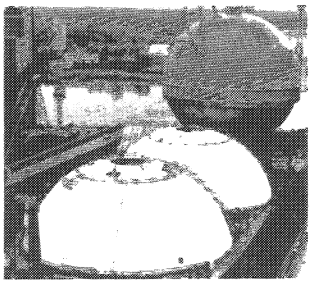
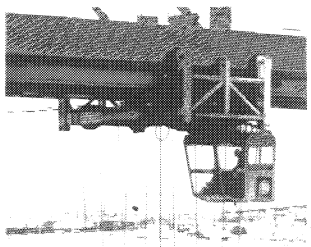
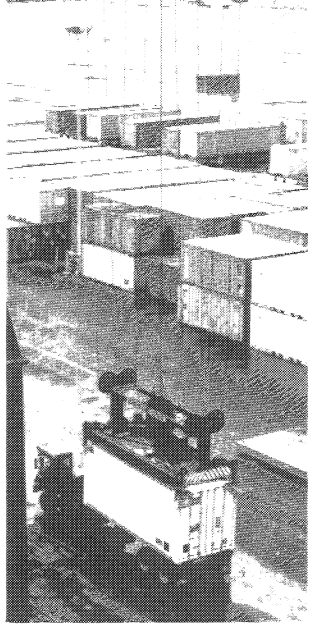
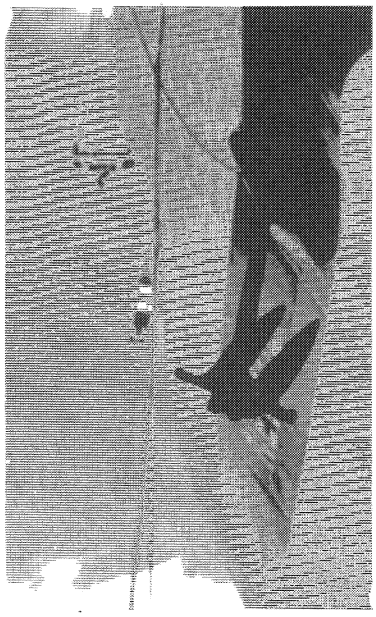
MARAD '76

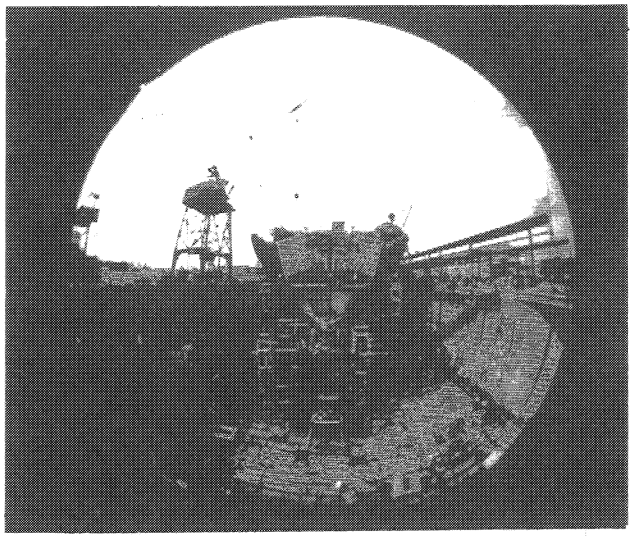
U.S. DEPARTMENT OF COMMERCE ● Maritime Administration

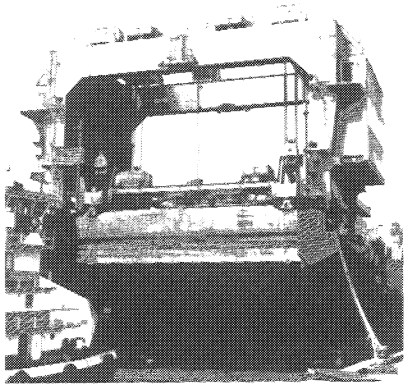


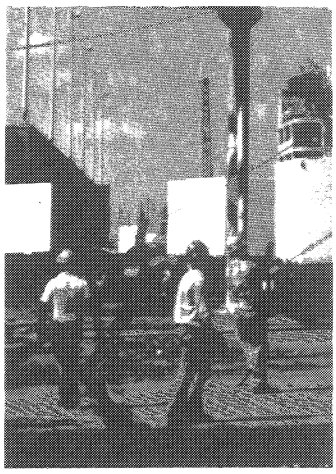












MARAD '76

The Annual Report of the
Maritime Administration
for Fiscal Year 1976
and the Transition
Quarter Ending
September 30, 1976

APRIL 1977

U.S. DEPARTMENT OF COMMERCE
Juanita M. Kreps, Secretary

MARITIME ADMINISTRATION
Robert J. Blackwell,
Assistant Secretary
for Maritime Affairs

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THE SECRETARY OF COMMERCE
Washington, D.C. 20230

The President
President of the Senate
Speaker of the House of Representatives

Sirs:

It is my honor to submit the annual report of the Maritime Administration covering fiscal year 1976 and the transition quarter.

The report describes in detail the Agency's efforts to promote and maintain a strong American merchant marine. Among the highlights during the reporting period were the following:

* On September 30, 1976, the U.S. shipbuilding orderbook comprised 75 new vessels totaling more than 7 million deadweight tons and valued at $4.6 billion.

* During the fiscal year construction-differential subsidy was awarded for the first two full containerships to be ordered under the provisions of the Merchant Marine Act of 1970.

* MarAd's research and development efforts during the period included the opening of the Computer-Aided Operations Research Facility, which houses the world's most advanced ship research simulator.

* The Agency's new Great Lakes Region Office was fully staffed during the year and began providing the Great Lakes maritime community with ready access to its programs.

The report indicates that during the period under review the American maritime industry continued to move forward in its efforts to become more efficient and more competitive.

Respectfully,

Secretary of Commerce


STATES

INTRODUCTION

BY ROBERT J. BLACKWELL
ASSISTANT SECRETARY
FOR MARITIME AFFAIRS

The parade of the Tall Ships in New York Harbor on July 4, 1976, served not only as a dramatic climax in the celebration of our Bicentennial but also as a fitting reminder of this Nation's maritime heritage: Throughout our 200 years as a Nation, a well-balanced merchant marine and a prosperous, innovative maritime industry have been vital components of U.S. seapower. And seapower has always been in the vanguard of American freedom and independence.

The development and maintenance of a merchant fleet and maritime industry capable of meeting U.S. waterborne shipping needs in peace and war are the primary objectives of the Maritime Administration (MarAd). This dual Government role of promoting commerce while providing for the national security is no less important today than it was in 1776.

To accomplish these objectives, MarAd administers financial aid programs for shipbuilders and ship operators; negotiates bilateral maritime agreements and participates in international maritime forums; sponsors maritime-related research and development to improve the industry's productivity; develops promotional programs to generate shipper support for U.S.-flag ships; promotes port development, domestic shipping, civil rights, and minority business enterprise in the maritime industry; operates the U.S. Merchant Marine Academy at Kings Point, N.Y., and provides other maritime manpower training; and maintains a reserve fleet of merchant vessels for defense mobilization purposes at three sites on the East, West, and Gulf coasts.

Highlights of this Agency's activities for Fiscal Year 1976 and the transition quarter ending September 30, 1976, follow.

SS MAINE, 20,000-deadweight ton Roll-On/Roll-Off vanship, was among subsidized ships added to U.S. merchant fleet in fiscal year 1976.

Shipbuilding

During the 15-month period, the Maritime Administration approved subsidized ship construction contracts for four new oceangoing vessels, including the first two containerships ordered under the Merchant Marine Act of 1970. The 1970 statute, which updated and expanded the Merchant Marine Act of 1936, authorizes MarAd to pay a construction-differential subsidy to equalize the disparity between U.S. and foreign shipbuilding costs on vessels that are built in American shipyards for operation in foreign trade under the U.S. flag.

The Government will pay $94 million of the total cost of $199 million for the four ships let to contract during the period.

These awards bring to 62 the number of new vessels ordered under the 1970 Act. Together, the new ships total more than 6 million deadweight tons (dwt.)—equivalent to 45 percent of the carrying capacity of the active U.S. merchant fleet—and are valued at more than $3.1 billion. In addition, subsidy contracts have been approved for the conversion of 22 conventional, general cargo ships to modern, full or partial containerships under the 1970 Act.

During the period covered by this report, orders also were placed with American shipyards for the construction of nine nonsubsidized merchant vessels; 23 new vessels were delivered by U.S. yards; and the first two liquefied natural gas tankers built in the United States were launched. The 23 deliveries included the first subsidized ship with an unmanned engine room.

U.S. shipyards held orders for 75 deep-draft merchant vessels totaling 7 million dwt. and valued at $4.6 billion on September 30, 1976. A year earlier the order-book comprised 81 new vessels totaling more than 8 million dwt. with a contract value of $4.4 billion.

Title XI Guarantees

Under the Federal Ship Financing (Title XI) Program, during this reporting period, the Maritime Administration guaranteed $885 million in privately held ship construction and mortgage loans covering 823 vessels and 528 shipboard lighters. On September 30, 1976, the balance of Title XI contracts in force was nearly $5 billion, covering the financing of 1,873 vessels and 2,666 lighters.

In November 1975 Congress approved an act which raised the ceiling on the unpaid principal guaranteed under Title XI from $5 billion to $7 billion.

Ship Operations

MarAd paid some $386 million in subsidies under long-term contracts with American-flag ship operators in fiscal 1976 and the transition quarter to provide essential services in the foreign commerce of the United States. No new long-term (20-year) operating subsidy contracts were awarded.

Twenty-year operating subsidy agreements were in effect on 198 vessels and short-term operating subsidy contracts covered 88 vessels

as of September 30, 1976. Of the 198 ships covered by long-term agreements, 187 were in service and 11 on order or under construction. The short-term contracts covered vessels carrying agricultural commodities from the United States to the Soviet Union.

International Agreements

A new, 6-year Maritime Agreement with the Soviet Union was signed by the Secretary of Commerce on December 29, 1975. This accord replaced the U.S.-U.S.S.R. Maritime Agreement signed in October 1972. Since that time U.S.-flag vessels have transported 9.33 million metric tons of grain, of some 39 million tons purchased by the U.S.S.R. The new 6-year Maritime Agreement extends through December 31, 1981, subject to earlier termination by either party on 90 days' notice.

In addition, a 5-year grain trade agreement, effective October 1, 1976, calls for the Soviet Union to purchase 6 million to 8 million metric tons of grain annually and continues the provision that U.S.-flag ships have access to one-third of the total tonnage. The Soviet Union also agreed to pay a fixed, minimum freight rate of $16 per ton for the U.S.-flag carriage of all grain to Soviet Black Sea ports, effective from September 22, 1975, through December 31, 1976.

In other international activities during this reporting period, MarAd signed a bilateral agreement with Romania and engaged in forums and/or exchanged information on maritime affairs with a score of other nations.

Research and Development

During the fiscal year and transition quarter, MarAd awarded a significant number of jointly funded research and development contracts. The combined R&D commitment for the period was some $32.7 million, with Agency funding totaling $22 million and industry contributing approximately $10.7 million.

The jointly funded Shipping Operations Information System was expanded further. This computer-based system is designed to improve day-to-day operations of U.S.-flag ocean carriers. Of 45 component systems planned, 15 now are in operation. The system is expected to be completed in fiscal 1978.

The Computer-Aided Operations Research Facility (CAORF), the world's most advanced shiphandling simulator, was dedicated at the National Maritime Research Center operated by MarAd at Kings Point, N.Y., on May 10, 1976. CAORF is a research facility for the study of shiphandling problems, particularly the causes of collisions and groundings, and the performance of the bridge crew in high-stress navigational situations.

The National Maritime Research Center also serves as the major land terminal and control center for the Marisat communications satellite system which became operational in mid-1976. The launch and placement of two satellites in stationary orbit over the Atlantic and Pacific Oceans and the start of commercial Marisat service climaxed an 8-year R&D effort by MarAd to apply space technology to ship-to-shore communications. Marisat is jointly sponsored by other Federal agencies and shipping companies.

U.S.-Flag Support

MarAd continued its marketing programs to increase shipper patronage of American-flag lines through direct contacts with importers and exporters, the use of computer-based Shipper and Market Lead Information Systems, and the marketing efforts of the National Maritime Council, for which the Agency provides executive secretariat support.

The Maritime Administration sponsored a Liner Marketing Conference in St. Louis, Mo., in July 1976. It was the first industrywide meeting of marketing executives representing American-flag carriers.

New marketing offices were opened in Cleveland, Ohio, and Detroit, Mich., in fiscal 1976.

Reflecting the progress of the Agency's marketing activities, the U.S.-flag share of U.S. liner cargoes rose from 29.4 percent in calendar year 1974 to 30.3 percent in 1975 although the total liner cargo declined from 52 million tons to 45 million tons, respectively.

Bulk Shipping

During the period, MarAd also launched a major new initiative to promote additional oceangoing bulk carriers and expand American-flag shipping of bulk cargoes.

The Agency sponsored a National Assessment and Planning Conference on U.S.-Flag Bulk Shipping at Hyannis, Mass., July 12-14, 1976. Participants included shippers, ship operators, ship owners, investors, brokers, labor leaders, shipyard officials, and government representatives. The conference identified the present constraints impeding the development of a viable U.S.-flag bulk fleet and the incentives needed to develop a bulk fleet.

Currently the U.S. merchant marine carries only approximately 2 percent of the dry bulk commodities moving in the Nation's foreign trade. The American fleet mainly consists of over-age and uneconomic vessels. While its bulk-carrying capability has declined over the past 10 years, bulk shipping has increased fivefold as

a result of America's permanent and growing dependence on foreign sources of supply and a corresponding demand in other developed countries.

Thirty-six recommendations related to the economic and operational environment of the bulk shipping industry came out of the Hyannis conference. A series of administrative changes and actions have already been initiated and a package of legislative proposals is being developed by the Agency.

Ports

Port development, winter navigation, domestic and foreign trade were major topics for discussion at the first Great Lakes-Seaway Port and Shippers Conference cosponsored by the Agency in Dearborn, Mich., April 25-29, 1976. The conference participants outlined a long-range, industry-developed maritime blueprint for the Nation's "fourth seacoast" and identified 89 regional issues for further study.

In its technical assistance and promotional programs to modernize and improve the Nation's marine terminal operations, MarAd completed and/or let to contract a number of port studies during the period. These included an evaluation by the Port Authority of New York and New Jersey of the contribution by port operations to the Gross National Product, employment, and other basic indicators of the economy.

Civil Rights

The reporting period was marked by continued progress in minority employment and minority business enterprise in the maritime industry.

Since 1969, when the Maritime Administration was assigned responsibility for equal employment opportunity assurance among Government contractors in maritime industries located in coastal states, minority group employment in American shipyards has risen 58.5 percent while total employment in the yards monitored in this program has increased only 11.5 percent.

Minorities constituted 28 percent of shipyard employees and 17.5 percent of shorebased employees of major shipping companies in 1976, compared to 19.6 and 10.3 percent, respectively, in 1969.

During fiscal year 1976, minority contractors furnished goods and services to the U.S. maritime industry exceeding $11 million, up from $10.4 million in fiscal 1975.

Maritime Training

In June 1976, the U.S. Merchant Marine Academy graduated 232 officers and the six state maritime academies (in California, Maine, Massachusetts, Michigan, New York, and Texas) a total of 425 officers.

The Agency opened its fifth Radar Training Center at Seattle, Wash., in April 1976. The Seattle school and others in New York City, New Orleans, San Francisco, and Toledo provided training for more than 2,000 persons during the fiscal year. An additional 3,700 completed firefighting and damage control courses conducted jointly by the Maritime Administration and the U.S. Navy's Military Sealift Command at Earle, N.J., and San Francisco.

Defense Needs

The National Defense Reserve Fleet, maintained as a ready source of merchant ships in the event of a military or other national emergency, was comprised of 347 ships on September 30, 1976.

During the fiscal year and transition quarter, 19 vessels were added to the fleet and 95 were withdrawn. Of those withdrawn, 67 were sold for scrapping or nontransportation use, 1 was sold for operation, 15 were turned over to States for use in an artifical fish reef program, and 12 were transferred to U.S. military units.

On November 1, 1975, the emergency responsiveness of the U.S. merchant marine was enhanced significantly by the establishment of the U.S. Merchant Ship Locator Filing System. Under this joint Maritime Administration-U.S. Navy system, U.S. merchant ships report their positions every 48 hours. Their movements can, thus, be directed for support of Government operations in the event of an emergency or major crisis.

Energy and the Environment

During fiscal 1976 the consumption of electricity at the three anchorages of the National Defense Reserve Fleet was reduced by 15 percent, and the use of diesel fuel in harbor craft also declined from the 1975 levels.

The Agency's energy research projects were consolidated into a single program during the period. Several studies were begun to determine the feasibility and economics of retrofit waste-heat recovery systems to improve ship power plant efficiency.

The Maritime Administration continued to work with the maritime industry to enhance conservation and productivity through the more efficient use of energy.


GENERAL DYNAMICS

Chapter 1

Shipbuilding

Contract Awards

During fiscal year 1976 the Maritime Administration granted construction-differential subsidy (CDS) for the construction of two 27,340-dwt. container/unitized cargo ships, the first containerships built under the provisions of the Merchant Marine Act of 1970. This was also the first subsidized shipbuilding contract awarded under this law that was based on competitive bids rather than price negotiations. The Government will pay $77.8 million or 49.64 percent of the total contract price of $156.6 million.

Subsidies are provided to offset the higher cost of building foreign-trade vessels in the United States, compared to the cost in foreign shipyards.

During the transition quarter (July 1-September 30, 1976) MarAd granted CDS for the construction of two integrated tug-barge vessels. Of the total contract price of $42.5 million for the vessels, the Government will pay $16.2 million or 38.05 percent. (See Appendix I for a list of vessels under CDS contracts on September 30, 1976.)

Besides subsidizing the construction of four new vessels, MarAd awarded CDS for reconstruction work on three existing ships during the 15-month period. Container cranes were installed on two of the vessels to provide onboard container-handling capability and the third ship was modified to increase its capacity to carry 40-foot containers. Of the total reconstruction cost of $5.2 million, the Government will pay $1.7 million in subsidy.

The low level of subsidized ship orders placed with American shipyards during the period of this report was largely attributable to the continuing depressed tanker freight market and general economic uncertainties.

Private contracts were awarded for the construction of nine ships with a deadweight tonnage of 451,000 (see Table 1). These ships, valued at $631.1 million, comprised two 125,000-cubic-meter liquefied natural gas (LNG) carriers, three Great Lakes bulk carriers, one tanker, one containership, and two Roll-On/Roll-Off (RO/RO) vanships.

As of June 30, 1976, there were 73 deep-draft merchant ships, with a total deadweight of 7.3 million tons on U.S. shipyard orderbooks, compared to 83 vessels a year earlier. Of these 73 new vessels, having a contract value of $4.5 billion, 32 were being built with both CDS and Title XI Federal Ship Financing Guarantees. Of the remaining 41 vessels which were being financed privately, 13 carried Title XI Guarantees.

On September 30, 1976, U.S. shipyard orderbooks comprised 75 new, deep-draft merchant vessels totaling 7 million deadweight tons and having a contract value of $4.6 billion. Thirty-one were being built with both CDS and Title XI Guarantees, and 12 privately financed vessels were carrying Title XI Guarantees.

The global market for offshore drilling rigs (semi-submersibles, jack-ups, and drillships) continued to decline. During the past 2 years, the market changed from a high-demand, short-supply situation to one of under-utilization and an excess of drilling rigs. At mid-1976, new offshore drilling units on order or in production in Amercan shipyards totaled 16, compared to 37 a year earlier. Several of these rigs have Government financing guarantees. Of the 16 units under contract at mid-1976, all but 3 were scheduled for delivery by the end of 1976.

Construction Subsidy

To equalize the cost disparity which exists between United States and foreign shipbuilding prices, MarAd is authorized to pay a construction-differential subsidy. (See Appendix II for CDS expenditures since 1936.) To be eligible for CDS, a vessel must be built in an American shipyard, owned by American citizens, manned by an American crew, and operated under the U.S.-flag in the Nation's essential foreign commerce.

On June 30, 1976, CDS was being paid for the construction of 32 new ships and the reconstruction of 2 vessels (see Appendix I). Construction and reconstruction costs for these 34 vessels totaled almost $2.3 billion, of which $748.5 million will be paid by the Government. The new vessels being built with CDS comprise 19 tankers, 9 liquefied natural gas carriers, 2 containerships, and 2 RO/ROs.

By September 30, 1976, CDS was being paid for the construction of 31 new vessels and the reconstruction of 2 vessels; their contracts totaled $2.3 billion, of which $764.7 million will be paid by the Government. The new vessels comprised 16 tankers, 9 LNGs, 2 containerships, 2 RO/ROs, and 2 integrated tug-barge vessels.

There were 57 applications for CDS pending on September 30, 1976.

At Quincy, Mass., 120-foot diameter liquefied natural gas (LNG) cargo tank is lowered into place, one of five to be installed aboard LNG vessel. Orderbook of U.S. shipyards on Sept. 30, 1976, included nine subsidized LNGs. Each cargo sphere weighs 850 tons.

They covered a total of 164 new vessels and the reconstruction of 4 vessels. The proposed new vessels consisted of 80 tankers, 32 LNGs, 6 ore/bulk/oil (OBO) carriers, 12 tug-barge combinations, 4 heavy-lift cargo vessels, 3 breakbulk cargo vessels, 10 RO/RO vessels, 4 Lighter-Aboard-Ship (LASH) vessels, 1 mini-LASH vessel, and 12 bulk carriers.

Ship Deliveries

Eighteen new vessels, aggregating 1.2 million dwt., were delivered by American shipyards during fiscal year 1976 (see Table 2). During the transition quarter five additional vessels, aggregating nearly 500,000 dwt., were delivered by American shipyards. In addition, subsidized reconstruction work was completed on the following ships: the MORMACDRACO and MORMACALTAIR, owned by Moore-McCormack Lines, Inc.; the NATHANAEL GREENE, owned by Waterman Steamship Corp.; and the PRESIDENT LINCOLN, owned by American President Lines.

The following nine subsidized vessels were delivered during the fiscal year:

- the 264,100-dwt. crude oil tankers MASSACHUSETTS and NEW YORK to Boston VLCC Tankers, Inc., for worldwide operations;
- the 39,200-dwt. product tankers MORMACSTAR and MORMACSUN to Moore-McCormack Bulk Transport, Inc., to serve restricted-draft ports of the U.S. Atlantic and Gulf Coasts;
- the 20,000-dwt. RO/RO vanships MAINE and ARIZONA to States Steamship Co. for U.S. Pacific/Far East service;
- the 91,800-dwt. crude oil tanker WORTH to Worth Oil Transport, Inc., for worldwide operations;
- the 91,800-dwt. crude oil tanker BEAVERSTATE to Yeon Shipping Co. for worldwide operations; and
- the 35,000-dwt. product tanker ZAPATA PATRIOT to Zapata Products Tankers, Inc., for worldwide operations.

Between July 1 and September 30, 1976, the following three subsidized vessels were delivered:

- the 264,100-dwt. crude oil tanker MARYLAND to Boston VLCC Tankers, Inc., for worldwide operations;
- the 91,800-dwt. crude oil tanker ROSE CITY to Northwest Shipping Corp. for worldwide operations; and
- the 35,000-dwt. product tanker ZAPATA RANGER to Zapata Products Tankers, Inc., for worldwide operations.

Delivery of these 12 vessels brought to 31 the number of ships contracted for and delivered since enactment of the Merchant Marine Act of 1970.

U.S. shipyards also delivered nine vessels built without subsidy during the fiscal year:

- two 27,300-dwt. product tankers to Marine Ship Leasing Corp. for charter to the Military Sealift Command;
- two 40,100-dwt. product tankers for charter to Chevron Shipping Co. for the U.S. Pacific Coast trade;
- one 42,000-dwt. self-unloading bulk carrier to American Steamship Co. for the Great Lakes trade;
- one 17,300-dwt. RO/RO vanship to an affiliate of Sun Oil Co. for coastwise trade between Alaska and the U.S. Pacific Coast;
- one 16,100-dwt. RO/RO vanship to Pacific Far East Line for the U.S. Atlantic/Middle East trade;
- one 124,000-dwt. double-hull crude oil tanker to an affiliate of Sun Shipbuilding & Dry Dock Co. for worldwide operations; and
- one 8,000-dwt. product tanker to Cleveland Tankers, Inc.

During the transition quarter two unsubsidized vessels were delivered: one 59,000-dwt. self-unloading bulk carrier to Interlake Steamship Co. and one 31,000-dwt. self-unloading bulk carrier to Inland Steel Co., both for the Great Lakes trade.

Deliveries of merchant vessels by major shipbuilding nations during fiscal year 1976 are shown in Appendix III.

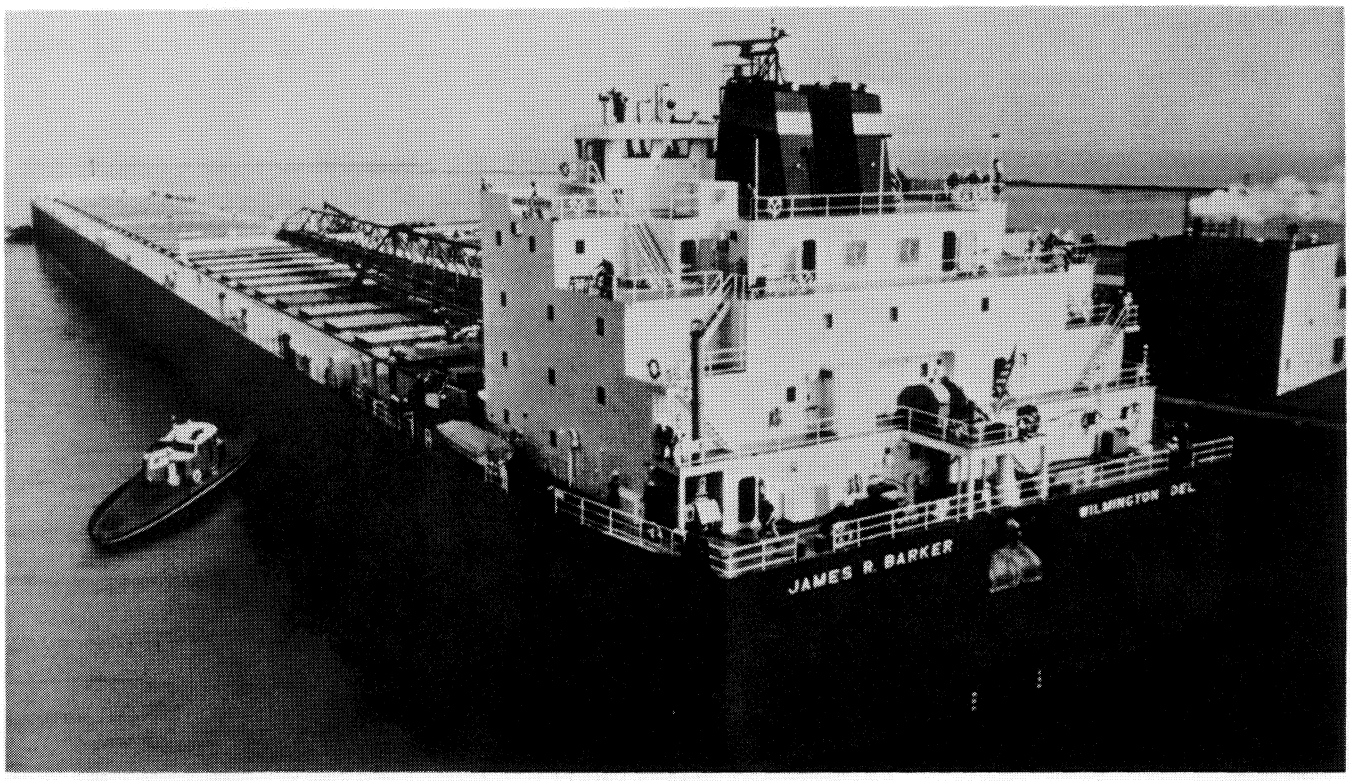
Title XI Guarantees

The Federal Ship Financing Program was established pursuant to Title XI of the Merchant Marine Act of 1936, as amended in 1972. It authorizes the Secretary of Commerce, acting through the Assistant Secretary for Maritime Affairs, to guarantee obligations made to finance the construction, reconstruction, and reconditioning of vessels and certain marine facilities and equipment. In the event of default by the shipowner, the U.S. Government guarantees payment of any principal and interest on the obligation.

The Title XI program encourages financial institutions to provide shipowners with long-term financing on favorable terms and conditions at interest rates that are comparable to those available to large, financially diversified corporations. Hence, ship operators can more easily obtain the large amounts of capital needed to modernize their fleets.

The 1972 amendment to the Merchant Marine Act of 1936 also liberalized the refinancing provisions of Title XI to permit refinancing under a wider range of terms and conditions.

Legislation enacted in November 1975 increased the aggregate amount of unpaid principal that could be guaranteed by the Government from $5 billion to $7 billion.



Motor Vessel JAMES R. BARKER, largest ship ever built entirely on Great Lakes, was christened Aug. 7, 1976. Vessel is 1,000 feet long, 105 feet abeam, and can carry 59,000 tons of taconite (iron ore) or 52,000 tons of coal.

Applications were approved for guarantees totaling approximately $806 million during fiscal year 1976 (see Appendix IV). These guarantees covered 8 deep-draft vessels, 28 ocean tugs or barges, 722 river tugs or barges, 13 drilling vessels, 6 offshore-drilling service vessels, and 325 LASH lighters. During the transition quarter, guarantees totaling almost $79 million were approved covering 6 ocean tugs or barges, 33 river tugs or barges, 9 offshore drilling service vessels, and 203 LASH lighters.

In addition, based on previous commitments, guarantees were placed on 281 vessels and 325 lighters during fiscal year 1976. During the transition quarter, guarantees were placed on 405 vessels and 203 lighters based on commitments which were previously entered into.

Title XI applications approved and contracts in force on September 30, 1976, had a total outstanding principal balance of $4.951 billion and covered 1,873 vessels and 2,666 lighters (see Table 3).

Pending applications for ship financing guarantees, as of September 30, 1976, encompassed construction or reconstruction of 290 vessels and 254 shipboard lighters. The estimated total amount of the guarantees for these projects was $4.7 billion.

The Revolving Fund of the Federal Ship Financing Fund received $22.5 million in net income during the fiscal year and transition quarter, making the Fund's retained income $89.6 million. This Fund is used to underwrite the Government's guarantees and to pay the program's cost.

Capital Construction Fund

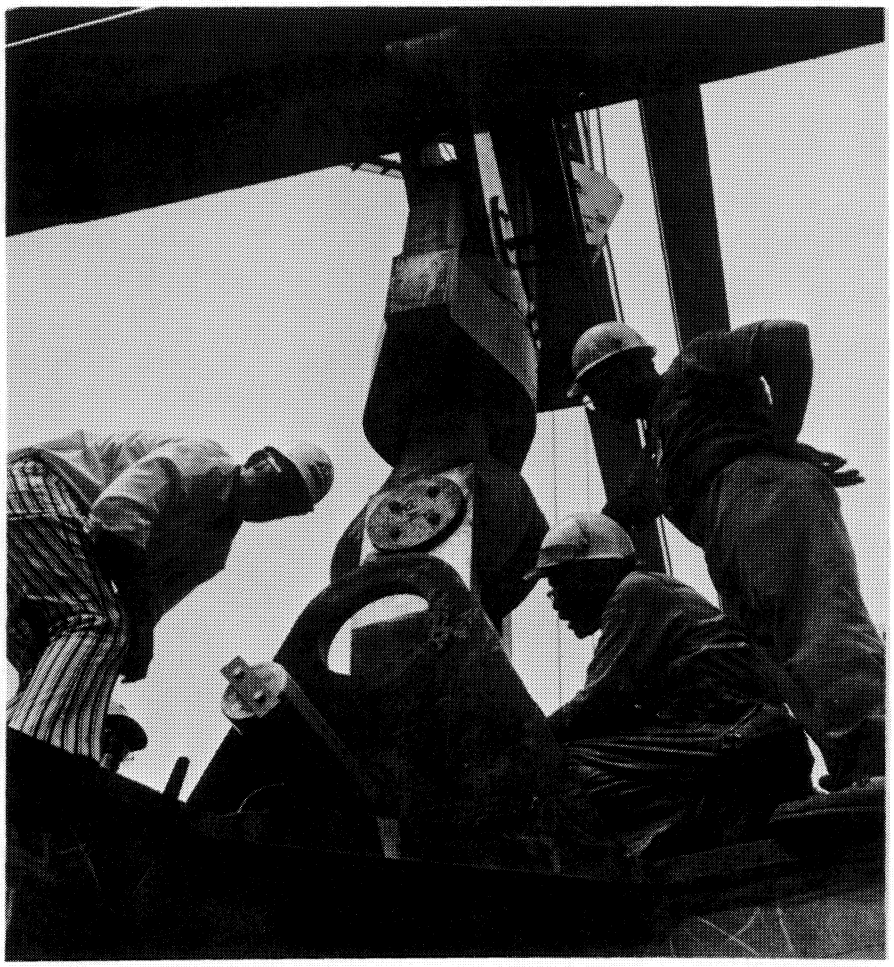
The Capital Construction Fund (CCF) program was created by the 1970 amendment to the Merchant Marine Act of 1936 to assist operators in accumulating the large amounts of capital necessary to build or reconstruct ships. Any U.S. ship owner or operator engaged in foreign, Great Lakes, or noncontiguous domestic trades is eligible to participate in the program.

Any U.S. citizen owning or leasing an eligible vessel may enter into an agreement with MarAd to obtain tax-deferral privileges on deposits placed in the CCF. Eligible deposits include earnings from the operation of a vessel, net proceeds from the sale of a vessel, depreciation on a vessel, and earnings from the investment of accumulated assets in the Fund.

During the fiscal year final regulations were adopted with respect to administration and tax aspects of the CCF. As a result, the 96 interim CCF Agreement holders have had the opportunity to apply for the permanent program. The number of individual and consolidated CCF Agreements increased from 80 to 88 during the 15-month period. Several interim CCF Agreements were terminated or consolidated. (Operators holding interim CCF Agreements who have applied for permanent Agreements and holders of permanent CCF Agreements are listed in Appendix V.) The 88 Agreements call for the acquisition, construction, or reconstruction of vessels, barges, and containers worth about $5 billion during the next 2 decades.

In the past, approximately 26 percent of CCF monies has been used for new construction, 18 percent for the acquisition of new vessels, 21 percent for reconstruction, and 35 percent for payment of new construction debt and existing indebtedness. In the future, it is anticipated that the funds will support about $3.5 billion in construction expenditures for vessels employed in U.S. foreign trade, $770 million for noncontiguous domestic trade vessels, and over $748 million for Great Lakes vessels (a total of $5 billion).

During the fiscal year, CCF holders deposited $291 million into their accounts. Since the inception of the program, qualified deposits of $838 million have been made in the CCF accounts and qualified withdrawals have been made as follows: $177 million for progress payments on construction, $90 million for reconstruction of existing vessels, $85 million for payment of debt obligations for new construction and existing vessels, and $90 million for acquisition of ships. As of September 30, 1976, the CCF balance was $396.1 million.



Construction-differential subsidy contracts let under Merchant Marine Act of 1970 have provided more than 85,000 man-years of employment to American shipyard workers such as these riggers at work in Newport News, Va.

Construction Reserve Fund

To encourage the upgrading of the U.S.-flag fleet, the Construction Reserve Fund (CRF) permits eligible parties to defer the taxation of gain on the sale or other disposition of a vessel, if the net proceeds from the transaction are deposited in a CRF and reinvested in a new vessel within 3 years. Because the benefits of the CRF are somewhat similar to but not as broad as the benefits of the CCF program, the CRF is used predominantly by vessel owners who operate on the inland waterways or in other trades not eligible for the CCF program.

At the beginning of fiscal year 1976, 11 companies maintained CRFs with an aggregate balance on deposit of approximately $3.1 million. Deposits totaled approximately $5 million in fiscal 1976 and $887,376 during the transition quarter. Nine of the fund holders made withdrawals totaling $5.6 million during the year; $1.4 million was withdrawn during the transition quarter. During the fiscal year and transition quarter eight CRF accounts were closed by fund holders who had completed their new construction objectives; and tentative

authorization was granted for the establishment of four new CRF accounts. As of September 30, 1976, there were four CRF accounts formally approved and four accounts tentatively authorized with a total balance of nearly $2 million on deposit (see Appendix VI).

Sea Trials

Personnel of MarAd's Office of Ship Construction participated in the official trials of 82 vessels during the fiscal year to ensure that the basic requirements of the construction contract and specifications were met. Of these 82 vessels, 9 were built with CDS and 73 were financed under the Title XI program. During the transition quarter, MarAd personnel participated in the trials of 23 vessels, 5 of which were built with CDS.

Ship Design

The Agency's continuing effort to maintain an adequate mobilization base for merchant shipping in the event of a national emergency included the development of a series of preliminary mobilization ship designs. When the designs are completed, a series of ships could be built at minimum cost and construction time. Design flexibility, of utmost importance, is reflected in the capability of all designs to carry breakbulk, container, or other types of cargo with minimum alteration to the basic structure of the ship. (Additional information on these ship designs may be found in Chapter 9.)

During the period, the Office of Ship Construction also was engaged in development of a preliminary design for a new type of oceangoing training ship to replace the conventional maritime schoolships. The vessel would operate throughout the year, rotating among the five State maritime academies—in Maine, Massachusetts, New York, Texas, and California—that train officers for deep-draft oceangoing vessels. To allow the students to gain the widest range of experience, many different types of machinery and equipment would be on board. For example, plans call for double engine rooms, incorporating both steam and diesel power plants.

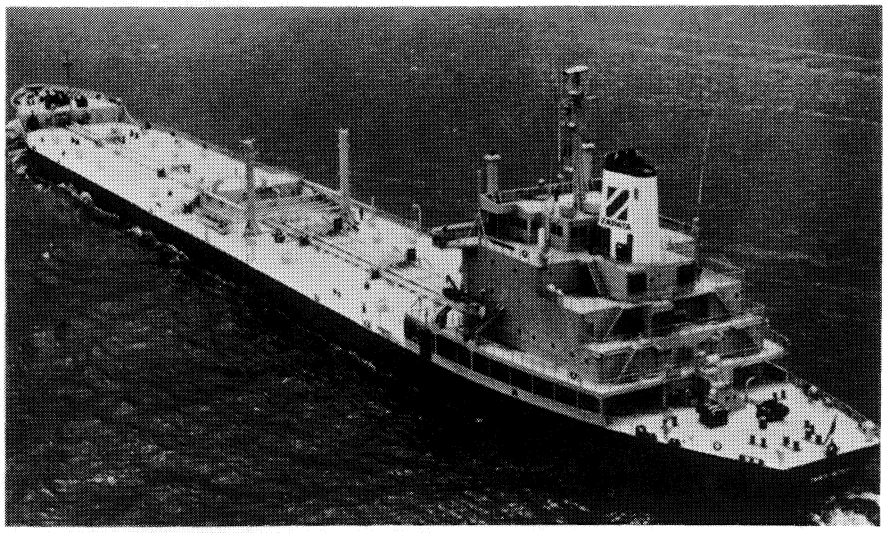
A commercial design was completed during fiscal year 1976 to develop a follow-on generation of containerships based on the United States Lines' Lancer-class vessels. The new design provides greater speed, cargo capacity, and loading versatility than the Lancer class.

Additionally, the Agency completed new *Standard Specifications for Tanker Construction*. Because the Merchant Marine Act of 1970 includes tankers among the type of vessels eligible for CDS, the specifications were needed to assure efficiency and uniformity in the construction program.

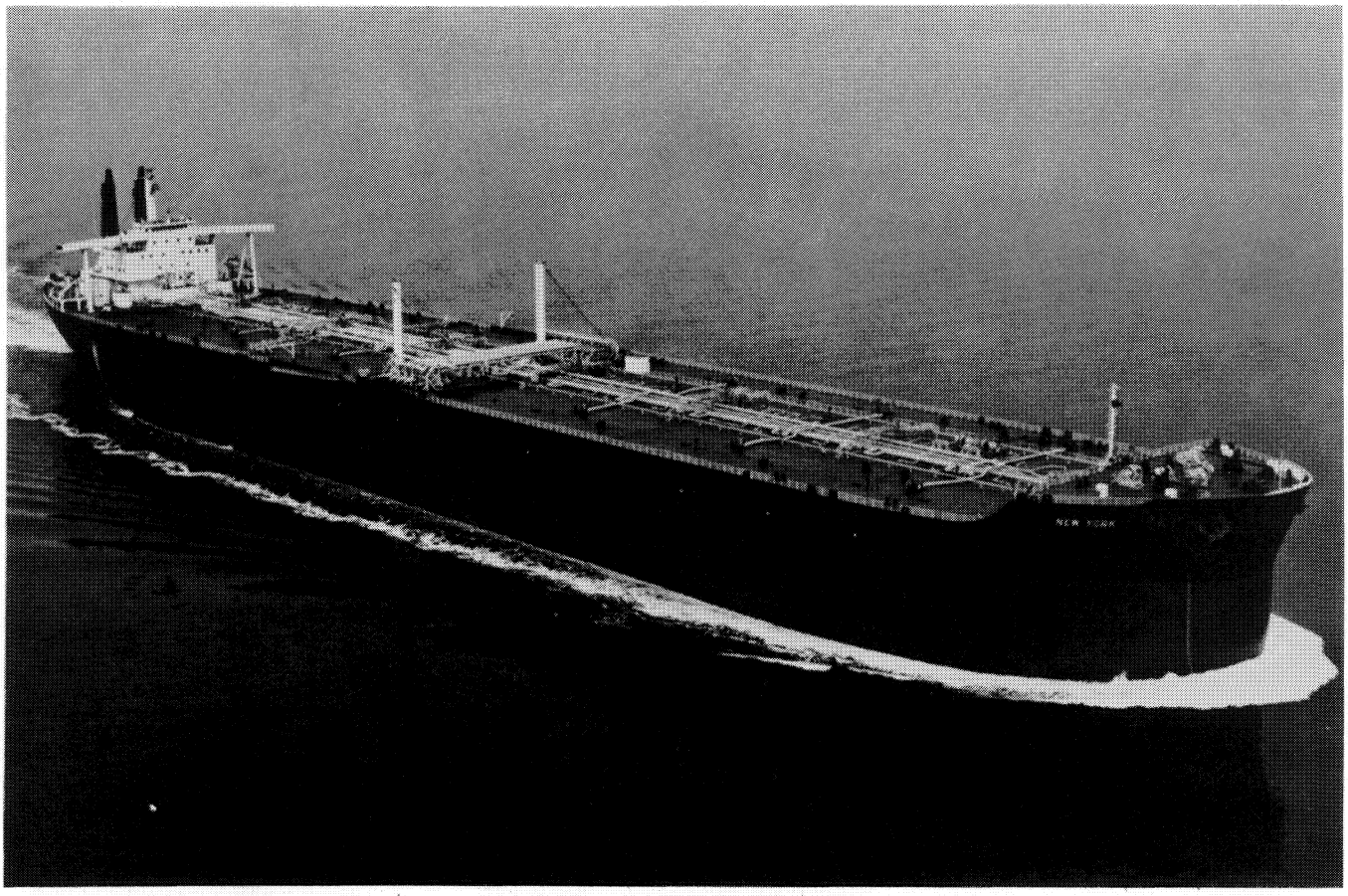
A new *Standard Specifications for Diesel Merchant Ship Construction* was also developed. Recent skyrocketing costs for fuel oil have produced a keen interest in diesels for American merchant vessel propulsion. Diesel engines may offer substantial savings in fuel consumption over traditional steam propulsion systems.

