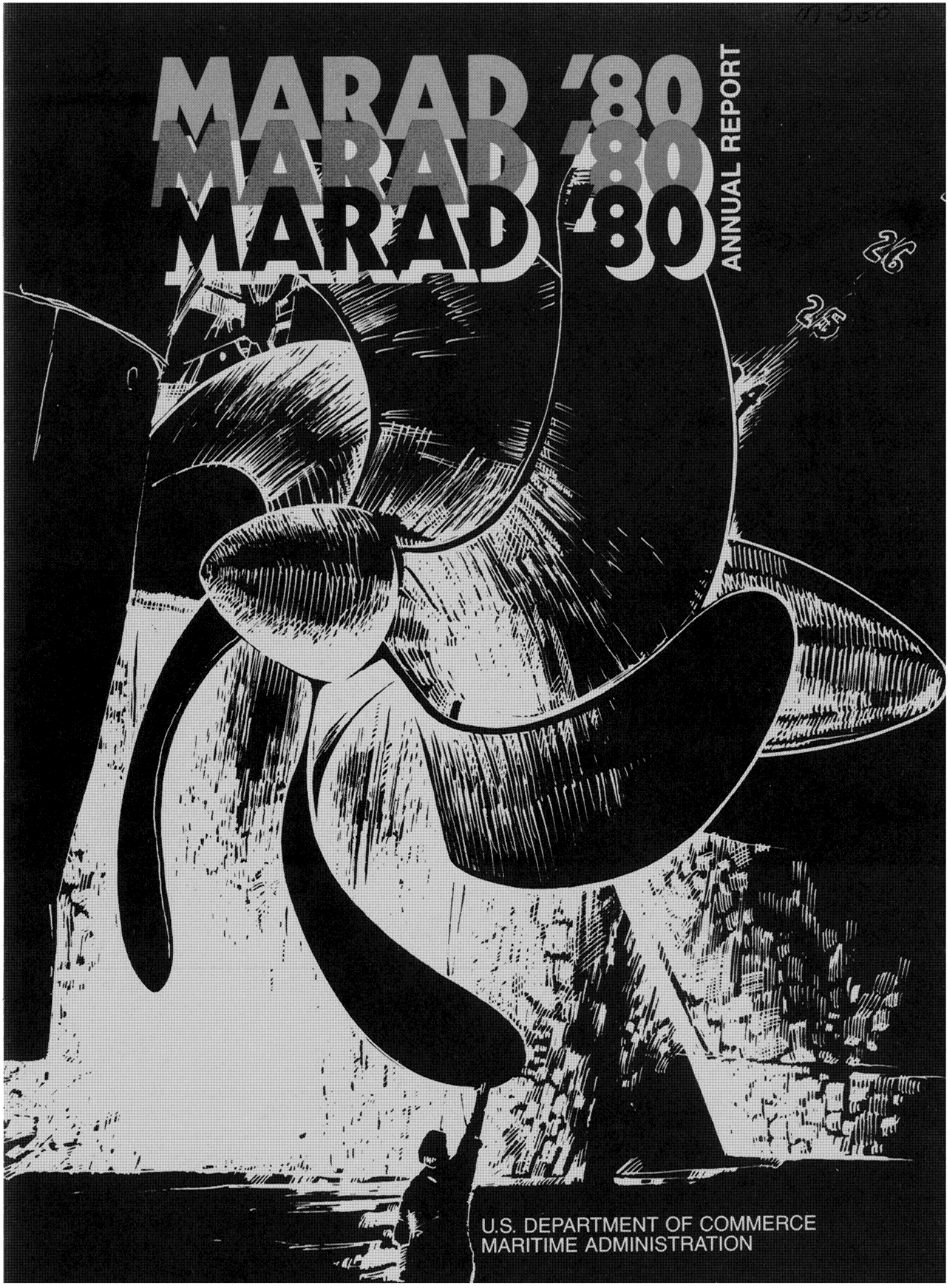
MARAD '80

ANNUAL REPORT



U.S. DEPARTMENT OF COMMERCE
MARITIME ADMINISTRATION

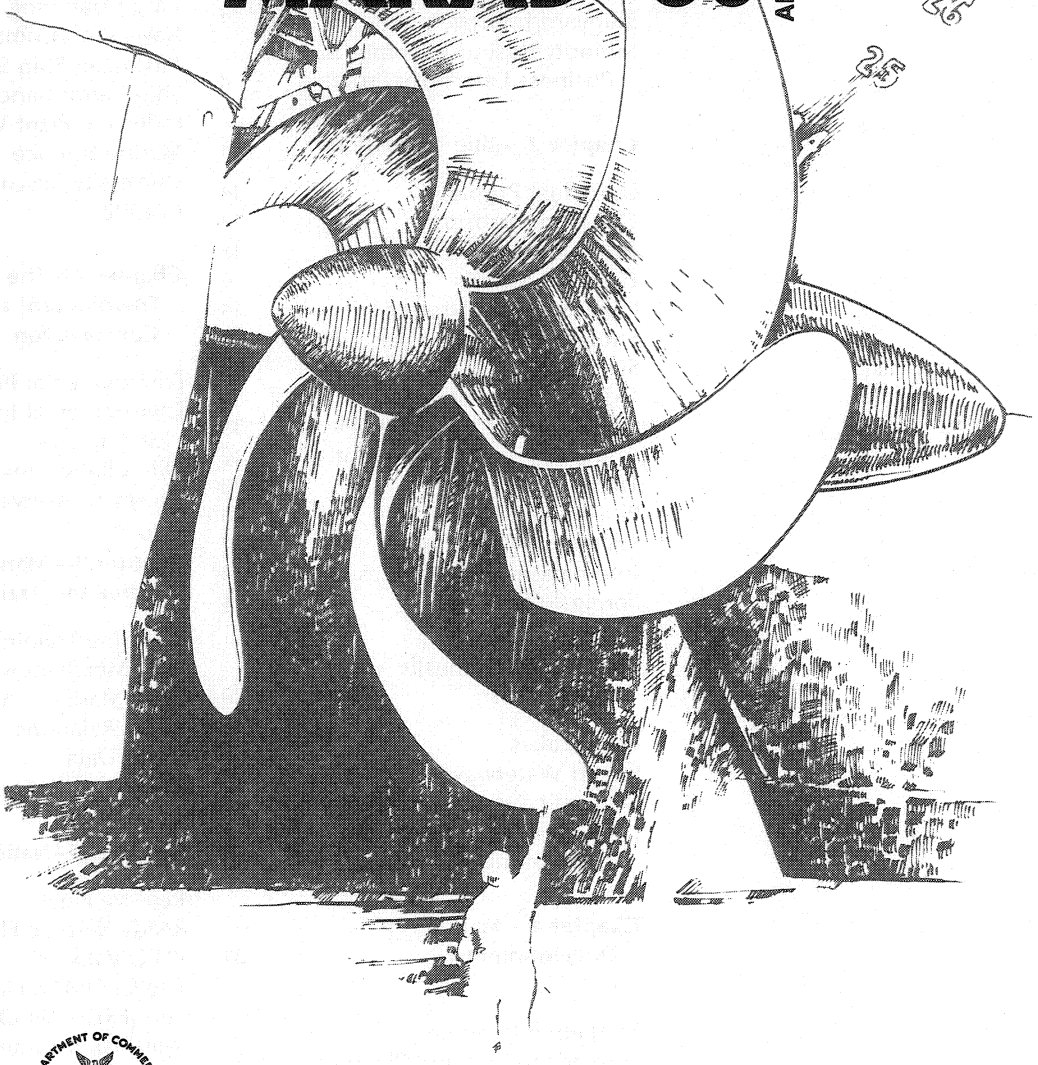
Note:
While this report was in production Malcolm Baldrige succeeded Philip M. Klutznick as Secretary of Commerce.

