before the Propeller Club of the United States, Port of Newport News, VA, 27 October 1982.

CHAPTER III

FREE WORLD SHIPBUILDING POLICY

General

To better understand the predicament of the American shipbuilding industry, it is useful to examine the shipbuilding industries of other nations which are in competition in the world market. The importance of a strong national merchant marine has led the governments of many industrialized and developing countries to provide substantial direct or indirect aid to their domestic shipbuilding industries. The form of this support varies from country to country but generally it includes one or more of the following:

Construction subsidies

Allowances for scrapping ships that are no longer economical

Interest rate subsidies

Accelerated depreciation rates

Tax free import of material used in ship construction

Cargo preference in bilateral trade agreements

Cargo restriction for domestic trade

Laws requiring domestically built national flag ships

Of the twenty leading shipbuilding countries, four (Japan, West Germany, South Korea and Brazil) are discussed in this paper to demonstrate the degree of government aid that is provided in the foreign shipbuilding industry. Japan and West Germany are two leading

industrialized countries with well established shipbuilding industries; whereas, Korea and Brazil are representative of several developing countries which have become world leaders in shipbuilding within the past ten to fifteen years through strong governmental support.

Japan

Japan, an island nation, has always maintained a strong interest in shipping and shipbuilding. The Japanese shipbuilding industry is the largest in the world. Typical of most maritime nations, the Japanese government provides loans to domestic shipbuilders for new ships sold to domestic owners. Credit coverage is provided by joint government and commercial bank financing, with the Japanese Development Bank contributing fifty to sixty percent of the loan depending on the type of ship. Repayment at low interest rates over ten years with a three year grace period is the typical agreement. Domestic owners are also allowed to depreciate ships at a higher than standard rate (fifteen percent) during the first year.²⁴

To maintain its competitive position in the world market, loans of up to eighty percent of the price of export ships are also available to shipbuilders. The Export-Import Bank of Japan contributes forty-five percent and commercial banks contribute the remaining amount of the loans which are repayable over eight and a half years at an attractive interest rate. Even more favorable financing has been made available to developing countries through the Japanese Overseas Economic Cooperative Fund. For example, in return for a seven ship order in 1979, Pakistan was granted an \$81 million dollar loan to be repaid over thirty years with a ten year grace period and at an annual interest rate of three and

one-half percent.²⁵ A government sponsored group insurance plan underwrites the commercial and political risks to the builders associated with loans to foreign owners.

To counter the effect of a worldwide depression in the shipbuilding industry, the Japanese government has developed, in cooperation with domestic shipbuilders, innovative programs to address the current excess in building capacity. Under a 1979 law, the government and shipbuilding interests have contributed equal shares to a fund to purchase surplus land and facilities from shipyards which are no longer competitive. The shipbuilding industry is involved in deciding how to best dispose of these facilities. The Japanese government has also provided funds for capital investment to shipyards which are being converted to other types of industries. A two year tax exemption was granted to businesses on ten percent of company investments that were used to convert shipyards in 1979. The Japanese government has also made loans available at low interest rates to assist small shipyards and subcontractors that have suffered under the current economic conditions.²⁶

Finally, to further stimulate the shipbuilding industry, the government has sponsored a program to promote scrapping of domestic and foreign ships which are no longer economical to operate. Under this program, shipyards receive government subsidies which decrease the difference between the cost of scrapping ships and the value of scrapped materials.²⁷

West Germany

Like Japan, West Germany is also strongly committed to maintaining modern and competitive shipping and shipbuilding industries despite the

depressed world market. The German government offers a twelve and one-half percent construction subsidy to domestic owners for ships to be used in international trade. Subsidies are also available for first time reconstruction and for conversion of ships to diesel propulsion. In addition, the government provided interest free loans, called "financial contributions", to owners from 1979 to 1981. These loans were intended to promote new ship construction by lowering overall interest rates by two and one-half percent.²⁸

Also, like the Japanese, the German government has authorized a special depreciation rate of forty percent of the ship's price over the first five years, including the year of construction. In addition, new seagoing ships are exempt from the national value added tax, and customs duties are waived on imported materials used for shipbuilding.²⁹

To assist shipbuilders in the increasingly competitive world market, the government makes loans available and grants interest rate subsidies to finance export ships. As is the case in many countries, loans can be secured for twenty percent of the purchase price of the ship. Repayment extends over eight and one-half years with interest rates as much as two percentage points below the market rate. In the event loans cannot be secured from the usual sources, the four German coastal states will provide credit guarantees for construction in local shipyards. Finally, Germany reserves coastal shipping for its own flag ships and has negotiated bilateral trade agreements that include cargo preferences with the Ivory Coast and Brazil.³⁰

South Korea

South Korea allocated a significant amount of its national resources,

one billion dollars, to shipbuilding from 1977 to 1981, and has rapidly developed as a leader among the maritime nations of the world. Government subsidies and attractive loans have been granted to both ship owners and builders. National policy dictates that Korean flag ships be built whenever possible in domestic shipyards. Exceptions are made only for ship designs which are beyond the current technical capability of South Korean shipbuilding, such as liquified natural gas (LNG) carriers. Government loans of up to ninety percent of the total ship costs are available to domestic owners. Owners are granted operating subsidies and are insured against incurring losses while operating on government approved shipping routes.³¹

Loans of up to eighty percent of the cost of export ships are available through co-financing arrangements with the Export-Import Bank of Korea and commercial banks. Loan repayment is scheduled over an eight year period at an annual interest rate of less than ten percent, and includes a grace period of two years. To further assist the shipbuilding industry, the South Korean government discounts the price of steel used for construction of export ships and reduces even further the cost of steel for Korean flag ships. Finally, as in the case of other countries, import duties are waived for material used in shipbuilding.³²