In 1976, the first subsidized vessel with an unmanned engine room, the ZAPATA PATRIOT, was delivered.

The Office of Ship Construction worked closely with the Radio Technical Commission for Marine Services to develop specifications for collision-avoidance radar to be submitted to the National Transportation Safety Board. Collision-avoidance radar tracks other vessels and provides guidance in steering a course to avoid them. Conventional radar simply displays the relative location of vessels and other navigational objects.



SS ZAPATA PATRIOT, 35,000-dwt. product tanker, was among 18 new vessels delivered by U.S. shipyards in fiscal year 1976, and first subsidized ship with unmanned engine room.



SS NEW YORK, one of three largest ships ever built in United States, sails down Chesapeake Bay during trials. Delivered by Bethlehem Steel Corporation, Sparrows Point, Md., 265,000-dwt. tanker and sistership, MASSACHUSETTS and MARYLAND, are owned by subsidiaries of First National Boston Corporation.

Value Engineering

By promoting the development and application of design and engineering innovations, MarAd's Value Engineering Program attempts to lower the cost of ship construction without impairing essential vessel design characteristics. Information about new developments is relayed to U.S. shipbuilders through the Value Analysis Committee of the Shipbuilders Council of America.

Potential savings totaling $800,000 and $207,000 were achieved in fiscal year 1976 and the transition quarter, respectively. Since the program's inception in 1957, cumulative savings have amounted to $31 million—an average of more than $1.5 million per year.

Shipyard Improvements

Since enactment of the Merchant Marine Act of 1970, the American shipyard industry has invested approximately $1 billion in facilities modernization and capital improvements, of which $252.9 million was expended during fiscal year 1976 and the transition quarter.

Despite continuing economic uncertainties in the worldwide shipbuilding market, U.S. shipyards plan to spend approximately $132.5 million for facility improvements during fiscal year 1977.

The following are selected examples of modernization programs at five major yards:

Newport News Shipbuilding and Dry Dock Co., Commercial Ship Division, Newport News, Va. This firm has committed approximately $210 million for a new commercial shipyard scheduled for completion in December 1976. Included in the new facilities is a large building basin 1,600 feet long, 250 feet wide, and 44 feet deep, the largest in the United States. Other new installations include a steel-preparation building, panel shop, sub-assembly areas, and a 900-ton Goliath crane.

Avondale Shipyards, Inc., New Orleans, La. In October 1975, Avondale completed a $42 million expansion program centered around construction of two new building ways on which two ships, each 960 feet by 176 feet, can be built simultaneously. For launching new ships and for major conversion work, the company has also added a 900-by-260-foot floating drydock.

General Dynamics Corp., Quincy Shipbuilding Division, Quincy, Mass. A $40 million modernization program was completed by this yard in mid-1975. Two inclined shipways were converted to building basins to enable the yard to construct LNGs in series production. In addition, a 1,200-ton Goliath crane, the largest in the Western Hemisphere, was installed. The company also committed in excess of $50 million for new tools, machinery, and buildings at its Charleston, S. C., facility, where spherical aluminum tanks are fabricated for the LNG carriers.

Sun Shipbuilding & Dry Dock Co., Chester, Pa. Completion of its $40 million facilities-expansion program in late 1975 has provided Sun Ship with the capacity to build vessels as large as 400,000 dwt. On the yard's new level "shipbuilding platform," two 700-foot-long ship sections or two vessels 700 feet in length or less can be built simultaneously. Sun's new floating drydock can accommodate ships as wide as 195 feet. Its lifting capacity is 70,000 long tons.

National Steel and Shipbuilding Co., San Diego, Calif. In early 1976, NASSCO completed a $20 million expansion and modernization program which enables the yard to build ships as large as 190,000 dwt. In its new building basin, NASSCO can produce vessels with a length of 1,000 feet and a width of 170 feet, compared to the previous maximum size of 900 by 106 feet.

EEO—Shipyards

The Maritime Administration is responsible for insuring that Government contractors in the maritime industries provide equal employment opportunities (EEO) to all Americans regardless of race, color, religion, sex, or national origin. Through its Office of Civil Rights, MarAd conducts EEO compliance reviews at contractor facilities to audit employment practices and affirmative action programs. Where discriminatory practices are encountered, corrective programs are initiated. The ship construction and repair facilities monitored by MarAd account for 80 percent of the industry's total employment.

While total shipyard employment increased by 11.5 percent between 1969 and 1976, minority group employment rose by 58.5 percent. Minorities represented 28 percent of shipyard employees in 1976, compared to 19.6 percent in 1969.

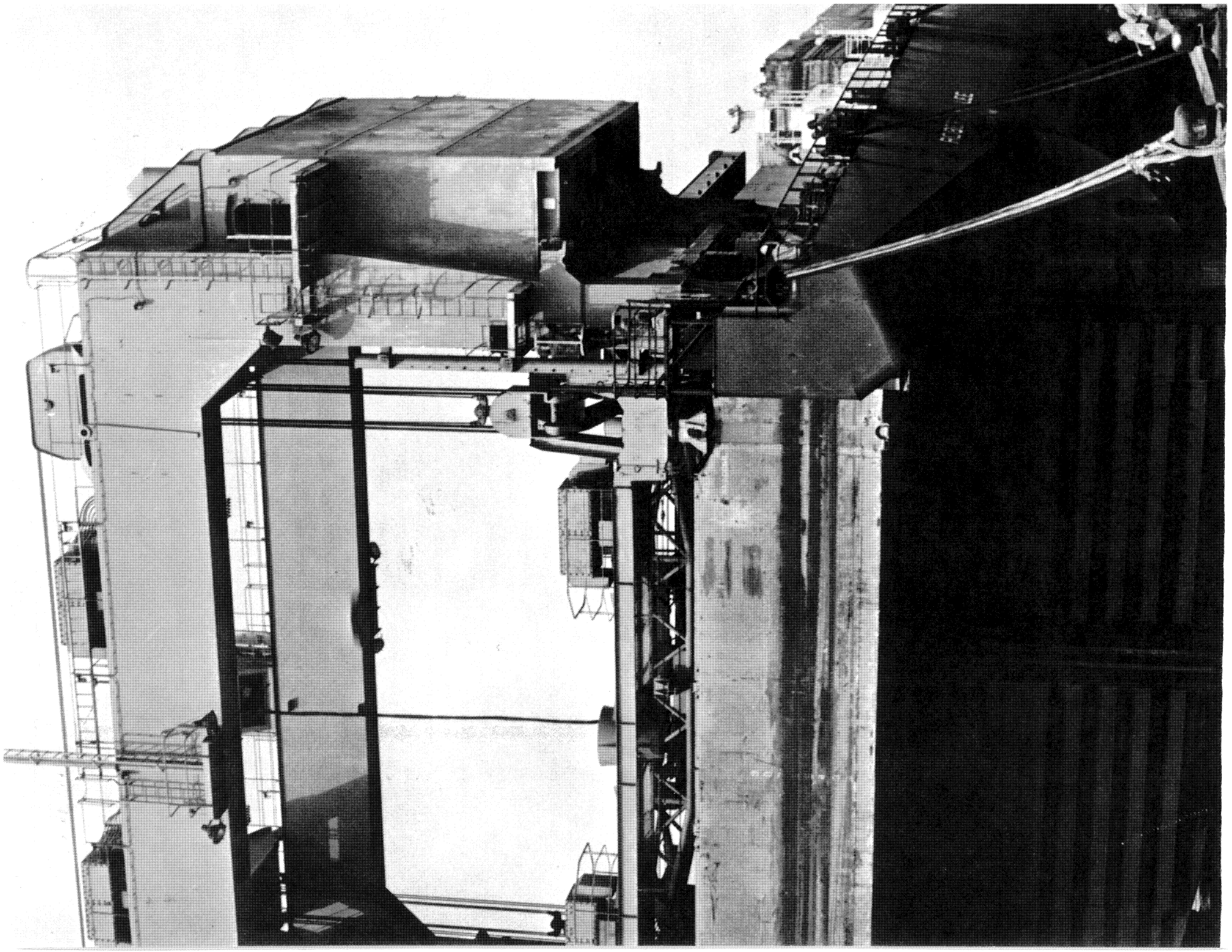
Minority representation in skilled jobs and white-collar salaried jobs—both indicators of progress in the quality of jobs held—also improved. In 1976, minority employees accounted for 30.2 percent of the skilled work-force, compared to 17.7 percent in 1969. Minority employment in this category increased from 9,985 to 17,345, a gain of 7,360 or 73.7 percent. Minority white-collar salaried representation increased from 4.1 percent in 1969, to 10.5 percent in 1976.

Under MarAd's EEO programs, women now comprise 7.5 percent of the shipyard workforce, compared to a 1969 figure of 3.7 percent.

In blue-collar jobs, women held 4.7 percent of the positions in 1976 compared to 0.2 percent in 1969. The number of women in skilled and semi-skilled shipyard jobs also increased significantly, rising from 95 in 1969 to 3,188 in 1976.

MBE Program

The Minority Business Enterprise (MBE) Program was initiated by MarAd in 1973 to foster greater opportunities for minority enterpreneurs in the maritime industry. MarAd personnel work with other government agencies, such as the Department of Commerce's Office of Minority Business Enterprise and the National Oceanic and Atmospheric Administration, to encourage the use of minority contractors by U.S. shipping and shipbuilding companies. During fiscal year 1976, minority contractors furnished more than $11 million in goods and services to the U.S. maritime industry; an additional $2.9 million was furnished during the transition quarter.



Chapter 2

Ship Operations

Status of U.S. Fleet

On September 30, 1976, there were 579 oceangoing merchant vessels of 15.8 million deadweight tons in the privately owned U.S. merchant marine (see Appendix VII). The fleet consisted of 517 vessels in active status and 62 vessels in an inactive status. This fleet had an average deadweight of 27,288 tons, an average age of 17 years, and an average speed of about 18 knots.

The 517 vessels in active status, totaling approximately 13.5 million dwt., included 142 freighters, 211 tankers, 16 bulk carriers, 142 intermodal vessels (containerships, barge-carrying vessels, and RO/RO vanships), and 6 combination passenger/cargo ships. Of the 62 vessels in an inactive status, 26 were laid up and 36 were temporarily inactive, either awaiting cargoes or undergoing repairs.

A composite pictue of the financial status of U.S.-flag operators, both subsidized and unsubsidized, is presented in the Combined Condensed Financial Statements (Appendix X). Table 4 presents the status of the Capital Reserve Funds held by U.S. operators as of September 30, 1976.

ROBERT E. LEE, Lighter-Aboard-Ship (LASH) vessel, loads lighter with stern elevator after it has been positioned by tug.

Operating Subsidy

The Maritime Administration is authorized to pay operating-differential subsidy (ODS) to U.S. shipping companies to offset the higher cost of operating a vessel in foreign trade under the American flag, compared to operating costs under a foreign flag. In past years this form of aid generally covered wages, insurance, maintenance and repairs not compensated by insurance, and subsistence of officers and crews on passenger ships. However, to reduce the industry's dependence upon subsidy, three contracts executed during fiscal year 1975 excluded subsidy payments for hull and machinery insurance premiums and maintenance and repairs not compensated by insurance. These exclusions are expected to result in savings of $59 million during the term of the contracts.

All modern cargo vessels, including bulk carriers, that operate in an essential foreign trade are eligible for ODS. Total payments during fiscal year 1976 and the transition quarter amounted to $386.4 million (see Appendices XI and XII for ODS accruals and expenditures).

Regular ODS

No long-term (20-year) ODS agreements were executed during fiscal year 1976 or the transition quarter. On September 30, 1976, 25 operators (10 liner and 15 bulk) held 26 ODS agreements with the Agency (see Appendix XIII). Of the 198 vessels covered under these agreements, 187 were in operation on September 30, 1976. The other 11 were under construction or on order.

Payments during fiscal year 1976 and the transition quarter pursuant to these regular ODS agreements totaled $347.9 million. ODS accruals from January 1, 1937, to September 30, 1976, totaled $4,771.2 million; recapture amounted to $238.2 million, leaving a net accrual of $4,533 million. Of the net accrual, $4,449.6 million has been paid out, leaving an estimated balance of $83.4 million at the end of the transition quarter.

Contract Auditing

Prior to the enactment of the Merchant Marine Act of 1970, subsidized liner operators were not paid the final 5 percent of accrued ODS until their annual accountings had been reviewed and approved by the Maritime Administration. During fiscal year 1976 final payment audits were completed for 11 liner operators, covering the periods 1970 through 1972. During the transition quarter, audits were completed for one liner operator covering 1970.

The 1970 Act provides for payment on a monthly basis of 100 percent of the accrued wage subsidy. During the fiscal year wage subsidies were paid on a 100-percent basis to 10 liner and 7 bulk operators under this provision, and during the transition quarter, to 10 liner and 6 bulk operators.

Audits of subsidizable expenses completed during the fiscal year resulted in reduced billings to the Government of approximately $3.4 million, and during the transition quarter approximately $500,000.

Uniform Accounts

During the period, the Maritime Administration continued its efforts to automate the various maritime aids programs. For example, a Voyage Performance Reporting System, developed in cooperation with the subsidized companies, will be used in conjunction with a computerized Financial Information and Retrieval System (FIRST). When development of this system is completed, it will provide a quick-access data base for use in economic analyses of the subsidized shipping industry.

Contract Awards

Waterman Steamship Corp. was awarded a 6-month ODS contract, effective from February 3, 1976, to August 2, 1976, for service from U.S. Atlantic and Gulf ports to the Far East (Trade Routes 12 and 22), replacing a contract which had expired in November 1975.

Pending Applications

Thirteen ODS applications from non-subsidized operators were pending on September 30, 1976. By companies and services, these included:

- American Heavy Lift Shipping Co.—to provide a heavy-lift cargo service between the U.S. and foreign ports.
- National Shipping Corp.—to carry dry-bulk cargoes from the Canadian West Coast to the U.S. East Coast.
- Prairie Shipping, Inc.—for the transportation of bulk and general cargoes between Great Lakes ports and Northern Europe.
- Pyramid Sugar Transport, Inc.—to carry grain from the United States to the Soviet Union.
- Suwannee River Lines, Inc.—to transport liquid bulk chemicals between the United States and the Soviet Union.
- United States Lines, Inc.—for containerships operating in the Transatlantic and Transpacific trades.

Applications for ODS for worldwide operations with ore/bulk/oil carriers or tankers were filed by Falcon Equities, Inc.; Farrell Tankers, Inc.; Hedge Haven Corp.; Multi-Carriers, Inc.; Tankers Holding, Inc.; Waterman Carriers, Inc.; and Zapata Western Shipholding, Inc.

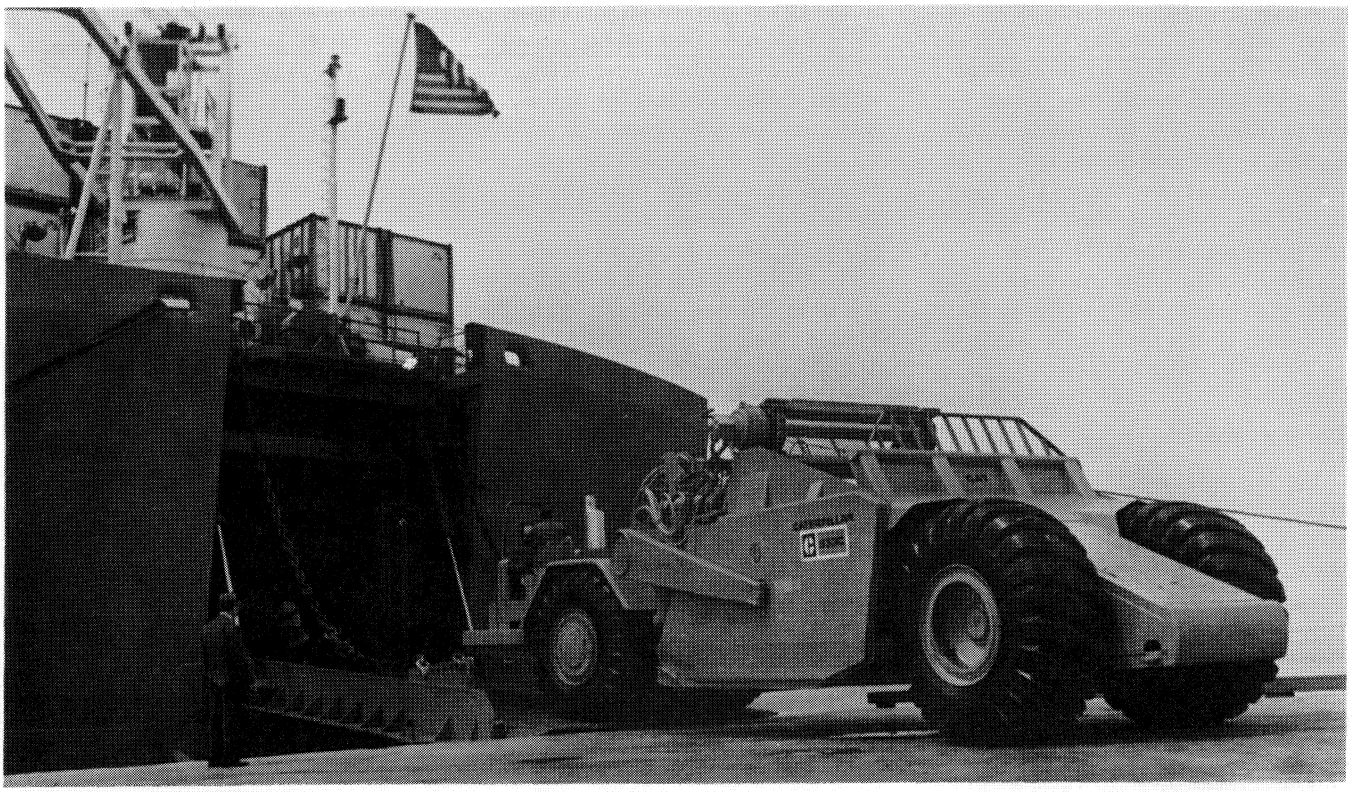
In addition to these applications from non-subsidized operators, six companies with existing ODS contracts applied for either renewals of existing contracts for operating subsidy to provide for additional sailings or new contracts for other services as follows:

- American President Lines, Ltd. (APL)—for a long-term renewal of its ODS agreement for Transpacific freight service (Trade Route 29); for service from U.S. Atlantic, Gulf and Pacific ports to ports in Indonesia and Malaya (Trade Route 17), and for Round-the-World Westbound and Round-the-World Eastbound service. APL also has applied for a 2-year extension of its ODS agreement to enable it and the ODS agreement of APL's American Mail Line Division to expire concurrently on December 31, 1978.
- Lykes Bros. Steamship Co., Inc. for a long-term renewal of its ODS agreement for service from U.S. Gulf ports to ports in the United Kingdom and Continent (Trade Route 21), the Mediterranean (Trade Route 13), the Far East (Trade Route 22), South and East Africa (Trade Route 15-B), and to the West Coast of South America (Trade Route 31); from South Atlantic ports to the Mediterranean (Trade Route 13); and from U.S. Great Lakes ports to ports in the Mediterranean, India, the Persian Gulf, and the Red Sea (Trade Area 4).
- Pacific Far East Line, Inc.—for a long-term renewal of its ODS agreement for service from U.S. Pacific ports to ports in Australia for combination passenger/cargo service only (Trade Route 27), and for extended Transpacific freight service (Trade Route 29).
- Prudential Lines, Inc.—for a long-term renewal of its ODS agreement for service from U.S. Atlantic ports to the West Coast of South America (Trade Route 2), U.S. Atlantic ports to the Caribbean (Trade Route 4), U.S. Pacific ports to the Caribbean and the East Coast of Mexico, the East Coast of South America, and the West Coasts of Mexico, Central, and South America, respectively (Trade Routes 23, 24, and 25), with requests for additional ports in each of these trade routes. Prudential's application also covers service from U.S. North Atlantic ports to the Mediterranean (Trade Route 10), U.S. South Atlantic to the Mediterranean and Black Sea (Trade Route 13), and additional service from U.S. North and South Atlantic ports to the Atlantic Coast of Spain north of Portugal.
- States Steamship Co.—for a long-term renewal for Transpacific Far East service (Trade Route 29).
- Waterman Steamship Corp.—for services from U.S. Gulf ports to the United Kingdom and Continent (Trade Route 21), from U.S. North Atlantic ports to the United Kingdom and Continent (Trade Route 5-7-8-9), U.S. North Atlantic to Scandinavia and the Baltic (Trade Route 6), and from U.S. South Atlantic ports to the United Kingdom and Europe north of Portugal (Trade Route 11). Waterman has also applied for new long-term ODS agreements for services from U.S. Atlantic ports to the Far East (Trade Route 12), and from U.S. Gulf ports to the Far East (Trade Route 22).

Subsidy Index

The Subsidy Index System embodied in the 1970 Act provides for the payment of wage subsidies in per diem amounts. The rate of change in the index, computed annually by the Bureau of Labor Statistics, determines the change in seafaring employment costs for subsidy purposes. Since the collection of foreign cost data takes several months, the Maritime Subsidy Board establishes tentative subsidy rates within 90 days of the beginning of each fiscal year.* The tentative fiscal

*NOTE: Although the Federal fiscal year now begins on October 1, the tentative subsidy rates cited in this paragraph are and will continue to be based on years starting July 1.



"Heavy-lift" earth mover is rolled over stern loading ramp onto American Export Lines Seabridge class RO/RO vessel. RO/RO vessels also receive other cargoes, such as trailers, via stern or bow ramps.

year 1976 rates for all subsidized vessels were completed in September 1975. Tentative rates for fiscal year 1977 were completed in September 1976.

MarAd completed all final 1972 and 1973 subsidy rates applicable to cargo and passenger vessels in liner service. In the Soviet Grain Program, 93 of the 231 final rates were completed. During the transition quarter, an additional 15 rates were completed.

Soviet Grain ODS

The United States and the U.S.S.R. have signed two maritime agreements, a 3-year accord in October 1972 and a 6-year accord in December 1975.

Since the first agreement was signed in 1972, U.S.-flag ships have participated in the carriage of over 39 million metric tons of grain purchased by the Soviet Union. During this period American-flag ships, carrying 9.33 million tons of grain, made 262 voyages to Soviet ports.

As of September 30, 1976, 43 operators held short-term ODS agreements covering 88 vessels for the carriage of agricultural commodities from U.S. ports to ports in the U.S.S.R. (see Appendix XIV).

Payments during fiscal year 1976 under the special Soviet Grain Agreements totaled $28.3 million (see Appendix XI). Forty-seven U.S. bulk vessels were fixed for 98 voyages during fiscal year 1976, and accrued $42.6 million in operating-differential subsidy. During the transition quarter, payments totaled $10.2 million, U.S. bulk vessels were fixed for 10 voyages, and they accrued $3.3 million in ODS.

These ODS agreements provide that within 1 year after termination of the grain voyage the operators shall submit their actual subsidized costs to determine the total subsidy due on each voyage completed. On September 30, 1976, 138 audits of cost submissions had been completed for the 149 voyages terminated through December 31, 1975, permitting the determination of final subsidy rates and payments to the operators.

Since the program began in fiscal year 1973, operators have accrued $103.4 million in ODS. Of this accrual, $85.5 million has been paid, leaving an estimated unpaid balance of $18 million at the end of the transition quarter.

In addition to exporting grain cargoes, these vessels have the capacity to import substantial amounts of crude oil and petroleum products on return voyages.

A new 5-year grain trade agreement, effective October 1, 1976, calls for the Soviet Union to purchase at least 6 million metric tons of grain per year from U.S. supplies with the option, within certain guidelines, of increasing this purchase to 8 million metric tons per year. The U.S.-U.S.S.R. Maritime Agreement, described in Chapter 10, provides U.S. vessels with the opportunity to carry at least one-third of the total grain cargoes.

Contract Awards

During fiscal year 1976 and the transition quarter four new operators with a total of 10 ships were awarded short-term ODS contracts under the Soviet Grain Program. In addition, seven operators with existing contracts added a total of 15 vessels to their contracts. Three existing operators with 6 ships terminated their ODS contracts, and five existing operators withdrew 10 vessels from the program. A net gain of one operator and nine vessels was recorded during fiscal year 1976 and the transition quarter.

Grain Rates

On September 22, 1975, a new U.S.-U.S.S.R. freight-rate agreement went into effect, providing a minimum rate of $16 per ton to be paid to American vessels transporting grain to the Soviet Union through December 31, 1976.

Passenger Ships

The passenger liner SS UNITED STATES, acquired by the Maritime Administration under Public Law 92-296 on February 5, 1973, remained in lay-up status in the National Defense Reserve Fleet at Norfolk, Va. An Invitation to Bid on the purchase of the vessel was issued on August 7, 1975. Bids were opened on January 27, 1976, but all bids were determined to be unresponsive to the invitation and were rejected. (In October 1976, Congress passed legislation, subsequently signed by the President, to amend Public Law 92-296 to allow the use of the SS UNITED STATES as a floating hotel on, or in, the navigable waters of the United States.)

On September 30, 1976, the active U.S.-flag passenger fleet consisted of the SSs MARIPOSA and MONTEREY, operated by Pacific Far East Line, Inc., in the Pacific trade, and four combination passenger/cargo vessels, the SSs SANTA MAGDALENA, SANTA MARIA, SANTA MARIANA, and SANTA MERCEDES, operated by Prudential Lines, Inc., in the South American trade.

Limited passenger service (approximately 12 passengers per vessel) was continued by seven U.S.-flag operators: Farrell Lines, Inc.; Moore-McCormack Lines, Inc.; Lykes Bros Steamship Co., Inc.; American President Lines, Ltd.; Waterman Steamship Corp.; Delta Steamship Lines, Inc.; and United States Lines, Inc.

Sec. 804 Activities

Section 804 of the Merchant Marine Act, 1936, as amended, makes it unlawful for any contractor receiving ODS or any holding company, subsidiary, affiliate, or associate of such contractor, directly or indirectly to own, charter, act as agent or broker for, or operate any foreign-flag vessel which competes with an essential American-flag service, without the prior approval of the Secretary of Commerce. The prohibition also applies to any officers,

ASHLEY LYKES, 14,300-dwt. partial containership owned by Lykes Bros. Steamship Co., moored at Great Lakes port. Lykes inaugurated first U.S.-flag Great Lakes-overseas service in fiscal 1975 and continued it in 1976.

directors, agents, or executives of such an organization.

During fiscal year 1976 and the transition quarter, the following waivers were granted under Section 804:

- Lykes Bros. Steamship Co., Inc.—to permit Lykes to act as a general agent in the U.S.-Gulf for the Soviet-flag Far Eastern Shipping Company (FESCO).
- Waterman Steamship Corp.—to permit Coordinated Caribbean Transport, Inc., an affiliate of Waterman, to operate foreign-flag vessels between Miami and Ecuador, Panama and Central America.
- American President Lines, Ltd.—to permit Anchor Trading Co.—a wholly owned subsidiary of Natomas Co., which owns more than 50 percent of the stock of American President Lines—to own, operate and/or charter the foreign-flag tanker FRANK M.
- Delta Steamship Lines, Inc.—to permit Delta to act as husbanding agent for Jamaica Merchant Marine Ltd.

The following Section 804 waivers were granted in connection with the transport of grain to the Soviet Union:

- Cove Tankers Corp.—to permit Compania Naviera Sfakia, S.A., an affiliated Panamanian company, to operate the foreign-flag tanker MOUNT JULIE.
- Ingram Ocean Systems, Inc.—to permit C. Rowbothai & Sons, Ltd., an affiliated company, to operate 19 foreign-flag vessels.
- Mobil Oil Corp.—to permit foreign-flag subsidiaries of Mobil to own and operate 45 foreign-flag vessels, and to charter 44 foreign-flag vessels.
- Sun Transport, Inc.—to permit Sun Transport to operate three foreign-flag vessels for Sun Overseas Transport, Ltd., an affiliated company and a subsidiary of Sun Oil Co.

In addition, 39 companies received extensions of previously granted waivers to allow them continued operation in the special Soviet Grain ODS Program.

Trade Routes

No changes were made in the number or description of routes and services determined to be essential to foreign commerce of the United States. Surveillance was continued over existing routes and services as to their continuing essentiality and the requirements for U.S.-flag service. Particular attention was given to those areas where applications were pending for new or amended operating-differential subsidy contracts or for assistance in the construction or reconstruction of vessels.

EEO—Ship Operators

The employment of minorities by major shipping companies has risen significantly since 1969, when MarAd assumed responsibility for monitoring the American lines' compliance with equal employment opportunity statutes.

In 1976 minority employment reached 1,528 persons or 17.5 percent of the total shoreside (noncasual) workforce; in 1969, there were 730 minority employees, or 10.3 percent of the shoreside workforce. Since 1969, total shoreside (noncasual) employment has increased by 23.7 percent, while minority employment during the period increased by 109.3 percent.

During the same period, minority participation in professional and management positions more than doubled, from 4.5 percent to 9.4 percent of the total shoreside workforce.

The status of women also improved. In 1976 women constituted 8.6 percent of all professional and managerial positions, compared with 2.1 percent in 1969. Overall, women comprised 37.4 percent of the total shoreside workforce.

Foreign Transfers

The Maritime Administration approved the transfer to foreign firms of 91 ships of 1,000 gross tons and over during the fiscal year, and 13 during the transition quarter. Fifty-four of the ships were undocumented or registered under foreign flag, although owned by U.S. citizens (see Appendix XV).

Approvals were also granted for the foreign transfer of 540 vessels of less than 1,000 gross tons during the fiscal year, and 110 such vessels during the transition quarter. These included 65 commercial and 45 pleasure crafts.

Charters of 74 U.S.-owned ships to aliens were approved during the fiscal year and 19 during the transition quarter. Charters were approved for 60 smaller vessels (under 1,000 gross tons) during the year, and for 11 during the transition quarter.

During the year 45 banks were approved for retention on the Roster of Approved Trustees, pursuant to Public Law 89-346 and General Order 107. One trustee was removed from the Roster. During the transition quarter, 14 banks were approved. Approval was granted for U.S. financial institutions to assign their interests in three construction contracts to aliens during the fiscal year, and for two assignments during the transition quarter.

During the fiscal year and the transition quarter there were 60 sale violations involving privately owned ships, of which 50 were mitigated.

User charges for filing applications for foreign transfers and similar actions totaled $61,927.22 during the fiscal year, and $12,353.75 during the transition quarter.

Chapter 3

Domestic Operations

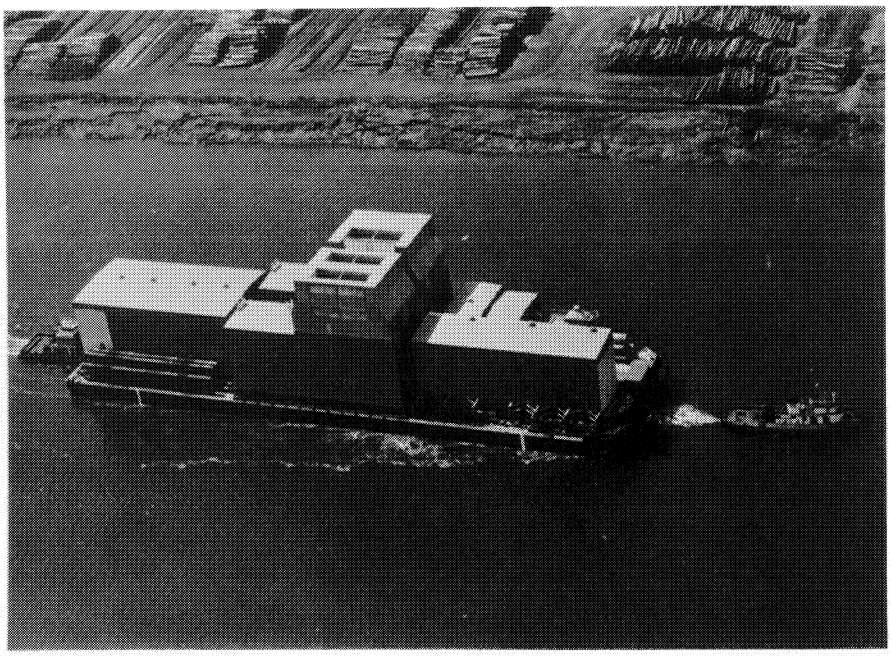
The domestic portion of the U.S. merchant marine, which transports more than a billion tons of cargo annually, has received greater emphasis in Maritime Administration programs in recent years.

Operators in all domestic trades—Great Lakes, inland waterways, and the coastwise, intercoastal, and noncontiguous ocean trades—have benefitted from MarAd's efforts.

Promotion

The Second National Conference on Domestic Shipping, held in New Orleans, La., March 10-11, 1976, brought together leaders of the domestic shipping industry for a critical review of its productivity. The conference participants reassessed their situation in light of increased fuel costs, environmental constraints, and the economic changes which had occurred since the First National Planning Conference on Domestic Shipping in St. Louis, Mo., in 1972. They made more than 50 recommendations, emphasizing improved productivity but also addressing issues ranging from railroad rates and mini-bridge competition to marketing programs. These recommendations will serve as a basis for the development and revision of MarAd domestic shipping policy and programs, much as the recommendations of the First National Planning Conference served as a basis for existing domestic shipping programs of the Agency.

During the period, the report, *Domestic Waterborne Trade of the United States*, was expanded to cover the years 1967 through 1974. The report lists commodities moved in domestic trades, the types of vessels employed, and waterborne trade between geographic areas. This publication and the Maritime Domestic Commodity Flow Data Bank, for which the publication provides a data base, support the Agency's domestic market development activities.



Modular building units enroute to Prudhoe Bay, Alaska. When trans-Alaska pipeline begins operating late in 1977, it will generate large demand for U.S.-flag tankers to carry oil to lower 48.

Great Lakes

In keeping with the policy established by the Merchant Marine Act of 1970, MarAd greatly expanded its efforts to serve the Great Lakes maritime industry.

In October 1975 the Great Lakes Region Office of the Maritime Administration was officially opened in Cleveland, Ohio. New marketing offices also were established in Cleveland and Detroit, Mich., in addition to the previously existing marketing office in Chicago, Ill.

In fiscal year 1976, Lykes Bros. Steamship Co. and Farrell Lines, Inc., returned to the Great Lakes. Lykes Bros., in fiscal 1975, had become the first U.S.-flag line since 1969 to provide Great Lakes-overseas service. Lykes' service links the Great Lakes to ports in the Mediterranean, Africa, and Southwest Asia, while Farrell provides service between the Great Lakes and Africa.

4,300-bhp MARJORIE B. McALLISTER, with pilothouse raised, pushes 18,000 dwt. oceangoing barge CIBRO ALBANY, one of the largest oceangoing barges operating on U.S. Atlantic coast.

Towboat maneuvers barges on Arkansas-Verdigris Navigation System. U.S. domestic shipping industry, of which this system is a part, transports more than 1 billion tons of cargo annually.

The winter freeze-up is one of the most severe impediments to further development of the Great Lakes maritime industry. The Maritime Administration, the U.S. Army Corps of Engineers, and other Federal and State government agencies continue their cooperative efforts to extend the navigation season on the Lakes and the St. Lawrence Seaway.

The Agency's new Great Lakes Region field offices provide managers of Lakes carriers, most of which are headquartered in Cleveland, with greater access to MarAd programs while significantly improving MarAd monitoring of Great Lakes activities.

Growth of waterborne commerce on the Great Lakes is encouraged through meetings with existing transportation companies and potential investors to apprise them of opportunities for new or expanded shipping services. Region staff personnel have conferred with Canadian authorities who are trying to reduce truck-trailer movement over Canadian highways by encouraging greater use of waterborne transportation. A conference also was held with towing companies, an industrial user, and a consultant to assess the viability of year-round multi-barge Great Lakes trade.

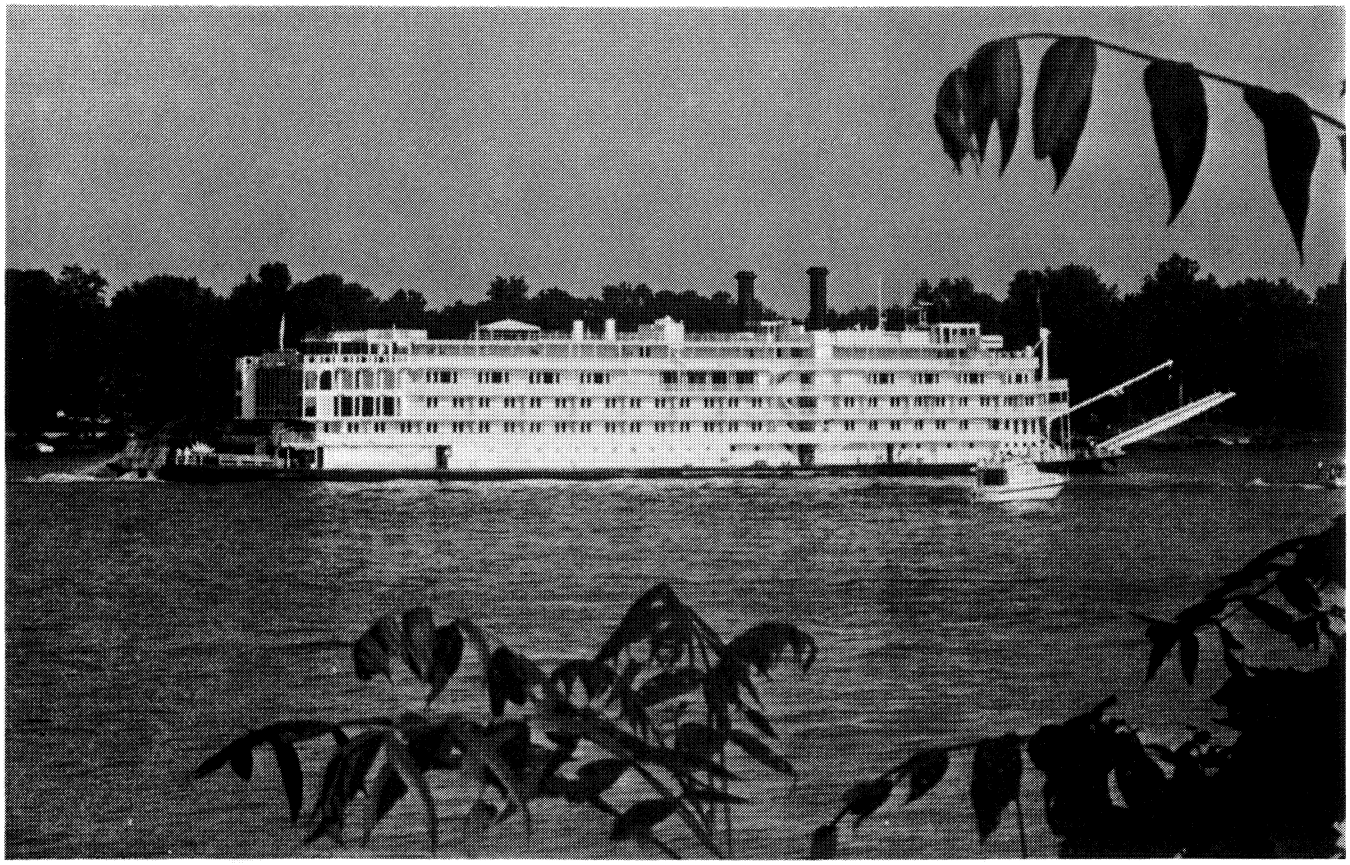
Other MarAd Great Lakes activities are described in Chapters 4, 5, and 6.

(See Table 5 for the composition of the U.S. Great Lakes fleet.)

Inland Waterways

Approximately 590 million tons of traffic moved on the inland waterways of the United States in calendar year 1975. This traffic consisted primarily of energy products, raw materials, and agricultural commodities.

The Maritime Administration's promotion of inland waterway transportation accelerated during the reporting period. This effort was marked by a strengthening of the coordination between MarAd and the towing industry and by greater MarAd participation in other Federal programs which affect inland waterway transportation.



MISSISSIPPI QUEEN, newest and one of only two overnight river steamboats operating in U.S., joined U.S. domestic fleet on July 25, 1975, at Cincinnati, Ohio.

During the 15-month period, MarAd and the inland waterway carriers jointly sponsored a study to investigate the most energy-efficient type of river shipping operation. The study will establish practical guidelines to reduce energy consumption and aid in promoting energy conservation.

A joint MarAd-U.S. Coast Guard study was initiated to identify, test, and evaluate interim repair materials and their applications for tank barges.

The Agency actively participates in regionl studies sponsored by the Ohio River Basin Commission and the Upper Mississippi River Basin Commission to investigate the future water transportation requirements of these areas. MarAd also is an active member of the Transportation Research Board's Inland Water Transportation Committee.