About the cover and pictures on pages IV and VI: artist sketch on cover shows experimental "skewed" propeller used in ship operations phase of R&D project. On page IV, bow section of ship under construction is lowered into place at Newport News (Va.) Shipbuilding and Dry Dock Co. Page VI shows U.S. Frigate CONSTELLATION, Nation's first warship, undergoing repairs to her hull at Bethlehem Steel Corp.'s Fort McHenry Repair Yard, Baltimore, Md.

The Annual Report of the
Maritime Administration
for Fiscal Year 1980

MARAD '80

ANNUAL REPORT



JULY 1981

U.S. DEPARTMENT OF COMMERCE
Malcolm Baldrige, Secretary

MARITIME ADMINISTRATION
Samuel B. Nemirow
Assistant Secretary
for Maritime Affairs

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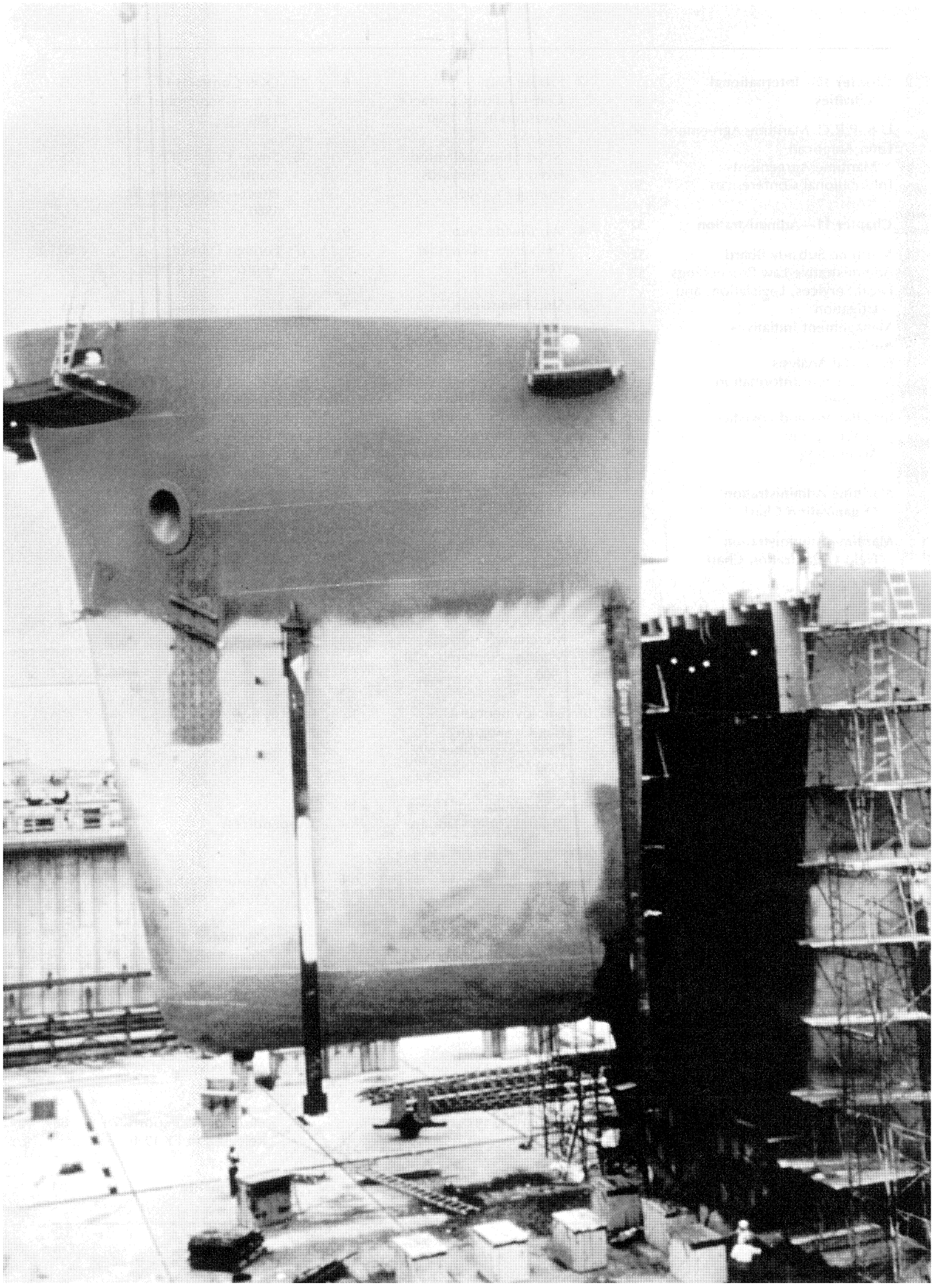
CONTENTS