Brazil

In the past two decades, Brazil has become one of the most successful shipbuilding countries in the free world. Having enjoyed a high government priority, the shipbuilding industry has expanded by over seven hundred percent since 1960. Like South Korea, the government of Brazil has adopted a policy that Brazilian merchant ships will be built in

domestic shipyards, with only a few exceptions. The goal of a recent shipbuilding plan was to add one billion dollars worth of ships annually to the national fleet until 1985.³³

A twenty percent tax has been levied by the national government on imported freight as well as freight carried by coastal shipping to help finance the expansion and modernization of the merchant fleet.³⁴ The government subsidizes about thirty percent of the cost of merchant ships purchased by Brazilian owners in order to bring domestic shipbuilding prices into line with prices on the world market. Brazilian owners are also able to obtain government loan credits for up to eighty-five percent of the cost of ships. These loans are repayable over twelve years at twelve and one-half percent annual interest.³⁵

Although government subsidies for export ships were abolished in 1979, the devaluation of Brazilian currency has helped to make Brazilian shipyards competitive in the world market. Financing of up to eighty-five percent of the cost of export ships is available through the Bank of Brazil with repayment up to ten years at an attractive annual interest rate. The Brazilian government waives all sales and excise taxes on ships, and grants rebates for taxes paid on engine and marine equipment used in ship construction.³⁶

Brazil has negotiated trade agreements which include provisions for cargo preference with a number of South American and European countries, as well as the United States. Domestic coastal trade is reserved for national flag ships unless otherwise authorized.³⁷ Brazil offers the best example of how a developing country is able to establish a position among the leading shipbuilding countries of the world through legislation

and protectionist financing methods, and, above all, national
commitment.³⁸

From the preceding discussion, it is evident that the shipbuilding industries of these four countries are supported to a considerable extent by various direct and indirect forms of government assistance. Our research indicates that this type of assistance is common in most all maritime nations. For the American shipbuilding industry to be competitive in building merchant ships for the world market, some form of government assistance must be included as an element in any American shipbuilding program to preserve the U.S. shipbuilding mobilization base.

FOOTNOTES

CHAPTER III (Pages 19-25)

²⁴U.S. Maritime Administration, World Government Aid to Shipbuilders and Shipowners, (Washington, DC: US Department of Commerce, Maritime Administration, September 1982), p. 18-20.

²⁵Ibid., p. 20-21.

²⁶U.S. Maritime Administration, Maritime Subsidies, (Washington, DC: US Department of Commerce, Maritime Administration, January 1981), p. 94.

²⁷World Government Aid to Shipbuilders and Shipowners, p. 22.

²⁸Ibid., p. 14.

²⁹Maritime Subsidies, p. 59-60.

³⁰Ibid., p. 59-61.

³¹World Government Aid to Shipbuilders and Shipowners, p. 24.

³²Ibid., p. 24-25.

³³Ibid., p. 3.

³⁴Maritime Subsidies, p. 21.

³⁵World Government Aid to Shipbuilders and Shipowners, p. 3.

³⁶Ibid., p. 3-4.

³⁷Maritime Subsidies, p. 22-23.

³⁸H. P. Drewry (Shipping Consultants) Limited, The Emergence Of Third World Shipping, (London: 1978), p. 17.

CHAPTER IV

OPTIONS

As stated previously, the intent of this study was to determine policies or programs which could support the U.S. shipbuilding industry. The research was undertaken without bias towards any potential solution. The seven principal options and the supplemental recommendations discussed below, evolved from sessions held at the end of the research phase, using the brain-storming technique.

Measures of Effectiveness were developed during a similar session to assist in comparing the options. The following five measures were selected: Cost to the taxpayer, impact on shipbuilding, political acceptability, impact on maritime or naval forces, and legislative feasibility. A basic analytical process guided the authors' systematic consideration of each option with respect to this range of issues and resulted in the selection of the most acceptable options. Appendix A contains a detailed description of the evaluation process.

1. BUILD AND CHARTER

A. Discussion. Build and charter is a means of financing construction of support type ships that the Navy needs through investment of private capital. When completed, those ships are chartered to the Navy for long term use to meet specific Defense Department requirements. The build and charter program could be used to expand the shipyard work base if the government would include more of the Navy's single mission or

single product ships under the build and charter construction program. This would also increase the size of the Navy with a minimum of current year funding.

A valid military requirement for a ship or ships is identified with specific characteristics that the vessels must possess. The Navy determines that the acquisition of ship services by build and charter procurement is more advantageous than by use of Shipbuilding and Conversion, Navy (SCN) funds. The Military Sealift Command (MSC) issues requests for proposals for financing and construction of ships for long term charter by MSC. After the proposals have been received and evaluated, an offer is selected to finance the ships, construction of the ships is arranged, and a charter agreement is negotiated with MSC. After selection, the prime contractor arranges for a construction contract with a shipyard, and then, either the contractor or the shipyard contracts with financial institutions to arrange short-term financing for construction of the ship. When the ships are ready for operation, the owner delivers the vessels to MSC under the terms of the charter agreement. The equity owner's capital and proceeds from the sale of bonds are used to pay off the financial institutions which financed construction of the vessels. MSC then pays the owners a daily charter rate. Over a period of time, charter payments will return the capitalized cost of the ships to the owners, plus a return on their investment.