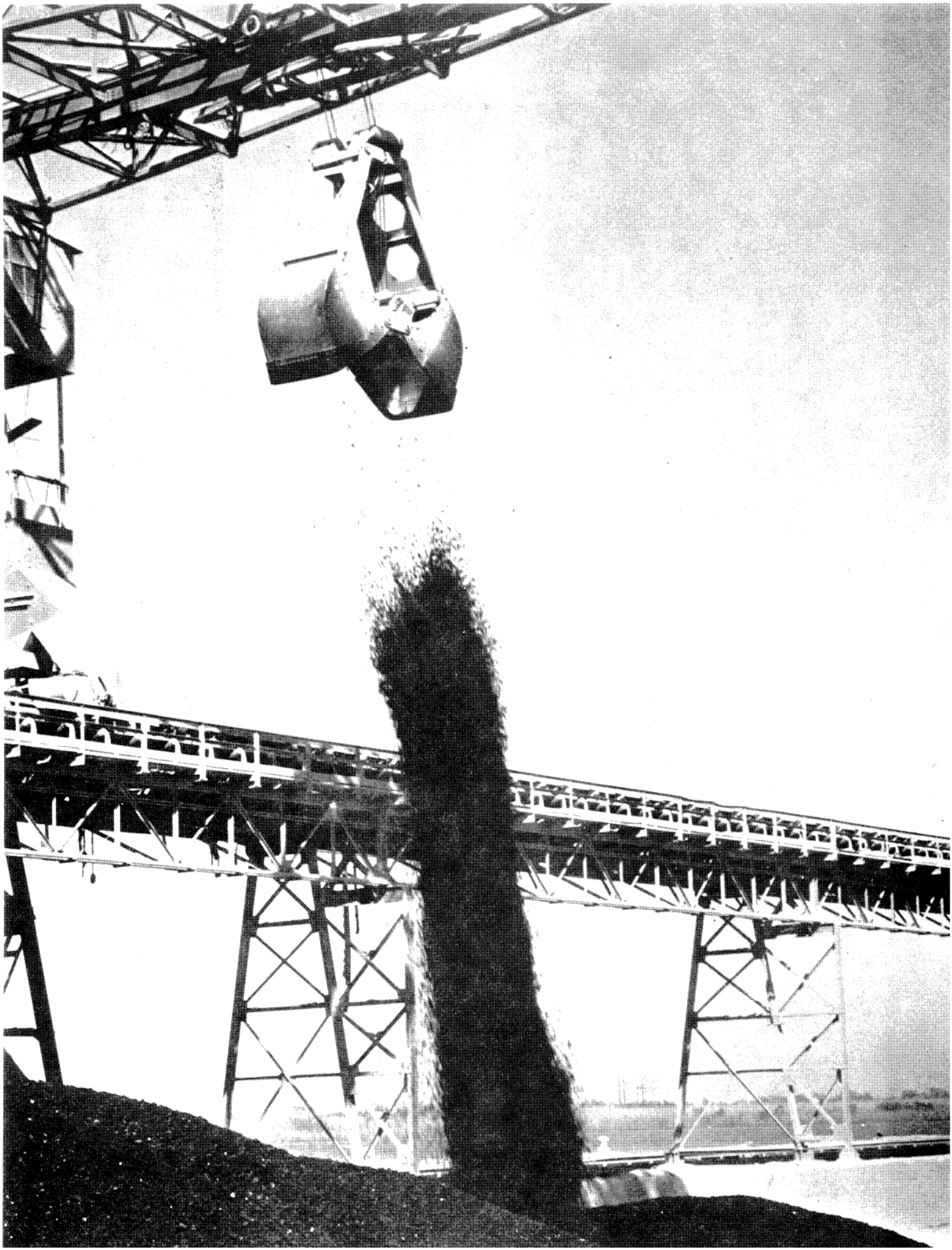
Domestic Ocean Trades

MarAd supported a Senate proposal to extend the U.S. coast-wise laws to the Virgin Islands with respect to petroleum products and prepared an in-depth analysis of the Virgin Islands oil trade. Although hearings were held on the bill, no floor action was taken by the Senate. A similar bill also was introduced in the House of Representatives. MarAd is continuing its surveillance of the Virgin Islands trade in anticipation that it will eventually provide future opportunities for American-flag carriers.

An in-depth analysis to evaluate year-to-year changes and forecast future trends in the domestic trades was completed during the year.

The Agency developed a computer program to retrieve commodity-flow data from the U.S. Army Corps of Engineers' data bank through a remote terminal. These data can be developed and customized for domestic, ocean, or inland waterways trade studies. Several industry requests were fulfilled with data retrieved via the remote terminal.

During fiscal year 1976 MarAd completed a number of studies on special situations affecting domestic ocean shipping. These included *Certain Statistical Data on the Domestic Ocean Trades for the Year 1974* and *The Role of the U.S. Tanker in the Virgin Island/U.S. Mainland Oil Trade.*



Chapter 4

Market Development

The Maritime Administration conducts an extensive marketing program to increase U.S.-flag carriage of the Nation's oceanborne foreign trade by: (1) Developing marketing information and cargo data which aid U.S.-flag ship operators in their sales efforts; and (2) Familiarizing exporters and importers with the benefits of transporting their cargoes on U.S.-flag ships.

Marketing Program

During the fiscal year and the transition quarter, MarAd's marketing program centered on such activities as direct contacts with shippers to promote patronage of American-flag lines; improving communications between U.S.-flag ship operators and shippers through the use of computer-based Shipper and Market Lead Information Systems; marketing-assistance projects to promote the expansion of U.S.-flag shipping services through studies, publications, seminars, and forums; and a special effort to increase U.S.-flag participation in the dry-bulk shipping market.

The Great Lakes Region Office inaugurated a "New Ventures" program to develop new American-flag shipping services, both interlake and Great Lakes-overseas.

The Region staff also worked with the advisors to the Great Lakes Overseas Market Assessment Study being conducted to determine the technical and financial feasibility of U.S.-flag operators investing in Great Lakes-overseas services.

MarAd during fiscal year 1976 initiated comprehensive program to develop viable U.S.-flag fleet of dry-bulk vessels. Dry-bulk cargoes, such as coal, comprise major portion of U.S. foreign waterborne commerce.

Representatives of the new marketing offices opened during the year in Cleveland and Detroit began contacting Great Lakes importers and exporters to stimulate increased interest in U.S.-flag shipping. (See Chapter 3.) With the addition of these offices, MarAd marketing representatives are now located in nine major cities.

During the year these representatives contacted policy-level executives of over 2,400 firms engaged in international commerce. Additional marketing contacts were made during the transition quarter.

MarAd marketing representatives have now visited policy-level executives of 75 percent of the 1,000 largest firms engaged in U.S. foreign trade, and more than half of them have isued policy directives supporting the "Ship American" program.

Unsolicited reports received over the past 3 years from more than 150 shippers indicate that approximately $80 million in freight revenues, which would otherwise have gone to foreign shipping concerns, was channeled to U.S.-flag operators as a result of the Maritime Administration's marketing program.

During the year, the Shipper and Market Lead Information Systems were integrated with the marketing procedures of U.S.-flag operators. The Shipper Information System provides carriers with general information on cargo movements, and, when appropriate, suggests means of improving U.S.-flag service. The Market Lead System identifies and tracks immediate and long-term business opportunities for U.S.-flag operators. Both help U.S.-flag operators anticipate the service requirements of American exporters and importers.

During the period, MarAd continued to promote the development of a U.S.-flag heavy-lift shipping capability. A preliminary study of heavy-lift shippers was followed by numerous meetings between MarAd officials and interested U.S.-flag ship operators.

A study, jointly funded by MarAd and Lykes Bros. Steamship Co., will explore the economic feasibility of developing U.S.-flag heavy-lift vessel services. It will analyze the market for such services, and examine vessel systems, regulatory and competitive factors, and the economics of the U.S. heavy-lift trade.

MarAd marketing representatives participated as technical advisors in the development of a publication entitled, *Effective Marketing for the Maritime Industry*. The document is scheduled for publication in 1977.

MarAd expanded its communications with other Federal and local government entities and continued joint sponsorship of seminars, forums, and other programs that promote U.S.-flag shipping. Interagency marketing activities include participation in the Bureau of International Commerce's (BIC's) domestic and international trade fair program. These trade shows have provided many opportunities for discussions with shippers. In addition, MarAd cooperates with BIC (a part of the Department of Commerce's Domestic and International Business Administration) in preparing the transportation sections of *Overseas Business Reports*, a service publication tailored to the markets of 61 foreign countries.

In July 1976 MarAd sponsored a Liner Marketing Conference in St. Louis, Mo., for the principal marketing managers of U.S.-flag carriers. This was the first industry-wide conference of shipping marketing executives. It included a review of marketing priorities and is expected to have a substantial impact on the development of MarAd/industry strategies and tools for increasing the cargo volume of the U.S.-flag liner fleet.

To promote U.S.-flag bulk shipping, MarAd officials met with the top management of a number of major U.S. exporters and importers of bulk commodities, and, in July 1976, the Agency sponsored a National Assessment and Planning Conference on U.S.-Flag Bulk Shipping at Hyannis, Mass. The conference attracted importers and exporters of dry bulk commodities

and chemicals, bulk shipping operators, naval architects, and representatives of labor, shipyards, financial institutions, educational institutions, and government. It produced recommendations and guidelines for a bulk shipping program and acquainted the participants with the government aids available to support bulk shipping.

Special presentations to promote U.S.-flag shipping were made to a number of business organizations, including the Florida Fresh Vegetable and Citrus Shippers, the Chain Store Association, and the Ski Industries Association.

Reflecting the progress of MarAd's marketing activities, the U.S.-flag share of liner cargo rose from 22.9 percent of the 44.2 million tons moved in calendar year 1971 to 30.3 percent of the 45 million tons of liner cargo moved in calendar year 1975.

Although the total liner cargo declined from 53 million tons in 1974 to 45 millions tons in 1975, the U.S.-flag share rose from 29.4 percent to 30.3 percent.

National Maritime Council

The National Maritime Council (NMC), comprised of 33 member organizations representing all segments of the American maritime industry, was founded in 1971 to develop a cooperative approach in programs to promote greater utilization of the U.S.-flag fleet by American importers and exporters. MarAd's Office of Market Development serves as Executive Secretariat for the NMC, both nationally and in each of the NMC's four regions.

During the 5 years of its existence, the Council has provided a forum for the presentation of ideas, opinions, and problems by both the shipping public and U.S.-flag carriers. The unprecedented stability of maritime labor-management relations during this period is a prime example of the cooperative spirit engendered by the NMC.

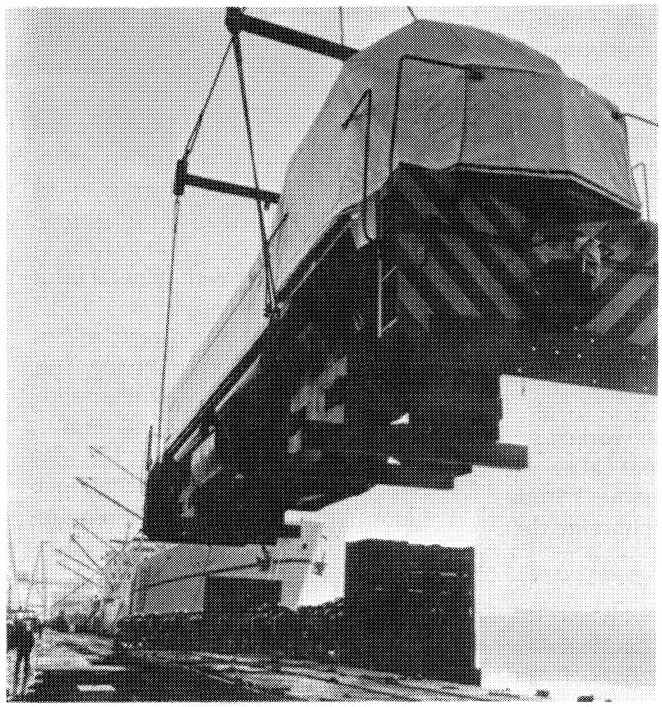
Shipper workshops sponsored by the NMC during the fiscal year provided small groups of shippers and carriers with an opportunity for active discussion of service requirements. These discussions were held not only in major shipping centers but also in such inland cities as Cedar Rapids, Iowa, and Kalamazoo, Mich.

The NMC also focused its attention on ways and means to increase U.S.-flag perishable cargo services and resolve shipper problems impeding the export of such cargoes from the Southeastern United States. After discussions with Southeastern fresh produce shippers, the Department of Agriculture and MarAd, the U.S. carriers expanded their refrigerated container service out of the South Atlantic Coast.

The NMC's Shipper Advisory Boards, which consist of 140 international traffic executives of major U.S. export and import businesses in the four NMC regions, provided a valuable dialogue to air specific problems and service requirements of shippers. In April 1976 Midwest Area Shipper Advisors met in Chicago with officials of 10 U.S.-flag carriers and labor and government representatives. As a result, MarAd has undertaken an in-house study to determine the feasibility of future container exchanges between U.S. carriers. Similar meetings were held with Eastern Region Shipper Advisors in New York City in May 1976 and with Western Region Shipper Advisors in San Francisco, Calif., in September 1976.

A major NMC undertaking during fiscal year 1976 was the publication of a book, *The United States Merchant Marine—A National Asset,* designed as a reference to provide the general public, the news media, and national policymakers with an understanding of the functions and the importance of the American merchant marine.

Cooperative efforts of the NMC and the U.S. Navy League included jointly sponsored Seapower Symposiums in Baltimore, Md.; New Orleans, La.; and San Francisco, Calif.



During fiscal year 1976 MarAd initiated market feasibility study on development of specialized vessels capable of self-loading and unloading heavy or oversize cargo such as locomotive pictured here.

U.S.–U.S.S.R. Bilateral Liner Cargoes

The United States and the Soviet Union in December 1975 signed a new 6-year shipping agreement which extends from January 1, 1976, through December 31, 1981. The new pact retains the basic provisions in effect since 1972. (It is discussed in greater detail in Chapter 10.)

During fiscal year 1976 direct service to the Soviet Union was maintained by three U.S.-flag liner operators. In addition, U.S.-flag container services to the Soviet Union were available to shippers on a trans-shipment basis.

In calendar year 1975 liner service, the U.S. accountable revenue share amounted to $19,111,468 and the Soviet share, $19,756,864.

Preference Cargoes

The Cargo Preference Act, Public Law 83-664, requires that at least 50 percent of all Government-generated cargo be shipped on privately owned U.S.-flag vessels to the extent such vessels are available at fair and reasonable rates.

The Maritime Administration monitors the shipping activities of more than 40 Federal agencies, the Export-Import (Ex-Im) Bank, and the Foreign Military Credit Sales program to assure that applicable cargo-preference statutes are followed. A computer-aided system and concentrated interagency liaison permitted MarAd to process about 18,000 ocean bills-of-lading covering shipments made during calendar year 1975 on this type of cargo.

In October 1975, the Maritime Administration concluded discussions with the Departments of State, Defense, and the Treasury which resulted in the adoption of a Marine Transportation Policy. The policy is applicable to the ocean transportation of defense supplies purchased under the Foreign Military Sales program with credits or guarantees issued by the Department of Defense or the Department of the Treasury. Since January 1, 1976, statistical data have been collected for such shipments, and a report on cargo-preference compliance will be included in future MarAd annual reports.

United States-flag participation in the shipment of Government-sponsored cargoes during calendar year 1975 is summarized in Table 7. Due to a lack of available U.S.-flag service, three agencies failed to meet the 50-percent U.S.-flag requirement of the Cargo Preference Act:

- Agency for International Development (AID)—32-percent U.S.-flag participation overall but only 25-percent U.S.-flag participation in the movement of cargoes under its loans and grants program. Of more than 1 million tons of bulk grains moved by AID to Israel in 1975, U.S.-flag vessels were available to carry only about 150,000 tons. Small quantities of AID fertilizers, offshore liner cargoes, and products requiring small tankers moved in other areas where U.S. vessels also were not available. Of the total cargo generated under the AID loans and grants program, U.S.-flag vessels were unavailable for 1 million tons of cargo. (If this tonnage, for which U.S.-flag vessels were not available, were deducted from the total cargo moved, U.S.-flag participation in the balance of the 1975 program would be 77.5 percent.)
- Bonneville Power Administration—37-percent U.S.-flag participation. Of the total 5,975 long tons moved during 1975, more than 3,000 tons of cargo originated in Western European and Mediterranean countries for delivery to U.S. West Coast ports. There were no U.S.-flag vessels available to handle these shipments. (If this tonnage is deducted from the total, the U.S.-flag participation is increased to 79 percent.)
- Bureau of Reclamation—1-percent U.S.-flag participation. Virtually all cargo orginated at foreign ports and was consigned to ports in the United States on trade routes where U.S.-flag service was not available.

As in the past, shipments generated by the U.S. Department of Agriculture (DOA) and AID comprised the preponderance of all nonmilitary cargoes moving under the Cargo Preference Act.

While the tonnage of DOA cargo generated under the "Food for Peace" program (Public Law 83-480) has increased from an all-time low of 1.4 million tons in 1974 to 4.8 million tons in 1975, the AID loans and grants program had an appreciable decrease in tonnage from 3.6 million tons in 1974 to 1.5 million tons in 1975. The decrease in AID tonnage was due primarily to the cessation of hostilities in Vietnam.

MarAd also administers Public Resolution 17, 73rd Congress, (P.R. 17) which requires all Export-Import Bank-generated cargoes to be shipped on U.S.-flag vessels, unless a statutory or general waiver is granted by MarAd. Statutory waivers are permitted when U.S. vessels are not available at reasonable rates and schedules; general waivers are granted to permit recipient nations to ship up to 50 percent of ocean cargoes on vessels of their national flag if they do not discriminate against U.S.-flag shipping.

In addition to the Export-Import Bank's direct loans and its Cooperative Financing Facility Program, under both of which the privately financed portion of the cargo is subject to P.R. 17, it has generated cargoes for U.S.-flag vessels by its Guarantee Program. Although the bank advances no funds under this program, its guarantee of other bank loans for approved foreign projects brings the cargoes generated by such projects under P.R. 17.

In calendar year 1975 the bank generated $166 million in freight revenue. Due to P.R. 17, U.S.-flag carriers received 77 percent of this revenue, or $127 million.

Chapter 5

Port and Intermodal Development

During fiscal year 1976 and the transition quarter, the Maritime Administration continued its support of local, State, regional, and national efforts to stimulate the American port industry and foster intermodal transportation.

The Agency's technical assistance and promotional programs are designed to increase the efficiency of marine terminal operations at U.S. coastal, Great Lakes, and inland ports. It also serves as a clearinghouse for port and intermodal data—collecting, analyzing, and disseminating information throughout the industry.

Studies during the fiscal year and transition quarter dealt with port economic impact, planning, development, operations, and dredging operations. Activities included the aforementioned first Great Lakes-Seaway Port and Shippers Conference and an international conference on dry-bulk cargo handling.

Through its regional offices, MarAd continued its role as technical consultant on port projects administered by the Economic Development Administration (EDA), another agency in the Department of Commerce. EDA grants and loans for port-related public works have totaled about $150 million since 1965.

Containerships being loaded at Howland Hook Container Terminal, Staten Island, N.Y. National economic impact of port facilities is being studied by Port Authority of New York and New Jersey under $234,049 contract let by MarAd during fiscal year.

Port Studies

Economic Impact—A $234,049 project to study the national economic impact of port activities and develop an analytical approach for efficient port planning and operations in the United States was launched during the year. The study, to be conducted over a period of 20 months by the Port Authority of New York and New Jersey, will evaluate the contributions of port operations in such areas as the local economy and Gross National Product, employment, individual industries, foreign trade, and tax revenues.

The "input/output" technique used in the study represents a new mathematical tool for problem solving in this area. It shows all the intricate links between ports and the Nation's industries and between industries and the consumer. Specifically, this analysis will indicate how the port industry interacts with production and consumption in such sectors as agriculture, steel, and automobiles.

Port Development and Operations—The Massachusetts Institute of Technology (MIT) was awarded a 12-month contract to study the requirements of port planning and development on a local or regional basis. The objective is to provide port planners with the best available analytical tools for improving development strategies. In early 1977, MIT will produce for the Maritime Administration a comprehensive set of reports on planning techniques and their application to port development in the United States.

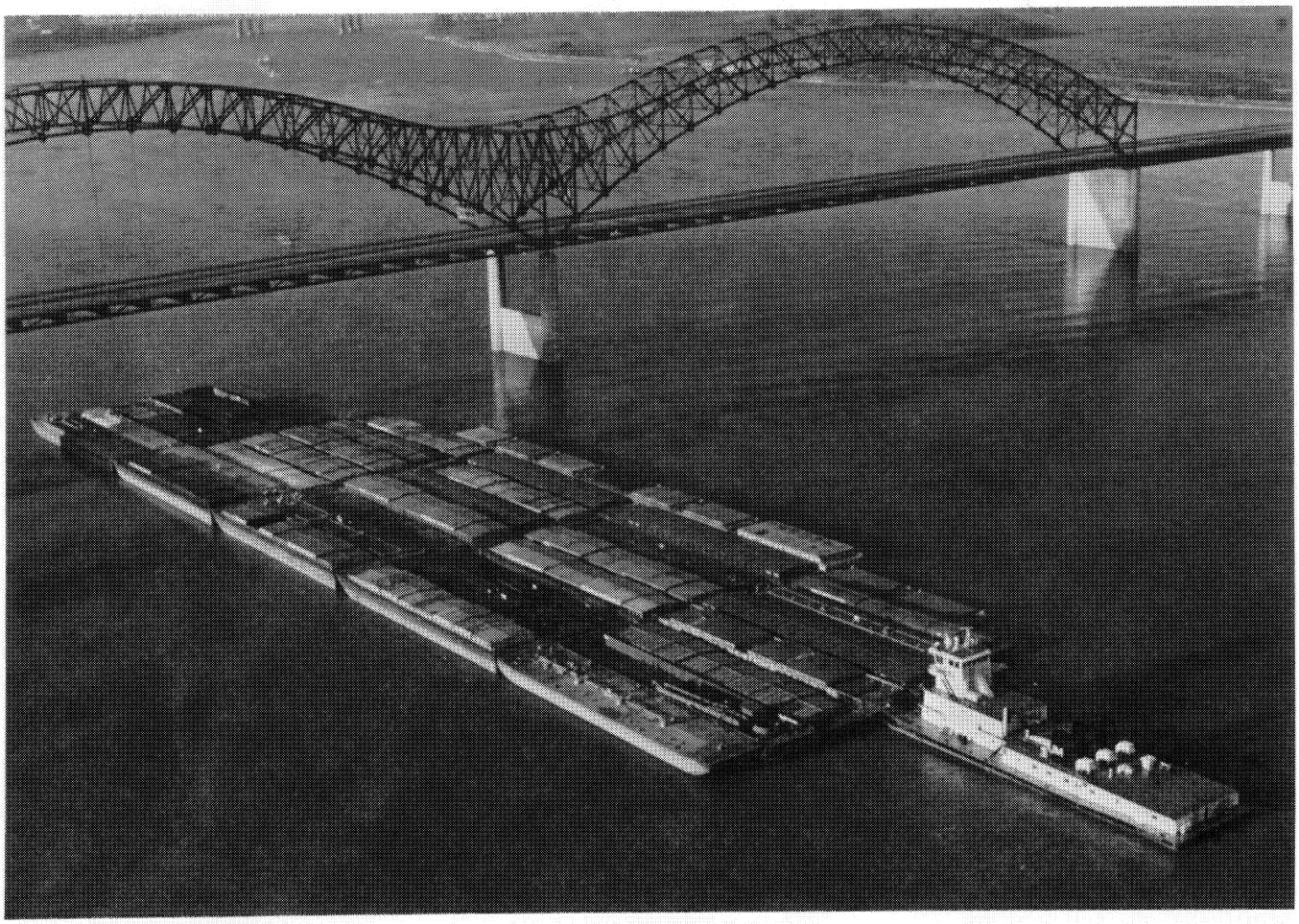
Florida Port Study—During the year the Florida Department of Transportation (FDOT) entered into a port planning program with MarAd. The Florida agency will prepare and implement a state transportation plan that will include ports, with emphasis on environmental considerations. This 18-month contract calls for an expenditure of $450,000, half of which will be underwritten by MarAd and half by FDOT. FDOT, in turn, has subcontracted the technical effort to URS-Coverdale & Colpitts, a management and engineering consulting firm.

This firm's contract calls for the following procedures: a survey of Florida port facilities; charting of the flow of goods and passengers on the State's waterways; assessment of future market demands for waterway and port services; determination of the current capacity of these facilities; recommendation of additional facilities to meet the projected demand; and preparation of proposals for the structure of each port.

The constraints imposed on port planning by Federal and State environmental safety statutes will be scrutinized in this study. The subcontractor will identify environmental problems and their primary causes. He will then propose technical solutions or alternative development plans along with cost estimates for the proposals.

Terminal Capacity—A study sponsored by MarAd and the Northern California Ports and Terminals Bureau (NORCAL) addressed itself to the question: "What is a terminal's capacity?" Completed during the year, the project provides a mechanism for estimating terminal capacity under realistic operating conditions. The individual terminal capacities estimated with this method can be aggregated to portray an entire port's capacity; estimated port capacities can, in turn, be aggregated to indicate the capacity of a group of ports, as was done in this study.

The NORCAL method divides terminal operations into seven functional work elements and determines the intrinsic capacity of each, based on facility and equipment design capacities. These capacities are then made to conform with the constraints



Barge-towing and inland waterway port operations are subject of study, co-sponsored by MarAd and East-West Coordinating Council of St. Louis, which was completed during year.

imposed by a carrier's ships and schedules, the type of trade, and local work practices. The element with the smallest capacity throughout determines a terminal's effective capacity. The NORCAL method thus isolates the element which restricts overall terminal productivity. It can be adapted to eight types of terminals—breakbulk, container, RO/RO, LASH, neobulk, dry bulk, liquid bulk, and multi-use facilities.

St. Louis Port Operations—The East-West Gateway Coordinating Council of St. Louis, Mo., and its subcontractor, A. T. Kearney, Inc., completed a cost-shared analysis of inland port operations in which the Port of Metropolitan St. Louis served as a national prototype. The study examines a number of factors—river level fluctuations; bankside topography; land use; types of dock construction; alternative commodity handling methods; fleeting; Federal regulations applicable to dock operations; and various measures to increase operational efficiency.

Emergency Planning—There was further progress during the year on a port facilities inventory data base. Port personnel began work on this project with MarAd's regional offices in 1974 and 1975. Data gathered in the 2-year inventory provide the base for the Agency's Emergency Berth Utilization Reporting System (EBURS). This program carries out MarAd's statutory responsibilities for emergency port planning established under the Merchant Marine Acts of 1920 and 1936 and Executive Order 11921.

A computer program that will make use of the inventory data was delivered to the Office of Port and Intermodal Development. It will be implemented under a contract for the software package. Completion of the contract will give MarAd the ability to manage more efficiently the planning, control, and scheduling of deep-draft berths in the United States during emergencies.

Cooperative Port Planning—Progress was made during the year in port planning on a regional basis: the Cooperative Development Committee (CDC) for Northwest Ports issued its first Certificate of Endorsement for a port development project.

The Committee approved a project submitted by the Port of Camas-Washougal, Wash., for construction of a barge berthing and loading facility adjacent to the port's industrial park. The facility will handle lumber and steel. It involves a $150,000 investment by the port.

The CDC was organized in December 1975 in response to a recommendation made by the Aerospace Corporation's 1975 Port System Study of the public ports of Washington and Portland, Ore. Representatives from member ports in Washington, Oregon, and Idaho sit on the committee and on subregional groups as well.

The 1975 Washington Public Port System Study was jointly funded by the Washington Public Ports Association, the Port of Portland, Ore., and the Maritime Administration.

Tethered Float Breakwater—Near the end of fiscal year 1976, MarAd initiated a study to determine the economic feasibility and potential commercial market of the Tethered Float Breakwater, a portable, open-ocean floating system for protecting marine operations that are vulnerable to ocean waves. This system is now under joint development by the Naval Facilities Engineering Command, the U.S. Army Corps of Engineers, the State of California, and MarAd.

MarAd's primary role is to determine whether such a device could help LASH vessels pick up or discharge barges at underdeveloped locations which offer potential new markets. It also is identifying other marine operations or construction projects for which even a partial reduction in wave height would reduce the cost or time lost due to adverse wave conditions.

The system is composed of modules, each of which consists of a number of spherical floats about 5 feet in diameter tethered to a ballasted anchor framework. Tank tests and the successful operation of a reduced-scale breakwater in San Diego, Calif., have confirmed that the system can reduce wave heights by as much as 50 percent for wave systems under a 12-second period.

The firm of Moffat and Nichol Engineers, of Long Beach, Calif., will develop details of a method to handle and transport the breakwater modules at the lowest possible cost. International Maritime Associates, of Washington, D.C., and Ogden Beeman, of Portland, Ore., as subcontractors, will canvass the maritime industry and the offshore construction industry to find potential projects which could use the breakwater units. The greater the number of these breakwaters in use, the lower the unit cost would be. The final product that MarAd seeks is a fully developed operational unit that will provide users with an economically feasible protection system.

Mid-America Ports Planning—A proposed Mid-America Port Study to be sponsored jointly by the Maritime Administration and up to 16 states in the Mississippi River System moved a step closer to completion in August 1976. Representatives of several states formed a coordinating committee in Washington, D.C. MarAd committed $200,000 to the venture as its 50 percent share, with the balance to be provided by the participating states.

The study would perform five tasks:

- Conduct an inventory of port facilities on the river system and assess existing port capacities;
- Analyze data on cargo flows in the system, both international and domestic, to study the interaction between ports;
- Analyze the utilization of each port's capacity and determine the amount of unused capacity (The analytical port capacity tools developed in the NORCAL Study will be employed here);
- Project cargo flow data to the year 2000 to determine volume and direction; and
- Estimate additional port capacity and capital requirements to accommodate expected cargo movements to the year 2000; and recommend the type, location, and schedule of needed additions as part of regional system plans.

The diversity of the Mid-America region offers a unique opportunity in cooperative regional port planning, providing a framework that will expedite domestic and international cargo flows by allocating scarce port resources in a most economical manner.

Conferences

Great Lakes Conference—Initial steps for a longrange, industry-developed maritime blueprint for the Nation's "fourth seacoast" were taken during fiscal year 1976. Some 150 industry, labor, and government executives, meeting in Dearborn, Mich., April 25-29, at the first Great Lakes-Seaway Port and Shippers Conference, identified 89 issues facing the region. Participants estimated the total cost of the program they proposed at $43 million—with at least 46 percent to be provided by government and 14 percent by industry. The remaining 40 percent would be shared expense between government and industry, but the exact shares were not determined. The estimate does not include an expenditure of $100 million by the U.S. Coast Guard to build new ice breakers for Great Lakes duty.

Sponsored by the Maritime Administration, the Coast Guard, the Army Corps of Engineers, and the St. Lawrence Seaway Development Corporation, the meeting provided an opportunity for area maritime industry representatives to identify problems facing the Great Lakes shipping industry and to propose solutions to them. Panels discussed Operations and Facilities, Marketing and Finance, Legislation and Regulation, and Research and Development.

On June 15, interested Members of Congress and their staffs were briefed in Washington, D.C., on the conference findings and recommendations.

A committee of the sponsors will allocate responsibility for each issue in keeping with each agency's program capability and budget considerations.

A final report prepared by the conference management firm of A.T. Kearney is available from the National Technical Information Service in Springfield, Va.

Dry Bulk Handling—The Port of Sacramento and MarAd sponsored an International Dry Bulk Handling Conference April 20-21 in Sacramento, Calif. The conference was designed to give dry bulk shippers and representatives of shipping companies, railroads, trucking firms, government, and ports the opportunity to discuss changes in the bulk-cargo handling and shipping business.

Marine Fire Protection—In conjunction with Washington State and the Seattle Fire Department, MarAd sponsored a conference on marine fire protection in Seattle June 9-10, 1976. Representatives of the maritime industry and municipal fire services heard the results of a 28-month pilot project to improve marine fire protection and firefighting systems. Discussions covered such matters as training, liability, equipment, and firefighting techniques.

MarAd and the National Fire Prevention and Control Administration, another Department of Commerce agency, have agreed to co-sponsor in 1977 a cost-effectiveness study of regional marine firefighting teams and alternatives to such teams.

Other Reports, Publications

In addition to the study and conference reports noted above, publications were released on the following ports and intermodal topics during the year:

Inventory of American Intermodal Equipment, 1976—An inventory update listing all U.S.-owned intermodal equipment, with statistical data on various types of containers, chassis, shipborne barges, and Roll-On/Roll-Off trailers, plus related vessels.

Untangling Dredging Regulations—Developed and published by the Western Region Office of MarAd, this publication sorts out the Federal and State agencies that have authority over dredging activities in the Nation's waters. It comments on the scope of each agency's powers and identifies problems U.S. ports have encountered because of existing permitting processes and dredging regulations. Among these are:

- Agency overlap and duplication of regulatory procedures.
- Long delays in obtaining permit approvals.
- Insufficient use of simplified application procedures for the authorization of maintenance dredging projects.
- The need for long-range planning of dredging activities, coupled with regional port planning.

Suggested remedies include:

- Adoption by State and Federal agencies of clear and concise decisionmaking procedures.
- Coordination to eliminate duplication.
- Fixed time limits for agency actions.

Port Information Sources—Provides information on ports in the United States and throughout the world, including general and special publications and bibliographies. Public and private organizations are listed, along with port-related agencies of the Federal Government.

Regional Developments

In addition to initiating and/or participating in some of the foregoing projects or programs, MarAd conducted regionally oriented programs which included pollution prevention, energy conservation, and coastal zone management, as well as monitored activities of the Economic Development Administration, and other local, State, regional, and Federal agencies.

In the Central Region, a *Container Transfer Report for the Port of Houston* was completed as part of a national project on rail-marine interfaces. The Central Region staff also participated in the establishment of a Post-Hurricane Assessment Team and agreed to provide continuing administrative support to a committee of Gulf port engineers in their assessment of damages from storms. A new Soviet Grain Trade Reporting System also was devised when the export program was expanded.

Separate joint conferences were conducted with the Environmental Protection Agency and the U.S. Customs Service with MarAd acting in an ombudsman role for the port and shipping industries.

Cooperative Development Council for Northwest Ports, of which Port of Tacoma is member, was organized during fiscal year.

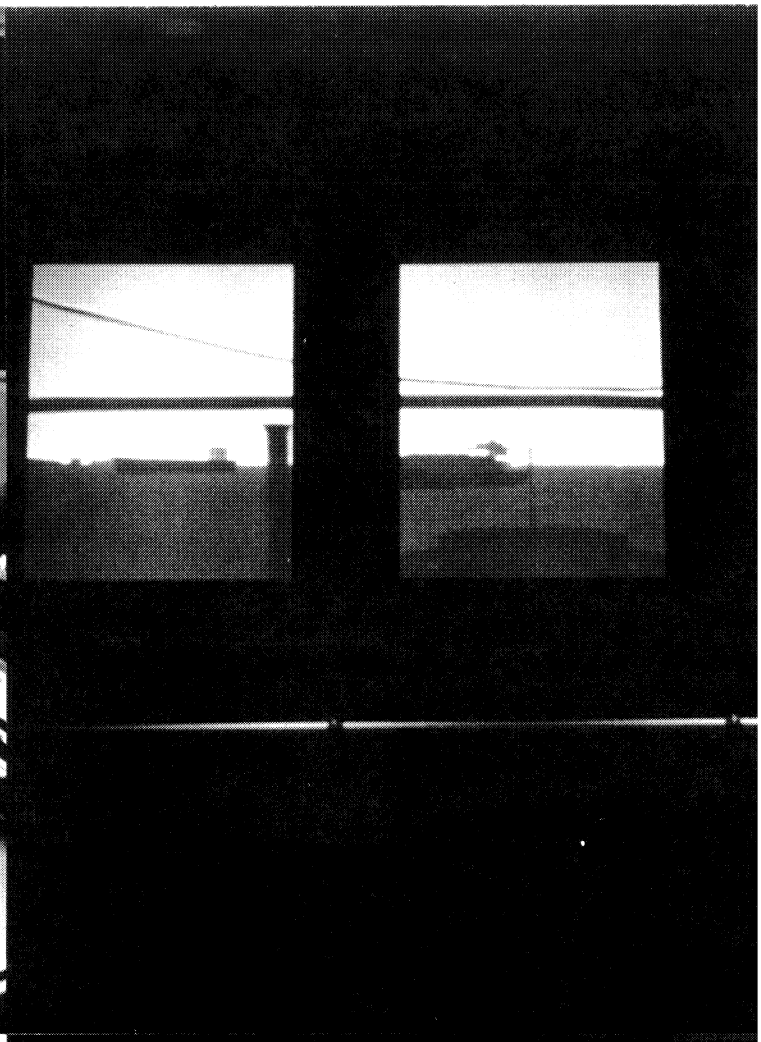
MarAd continued support of the standardization of shipborne barges, and the Central Region hosted the fourth conference of U.S. bargeship operators.

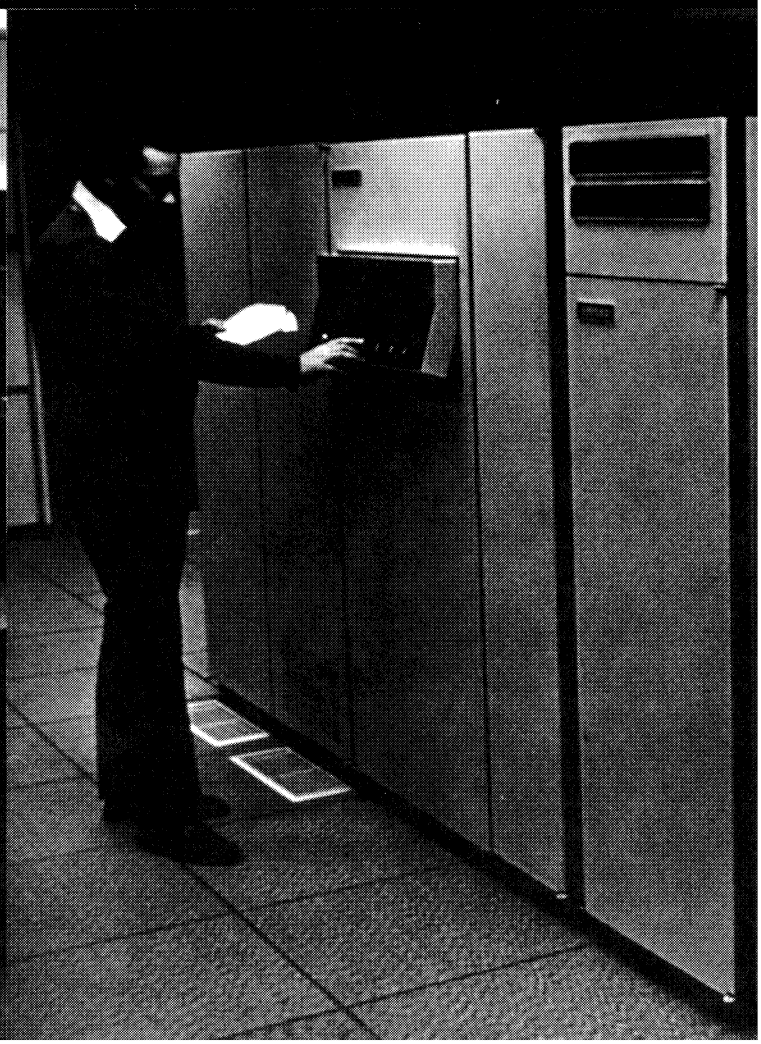
The Western Region conducted a feasibility study which concluded that Roll-On/Roll-Off vessels are adaptable to the logistics needs for national defense. The Region also continued its participation (with the Department of Transportation) in a 15-city National Cargo Security Program.

Representatives of the Agency continued their dialogue with California fruit and vegetable growers. Their objectives are: to expand agribusiness exports, increase their carriage on U.S.-flag ships, and improve intermodal equipment to better protect these commodities in waterborne transit to foreign markets.

The Western Region was host to a Soviet delegation for a 9-day tour of West Coast ports. This was part of the exchange program begun in 1975 with the visit of a U.S. industry/MarAd delegation to Soviet ports under the U.S.-U.S.S.R. Agreement on Cooperation in Transportation.

MarAd's Great Lakes Region staff provided assistance to area ports interested in applying for EDA funding. The region staff also assisted the Great Lakes Basin Commission in its preparation of a Coastal Zone Management Energy Facilities Siting Study.





Chapter 6

Research and Development

MarAd's research and development programs are structured to develop and apply advanced technology to improve the productivity and capabilities of the American shipping and shipbuilding industries. This is being accomplished through contracted research projects and the Agency's close working relationship with the various segments of the maritime industry.

As noted in Appendix XVI, a significant number of R&D contracts awarded during fiscal year 1976 and the transition quarter were jointly funded by the Federal Government and industry.

Industry is thus financially and technically involved in the R&D effort to advance the state-of-the-art; to increase productivity and decrease costs ashore and afloat; and to improve and expand service and production.

For the fiscal year, R&D funding by MarAd amounted to $19.1 million and industry funding totaled approximately $10 million, for a combined commitment of $29.1 million. During the transition quarter, MarAd R&D funding totaled $2.9 million, and industry contributions totaled $700,000, for a combined commitment of $3.6 million.

MarAds Computer-Aided Operations Research Facility (CAORF) was opened in May 1976 at Kings Point, N.Y. World's most advanced maritime simulator enables officers on full-scale mockup bridge (top left) to navigate "own ship" through wide range of traffic and environmental situations (top right) with simulated sight and sound generated by computer (lower right) controlled from CAORF operations console (lower left).

Shipbuilding

The objective of MarAd's Shipbuilding Research Program is to develop technological and managerial improvements in the U.S. shipbuilding industry which will reduce construction costs and increase the productivity and competitiveness of American shipyards.

Over a 5-year period extending through fiscal year 1976, almost 80 development and demonstration projects were funded by the Maritime Administration at a cost of $15 million. In addition, the industry has contributed manpower, material, and facilities valued in excess of $5 million. These projects have advanced shipbuilding technology in welding, material handling, ship outfitting, production methods, manufacturing automation, and production-oriented design.

Technological advances which have been put into commercial practice by the shipbuilding industry include:

- Alignment lasers, now in common use in U.S. shipyards.
- Water-bearing transporters to move heavy ship sections (up to 1,200 tons), now in use by several yards.
- A study of weather protection needs and criteria for planning large new facilities.
- Improved welding procedures and equipment, currently used throughout the U.S. shipbuilding industry.
- Computer-aided manufacturing systems now in all but one of the Nation's major shipyards.