THE SECRETARY OF COMMERCE
Washington, D.C. 20230

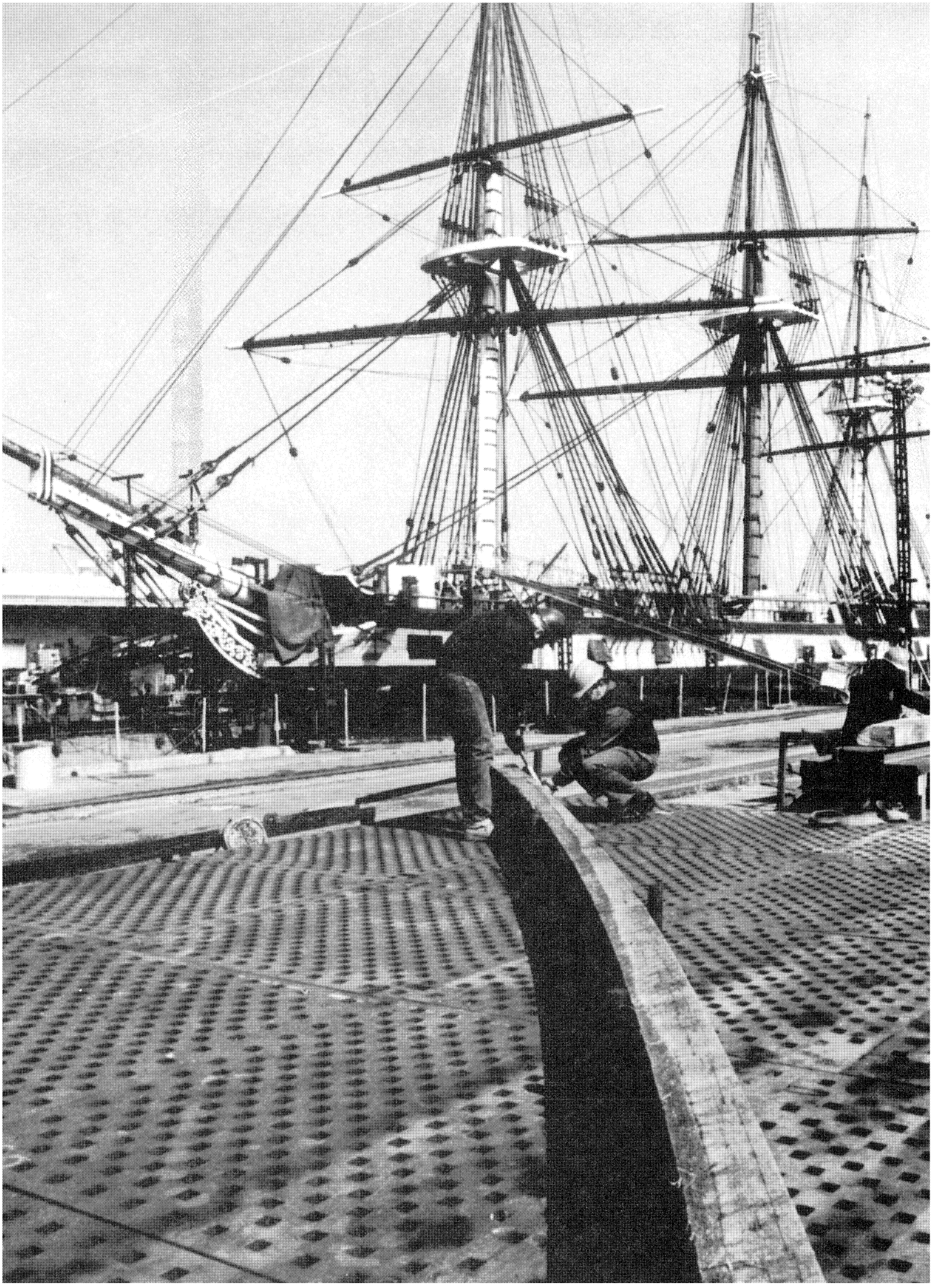
The President
President of the Senate
Speaker of the House of
Representatives
Washington, D.C. 20515

Sirs:

Enclosed is the annual report of the Maritime Administration for fiscal year 1980 as required by the Merchant Marine Act, 1936, as amended.

Sincerely,

Secretary of Commerce



FOREWORD

This Annual Report of the Maritime Administration, submitted in accordance with the Merchant Marine Act, 1936, as amended, reviews Agency activities in administering Federal maritime programs and pertinent developments which affected the U.S. maritime industry in the fiscal year which ended September 30, 1980.

The Nation's maritime community endured some setbacks and disappointments during this reporting period. Rate-cutting by independent carriers, overtonnaging and other disruptive conditions continued in the transatlantic and transpacific liner trades, adding to the problems faced by U.S.-flag operators on those key routes. An economic downturn, especially in the basic steel and automobile industries, severely reduced ship operations on the Great Lakes. (At the low point, 40 percent of the U.S.-flag lakes fleet was laid up.) New merchant ship deliveries generally outpaced new orders in America's shipyards, portending reductions in the shipbuilding industry's workforce.

Of 16 new merchant vessels delivered, eight were constructed with the assistance of Federal subsidy, bringing to 61 the number of subsidized ships contracted for and delivered since enactment of the Merchant Marine Act of 1970. The new vessels included the very large crude carrier, U.S.T. PACIFIC, a sister ship of the U.S.T. ATLANTIC, delivered in the previous year. At 390,770 deadweight tons, they are the largest vessels ever built in the United States.

These and other new ships have increased the carrying capacity and productivity of the privately owned, U.S.-flag oceangoing fleet to record levels.

Within the U.S. Government, there were significant advances in interagency programs to enhance the merchant fleet's sealift capability, including a joint MarAd-Navy project for the design and development of a maritime prepositioning ship.

A trend toward the use of more energy-efficient diesel-propulsion systems in the U.S. merchant fleet continued during the year. Thirty-two deepdraft merchant vessels which were on order or under construction in U.S. yards on September 30, 1980, will be diesel powered. Among these are three large containerships to be propelled by the first slow-speed diesel engines ever built in the United States. The Maritime Administration further expanded its diesel training efforts and, through its research and development program, sought to increase energy efficiency and reduce the impact of accelerating fuel oil costs on ship operations. These efforts included exploring alternative ship-propulsion systems, among them coal-fired steam plants and wind-assisted diesel systems.

In international affairs, the United States and the People's Republic of China signed a maritime agreement under which each country's merchant fleet will have access to at least one-third of the bilateral trade tonnage. The agreement also opens, on short notice, most ports in each nation to the merchant ships of the other.

SAMUEL B. NEMIROW
Assistant Secretary of Commerce
for Maritime Affairs

Chapter 1

Shipbuilding

Contract Awards

The Maritime Administration (MarAd) granted construction-differential subsidy (CDS) for the reconstruction of seven existing vessels in fiscal year 1980. The Government will pay $2.5 million of the total cost of $6.8 million for this work (see Table 1).

No CDS contracts were awarded in this reporting period for the construction of new merchant ships.

Private contracts were awarded for the construction of 15 new, nonsubsidized commercial vessels totaling 545,000 deadweight tons (dwt.). These contracts included eight product tankers, four integrated tug/barge vessels, one integrated tug/barge bulk carrier, and two oceangoing diesel-powered hopper dredges (see Table 2).

On September 30, 1980, 50 merchant vessels totaling 1.6 million dwt. and valued at $2.8 billion were under construction or on order in American shipyards. Of that total, 17 were being built with the aid of construction subsidy and were also participating in the Federal Ship Financing Guarantees (Title XI) Program. An additional 13 of the 33 privately financed vessels carry Title XI guarantees.

Two contracts totaling $1.6 million were awarded for modification of the Lykes Bros. Steamship Co. vessels TYSON LYKES (former MAINE) and CHARLES LYKES (former ARIZONA). Each vessel's fuel capacity was increased to avoid the purchase of more costly foreign oil, its feed water pumps replaced, and container capacity increased by 166 twenty-foot equivalents.

Also on September 30, 1980, 59 offshore oil-drilling rigs valued at approximately $1.8 billion were in production or on order in nine U.S. shipyards, compared with 31 units one year earlier.

During the fiscal year, two ships in a five-ship construction contract involving Federal aid were cancelled. The Levingston Shipbuilding Co. exercised an option to reduce to three the number of 36,000-dwt. bulk carriers on order for Levingston Falcon 1 Shipping Co.

On September 15, 1980, construction was terminated on three 125,000-cubic-meter liquefied natural gas (LNG) carriers being built at Avondale Shipyards for subsidiaries of El Paso Co. The contractual parties terminated construction due to technical problems with the cargo insulation system.

Additionally, a barge being built under a CDS contract in Brooklyn, N.Y., was transferred to the Norfolk (Va.) Shipbuilding and Drydock Co. for completion when the Seatrain Shipyard ceased operations.

Reconstruction contracts were awarded for four C4 vessels for Moore McCormack Lines at a total cost of $4.6 million. Each vessel will be modified to increase its container capacity by 66 twenty-foot equivalents. Cargo hatches and ballast also will be increased to handle the increased weight. Federal subsidy of $1.8 million is involved in this contract.