B. Advantages. Build and charter offers a viable alternative to the use of appropriated funds at a lower economic cost to the government. When compared to SCN funding, build and charter minimizes the initial

outlay of money for acquisition of ships needed by the Navy. Under the direct-buy approach, the total amount necessary to construct a ship must be appropriated and expended prior to the delivery of the ship. In many cases, the sheer magnitude of the amount involved may delay action even though the requirement has been validated by the Navy and Congress. However, under build and charter, the expenditure of money is spread over the economic life of the ship. This lessens the short-term impact within the defense budget since no money is required until the ship is ready for sea and the construction cost is spread over the useful life of the ship. Other advantages are accrued by the use of private capital rather than SCN funds, cost overruns are minimized with a fixed price contract, and contract changes are inhibited.

C. Disadvantages. Critics claim that build and charter procurement is more costly to the Navy in the long term. Interest costs do increase dollar outlays, but overall cost is less under the present value of money theory. However, the overall cost to the government is raised due to the tax shelter benefits accrued to the investors which deprives the treasury of revenue. Another objection is that build and charter procurement circumvents Congress. Finally, the number of ships required by MSC is limited. Therefore, an expanded build and charter program could provide only a minimum impetus to the shipbuilding industry.

2. CARGO RESERVATION

A. Discussion. Many countries are supporting their shipping industries by increasing the number of bilateral trade agreements with cargo reservation clauses. These agreements require that a certain percentage of specified cargo be carried in ships flying the flags of the

signatories. This practice is particularly prevalent among the lesser developed nations. The United Nations Conference on Trade and Development (UNCTAD) Code of Liner Conduct, expected to be signed in 1983, would reserve forty percent of the cargo for each of the parties to a bilateral trade agreement. However, the U.S. is not expected to be a signatory to this code. Increasing U.S. involvement in bilateral trade agreements which contain reservation clauses could be used to stimulate U.S. merchant shipping, and thereby provide secondary impact on the shipbuilding industry.

B. Advantages. Trade agreements containing cargo reservation clauses are attractive in that they do not represent a costly direct government subsidy, rather costs are passed on to the consumer. Entering bilateral or multilateral agreements can also be accomplished without extensive Congressional debate and changes to the existing law.

C. Disadvantages. The impact of bilateral trade agreements on the U.S. shipbuilding industry is only a secondary impact. If more than a minor impact on the shipbuilding industry is desired, it would be necessary to maintain policies which require U.S. flag ships to be built in the U.S. if they were to partake of the reserved trade. The major impediment to implementation of increased bilateral agreements containing cargo reservation clauses is the major commitment of the Reagan administration to "free trade" policies. Even those bilateral agreements with cargo reservation clauses that the U.S. has negotiated state that ships of the signatories need only be used when they are available at "competitive rates". This essentially limits their effect on U.S. shipping because of the higher U.S. operating costs.

3. CONSTRUCTION/MODERNIZATION POLICY

A. Discussion. This option would require shipping companies to spend a set percentage of their construction or modernization funds in U.S. shipyards if their ships are to qualify to receive operating differential subsidies and to qualify for reserved cargo. In the past, government operating differential subsidies were paid only for U.S. flag ships constructed in U.S. shipyards. Recent legislative changes allowed ship operators to acquire ships abroad, operate them under U.S. flag and receive this subsidy for a trial period. The result was almost a total loss of commercial business for the higher priced U.S. shipbuilding industry.

A possible compromise between past and the trial policies would allow an operator to build, acquire, or modernize ships abroad under the condition that he spend a percentage of the foreign cost in U.S. shipyards within a prescribed period of time in order to qualify for the operating differential subsidy. Further, this obligation to spend money in U.S. shipyards could be made transferable from one company to another. This option is illustrated by the following example:

(1) Company A wants to build three ships for which it desires to receive an operating differential subsidy for use in moving reserved cargo. The U.S. cost to build the ships would be \$300M, but the cost to build them overseas would be only \$100M.

(2) To qualify for the subsidy under the old policy, the operator would be required to build in the U.S., which would result in an expense of \$200M more than the cost of building abroad. Under this compromise plan, the owner would be allowed to build abroad at a cost of \$100M, but

he would also incur an obligation to spend money in U.S. shipyards.

(3) If the percentage requirement for U.S. expenditure had been set at 20 percent, the company would now be required to spend \$20M in U.S. shipyards on either construction or modernization within a given timeframe, for example 18 months.

(4) If Company A had no requirement to spend the \$20M in U.S. yards on modernization or other work, the obligation could be transferred to another company, Company B, which has work to be accomplished. In this case, Company A pays Company B \$10M to assume the obligation.

(5) At this point, Company A has built, purchased, or modernized its ships abroad at a total cost of \$110M which compares favorably to the \$300M it would have cost to do the same work in the U.S. Company A's new ships are also eligible for the operating differential subsidy and to ship reserved cargo.

(6) Company B can now have \$20M worth of work done in U.S. yards at an actual cost to the company of only \$10M (having received \$10M from Company A).

B. Advantages. This option would ensure that some commercial business is retained in U.S. shipyards while still allowing U.S. companies to take advantage of lower foreign shipbuilding costs. Congressional adjustment of the percentage of foreign expenditure that companies would be required to spend in U.S. shipyards would allow control of the amount of money funneled to the U.S. yards, and, thus, indirectly influence the size of the U.S. industrial base. Additionally, the subsidy in this case is not a direct government outlay. Rather, the cost is hidden and can be justified as being the cost of qualifying for

the operating subsidy. Because this plan would apply only to ships which are to qualify for government operating differential subsidies, it would seem that such an approach should have some chance of success in these times when Congress is considering requiring foreign auto makers to build cars in the U.S. if they are to be sold in the U.S.

C. Disadvantages. This program is an industry subsidy and could lead other troubled U.S. industries to seek similar relief. For example, the U.S. steel industry could lobby for laws which required the automobile industry to use a prescribed percentage of U.S. steel in automobiles manufactured in the U.S. Such support for an industry is in general opposition to the free enterprise policies of the present administration.