Ship's Machinery

MarAd's Ship Machinery Program concentrated on projects which offer short-term benefits to the U.S. operating fleet.

During the period, projects were initiated in such areas as improved boiler reliability and fuel combustion, safety techniques for bulk-carrier operations, design of stern tube bearings and seals, and retrofit improvements which reduce fuel consumption in existing vessels.

A long-term effort was initiated in advanced reheat marine power plants.

A substantial number of these R&D projects were coordinated with industry members of the Society of Marine Port Engineers who deal with day-to-day problems encountered in ship operations.

Nuclear Ships

To provide an alternative to fossil-fueled ships, MarAd's Nuclear Ship Program has been directed toward the application of existing nuclear reactor technology, largely developed for shorebased electric power generation, to maritime propulsion applications. An up-to-date nuclear propulsion plant has been designed for such an application and efforts are now centered on securing its regulatory approval.

Most of the activities during the year dealt with technical issues raised by the Nuclear Regulatory Commission, and various other administrative issues which must be resolved before a license (construction permit) can be granted.

Ship Operations

During the 15-month period, MarAd conducted ship operations research to increase the productivity of American-flag shipping companies. Emphasis was given to improved ship-management systems, better cargo-handling equipment, automated ship control, and advanced communications and navigation systems, including the following programs and activities:

SOIS

The Shipping Operations Information System (SOIS), a computer-based management-control system designed to improve the day-to-day operations of U.S.-flag ocean carriers, was expanded. SOIS is jointly funded by 15 ship operators and the Federal Government. It will provide timely information on cargo, ships, and equipment through a computer network. It is already reducing shoreside costs, cutting down on cargo documentation, and increasing fleet productivity.

The SOIS will ultimately consist of some 45 modules, 15 of which have been completed and are in commercial operation. These perform such important functions as cargo documentation, equipment control, terminal management, and financial budgeting. Another 15 modules are scheduled to be completed during fiscal year 1977, and the remaining 15 are expected to be finished in fiscal year 1978. The modules can be implemented separately or as a total package.

During this reporting period, MarAd and five U.S.-flag shipping companies continued the modular development of the National Shipping Management System, the Export Booking and Billing System, and the Marine Terminal Control System. In addition, progress continued on the Cargo Data Coding System and the Financial Information Retrieval System.

A new project was initiated to develop a cost-shared International Data Communications System through the American Institute of Merchant Shipping (AIMS) on behalf of four U.S.-flag shipping companies. This project will result in a prototype communications network between the East and Gulf Coasts of the United States and Northern and Mediterranean Europe. Improved cargo, equipment, and financial control functions will be derived from the less expensive and speedier information transfer which this system will provide.

Ship Control

In the ship control area, R&D emphasis was on the application of electronic technology to critical bridge and engine room functions, with the objectives being lower operating costs and improved safety and reliability.

Among specific areas investigated was the use of video displays of computer-generated or stored information for access and use by bridge personnel.

An Integrated Lookout System Study also was initiated. This project would provide automated sensor information where normal visual or audio sensing is obscured or reduced by rain, fog, darkness, or other severe weather conditions.

Under study at the end of the 15-month period was the utility of an automated hull-monitoring system correlated with sea-state monitors as a tool for measuring, predicting, and improving vessel performance.

Cargo Handling

A number of steps were taken to improve cargo-handling systems in the U.S. merchant fleet.

Included were studies to:

- Investigate and evaluate the merits of new cargo-handling systems and designs to improve productivity in the general liner services, including the economic feasibility of developing U.S.-flag heavy-lift vessel services.
- Explore the marketability and design of a heavy-lift LASH barge to expand the heavy-lift capability of U.S.-flag LASH operators.
- Identify problem areas and suggest improvements associated with the towing and fleeting of LASH barges.
- Analyze the feasibility of LASH barge feeder vessels to service the Atlantic and Gulf Coasts, and the Great Lakes and other inland areas. The intent is to increase the time that the high-cost LASH mothership are underway at sea and reduce the time they spend in port.
- Additionally, a program to determine optimum loading sequences for containers was designed and demonstrated to major containership lines.

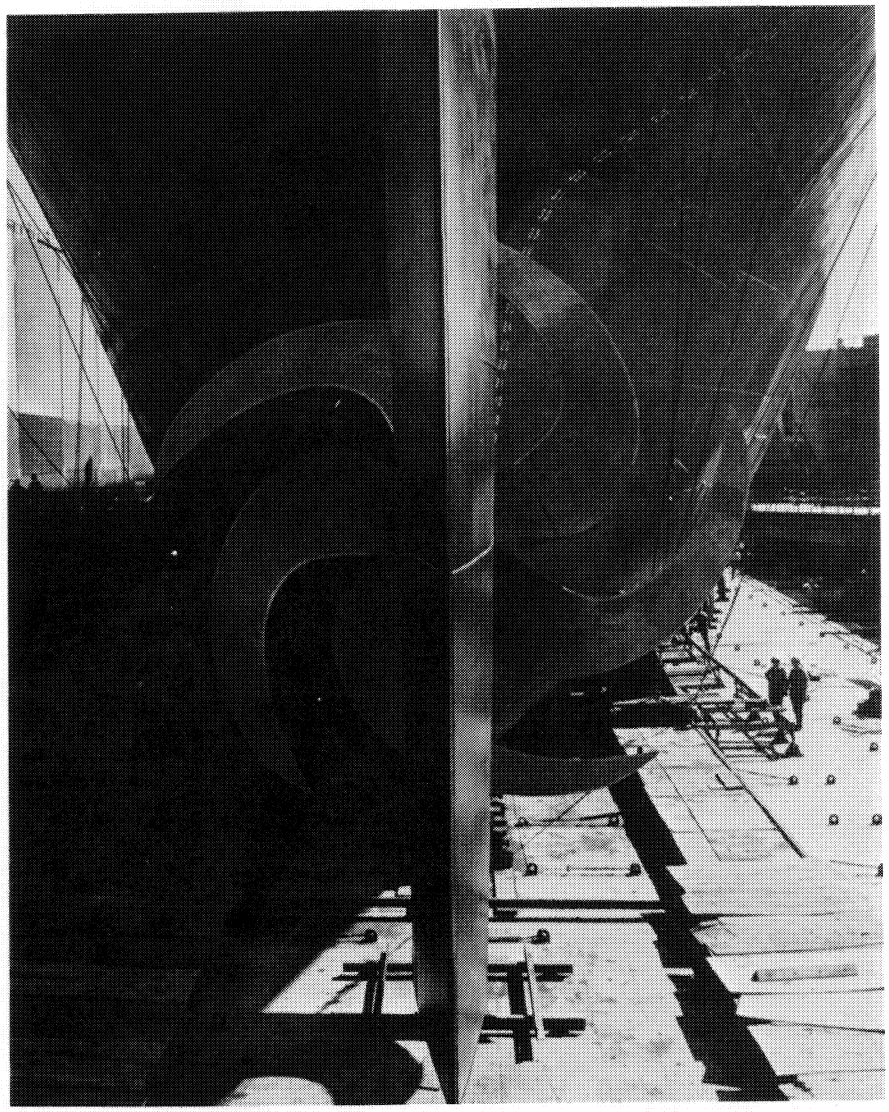
Two portable "tween decks" were fabricated and installed in LASH barges to increase their capacity and are now being evaluated in service by shipping companies.

Plans were developed for a joint MarAd-Navy design project for defense logistics ships. This project will allow underway transfer and stowage of containers, and will greatly facilitate provisioning at sea.

A study of liquid bulk cargo-handling problems was nearing completion, and methods for handling a range of dry bulk cargoes in slurry form were being evaluated at the end of the 15-month period.

Navigation/Communications

In fiscal year 1976 and the transition quarter, MarAd completed preparations for the fourth phase of its Maritime Satellite Program. The first three phases of this program were conducted in cooperation with



During fiscal year MarAd continued testing highly skewed propellers to improve performance of merchant ships.

shipping companies, the National Aeronautics and Space Administration, and other Government agencies.

The Maritime Administration has helped make the United States a world leader in the application of space technology to marine communications. From feasibilty testing in 1968 through two-ocean commercial Marisat service in August 1976, MarAd used newly developed technology to improve communications between ships at sea and owners ashore.

In the near-term communications area, fiscal year 1976 saw the operational testing of a Great Lakes Automated VHF Radiotelephone System. More than 100 vessels were equipped to communicate via the six relay stations that were established. In the near future, the number of stations will be increased to 14 and the entire Lakes area will be covered. A similar system is being planned on the inland waterways.

Operational and technical parameters of the digital Selective Calling (SELCALL) system were completed for international adoption. SELCALL is designed to improve communications services for older vessels not equipped with satellite communications hardware.

A safety device, the Marine Radar Interrogator Transponder, also was developed and successfully tested during the period. This device has demonstrated potential for improved, automated, collision-avoidance systems for application in future U.S. vessels.

CAORF

A Computer-Aided Operations Research Facility (CAORF) conceived in 1970 was dedicated on May 10, 1976. The facility is located at MarAd's National Maritime Research Center, Kings Point, N.Y. It is the world's most advanced maritime situation simulator.

The facility uses a full-scale bridge mockup fitted with contemporary bridge controls and computerized equipment to simulate, through sight and sound, a wide range of navigational traffic situations and environmental conditions. The computers can be programmed to provide the ship-handling characteristics of any type of vessel—from small harbor craft to very large crude carriers (VLCCs). The term "own ship" is used to designate the vessel which is operated from the simulated wheelhouse and to differentiate it from other vessels in the operating area. Similarly, the computers can be programmed to portray the configurations, landmarks, and channel markers of any harbor in the world.

The simulator enables the ship handler to maneuver "own ship" in a realistic, though simulated, environment. The view through the bridge windows is a full-color projected image of a port or harbor on a cylindrical screen measuring 60 feet in diameter by 15 feet high which provides visibility of 240 degrees in azimuth and 24 degrees in elevation.

As the ship handler changes course or speed, a central computer alters the visual scene accordingly and immediately adjusts all instrument readings, including the radar pictures. The result is an illusion of being on the bridge of a vessel entering or leaving a port. The view from the bridge can be adjusted from day to night and from full to zero visibility. The fact that the image display is in color enables running lights of other vessels to be identified in nighttime sequences.

Advanced Ship Systems

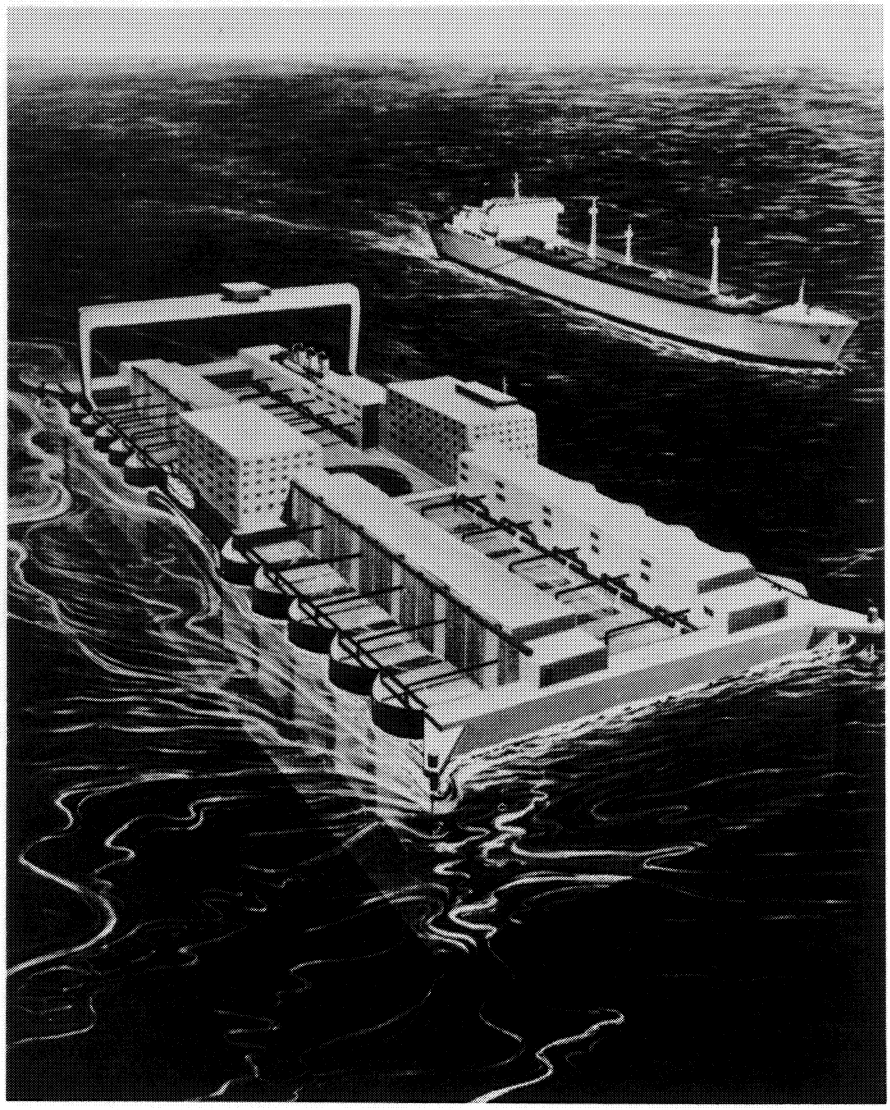
Several major studies to investigate the economic and technical feasibility and probable market penetration of innovative ship types, as well as alternate missions for existing ships, were begun during the period.

In an effort to reduce capital outlays for new containerships to be ordered by several ship operators, a contract was awarded to consolidate owner preferences into a single containership design using series-production techniques. The consolidated design was completed. Two ship operators agreed to build vessels of this design and a third firm was considering such plans at year's end.

Paralleling this effort, a contract was awarded to develop a standard design for a new generation of liner vessel, also encouraging the series-production technique.

As part of a broader program, work was extended on the development of a 25-year forecast of the size and composition of the merchant fleet to service U.S. trade.

In specialized transport, MarAd explored the concept of small, automated trailerships having short routes (less than 200 miles) to provide another market for U.S. shipping services.



MarAd R&D study completed during year indicates that by 1986 as much as 40 percent of Nation's ammonia requirements could be manufactured aboard oceangoing thermal energy conversion (OTEC) vessels.

In other technology assessment areas, a contract was awarded to study the economics of a coal slurry transport system, specifically for the export of steam coke. In addition to an economic analysis, the project will produce preliminary ship conversion plans.

During the reporting period, MarAd continued its technology assessment and market analysis for production and commercialization of ocean thermal-energy-conversion vessels, including product marketing and distribution studies.

A comprehensive analysis of the supply and demand factors affecting the markets for offshore oil-drilling rigs and related support vessels to determine the economic viability of vessel construction projects was continued during the period.

MarAd also supported institutional programs involving the collection and dissemination of maritime technology and general transportation systems research in cooperation with other agencies and with universities.

Marine Sciences

The Agency continued marine sciences research to achieve better, safer, and more efficient ship designs.

A problem that has always plagued naval architects is excessive vibration which causes costly hull damage. During the fiscal year, MarAd initiated a project to validate existing methods of determining propeller-induced vibration forces on hull surfaces to assist designers in reducing or eliminating these problems.

Additionally, the Agency began an effort to determine the effects of propeller-blade cavitation on after-body ship structures with the objective of reducing hull damage.

MarAd previously studied the application of highly skewed propellers to improve the performance of merchant ships. Propellers of this type have been installed and tested on an ore/bulk/oil carrier and a high-speed containership.

In other activities during the period, model tests were initiated at 1/10 scale of a force-and-motion computer program for barge train flexible linkages for inland and coastal waters. Tank tests in various sea states with river barges linked by semi-rigid connectors to predict forces and stresses in barge connectors are also a part of MarAd's ship-barge program.

MarAd continued its support of various maritime technologies through its involvement with the Ship Structure Committee administered by the National Academy of Sciences.

In the hydrodynamics area, MarAd initiated projects to:

(1) Develop, from model tests, reliable correlation factors on which to base predictions of full-scale powering characteristics for merchant ships;

(2) Develop a computer program for the resistance model test data in MarAd standard series single-screw bulk carrier vessels to obtain rapid retrieval of deep-water, ship-powering and ship-design data;

(3) Check the accuracy of computer-predicted motions of floating bodies in confined waters, and compare them with the actual motions of ship models in shallow water;

(4) Test remote-controlled models duplicating full-scale ship trial maneuvers in order to determine whether meaningful measurements can be made of the control forces involved in full-scale ship maneuvers; and

(5) Support such programs of the Sea Use Council as improved environmental services, coordination of coastal zone questions, and development of the Council's program as a demonstration project for use by regional ocean organizations. (The Sea Use Council is a regional oceanic use and research organization composed of representatives of 10 U.S., State, and Canadian government agencies.)

Market Analysis

A market analysis program begun in 1975 was continued during the period with an assessment of market requirements and opportunities for U.S.-flag shipping for general and neobulk trade with Mid-Eastern oil-producing countries. The program provides the industry with data helpful in obtaining more cargo and determining future commercial requirements.

A model is being developed to identify and provide a better understanding of the supply and demand forces operating in the bulk shipping market, including pricing practices and other competitive factors. The model will help determine the future needs and desirability for bulk ship construction in this area.

Research was completed on the extension of a shallow-draft ship technology assessment for vessels under 70,000 dwt.

A project was initiated to determine service factors influencing shippers' choices of marine transport and to estimate the market penetration that can be expected from changes in service factors.

Studies also were initiated to identify impediments of U.S. overseas dry cargo transportation and to determine market requirements and develop a marketing, operating, and financing plan for specialized heavy-lift vessels.

Two other studies analyzed new opportunities for Great Lakes shipping, one related to the design of a marine system for general cargo and the other to transporting western coal to eastern and southern markets.

Additional MarAd R&D projects are described in Chapters 3, 4, and 7.

Chapter 7

The Marine Environment and Energy Conservation

To enhance the marine environment and conserve energy in the maritime industry during this reporting period, the Agency:

- Participated in a number of international conferences on ocean pollution-abatement and control.
- Assisted in the Government's projects to eliminate ocean dumping.
- Continued efforts to assure compliance with MarAd standards for pollution abatement in subsidized tankers.
- Prepared training materials on standards for the shipboard control and avoidance of pollution.
- Consolidated its energy research projects under one program.
- Further reduced energy consumption in the National Defense Reserve Fleet.

International Conferences

The Marine Environmental Protection Committee of the Intergovernmental Maritime Consultative Organization (IMCO) met in London in October 1975 and May 1976 with representatives of the Maritime Administration in attendance. Items discussed included segregated ballast in existing tankers; reception facilities in ports for oil wastes, sewage, and garbage; oily water separators and oil-discharge control and monitoring equipment; sewage-treatment plants for ships; and a comprehensive antipollution manual.

MarAd participated in meetings of a U.S. Ad Hoc Working Group on Incineration at Sea. The Working Group is an outcome of the First Consultative Meeting held in London in September 1975, which was sponsored by IMCO upon the implementation of the Ocean Dumping Convention.

MarAd participated in the fourth meeting of the Joint Working Group on Marine Pollution from Shipping, which was held in the United States from November 30 to December 14, 1975. The Coast Guard headed the U.S. delegation, which also included the Environmental Protection Agency. The Joint Working Group is a project of the U.S.-U.S.S.R. Agreement on Cooperation in the Field of Environmental Protection. The Soviet delegation toured a number of environmental laboratories and test facilities in this country. Discussions during the visit led to agreement upon test methods for the evaluation of chemical dispersing and collecting agents.

Results of these evaluations will be presented at future meetings of the IMCO Marine Environment Protection Committee (MEPC). The Soviet and U.S. delegations agreed to continue to develop standards and other recommendations for the MEPC, and to continue to exchange information on antipollution devices and techniques. In addition, the U.S. representatives made recommendations for equipping a Soviet-designed emergency-salvage vessel with oil-containment booms, self-propelled skimmers and other oil recovery devices, along with a high-capacity oil-water separator.

From June 12-16, 1976, the Joint Working Group met again, with the Soviet delegation serving as hosts to their U.S. counterparts at a variety of pollution-control facilities, port authorities, and research institutes in Tallin, Leningrad, and Volgograd.

The sixth meeting of the Joint Working Group was held in the United States from August 31 to September 12, 1976, with sessions in Washington, D.C., New Orleans, La., and St. Louis, Mo.

Another international antipollution effort in which MarAd has taken an active role is the Global Investigation of Pollution in the Marine Environment (GIPME). This program, which is administered by the Intergovernmental Oceanographic Commission, conducts a wide range of marine-pollution studies. The GIPME Comprehensive Plan includes (1) an ongoing review of the health of the oceans; (2) the promotion of regional studies; (3) baseline studies; and (4) analyses of pollutants in the marine environment and their processes of transfer.

The U.S. GIPME Subpanel, which met twice during fiscal year 1976, is charged with the responsibility of implementing the Comprehensive Plan in this country. The U.S. Subpanel is currently chaired by NOAA, another Commerce Department agency.

The fourth session of the Third United Nations Conference on the Law of the Sea was held in New

Off-shore drilling for oil and natural gas underscores America's extended search for declining fossil fuel resources and our pressing need to conserve energy, while assuring continued protection of marine environment.

York from March 15 to May 7, and the fifth session from August 2 to September 17, 1976. MarAd's representatives participated in the work of Committee III at both sessions, which dealth with the preservation of the marine environment, marine scientific research, and transfer of marine technology. A single negotiating text was discussed and revised at the fourth session. The fifth session did not produce any substantive changes to the revised single negotiating text. Major topics for negotiation in Committee III centered on the specific rights of port countries to enforce international discharge regulations regardless of where the violations occur, and the rights of coastal nations to establish and enforce national pollution-control regulations governing the design, construction, and manning of ships operating in their territorial seas.

Environmental Impact Statements

Ocean dumping is a serious threat to the marine environment. The Secretary of Commerce is authorized by the Marine Protection Research and Sanctuaries Act to support measures to eliminate this practice. One such measure is the development of a chemical-waste incinerator ship. An Environmental Impact Statement (EIS) on this project was submitted by the Maritime Administration to the Council on Environmental Quality during fiscal 1976 and was approved by the Council and officially released to the public on July 2, 1976.

An Environmental Impact Statement on the offshore oil and gas drilling vessels covered by MarAd's Title XI ship financing guarantees was published January 19, 1976.

At the end of the transition quarter, MarAd also was drafting an EIS on the tankers and barges in the domestic trade that receive Title XI ship financing guarantees.

Construction Standards

Agency personnel continually monitor the status of the Pollution Abatement Program to insure compliance with Docket A-75, under which the Maritime Subsidy Board stipulated that all tanker vessels receiving construction-differential subsidy must comply with MarAd's Standard Specifications for Merchant Ship Construction.

The majority of these vessels incorporated all required features into the original CDS contract specification. Operators and/or owners not meeting these specifications were in the process of making the necessary changes during the period of this report.

Training

Docket A-75 also requires MarAd to publish clear and concise manuals relating to the operation of fuel, cargo, and waste-disposal systems aboard tankers. An editorial control committee, chaired by the Agency's Eastern Region Director, produced a *Shipboard Guide to Pollution Free Operations,* October 1976, a manual detailing standards for shipboard control and avoidance of pollution. Twenty-two representatives from management, labor, Government, and academia served on the committee. The Guide was completed and sent to the printer during the transition quarter.

A *Curriculum on Marine Pollution Abatement* also was published during the period. It was so well received that it required two reprintings.

Plans are underway in the Eastern Region to publish a *Marine Container Stowage Manual,* an operator's guide for approved techniques in stowing marine containers.

Energy R&D

During fiscal year 1976, energy research projects of the Maritime Administration were consolidated into a separate program. In support of the nationwide conservation effort, a contract was awarded to Metrics, Inc., Atlanta, Ga., to compile and analyze data and develop energy-reporting formats and data-processing software so that the major segments of the maritime industry can quantitatively measure their energy efficiency. This project will help gauge the effectivness of present conservation programs and provide the basis for the development of new ones.

A contract was awarded to American Waterways Operators, Inc., Arlington, Va., under which Ketron, Inc., also of Arlington, (as a subcontractor) will analyze the factors affecting fuel consumption and total costs in river fleets and test concepts in actual river operations.

Several studies of marine steam and diesel power plants were undertaken to determine the feasibility of retrofit waste-heat recovery systems

as a means of improving power-plant efficiency. In this and other MarAd conservation activities, close liaison was maintained with ERDA and other Federal agencies.

In the environmental protection program, MarAd began the evaluation of oil-in-water monitors. In previous years, a monitor test loop was designed and constructed. The plan calls for a thorough evaluation of an average of three instruments per year. The results are to be disseminated throughout the maritime community and to other Government agencies. The first three monitors to be tested are those designed and built by Horiba Instruments, Inc., Northbrook, Ill.; Teledyne Analytical Instruments, San Gabriel, Calif.; and Bailey Meters and Controls, Ltd., Croydon, England.

Under a contract with the U.S. Navy, MarAd sponsored the design and testing of a sewage-treatment plant for ships operating on the Great Lakes. This system separates solids from liquids in shipboard waste, burns the solids in the ship's boiler (using a specially designed burner), and disinfects the liquid with ozone. It is expected that this design will eventually be approved by the U.S. Coast Guard for ships operating on the Great Lakes and possibly in the deep oceans as well.

In keeping with Executive Order 11507 on pollution control at Federal facilities, MarAd's Eastern Region announced plans to install devices to process shipboard wastes on board the three state maritime school ships under its jurisdiction. These sewage treatment plants were ordered from Red Fox Industries, New Iberia, La.

Energy Conservation

Through conferences, studies, and other energy-conservation projects, MarAd continued its program encouraging the maritime industry to adopt optimum management and operational techniques in the use of energy. The industry has responded with improved equipment maintenance and housekeeping procedures. As a result, the maritime industry as a whole has recorded a 10-percent reduction in energy consumption since 1972.

Recognizing that the industry is composed of many companies that lack the resources necessary for their own energy-conservation programs, MarAd initiated the development of energy-conservation manuals for each segment of the industry. These manuals will be distributed to the maritime industry in the early part of 1977.

The Maritime Administration joined with the Maritime Training Advisory Board to encourage the inclusion of energy conservation in the curricula of all maritime training institutions. For example, literature on the subject has been made available to the schools' libraries.

Energy consumption continued to decrease in the National Defense Reserve Fleet (NDRF). In fiscal year 1976, consumption of electricity dropped 576,011 Kilowatt hours, or 15.1 percent below the level in fiscal 1975. Since fiscal year 1973, which is used as the base year, electricity usage has been reduced by 2,485,706 Kilowatt hours, or approximately 43.4 percent, in the NDRF. Diesel fuel use in craft operations showed a reduction of 37,656 gallons, or 18.8 percent, between 1973 and 1976.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Chapter 8

Maritime Manpower

To insure a readily available supply of well trained personnel for the merchant marine, the Maritime Administration:

- Administers training programs for merchant seamen.
- Conducts liaison with national and international bodies to coordinate maritime labor policies.
- Aids in the peaceful conduct of labor relations.
- Sets shipboard manning levels for subsidy purposes.
- Administers the Merchant Marine Awards Program.

Seamen's Training

Through the combined efforts of the Maritime Administration and the U.S. Coast Guard, a new Radar Training Center was opened in April 1976 in Seattle, Wash. Other Radar Training Centers are located in New York, N.Y.; New Orleans, La.; San Francisco, Calif.; and Toledo, Ohio. Trainees include qualified merchant seamen, inland waterways and offshore drilling and mining vessel operators, maritime academy students, and personnel of the National Oceanic and Atmospheric Administration, and the U.S. Coast Guard. A total of 2,016 students received training in navigation, collision-avoidance radar, gyrocompass, and Loran at the Agency's regional centers during fiscal 1976 and 489 during the transition quarter.

On September 15, 1976, Captain Arthur F. Boucher was honored as the recipient of the 10,000th training certificate issued by the Eastern Region's Radar Training Center in New York.

A videotape training film produced at the Central Region Radar Training Center was distributed to approved vocational-technical and State marine academies. In Louisiana, 82 students successfully completed the MarAd/Coast Guard-approved "off-site" training program which utilizes these videotapes.

Firefighting and damage control courses are conducted at Earle, N.J., and Treasure Island, San Francisco, Calif., by the Maritime Administration and the U.S. Navy's Military Sealift Command. In fiscal year 1976, 3,066 seafarers completed training at these schools. During the transition quarter, 649 completed the training.

In anticipation of increased demand for this training, an expanded firefighting program is being planned for fiscal year 1978.

During fiscal year 1976 MarAd awarded a contract for development of a standard firefighting handbook. The Agency also plans to let another contract to develop a course curriculum and preliminary design for a field exercise facility.

MarAd actively participated in meetings of the Maritime Training Advisory Board's Subcommittees for the Development of Effective Fire Fighting Training and Education Coordination. The board is an organization of industry and government training professionals.

The Fire Fighting Training Subcommittee volunteered to act as an advisory group on firefighting training and submitted a text outline and recommendations for a marine firefighting handbook.

The Educational Coordination Subcommittee formulated proposals for the abstracting and publishing of marine training material assembled by the major maritime training institutions. The Maritime Research Information Service (MRIS) of the National Academy of Sciences will publish these abstracts, and future materials will be abstracted and listed in the MRIS monthly research abstracts.

Industry training institutions sponsored by labor and management continued to operate on a reduced scale because of a diminished seagoing job market. During the 15-month period, 220 persons received original deck or engineering officers' licenses and 430 officers upgraded their licenses. Approximately 670 unlicensed seafarers graduated from entry-level programs, and 798 unlicensed seamen upgraded their ratings.

MarAd also provided technical assistance to the governments of Costa Rica, Honduras, Guatemala, Ecuador, Iraq, Venezuela, and Bangladesh in developing marine training programs during fiscal year 1976.

Merchant Marine Academy

The U.S. Merchant Marine Academy, Kings Point, N.Y., offers courses in marine and nautical sciences, oceanography, naval architecture, business administration, computer science, nuclear engineering, mathematics, the humanities, and transportation. In addition to 3 years

Women are finding greater employment opportunities in all segments of maritime industry—from shipyard welder and Ordinary Seaman to white-collar positions ashore.

of classroom training, midshipmen spend a year at sea on American-flag vessels.

All graduates receive U.S. Coast Guard licenses, Bachelor of Science degrees, and, if offered, commissions as Ensigns in the U.S. Naval Reserve.

The Academy's June 1976 graduates included 131 third mates, 84 third assistant engineers, and 17 officers who had completed the dual deck/engine program.

Members of Congress nominated 2,721 persons for appointments to the class of 1980. From these nominations, 353 appointments were made. During the year the Academy maintained an average enrollment of 975 students.

At the start of the 1976-1977 school year, there were 50 female students enrolled at the Academy. MarAd amended its regulations to permit women to be nominated and appointed to the U.S. Merchant Marine Academy in January 1974, thus becoming the first Federal service academy to admit women.

As part of the Bicentennial observance, midshipmen from the U.S. Merchant Marine Academy sailed the yacht AMERICA in Operation Sail 1976. The AMERICA led the Tall Ships Parade from Newport, R.I., to Long Island Sound and participated in the July 4th Parade in New York harbor along with the Academy's motor vessels VENTURA and JERRY LAND.

State Maritime Academies

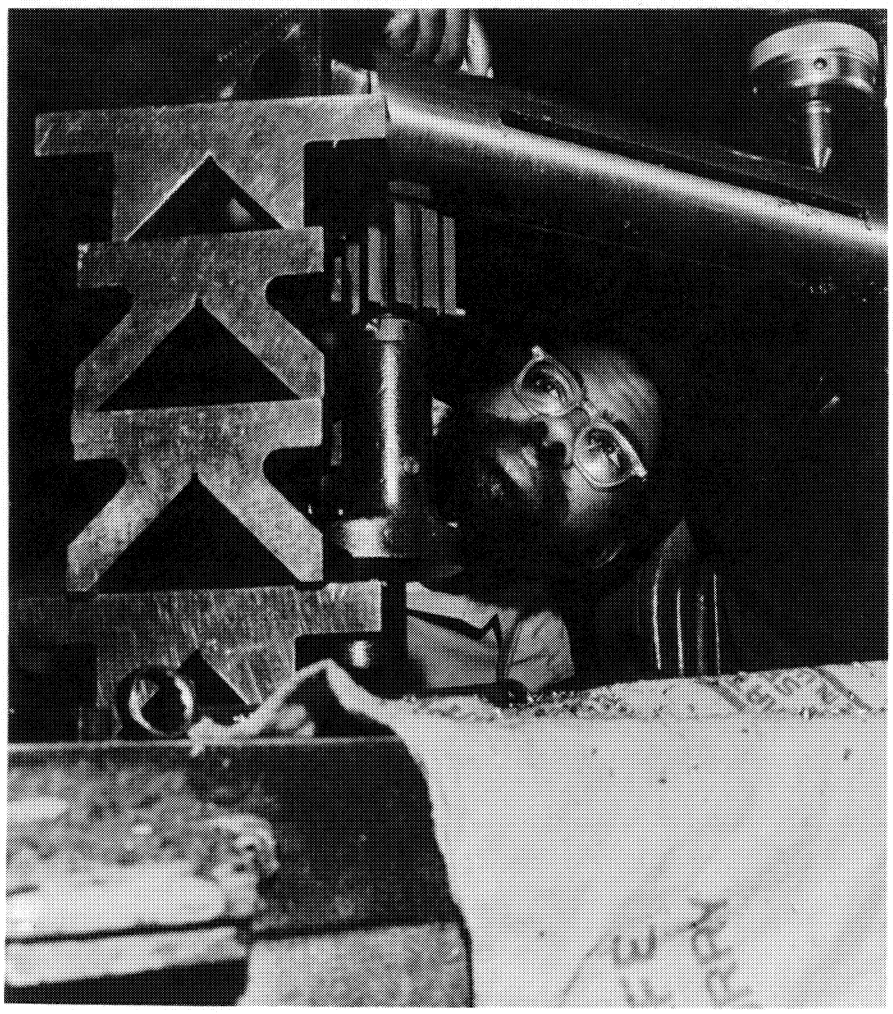
A total of 425 merchant marine officers were graduated in June 1976 from the six State Maritime Academies located at Vallejo, Calif.; Castine, Me.; Buzzards Bay, Mass.; Traverse City, Mich.; Fort Schuyler, N.Y., and Galveston, Tex. In addition to a Coast Guard license, each graduate received a Bachelor of Science degree (associate degree at the Michigan Academy) and, if qualified, a commission as Ensign in the U.S. Naval Reserve.

Construction-differential subsidy contracts awarded by MarAd under 1970 Act have provided more than 85,000 man-years of employment to America's shipyard workers.

Labor Data

Average monthly seafaring employment in all sectors—private, Government contract, and Great Lakes—declined 16 percent to 26,889 jobs in fiscal 1976, compared to the fiscal 1975 average of 31,176 from all sectors (see Table 8). The greatest decline was on the Great Lakes, where employment fell by 20 percent.

Employment in the Soviet Grain Program increased sharply, however, with the signing of a new U.S.-U.S.S.R. Maritime Agreement on December 29, 1975. While average monthly employment in the Soviet



Grain Program during fiscal year 1975 was only 63 jobs per month, in fiscal year 1976 and the transition quarter this rose to 256 jobs monthly. This equaled full-time employment for 1,280 merchant seamen.

The total workforce in selected commercial shipyards increased 6.7 percent, from 91,039 in 1975 to 97,154 in 1976 (see Table 8).

Average longshore employment declined from 63,725 in 1975 to 58,888 in 1976 due primarily to the worldwide shipping slump. There were no significant work stoppages in U.S. ports during the year.

During the transition quarter, the Agency completed an analysis of the active seafaring workforce, using its computer-based Seamen's Employment Analysis System, which draws upon information gathered by the U.S. Coast Guard.

The system describes the workforce in terms of age, skill level, and area of employment. The analysis indicated that the total number of merchant seamen finding full or part-time employment aboard U.S.-flag vessels declined from 73,674 in calendar year 1974 to 69,342 in calendar year 1975.

Labor Relations

The major seafaring unions negotiated new, 3-year contracts during the fiscal year, without work stoppages. However, more than 600,000 man-days of employment were lost during fiscal year 1976, principally through labor-management disputes involving Naval and commercial-contract shipyards. Contract expirations at the Electric Boat Company shipyard in Groton, Conn.; Maryland Shipbuilding & Dry Dock Co. in Baltimore and Alabama Dry Dock and Shipbuilding Co. in Mobile triggered strikes which resulted in the loss of more than 500,000 man-days.

Negotiations between the Groton yard and the Metal Trades Council continued for 144 days before final settlement was reached on November 21, 1975.

The Industrial Union of Marine and Shipbuilding Workers of America (IUMSWA) signed new contracts at the Baltimore yard on April 1, 1976, and at the Mobile shipyard in May.

Members of IUMSWA were also involved in job actions at Todd Shipyards Corporation, New Orleans, La.; Ingalls Shipbuilding Division, Pascagoula, Miss.; and Bath Iron Works, Bath, Me.

In the seafaring sector of the industry, the two largest work stoppages involved jurisdictional disputes between the National Maritime Union (NMU) and the Seafarers International Union (SIU). On July 10, 1975, members of the Sailors' Union of the Pacific and the Marine Firemen's Union (SIU West Coast affiliates) refused to sign on Pacific Far East Line (PFEL) vessels. They were protesting the sale of four PFEL ships to Farrell Lines and the subsequent loss of these jobs to the National Maritime Union. A temporary restraining order was issued on August 1, 1975, and a final agreement on compensation for the job losses was reached on November 24, 1975, between PFEL and the SIU affiliates.

On October 3, 1975, NMU members picketed the Puerto Rican Maritime Shipping Authority's (PRMSA) vessels, protesting the loss of their jobs aboard four PRMSA vessels due to the transfer of the ships to an SIU-contracted operating company. International Longshoremen's Association (ILA) members honored the picket lines, and all 11 PRMSA vessels were idled by October 7. A court injunction was issued, and NMU's pickets were withdrawn on October 13, 1975. As of September 30, 1976, three of the four disputed ships were manned by SIU members and one by NMU members.

On March 14, 1976, the first major job action in the history of the Panama Canal began, as canal pilots joined other Canal Zone employees in a sickout protesting a proposed wage freeze. Almost all the 200 pilots joined in the work stoppage, which ended 6 days later with an announcement by Canal Zone Governor Harold R. Parfitt that the wage freeze issue would be negotiated and none of the workers participating in the sickout would be put on non-pay status. Although the canal never closed, approximately 175 vessels were waiting to transit the waterway by the time the dispute ended.

Changes in the organizational structure of the maritime labor unions and an intense competition for jobs also marked maritime labor relations during fiscal year 1976.

Capt. Frank Scavo succeeded Capt. Thomas O'Callaghan as president of the International Organization of Masters, Mates and Pilots (MMP) on July 1, 1975.

The Brotherhood of Marine Officers (BMO) terminated its affiliation with the National Maritime Union, and a new affiliation with the Marine Engineers Beneficial Association (MEBA) was ratified by BMO members in November 1975.

Members of the MMP picketed the SS MOUNT EXPLORER (Mount Shipping Inc.) and the SS ACHILLES (Newport Tankers Corp.) as they were loading for a Soviet Grain Program voyage, protesting the change of these vessels to companies with Associated Maritime Officers (AMO) contracts.

The U.S. Court of Appeals for the Second Circuit upheld a decision of the National Labor Relations Board nullifying the container-handling clause of the International Longshoremen's Association-New York Shipping Association (NYSA) contract. Both the ILA and the Council of Northern

Atlantic Shipping Associations (representing NYSA) protested the court decision, saying that this and similar container-contract clauses are considered vital to the maintenance of the Guaranteed Annual Income (GAI) funds in ILA ports on the Atlantic and Gulf coasts. Past problems with GAI funding (prompting work stoppages in the Port of Boston during fiscal year 1975) and statements made during fiscal year 1976 indicated further difficulties over GAI rules in ILA contract negotiations can be expected during fiscal 1977.

The institution of strong job-security clauses and new cost-of-living increases characterized seafaring labor contract negotiations during this reporting period. The first major contract to be signed was that of the National Maritime Union with the Maritime Service and Tanker Service Committees and the last was between the International Organization of Masters, Mates and Pilots and the Maritime Service Committee.

Maritime Administration representatives served as neutral sources of information in these negotiations, particularly through the use of the Maritime Contract Impact System (MCIS) by both labor and management. MCIS, a computerized system, provides rapid calculation and evaluation of the impact that changes in base wage and fringe benefit costs would have on the financial viability of the companies operating dry cargo and tanker vessels.

The MCIS also provided the Military Sealift Command (MSC) with cost comparisons on the use of Civil Service or union crews aboard MSC vessels. The Civil Aeronautics Board, the Transportation Institute, the Marine Engineers Beneficial Association, and several MarAd offices also used the system to resolve 40 additional problems during fiscal 1976 and the transition quarter.

MarAd, MSC, and several nongovernment organizations use MCIS on a continuous basis to develop crew cost estimates.

Labor Policy

An International Labor Organization (ILO) Technical Maritime Conference was held October 13-24, 1975, in preparation for the 1976 ILO Plenary Maritime Conference. A Maritime Administration advisor served on committees concerned with setting international standards for holidays with pay for seafarers and the protection of young seafarers. The U.S. Government delegation helped draft resolutions in these areas, as well as others concerning higher international standards for industrial relations in the shipping industry, continuity of employment, and the regulation of substandard vessels, particularly those registered under flags of convenience.

The seventh and eighth sessions of the Intergovernmental Maritime Consultative Organization's Subcommittee on Standards of Training and Watchkeeping were held in London December 8-12, 1975, and June 13-30, 1976, respectively. Considerable progress was made in drafting an agreement on training and certification of seafarers, to be presented at the IMCO Assembly in 1978. MarAd supported the Subcommittee's consensus that firefighting training be made mandatory for all crew members, and that ship-handling simulators be used as an alternative to actual experience for prospective masters and chief mates of larger ships. MarAd will continue to oppose the introduction of issues which would arbitrarily increase manning or thwart technological advances.

During the fiscal year and transition quarter, the MarAd Crew Committee met 20 times to recommend manning scales and crew-quarters standards on subsidized vessels and on new vessel designs. The five-member group reviewed 13 ODS applications and amendments to existing ODS contracts.