A reconstruction contract was also awarded for Delta Steamship Lines' DELTA MEXICO for the removal of a five-ton deck crane, installation of a 25-ton crane, and the strengthening of cargo hatch covers to accommodate the loading of containers.

Construction-Differential Subsidy

To reduce or eliminate the disparity which exists between U.S. and foreign shipbuilding costs, MarAd is authorized to pay the construction-differential subsidy as noted above. CDS is defined as the difference between the shipbuilding costs in a U.S. shipyard and a reasonable estimate of costs in a foreign yard. By law, it may not exceed 50 percent of the domestic shipbuilding costs. (See Appendix I for CDS expenditures since 1936.) To be eligible for the subsidy, a vessel must be built in a U.S. shipyard, owned by a U.S. citizen or citizens, manned by a U.S. crew, and operated under the U.S. flag in the Nation's essential foreign commerce.

The combined costs of vessels which were under CDS contracts for construction or reconstruction on September 30, 1980, totaled almost $1 billion, of which $482 million will be paid by the Government. The 17 new vessels being built with CDS consisted of five containerships, one cargo vessel, five integrated tug/barge vessels, three Roll-On/Roll-Off (RO/RO) containerships, and three dry-bulk carriers.

There were 46 CDS applications for the construction or reconstruction of 124 vessels on file at MarAd at the close of the fiscal year. However, a number of these applications have been pending for some time and, under current criteria, are considered dormant. (They could be reactivated upon request.)

Ship Deliveries

American shipyards delivered a total of 16 new merchant vessels totaling 1.2 million dwt. during fiscal year 1980 (see Table 3). Federal assistance was provided for half that number.

The eight subsidized vessels were:

- The two 125,000-cubic-meter LNG carriers, LAKE CHARLES and LOUISIANA, built for Lachmar by General Dynamics, Quincy, Mass., for service from Algeria to the U.S. Gulf Coast;
- The two 2,000-dwt. multipurpose cargo ships, AMERICA and AMAZONIA, built by Equitable Shipyards for American Atlantic Shipping, for service between the U.S. Atlantic/Gulf

Coasts and the Caribbean, Central America, and South America;

- The 390,770-dwt. crude oil carrier, U.S.T. PACIFIC, built by Newport News Shipbuilding and Dry Dock Co. for U.S. Trust Co. of New York for charter to VLCC II Corp. in worldwide service;
- The 27,340-dwt. containership, AUSTRAL PIONEER, built by Bethlehem Steel at Sparrows Point, Md., for Farrell Lines for service between the U.S. Atlantic/Gulf Coasts and Australia/New Zealand;
- The 14,600-dwt. containership, RESOLUTE, built by Bath Iron Works for Farrell Lines for service between the U.S. East Coast, Europe, and the Mediterranean; and
- The 40,680-dwt. lighter-aboard-ship (LASH) vessel, BENJAMIN HARRISON, built by Avondale Shipyards for Waterman Steamship Corp. for service between the U.S. Gulf/East Coast and the Far East.

Delivery of these eight vessels brings to 61 the total number of subsidized ships contracted for and delivered since enactment of the Merchant Marine Act of 1970.

The eight nonsubsidized vessels delivered in FY 1980 were:

- The two 188,500-dwt. crude oil carriers, ARCO ALASKA and ARCO CALIFORNIA, built by National Steel and Shipbuilding Co. for Atlantic Richfield Co. for the Alaska/U.S. West Coast service;
- The 125,000-cubic-meter LNG carrier, LNG VIRGO, built by General Dynamics/Quincy for Patriot IV Shipping Corp. for service between Indonesia and Japan;
- The 26,600-dwt. containership, KAUAI, built by Sun Ship, Inc., for Matson Navigation Co. for service between the U.S. West Coast and Hawaii;
- The 32,600-dwt. self-unloading ore carrier, AMERICAN MARINER, built by Bay Shipbuilding Corp. for Cooper Steamship Co. for the Great Lakes trade;
- The 59,000-dwt. self-unloading ore carrier, EDGAR B. SPEER, built by American Shipbuilding Co. for U.S. Steel Corp. for the Great Lakes trade;
- The 62,000-dwt. self-unloading ore carrier, BURNS HARBOR, built by Bay Shipbuilding Corp. for Bethlehem Steel Corp. for the Great Lakes trade; and
- The diesel-powered oceangoing hopper dredge, DODGE ISLAND, built by Southern Shipbuilding Corp. for Great Lakes Dredge & Dock Co.

Table 4 shows deliveries of merchant vessels by major shipbuilding nations during calendar year 1978.

Title XI Guarantees

Title XI of the Merchant Marine Act of 1936, as amended, established the Federal Ship Financing Guarantees Program.

As originally enacted, Title XI authorized the Secretary of Commerce, acting by and through the Assistant Secretary for Maritime Affairs, to insure private-sector loans or mortgages made to finance or refinance the construction or reconstruction of American-flag vessels in U.S. shipyards. Title XI was amended in 1972 to provide direct Government guarantees of the underlying debt obligations for future transactions.

The U.S. Government insures or guarantees full payment to the lender of the unpaid principal and interest of the mortgage or obligation in the event of default by the vessel owner.

Title XI guarantees of approximately $1.1 billion covering 294 vessels and 237 LASH lighters (see Table 5) were conditionally approved by MarAd during this fiscal year.

Based on previous Title XI commitments, guarantees were placed on 286 vessels and 253 LASH lighters during this reporting period.

As of September 30, 1980, Title XI guarantees in force amounted to approximately $7.2 billion. Pending applications on that date represented approximately $4.3 billion in additional guarantees (see Table 6). Of the total guarantees in force, $363.4 million has aided the financing of ships constructed on the Great Lakes; of pending requests, $159.8 million involved shipbuilding on the lakes.

During the fiscal year, the Title XI ceiling authorization was $10 billion, of which $250 million was allocated administratively to guarantee the financing of fishing vessels by the National Oceanic and Atmospheric Administration.

This self-sustaining program has been one of the most successful under the Merchant Marine Act of 1936. Its total costs, including salaries of the MarAd staff employed in the merchant ship financing program, are underwritten by fees which are paid by users. The insurance premiums and guarantee fees go into the Federal Ship Financing Fund, a revolving fund which may be used for payment of any defaults.

Since the inception of the Title XI program, only 11 companies have defaulted.

During FY 1980, the Federal Ship Financing Fund had a net income of $42,219,628.

Also during this reporting period, Title XI representatives in MarAd's regional offices began processing applications for owner/operators involving less than $5 million in ship financing guarantees. Operations analyses, supplementing the economic and financial analyses of headquarters personnel, also were initiated at the regional level.

In addition, Water Transportation Financing Seminars were conducted in San Francisco, New Orleans, and New York. Participants received information on the benefits and operation of the Agency's maritime aids program, including Title XI, and had an opportunity to discuss the program with Agency personnel.