4. BUILD AND LEASE/LAY-UP

A. Discussion. Build and lease/lay-up is another means of financing construction of support type ships. The U.S. government would initiate a modest construction program and then lease the ships to commercial ship operators. The ships that couldn't be leased would be placed into the Ready Reserve Fleet (RRF).

In the event of mobilization, numerous ships will be required to transport men, weapons and support equipment to the theatre of operation. A government funded construction program would be a contributing factor in ensuring that a sufficient quantity of ships are available during mobilization. At the same time, such a program would assist in maintaining the shipbuilding industrial base.

The government would determine ship cargo-carrying requirements so that a standard design could be finalized. The standard design would be

austere, yet flexibility within specific parameters would be maintained to allow transporting various types of military cargo. Correlation between merchant ship characteristics and military sealift requirements would have to be fully coordinated. This proposal has been made previously by Mr. Edwin Hood when he recommended that the government "Initiate a maritime-type program to accomplish prompt construction of 30 or more ships of potential military utility (breakbulk vessels and medium size clean product carriers) with Defense Department funding, possibly for charter to commercial interest as naval auxiliaries."³⁹

Construction contracts would be awarded to the shipbuilder with the proposal that is most beneficial to the government. Upon completion of construction, the new ship would be leased perhaps for five years with a renewal option. Ships not leased would be preserved and laid-up in the reserve fleet. Proper lay-up maintenance would be performed in order to keep the vessels in a high state of readiness.

B. Advantages. Currently, a sufficient quantity of ships does not exist to meet mobilization requirements. This option would increase the number of U.S. flag ships readily available upon mobilization. Of more importance to this paper, a build and lease/lay-up program would assist in preserving a shipbuilding industrial base. Building repetitive hulls to a standard simple design would minimize cost of construction and life cycle support costs. In addition, multi-ship and multi-year procurement practices could be followed which would also reduce the overall program cost.

C. Disadvantages. The major disadvantage of this program is cost. To build and then lay-up new ships without using them to generate

revenue, is a bold and expensive effort. Leasing of ships has to be maximized to help offset the construction costs. Weighing the cost of this option against the cost of maintaining the industrial base, excluding ownership and availability of the new ships, unfairly skews the trade-off analysis of the cost effectiveness of this program. Due to the mission of these ships, this program would most likely be required to be funded by the Navy and would compete with the current naval shipbuilding program for available funds.

5. LAY-UP AND PRESERVATION OF SHIPYARD FACILITIES

A. Discussion. As shipyards close, the plant facilities are either left to deteriorate, or they are converted to other industrial or commercial use. No adverse impact is felt until mobilization requires the use of the shipyard facility which is no longer available. When specific shipyard facilities are being closed, government actions could prevent the permanent loss of the shipyard by preserving it in its entirety, thereby allowing its availability to be guaranteed whenever mobilization requirements dictate its activation.

Currently, the Navy and the Maritime Administration monitor the status of all shipyards in the U.S. including facility changes, equipment replacements, and modifications. A government program to intercede when a vital shipyard is about to close would provide a solution for keeping needed facilities ready to meet mobilization requirements. The government would determine which shipyards would be vital in the event of mobilization. If one of these shipyard were about to fail, the government would exercise one of the following options:

- (1) Buy the facility, place it in a preserved status, and perform

routine maintenance as required.

(2) Buy the facility and lease it with the condition that the new tenant preserve and maintain the facility and equipment to a prescribed state of readiness.

(3) Pay a subsidy to a new owner to preserve and maintain the key shipyard machine shops, building ways, drydocks and piers.

It is noteworthy to mention here that Japan, the leading shipbuilding nation in the world, undertook similar efforts. In 1978, the Japanese government enacted a new law titled "Temporary Law for Stabilizing the Designated Depressed Industries." Under that law, government and shipbuilding interests jointly established an association which was initially financed by equal amounts of money, approximately \$5.1M, from the government and shipbuilding interests.⁴⁰ The function of the association was to purchase surplus land and facilities that hard hit medium and small shipbuilders wished to sell, to review and process disposal plans, and to lease or sell properties which were purchased.⁴¹

B. Advantages. This program would provide a readily available mobilization base by preserving facilities and equipment which are extremely costly and which require a long lead time to replace. By the identification of key facilities, the preservation of vital shipyards would result in a less costly solution than subsidizing the entire industrial base.

C. Disadvantages. The determination of which shipyards are to be considered vital would be a most difficult task. In addition, the government would be inserting itself into the free enterprise system with its associated legal ramifications. Whereas this option would preserve

the facility, it would not prevent the loss of the skilled manpower.

6. CONSTRUCTION DIFFERENTIAL SUBSIDY

A. Discussion. A Construction Differential Subsidy (CDS) is intended to offset the difference in cost for an American owner to build a U.S. flag ship in a U.S. shipyard compared with the cost to build a similar ship overseas. Until the CDS was eliminated by the Reagan Administration, the U.S. government would pay up to fifty percent of the cost of a U.S. flag ship which was built in the U.S. In order to attract commercial shipbuilding business for U.S. yards, a higher CDS would have to be authorized under current market conditions.