On September 15, 1975, a U.S. Coast Guard officer was assigned to MarAd headquarters as a liaison officer. The liaison officer contributes to a cohesive Federal maritime policy through the review of MarAd studies, seminars, and reports in which the Coast Guard has an interest, and by serving as a consultant to the Crew Committee. MarAd also is provided with expertise in Coast Guard policy in such areas as lifeboatman training, firefighting, and radar training, and Coast Guard certification requirements.

During the transition quarter, a program was initiated to establish minimum Coast Guard and MarAd standards for deck and engine officer training programs and for midshipmen's sea-time training requirements.

During the period, MarAd continued its support of the merchant marine Naval Reserve program. Efforts were made to foster closer Navy-merchant marine relations through programs to hasten the processing of Merchant Marine Academy applicants for the Naval Reserve program and to remedy other enrollment problems.

As part of the Reserve Fleet Ships Pre-Activation Program, the Agency assessed a new Rapid Response Reactivation Program for fleet units in terms of vessel habitability, probable union reactions, and crewing costs. A seminar on the subject was held in the Central Region Office October 27-31, 1975.

Also during the 15-month period, more than 66,000 postcard applications for absentee ballots and 2,700

Students at U.S. Merchant Marine Academy, where young men and women are trained to become deck and/or engine officers in U.S. merchant marine.

voting assistance guides and election notices were distributed to steamship companies, labor unions, and the United Seamen's Service under the 1976 Absentee Voting Information Program for merchant mariners as authorized by the Federal Voting Assistance Act of 1955.

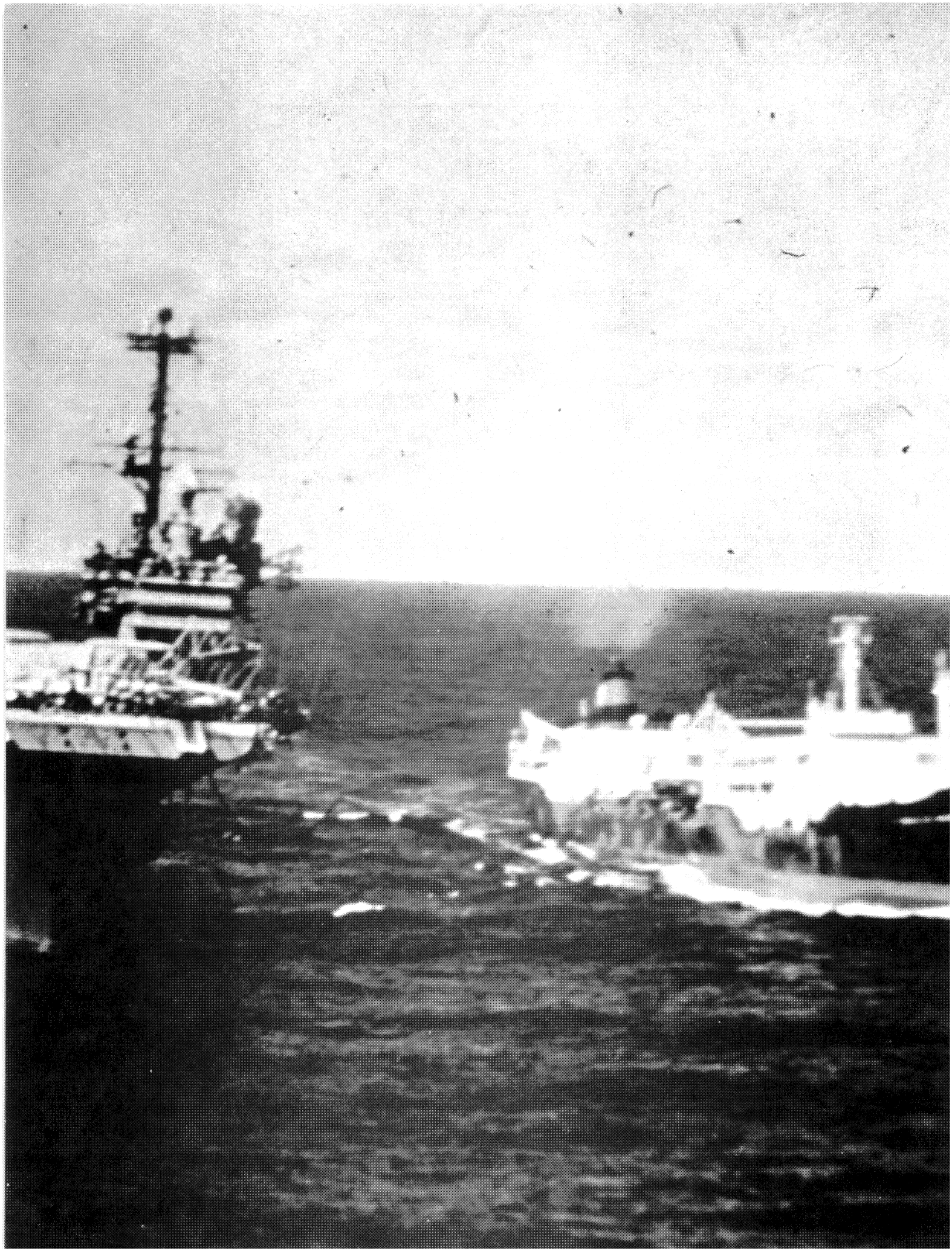
Merchant Marine Awards

Under the Merchant Marine Medals Act of 1956, the Secretary of Commerce awarded 53 medals and decorations for outstanding and meritorious service during the period covered by this report.

The Merchant Marine Meritorious Service Medal was presented to six seafarers in recognition of their heroic actions during the GLOBTIK SUN disaster in August 1975. Master Phil Julian Migues of the M/V BEN CANDIES; Assistant Engineer Joe Dale Bailey, Able Seamen Francis S. Simpson and Terry Laviolette of the M/V MARJORIE B. MCALLISTER; and Assistant Engineer Samuel L. Hilton and Steward Emil T. McDonald of the M/V ELLEN F. MCALLISTER were honored for their efforts to rescue the crew of a burning oil tanker, the GLOBTIK SUN, which collided with an oil production platform in the Gulf of Mexico at 1:30 a.m. on August 15, 1975. Thirty-eight other crewmen aboard the tugs BEN CANDIES, MICHELE A. DEFELICE, CARL RAY, LONG TIDE, CONCH, MARJORIE B. MCALLISTER, ELLEN F. MCALLISTER, and CAPTAIN DARCE also received letters of commendation for their heroic actions in the incident. The awards were presented in New Orleans on National Maritime Day, May 22, 1976.

Chief Engineer Charles F. Smith and Assistant Engineer John P. Markley of the tankship HAROLD REINAUER received letters of commendation on July 28, 1975, for their heroic firefighting efforts of October 23, 1974. They saved the vessel from possible explosion when a flash fire broke out in the engine room while the vessel was discharging furnace oil.

Letters of commendation also were presented to the Master and six crewmen of the USNS SCHUYLKILL for their rescue of six crewmen from the burning tug FRANK CANDIES on April 2, 1974. Honored were Master Melvin M. L'Esperance, Chief Officer Ercument Mergen, Third Mate James C. Walker, Able Seaman Drew C. Gay, Ordinary Seaman Faustion Calvo, Second Engineer Curtis L. Rector, and Third Engineer Milton L. Roat. The FRANK CANDIES caught fire while towing a barge of creosoted pilings in seas running from 3 to 5 feet.



Chapter 9

National Security

A strong American merchant marine is essential for our national security. The fleet not only serves as a major supply line for U.S. defense forces throughout the world in peacetime but also minimizes political and economic pressures that could be brought to bear against the United States if it had to depend on foreign maritime powers for shipping services. During national emergencies, U.S.-flag merchant ships and civilian seamen act as a naval auxiliary. They provide logistic support to the armed services by transporting military personnel and materiel, and they supply the materials essential for war production and the civilian economy.

Reserve Fleet

The Maritime Administration maintains the National Defense Reserve Fleet as a ready source of merchant ships to support military operations, if the need arises. NDRF vessels are also available for use in nonmilitary emergencies, such as commercial shipping crises.

The NDRF consists primarily of World War II Victory ships and naval auxiliary vessels. These vessels are anchored at James River, Va.; Beaumont, Tex.; and Suisun Bay, Calif. (see Table 9).

As of September 30, 1976, there were 347 ships moored at the three locations. Of this total, 249 vessels were owned by MarAd and 98 were Navy Department vessels.

During the fiscal year, 13 ships were placed in the NDRF and 81 were withdrawn; and during the transition quarter, 6 vessels were placed in the NDRF and 14 were withdrawn. Of the 95 ships withdrawn, 67 were sold for scrapping or nontransportation use, 15 were turned over to States for use in the Artificial Fish Reef Program, 9 were turned over to the U.S. Navy, 1 was given to the U.S. Air Force, 1 to the U.S. Coast Guard, 1 to the U.S. Army, and 1 was sold for operation. The contraction of the NDRF since its establishment in 1945 is shown in Table 10.

The vessel sold for operation was the SS SANTA ROSA, a passenger ship built in 1958 with construction-differential subsidy and acquired by the Government in August 1974 through mortgage foreclosure proceedings. As reported in MarAd 1975, the vessel was sold for foreign-flag operation in April 1975 for $1 million. It was withdrawn from the fleet on September 8, 1975.

The number of ships in the Fleet Preservation Program—which involves conventional preservation, dehumidification, and cathodic protection—declined from 274 to 242, as noted in the "Retention" column of Table 9.

During national emergency U.S.-flag merchant fleet serves as naval auxiliary, transporting men and supplies and providing at-sea replenishment of naval vessels.

Material Control

Marine equipment valued at $21,525 was on loan to steamship operators and other marine industries on September 30, 1976. Warehouse inventories were valued at $4.19 million.

Ship Sales

MarAd is authorized to sell NDRF vessels for scrap or nontransportation purposes. The Agency can also transfer vessels from the NDRF to any Government agency, or charter vessels to U.S. companies when privately owned U.S.-flag vessels are not available for charter at reasonable rates.

Seventy-five Government-owned vessels were sold for scrap or nontransportation purposes during the fiscal year for an aggregate return to the Government of $11,908,283. Sixty-three of these vessels were sold from NDRF anchorages for $9,028,097. The other 12 vessels were sold from non-fleet locations for $2,879,386. Two vessels, both from NDRF anchorages, were sold during the transition quarter for a return of $470,000.

The sale of 2,053 vessels from NDRF anchorages from 1958 through the transition quarter brought a total return to the Government of $162.5 million. Sale of 196 vessels from locations outside the NDRF from 1958 through the transition quarter brought a total return of $29.1 million.

In summary, since 1958, 2,249 vessels have been sold for scrap or nontransportation purposes for a total return to the U.S. Treasury of $191.6 million.

War Risk Insurance

MarAd's war-risk insurance program insures operators and seamen against losses as a result of hostile actions under circumstances in which commercial insurance is not available.

At the beginning of fiscal 1976 the Maritime Administration was administering war-risk and certain marine liability insurance programs for vessels and cargoes; and it continued to do so until September 7, 1975, when the legislative authority for these programs under Title XII of the Merchant Marine Act of 1936, as amended, expired. No new binders were issued after that date, and existing ones were allowed to lapse.

Legislation to reinstate authority for these programs under Title XII was approved by Congress on October 1, 1976. The President signed the bill on October 17, 1976. This legislation (Public Law 94-523) provides new and explicit authority to insure containers, as distinct from their contents; limits the insuring of foreign-flag vessels to those vessels most appropriate for national security purposes based on their characteristics, employment, and general management; and also requires foreign-flag ships covered under the provisions of the Act to comply with vessel location reporting requirements as established by the Secretary of Commerce.

As of September 7, 1975, when the old legislative authority expired, outstanding binders to cover shipowners during the 30-day period after the termination of their commercial war-risk insurance included 1,095 for war-risk hull insurance, 1,032 for war-risk protection and indemnity insurance, and 751 for war-risk insurance of crew life and personal effects.

From the inception of the program in 1952 until September 30, 1976, binder fees totaled $1.13 million and expenses totaled $1.12 million, of which $460,114 was paid as fees and expenses of the underwriting agents appointed by MarAd to process the binders.

War-risk builder's risk insurance for the pre-launching construction period was written on 164 ships from the inception of the program in 1953 through September 7, 1975. Premiums totaled $3.5 million. From October 1962 through September 7, 1975, 52 policies were issued for war-risk builder's-risk insurance for the post-launching construction period, each with a service fee of $75 and subject to attachment and premium assessment upon the termination of commercial insurance resulting from the outbreak of hostilities.

The standby war-risk cargo insurance program administered by MarAd would become effective when the Assistant Secretary for Maritime Affairs finds that insurance adequate for the needs of the U.S. waterborne commerce cannot be obtained from commercial sources at reasonable terms and conditions. Commercial underwriting agents are employed to write this insurance and, as of September 7, 1975, 38 were under contract.

At the request of the U.S. Navy, war-risk insurance was provided without premium charge but on a reimbursable basis for losses incurred as authorized under Section 1205 of the 1936 Act. Until September 7, 1975, insurance coverage in effect was as follows:

(1) Second seamen's war-risk insurance was provided for the crews of four Government-owned tankers operated for the account of the Military Sealift Command.

(2) Second seamen's war-risk insurance was provided on one privately owned U.S.-flag vessel and its crew while under bareboat charter to MSC.

Net premium savings to the Department of the Navy under these programs, from their inception in 1954 and 1964, respectively, to September 7, 1975, was estimated at $1.3 million after deducting claims payments of $110,740.

Under Section 1208(a) of the 1936 Act, money in the war-risk insurance revolving fund may be invested in U.S. securities or in securities on which the United States guarantees principal and interest. From 1962, when the initial investment was made, through September 30, 1976, earned interest totaled $3.4 million.

Marine Insurance

The Maritime Administration continued to act as the insuring agent for Government-owned ships during the period. As of September 30, 1976, four marine protection and indemnity claims were outstanding, with settlement value estimated at $154,000. These claims, which arose from operations in Vietnam, have an estimated reimbursement value from commercial insurance (in effect during the Vietnam build-up) amounting to $150,000. (The $4,000 difference in estimated values represents deductibles of $1,000 for each outstanding claim under MarAd's protection and indemnity insurance policy.)

MarAd assures that contract requirements are met on all insurance placed in commercial markets by mortgagors of ships on which the Government holds or insures mortgages, by charterers of Government-owned ships, and by subsidized vessel operators.

Insurance amounts approved during fiscal year 1976 and the transition quarter are shown in Table 11.

Interagency Projects

The Agency continued to work closely with other Government agencies and departments to further improve the Nation's maritime capabilities.

During fiscal year 1976 substantial agreement was reached between the Maritime Administration, the U.S. Navy, and the U.S. Coast Guard regarding the establishment of a Joint Maritime Information Element (JMIE). This project will provide merchant shipping information to both military and civilian agencies of the Government. Included in this information will be data on the positions of merchant ships, their movements, and characteristics. The purpose of the system is to manage and protect U.S. and allied merchant shipping during periods of crisis. As a centralized system, JMIE is expected to reduce costs by eliminating duplicate data bases. It also will standardize and improve the accuracy of the information available to all users.

Work toward an operational JMIE system was continuing as this reporting period ended.

MarAd's Western Region joined with the Commander of the Pacific Naval Surface Forces to institute an officer-exchange program between merchant and naval ships. Merchant marine masters and U.S. Navy commanding officers were observers aboard each other's ships for periods of 7 to 12 days, concentrating on such areas as shipboard organization, cargo operations, navigation, and ship repair. The first such exchange was between the master of Prudential Lines' SS SANTA MERCEDES and the commanding officer of the USS DURHAM.

The Western Region's Ship Management Office conducted briefings on the Maritime Administration for Naval Reserve officers, including visits to the Suisun Bay Reserve Fleet. The office also joined with the Naval Amphibious Group of the Eastern Pacific Command to evaluate an elevated causeway for over-the-beach operations at Coronado, Calif., and evaluated the offloading of LASH barges to a floating causeway.

MarAd participated in the President's Interagency Task Force on Liquefied Natural Gas, established to study U.S. LNG policies and make recommendations to the Energy Resources Council on LNG importation. The Agency, in one of the four chapters of the task force report, covered such pertinent topics as financial arrangements, ownership of LNG vessels and facilities, pricing, and contract provisions. On the basis of the task force analysis, the President established an import guideline of 2 trillion cubic feet of LNG per year, with no more than 0.8 to 1.0 trillion cubic feet from any one country.

Emergency Readiness

Emergency responsiveness of the U.S. merchant marine was enhanced significantly by the establishment, on November 1, 1975, of the U.S. Merchant Ship Locator Filing System (USMER). Under USMER, which was developed jointly by MarAd and the U.S. Navy, U.S. merchant ships report their positions every 48 hours to the Director of MarAd's Office of Domestic Shipping and to the Naval Ocean Surveillance Information Center. When an emergency develops, Federal agencies are able to warn ships of hazardous areas and, if necessary, direct their movements for support of Government operations. In a major crisis, USMER can facilitate the positioning of ships for deployment of U.S. military forces to foreign areas.

During the period, work progressed on the Ready Reserve Fleet Program, a plan that would make 30 Victory ships in MarAd's

National Defense Reserve Fleet ready for service on 5 to 10 days' notice.

The NDRF's importance as a resource to meet a national emergency in ocean transportation has been stressed in studies by the Department of Defense and the General Accounting Office. Since the number of ships in the active U.S. merchant marine has declined, and since there has been increasing reliance on specialized cargo carriers (e.g., containerships, LASH, RO/RO, etc.) which do not completely meet military requirements, the NDRF ships now provide the chief means to meet surge breakbulk shipping demands.

Ready Reserve Fleet planning during the period included a series of meetings in major cities to discuss the technical requirements of rapid reactivation, financial preparations, reactions from labor organizations, and manning costs.

Funds to begin the program have been included in the Navy's 1977 budget request.

In contingency planning, the Office of Ship Construction developed three suggested designs for possible use in the rapid construction of ships during times of mobilization—much as the Liberty ship design was used during World War II. After consultation with the Department of Defense, one MarAd design was selected for further development. The objectives of the plan are to have standby designs ready for rapid ship production in wartime, assure sufficient additional shipping capacity in wartime, and provide for the replacement of ship losses to meet postwar trading requirements.

A MarAd/Navy agreement concerning operations of the Coordinator of Shipbuilding, Conversion and Repair was renewed on August 12, 1975. The Coordinator is responsible for the operation of national ship repair facilities to meet the requirements of both the Navy and the merchant marine in wartime. The renewed agreement designates MarAd's Assistant Administrator for Operations as Deputy Coordinator.

The Navy-MarAd Policy Planning Committee, which had existed informally since 1971, was formally chartered by the Secretaries of Defense and Commerce in the spring of 1976. The charter covers the whole range of Navy-merchant marine relationships in both peacetime and wartime.

MarAd continued its participation in the activities of the NATO Planning Board for Ocean Shipping. Particular emphasis was placed on the review of emergency shipping plans to ensure that they are responsive to current shipping conditions. In April 1976, MarAd hosted the 28th Plenary Meeting of the Planning Board, in which the Board resolved to draw the attention of higher NATO authorities to the continued expansion of the Soviet merchant marine and to the need for clarification of the relationship between NATO shipping and supply planning.

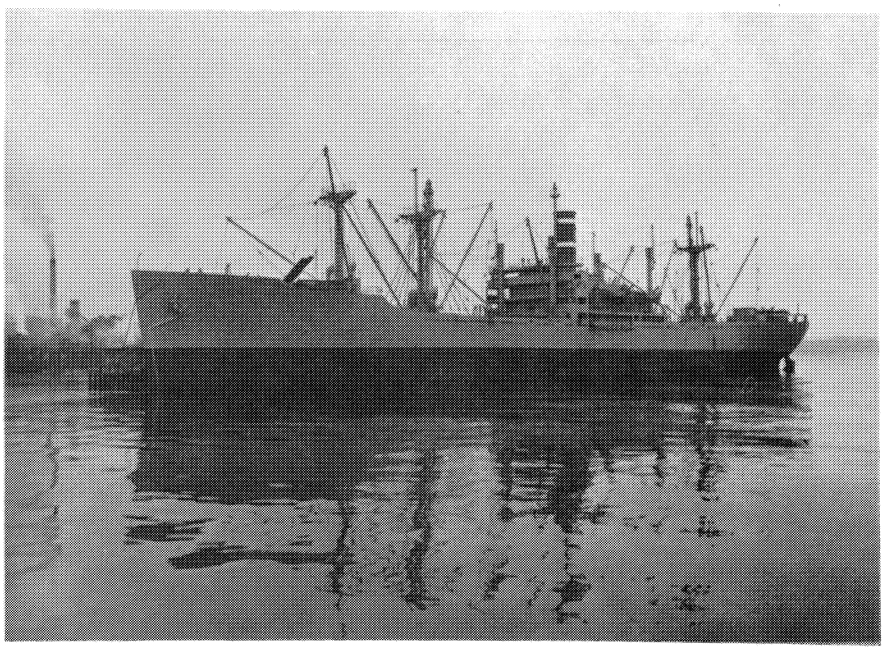
In September 1976 several U.S. ships participated in a NATO exercise that tested methods of control and protection of high-speed ships, a significant problem arising from the substantial increase in ship speeds since World War II.

From September 21-23, 1976, MarAd and the NATO Wartime Oil Organization conducted a training session for persons assigned to posts in the Defense Shipping Authority, the NATO wartime shipping management organization. Participants included 52 persons from the NATO shipping organization, 57 from the NATO oil agency, and about 30 military and government observers and training staff members. The participants, who represented the United States and most of the other NATO countries, discussed policies and proposed procedures for future NATO shipping operations.

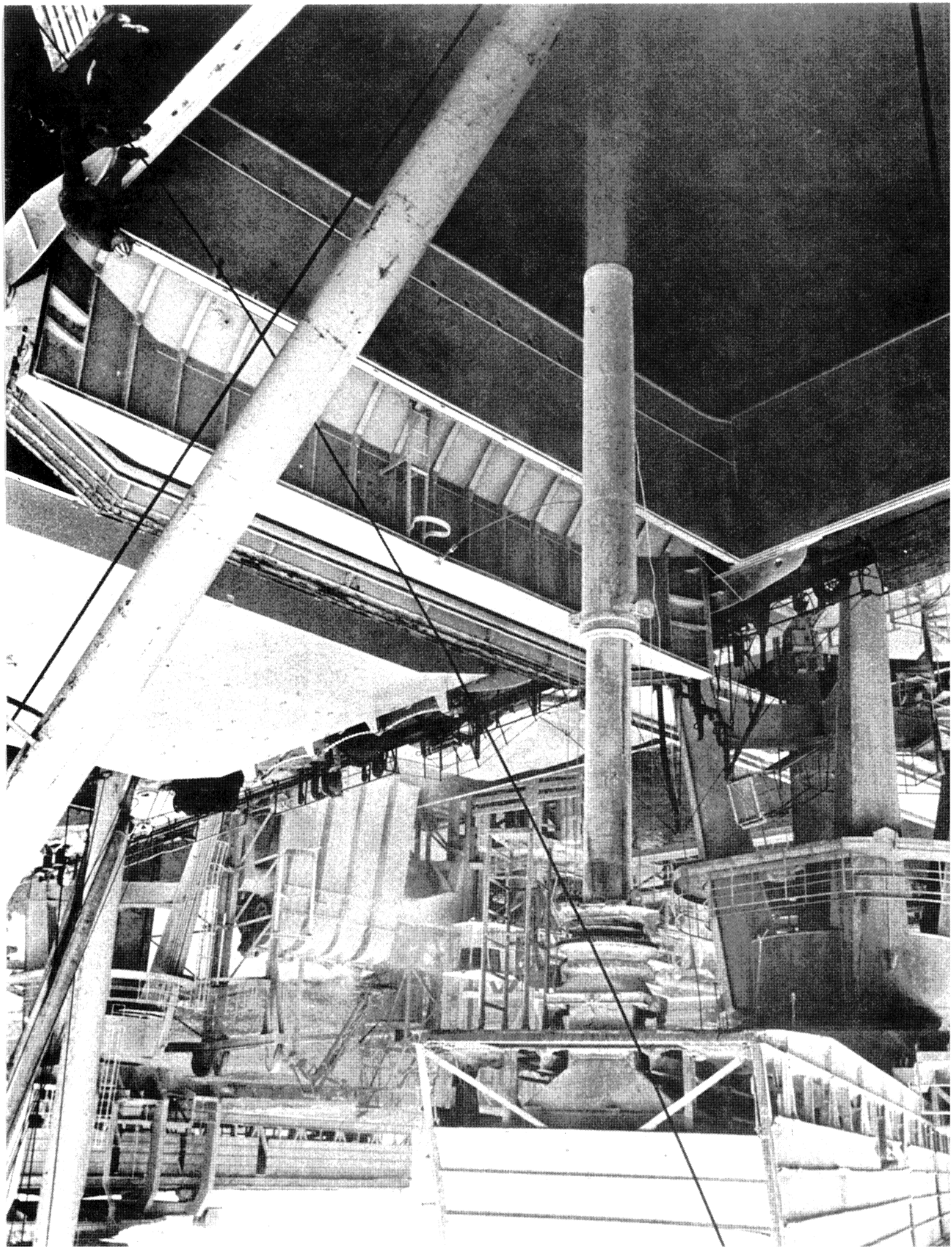
There was joint participation by the Navy and the merchant marine in REDCOAT, a Naval exercise in the Pacific for emergency preparedness. Naval Control of Shipping Organization (NCSO) Officers briefed merchant ship masters on the routings for their voyages in the mock emergency. The Ship Management Office of MarAd's Western Region served as liaison between NCSO and the merchant vessel masters. MarAd's role was that of the National Shipping Authority—the authority that controls merchant vessel allocation during emergencies.

With enactment of The Energy Policy and Conservation Act of 1975 (P.L. 94-163), the United States embarked on a program to establish a National Strategic Petroleum Reserve. The purpose of this Reserve is to insulate—at least partially—the U.S. economy against the effects of a future oil embargo. Under this program, over the next several years crude oil will be placed in storage sites in States adjoining the Gulf of Mexico. In the event of an embargo, this oil would be transported to refineries whose normal foreign supplies were interrupted. Primary responsibility for this program rests with the Strategic Petroleum Reserve Office of the Federal Energy Administration (FEA). During the period, MarAd assisted FEA by providing assessments of tanker and storage facility requirements and by developing plans for emergency withdrawals from the petroleum reserves.

The Agency significantly increased the number of Industrial Preparedness Planning (IPP) schedules during this reporting period. As of September 30, 1976, some 1,500 IPPs had been negotiated with 320 companies in the marine supply industry. The purpose of this planning program is to provide a commercial manufacturing base to supply marine-related material in the event of a national emergency.



National Defense Reserve Fleet Victory cargo ship, among those kept in state of readiness for rapid reactivation on 5 to 10 days' notice.



Chapter 10

International Activities

The Maritime Administration's international activities during fiscal 1976 and the transition quarter were marked by agreements on technical, commercial, and legal aspects of maritime transportation and exchanges of information with more than a score of nations.

Of primary importance to the well-being of the U.S. merchant marine were the negotiation of an extended U.S.-U.S.S.R. Maritime Agreement, a bilateral agreement with Romania, and other bilateral and multilateral arrangements. These activities involved technical cooperation, marine pollution conventions, matters dealing with equal access agreements, strategic planning conferences, and participation in various international meetings concerned with maritime transportation.

Special meetings covering these and other areas of maritime cooperation and bilateral shipping concerns were held in Canada, Mexico, Japan, the Scandinavian countries, the United Kingdom, the Federal Republic of Germany, France, Italy, Spain, Belgium, Greece, Yugoslavia, Romania, and the Soviet Union.

U.S.-U.S.S.R. Maritime Agreement

On December 29, 1975, a new, 6-year U.S.-U.S.S.R. Maritime Agreement was signed in Washington and Moscow by the U.S. Secretary of Commerce and the Minister of Merchant Marine of the Union of Soviet Socialist Republics.

Negotiations which culminated in the new Agreement were initiated in late 1974 and continued through a series of meetings in Washington and Moscow in 1975.

The original Agreement, dated October 14, 1972, opened major U.S. and Soviet ports for easy access by vessels of the other nation and provided a clear set of ground rules for maritime activities between the two countries. It proved to be an important impetus to the normalization and expansion of commercial relationships between the United States and the Soviet Union.

The new Agreement, supplanting the original, represents a necessary link in the continuation and expansion of this commercial relationship. It is expected to facilitate further trade and provide additional employment for U.S.-flag vessels in that trade. Details of U.S.-flag participation in liner and bulk movements between the United States and Soviet Union are covered in Chapters 2 and 4.

The new Agreement maintains the two basic objectives of the original. It keeps open the channels of maritime commerce between the two nations by continuing the access to major U.S. and Soviet commercial ports for calls by specified types of U.S.-flag and Soviet-flag vessels. It also affords those vessels the opportunity to participate equally and substantially in the carriage of all cargoes moving by sea between the two nations. The U.S. ports open to access by Soviet vessels are the same as those opened under the original Agreement.

The intention that a substantial share of the trade between the two nations will be carried by each nation's merchant marine is defined as meaning that each fleet will have the opportunity to carry not less than one-third of all cargoes moving in whole or in part by sea between the two nations, either by direct movement or by trans-shipment through third countries.

The freight rates to be paid to U.S. vessels in the bulk trades is an important provision of the Agreement, particularly the rates for agricultural commodities and products. For fixtures made between January 1, 1976, and December 31, 1976, both sides agreed that the minimum freight rate payable to U.S.-flag vessel operators for the carriage of grain from U.S. Gulf ports to Soviet Black Sea ports would be $16.00 per long ton.

During the past fiscal year American and Soviet maritime delegations—led by Assistant Secretary of Commerce Robert J. Blackwell and Igor M. Averin, Head of the Foreign Relations Department

Shipment of agricultural commodities from U.S. to Soviet Union was among topics of discussion between U.S. and Soviet maritime officials during year.

of the Ministry of Merchant Marine—met four times in Moscow and three times in Washington to review and adjust various provisions of the Agreement. The principal subjects of these discussions were the rates for charter fixtures of U.S.-flag vessels to be made after December 31, 1976, and the fact that U.S. vessels were not provided one-third of the carriage of grain cargoes.

The U.S.-U.S.S.R. Maritime Agreement remains in force through December 31, 1981, subject to earlier termination by either party on 90 days' notice.

Agreement with Romania

On June 4, 1976, an Agreement on Maritime Transport was signed by the United States and Romania.

MarAd and Department of State representatives met twice in Bucharest with Romanian officials to address basic shipping matters which had previously been handled through normal diplomatic channels.

The discussions led to the agreement, which deals with the development and facilitation of maritime traffic, participation in maritime transportation, and the exchange of shipping representatives by the two countries.

Maritime Arrangements

Assistant Secretary Blackwell met with maritime officials in Norway, the Federal Republic of Germany, Sweden, and Denmark in July 1976 to discuss such shipping matters as the worldwide tanker crisis and Soviet shipping practices.

These meetings confirmed the desirability of close cooperation by concerned governments to maintain a fair and equitable competitive climate in international maritime transport and the coordination of shipping policies which collectively address adverse situations with international implications.

MarAd representatives led by Assistant Secretary Blackwell went to Rio de Janeiro in September 1976 to discuss shipping issues of mutual concern with Brazilian maritime authorities. MarAd sought the initiation of positive steps on the behalf of U.S.-flag carriers to offset the advantage provided to Brazilian carriers in the northbound Brazil/U.S. West Coast trade resulting from the Brazilian export incentive program.

The possible extension of the Equal Access Agreement of 1970 to non-pool ports, marine cargo insurance, and restrictions on wayport trades also were discussed. Both sides agreed to resume discussions in Washington at a later date.

A U.S. marine insurance delegation, also led by Assistant Secretary Blackwell, met with Soviet trade officials in London in June 1976 to promote the participation of American underwriters in marine cargo insurance covering U.S.-U.S.S.R. trade. Presently all Soviet marine cargo insurance is underwritten by the Soviet state insurance agency, Ingosstrakh, to the exclusion of American marine underwriters. Further meetings on this subject are planned.

In connection with MarAd's participation in the Marine Working Group of the U.S.-U.S.S.R. Agreement on Cooperation in the Field of Transportation, delegations were exchanged on several occasions during the period.

The Safety of Life at Sea Panel discussed each side's position in conjunction with Intergovernmental Maritime Consultative Organization meetings.

There were other exchanges on ports and cargo handling, ship equipment and crew training, and ice transiting. Discussions also led to the placing of an American selective calling communications device aboard the soviet ship PALEV for demonstration and testing, and equipment demonstrations aboard American ships in Soviet ports. In addition, these activities included a tour of the ZAPATA PATRIOT and a demonstration of its automated equipment and the MORMACSTAR's satellite communications terminal.

International Conferences

MarAd representatives participated in 42 regularly scheduled international conferences and attended many *ad hoc* discussions on a variety of international shipping matters during the reporting period.

Regular conferences under the auspices of the IMCO dealt with maritime safety, ship design and equipment, subdivision and stability, marine environment protection, legal matters, training and watchkeeping, safety of life at sea, maritime satellites, and radio communications.

The Maritime Transport Committee of the Organization for Economic Cooperation and Development convened regularly during this reporting period to consider such international shipping developments

as the tanker problem, flag-of-convenience shipping, liner conferences, IMCO activities, and Eastern bloc shipping matters.

MarAd delegates also attended conferences on the Law of the Sea, sessions of the U.N. Conference on Trade and Development Committee on Shipping, European Economic Community meetings on container transport, NATO Planning Board for Ocean Shipping plenary and working sessions, Organization of American States port and harbor conferences, and International Labor Organization maritime technical meetings.

In addition to regularly scheduled conferences, the Agency was represented at several *ad hoc* bilateral and multilateral meetings dealing with such matters as nuclear-powered merchant vessels, computer technology, technical cooperation in maritime shipping, and the shipment of liquefied natural gas.

Foreign Maritime Representatives

Shipper contacts significantly increased in Europe and the Middle East during fiscal 1976 and the transition quarter through a concerted effort by the Maritime Administration's Foreign Maritime Representatives (FMRs) in Brussels and Rome.

In addition to these two cities, MarAd has FMRs in London, Tokyo, and Rio de Janeiro.

The representative for Latin America was relocated from Caracas to Rio de Janeiro in August 1976 because of Brazil's rapid maritime development and growing influence in maritime affairs. The representative's presence in this active maritime environment is expected to foster better relations between U.S. and Latin American maritime interests, as well as to permit closer monitoring of shipbuilding and operating costs in that region. The representative will continue to provide maritime expertise to U.S. Embassies and U.S. shipping lines in other parts of Latin America, as he did when located in Caracas.

As a primary responsibility, all MarAd FMRs investigate, determine, compile, and transmit data covering foreign costs of vessel construction and operation. This information is of critical importance to the U.S. maritime operation and construction subsidy programs, which are based on the differential between foreign and domestic costs.

Other FMR responsibilities include participation in intergovernmental or private organizations concerned with maritime transport, obtaining shipbuilding contracts and ship plans and specifications, and transmitting significant general maritime information.

The representatives also provide liaison and marketing support for U.S. shipping lines overseas, as noted above, and coordinate international maritime transport matters with foreign affiliates of American exporters and importers and U.S.-flag ship operators.

Chapter 11

Administration

Maritime Subsidy Board

The Maritime Subsidy Board, by delegation from the Secretary of Commerce, exercises the authority to award, amend, and terminate subsidy contracts for the construction and operation of vessels in the foreign commerce of the United States. The Board's functions are implemented through fact-finding investigations, compilation of domestic and foreign trade statistics and cost data, and public hearings. Decisions, opinions, orders, rulings, and reports of the Maritime Subsidy Board are final unless the Secretary of Commerce, on his own motion or pursuant to a petition filed by an interested party, undertakes a review of its action. Final actions by the Secretary may be appealed to the Federal courts.

The Assistant Secretary of Commerce for Maritime Affairs, as ex officio Maritime Administrator, is Chairman of the three-member Maritime Subsidy Board. Other members are the Deputy Assistant Secretary and the Agency's General Counsel. The Secretary of the Maritime Administration acts as an alternate member in the absence of any one of the three permanent members.

Contract for first two subsidized containerships ordered under Merchant Marine Act of 1970 was signed during fiscal year 1976. Vessels, of 27,340-dwt. each, will be built by Bethlehem Steel Corp. at its Sparrows Point, Md., shipyard, for Farrell Lines, Inc. Shown signing contract documents are Robert J. Blackwell (center), Assistant Secretary of Commerce for Maritime Affairs; Thomas J. Smith, President, Farrell Lines (on Blackwell's right); and William C. Bringham, Assistant Vice-President, Bethlehem Steel (at Blackwell's left).

In fiscal year 1976 the Board convened 45 meetings in which it considered and acted on 289 items and issued 14 formal opinions, rulings, and orders. It also published 110 notices in the *Federal Register* pertaining to required statutory hearings and development and adoption of rules and regulations in the implementation of the Merchant Marine Act of 1936, as amended. During the transition quarter the Board convened 12 meetings, acted on 67 items, issued 5 formal decisions, and published 12 *Federal Register* notices.

Many of the Board's rulings were procedural in nature. Of particular significance was a ruling on September 17, 1975, designated Docket No. A-100, on a dispute between Avondale Shipyards, Inc., and Pacific Far East Line, Inc., which established the Board's role in controversies under the new form of construction subsidy contract adopted after passage of the Merchant Marine Act of 1970.

The dispute involved a lighter crane accident on board the SS CHINA BEAR, a barge carrier built by Avondale in 1972 and operated by PFEL. The accident, which occurred after delivery of the vessel and within the guarantee period, took place when the crane failed to hold a lighter, because of a brake malfunction. PFEL contended that the mishap was the responsibility of the shipbuilder; Avondale replied that PFEL crews had sufficient warning that the brakes needed adjustment and that such maintenance is the responsibility of the owner. MarAd's Contracting Officer decided in favor of Avondale, but also ruled that "There is no Board monetary interest involved" and so "this decision is not final, conclusive, and binding upon the parties."

Avondale then appealed this decision to the Board, arguing that it was entitled to a final Agency decision. The shipbuilder also contended that in light of the construction subsidy, Title XI commitment, and allocation of maintenance and repair funds for the ship, Board monetary interest was involved.

The Board ruled that its monetary interest "must flow directly from the dispute presented" and that, once the Board had released all funds related to a guarantee, there could be no Board monetary interest in a dispute involving that guarantee. The Board, therefore, held that it had no monetary interest in this dispute and that no appeal of the Contracting Officer's decision could be made under the contract. This ruling was upheld after several appeals to the Secretary of Commerce.

This decision affirms that, for construction subsidy contracts made under the Merchant Marine Act of 1970, the Maritime Subsidy Board can only render decisions in cases where it has monetary interest. The Board has removed itself from controversies where the Government has no real interest and allowed the dispute to remain solely between the contractor and the owner.

Administrative Law Judges

MarAd's Administrative Law Judges, operating in conjunction with the Executive Staff, conduct public hearings necessitated by the various merchant marine and shipping statutes and then prepare initial decisions. They also maintain the official dockets of formal proceedings. Cases are referred by the Assistant Secretary of Commerce for Maritime Affairs or the Maritime Subsidy Board.

At the beginning of fiscal year 1976 there were 19 proceedings pending before the Administrative Law Judges. Of these, 10 involved operating-differential subsidy matters and 9 concerned appeals from final decisions of contracting officers in disputes between shipowners, shipyards, and MarAd.

In the course of the year, 15 more cases were referred for hearing. Of these proceedings, four applications were withdrawn, seven initial decisions were issued, and four hearings were completed in which initial decisions were pending at the end of the year.

During the transition quarter, two proceedings involving ODS were referred for hearing, one initial decision was issued, one application was returned to the Maritime Subsidy Board for administrative processing, and one hearing was completed in which an initial decision was pending at the end of the quarter.

Internal Management

During fiscal year 1976, MarAd's Office of the General Counsel was reorganized to improve efficiency, communications, and control. The functions of three divisions (the former Divisions of Operating Contracts, Construction Contracts, and Litigation) were realigned so that all subsidy activities were consolidated in a new Division of Maritime Aids, all administrative activities were assigned to a Division of Administration, and functions relating to litigation alone were concentrated in the Division of Litigation. In addition, a single Deputy General Counsel position was established, replacing the positions of Deputy General Counsel for Maritime Aid Contracts and Deputy General Counsel for Legislation and Litigation.

As the result of another reorganization, the Office of Maritime Manpower now reports directly to the Assistant Secretary for Maritime Affairs, rather than to the Assistant Administrator for Maritime Aids. This realignment is designed to improve communications and facilitate the review of maritime labor studies.

As part of the Agency's management improvement program, the Maritime Administration undertook a comprehensive review of all reports it receives from the shipping industry and other sources outside the Government. As a result of this effort, the number of reports from the public was reduced by 20 percent, and there was a savings of approximately 7,000 man-hours previously expended by the public in reporting to MarAd. Efforts in this area are continuing, and further reductions are expected.

Because of a reduction in the Agency's permanent ceiling, it was necessary to transfer personnel to meet increased workloads in such areas as the Cargo Preference and Capital Construction Fund Programs and to staff the newly established radar training facility in Seattle, Wash. The required reductions and readjustments were accomplished through elimination or curtailment of low-priority activities, manpower surveys to improve the use of resources, and automation of administrative and operating procedures.

Financial Analysis

The productivity of the Agency's financial analysis staff in the review of Title XI applications was increased by utilizing existing computer programs and the development of new ones to perform repetitive, time-consuming calculations of interest, bond amortization, depreciation, cash flow, and present value. These efforts resulted in significant cost savings, despite an increased workload.

Audits

Two internal audit reports were submitted to MarAd by the U.S. Department of Commerce, Office of Audits—an Audit of Selected Ship Sales Activities and an Audit of Essential Trade Route and Service Requirement Determinations.

The General Accounting Office submitted audit reports on Academic and Military Programs of the Five Service Academies, a System to Warn U.S. Mariners of Potential Political/Military Hazards, and Student Attrition at the Five Federal Service Academies.

With minor exceptions, the Maritime Administration concurred in the recommendations contained in these reports and took appropirate implementing actions.

Management Information

The Maritime Administration uses automation in the management and support of all of its programs.