Table 1: SHIPS UNDER CDS—SEPTEMBER 30, 1980

Owner	Shipbuilder	Ship Type
Contracts Awarded in FY 1980:		
Delta Steamship Lines[2]	Buck Kreihs	CN
Lykes Bros. Steamship Lines[2]	Todd Shipyard	RO/RO
Moore McCormack Lines[2]	Maryland Shipbuilding	BBC
Lykes Bros. Steamship Lines[2]	Bethlehem Steel	RO/RO
TOTAL (FY 1980)		
Undelivered Vessels Under Contracts Awarded Prior to FY 1980:		
American President Lines	Avondale	CN
American Atlantic Shipping	Equitable Shipyards	BBC
Coordinated Caribbean Transport[3]	Manhattan Barge/Norfolk	TB
Farrell Lines	Bethlehem/Sparrows Point	CN
Levingston Falcon I	Levingston	DBC
Suwannee River Finance	Avondale	TB
Suwannee River Spa Finance	Avondale	TB
Suwannee River Phosphate Finance	Avondale	TB
Waterman Steamship	Sun Shipbuilding	RO/RO
Waterman Steamship	Sun Shipbuilding	RO/RO
Waterman Steamship	Avondale	LASH
Total (Prior to FY 1980		
Total All Ships Under CDS September 30, 1980		

Capital Construction Fund

The Capital Construction Fund Program was established under the Merchant Marine Act of 1970. It assists operators in accumulating capital to build, acquire, and reconstruct vessels through the deferral of Federal income taxes on eligible deposits. Today, with the high cost of ship construction, the CCF is a significant source of capital.

During FY 1980, $332 million was deposited in these accounts. Since the program was initiated in 1971, the fundholders (shown in Table 7) have deposited $2 billion in CCF accounts and withdrawn $1.6 billion for the modernization and expansion of the U.S. merchant marine.

The CCF Program has broad applicability. It enables operators to build vessels for the U.S. foreign trade, the Great Lakes trade, the noncontiguous domestic trade (e.g., between the East Coast and Puerto Rico), and the fisheries of the United States. This program also aids in the construction, reconstruction, or acquisition of a wide variety of vessels, including containerships, LASH vessels, other cargo ships, tankers, LNG vessels, bulk carriers, tugs, barges, supply vessels, ferries, and passenger vessels.

During this fiscal year, the Maritime Administration issued a regulation defining when and whether a vessel is operating within the noncontiguous domestic trade. It redefined the term "insular territories and possessions of the United States" to include platforms, rigs, and other facilities which are attached to the seabed of the Outer Continental Shelf beyond the territorial seas of the United States. The significance of this rule is that operators engaged in the offshore marine service industry are now eligible for the CCF program.

The total value of projects completed or begun by CCF holders to date is approximately $5.2 billion. The 92 fundholders listed in Table 7 have projected expenditures under this program totaling $5.3 billion. Of this total, $4.4 billion is projected for vessels operating in the U.S. foreign trade, $538 million for the Great Lakes trade, and $443 million for the noncontiguous domestic trade.

No. of Ships	Total Deadweight Tons	Estimated Completion Date	Total Estimated Cost[1] (Millions)	Estimated CDS (Millions)	Estimated Cost NDF (Thousands)
1	13,039	5-80	$ 0.6	$ 0.2	-0-
1	14,497	9-82	0.8	0.2	-0-
4	57,396	11-80	4.6	1.8	-0-
1	14,497	9-80	0.8	0.3	-0-
7	**99,429**		**$ 6.8**	**$ 2.5**	**-0-**
3	98,400	4-82	$273.0	$135.3	$1,066
1	2,220	11-80	9.6	4.6	65
2	13,542	[3]	48.4	22.2	-0-
1	27,340	11-80	78.4	38.9	36
3	105,000	12-81	121.2	60.5	-0-
1	40,134	3-81	54.7	26.9	181
1	40,134	4-81	54.7	26.9	181
1	40,134	5-81	54.7	26.9	181
2	77,000	11-81	137.4	66.4	1,573
1	38,500	4-82	70.5	34.4	742
1	49,921	1-81	70.0	32.9	259
17	**523,325**		**$972.6**	**$475.9**	**$4,284**
24	**622,754**		**$979.4**	**$478.4**	**$4,284**

[1] Total contract cost including CDS and National Defense Features (NDF), but excluding engineering and change orders.
[2] These contracts are for conversion of existing vessels, two of which have been completed.
[3] The yard originally contracted to build the barge portions of these vessels has ceased operations. The first barge is being completed under a new contract. The date of completion is uncertain.

Key to Ship Types: CN=containership, LNG=liquefied natural gas carrier, TB=integrated tug/barge vessel, BBC=breakbulk carrier, RO/RO=roll-on/roll-off vanship, LASH=lighter aboard ship, DBC=dry bulk carrier.

Construction Reserve Fund

Like the Capital Construction Fund, the Construction Reserve Fund (CRF) encourages upgrading of the American-flag fleet. This program allows eligible parties to defer taxation of capital gains on the sale or other disposition of a vessel if net proceeds are placed in a CRF and reinvested in a new vessel within 3 years.

The CRF is used predominantly by owners of vessels operated in coastwise trades, the inland waterways, and other trades not eligible for the CCF Program. Its benefits are not so broad as those of the CCF.

The number of companies with CRF balances decreased from 11 to 9 during FY 1980 due mainly to the merging of funds of related companies. During this reporting period, the total on deposit in these funds increased by $5.4 million to $15.5 million (see Table 8).

Ship Design and Engineering

Development of the design for the Maritime Prepositioning Ship (MPS) was a significant achievement during FY 1980. Late in the year MarAd—acting on behalf of the Department of Defense—invited bids from American shipyards for construction of the first two vessels in this projected series. Contract plans and specifications for the ships were based on MarAd's Security Class Mobilization Ship.

The MPS design has RO/RO, tanker, and liquid-bulk cargo capabilities, permitting the storage and carriage of military vehicles and supplies for long periods of time. Expected to become a part of the U.S. Rapid Deployment Force, these diesel-propelled ships would have a length of 831 feet, 6 inches, a beam of 105 feet, 6 inches, a serv-

Table 2: PRIVATE SHIP CONSTRUCTION CONTRACTS AWARDED IN FY 1980

Owner	Shipbuilder	Type	No. Vessels	Total Deadweight Tons	Est. Completion Date	Total Est. Cost (Millions)
American Tankships, Inc.	National Steel	Product Tankers	5	187,500	1982/1984	$260.8
First Attransco Tanker Corp.	National Steel	Product Tanker	1	44,000	1982	65.7
Second Attransco Tanker Corp.	National Steel	Product Tanker	1	44,000	1982	65.7
Third Attransco Tanker Corp.	National Steel	Product Tanker	1	44,000	1983	65.7
Second Tug/Barge Corp.	Beth. Sp. Pt. Halter Marine	Tug/Barge	1	47,075	1981	53.7
Third Tug/Barge Corp.	Beth. Sp. Pt. Halter Marine	Tug/Barge	1	47,075	1981	53.7
Fourth Tug/Barge Corp.	Beth. Sp. Pt. Halter Marine	Tug/Barge	1	47,075	1982	53.7
Fifth Tug/Barge Corp.	Beth. Sp. Pt. Halter Marine	Tug/Barge	1	47,075	1982	53.7
C&H Sugar Co.	Sun Ship Halter Marine	Tug/Barge	1	37,000	1981	45.7
U.S. Trust Co.	Avondale	Dredge	1	N.A.	1982	30.2
Great Lakes Dredge & Dock Co.	Southern SB	Dredge	1	N.A.	1982	18.0
Total Private Contracts—FY 1980			**15**	**544,800**		**$766.6**

ice speed of 20 knots, and a range of 12,000 miles. The Navy designation for this design is T-AKX.