Shipbuilding in the U.S. has generally been more expensive than in Europe or in Japan. Also, as previously discussed, several developing countries, Taiwan and South Korea in particular, have entered the world shipbuilding market, and are building ships at an even lower cost. The reasons for the cost differences can be partially attributed to the fact that shipbuilding is a labor intensive, heavy assembly industry. American labor costs are several times greater than labor costs in the developing and other shipbuilding countries. Another reason for the cost difference is that every other maritime country provides some form of government protection, subsidy, or both, to its shipbuilding industry. Shipbuilding has been adopted by some countries as a means to begin industrialization, to generate foreign exchange credits, and to build national merchant fleets to expand international trade. Not only have the governments of these countries invested in shipbuilding, but technical and financial assistance has been received from traditional shipbuilding countries such as the United Kingdom, West Germany, the

Netherlands and Japan.⁴²

Without the backing of the U.S. government, it has become almost impossible for the American shipbuilder to compete with foreign shipbuilders in the world market. Even when the CDS was available for fifty percent of the construction cost, American shipbuilders were unable to compete with some foreign shipyards. It has been postulated that even if the lowest cost U.S. shipyard were to charge zero dollars for labor, it could not match the the price for which Japanese and South Korean shipyards, among others, are presently willing to sell ships.⁴³ Any new CDS program would, therefore, have to offer an even greater level of subsidy or be combined with other policies, such as cargo preference, to be viable in the current market. A reduction in the wage rate of shipyard workers would probably also have to accompany any reinstatement of a federal subsidy program for shipbuilding.

B. Advantages. A CDS program would help to again place the American shipbuilder on a more equal basis with foreign shipbuilders who currently enjoy substantial assistance from their governments. Also, federal expenditures would contribute to building the American merchant marine while also preserving the shipbuilding mobilization base.

C. Disadvantages. It is contrary to the American belief in free enterprise to provide government subsidies to industry. Assistance of this type is not normally available to any other American industry. In the current economic climate, it is politically improbable that a subsidy program to support the shipbuilding industry could be reinstated unless it could be established that preserving the shipbuilding base was a high priority for national security. This is particularly true under the

Reagan administration which strongly favors a diminished role of government in regulating business. This administration, after all, eliminated the previous CDS program. It could be argued that in the past, federal subsidies have propped-up the maritime industries and thereby reduced their incentive to compete effectively in the world market through innovation, modernization and control of wages.

Finally, to be effective, this option would necessarily be expensive to the American taxpayer. Under the previous CDS program, the government spent over \$1.8 billion between 1936 and 1973.⁴⁴ With the number of countries that have emerged as leading shipbuilders since 1973, it can be anticipated that competition would drive the cost of a subsidy program significantly higher.

7. FOREIGN MILITARY SALES

A. Discussion. The U.S. has not been very active in building ships for foreign military sales. Australia purchased three guided missile destroyers in the 1960's and four guided missile frigates in the 1970's. West Germany purchased three guided missile destroyers in the mid-1960's. More recently, Saudi Arabia has purchased a number of missile patrol boats of two different classes from the U.S.⁴⁵

There has been a significant demand from allied nations for modern destroyers, frigates, missile patrol boats and diesel submarines. In many cases this demand has resulted from the need to replace former U.S. Navy ships which were transferred to allies as the U.S. modernized its fleet. Although clearly a world leader in naval shipbuilding, the U.S. has not been very successful in selling naval ships. The reason for this is primarily that the U.S. Navy is interested in building larger, more

complex ships to satisfy a world-wide naval strategy. These ships are usually more capable than needed by most other navies, and generally more expensive than most countries can afford. Furthermore, since the U.S. has not built a diesel submarine for over twenty years, the technical base would be too expensive to reestablish in order for the U.S. to be competitive with other Western countries that have submarine building programs.

While the U.S. has been successful in a limited scale in selling missile patrol boats, a larger naval ship would have to be built in greater numbers in order to significantly affect the U.S. shipbuilding mobilization base. A small frigate of about 3000 tons full-load displacement and designed to perform the ocean escort mission would probably be the most attractive naval surface ship for most of our allies. A ship of this type could be equipped with modern U.S. weapons and sensors such as a passive towed sonar array, a medium range active sonar and a single helicopter for anti-submarine warfare, a NATO Sea Sparrow and Phalanx gatling guns for anti-air warfare, and canister launched Harpoon missiles for surface warfare. Gas turbine or combined diesel and gas turbine (CODOG) propulsion would provide sufficient maximum speed for ocean escort missions while ensuring a small crew complement.

Not only could a small escort ship be designed and built in the U.S. for allied requirements, but it could also be built for use by the U.S. Naval Reserve. The design could be fully tested, modified, and updated as necessary through continued service with the reserve forces. At mobilization, this design would be ready for serial production to provide

the large number of ocean escorts which will be needed for convoy protection.

B. Advantages. The U.S. should be able to compete favorably with other Western countries in building modern warships for sale to foreign countries. The U.S. already has a large naval shipbuilding base and is in the forefront in naval weapon development. Ships built in the U.S. for foreign sale could be supported with a well developed logistic base, including training, spares and maintenance support. This option would also eliminate federal financial support beyond the initial development of the prototype design. This design would be available to put into serial production in shipyards which would already be experienced in building these ships when needed during mobilization.

C. Disadvantages. The construction of naval ships, frigate size and smaller, would not necessarily preserve the capability to reactivate, repair and build merchant ships. The current naval shipbuilding plan will maintain an adequate repair and building capability for naval ships only. Also, foreign military sales are politically sensitive and the human rights policy under the Carter administration may have had a lasting adverse effect on certain potential customers.

Finally, in order to make naval ships constructed in the U.S. attractive to a foreign navy, the ships would have to be fitted with the current state-of the-art weapons and sensors. The risk of this technology being used against the U.S. would have to be weighed against the opportunity for increased foreign military sales, as exemplified by the situation in Iran.