During the 15-month period, MarAd began development of a

major, new automation system in conjunction with market development programs. The new system will closely monitor cargoes from the Department of Defense, U.S. civilian agencies, and quasi-governmental agencies such as the Export-Import Bank. By tracking the movement of these military and civilian cargoes MarAd can more effectively promote the cargo preference legislation designed to assist the maritime industry.

In the operating-differential subsidy program, the Agency has two major, complementary automation systems underway. The first, automation of the subsidy-rate calculation process, will facilitate more accurate payment of subsidies to operators through the use of the most current data available. Additionally, this system will permit professionals to perform more detailed and comprehensive analyses by freeing them from much of the clerical effort required in the old manual system. The second effort in this area is the creation of a comprehensive, detailed waterborne-trade data base which will more accurately tie commodity movements to vessels and increase the overall accuracy of the operating-differential subsidy process. This data base utilizes Bureau of the Census trade data and is a first step toward the long-range goal of eliminating the Vessel Utilization and Performance Report currently required of all operators.

During fiscal year 1976, significant progress was made in the creation of detailed data bases dealing with the maritime industry and MarAd's responsibilities. These data bases, coupled with the use of the Management Data Query and other new automation techniques, enable users throughout the Agency to utilize the computer independently. Use of the data bases and associated techniques also permits the Management Information Systems staff to assist MarAd program offices in the preparation of special time-sensitive reports.

Personnel

Employment

Total employment in the Maritime Administration decreased by 58 to 1,478 during fiscal year 1976, and during the transition quarter the number decreased by 21 to 1,457. There was a slight decrease in the total number of supervisors. The percentage of minority supervisors declined by 1 percent to 14 percent.

Female employees, who constitute 31 percent of the work force, received 36 percent of all promotions in the fiscal year and 39 percent in the transition quarter. Women now hold 7 percent of the GS-12 and above positions.

Minority employment remained at 26 percent of the total work force as of September 30, 1976. Minorities received 31 percent of all promotions during the fiscal year and 25 percent during the transition quarter. They now hold 21 percent of all GS-9 through GS-11 positions.

Training

During the fiscal year and the transition quarter 418 MarAd employees attended Agency-supported training courses totaling 2,216 hours.

A formal Executive Development Program was instituted. In this program, MarAd's top managers were interviewed to determine the knowledge, skills, and abilities required for their positions. Participants in the program were tested to determine whether they had the qualities identified in the survey. They were then helped to further develop those qualities.

Increased use was made of video tapes and audio cassettes to provide training for individuals unable to attend formal training programs.

Awards

During the fiscal year and transition quarter, nine MarAd employees received Bronze Medal Awards, the agency's top award. One employee received the Department of Commerce Gold Medal, the highest award

that can be bestowed upon a Commerce employee; and six employees received the second highest award, the Department's Silver Medal.

A member of the Office of the General Counsel received the first Lawyer of the Year award, the Department of Commerce's highest award for legal work.

In addition, a total of 59 employees were granted Quality Increases during the fiscal year and the transition quarter. The average one-year cost of these awards is $627.35. Special Achievement Awards for one-time acts of service or sustained superior performance were granted to 136 employees during the fiscal year. The average award was $272.57. During the transition quarter, Special Achievement Awards were granted to 26 employees, and these awards averaged slightly over $322 per person.

Cash awards were presented to nine employees for their suggestions, which resulted in tangible savings of $12,587 to the Agency—a significant increase over last year. Management officials adopted 18 other suggestions submitted by employees. During the transition quarter, an additional 11 suggestions were received for processing.

Position Classification and Management

During fiscal year 1976, 941 classification actions were processed, including 881 desk audits; and during the transition quarter, 240 actions were processed, including 74 desk audits.

Classification and position management advice was provided to management through individual discussions, surveys, and personnel management reviews. This advice concerned proposed classification actions, position restructuring, and reorganizations.

Installations and Logistics

Material Control

Rental of mobilization reserve machine tools and equipment to commercial concerns working on defense contracts, or in support of merchant marine programs, produced revenues of $124,773.15 in fiscal year 1976 and $31,193.29 in the transition quarter. Property having an acquisition value of $751,130 was declared excess during the fiscal year, and $123,102 in property was declared excess during the transition quarter. Property having an acquisition vale of $1,974 was redistributed within the Agency during the fiscal year, and $148 in the transition quarter. Property valued at $192,811 in the fiscal year and $242,278 in the transition quarter was transferred to other Federal agencies. Property with an acquisition value of $54,313 was sold during the fiscal year with a return of $9,363 and $134,640 worth was sold for $126,856.78 during the transition quarter.

Real Property

At the end of the year MarAd's real property included the following: Reserve Fleet sites at Suisun Bay, Calif., Beaumont, Tex., and James River, Va.; a warehouse at Kearny, N.J.; the U.S. Merchant Marine Academy, Kings Point, N.Y.; and the Wilmington, N.C., Maritime Facility. The Maritime Oily Waste Treatment Facility in Yorktown, Va., was transferred to the General Services Administration as excess property.

Region Offices are located at San Francisco, Calif.; Cleveland, Ohio; New Orleans, La.; and New York, N.Y. Market Development Offices are maintained in Long Beach, Calif.;

Chicago, Ill.; Norfolk, Va.; Seattle, Wash.; Houston, Tex.; and Detroit, Mich. National Maritime Research Center facilities are maintained at Kings Point, N.Y. Radar training schools are operated at San Francisco, New Orleans, Toledo, Seattle, and New York.

MarAd's Hoboken, N.J., Terminal is under lease to the Port Authority of New York and New Jersey.

Accounting

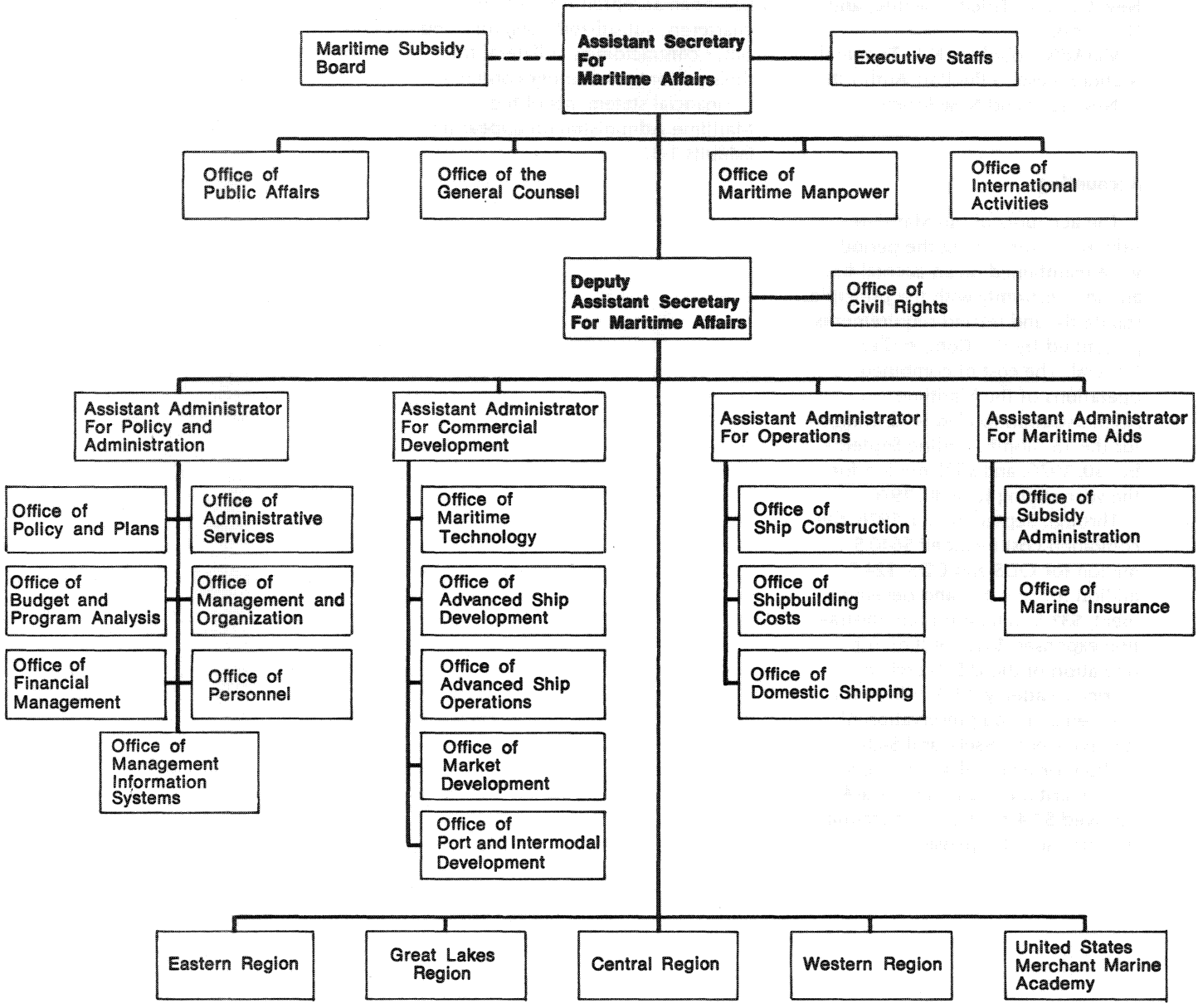
The accounts of the Maritime Administration during the period were maintained on an accrual basis and in conformity with the principles, standards, and related requirements prescribed by the Comptroller General. The cost of combined operations of the Maritime Administration totaled $712 million for the 15 months ending September 30, 1976, and $582 million for the year ending June 30, 1976.

Through September 30, 1976, the combined cost included $640.5 million for ODS and CDS, $24.5 million for research and development, $31.5 million for administration expenses, $12.7 million for operation of the U.S. Merchant Marine Academy, $5.6 million for maintenance and preservation of Reserve Fleet vessels, and $4.6 million for financial assistance to State maritime academies. MarAd received $7.4 million in operating income, net of expenses.

On September 30, 1976, on June 30, 1976, and June 30, 1975, the U.S. Treasury held in safekeeping for the Maritime Administration $130,000, $130,000 and $105,000, respectively, of U.S. Government securities which had been accepted from vessel charterers, subsidized operators, and other contractors as collateral for their performance under contracts.

Financial statements of the Maritime Administration appear in Exhibits 1-3.

Maritime Administration
Organization Chart



Maritime Administration
Field Organization

FINANCIAL STATEMENTS

U.S. Department of Commerce—Maritime Administration

Exhibit 1. Statement of Financial Condition

September 30, 1976, June 30, 1976, and June 30, 1975 (See Note 1)

Assets	Sept. 30	June 30	
	1976	1976	1975
Selected Current Assets			
Fund Balances with Treasury:			
Budget Funds	$ 853,713,418	$ 892,014,725	$ 893,181,299
Deposit Funds	2,708,218	2,718,725	2,989,831
Allocation from Other Agencies	340,414	400,274	1,119,449
Budget Clearing Accounts	21,602	20,748	18,799
	856,783,652	895,154,472	897,309,378
Federal Security Holdings	104,970,000	99,319,551	76,934,399
Accounts Receivable:			
Government Agencies	2,182,879	444,948	367,275
The Public	5,925,400	4,324,476	2,485,330
Allowances (−)	−867,987	−171,216	−171,216
	7,240,292	4,598,208	2,681,389
Advances To:			
Government Agencies	82,584	82,584	82,584
The Public	56,410	52,681	49,545
	138,994	135,265	132,129
Total Selected Current Assets	**969,132,938**	**999,207,496**	**977,057,295**
Loans Receivable:			
Repayable in Dollars	35,262,282	35,441,309	39,480,714
Allowances	−10,756,550	−10,756,550	−11,386,609
	24,505,732	24,684,759	28,094,105
Inventories:			
Raw Material and Supplies	5,895,505	5,895,504	5,888,847
Real Property and Equipment:			
Land	5,841,348	5,841,348	5,844,928
Structures and Facilities	35,321,414	34,329,068	35,357,644
Equipment and Vessels	1,439,355,598	1,460,190,594	1,573,612,194
Leasehold Improvements	92,119	92,119	92,119
Allowances (−)	−1,382,915,225	−1,399,080,801	−1,505,246,678
	97,695,254	102,372,328	109,660,207
Other Assets:			
Work-in-Process, Contractors	2,628,695	2,230,551	744,224
Materials and Supplies, Other	553,543	470,653	516,794
Deferred Charges	749,244	749,244	975,476
Allowances (−)	−749,244	−749,244	−749,244
	3,182,238	2,701,204	1,487,250
Total Assets	**$1,100,411,667**	**$1,134,861,291**	**$1,122,187,704**

The notes and schedules to financial statements are an integral part of this statement.

FINANCIAL STATEMENTS

U.S. Department of Commerce—Maritime Administration

Liabilities	Sept. 30 1976	June 30 1976	June 30 1975
Selected Current Liabilities (Note 2):			
Accounts Payable (including Funded Accrued Liabilities):			
Government Agencies	$ 286,167	$ 32,721	$ 59,597
The Public	147,049,625	162,335,480	139,550,122
	147,335,792	162,368,201	139,609,719
Advances From:			
Government Agencies	3,556,901	2,977,982	2,558,955
The Public	21,655,367	15,302,626	10,700,383
	25,212,268	18,280,608	13,258,338
Total Selected Current Liabilities	**172,548,060**	**180,648,809**	**152,868,057**
Deposit Fund Liabilities	2,708,218	2,718,725	2,989,831
Unfunded Liabilities:			
Accrued Annual Leave	2,521,532	2,736,013	2,588,425
Other Liabilities:			
Vessel Trade-in-Allowance	372,887	372,887	372,887
Deferred Credits		–0–	–0–
Total Liabilities	**178,150,697**	**186,476,434**	**158,819,200**

Government Equity

Unexpended Budget Authority:			
Unobligated	455,544,543	445,500,371	329,957,861
Undelivered Orders	438,519,054	472,806,831	604,922,423
	894,063,597	918,307,202	934,880,284
Unfinanced Budget Authority (—):			
Contract Authority	—101,226,206	—104,133,260	—114,636,075
Invested Capital	128,474,310	132,634,894	142,169,095
Receipt Account Equity	949,269	1,576,021	955,200
Total Government Equity	**922,260,970**	**948,384,857**	**963,368,504**
Total Liabilities and Government Equity	**$1,100,411,667**	**$1,134,861,291**	**$1,122,187,704**

The notes and schedules to financial statements are an integral part of this statement.

FINANCIAL STATEMENTS

U.S. Department of Commerce—Maritime Administration

Exhibit 2. Statement of Equity of U.S. Government

For transition quarter ended September 30, 1976, and years ended June 30, 1976, and June 30, 1975 (See Note 3)	Quarter Ended 9/30/76	Years Ended June 30 1976	1975
Balance Beginning of Fiscal Year	$ 963,368,504	$ 963,368,504	$ 921,744,820
Additions:			
Funds Appropriated by Congress	673,074,000	568,836,000	584,883,000
Property Capitalized with Use of Funds	16,896,190	15,325,392	25,834,302
	$1,653,338,694	$1,547,529,896	$1,532,462,122
Deductions:			
Net Cost of Combined Operations (Exhibit 3)	712,383,784	582,122,131	537,977,693
Payments into General Fund Receipts	18,502,833	17,026,142	31,099,326
Balances Withdrawn or Restored (—)	191,107	—3,234	16,599
	731,077,724	599,145,039	569,093,618
Balance, Close Accounting Period (Exhibit 1)	**$ 922,260,970**	**$ 948,384,857**	**$ 963,368,504**

The notes and schedules to financial statements are an integral part of this statement.

FINANCIAL STATEMENTS

U.S. Department of Commerce—Maritime Administration

Exhibit 3. Statement of Operations

For 15-month period ended September 30, 1976, and years ended June 30, 1976, and June 30, 1975. (See Note 3)

	15-Month-Period Ended	Years Ended June 30	
	9/30/76	1976	1975
OPERATIONS OF MARITIME ADMINISTRATION:			
Net Costs of Operating Activities			
Reserve Fleet Programs:			
Depreciation on Vessels	$ 12,117,481	$ 9,680,569	$ 5,901,130
Maintenance and Preservation	5,567,885	4,336,439	4,123,667
	17,685,367	14,017,008	10,024,797
Maritime Training Program	12,670,724	9,761,810	9,821,870
Maintenance of Shipyards and Warehouses	34,606	29,983	30,883
	30,390,697	23,808,801	19,877,550
Direct Subsidies and National Defense Cost:			
Operating-Differential Subsidies	373,090,832	305,415,887	263,560,475
Construction-Differential Subsidies	267,360,126	219,018,134	229,832,406
Cost of National Defense Features	1,053,575	950,364	1,032,778
	641,504,533	525,384,385	494,425,659
Administrative	31,502,143	25,022,761	23,723,337
Research and Development	24,486,676	20,550,877	28,268,110
Financial Assistance to State Marine Schools	4,630,908	3,907,005	3,000,522
	60,619,727	49,480,643	54,991,969
Other Costs (—Income)			
Depreciation on Vessels—Prior Years	6,381,690	6,381,690	—
Income on Sale of Obsolete Vessels	—7,715,046	—7,526,098	—18,376,674
Income on Sale of other Assets	—66,323	—77,268	—54,884
Inventory and Property Adjustments	—24,753	17,885	146,470
Interest Income	—532,301	—445,408	—600,009
Miscellaneous (Net)	3,272,683	3,054,365	—387,529
	1,315,950	1,405,166	19,272,626
Net Cost of Maritime Administration Operations	**$733,830,907**	**$600,078,995**	**$550,022,552**
OPERATIONS OF REVOLVING FUNDS:			
Vessel Operations Revolving Fund	201,365	180,379	43,221
War Risk Revolving Fund	—501,678	—389,502	—341,146
Federal Ship Financing Fund, Revolving Fund	—21,146,810	—17,747,741	—11,746,934
Net Costs of Combined Operations (Exhibit 2)	**$712,383,784**	**$582,122,131**	**$537,977,693**

The notes and schedules to financial statements are an integral part of this statement.

U.S. Department of Commerce—Maritime Administration

Notes to Financial Statements—September 30, 1976, June 30, 1976, and June 30, 1975

1. The preceding financial statements include the assets, liabilities, income and expenses of the Maritime Administration; the Vessel Operations Revolving Fund; the War Risk Insurance Revolving Fund; and the Federal Ship Financing Fund, Revolving Fund.

2. Because of the transition from a June 30 fiscal year to a September 30 fiscal year this statement is shown for September 30, 1976, June 30, 1976, and June 30, 1975.

3. Because of the transition from a June 30 fiscal year to a September 30 fiscal year this statement reports for the transition quarter (July 1, 1976, to September 30, 1976) and the fiscal years ended June 30, 1976, and June 30, 1975.

4. The Maritime Administration was contingently liable under agreements insuring mortgages, construction loans, and accrued interest payable to lending institutions totaling $3,590,508,399 on September 30, 1976, $3,526,155,267 on June 30, 1976, $2,366,248,362 on June 30, 1975. Commitments to insure additional loans and/or mortgages amount to $1,360,642,090 on September 30, 1976, $1,374,076,485 on June 30, 1976, and $1,846,095,667 on June 30, 1975. U.S. Government securities and cash of $395;341,141 on September 30, 1976, $411,160,193 on June 30, 1976, and $353,357,476 on June 30, 1975 were held in escrow by the Government in connection with insurance of loans and mortgages which were financed by the sale of bonds to the general public. There were no conditional liabilities for prelaunching War Risk Builder's Risk Insurance on September 30, 1976. There were conditional liabilities of $25 billion on June 30, 1976, and $25 billion on June 30, 1975.

On September 30, 1976, on June 30, 1976 and June 30, 1975, the U.S. Treasury held in safekeeping for the Maritime Administration $130,000, $130,000 and $105,000, respectively, of U.S. Government securities which had been accepted from vessel charterers, subsidized operators, and other contractors as collateral for their performance under contracts.

List of Abbreviations

The following abbreviations are used in this publication:

AID—Agency for International Development

AIMS—American Institute of Merchant Shipping

AMO—Associated Maritime Officers

APL—American President Lines, Ltd.

BIC—Bureau of International Commerce

BMO—Brotherhood of Marine Officers

CAORF—Computer-Aided Operations Research Facility

CCF—Capital Construction Fund

CDC—Cooperative Development Committee

CDS—Construction-Differential Subsidy

CRF—Construction Reserve Fund

dwt.—Deadweight Tons

DOA—Department of Agriculture

EBURS—Emergency Berth Utilization Reporting System

EDA—Economic Development Administration

EEO—Equal Employment Opportunity

EIS—Environmental Impact Statement

ERDA—Energy Research and Development Administration

Ex-Im—Export-Import Bank

FDOT—Florida Department of Transportation

FEA—Federal Energy Administration

FIRST—Financial Information & Retrieval System

FMR—Foreign Maritime Representative

GAI—Guaranteed Annual Income

GIPME—Global Investigation of Pollution in the Marine Environment

ILA—International Longshoremen's Association

ILO—International Labor Organization

IMCO—Intergovernmental Maritime Consultative Organization

IPP—Industrial Preparedness Planning Schedules

IUMSWA—Industrial Union of Marine & Shipbuilding Workers of America

JMIE—Joint Maritime Information Element

LASH—Lighter-Aboard-Ship Vessel

LNG—Liquefied Natural Gas

MARISAT—Maritime Satellite

MarAd—Maritime Administration

MBE—Minority Business Enterprise

MEBA—Marine Engineers Beneficial Association

MEPC—Marine Environment Protection Committee

MIT—Massachusetts Institute of Technology

MMP—International Organization of Masters, Mates & Pilots

MRIS—Maritime Research Information Service

MSC—Military Sealift Command

NASSCO—National Steel & Shipbuilding Company

NATO—North Atlantic Treaty Organization

NCSO—Naval Control of Shipping Organization

NDRF—National Defense Reserve Fleet

NORCAL—Northern California Ports & Terminals Bureau

NMC—National Maritime Council

NMU—National Maritime Union

NYSA—New York Shipping Association

OBO—Ore/Bulk/Oil Carriers

ODS—Operating-Differential Subsidy

PFEL—Pacific Far East Line

PRMSA—Puerto Rican Maritime Shipping Authority

RO/RO—Roll-On/Roll-Off

SELCALL—Selective Calling ship communications system

SIU—Seafarers International Union of North America

SOIS—Shipping Operations Information System

ULCC—Ultra Large Crude Carriers (tankers larger than 300,000 dwt.)

USMER—U.S. Merchant Ship Locator Filing System

VLCC—Very Large Crude Carriers (tankers between 200,000 and 300,000 dwt.)

Table 1: PRIVATE CONSTRUCTION CONTRACTS AWARDED IN FISCAL YEAR 1976 AND TRANSITION QUARTER

Owner	Shipbuilder	Type	No.	Total Dwt. Tonnage	Estimated Completion Date	Total Estimated Cost[1]
Cherokee VI Shipping	Gen. Dyn. (Quincy)	LNG	1	63,600	1979	$155.0
Cherokee VII Shipping	Gen. Dyn. (Quincy)	LNG	1	63,600	1979	155.0
Matson Navigation	Bath Iron Works	Containership	1	26,600	1978	50.7
Pacific Far East	Sun SB & DD	RO/RO	1	17,300	1976	46.0
Shipco 669, Inc.	Sun SB & DD	Crude Oil Tanker	1	118,300	1978	70.4
U.S. Steel Corp.	Bay SB	Bulk Carrier	1	62,000	1978	45.0
American Steamship*	Bay SB	Bulk Carrier	1	23,300	1978	18.0
Undisclosed*	Sun SB & DD	RO/RO	1	17,300	1978	46.0
U.S. Steel Corp.*	American SB	Bulk Carrier	1	59,000	1978	45.0
Total Private Contracts Awarded, FY 1976 and Transition Quarter			**9 (3*)**	**451,000**		**$631.1 ($109*)**

[1]Millions of dollars.
*Transition quarter, July 1-September 30, 1976.

Table 2: NEW SHIPS DELIVERED FROM U.S. SHIPYARDS DURING FISCAL YEAR 1976 AND TRANSITION QUARTER

Owner	Builder	Type	Vessels
Subsidized			
Boston VLCC Tankers	Bethlehem (Sparrows Point)	Crude Oil Tankers	3 (1*)
Moore-McCormack	National Steel & SB	Product Tankers	2
States Steamship	Bath Iron Works	Roll-on/Roll-off	2
First Pennsylvania Bank	National Steel & SB	Crude Oil Tanker	1
Yeon Shipping	National Steel & SB	Crude Oil Tanker	1
Zapata	Todd (Los Angeles)	Product Tanker	2 (1*)
Northwest Shipping*	National Steel & SB	Crude Oil Tanker	1*
	Total Subsidized Deliveries		**12 (3*)**
Non-Subsidized			
American Steamship	Bay SB	Bulk Carrier	1
Chevron Shipping	FMC	Product Tankers	2
Cleveland Tankers	SBA Shipyards	Product Tanker	1
Marine Ship Leasing	Bath Iron Works	Product Tanker	1
Marine Ship Leasing	Todd (Los Angeles)	Product Tanker	1
Pacific Far East Line	Sun SB & DD	Roll-on/Roll-off	1
Sun Oil Affiliate	Sun SB & DD	Roll-on/Roll-off	1
Sun Ship Affiliate	Sun SB & DD	Crude Oil Tanker	1
Interlake Steamship*	American SB	Bulk Carrier	1*
Inland Steel*	Bay SB	Bulk Carrier	1*
	Total Non-Subsidized Deliveries		**11 (2*)**
Total New Ships Delivered FY 1976 and Transition Quarter			**23 (5*)**

*Transition quarter, July 1-September 30, 1976.

Table 3: FEDERAL SHIP FINANCING GUARANTEE PROGRAM
(Title XI) Principal Liability (Statutory Limit $6.950 Billion), September 30, 1976

	Contracts In Force		Applications Pending	
	Vessels Covered	Principal Amount	Vessels Covered	Principal Amount
Vessel Types				
Deepdraft Vessels:				
Tankers	73	$1,029,916,165.12	19	$ 994,645,918
Cargo	174	946,580,786.22	24	451,801,000
LNGs	14	1,041,299,500.00	21	2,081,319,750
Bulk/OBOs	14	202,961,427.37	22	424,336,750
Total	**275**	**$3,220,757,878.71**	**86**	**$3,952,103,418**
Other Types:				
Drilling Rigs/Ships	44	$ 674,570,064.13	14	$ 223,700,240
Tugs/Barges/Drilling Service	1,546	886,433,126.16	179	276,653,209
Miscellaneous	8	59,833,003.00	11	121,669,491
Total	**1,598**	**$1,620,836,193.29**	**204**	**$ 622,022,940**
TOTAL VESSELS	**1,873**	**$4,841,594,072.00**	**290**	**$4,574,126,358**
SHIPBOARD LIGHTERS	**2,666**	**$ 109,340,660.57**	**254**	**121,480,000**
TOTAL	**4,539**	**$4,950,934,732.57**	**544**	**$4,695,606,358**

Table 4: CAPITAL RESERVE FUNDS' SEPTEMBER 30, 1976

Operators	Cash	Securities	Balance
American President Lines, Ltd.	$83,757.73	$3,100,000.00	$3,183,757.73
States Steamship Company	$78,769.34		$ 78,769.34

[1]Cash, approved interest bearing securities, and common stocks under approved common stock trust on deposit in the statutory Capital Reserve Funds of subsidized operators.

NOTE: All Special Reserve Funds have been closed. Capital Reserve Funds will be phased out as required by the Merchant Marine Act of 1970.

Table 5: U.S. GREAT LAKES FLEET[1] SEPTEMBER 30, 1976

	Vessels	Gross Registered Tons	Estimated Dwt.
Total	**171**	**1,567,568**	**2,627,261**
Bulk Carriers	150	1,495,623	2,562,211
Tankers	11	38,551	65,050
Others	10[2]	33,394	[3]

[1]Self-propelled vessels of 1,000 gross registered tons and over.
[2]Includes railroad car ferries, auto ferries.
[3]Not available.

NOTE: Data supplied by the Lake Carriers Association.

Table 6: U.S. OCEANBORNE FOREIGN TRADE/COMMERCIAL CARGO CARRIED

Calendar Year	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975
Total-Tons (Millions)	392.3	387.6	418.6	427.5	473.2	457.4	513.6	631.6	628.5	612.0
U.S.-Flag Tons	26.2	20.5	25.0	19.8	25.2	24.4	23.8	39.9	40.9	31.0
U.S. Percent of Total	6.7	5.3	6.0	4.6	5.3	5.3	4.6	6.3	6.5	5.1
Liner Total Tons	49.9	47.9	46.1	41.9	50.4	44.2	44.6	51.3	51.4	45.0
Liner U.S.-Flag Tons	11.4	10.6	11.1	9.7	11.8	10.1	9.8	13.2	15.3	13.6
Liner U.S. Percent	22.9	22.2	24.0	23.1	23.5	22.9	21.9	25.8	29.8	30.3
Non-Liner Total Tons	189.5	190.4	209.5	212.1	240.7	220.7	242.6	281.9	282.7	272.7
Non-Liner U.S.-Flag Tons	6.9	5.4	6.4	4.6	5.4	4.8	3.8	4.5	5.0	3.8
Non-Liner U.S. Percent	3.6	2.8	3.0	2.2	2.2	2.1	1.6	1.6	1.8	1.4
Tanker Total Tons	152.8	149.3	163.1	173.5	182.1	192.5	226.4	298.4	294.4	294.3
Tanker U.S.-Flag Tons	7.9	4.5	7.5	5.5	8.0	9.5	10.2	22.2	20.5	13.7
Tanker U.S. Percent	5.2	3.0	4.6	3.2	4.4	4.9	4.5	7.4	7.0	4.6
Dollar Value										
Total Value ($ billions)	36.4	36.6	41.1	41.9	49.7	50.4	60.5	84.0	124.2	127.3
U.S.-Flag Value ($ billions)	8.2	7.9	8.5	8.1	10.3	9.9	11.1	15.9	22.0	22.3
U.S. Pecent of Total	22.5	21.7	20.7	19.3	20.7	19.6	18.4	18.9	17.7	17.5
Liner Total Value	24.8	24.8	26.8	27.2	33.5	32.4	37.4	49.6	63.4	64.2
Liner U.S.-Flag Value	7.5	7.4	7.8	7.5	9.7	9.2	10.3	14.4	19.4	20.0
Liner U.S. Percent	30.4	29.8	29.0	27.6	28.8	28.4	27.7	29.1	30.6	31.2
Non-Liner Total Value	8.2	8.6	10.8	11.1	12.2	13.2	17.4	25.2	34.7	36.3
Non-Liner U.S.-Flag Value	.4	.4	.5	.4	.4	.4	.4	.7	.8	1.0
Non-Liner U.S. Percent	4.9	4.5	4.6	3.6	3.3	3.1	2.4	2.5	2.3	2.7
Tanker Total Value	3.4	3.2	3.4	3.6	4.0	4.9	5.7	9.2	26.0	26.7
Tanker U.S.-Flag Value	.3	.2	.2	.2	.2	.3	.4	.8	1.8	1.4
Tanker U.S. Percent	7.7	4.8	6.6	5.6	5.6	5.5	6.2	9.1	6.9	5.1

[1]Preliminary data subject to future revisions.

NOTE: Includes Government-sponsored cargo; excludes Department of Defense cargo and U.S./Canada translakes cargo.

Table 7: GOVERNMENT-SPONSORED CARGOES[1] CALENDAR YEAR 1975

Public Law 664 Cargoes:

Shipper	Total Long Tons	U.S.-Flag Long Tons	Percentage U.S. Flag
Agency for International Development	1,700,572	542,815	32
Department of Agriculture	4,761,882	2,400,949	50
Department of the Interior:			
▪ Bonneville Power Administration	5,975	2,234	37
▪ Bureau of Reclamation	118	1	1
Department of Commerce	264	215	81
Inter-American Development Bank	22,570	11,228	50
National Aeronautics & Space Administration	416	353	85
Smithsonian Institution	236	186	79
Department of State	7,797	6,664	85
Tennessee Valley Authority	4,470	4,023	90
Department of Transportation	338	200	59
Department of the Treasury	114	114	100
U.S. Information Agency	3,717	3,347	90
Other[2]	221	200	90

Public Resolution 17 Cargoes:

	Total Freight Revenue	U.S.-Flag Freight Revenue	Percentage U.S. Flag
Export-Import Bank	$166,365,453	$123,091,741	77

[1]Civilian agencies.
[2]Cargoes of agencies which generate less than 100 tons of cargoes per year.

Table 8: MARITIME MANPOWER AVERAGE MONTHLY EMPLOYMENT

	Average Monthly Employment	
	1975	1976
Seafaring:		
Shipboard Jobs (all sectors)	31,176	26,889
Shipyard:[1]	91,039	97,154
Production Workers	72,668	78,228
Management and Clerical	18,371	18,926
Longshoremen	63,725	58,888

[1]Commercial yards able to construct ships 475 by 68 feet.

Table 9: NATIONAL DEFENSE RESERVE FLEET, SEPTEMBER 30, 1976

Fleets	Retention[1]	Scrap Candidates	Special Programs	Total
Beaumont, Tex.	39	12	1	52
James River, Va.	108	33	2	143
Suisun Bay, Calif.	95	52	5	152
Total	**242**	**97**	**8**	**347**[2]

[1]Vessels maintained for emergency activation under the fleet preservation program.
[2]Includes 98 vessels owned by the Navy Department.

Table 10: NATIONAL DEFENSE RESERVE FLEET 1945-1976

Fiscal Year	Ships	Fiscal Year	Ships
1945	5	1961	1923
1946	1421	1962	1862
1947	1204	1963	1819
1948	1675	1964	1739
1949	1934	1965	1594
1950	2277	1966	1327
1951	1767	1967	1152
1952	1853	1968	1062
1953	1932	1969	1017
1954	2067	1970	1027
1955	2068	1971	860
1956	2061	1972	673
1957	1889	1973	541
1958	2074	1974	487
1959	2060	1975	419
1960	2000	1976 (September 30)	347

Table 11: MARINE AND WAR RISK INSURANCE APPROVED FY 1976 AND FY76TQ

Kind of Insurance	FY 76 Amount	FY 76TQ Amount	15 Month Total	Percentage	
				American	Foreign
Marine Hull	$3,598,279,000	$719,656,000	$4,317,935,000	69	31
Marine Protection and Indemnity	3,459,981,000	691,996,000	4,151,977,000	45	55
War Risk Hull	3,406,183,000	681,237,000	4,087,420,000	47	53
War Risk Protection and Indemnity	3,406,183,000	681,237,000	4,087,420,000	47	53

Appendix I: SHIPS UNDER CDS JUNE 30, 1976, AND SEPTEMBER 30, 1976

Owner	Shipbuilder	Ship Type
Contracts Awarded in FY 1976 and the transition quarter:		
American President	West Winds	CN
American President	Triple "A" Machine Shop	CN
Farrell	Bethlehem (Sparrows Point)	CN
Coordinated Caribbean Transport*	Seatrain (Marinette Marine)	TB
Undelivered Vessels Under Contracts Awarded Prior to FY 1976:		
Achilles Marine	Avondale	PT
Ajax Marine	Avondale	PT
Boston VLCC, VI	Bethlehem (Sparrows Point)	COT
Chestnut Shipping	National Steel & SB	COT
Cryogenic Energy Transport	General Dynamics	LNG
El Paso Arzew	Newport News SB & DD	LNG
El Paso Columbia	Avondale	LNG
El Paso Cove Point	Avondale	LNG
El Paso Gamma	Newport News SB & DD	LNG
El Paso Savannah	Avondale	LNG
El Paso Southern	Newport News SB & DD	LNG
Farrell Lines	Avondale	CN
Fillmore Tanker	Seatrain	COT
First Pennsylvania Bank	National Steel & SB	COT
Gulf Oil	Bethlehem (Sparrows Point)	COT
Gulf Oil	Bethlehem (Sparrows Point)	COT
Liquegas Transport	General Dynamics	LNG
LNG Transport	General Dynamics	LNG
Moore-McCormack Bulk	National Steel & SB	PT
Northwest Shipping	National Steel & SB	COT
Polk Tanker	Seatrain	COT
States Steamship	Bath Iron Works	RO/RO
States Steamship	Bath Iron Works	RO/RO
United Shipping	Avondale	PT
VLCC I	Newport News SB & DD	COT
VLCC II	Newport News SB & DD	COT
Zapata Ocean Carriers	Newport News SB & DD	COT
Zapata Product Tankers	Todd (San Pedro)	PT
Total Undelivered Vessels Under Pre-FY76 Contracts:		
June 30, 1976		
September 30, 1976		
Total Ships Under CDS June 30, 1976		
September 30, 1976		

*Transition quarter.
[1]Total contract cost including CDS and National Defense Features (NDF), but excluding engineering and change orders.
[2]Reconstruction.
[3]125,000 cubic meters.
[4]Delivered during transition quarter.
[5]Only one of the three Zapata vessels being built at Todd was delivered during the transition quarter.
Key to Ship Types: CN=containership, COT=crude oil tanker, LNG=liquefied natural gas carrier, PT=product tanker, RO/RO=roll-on/roll-off vanship, TB=Tug-barge (each tug-barge unit comprises one tug and one barge), VLCC=Very Large Crude Carrier.

No. of Ships	Total Dwt.	Estimated Completion Date[1]	Total Estimated Cost (Millions)	Estimated CDS (Millions)	Estimated Cost NDF (Thousands)
2[2]	39,090	11-75	$ 4.3	$ 1.4	$ -0-
1[2]	14,048	4-76	.9	.3	-0-
2	54,680	1-79	156.6	77.8	72
2	12,900	4-78	42.5	16.2	-0-
1	56,000	4-78	$ 43.5	$ 15.2	$ 100
1	56,000	6-78	43.5	15.2	100
1[4]	265,000	7-76[4]	71.2	30.6	133
2	179,400	3-77	65.7	21.9	120
1	63,600[3]	12-76	89.6	21.2	20
1	63,460[3]	4-78	96.8	24.8	17
1	63,170[3]	11-77	106.0	17.5	20
1	63,170[3]	11-78	100.0	16.5	20
1	63,460[3]	7-78	94.2	24.1	18
1	63,170[3]	5-78	103.0	17.0	20
1	63,460[3]	8-77	106.6	27.3	17
2[2]	54,960	6-77	40.3	14.8	100
1	225,000	12-77	70.6	28.8	63
1	89,700	9-76	28.2	10.3	60
1	265,000	12-76	81.5	33.3	151
1	265,000	5-77	81.5	33.3	151
1	63,600[3]	2-78	89.6	21.2	20
1	63,600[3]	5-77	89.6	21.2	20
1	38,300	1-77	21.7	7.6	55
1[4]	89,700	7-76[4]	28.2	10.2	60
1	225,000	12-76	63.1	27.1	58
1	19,543	10-76	38.2	16.3	319
1	19,543	3-77	35.3	14.1	205
1	51,000	6-78	43.5	15.2	100
1	390,770	5-78	139.7	54.1	66
1	390,770	9-78	138.2	53.5	58
1	390,770	1-79	136.6	52.9	59
3[5]	105,000	11-76[5]	59.7	25.2	-0-
32	**3,747,146**		**$2,105.6**	**$670.7**	**$2,130**
29	**3,357,446**		**$1,986.4**	**$604.7**	**$1,937**
34	**3,802,006**		**$2,262.2**	**$748.5**	**$2,202**
33	**3,424,312**		**$2,304.7**	**$764.7**	**$2,202**

Appendix II: MARITIME SUBSIDY OUTLAYS

Fiscal Year	CDS	Reconstruction Subsidy	TOTAL	ODS	Total ODS & CDS
1936-1955	$ 248,320,942[1]	$ 3,286,888	$ 251,607,830	$ 341,109,987	$ 592,717,817
1956-1960	129,806,005	34,881,409	164,687,414	644,115,146	808,802,560
1961	100,145,654	1,215,432	101,361,086	150,142,575	251,503,661
1962	134,552,647	4,160,591	138,713,238	181,918,753	320,631,991
1963	89,235,895	4,181,314	93,417,209	220,676,685	314,093,894
1964	76,608,323	1,665,087	78,273,410	203,036,844	281,310,254
1965	86,096,872	38,138	86,135,010	213,334,409	299,469,419
1966	69,446,510	2,571,566	72,018,076	186,628,357	258,646,433
1967	80,155,452	932,114	81,087,566	175,631,860	256,719,426
1968	95,989,586	96,707	96,086,293	200,129,670	296,215,963
1969	93,952,849	57,329	94,010,178	194,702,569	288,712,747
1970	73,528,904	21,723,343	95,252,247	205,731,711	300,983,968
1971	107,637,353	27,450,968	135,088,321	268,021,097	403,109,418
1972	111,950,403	29,748,076	141,698,479	235,666,821	377,365,300
1973	168,183,937	17,384,604	185,568,541	226,710,926	442,279,467
1974	185,060,501	13,844,951	198,905,452	257,919,080	456,824,532
1975	237,895,092	1,900,571	239,795,663	243,152,315	482,947,978
1976	194,104,198	7,658,697	201,762,895	301,107,973	502,870,868
Transition Quarter	39,722,226	2,227,327	41,949,553	85,326,021	127,275,574
Total	**$2,322,393,349**	**$175,025,112**	**$2,497,418,461**	**$4,535,062,779**	**$7,032,481,260**

[1]Includes $131.5 million CDS adjustments covering the World War II period, $105.8 million equivalent to CDS allowances which were made in connection with the Mariner ship construction program and $10.8 million for CDS in fiscal years 1954 and 1955.