MarAd's Security Class Mobilization Ship design program, which was interrupted to expedite the MPS design, is expected to be completed in fiscal year 1981. This design, together with shipyard working plans and technical purchase specifications for the MPS, would allow MarAd to begin rapid construction of cargo ships in the event of emergency mobilization.

As a further extension of the Security Class Mobilization Ship program, the Maritime Administration has prepared a series of concept design studies of an integrated tug/barge for mobilization use.

Due largely to the restricted number of shipways available for building Security Class ships, the need has become evident for another ship design suitable for construction at a larger number of shipyards. The tugs and barges would be separately built in smaller shipyards specializing in those types of vessels and would then be joined for service.

In other areas of ship design during fiscal year 1980, MarAd:

- Completed design and cost studies for a commercial fleet oiler, designated the T-AO, for the Navy. (Two of the feasibility study designs completed last year were chosen by the Naval Sea Systems Command (NAVSEA) for further development at the concept design level.)
- Completed work on the procurement of the National Oceanic and Atmospheric Administration (NOAA) 127-foot combination crabber-trawler fisheries research vessel, CHAPMAN, which was delivered in May 1980.
- Continued work on a 130-foot coastal research vessel for NOAA. (This project, begun last year as a 150-foot fisheries research vessel, was redefined with a subsequent reduction in vessel size to 130 feet.)
- Prepared a concept design study to convert a group of four existing commercial Maine Class (RO/RO) cargo ships to the MPS design. The converted vessels would be almost identical in performance characteristics to the new MPS/T-AKX and would, like any new ships of this design, be operated by the Military Sealift Command (MSC) to maintain military supplies in readiness at various locations around the world.

During the fiscal year, MarAd participated in a number of other computer-aided ship design and ship production projects with the Navy and private industry; prepared a series of design studies in an interagency effort to develop incinerator vessels for the transport and incineration at sea of chemical wastes; completed an analysis of the cost-effectiveness of various

vessel types proposed for transporting coal from East Coast ports to New England electric power plants; and began a new project to develop designs for three conventional colliers to transport coal to foreign or domestic users.

MarAd also prepared a study demonstrating how existing commercial trailerships without external vehicle ramps of their own can be fitted with existing land-based military ramps to permit off-loading of vehicles anywhere in a military emergency. Currently, these ships call at ports with special pierside ramps designed to attach to the ships' loading ports.

The report *Standard Specifications for Slow Speed Diesel Merchant Ship Construction* was issued during the fiscal year. This publication provides guidelines to the maritime industry for development of more fuel-efficient vessels.

In further support of more efficient energy use, the Maritime Subsidy Board allowed American President Lines, Ltd., to substitute fuel-efficient, slow-speed diesel engines for steam turbines in three large containerships being built at Avondale Shipyards with the aid of construction-differential subsidy.

Shipyard Improvements

Despite a continuing worldwide shipping recession and a climate of uncertainty and overcapacity in global shipbuilding, the American shipbuilding and ship repair industry invested $263 million in facilities modernization and expansion during 1980. Plans also were underway to spend an additional $166 million in 1981.

Since enactment of the Merchant Marine Act of 1970, the American shipbuilding industry has invested approximately $2.04 billion in modernization and improvements. These investments have significantly increased the capacity, capability, and productivity of the U.S. shipbuilding industry. In recent years the emphasis has been on expanded ship repair and conversion facilities.

Table 3: NEW SHIPS DELIVERED FROM U.S. SHIPYARDS DURING FY 1980

Owner*	Builder	Type	Vessels
Subsidized			
Lachmar	Gen. Dynamics–Quincy	LNG Carrier	2
American Atlantic Shipping, Inc.	Equitable Shipyards	Multi-purpose Cargo	2
U.S. Trust Co. of N.Y. (VLCC II Corp.)	Newport News SB	Crude Oil Tanker	1
Farrell Lines	Bethlehem–Sparrows Point	Containership	1
Farrell Lines	Bath Iron Works	Containership	1
Waterman Steamship Corp.	Avondale Shipyards	LASH Ship	1
	Total Subsidized Deliveries		**8**
Nonsubsidized			
Atlantic Richfield Co.	National Steel & SB	Crude Oil Carrier	2
Patriot IV Shipping Corp.	Gen. Dynamics–Quincy	LNG Carrier	1
Matson Navigation Co.	Sun Ship	Containership	1
Cooper Steamship Co.	Bay Shipbuilding	Bulk Carrier	1
U.S. Steel Corp.	American Ship Building	Bulk Carrier	1
Bethlehem Steel Corp.	Bay Shipbuilding	Bulk Carrier	1
Great Lakes Dredge & Dock Co.	Southern SB	Dredge	1
	Total Nonsubsidized Deliveries		**8**
Total New Ships Delivered FY 1980			**16**

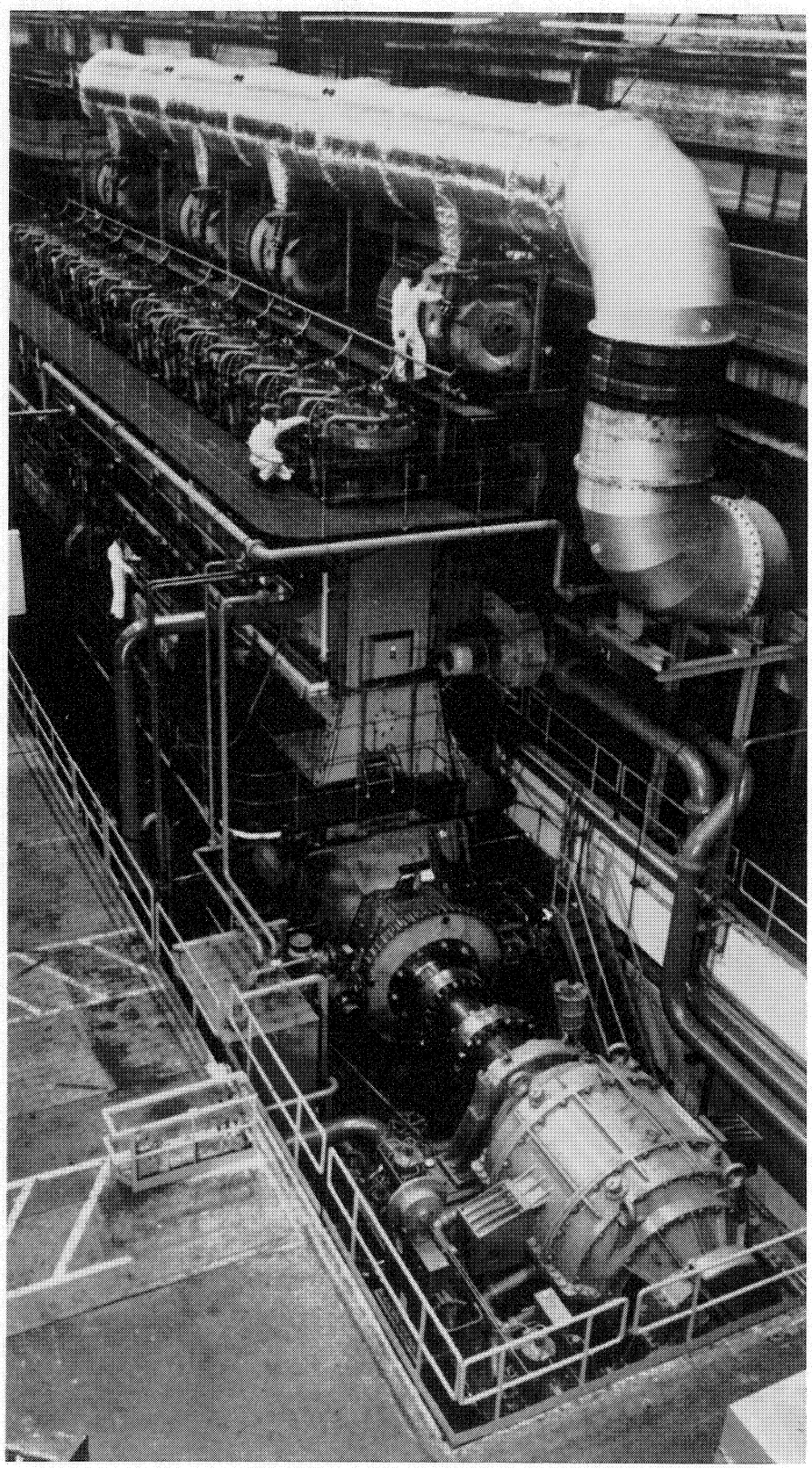
* Bareboat charterer is shown in parentheses if owner is a bank.