8. OTHER PROGRAMS/INCENTIVES. In addition to the seven major options discussed above, there are a number of other programs, initiatives and incentives which could be undertaken to preserve or stimulate the shipbuilding industry. These may be similar to incentives used by foreign countries to support their industries or may be expansions of programs already in existence in the U.S. Although each of these might have some impact, the effect of any one is considered minimal in terms of overall support of the shipbuilding industry. For this reason, they were not evaluated in depth. It is felt that one or more of the below listed programs could be used to round out a comprehensive U.S. policy:

- a. Trade-in allowances for older ships
- b. Construction loan interest subsidies
- c. Official low interest loans
- d. Accelerated depreciation for ships and shipyard equipment
- e. Duty free import of ship construction materials
- f. Increased R&D funding through the Navy
- g. Establishment of R&D funding available for non-Navy shipbuilding
- h. Expansion of Title XI loan guarantees to products other than ships produced by shipyards to promote diversification
- i. Laws requiring ships, oil rigs, etc., used on the continental shelf to be constructed in the U.S.
- j. Relaxation of anti-trust laws.

FOOTNOTES

CHAPTER IV (Pages 27-42)

³⁹Interview with Edwin M. Hood, President Shipbuilders Council of America, 20 September 1982.

⁴⁰World Government Aid to Shipbuilders and Shipowners, p. 21.

⁴¹Maritime Subsidies, p. 94.

⁴²H. P. Drewry (Shipping Consultants) Limited, The Emergence Of Third World Shipping, p. 7.

⁴³Interview with Edwin M. Hood, President Shipbuilders Council of America, 20 September 1982.

⁴⁴Gerald R. Jantscher, Bread Upon The Waters: Federal Aid To The Maritime Industries, (Washington: The Brookings Institute, 1974), p. 139.

⁴⁵Captain John Moore, RN, ed., Jane's Fighting Ships, (New York: Jane's Publishing Inc., 1981), p. 38, 39, 192, 392-393.

CHAPTER V

CONCLUSION

Conclusion

As the research for this project progressed, it became increasingly apparent to the authors that the preservation of the American shipbuilding industry is a complex problem which demands an imaginative solution. It also became clear that to implement any feasible solution will require the joint cooperation and support of the federal government, shipbuilding and shipping companies, and the maritime labor unions. Furthermore, no solutions were discovered that were both feasible and inexpensive. Not unlike the current plan to repair the American highway system, a plan to renovate the American maritime industry will not be cheap. For this reason, the public and the leaders of government must be alerted to the dire consequences which could be imposed upon both national security and possibly our international trade if the shipbuilding and shipping industries are totally abandoned and allowed to decay any further.

The analysis of the seven major options selected strongly favored cargo reservations and bilateral trade agreements. This conclusion was reached primarily because cargo reservations for U.S. built ships would create a market for U.S. shipyards, would be in the form of an indirect subsidy, and would be in consonance with trade policies accepted by most other countries of the world. Although the Reagan administration does

not currently favor any policy which restricts free trade, it is the conclusion of this study that the U.S. must actively pursue trade reservation policies either through bilateral trade agreements or multi-lateral agreements such as the UNCTAD Code of Liner Conduct. Similar policies developed through such international efforts as General Agreement on Tariffs and Trade (GATT) or Organization for Economic Cooperation and Development (OECD) should also be investigated. Passage of the Boggs Bill would be an excellent first step in showing the national resolve which will be necessary if the U.S. merchant shipping and shipbuilding industries are to be supported at the levels necessary to sustain mobilization requirements.

Foreign military sales and construction or modernization policy were the second and third options, respectively, in order of merit. It was concluded that these options should be combined with trade agreements to form the base of a national maritime program. The advantages of these three options are complementary while the disadvantages of the combined options are not significantly greater than the most acceptable option, trade agreements, taken by itself. Although detailed evaluation of the other lesser initiatives discussed at the end of the previous chapter was not undertaken in this paper, it is felt that they should also be given consideration for implementation as part of an overall maritime policy. This is particularly true of increased R&D funding to stimulate industry productivity improvements. The authors feel that once a government commitment to the industry has been demonstrated, additional impetus will be generated from within the commercial sector. However, until some initiatives are undertaken by government, private enterprise will not

undertake costly productivity improvements and modernization.

Recommendation

It is the recommendation of this research group that a national maritime program be adopted to revitalize the American shipbuilding and shipping industries. The priority of this program should be commensurate with its importance to national security. A national maritime program should include the following initiatives which would preserve the shipbuilding mobilization base:

a. First, the U.S. should pursue bilateral and multi-lateral trade agreements which include cargo reservations for U.S. built flag ships.

b. Second, the U.S. should promote the construction of naval ships for sale to allied nations. An innovative design and prototype development for a small frigate or corvette which could be serially produced in large numbers should be initiated by the Navy.

c. Third, U.S. shipping companies should be required to spend a prescribed percentage of their construction and modernization budget in U.S. shipyards in order to qualify for operating differential subsidies and reserved cargo.

APPENDIX A

EVALUATION OF OPTIONS

Although all of the options satisfied, to various degrees, the basic objective to preserve all or a portion of the shipbuilding industrial base, a non-biased approach was necessary to evaluate the various options. To maximize objectivity and minimize subjectivity, measures of effectiveness (MOE) were developed. Each MOE was then assigned a relative weight on a scale of ten according to its importance.

The MOE's used in this analysis were:

MOE 1 - Cost to the Taxpayer - Cost is a very significant factor, especially when one considers the extremely high deficit of the federal budget and the growing attitude towards reducing the portion of the budget for the Department of Defense. The weight assigned to this MOE is 8.

MOE 2 - Impact on the Shipbuilding Base - This MOE is the most important inasmuch as the major thrust of this paper is to develop ways to preserve the shipbuilding industrial base in the U.S. Some options will maintain a broad geographical base of facilities and equipment without skilled workers; others will preserve facilities, equipment and skilled workers within a narrower base. The assigned weight is 10.