Appendix III: SHIP DELIVERIES DURING FISCAL YEAR 1976 (TONNAGE IN THOUSANDS)

Country of Construction	Total All Types No.	Total All Types Dwt.	Combination Pass. & Cargo No.	Combination Pass. & Cargo Dwt.	Freighters No.	Freighters Dwt.	Bulk Carriers No.	Bulk Carriers Dwt.	Tankers No.	Tankers Dwt.
Total	**1,034**	**54,740.4**	**3**	**12.8**	**437**	**3,929.1**	**263**	**10,720.6**	**331**	**40,077.9**
United States	18	1,206.0	–	–	4	73.4	1	42.0	13	1,090.6
Brazil	19	614.1	–	–	13	124.8	4	347.3	2	142.0
Denmark	20	1,433.5	–	–	9	52.8	7	355.0	4	1,025.7
France	24	2,038.4	1	1.9	9	133.9	–	–	14	1,902.6
Germany, East	19	212.2	–	–	19	212.2	–	–	–	–
Germany, West	72	2,718.6	–	–	43	425.6	10	292.2	19	2,000.8
Italy	20	1,302.9	–	–	5	33.9	2	124.0	13	1,145.0
Japan	513	31,325.8	–	–	194	1,744.7	158	6,043.3	161	23,537.8
Korea, South	8	1,234.7	–	–	1	9.2	2	37.1	5	1,188.4
Netherlands	43	1,186.0	–	–	28	96.9	6	86.0	9	1,003.1
Norway	36	1,344.8	–	–	8	62.2	7	350.3	21	932.3
Poland	24	515.8	–	–	17	149.6	5	308.4	2	57.8
Spain	47	2,358.7	–	–	27	228.0	9	257.9	11	1,872.8
Sweden	24	2,835.4	–	–	–	–	6	619.6	18	2,215.8
United Kingdom	38	1,841.6	–	–	12	154.9	18	910.3	8	776.4
U.S.S.R.	19	284.5	–	–	15	139.5	4	145.0	–	–
Yugoslavia	12	722.0	1	1.4	–	–	3	252.9	8	467.7
All Others	78	1,565.4	1	9.5	33	287.5	21	549.3	23	719.1

Appendix IV; SHIP FINANCING GUARANTEES APPROVED IN FY 1976 AND TRANSITION QUARTER

Number	Type	Company	Amount Guaranteed: Transition Quarter	Amount Guaranteed: Fiscal Year 1976
Deepdraft Vessels:				
1	Great Lakes Bulk Carrier	Interlake Steamship		$ 5,214,000
1	RO/RO Trailership	Pacific Far East Line		40,200,000
2	Container Vessels	Farrell Lines		66,294,000
1	Bulk Carrier	Baldbutte Shipping		5,400,000
1	Bulk Carrier	Bell Steamship		21,270,000
1	RO/RO Trailership	670 Leasing		26,400,000
1	RO/RO Trailership	673 Leasing		36,997,866
8		**Total Deepdraft Vessels**		**$201,755,866**
Other Types:				
Ocean:				
6	Tugs	Marine Leasing		$ 19,891,897
2	Tugs	Liberty Bell		6,116,250
1	Barge	Rain Associates		2,348,000
1	Self-propelled hopper suction dredge	North American Trailing		6,108,199
8	Barges	Bulk Food Carriers		20,348,000
1	Floating Drydock	Avondale Shipyards		19,012,000
2	1 Tug & 1 Barge	Niagara Barge		4,152,753
1	Tug	Pacific Towboat & Salvage		2,635,000
6	4 Tugs & 2 Barges	Foss Launch & Tug		11,421,000
2	Tugs	General Marine	$ 4,686,000	
4	2 Tugs & 2 Barges	Coordinated Caribbean Transport	$22,328,000	
34		**Total Ocean**	**$27,014,000**	**$ 92,033,099**
River:				
54	6 Tows & 48 Barges	Ingram Transportation		$ 52,042,000
10	Barges	Bultema Dock & Dredge		2,453,307
16	Barges	National Marine Service		6,200,000
227	22 Tows & 205 Barges	American Commercial Lines		40,653,461
276	16 Tows & 260 Barges	Ohio Power Company		75,081,000
17	2 Tows & 15 Barges	Magnolia Marine Transport		8,062,000
1	Barge	Foss Launch & Tug		1,410,000
3	Barges	Umpqua Navigation Equipment		4,420,000
5	4 Tows & 1 Barge	LeBeouf Bros. Towing		3,461,000
1	Tow	Canal Barge		1,496,000
81	4 Tows & 77 Barges	Flowers Transportation		18,612,000
31	1 Tow & 30 Barges	Marine Leasing		7,800,000
32	7 Tow & 25 Barges	Wisconsin Barge Line	$12,516,243	
1	Tow	Liberty Bell Towing	480,370	
755		**Total River**	**$12,996,613**	**$221,690,768**
Drilling Ships:				
1	Jackup Drilling Platform	Southern Marine		$ 24,000,000
2	Semi-sub. Drilling Vessels	Sedco Maritime		74,000,000
8	Drilling Vessels	Global Marine Deepwater Drilling		152,100,000
2	Drilling Tenders	Sea Drilling		3,690,000
13		**Total Drilling Ships**		**$253,790,000**

Appendix IV: (Continued)

Drilling Service:				
4	Tug/Supply Vessels	AquaMarine Associates		$ 11,576,000
1	Tow	F & S Offshore		2,688,000
1	Tug/Oil Service	Gulf Overseas Marine		1,369,000
1	Tug/Supply Vessel	Offshore Service Ships	$ 1,875,000	
2	Tug/Supply Vessels	Point Marine	3,150,000	
4	Tug/Supply Vessels	Arthur Levy Enterprises	6,284,000	
2	Tug/Supply Vessels	Biehl Offshore	14,582,000	
15		**Total Drilling Service**	**$25,891,000**	**$ 15,633,000**
Lighters:				
200	LASH Lighters	Pacific Far East Line		$ 12,847,000
125	Single Skin Lighters	Waterman Steamship		8,250,000
203	LASH Lighters	Farrell Lines	$12,859,550	
528		**Total Lighters**	**$12,859,550**	**$ 21,097,000**
1,353		**Total Guaranteed**	**$78,761,163**	**$805,999,733**

Appendix V: CAPITAL CONSTRUCTION FUND HOLDERS—SEPTEMBER 30, 1976

Aeron Marine Shipping
American Export Lines
American Foreign Steamship
Aquarius Marine
Ashland Oil
Atlantic Richfield
Bankers Trust, N.Y.
Bethlehem Steel
Boblo
Bultema Dock & Dredge
Campbell Towing
Central Gulf Lines
Citimarlease (Burmah I)
Citimarlease (Burmah LNG Carrier)
Citimarlease (Burmah Liquegas)
Citimarlease (Fulton)
Citimarlease (Whitney)
Clemens Ships
Cleveland-Cliffs Iron
Coastal Barge Line
Cook Inlet Tug & Barge
Crowley Maritime
Delta Steamship Lines
Ecological Shipping
El Paso Arzew Tanker
El Paso Cove Point Tanker
El Paso Columbia Tanker
El Paso Gamma Tanker
El Paso Savannah Tanker
El Paso Southern Tanker
Empire Transport
Erie Navigation
Exxon
Farrell Lines
Ford Motor
Foss Alaska Line
Foss Launch and Tug
Fred Devine Diving & Salvage
GATX Corp.
General Marine
Globe Seaways
Great Lakes Towing
Hannah Brothers
Hannah Inland Waterways
Hannah Marine
Hawaiian Tug & Barge
Inland Steel
Intercontinental Bulktank
International Ocean Transport
Interstate Marine Transport
Interstate Towing
James River Transport
Luedtke Engineering
Lykes Bros. Steamship
Matson Navigation
Meadowbrook Transport
Mohawk Shipping
Moore-McCormack Resources
MOTC Acquisitions
Nolty J. Theriot
Neuman Boat Line
Ocean Tankships
Ogden Merrimac Transport
Ogden Sea Transport
Ogden Sacramento Transport
Oceanic Partners
Oglebay Norton
Ohio Barge Line
Overseas Bulktank
Pacific Towboat & Salvage
Pacific Far East Line
Platte Transport
Prudential Lines
Ritchie Transportation
Rio Grande Transport
Robin Towing
S & E Shipping
Schmidt (O.L.) Barge Lines
Sun Oil
Union Oil of Calif.
United States Lines
United States Steel
United Tanker
Young Brothers
Wabash Transport
Warrior & Gulf Navigation
Willamette Transport
Waterman Steamship

Appendix VI: CONSTRUCTION RESERVE FUNDS—SEPTEMBER 30, 1976

Company	Balance
Central Gulf Steamship	$ 1,000
Smith-Rice	547,109
Kathleen Turecamo	681
Gulf Mississippi Marine	100
Chas. Kurz	514,910
Keystone Tankship	423,376
Campbell Barge Lines	64,000
NMS Chemical	400,000
Total September 30, 1976	**$1,951,176**
Total June 30, 1976	**2,417,848**
Total June 30, 1975	**3,089,261**
Net Increase (Decrease) Transition Quarter	**($466,672)**
Net Increase (Decrease) Fiscal Year	**($671,413)**

Appendix VII: U.S. OCEANGOING MERCHANT MARINE[1]—SEPTEMBER 30, 1976

	Privately Owned		Government-Owned		Total	
	Ships	Deadweight Tons (000)	Ships	Deadweight Tons (000)	Ships	Deadweight Tons (000)
Active Fleet:						
Combo Pass./Cargo	6	50	2	9	8	60
Freighters	142	1,943	7	60	149	2,003
Bulk Carriers	16	431	0	0	16	431
Tankers	211	8,268	2	21	213	8,288
Intermodal	142	2,786	0	0	142	2,786
Total Active Fleet	**517**	**13,478**	**11[2]**	**90**	**520**	**13,568**
Inactive Fleet:						
Combo Pass./Cargo	0	0	53	333	53	333
Freighters	14	180	183	1,863	197	2,043
Bulk Carriers	2	99	0	0	2	99
Tankers	41	2,020	13	184	54	2,203
Intermodal	5	58	4	47	9	105
Total Inactive Fleet	**62**	**2,356**	**253[3]**	**2,427**	**315**	**4,783**
Total Active and Inactive by Type:						
Combo Pass./Cargo	6	50	55	342	61	393
Freighters	156	2,123	190	1,923	346	4,045
Bulk Carriers	18	529	0	0	18	529
Tankers	252	10,288	15	205	267	10,492
Intermodal	147	2,844	4	47	151	2,891
Total American Flag	**579**	**15,834**	**264**	**2,517**	**843**	**18,350**

[1]Vessels of 1,000 gross tons and over, excluding privately owned tugs, barges, etc.
[2]Includes 1 vessel in bareboat charter and 9 vessels in custody of other U.S. Government agencies.
[3]National Defense Reserve Fleet consists of 251 vessels of which 71 are scrap candidates.
Excluded are 98 vessels owned by the Navy Department which are in the custody of MarAd's Reserve Fleet.

NOTE: Tonnage figures may not be additive due to rounding.

Appendix VIII: EMPLOYMENT OF U.S.-FLAG OCEANGOING MERCHANT FLEET[1]— SEPTEMBER 30, 1976

Status and Area of Employment	Total		Vessel Type					
			Combination Pass./Cargo		Freighters		Tankers	
	No.	Dwt. (000)	No.	Dwt. (000)	No.	Dwt. (000)	No.	Dwt. (000)
Grand Total	**843**	**18,350**	**61**	**393**	**515**	**7,465**	**267**	**10,492**
Active Vessels	**528**	**13,568**	**8**	**59**	**307**	**5,220**	**213**	**8,289**
Foreign Trade[2]	281	6,601	6	50	225	4,102	50	2,449
Nearby Foreign	23	650	–	–	8	149	15	501
Great Lakes-Seaway Foreign	4	56	–	–	4	56	–	–
Overseas Foreign	254	5,895	6	50	213	3,897	35	1,948
Foreign to Foreign	12	1,064	–	–	8	84	4	980
Domestic Trade	177	4,758	–	–	43	612	134	4,146
Coastwise	103	3,053	–	–	7	85	96	2,968
Intercoastal	18	510	–	–	2	38	16	472
Noncontiguous	56	1,195	–	–	34	489	22	706
Other U.S. Agency Operations	58	1,145	2	9	31	422	25	714
MSC Charter	47	1,055	–	–	24	362	23	693
Bareboat & Other Custody	11	90	2	9	7	60	2	21
Inactive Vessels	**315**	**4,782**	**53**	**334**	**208**	**2,245**	**54**	**2,203**
Temporarily Inactive	36	1,509	–	–	13	243	23	1,266
Merchant Types	36	1,509	–	–	13	243	23	1,266
Military Types	–	–	–	–	–	–	–	–
National Defense Reserve Fleet[3]	251	2,396	52	324	187	1,909	12	163
Merchant Types	155	1,672	1	16	152	1,617	2	39
Military Types	96	724	51	308	35	292	10	124
Laid-Up (Privately Owned)	26	847	–	–	8	93	18	754
Laid-Up (MarAd-Owned, Bareboat)	2	30	1	10	–	–	1	20

[1]Excludes vessels operating exclusively on the Great Lakes and inland waterways, those owned by the U.S. Army and Navy, and special types such as cable ships, tugs, etc.
[2]Nearby Foreign includes Canada, Central America, West Indies, North Coast of South America, and Mexico.
[3]Excludes vessels owned by the Navy Department which are in the custody of MarAd's Reserve Fleet.

Appendix IX: MAJOR MERCHANT FLEETS OF THE WORLD[1]—JUNE 30, 1976

Country	Ships	Rank by[2] No. Ships	Dwt. (thousands)	Rank by Dwt.
Liberia	2,609	1	141,172	1
Japan	2,079	3	65,557	2
United Kingdom	1,552	6	54,812	3
Norway	999	7	49,302	4
Greece	1,816	4	38,736	5
Panama	1,585	5	22,969	6
France	449	14	19,016	7
U.S.S.R.	2,420	2	18,678	8
Italy	636	8	17,256	9
United States (Privately-Owned)	577	10	15,455	10
Germany (West)	616	9	13,485	11
Sweden	319	–	12,409	12
Spain	458	12	8,850	13
Singapore	429	15	8,671	14
Netherlands	453	13	8,355	15
All Others[3]	6,137	–	84,026	–
Total	**23,134**	**–**	**578,749**	**–**

[1]Oceangoing merchant ships of 1,000 gross tons and over.
[2]By number of ships, Cyprus ranks 11th with 565 vessels aggregating 4,667,000 dwt.
[3]Includes 266 United States Government-owned ships of 2,533,000 dwt.

Appendix X: COMBINED CONDENSED FINANCIAL STATEMENTS OF SUBSIDIZED AND UNSUBSIDIZED OPERATORS[1] (See Notes)

Statement A—Combined Condensed Balance Sheets December 31, 1975 (Amounts Stated in Thousand Dollars)

		Unsubsidized	
	Subsidized	Tanker	Cargo
ASSETS			
Current Assets:			
Cash	$ 44,439	$ 31,087	$ 6,694
Marketable Securities	82,070	414	53,122
Accounts Receivable	232,865	51,421	64,874
Other Current Assets	70,322	7,746	32,131
Total Current Assets	429,696	90,668	156,821
Special Funds and Deposits	193,568[2]	68,864	14,035
Investments	47,191	21,656	12,811
Deferred ODS Receivable (See Contra)	9,174	–	–
Property and Equipment Less Depreciation:			
Vessels	953,804	240,980	264,087
Other Property and Equipment	183,771	413	78,324
Other Assets	49,791	69,485	13,270
Voyages in Progress-Net	305	1,096	–
TOTAL ASSETS	**$1,867,300**	**$493,162**	**$539,348**
LIABILITIES AND NET WORTH			
Liabilities:			
Current Liabilities:			
Accounts and Notes Payable	$ 175,777	$ 26,674	$ 45,062
Current Long-Term Debt	16,058	17,354	7,715
Other Current Liabilities	108,218	19,985	52,640
Total Current Liabilities	300,053	64,013	105,417
Voyages in Progress-Net	71,560	5,169	10,313
Long-Term Debt	577,866[2]	224,538	174,013
Recapture ODS (See Contra)	9,174[4]	–	–
Operating Reserves	49,962	2,437	22,833
Other Liabilities	83,497	44,258	46,797
Total Liabilities	1,092,112	340,415	359,373
Net Worth:			
Capital Stock	110,253	30,856	25,792
Surplus:			
Paid in Capital	202,188	40,029	136,698
Retained Earnings	462,747	81,862	17,485
Total Surplus	664,935	121,891	154,183
Total Net Worth	775,188[3]	152,747	179,975
TOTAL LIABILITIES AND NET WORTH	**$1,867,300**	**$493,162**	**$539,348**

NOTES TO STATEMENTS A AND B

[1]The data were obtained from Forms MA-172 filed by (1) 15 subsidized operators owning 173 vessels and chartering 23 others (2) 26 unsubsidized operators owning 30 tankers and chartering 10 tankers and (3) 4 unsubsidized liner cargo vessel operators owning 48 vessels and chartering 21 others. A few Forms MA-172 for unsubsidized operators cover 1975 fiscal years ending prior to December 31, 1975.

[2]$125,028 of mortgage indebtedness included in the $577,866 shown as the Long-Term Debt of subsidized operators is payable from Special Funds and Deposits.

[3]Income Taxes in the amount of $9,379 for the subsidized operators have been deferred for payment through accelerated depreciation and other tax shelter provisions of the Internal Revenue Code.

[4]Represents the Government's share of recapturable subsidy (ODS) deducted from subsidy payments pending settlement of complete 10-year subsidy recapture periods.

[5]For transportation of grain to USSR.

Appendix X: (Continued)
(See Notes)

Statement B—Combined Condensed Income and Surplus Accounts Year Ended December 31, 1975
(Amounts Stated in Thousand Dollars)

		Unsubsidized	
	Subsidized	Tanker	Cargo
Shipping Operations:			
Revenue:			
Terminated Voyages	$1,466,627	$122,917	$536,670
Other Shipping Operations	9,836	3,202	19,799
Total Revenue	1,476,463	126,119	556,469
Expenses:			
Terminated Voyage Expense			
Wages, Payroll Taxes, Welfare Contributions	313,796	47,382	81,121
Subsistence	14,454	1,921	3,265
Maintenance and Repair	88,122	9,692	25,389
Insurance (Hull and P and I)	64,458	6,914	19,289
Total	480,830	65,909	129,064
Less: Operating-Differential Subsidy (ODS)	259,190	7,399[6]	3,621
Total	221,640	58,510	125,443
Other Vessel Expense	207,041	2,954	30,155
Voyage Expense	725,206	28,407	287,719
Total Terminated Voyage Expense	1,153,887	89,871	443,317
Other Shipping Operations Expense			
Overhead	140,891	9,122	53,511
Depreciation on Shipping Property	54,354	16,094	23,970
Other Miscellaneous Shipping Property	470	5,802	3,725
Total Expense	1,349,602	120,889	524,523
Gross Profit from Shipping Operations	126,861	5,230	31,946
Interest and Other Income	26,892	6,191	7,402
Interest and Other Deductions	(48,373)	(12,417)	(20,594)
Net Profit from Shipping Operations	105,380	(996)	18,754
Non-Shipping Operations-Net Profit (Loss)	(64)	447	63
Ordinary Income before Federal Income Taxes	105,316	(549)	18,817
Provisions for Federal Income Taxes	37,222	387	5,915
Ordinary Income After Taxes	68,094	(162)	12,902
Extraordinary and Prior Period Items:			
Extraordinary Items-Net Income (Net Expense)	22,918	(79)	65
Federal Income Taxes Thereon (Net Expense)	(4,962)	–	(26)
Total	17,956	(79)	39
Net Income (Loss)	86,050	(241)	12,941
Add: Paid in Capital and Retained Earnings Beginning of Year	603,005	128,066	147,231
Total Surplus Available	689,055	127,825	160,172
Surplus Changes:			
Cash Dividends	(8,557)	(4,764)	12,400
Other (Net)	(15,563)	(1,170)	(6,411)
Total	(24,120)	(5,934)	5,989
SURPLUS (CAPITAL AND EARNED) END OF YEAR	**$ 664,935**	**$121,891**	**$154,183**

Appendix XI: ODS ACCRUALS AND OUTLAYS—JANUARY 1, 1937, TO SEPTEMBER 30, 1976

	Accruals			Outlays		
Calendar Year of Operation	ODS	Recapture	Net Accrual	In FY 1976	Net ODS Paid	Net Accrued Liability
1937-1955	$ 682,457,954	$157,632,946	$ 524,825,008	$ –0–	$ 524,825,008	$ –0–
1956-1960	751,430,098	63,755,409	687,674,689	–0–	687,674,689	–0–
1961	170,884,261	2,042,748	168,841,513	–0–	168,841,513	–0–
1962	179,759,006	4,929,404	174,829,602	–0–	174,498,999	330,603
1963	189,119,876	(1,415,917)	190,535,793	–0–	190,535,793	–0–
1964	220,334,818	674,506	219,660,312	–0–	219,660,312	–0–
1965	183,913,236	1,014,005	182,899,231	–0–	182,899,231	–0–
1966	202,734,069	3,229,471	199,504,598	–0–	199,504,598	–0–
1967	220,579,702	5,162,831	215,416,871	–0–	215,416,871	–0–
1968	222,763,009	3,673,790	219,089,219	–0–	219,089,219	–0–
1969	233,201,233	2,217,144	230,984,089	1,052,773	227,738,947	3,245,142
1970	232,741,234	(1,908,643)	234,649,877	8,534,449	234,749,812	(99,935)
1971	199,134,309	(2,821,259)	201,955,568	7,208,037	200,885,795	1,069,773
1972	197,255,732	–0–	197,255,732	5,488,048	188,514,972	8,740,760
1973	212,601,013	–0–	212,601,013	13,673,036	210,668,231	1,932,782
1974	234,134,499	–0–	234,134,499	4,911,474	204,697,760	29,436,739
1975	246,679,458	–0–	246,679,458	150,668,946	242,973,916	3,705,542
1976	191,442,409	–0–	191,442,409	156,388,776	156,388,804	35,053,605
Total Regular ODS	$4,771,165,916	$238,186,435	$4,532,979,481	$347,925,539	$4,449,564,470	$ 83,415,011
Soviet Grain Programs	$ 103,411,549	$ –	$ 103,411,549	$ 38,508,455	$ 85,498,357	$ 17,913,192
Total ODS	**$4,874,577,465**	**$238,186,435**	**$4,636,391,030**	**$386,433,994**	**$4,535,062,827**	**$101,328,203**

Appendix XII: OPERATING-DIFFERENTIAL SUBSIDY ACCRUALS AND OUTLAYS BY LINES JANUARY 1, 1937, TO SEPTEMBER 30, 1976

Lines	Accruals				
	ODS	Recapture	Net Accrual	ODS Paid	Net Accrued Liability
Aeron Marine Shipping	$ 3,511,460	$ –	$ 3,511,460	$ 2,836,173	$ 675,287
American Banner Lines[1]	2,626,512	–	2,626,512	2,626,512	–
American Diamond Lines[1]	185,802	28,492	157,310	157,310	–
American Export Lines	632,943,809	10,700,587	622,243,222	605,296,825	16,946,397
American Mail Line[2]	163,527,048	7,424,901	156,102,147	148,283,182	7,818,965
American President Lines[2]	609,603,152	17,676,493	591,926,659	584,747,779	7,176,880
American Shipping	556,794	–	556,794	–	556,794
American Steamship	111,751	–	111,751	76,462	35,289
Aquarius Marine Co.	672,409	–	672,409	455,924	216,485
Aries Marine Shipping	4,635,275	–	4,635,275	3,491,038	1,144,237
Atlantic & Caribbean S/N[1]	63,209	45,496	17,713	17,713	–
Baltimore Steamship[1]	416,269	–	416,269	416,269	–
Bloomfield Steamship[1]	15,588,085	2,613,688	12,974,397	12,974,397	–
Delta Steamship Lines	186,065,397	8,185,313	177,880,084	172,585,431	5,294,653
Ecological Shipping Co.	2,824,776	–	2,824,776	1,743,039	1,081,737
Farrell Lines	258,520,859	1,855,375	256,665,484	250,504,814	6,160,670
Prudential Lines[3]	482,145,568	24,223,564	457,922,004	448,075,376	9,846,628
Gulf & South American Steamship[4]	34,536,449	5,226,214	29,310,235	29,245,567	64,668
Lykes Bros. Steamship	592,937,111	52,050,599	540,886,512	536,673,112	4,213,400
Margate Shipping	6,851,810	–	6,851,810	5,543,534	1,308,276
Moore-McCormack Bulk Transport	1,326,120	–	1,326,120	334,997	991,123
Moore-McCormack Lines	478,648,661	17,762,445	460,886,216	458,521,502	2,364,714
N.Y. & Cuba Mail Steamship[1]	8,090,107	1,207,331	6,882,776	6,882,776	–
Oceanic Steamship[5]	112,071,235	1,171,756	110,899,479	110,800,925	98,554
Pacific Argentina Brazil Line[1]	7,963,939	270,701	7,693,238	7,693,238	–
Pacific Far East Line	255,685,892	23,479,204	232,206,688	222,957,104	9,249,584
Prudential Steamship[1]	26,098,640	1,680,796	24,417,844	24,417,844	–
Sea Shipping[1]	25,819,800	2,429,102	23,390,698	23,390,698	–
South Atlantic Steamship[1]	96,374	84,692	11,682	11,682	–
States Steamship	200,039,408	5,110,997	194,928,411	191,095,573	3,832,838
U.S. Lines[6]	584,187,406	54,958,689	529,228,717	529,228,717	–
Waterman Steamship	71,249,271	–	71,249,271	67,914,568	3,334,703
Worth Oil Transport	709,560	–	709,560	310,790	398,770
Zapata Products	855,958	–	855,958	253,599	602,359
Total Regular ODS	$4,771,165,916	$238,186,435	$4,532,979,481	$4,449,564,470	$ 83,415,011
Soviet Grain Programs[7]	$ 103,411,549	$ –	$ 103,411,549	$ 85,498,357	$ 17,913,192
TOTAL ODS	**$4,874,577,465**	**$238,186,435**	**$4,636,391,030**	**$4,535,062,827**	**$101,328,203**

[1]No longer subsidized or combined with other subsidized lines.
[2]APL merged its operations with AML, October 10, 1973.
[3]Changed from Prudential-Grace Lines, Inc., August 1, 1974.
[4]Purchased by Lykes Bros. Steamship Co.
[5]Purchased by Pacific Far East Line, Inc.
[6]Ceased to be a subsidized line November 1970.
[7]Includes 43 subsidized operators.

Appendix XIII: ODS CONTRACTS IN FORCE, SEPTEMBER 30, 1976

Operator and Contract No.	Contract Duration	Number of Subsidized Ships	Service	Annual Sailings Minimum	Annual Sailings Maximum
A. Liner Trades:					
American Export Lines FMB–87	1-01-60 to 12-31-79	24	U.S. Atlantic/Mediterranean (T.R. 10)	65	95
			U.S. Atlantic/Far East (T.R. 12)	20	30
			U.S. Atlantic/India (T.R. 18)	24	29
			U.S. North Atlantic/Western Europe (T.R. 5-7-8-9)	40	55
American President Lines FMB–50	1-01-57 to 12-31-76	13	Transpacific Service (T.R. 29)	32	54
			Transpacific Feeder	–	(54)
			Round-the-World (Westbound)	24[1]	36
			Atlantic/Straits (T.R. 17)	12[1]	28
American President Lines for the American Mail Line Div. FMB–76	1-01-59 to 12-31-78	10	Transpacific Service (T.R. 29) as extended	54	80
			Southeast Asia Feeder	–	(80)
Delta Steamship Lines MA/MSB–353	1-01-76 to 12-31-95	11	U.S. Gulf/East Coast South America (T.R. 20)	43	Overall maximum not to exceed 79
			U.S. Gulf/West Africa (T.R. 14)	24	
Farrell Lines MA/MSB–352	1-01-76 to 12-31-95	16	U.S. Atlantic/South & East Africa (T.R. 15-A)	20	(30)
			U.S. Atlantic/West Africa (T.R. 14-1)	20	(Overall maximum not to exceed 89)
			U.S. Atlantic & Gulf/Australia (T.R. 16)	16	
			U.S. West Coast/Australia (T.R. 27)	14	24
Lykes Bros. Steamship FMB–59[2]	1-01-58 to 12-31-77	41	U.S. Gulf/U.K.-Continent (T.R. 21)	24	84[3]
			U.S. Gulf/Mediterranean (T.R. 13)	42	48
			U.S. Gulf/Far East (T.R. 22)	48	60
			U.S. Gulf/South & East Africa (T.R. 15-B)	18	24
			U.S. Gulf/West Coast South America (T.R. 31)	30	36
			U.S. Great Lakes/Med., India, Persian Gulf, Red Sea (Trade Area 4)	3	10
Moore-McCormack Lines MA/MSB–338	1-01-75 to 12-31-94	14	U.S. Atlantic/East Coast South America (T.R. 1)	50	86
			U.S. Atlantic/South & East Africa (T.R. 15-A)	20	30
Pacific Far East Line FMB–81	1-01-59 to 12-31-78	6	U.S. Pacific/Australia—Combination (T.R. 27)	12	16
			Transpacific Freight Service (as extended) (T.R. 29)	20	36

Appendix XIII: (Continued)

Operator and Contract No.	Contract Duration	Number of Subsidized Ships	Service	Annual Sailings Minimum	Annual Sailings Maximum
Prudential Lines FMB–49	1-01-58 to 12-31-77	18	U.S. Atlantic/West Coast South America (T.R. 2)	48	62
			U.S. Pacific/South America, Caribbean, Central America and Mexico (T.R. 23, 24, 25)	25	42
			U.S. Atlantic/Caribbean (T.R. 4)	44	52
			U.S. North Atlantic/Mediterranean (T.R. 10)	41	50
States Steamship FMB–62	1-01-58 to 12-31-77	11	Washington-Oregon/Far East (T.R. 29)	10	16[4]
			Washington-Oregon-California/Far East (T.R. 29)	20	41
			California/Far East (T.R. 29)	22	38
Waterman Steamship MA/MSB–115	6-04-71 to 6-03-91	7	U.S. Atlantic-Gulf/India Pakistan, Persian Gulf and Red Sea (T.R. 18)	24	32
Total Liner Trades		**171**		**915**	**1,346**

Operator	ODS Contract Number (Effective Date)	Termination Date	Number of Subsidized Ships	Service	Annual Sailings Minimum No. of Days
B. Bulk Trades:					
Achilles Marine	MA/MSB-356 (6-30-75)	[5]	0	Worldwide Bulk	335
Aeron Marine Shipping	MA/MSB–166 (6-30-72)	10-09-94	2	Worldwide Bulk	335
Ajax Marine Shipping	MA/MSB–354 (6-30-75)	[5]	0	Worldwide Bulk	335
American Shipping	MA/MSB-272 (6-26-73)	4-14-96	1	Worldwide Bulk	335
Aquarius Marine	MA/MSB-309 (5-30-74)	10-15-95	1	Worldwide Bulk	335
Aries Marine Shipping	MA/MSB-129 (6-30-71)	8-07-93	2	Worldwide Bulk	335
Athena Marine Shipping	MA/MSB-355 (6-26-73)	[5]	0	Worldwide Bulk	335
Atlas Marine	MA/MSB-274 (6-26-73)	[5]	0	Worldwide Bulk	335
Chestnut Shipping	MA/MSB-299 (12-17-73)	[5]	0	Worldwide Bulk	335
Ecological Shipping	MA/MSB-275 (6-15-73)	6-17-78	1	Worldwide Bulk	335
Margate Shipping	MA/MSB-134 (1-4-72)	12-27-93	3	Worldwide Bulk	335
Moore-McCormack Bulk Transport	MA/MSB-295 (10-5-73)	12-09-95	2	Worldwide Bulk	335
Pacific Shipping	MA/MSB-273 (6-26-73)	7-23-96	1	Worldwide Bulk	335

Appendix XIII: (Continued)

Operator	ODS Contract Number (Effective Date)	Termination Date	Number of Subsidized Ships	Service	Annual Sailings Minimum No. of Days
Worth Oil Transport	MA/MSB-271 (6-26-73)	2-19-96	1	Worldwide Bulk	335
Zapata Products Tankers	MA/MSB-167 (6-30-72)	4-02-96	2	Worldwide Bulk	335
Total Bulk Trades			**16**		

[1]American President Lines combined minimum Round-the-World and T.R. 17, 42 sailings.
[2]Per Addendum No. 121 of Lykes Contract No. FMB-59 overall maximum not to exceed 246.
[3]Per Addendum No. 121 of Lykes Contract No. FMB-59, limited to 42 sailings when Seabee vessels are used (two voyages with conventional vessels may be made for every Seabee voyage.)
[4]States was not required to make any sailings on T.R. 29, service A, during calendar year 1976.
[5]Twenty years from the date of entry of the first vessel into subsidized service.

Appendix XIV: SOVIET GRAIN ODS CONTRACTS IN EFFECT—SEPTEMBER 30, 1976

Company	Date Approved	Vessels
Academy Tankers	12-07-72	THOMAS Q
	5-01-73	THOMAS M
American Eagle Tanker	1-31-73	AMERICAN EAGLE
American Trading Transportation	12-14-72	
	12-23-75	WASHINGTON TRADER
Atlantic Richfield	7-17-74	SINCLAIR TEXAS
		ARCO PRUDHOE BAY
		ARCO ANCHORAGE
	11-13-75	ARCO ENTERPRISE
		ARCO HERITAGE
	5-18-76	ATLANTIC TRADER
		ARCO PRESTIGE
		ARCO ENDEAVOR
		ARCO SAG RIVER
		ARCO JUNEAU
		ARCO FAIRBANKS
Blackships	2-09-73	GULFKING
		GULFQUEEN
		GULFPRINCE
		GULFKNIGHT
Chas. Kurz	11-22-72	JULESBURG
		TULLAHOMA
		BIRCH COULIE
	4-04-73	FORT FETTERMAN
		GAINES MILL
	4-27-76	SPIRIT OF LIBERTY
Connecticut Transport	11-24-72	CONNECTICUT
Cove Tankers	10-06-75	MOUNT EXPLORER
		MOUNT NAVIGATOR
		COVE COMMUNICATOR

Appendix XIV: (Continued)

Company	Date Approved	Vessels
Eagle Terminal Tankers	11-29-72	EAGLE CHARGER EAGLE LEADER EAGLE COURIER EAGLE TRANSPORTER
Empire Transport	3-09-73	POTOMAC
Globe Seaways	11-24-72	OVERSEAS ANCHORAGE
Hudson Waterways	11-28-72	TRANSERIE TRANSPANAMA TRANSSUPERIOR
Ingram Ocean Systems	4-27-76	MARTHA R. INGRAM
Intercontinental Bulktank	12-05-72	OVERSEAS ALASKA
International Ocean Transport	1-18-73	ALLEGIANCE CANTIGNY BRADFORD ISLAND FORT HOSKINS CITES SERVICE NORFOLK
	5-03-73	BANNER
James River Transport	3-09-73	JAMES
Keystone Shipping	11-22-72	PERRYVILLE
Keystone Tankship	11-22-72	KEYTANKER
	3-01-74	GOLDEN GATE
Manhattan Tankers	11-28-72	MANHATTAN
Mathiasen's Tanker Industries	12-13-72	SOHIO INTREPID SOHIO RESOLUTE
	9-24-75	JOSEPH D. POTTS
Mobil Oil	5-18-76	MOBIL AERO MOBIL ARCTIC MOBIL LUBE MOBIL MERIDIAN
Mohawk Shipping	3-09-73	MOHAWK
Monticello Tanker	4-17-73	MONTICELLO VICTORY
Montpelier Tanker	2-20-73	MONTPELIER VICTORY
Mount Vernon Tanker	12-18-72	MOUNT VERNON VICTORY
Mount Washington Tanker	12-18-72	MOUNT WASHINGTON
Newport Tankers	3-05-73	ACHILLES
Ocean Clippers	1-22-73	OVERSEAS TRAVELER
Ocean Tankships	12-05-72	OVERSEAS VIVIAN
	11-15-72	OVERSEAS NATALIE
Ocean Transportation	11-24-72	OVERSEAS ALEUTIAN OVERSEAS ULLA
Ogden Merrimac Transport	3-09-73	MERRIMAC
Ogden Sea Transport	3-09-73	COLUMBIA OGDEN YUKON
Overseas Bulktank	12-05-72	OVERSEAS ARCTIC

Appendix XIV: (Continued)

Company	Date Approved	Vessels
Overseas Oil Carriers	11-24-72	OVERSEAS JOYCE
Penn Tanker	1-03-73	OGDEN CHAMPION OGDEN CHALLENGER
Rio Grande Transport	3-09-73	YELLOWSTONE
Sea Tankers	1-22-73 3-23-76	OVERSEAS ALICE OVERSEAS VALDEZ
Sea Transport	11-29-72	EAGLE TRAVELER EAGLE VOYAGER
Sun Transport	4-27-76	AMERICA SUN PENNSYLVANIA SUN TEXAS SUN
Transeastern Shipping	11-28-72	TRANSEASTERN
Vancor Steamship	12-19-72	VANTAGE HORIZON
Wabash Transport	11-24-72	OGDEN WABASH
Willamette Transport	11-24-72	OGDEN WILLAMETTE

Appendix XV: APPROVALS FOR FOREIGN TRANSFERS—FY 1976 AND TRANSITION QUARTER[1]

	Pursuant to Sections 9 and 37 (U.S. owned and documented)			Pursuant to Section 37 (Only) (U.S. owned, not U.S. documented)			Combined Totals		
	No. of Vessels	Gross Tons	Average Age	No. of Vessels	Gross Tons	Average Age	No. of Vessels	Gross Tons	Average Age
Fiscal Year									
U.S. Privately Owned:									
Tankers	14	92,878	30.3	11	295,955	15.0	19	388,833	23
Cargo	18	142,599	47.0	5	33,755	23.0	23	176,354	41
Cargo/Passenger	–	–	–	2	30,027	19.0	2	30,027	19
Miscellaneous	14	37,389	21.3	33	136,375	23.0	47	173,764	22
Total FY 1976	**40**	**273,866**	**34.5**	**51**	**496,112**	**21.0**	**91**	**768,978**	**28**
Transition Quarter									
U.S. Privately Owned:									
Tankers	3	10,711	31.0	1	19,274	–	4	29,985	23.2
Cargo	2	11,214	32.0	1	5,500	–	3	16,714	21.3
Cargo/Passengers	–	–	–	1	8,312	19.0	1	8,312	19.0
Miscellaneous	5	10,588	21.6	–	–	–	5	10,588	21.6
Total T.Q.	**10**	**32,513**	**26.5**	**3**	**33,086**	**6.3**	**13**	**65,599**	**22.0**
Fiscal Year and Transition Quarter									
U.S. Government-Owned:									
Cargo & Tankers (for scrapping)	–	–	–	–	–	–	–	–	–

Appendix XV: (Continued)

Recapitulation by Nationality

Fiscal Year

	Sections 9 and 37		Section 37 (Only)		Combined Totals	
	Number	Gross Tons	Number	Gross Tons	Number	Gross Tons
U. S. Privately Owned Vessels Sold for Foreign Documentation: Country of Registry						
Tehrain	2	2,395	–	–	2	2,395
Brazil	1	2,304	–	–	1	2,304
Britain	–	–	5	12,398	5	12,398
Canada	6	47,440	–	–	6	47,440
France	1	5,828	–	–	1	5,828
Israel	–	–	1	1,258	1	1,258
Liberia	–	–	4	65,746	4	65,746
Mexico	–	–	1	1,000	1	1,000
Netherlands Antilles	1	2,312	–	–	1	2,312
Nicaragua	–	–	1	2,500	1	2,500
Norway	–	–	1	17,800	1	17,800
Panama	11	51,801	19	118,813	30	170,614
Singapore	–	–	5	7,970	5	7,970
Venezuela	–	–	1	8,312	1	8,312
Total	**22**	**112,080**	**38**	**235,797**	**60**	**347,877**
Sale Alien for Scrap or Nontransportation	18	160,786	13	260,315	31	421,101
Total Privately Owned	**40**	**272,866**	**51**	**496,112**	**91**	**768,978**
U.S. Government-Owned: Freighters or Tankers Sold for Scrapping	–	–	–	–	–	–
Total Government-Owned	**–**	**–**	**–**	**–**	**–**	**–**
Transition Quarter						
U.S. Privately Owned Vessels Sold for Foreign Documentation: Country of Registry						
Bahamas	1	2,023	–	–	1	2,023
Colombia	1	1,083	–	–	1	1,083
Greece	2	4,395	–	–	2	4,395
Liberia	–	–	1	19,274	1	19,274
Mexico	1	1,091	–	–	1	1,091
Panama	3	7,474	1	8,312	4	15,786
Total	**8**	**16,066**	**2**	**27,586**	**10**	**43,652**
Sale Alien for Scrap or Nontransportation	2	16,447	1	5,500	3	21,947
Total Privately Owned	**10**	**32,513**	**3**	**33,086**	**13**	**65,599**
U.S. Government-Owned: Freighters or Tankers Sold for Scrapping	–	–	–	–	–	–
Total Government-Owned	**–**	**–**	**–**	**–**	**–**	**–**

[1]Vessels over 1,000 gross tons.

Appendix XVI: RESEARCH AND DEVELOPMENT CONTRACTS AWARDED DURING FISCAL YEAR 1976

Project	Task	Vendor	Contract Number	Amount
Competitive Shipbuilding				
Surface Preparation & Coatings of Ship Steel*	Develop improved materials, equipment, and techniques for steel surface preparation and coatings.	Avondale Shipyards, Inc. New Orleans, La.	5-38071	$315,000
Outfit and Production Aids	Improve planning, materials, and production aids for the outfitting phase of ship construction.	Todd Shipyards Corp. Seattle, Wash.	2-36233	395,000
Welding Methods & Materials*	Improve pipe and laser welding techniques and materials and evaluate new materials.	Bethlehem Steel Corp. Sparrows Point, Md.	2-36214	575,000
Shipyard Support/ Equipment Development	Design and develop economical internal and external ship construction and repair staging that conforms to most large ship configurations, and that can be used repeatedly.	Avondale Shipyards, Inc. New Orleans, La.	6-38013	30,550
Automated Pipe Fabrication Facility*	Design, build, and operate an automated pipe fabrication facility for advancement of manufacturing techniques.	Avondale Shipyards, Inc. New Orleans, La.	6-38061	244,500
Ship Steel Improvement, Phase I	Develop and test hull steels for low-temperature service (LPG, LNG, or liquid ammonia carriers) which will permit the use of more productive welding techniques.	National Bureau of Standards Boulder, Colo.	400-58073	35,000
Computer-Aided Pipe Detailing, Phase II*	Develop automated systems for pipe fabrication and for the final detailing of shipboard piping systems.	Newport News Shipbuilding & Dry Dock Co. Newport News, Va.	6-38028	437,819
Shipyard Automation (Autokon)*	Improve error-identifying ability and further automate several functions of AUTOKON, a computer-aided ship manufacturing system.	Newport News Shipbuilding & Dry Dock Co. Newport News, Va.	6-38034	82,617
Shipyard Automation (REAPS)	Coordinate system maintenance and technology development.	IITRI Chicago, Ill.	5-38072	316,170
Ship Surface Development	Develop computer programs to efficiently describe ship surfaces.	Office of Naval Research Arlington, Va.	400-69007	78,500
Ship Producibility	Describe new techniques and practices which reduce outfitting costs in U.S. shipyards; develop a manual which will enable ship designers to utilize shipbuilding facilities and equipment to best effect; develop selected shipyard design standards for minimum cost ship structure welding; develop propulsion plant standards which have been implemented in one or more shipyards; and define the cost of application and resultant savings.	Bath Iron Works Corp. Bath, Maine	3-36233	610,000

*Cost-shared.