Minority Business/Women's Business Enterprise Program

In 1974, MarAd initiated a program to encourage shipping and shipbuilding firms to use minority suppliers and vendors. This program was expanded in 1979 to assist businesses operated by women.

Prior to 1974, less than $1 million per year was transacted between the American maritime industry and minority-owned firms. However, since 1977 such transactions have averaged approximately $15 million per year and this level of participation is expected to continue.

The Agency's efforts to promote the use of women's business enterprise (by including subcontracting clauses in subsidy contracts which specifically address female-owned companies) is expected to enhance their procurement opportunities with the maritime industry.



Workmen at Allis-Chalmers plant in Milwaukee are dwarfed as they check out huge slow-speed diesel engine, first of its kind ever built in United States. Manufactured under licensing agreement with Sulzer Brothers Ltd., engine is first of three of this design scheduled to power new American President Lines containerships under construction at Avondale Shipyards, New Orleans.

Table 4: WORLDWIDE SHIP DELIVERIES—CALENDAR YEAR 1978 (TONNAGE IN THOUSANDS)

Country of Construction	Total All Types No.	Total All Types Deadweight Tons	Combination Pass. & Cargo No.	Combination Pass. & Cargo Deadweight Tons	Freighters No.	Freighters Deadweight Tons	Bulk Carriers No.	Bulk Carriers Deadweight Tons	Tankers No.	Tankers Deadweight Tons
Total	**1,145**	**26,598.9**	**6**	**14.1**	**726**	**7,869.8**	**249**	**9,024.9**	**164**	**9,690.1**
United States	14	1,456.5	—	—	2	32.6	—	—	12	1,423.9
Brazil	20	761.6	—	—	10	98.8	9	384.3	1	278.5
Denmark	26	531.9	1	2.8	18	164.3	4	158.9	3	205.9
Finland	23	464.7	—	—	13	75.8	—	—	10	388.9
France	23	443.0	2	3.3	17	313.5	—	—	4	126.2
Germany, West	76	1,001.0	1	3.0	64	823.7	3	62.4	8	111.9
Italy	17	547.4	—	—	5	71.0	4	303.5	8	172.9
Japan	471	9,297.1	1	3.4	267	3,155.9	150	5,066.4	53	1,071.4
Korea, South	41	1,005.7	—	—	22	323.8	15	317.5	4	364.4
Netherlands	42	492.0	—	—	39	240.4	—	—	3	251.6
Poland	33	840.7	—	—	23	275.1	7	446.5	3	119.1
Rumania	25	405.1	—	—	20	114.1	4	143.4	1	147.6
Spain	64	1,460.2	—	—	53	438.3	4	134.6	7	887.3
Sweden	25	2,509.4	—	—	10	83.6	9	538.7	6	1,887.1
United Kingdom	45	1,558.8	—	—	32	423.9	7	373.0	6	761.9
U.S.S.R.	37	706.3	—	—	23	165.6	10	324.3	4	216.4
Yugoslavia	14	438.2	—	—	5	68.7	2	125.4	7	244.1
All Others	149	2,679.3	1	1.6	103	1,000.7	21	646.0	24	1,031.0

Table 5: SHIP FINANCING GUARANTEES—COMMITMENTS IN FY 1980[1]

Number	Type of Vessel	Company	Amount Guaranteed
Deepdraft Vessels:			
1	Tug/Barge Tanker Unit	Second Tug/Barge Corp.	$ 53,781,000
1	Tug/Barge Tanker Unit	Third Tug/Barge Corp.	53,781,000
1	Tug/Barge Tanker Unit	Fourth Tug/Barge Corp.	53,781,000
1	Tug/Barge Tanker Unit	Fifth Tug/Barge Corp.	53,781,000
3	Cargo	Farrell Lines, Inc.	8,147,000
1	Tanker	Ariadne Corp.	26,805,000
3	Cargo	Prudential Lines, Inc.	3,741,000
1[2]	RO/RO Trailer	Matson Navigation Co.	32,026,750
2	Product Carriers	American Tankships, Inc.	104,860,000
1	Product Carrier	First Attransco Tanker Corp.	57,460,000
1	Product Carrier	Second Attransco Tanker Corp.	57,460,000
1	Product Carrier	Third Attransco Tanker Corp.	57,460,000
1	Deep Notch Tug/Barge Unit	Bulkfleet Marine Ltd. No. 1	17,239,000
1	Deep Notch Tug/Barge Unit	Bulkfleet Marine Ltd. No. 2	17,239,000
1	Tanker	Cambridge Tankers, Inc.	25,700,000
19		**Total Deepdraft Vessels**	**$623,261,750**
Other Types:			
Ocean:			
11	Barges	Foss Launch & Tug Co.	$ 13,576,498
6	Tugs	Foss Launch & Tug Co.	7,273,502
2	Barges	Moran Enterprises Corp.	12,711,804
3	Tugs	Moran Enterprises Corp.	7,127,485
8	Tugs	Tractug Associates	17,320,275
30		**Total Ocean**	**$ 58,009,564**

(Continued on page 10)

Table 5: (Continued)