MOE 3 - Political Acceptability - Not all of the options possess the same degree of political acceptability. The impact on the job market, the free enterprise system, and public support will affect the successful

implementation of this option. This MOE is assigned a weight of 8.

MOE 4 - Impact on Maritime/Naval Forces - In addition to preserving the shipbuilding industrial base, most options will also provide benefits to the merchant and naval fleets in the form of either ship design or additional ships. This measure must be included in the evaluation to counter balance MOE 1 which deals with cost. Some options have a significantly higher cost associated with them; however, the final product includes additional ships. The assigned weight is 5.

MOE 5 - Legislative Feasibility - The legislative aspect must be included since gaining the approval of Congress or the responsible agency would be easier for some options compared with others. Many questions will arise. Is legislative action required? How complex is the issue? Is it a recurring issue? The degree of legislative feasibility can enhance or hinder the implementation of the option. The assigned weight to MOE 5 is 6.

After establishing the measures of effectiveness, all options were rated. A score of 1 to 10 was given based upon the relative impact on the MOE. The weighted score for each option was found by multiplying the score for each MOE by the assigned weight for that MOE. The total weighted score is found by adding all the weighted scores for that option to determine the ranking of the options. Figure 7 displays the results of this process.

LIST OF OPTIONS

1. BUILD AND CHARTER
2. CARGO RESERVATION
3. CONSTRUCTION/MODERNIZATION
4. BUILD AND LEASE/LAY-UP
5. LAY-UP AND PRESERVATION OF SHIPYARD FACILITIES
6. CONSTRUCTION DIFFERENTIAL SUBSIDY
7. FOREIGN MILITARY SALES

LIST OF OPTIONS AND OPTION RANKING

| MOE | MOE WEIGHT | <u>OPTION</u> | | | | | | | |
|-----|-------------------------|------------------------|------|------|-------|------|------|------|------|
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | |
| | | (score/weighted score) | | | | | | | |
| 1 | Cost to taxpayer | 8 | 2/16 | 8/64 | 10/80 | 1/8 | 4/32 | 3/24 | 9/72 |
| 2 | Impact on Shipbuild | 10 | 3/30 | 9/90 | 5/50 | 7/70 | 7/70 | 6/60 | 3/30 |
| 3 | Political Acceptance | 8 | 2/16 | 7/56 | 3/24 | 1/8 | 2/16 | 1/8 | 4/32 |
| 4 | Impact on Maritime | 5 | 3/15 | 7/35 | 2/10 | 9/45 | 0/0 | 5/25 | 1/5 |
| 5 | Legislative Feasibility | 6 | 7/42 | 3/18 | 3/18 | 5/30 | 2/12 | 7/42 | 8/48 |
| | Total Weighted Score | | 118 | 263 | 182 | 161 | 130 | 159 | 197 |
| | OPTION RANKING | | 7 | 1 | 3 | 4 | 6 | 5 | 2 |

1. CARGO RESERVATION
2. FOREIGN MILITARY SALES
3. CONSTRUCTION/MODERNIZATION
4. BUILD AND LEASE/LAY-UP
5. CONSTRUCTION DIFFERENTIAL SUBSIDY
6. LAY-UP AND PRESERVATION OF SHIPYARD FACILITIES
7. BUILD AND CHARTER

Figure 7.

BIBLIOGRAPHY

- Bibblin, Jed. Shipbuilders Council of America Staff, Washington: Interview, 19 October 1982.
- Brown, Paul B. "All Ahead Full," Forbes, 28 September 1981, p. 114-115.
- Carleton, Robert Bruce. Office of the U.S. Trade Representative, Washington: Interview, 5 November 1982.
- Casini, R. CAPT USCG (Ret). House Merchant Marine and Fisheries Committee Staff, Washington: Interview, 20 October 1982.
- Chief of Naval Material Memorandum of 5 October 1982 Subject: "Status of Proposed DoD Industrial Modernization Incentives Program."
- Commission on American Shipbuilding. Commission on American Shipbuilding Report. Washington: October 1982.
- Data Resources Inc. The Economic Impact of the U.S. Shipbuilding Industry. Washington: August 1982.
- DeMott, John S. "Bath's Fighting Company." Time, 12 October 1981, p. 82.
- Doan, Michael. "Raising The Scuttled U.S. Merchant Fleet," U.S. News & World Report, 19 July 1982, p. 43-44.
- Drewry, H.P. (Shipping Consultants) LTd. The Emergence of Third World Shipping. London: 1978.
- Fisher, James R. and Coady, Phillip J. "US Shipbuilding: The Seventies in Retrospect/The prospects for the Eighties." National Security Affairs Issue Paper No. 81-2. National Defense University, Washington: June 1981.
- "Flabby Maritime Muscle: A Military Weakness," Nation's Business, June 1982, p. 37.
- "Greece-Floundering Shipowners Look for a Life Raft," Business Week, 5 July 1982, p. 41.
- Green, Kaylene. Legislative Assistant for Government Affairs, Bath Iron Works, Washington: Interview, 21 October 1982.
- Greenberg, Mark. Legislative Assistant to Congressman Tribble (VA), Interview, 1 November 1982.
- Gustavson, Robert L. Comparative Industrial Capabilities of Major Combatants During World War II. National Defense University, Washington: 26 November 1982.