Appendix XVI: (Continued)

Project	Task	Vendor	Contract Number	Amount
Ship Machinery				
Clean Ballast Crude Carriers Arrangement and Structural Study	Evaluate economic impact of meeting permanent clean ballast requirements through alternative VLCC design, in accordance with the International Convention for Prevention of Pollution by Ships.	Newport News Shipbuilding & Dry Dock Co. Newport News, Va.	5-38050	$147,719
Non-Reheat Steam Power Plant for Retrofit and Design*	Determine what cost effective efforts can be undertaken by owners and operators to reduce the fuel consumption of existing steam turbine power plants.	DeLaval Turbine Co. Trenton, N.J.	6-38058	155,000
Marine Boiler Reliability Fuel Oil Analysis Testing	Analyze 120 samples of marine bunker fuel from around the world. Results will be used in establishing reliability of boiler designs.	Combustion Engineering Windsor, Conn.	5-38014	17,381
Marine Boiler Reliability and Performance Criteria, Phase II	Evaluate reliability and performance criteria of marine boilers based on technical data rather than low cost.	Combustion Engineering Windsor, Conn.	6-38088	328,266
Reheat Steam Propulsion System Design Study*	Design an advanced reheat steam propulsion system with improved fuel consumption competitive with foreign diesel engines.	General Electric Co. Lynn, Mass.	6-38042	224,325
Evaluation of Energy Utilization Improvement Techniques*	Determine the reductions in Fuel consumption and maintenance resulting from the use of 10 marine fuel additives in two advanced combustion systems.	Seaworthy Engine Systems Canton, Conn.	6-38008	215,225
Marine Shafting System Bearing Analysis, Phase I	Develop and test new designs and safeguards of stern tube bearings.	Mechanical Technology Latham, N.Y.	6-38054	239,950
Planetary Marine Transmission System	At-sea test and evaluation of the Curtiss-Wright planetary transmission system "A" aboard a tanker or Roll-On/Roll-Off ship.	J. J. Henry, Inc. New York, N.Y.	61599	22,765
Contrarotating Propeller Planetary Gear System Test Rig	Design and evaluate a model test system for the full-scale planetary gear.	Transmission Technology Fairfield, N.J.	6-38074	94,484
Cavitation Erosion-Resistant Coverings for Propellers	Develop the technology to cover low-cost clad steel propellers with erosion-resistant materials.	Bell Aerospace Buffalo, N.Y.	6-38075	63,585
Cavitation Erosion-Resistant Coverings for Propellers	Cover low-cost, clad-steel propellers with cavitation erosion-resistant materials.	NSRDC Bethesda, Md.	400-69018	25,000
Bulk Carrier Safety Enhancement, Phase II	Perform modeling experiments to identify criteria for the design, installation and safe operation of tank-washing, ventilating, and inerting systems for bulk carriers.	Southwest Research San Antonio, Tex.	5-38044	279,631

*Cost-shared.

Appendix XVI: (Continued)

Project	Task	Vendor	Contract Number	Amount
Impact of Degraded Marine Fuels on Marine Equipment and Systems	Evaluate impact of poor quality fuels on marine equipment systems.	George G. Sharp, Inc. New York, N.Y.	6-38025	$ 99,290
Destator Test and Evaluation*	At-sea testing of a destator to dissipate electrostatic charges generated by tank-cleaning equipment.	Cinco-Tech Corp. Beverly Hills, Calif.	4-37065	12,877
Nuclear Ships				
Power Plant Engineering*	Develop design features in accordance with Federal Government licensing requirements for construction phase of nuclear ship development.	Babcock & Wilcox Lynchburg, Va.	4-37067	2,238,409
Marvel-Schebler Control Rod Drive	Set up and test control rod drive mechanisms.	Todd R&T Division Galveston, Tex.	6562	12,426
International Standards	Develop internationally acceptable design criteria, safety standards, and procedures for nuclear ship port entry.	Todd R&T Division Galveston, Tex.	6562	158,478
Consolidated Nuclear Steam Generator (CNSG) VLCC Propulsion System	Design Very Large Crude Carrier utilizing CNSG plant, forecast economic competitiveness of the ship in crude oil service, and produce bid plans and specifications for series production.	Babcock & Wilcox Lynchburg, Va.	2-36216	48,575
Regulations, Safety, and Collision Designs	Develop ship collision program, including approvals required for collision barrier designs and related safety aspects.	Todd R&T Division Galveston, Tex.	6562	51,450
Hydrogen Suppression System/Solubility Rate of Halon 1301 in Water	Study solubility rate of Halon 1301 (explosion suppressant) in water.	Todd R&T Division Galveston, Tex.	6562	55,118
Large-Scale Testing of Hydrogen Suppression System	Determine whether liquefied Halon 1301 can be discharged into a large tank in quantities required for explosion suppression.	Todd R&T Division Galveston, Tex.	6562	114,577
Quality Assurance, Phase II	Revise the MarAd Quality Assurance Manual on nuclear program development.	Todd R&T Division Galveston, Tex.	6562	100,000
Nuclear Ship Collision Protection Study	Study, in cooperation with GKss, Germany, nuclear ship collision protection.	Todd R&T Division Galveston, Tex.	6562	47,250
Collision and Accident Study of Grillage Reinforcement of Hull Steel	Develop a program for elastic plastic analysis of grillages for anti-collision protection of nuclear reactor compartments.	Hydronautics, Inc. Laurel, Md.	6-38081	95,500

*Cost-shared.

Appendix XVI: (Continued)

Project	Task	Vendor	Contract Number	Amount
Ship-Related Accidents	Evaluate probability and consequences of potential nuclear ship accidents to assure no undue risk to public health and safety. Establish design criteria acceptable to regulatory authorities.	George G. Sharp, Inc. New York, N.Y.	6-38053	$ 94,587
Nuclear Icebreaking Tanker Conceptual Design	Conduct economic, operational and safety feasibility study of a nuclear-powered icebreaking tanker to transport oil from Arctic areas as an alternate to a proposed pipeline.	Newport News Shipbuilding & Dry Dock Co. Newport News, Va.	5-38022	109,621
Shipping Operations Information System (SOIS)				
Network Installation/ Industry Utilization*	Implement computer-based SOIS Module developed by one carrier into the operations of other U.S.-flag carriers.	General Electric Arlington, Va.	6-38043	82,925
Corporate Fleet Planning System*	Provide computer-aided simulation to evaluate an automated cargo assignment and voyage analysis system.	Prudential Lines, Inc. New York, N.Y.	5-37043	47,376
International Data Communications System, Phase I*	Design, develop, operate, and evaluate a prototype international data communications network for the transmission of shipping, equipment, and financial control information between the U.S. and Europe.	American Institute of Merchant Shipping Washington, D.C.	6-38030	640,357
Export Booking and Billing Systems*	Design, develop, operate, and evaluate a computer-based daily arrival notice/manifest entry system.	American Export Lines, Inc. New York, N.Y.	4-37126	147,506
Maritime Data Coding	Manage application of computer communications technology to U.S. merchant fleet.	Data Architects Waltham, Mass.	5-38029	11,028
Shipboard Automation				
Human Factors in Ship Control	Determine the impact of modern technology on bridge operations and standardized conning systems guidelines.	Eclectech Associates North Stonington, Conn.	6-38006	141,000
Integrated Lookout System, Phase I	Design, develop, and evaluate at sea an integrated lookout system; determine the impact of modern technology on bridge operations.	Sperry Marine Systems, Inc. Great Neck, N.Y.	6-38057	74,332
Evaluate Operationally Vibration Deviation Concept (VIDEC)	Evaluate an automated machinery monitoring and analysis system which detects trends in operating characteristics of the monitored machinery through thermal and vibration deviation.	American President Lines, Inc. San Francisco, Calif.	3-36246	50,000

*Cost-shared.

Appendix XVI: (Continued)

Project	Task	Vendor	Contract Number	Amount
Environmental Standards for Shipboard Equipment, Phase II	Develop environmental specifications for commercial shipboard equipment.	Automated Marine International San Diego, Calif.	6-38059	$239,850
Remote Conning Control Unit	Provide a second remote unit for the Integrated Conning System aboard the EXPORT FREEDOM.	American Export Lines, Inc. New York, N.Y.	4-37093	30,503
Ship Operations and Logistics	Identify requirements for a program to provide continued economical, safe, and reliable operation of modern ship systems.	Mystech Associates Mystic, Conn.	6-38063	82,751
Specialized Vessel Design	Analyze design of specialized vessels for U.S. coastal and Caribbean trades.	Stanwick Corp. Norfolk, Va.	0-35505	12,628
Cargo Handling				
LASH Heavy-Lift Barge Design*	Study market for design of a heavy-lift LASH barge.	Waterman Steamship Corp. New Orleans, La.	6-38026	47,300
Improved Control Systems/ Digital Steering	Design a computerized, direct digital steering system for continuous all-weather steering of high-speed ships.	Sperry Marine Systems Great Neck, N.Y.	60072	74,931
Liquid Bulk Cargo Handling	Improve cargo-handling technology for liquid bulk cargo vessels.	Todd R&T Division Galveston, Tex.	6562	125,491
Container Loading Demonstration	Demonstrate to U.S. containership operators the use of computers to improve container loading and discharge operations.	Hydronautics, Inc. Laurel, Md.	5-38023	56,913
Sea Shed Pilot Program	Conduct a market survey of the Sea Shed concept—identify acceptable cargoes, establish dimensions and weight envelopes, define preliminary operational requirements, and contact interested shippers and carriers.	R. T. L. Inc. Paramount, Calif.	6-38036	24,000
Navigation & Communications				
Radio Technical Commission-Marine	Cooperative development between Federal agencies and industry of communications and navigation requirements.	Federal Communications Commission Washington, D.C.	400-69000	7,040
Great Lakes Navigation/ Communication System	Evaluate initial operation of the automated VHF system and modify software and ship equipment requirements for use in other U.S. areas.	Lorain Electronics Corp. Lorain, Ohio	3-36280	41,727
Advanced Navigation/ Communications	Analyze alternatives for MarAd Fleet Management program, emphasizing communications and navigation.	Mitre Corp. McLean, Va.	4-37036	15,409

*Cost-shared.

Appendix XVI: (Continued)

Project	Task	Vendor	Contract Number	Amount
Selective Calling and Teleprinter Demonstration*	Evaluate advanced high-frequency (HF) teleprinter and error-correction techniques.	RCA New York, N.Y.	5-38021	$29,942
Ship Control System	Analyze maritime high frequency communications projects.	Office of Telecommunications Boulder, Colo.	400-69002	60,000
Radio Frequency Management	Coordinate U.S. Government allocation of radio frequencies and special frequencies for experimental projects.	National Oceanic and Atmospheric Administration Rockville, Md.	400-69019	22,700
MARISAT				
Technical & Engineering Services	Perform analysis, evaluation, and engineering related to maritime satellite and advanced navigation projects.	Mitre Corp. McLean, Va.	6-38002	148,584
NAVSTAR Global Positing System	Evaluate a Department of Defense NAVSTAR navigation system as a potential replacement for current navigation systems.	Department of the Air Force Los Angeles, Calif.	400-69009	310,000
Satellite Navigation Receiver*	Evaluate performance and benefits of automated navigation system.	Moore-McCormack Lines, Inc. Stamford, Conn.	5-38037	17,600
Maritime Satellite Engineering*	Modify ship and Maritime Coordination Center hardware systems in accordance with test results.	Magnavox Torrance, Calif.	5-37039	204,058
Satellite Fleet Management, Phase IV*	Plan, coordinate and evaluate maritime satellite experiments proposed by shipping companies; operate the Maritime Coordination Center; and develop plans for model satellite system.	Computer Sciences Corp. Falls Church, Va.	6-38012	416,052
Navigation/Communications Tests	Coordinate and evaluate maritime satellite test program through 1977.	National Maritime Research Center Kings Point, N.Y.		84,590
INMARSAT Radio Determination	Analyze the possibility of implementing a radio determination capability for the first-generation International Maritime Satellite (INMARSAT).	Computer Sciences Corp. Falls Church, Va.	60062	73,466
INMARSAT Requirements	Summarize results of communications and navigation tests and demonstrations of synchronous satellites.	Washington Focus Co. Absecon, N.J.	2-4309	18,450
Ship Systems				
Alternative Use for VLCC Vessels	Examine the technical and economic feasibility of converting tankers for alternate uses in the offshore oil and gas industry.	ETA Engineers Houston, Tex.	6-38033	149,042

*Cost-shared.

Appendix XVI: (Continued)

Project	Task	Vendor	Contract Number	Amount
Mini-Trailership Development	Investigate the technical and economic feasibility of a small, automated ship capable of carrying 12 to 15 forty-foot trailers over routes of less than 200 miles.	Booz, Allen & Hamilton, Inc. Bethesda, Md.	6-38065	$129,929
Consolidated Liner Cargo Design*	Design, in partnership with operators, a standard containership for a ship replacement program.	George G. Sharp, Inc. New York, N.Y.	6-38021	54,850
Fleet Forecast	Develop a 25-year forecast of the size and composition of the merchant fleet serving the United States.	Temple, Barker & Sloane, Inc. Wellesley Hills, Mass.	6-38091	62,840
Development of Next Generation Cargo Liner*	Develop standard design for next generation cargo liner to encourage series production.	J. J. Henry Co. New York, N.Y.	6-38060	326,610
Ocean Thermal Plant Ships*	Produce market analysis and develop program and model of an offshore thermal energy conversion ammonia production plant ship.	Johns Hopkins Applied Physics Laboratory Laurel, Md.	5-38054	95,000
Coal Slurry Transport System Economics*	Investigate the market for exporting steam coke in slurried form.	Hydronautics, Inc. Laurel, Md.	6-38072	33,000
Economic Analysis of Offshore Petroleum Industry	Analyze the supply and demand factors for offshore oil drilling rigs and related support vessels.	BDM Corp. Vienna, Va.	5-38024	96,401
Marine Sciences				
Maritime Research Information System (MRIS)	Collect and disseminate maritime technology information.	National Academy of Sciences Washington, D.C.	5-38005	189,449
Maritime Transportation Research Board (MTRB)	Study research in areas of shipbuilding, use of university research, shipboard information systems, energy conservation, and effect of technological progress on society.	National Academy of Sciences Washington, D.C.	400-69006	100,000
Propeller-Induced Vibration Forces on Nearby Hull Surfaces*	Validate existing methods for measuring propeller-induced vibration on ship hull surfaces.	NSRDC Bethesda, Md.	400-69008	86,900
Ship Structure Committee	Study maritime technology research related to basic improvements in ship design, fabrication methods and materials, stress instrumentation, and data analysis.	U.S. Navy Washington, D.C.	400-69003	150,000
Skewed Propeller/Build-Test-Evaluate	Test and evaluate a skewed propeller on high-speed containership; investigate cavitation erosion and develop a capability to predict propeller life.	American Export Lines, Inc. New York, N.Y.	3-36288	64,028
Effects of Propeller Cavitation on Vibration*	Determine the effects of propeller blade cavitation on ship afterbody.	M.I.T. Cambridge, Mass.	6-38068	225,000

*Cost-shared.

Appendix XVI: (Continued)

Project	Task	Vendor	Contract Number	Amount
Maritime Research Information System (MRIS) Evaluation	Determine ways to improve MRIS and increase industry participation.	Seatrack Inc. Great Neck, N.Y.	60061	$ 8,500
International Ship Structure Committee Congress	Co-sponsor triennial International Ship Structure Congress, held in August at Cambridge, Mass.	M.I.T. Cambridge, Mass.	5-38067	50,488
Verification of a Barge Train Flexible Linkage System	Develop and demonstrate, through 1/10-scale model testing, a force and motion computer program; determine, through full-scale operation, feasibility of barge train with flexible linkage.	Barge Train, Inc. Long Beach, Calif.	5-38069	67,291
Spectral Analyses of Sea States	Perform tank tests in various sea states to predict forces affecting river barges linked by semirigid connectors.	NSRDC Carderock, Md.	400-58087	4,500
Ship Structure Committee*	Perform research in basic maritime technology related to ship design, fabrication, stress instrumentation, and data analysis.	U.S. Coast Guard Washington, D.C.	400-69020	150,000
Model Ship Correlation Studies on Full-Form Merchant Ships*	Develop reliable correlation factors on which to base predictions of powering characteristics of merchant ships.	Hydronautics, Inc. Laurel, Md.	6-38037	125,000
Hull Form and Performance Test Data Retrieval—MarAd Standard Series	Develop a computer program for the rapid retrieval of deep water ship powering data and ship design data available from model tests of the MarAd standard series single-screw bulk carrier design.	Hydronautics, Inc. Laurel, Md.	5-38074	29,980
Ship Motions in Confined Waters*	Compare a computer program which predicts the motions of floating bodies in confined waters with actual motions of ship models in shallow waters.	Austin Research Associates Austin, Tex.	6-38003	88,015
Model Tests of Maneuvering Coefficients—Full Scale	Test remote-controlled models duplicating ship maneuvers to determine whether the control forces involved in full-scale ship maneuvers can be meaningfully measured.	M.I.T. Cambridge, Mass.	5-38073	46,000
Sea Use Council	Provide administrative services for operating the Sea Use Council, a nonprofit regional organization composed of the members of 10 U.S., State, and Canadian Government agencies. The Council defines oceanic needs and coordinates research in meeting them.	National Oceanic and Atmospheric Administration Rockville, Md.	400-69017	10,000
Analysis of Ocean Wave Data	Evaluate ship responses using wave forecasting model for LASH ITALIA.	Webb Institute of Technology Glen Cove, N.Y.	60074	126,256

*Cost-shared.

Appendix XVI: (Continued)

Project	Task	Vendor	Contract Number	Amount
Analyses of Pacific Ocean Wave Spectra	Analyze COBB Seamount data and prepare report on ocean wave spectra from PAPA station and COBB Seamount.	Webb Institute of Technology Glen Cove, N.Y.	61596	$ 11,000
Market Analysis				
Shippers' Preference and Usage of U.S.-Flag Carriers	Encourage U.S. maritime industry utilization, through seminars, of marketing strategy computer model; determine service factors that influence shippers' choice of marine transportation services; and develop method of determining market penetration that can be expected as a result of service changes.	Market Facts Chicago, Ill.	6-38076	35,309
Assessment of Shipping Requirements for Trade with Petroleum Exporters (OPEC)	Assess market requirements and opportunities for general and neo-bulk U.S.-flag trade with Mid-Eastern oil producing countries.	CACI, Inc. Arlington, Va.	6-38064	149,453
Ripple Effects of Tanker Rate Changes on Liner Trades	Develop a model of supply and demand forces affecting the bulk shipping market to determine future ship construction needs.	Temple, Barker & Sloane, Inc. Wellesley Hills, Mass.	6-38077	63,315
New Methods to Eliminate Overseas Shipping Impediments	Analyze impediments to U.S.-overseas dry cargo trade and recommend methods to eliminate them.	Webb Institute of Technology Glen Cove, N.Y.	60065	40,000
Short Term Forecast of U.S. Oceanborne Exports	Analyze by type and volume, the U.S. exports expected to constitue the major cargo flows over the next 2 years.	Temple, Barker & Sloane, Inc. Wellesley Hills, Mass.	6-38023	41,808
Heavy Lift Market Assessment*	Assess market requirements for specialized vessels to move heavy, outsized cargoes which cannot be carried on existing liners, develop a financing, marketing, and operating plan, and develop ship systems performance specifications.	Lykes Bros. Steamship Co. Inc. New Orleans, La.	6-38039	88,365
Economic Analyses of Great Lakes Coal Transportation	Perform technical and economic analyses to help establish the best overall design for the marine leg of the growing western U.S. coal trade.	University of Michigan Ann Arbor, Mich.	638011	130,000
Shallow Draft Bulk Carrier Technology	Extend shallow-draft bulk carrier economic analysis to trades accommodating drafts of 30 to 40 feet.	M. Rosenblatt & Sons Hyattsville, Md.	6-38029	44,562

*Cost-shared.

Appendix XVI: (Continued)

Project	Task	Vendor	Contract Number	Amount
Energy Conservation				
Energy Reporting System	Develop a maritime industry energy reporting system to be used to measure the effectiveness of industry conservation programs.	Metrics, Inc. Atlanta, Ga.	6-38035	$ 159,827
Waste Heat Recovery of Marine Diesels*	Examine feasibility and economics of retrofitting marine diesels with waste-heat-recovering systems.	Energy Research and Development Administration Washington, D.C.	400-69015	15,000
Energy Recovery System for Ships, Phase I	Determine the technical and economic feasibility of recovering heat through steam plant stack and condenser water. Develop a preliminary design for a heat recovery system.	M. Rosenblatt & Sons Hyattsville, Md.	6-38010	94,920
Energy Recovery System for Ships, Phase I	Determine the technical and economic feasibility of recovering heat normally lost through a steam plant stack.	Mechanical Technology Inc. Latham, N.Y.	6-38048	38,364
Least Energy Operation In River Shipping	Develop operating rules to minimize fuel consumption for river towing and evaluate their impact on overall costs.	American Waterways Operators Arlington, Va.	6-38046	77,240
Tests and Evaluation of Antifoulant Paints	Perform velocity and static immersion tests of antifoulant paints.	Todd R&T Division Galveston, Tex.	6562	21,750
LNG				
Cryogenic Research/ Evaluation of Alternate Materials	Evaluate alternative materials for low-cost cryogenic containment systems, develop standards for liquefied natural gas (LNG) measurement, and disseminate advanced LNG technology to the U.S. maritime industry.	National Bureau of Standards Boulder, Colo.	400-69012	150,000
Utilize Existing LNG Tankers to Transport Other Cryogens	Identify, evaluate, and recommend alternate cargoes for LNG vessels.	Todd R&T Division Galveston, Tex.	6562	15,316
Pollution Control				
Oil/Water Monitor Evaluation	Evaluate performance of oil/water monitor systems with existing test loop.	Todd R&T Division Galveston, Tex.	6562	100,000
Great Lakes Sewage Treatment System*	Improve existing Great Lakes vessel sewage treatment systems to comply with Environmental Protection Agency regulations.	U.S. Navy, NSRDC Annapolis, Md.	400-69013	45,000

*Cost-shared.

Appendix XVI: (Continued)

Project	Task	Vendor	Contract Number	Amount
Market Development				
National Cargo Shipping Analysis System	Design and implement a system which will enable MarAd to monitor, analyze, and report ocean shipping activities of Government agencies, to assure compliance with the Cargo Preference Act, P.L. 664.	Auerbach Philadelphia, Pa.	6-38044	$ 210,169
National Conference: U.S.-Flag Bulk Shipping	Conduct a national conference to determine ways of devoloping a significant American-flag bulk shipping industry.	Temple, Barker & Sloane, Inc. Wellesley Hills, Mass.	6-38031	58,739
Ports and Terminals				
Computer Model of U.S. International Waterborne Commerce	Expand a computer model to include the analysis of bulk commodity movements.	Ernst & Ernst Washington, D.C.	4-37081	29,952
Commercial Market for Tethered Float Breakwater System	Evaluate the commercial market for tethered float breakwaters (TFB) as temporary wave shelters for LASH barge-handling operations and offshore construction.	Moffat & Nichol Engineers Long Beach, Calif.	6-38066	49,687
Preliminary Design of Tethered Float Breakwater*	Develop preliminary design and cost data for the modules and anchoring system of a prototype transportable open-ocean TFB.	Naval Underseas Center San Diego, Calif.	400-69010	20,000
Economic Impact of Port Activities in U.S.A.	Evaluate the U.S. port industry's overall impact on the Nation's economy. Develop a model which will indicate how the port industry interacts with other sectors of the economy.	Port Authority of New York and New Jersey New York, N.Y.	6-38024	108,000
Port Development and Operations Requirements	Develop analytical tools to assist port planning staffs in determining future port requirements.	M.I.T. Cambridge, Mass.	6-38004	79,015
Florida Water Port Study*	Assess Florida's future port needs, recommend solutions to its problems, and propose a framework for cooperative action. Create plans for port facilities construction and utilization.	Florida Department of Transportation Tallahassee, Fla.	6-38056	225,000
Great Lakes/Seaway Port and Shipper Conference	Determine needs and priorities of U.S. Great Lakes/Seaway port and shipping industries.	A. T. Kearney, Inc. Chicago, Ill.	6-38045	30,528
Ship Operations—CAORF				
CAORF Maintenance, Repair, Engineering, and Logistics	Perform engineering, logistics, and M&R for the Computer-Aided Operations Research Facility at NMRC, Kings Point, N.Y.	Sperry Marine Systems, Inc. Great Neck, N.Y.	6-38000	781,000

*Cost-shared.

Appendix XVI: (Continued)

Project	Task	Vendor	Contract Number	Amount
CAORF Image Display Subsystems Modifications	Modify projectors to improve CAORF's computer-generated images.	Grumman/Gretag Great Neck, N.Y. Zurich, Switzerland	61594	$ 149,795
Human Factors Research for Ship Safety	Perform CAORF experiments with subjects with recent sea-going experience.	Grumman Systems Corp. Bethpage, N.Y.	60077	64,000
CAORF Visual Presentations	Produce visual presentations to explain the purpose, objective, and results expected from CAORF.	Grumman Data Systems Bethpage, N.Y.	61601	57,067
CAORF Water Current and Wind Effects	Develop water current and wind effects for New York Harbor and incorporate them into CAORF data base.	Sperry Systems Management Great Neck, N.Y.	61607	167,505
CAORF Industry Presentations	Produce audio-visual presentations to assist in explaining CAORF program to U.S. maritime industry.	Grumman Systems Corp. Bethpage, N.Y.	61600	74,244
CAORF Equipment	Procure and install additional data processing equipment to expand CAORF capability.	Sperry Systems, Tectronics, Systems Engineering Laboratory	61602, 61888, 61603	271,447
CAORF Central Data Processor Program Redistribution	Provide additional computer capacity to expand CAORF simulation.	Sperry Systems Management Great Neck, N.Y.	61606	184,000
CAORF Radar Transponder Mathematical Model	Develop a mathematical model to integrate the characteristics of a marine radar interrogator transponder into CAORF data base.	Mitre Corp. McLean, Va.	61605	60,410
CAORF Operations Theatre Equipment Integration	Install additional equipment in the CAORF Human Factors Monitoring Station.	Sperry Visions Corp. Manhassett, N.Y.	60064	59,747
CAORF Eidophor Projector Maintenance	Maintain CAORF image projectors.	TNT Communications Woodside, N.Y.	61104 and 60073	107,260
Ships of Opportunity	Collect ocean science data for input into CAORF data base.	Suppican Corp., Oceanographic Systems, Marion, Mass.	61798	9,976
Maritime Operational Data Center (MODC)	Obtain foreign vessel casualty reports for inclusion in CAORF data base.	Grumman Data Systems Bethpage, N.Y.	60074	126,256
Fire Protection				
Marine Fire Protection System*	Implement and test a marine fire protection and pre-fire planning system.	Washington State Coordinating Council Olympia, Wash.	5-37031	13,752
Marine Fire Protection—Atlantic Coast Ports	Analyze the marine fire protection project for use in Atlantic Coast ports.	New York City Fire Department New York, N.Y.	2-4256	9,600
Firefighting & Fire Safety Manual	Develop and print a standardized firefighting manual for use aboard merchant vessels.	Brady Co. Bowie, Md.	60071	67,692

*Cost-shared.

Appendix XVI: (Continued)

Project	Task	Vendor	Contract Number	Amount
Maintenance and Repair				
Marine Reliability and Maintainability	Develop specifications for the improvement of ship systems reliability and maintenance.	Arinc, Inc. Annapolis, Md.	60079	$ 124,500
Miscellaneous				
Service Speed Performance of Ships Techniques	Develop ways of monitoring the speed of ships so an economic analysis can be made of the various factors affecting speed performance.	Eclectech Corp. North Stonington, Conn.	61597	40,739
Personnel Study of Licensed Officers and Unlicensed Seamen	Study the job satisfaction and morale of U.S. seafarers, and the human factors that lead to accidents and illnesses. Collect personnel data from U.S. Coast Guard and American Bureau of Shipping, and integrate it with MarAd data base.	Marine Index Bureau New York, N.Y.	60075	89,994
Master Plan for Maritime Fuel Conservation	Provide maritime industry with a comprehensive master plan for fuel conservation, with optional strategies to be followed regarding short- and long-range availability of fuel oil.	Webb Institute of Technology Glen Cove, N.Y.	60076	50,000
Foreign Maritime Aids	Evaluate maritime policy of the major maritime nations between 1971 and 1975.	Temple, Barker & Sloane, Inc. Washington, D.C.	6-38070	85,838
Shipyard Worker Turnover	Measure job turnover among shipyard workers to determine patterns and degree of shipyard mobility.	Public Research Institute of Center for Naval Analysis Arlington, Va.	6-38073	19,950
Permeability of Cargo Ships*	Study of permeability of cargo ships to determine damage stability and floodability. Establish improved ship design safety criteria.	George G. Sharp, Inc. New York, N.Y.	6-38078	27,898

Appendix XVI: RESEARCH AND DEVELOPMENT CONTRACTS AWARDED DURING TRANSITION QUARTER (July 1-September 30, 1976)

Project	Task	Vendor	Contract Number	Amount
Competitive Shipbuilding				
OSHA Impact on Shipyards*	Determine the impact of the Occupational Safety and Health Act (OSHA) and similar legislation on shipyard operations and develop a manual of alternate standards to meet existing safety requirements.	Long Beach Naval Shipyard Long Beach, Calif.	400-69024	$ 152,000

*Cost-shared.

Appendix XVI: (Continued)

Project	Task	Vendor	Contract Number	Amount
Shipyard Automation				
REAPS System	Design plans for disseminating information and techniques developed in shipyard automation and computerization program.	IITRI Chicago, Ill.	5-38072	$ 88,500
Advanced Ship Machinery				
Planetary Transmission System*	Develop improved and lower-cost compact marine transmissions.	Curtiss-Wright Woodbridge, N.J.	3-36247	56,000
Nuclear Ships				
Halon 1301 Explosion Suppression, Phase III	Provide information for the design of an explosion suppression system for Consolidated Nuclear Steam Generator vessels, in order to obtain Nuclear Regulatory Commission licensing for the system.	Atlantic Research Alexandria, Va.	6-38169T	96,539
Nuclear Ship Accident Research and Environmental Tasks	Develop scenarios for the effects of ship collisions, groundings, fires, explosions, and structural failures on nuclear ship reactor safety systems.	NUS Corporation Rockville, Md.	6-38160	72,853
Feasibility of Tanker Transportation System for Alaskan Coast	Examine the technical and economic feasibility of a nuclear-powered marine transportation system to serve the northwest Alaskan coast.	Global Marine San Diego, Calif.	6-38164	95,797
Shipping Operations Information System (SOIS)				
Corporate Management Information System*	Design, operate, test, and evaluate computer-based vessel performance monitoring and decision-making system utilizing satellite communications.	Pacific Far East Line, Inc. San Francisco, Calif.	5-38046	350,000
Maritime Ship Data System	Design, operate, test, and evaluate computer-based ship characteristics information system for both U.S. and foreign-flag vessels.	Marine Management Stamford, Conn.	6-38069	189,529
Corporate Fleet Planning System*	Add cargo handling and port expense module to a computer-aided simulation to analyze an automated cargo assignment and voyage analysis system.	Prudential Lines, Inc. New York, N.Y.	5-37043	45,108
Shipboard Automation				
Steam Turbine Prototype*	Develop a prototype maintenance and repair system for steam turbine plants designed for unattended operation. Test aboard the LASH ATLANTICO for one year.	Prudential Lines, Inc. New York, N.Y.	6-38082	49,444

*Cost-shared.

Appendix XVI: (Continued)

Project	Task	Vendor	Contract Number	Amount
Maritime Sonar System, Phase I	Develop a sonar system to provide U.S.-flag ships with information about underwater obstacles.	Tracor, Inc. Austin, Tex.	6-38150T	$122,500
Navigation/Communications				
Digital Selective Calling	Analyze and review research relating to digital selective calling High Frequency (HF)/Medium Frequency (MF) antennas and HF error-correction techniques.	National Bureau of Standards Boulder, Colo.	400-69021	23,000
Marine Sciences				
Maritime Research Information System (MRIS)	Collect and disseminate maritime technology information.	National Academy of Sciences Washington, D.C.	5-38005	225,000
Propeller-Induced Vibration Forces on Nearby Hull Surfaces*	Validate existing methods for measuring propeller-induced vibration on ship hull surfaces.	DT-NSRDC Bethesda, Md.	400-69008	3,650
Ship Maneuvering Trials, Including Measurement of Ship Speed Loss and Roll	Include speed loss and roll measurement in maneuvering trials program.	M.I.T. Cambridge, Mass.	5-38073	50,000
Ice-Transiting Bow Form for Great Lakes Bulk Carriers*	Develop bow form for ice transiting for Great Lakes bulk carriers. Design tools for predicting power requirements and maneuvering and impact forces.	Pickands Mather & Co. Cleveland, Ohio	6-38055	180,000
Market Analysis				
Great Lakes Overseas Market Assessment	Investigate the market feasibility of a combination bulk-container-RO/RO vessel, in addition to the general cargo vessel analysis provided in the original Great Lakes overseas market assessment.	Simat, Helliesen & Eichner Boston, Mass.	4-37124	21,299
Survey of U.S. Foreign Trade: 1976 Bulk Commodities	Determine the inland origin and destination of bulk commodities moving in U.S. foreign trade.	U.S. Army Corps of Engineers Fort Belvoir, Va.	400-69023	124,200
Energy Conservation				
Cavijet Hull Cleaning, Phase II*	Evaluate the cavijet hull cleaning concept both in drydock and underwater.	Hydronautics, Inc. Laurel, Md.	7-38001	137,981
Ports and Terminals				
Port Vessel Locator System	Examine the feasibility of an automated system to collect ship traffic and cargo data for harbor areas.	Marine Exchange of San Francisco San Francisco, Calif.	6-38047	78,000

*Cost-shared.

Appendix XVI: (Continued)

Project	Task	Vendor	Contract Number	Amount
CAORF				
Shallow Water Ship Coefficient	Develop shallow-water coefficient and incorporate into the CAORF data base.	Sperry Systems Management Great Neck, N.Y.	65595T	$158,576
Loran C Capability	Provide Loran C navigation capability for CAORF.	Grumman Systems Bethpage, N.Y.	65488T	171,648
Ship Bank Effects	Develop hydrodynamic effects of CAORF "own ship" passing bank or shoal.	Sperry Systems Management Great Neck, N.Y.	65591T	72,666
Ship's Course Indicator and Azimuth Circle	Design, develop, install, and test two ship's course indicators for the CAORF bridge to measure the Azimuth Circle position.	Grumman Corp. Bethpage, N.Y.	65590T	108,272
Passing Effects Data Base	Provide the capability of simulating the effect of other ships passing in proximity to the CAORF "own ship."	Sperry Systems Management Great Neck, N.Y.	65592T	87,005
Miscellaneous				
Optimum Ship Routing	Develop a methodology and predicting capability for optimum routing of ships based on weather conditions, vessel characteristics, and operational objectives.	M.I.T. Cambridge, Mass.	65594T	71,938

Appendix XVII: STUDIES AND REPORTS

The following studies or reports were released by the Maritime Administration during fiscal year 1976 and the transition quarter:

A limited number of copies of publications marked [MarAd] are available from the Office of Public Affairs, Maritime Administration. Publications marked [GPO] are available from Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402. Those labelled [NTIS] may be purchased from the National Technical Information Service, 5285 Port Royal Road, Springfield, Va. 22161.

MARAD 1975, (Report of the Maritime Administration for fiscal year 1975), 98pp, $1.70 [GPO]

Bulk Carriers in the World Fleet—Oceangoing Merchant Type Ships of 1,000 Gross Tons and Over (Excludes Vessels on the Great Lakes) December 1975, 132pp, $2.15 [GPO]

A Statistical Analysis of the World's Merchant Fleets, December 1975, 375pp, $5 [GPO]

Maritime Subsidy Board, Maritime Administration, Department of Commerce, Reports—Volume 3 (March 1969 to May 1973) 1033pp, $13 [GPO]

Merchant Fleets of the World—Oceangoing Steam and Motor Ships of 1,000 Gross Tons and Over, December 1975, 43pp $1.25 [GPO]

Vessel Inventory Report (United States Dry Cargo and Tanker Fleets, 1,000 Gross Tons and Over) June 1976 [MarAd]

A Short Term Forecast of U.S. Oceanborne Exports, prepared by Temple, Barker & Sloane, Inc., 209pp, $9 PB-251624/AS [NTIS]

Domestic Waterborne Trade of the United States, 1967-1974, June 1975, 109pp, $1.80 [GPO]

Marine Transportation of Liquefied Natural Gas, prepared by NMRC-KP, 258 pp, PB-249014/AS $9 [NTIS]

Final Environmental Impact Statement—Maritime Administration Chemical Waste Incinerator Ship Project, Prepared by MarAd, June 1976 [NTIS]

Volume I	Text	PB-253978/AS	$10.75
Volume II	Appendix	PB-253979/AS	$ 7.75

Final Environmental Impact Statement—Maritime Administration Title XI Vessels Engaged in Offshore Oil and Gas Drilling Operations, prepared by MarAd, January 1976, 370pp, $10.50 PB-248857/AS, [NTIS]

Inventory of American Intermodal Equipment, April 1976, 54pp, PB-253977/AS, $4.50 [NTIS]

The National Maritime Bulk Commodities Model, prepared by Ernst & Ernst, May 1976 [NTIS]

Volume 1:	Management Summary	PB-254442/AS	$ 4
Volume 2:	Technical Report	PB-254443/AS	$ 6
Volume 3:	Users Documentation	PB-25444/AS	$ 5
	Complete Set	PB-254441	$13

Regional Port Planning Study for San Francisco Bay Area, prepared by Policy Planning Consultants and Manalytics, Inc., September 1976 [NTIS]

Volume 1: Port Requirements for the San Francisco Bay Area NORCAL: Phase I; Port Studies 1&2, Summary Report, 53pp PB-256595/AS, $4.50

Volume 2: NORCAL: Port Study 1—Cargo Projections, Trade Outlook of the Northern California Ports: Year 2000 and Beyond, 171pp, PB-256596/AS, $6.75

Volume 3: NORCAL: Port Study 2—Methodology for Estimating Capacity of Marine Terminals, Volume I: Standardized Methodology, 234pp, PB-256597/AS, $8

Volume 4: NORCAL: Ports Study 2—Methodology for Estimating Capacity of Marine Terminals Volume II: NORCAL Port Capacities, 13pp, PB-256598/AS, $3.50

Standard Specifications for Diesel Merchant Ship Construction, prepared by MarAd, August 1976, 395pp, PB-257261, $10.75 [NTIS]

Standard Specifications for Tanker Construction, prepared by MarAd, October 1976, 594pp, PB-258661/AS, $16.25 [NTIS]

Maritime and Construction Aspects of Ocean Thermal Energy Conversion (OTEC) Plant Ships, prepared by Johns Hopkins Applied Research Laboratory, July 1976 [NTIS]

Volume I	Executive Summary	PB-255639/AS	$4
Volume II	Detailed Report	PB-257444	$8

U.S. Flag Bulk Shipping, prepared by Temple, Barker & Sloane, Inc., August 1976, 224pp, PB-257402/AS, $7.75 [NTIS]

ASSISTANT SECRETARIES OF COMMERCE FOR MARITIME AFFAIRS AND MARITIME ADMINISTRATORS

	Tenure	
	Began	Ended
Maritime Administrators:		
E. L. Cochrane	Aug. 1, 1950	Oct. 1, 1952
Albert W. Gatov	Oct. 2, 1952	June 30, 1953
Louis S. Rothschild	July 1, 1953	Feb. 25, 1955
*Walter C. Ford	Feb. 26, 1955	Mar. 15, 1955
Clarence G. Morse	Mar. 16, 1955	May 1, 1960
*Walter C. Ford	May 2, 1960	June 30, 1960
Ralph E. Wilson	July 1, 1960	Feb. 22, 1961
Thomas E. Stakem	Feb. 23, 1961	Aug. 11, 1961
*Thomas E. Stakem	Aug. 12, 1961	Oct. 8, 1961
Donald W. Alexander	Oct. 9, 1961	Oct. 31, 1963
*Robert E. Giles	Nov. 1, 1963	Mar. 1, 1964
Nicholas Johnson	Mar. 2, 1964	June 30, 1966
*James W. Gulick	July 1, 1966	Mar. 24, 1969
Andrew E. Gibson	Mar. 25, 1969	[1]
Assistant Secretaries for Maritime Affairs:		
Andrew E. Gibson	Dec. 8, 1970	July 6, 1972
Robert J. Blackwell	July 7, 1972	Present

[1]The position of Assistant Secretary of Commerce for Maritime Affairs (*ex officio* Maritime Administrator) was created on October 21, 1970.
*Interim Appointee.

Hull of EL PASO COLUMBIA, one of 18 liquefied natural gas carriers under construction in U.S., is launched from Avondale Shipyards, Inc., New Orleans, La. Hull was then taken to outfitting berth to be prepared for delivery to owner.

Acknowledgments

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American Export Lines, Inc.
The American Waterways Operators, Inc.
Atlantic Richfield Co.
Avondale Shipyards, Inc.
Bath Iron Works Corp.
Bethlehem Steel Corp.
Delta Queen Steamboat Co.
General Dynamics, Quincy Shipbuilding Div.
The Johns Hopkins University, Applied Physics Laboratory
Lykes Bros. Steamship Co.
McAllister Bros., Inc.
National Steel & Shipbuilding Co.
National Maritime Council
Newport News Shipbuilding
Pickands Mather & Co.
Port of Mobile, Ala.
Port of New Orleans, La.
Seatrain Shipbuilding Corp.
Sun Oil Co.
Waterman Steamship Corporation
Zapata Bulk Transport, Inc.

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