- Halpern, Maurice Captain Brazilian Navy. Assistant Naval Attache, Brazilian Embassy Washington: Interview, 22 October 1982.
- Harbridge House Inc. U.S. Shipbuilding and Its Role in Maintaining the Defense Industrial Base, July 1979.
- Hood, Edwin M. President of Shipbuilders Council of America, Washington: Interview, 20 September 1982.
- Hood, Edwin M. "US Merchant Shipbuilding," Maritime Reporter and Engineering News, 1 June 1982, p. 59.
- Hood, Edwin M. Speech before the Propeller Club of the United States, Port of Newport News, Va., 27 October 1982.
- Institute For Defense Analysis Cost Analysis Group. A Preliminary Review Of The United States Shipbuilding Industry And Its Ability To Support The United States Navy. IDA Paper P-1272. Arlington, Va., May 1978.
- Jantscher, Gerald R. Bread Upon The Waters: Federal Aid To The Maritime Industries. The Brookings Institute, Washington: 1974.
- Jones, Sam L. "Shipyard Technology Incentives," American Metal Market/Metalworking News, 4 October 1982, p. 15-16.
- Kuenne, Robert E. Perry, Mark S. Fry, John N. Henry, James H. Wells, John D. and Williams, Harry. The Shipbuilding Industries of the U.S. and USSR As Bases for National Maritime Policies: Current Capabilities And Surge Demand Potential. Vol. I., IDA Report R-260. Arlington, Va.: Institute for Defense Analysis, 1981, p. S4.
- Kurfek, William. Shipbuilders Council of America Staff, Washington: Interview, 19 October 1982.
- Lehman, John F. Jr. Statement before the House Armed Services Committee on 8 February 1982.
- Lewis, Kevin. Speech before the Merchant Sealift and Shipbuilding Working Group, 1982 Mobilization Conference, Industrial College of the Armed Forces, Washington: 29 November 1982.
- Mallon, Lawrence. House Merchant Marine and Fisheries Committee Staff, Washington: Interview, 20 October 1982 and 27 January 1983.
- McCown, Henry Jr. Director of South American Bureau of International Economic Policy Office, Department of Commerce, Washington: Interview, 20 October 1982.
- Moore, John CAPT, RN, ed., Jane's Fighting Ships. New York: Jane's Publishing Inc., 1981.

Morelli, Vincent L. Manager of Government Affairs, Bath Iron Works,
Washington: Interview, 21 October 1982.

National Academy of Science. The Sealift Readiness Program. Washington:
June 1975.

Naval Sea Systems Command. Annual Report On The Status Of The
Shipbuilding And Ship Repair Industries Of The United States,
1981. Washington: 3 September 1982.

Office of the Chief of Naval Operations, Various interviews conducted
OPS 03, 04, 96, and 090 from 1 September 1982 to 31 December 1982

Office of Management and Budget, Special Studies Division, Economic and
Government. U.S. Maritime Programs and Policy. Washington, D.C.,
May 1982

Ortengrin, William CAPT USN, Operations Officer, Military Sealift
Command, Washington: Interview, 1 November 1982.

"Overhauling the Merchant Fleet," Business Week, 1 February 1982.

Ramsey, Raymond. Director, Office of Maritime Affairs and Shipbuilding
Technology, Naval Sea Systems Command, Washington: Interview,
22 October 1982.

Ramsey, Raymond. "A Time For Shipbuilding Renaissance," Unpublished Paper
presented at the 1982 Technical Symposium of the American
Society of Naval Engineers, Washington: April 1982.

Ramsey, Raymond. "Improving the National Shipbuilding Industrial Base,"
Association of Scientists & Engineers 19th Annual Technical
Symposium 1982. Washington: April 1982.

Ratti, R. RADM USCG (Ret). House Merchant Marine and Fisheries Committee
Staff, Washington: Interview, 20 October 1982.

Rice, Lee. Chief Executive Officer Ogden Transportation Corporation,
Washington: Interview, 5 November 1982.

Rivers, John. Shipbuilders Council of America Staff, Washington:
Interview, 19 October 1982.

Schafer, Robert E. Sea Power Subcommittee Staff, House Armed Services
Committee, Washington: Interview, 20 October 1982.

Shear, Harold E. ADM USN (Ret). Administrator Maritime Administration,
Lecture to the Shipbuilding Defense Industry Analysis Seminar,
Industrial College of the Armed Forces, Washington: 10 February
1983.

"Ship Lines Plans to Build Abroad Approved by U.S.," The Wall Street Journal, 4 October 1982. p. 28.

Shipbuilder's Council of America. 1981 Annual Report. Washington: March 1982.

"Shipbuilding Industry in US Flounders as Federal Aid Ebbs and Navy Orders Lag," The Wall Street Journal, 25 May 1982, p. 62.

Striker, Russell. Deputy Administrator, Maritime Administration, Washington: Interview, 21 October 1982.

Suydam, Marty. Director of Resources and Policy Evaluation, Office of the Assistant Secretary of the Navy (Shipbuilding and Logistics), Washington: Interview, 4 October 1982

Thomas, Richard M. Speech before the Merchant Sealift and Shipbuilding Working Group, 1982 Mobilization Conference, Industrial College of the Armed Forces, Washington, D.C., 29 November 1982.

U.S. Department of Commerce. A Survey of U.S. Export Opportunities in Brazil, Washington: June 1979.

U.S. Department of Commerce, Maritime Administration, Maritime Subsidies. Washington: January 1981.

U.S. Department of Commerce, Maritime Administration, Report on World Shipbuilding, First Quarter 1982, Washington: 1 April 1982.

U.S. Department of Commerce, Maritime Administration, The Maritime Aids of the Six Major Maritime Nations, Washington: November 1977.

U.S. Department of Commerce, Maritime Administration, World Government Aid to Shipbuilders and Shipowners, Washington: September 1982.

Velocci, Tony. "Our Ebbing Maritime Industry," Nation's Business, June 1982, p. 34.

LMED

88