Number	Type of Vessel	Company	Amount Guaranteed
Other Types:			
River:			
3	Barges	Brown Marine Service, Inc.	$ 1,750,000
1	Barge	Manatee Towing Co.	737,500
1	Tug	Manatee Towing Co.	733,500
85	Barges	Ingram River Equipment, Inc.	15,111,000
1	Tug	Canal Barge Co., Inc.	1,782,000
90	Barges	SCNO Barge Lines, Inc.	18,484,000
15	Barges	Barge Operating Co., Ltd.	3,000,000
2	Barges	Pawg Marine, Inc.	602,000
2	Barges	Ole Man River Barge Co.	1,686,500
1	Tug	Ole Man River Barge Co.	1,113,500
201		**Total River**	**$ 45,000,000**
Drill Service:			
1	Tug/Supply	Ocean Energy Services, Inc.	$ 2,330,000
1	Tug/Supply	Three R Trust	2,068,000
5	Tug/Supply	Pelham Marine, Inc.	13,435,000
1	Tug/Supply	Marsea Marine One, Inc.	2,977,000
1	Tug/Supply	Offshore Southern Ships, Inc.	2,380,000
4	Tug/Supply	Gulf Pacific Partnership	9,893,000
1	Tug/Supply	Marsea Marine Two, Inc.	2,977,000
1	Tug/Supply	Marsea Marine Three, Inc.	2,977,000
1	Tug/Supply	Marsea Marine Four, Inc.	2,977,000
1	Tug/Supply	Marsea Marine Five, Inc.	2,977,000
1	Tug/Supply	Marsea Marine Six, Inc.	2,977,000
7	Supply Crew Boats	Bruce Boat Rentals, Inc.	3,400,000
25		**Total Drill Service**	**$ 51,368,000**
Drill Vessels:			
1	Jackup Drill Barge	Houston Offshore Ltd. III	$ 17,300,000
1[2]	Drilling Tender	Sea Drilling Corp.	2,354,000
1	Jackup Drill Rig	Tideland Ltd. II	17,109,000
3	Jackup Drill Rigs	Global Marine Deepwater Drilling, Inc.	67,735,000
1	Jackup Drill Rig	Broughton Offshore Ltd. II	16,650,000
1	Jackup Drill Rig	Chiles Offshore Ltd. II	11,350,000
1	Jackup Drill Rig	Keyes Offshore, Ltd. III	18,830,000
4	Post Drill Vessels	Goldrus Marine Drilling Co.	33,000,000
4	Jackup Drill Rigs	Marine Drilling, Ltd.	63,087,000
16		**Total Drill Vessels**	**$ 247,415,000**
Miscellaneous:			
1	Self-propelled hopper suction dredge	National Dredging, Inc.	$ 30,579,000
1	Self-propelled hopper dump dredge	North American Trailing Corp.	11,000,000
1	Self-propelled suction dredge	Eagle Dredging Corp.	6,314,000
3		**Total Miscellaneous**	**$ 47,893,000**

Table 5: (Continued)

Number	Type of Vessel	Company	Amount Guaranteed
Lighters:			
176	LASH Lighters	Waterman Steamship Corp.	$ 9,698,000
61	LASH Lighters	Farrell Lines, Inc.	2,798,050
237		**Total Lighters**	**$ 12,496,050**
531	**All Vessels**	**Total Guaranteed**	**$1,085,443,364**

[1] Note: Some numbers have been rounded to nearest dollar.
[2] Not included in ship count, involved second mortgage.

Table 6: FEDERAL SHIP FINANCING GUARANTEES (TITLE XI) PROGRAM SUMMARY (Statutory Limit $9.750 Billion) Principal Liability on September 30, 1980

	Contracts in Force		Applications Pending	
Vessel Types	Vessels Covered	Principal Amount*	Vessels Covered	Principal Amount*
Deepdraft Vessels:				
Tankers	75	$1,774,829,229	33	$ 994,623,750
Cargoes	153	1,235,627,333	22	359,694,250
LNGs	16	1,359,281,400	14	1,634,881,000
Bulk/OBOs	18	317,474,693	8	149,605,000
Total	**262**	**$4,687,212,655**	**77**	**$3,138,804,000**
Other Types:				
Drill Rigs/Ships	68	$ 935,280,328	35	$ 465,658,000
Tugs/Barges/Drill Service	2,441	1,357,053,156	860	529,528,123
Miscellaneous	11	153,702,040	16	147,371,657
Total	**2,520**	**$2,446,035,524**	**911**	**$1,142,557,780**
Total Vessels	**2,782**	**$7,133,248,179**	**988**	**$4,281,361,780**
Shipboard Lighters	**2,118**	**$ 81,736,168**	**409**	**$ 6,571,000**
Total	**4,900**	**$7,214,984,347**	**1,397**	**$4,287,932,780**

*Rounded to the nearest dollar.

Table 7: CAPITAL CONSTRUCTION FUND HOLDERS—SEPTEMBER 30, 1980

A & G Transportation Co.
Aeron Marine Shipping Co.
Alaska Aggregate Corp.
Alaska Riverways, Inc.
Amak Towing Co., Inc.
American Atlantic Shipping, Inc.
American President Lines, Ltd.
American Shipping, Inc.
Aquarius Marine Co.
Ashland Oil, Inc.
Atlantic Richfield Co.
Atlas Marine Co.
Bankers Trust New York Corp.
Bethlehem Steel Corp.
Blue Lines, Inc.
Bob-Lo Co.
Bultema Dock & Dredge Co.
Bultema Marine Transportation Inc.
Cambridge Tankers
Campbell Towing Co.
Cement Transit Co.
Central Gulf Lines, Inc.
Citimarlease (Burmah I), Inc.
Citimarlease (Burmah LNG Carrier), Inc.
Citimarlease (Burmah Liquegas), Inc.
Citimarlease (Fulton), Inc.
Citimarlease (Whitney), Inc.
Cleveland-Cliffs Iron Co.
Cook Inlet Tug & Barge Co.
Cove Maritime Companies, Inc.
Crowley Maritime Corp.
Delta Steamship Lines, Inc.
Dillingham Tug & Barge Corp.
Durocher Dock & Dredge, Inc.
El Paso Arzew Tanker Co.
El Paso Howard Boyd Tanker Co.
El Paso Southern Tanker Co.
Exxon Corp.
Farrell Lines, Inc.
Ford Motor Co.
Foss Alaska Line, Inc.
Foss Launch & Tug Co.
Fred Devine Diving & Salvage, Inc.
GATX Corp.
General Electric Credit & Leasing Corp.
General Electric Credit Corp. of Delaware
Great Lakes Towing Co.
Hannah Brothers
Hannah Marine Corp.
Houston Natural Gas Corp.
Hvide Shipping, Inc.
Inland Steel Co.
Intercontinental Bulktank Corp.
Interstate Marine Transportation Co.
Interstate Towing Co.
Luedtke Engineering Co.
Lykes Bros. Steamship Co., Inc.
Madeline Island Ferry Line, Inc.
Marine Leasing Corp.
Matson Navigation Co.
Middle Rock, Inc.
Moore McCormack Resources, Inc.
National Gypsum Co.
Neuman Boat Line, Inc.
O.L. Schmidt Barge Lines, Inc.
Ogden Corp.
Oglebay Norton Co.
Ohio Barge Line, Inc.
Overseas Bulktank Corp.
Pacific Shipping, Inc.
Prince William Navigation
Prudential Lines, Inc.
Ritchie Transportation Co.
River & Gulf Transportation Co.
S & E Shipping Corp.
Seabulk Tankers Ltd.
Smith Lighterage Co., Inc.
Tidewater, Inc.
Transway International Corp.
Tug Alaska Mariner, Inc.
U.S. Steel Corp.
Union Oil Co. of California
United States Cruises, Inc.
United States Lines, Inc.
Warrior & Gulf Navigation Co.
Washington Island Ferry Line, Inc.
Waterman Steamship Corp.
Western Pioneer Inc.
Windjammer Cruises, Inc.
Worth Oil Transport Co.
Young Brothers, Ltd.
Zidell, Inc.

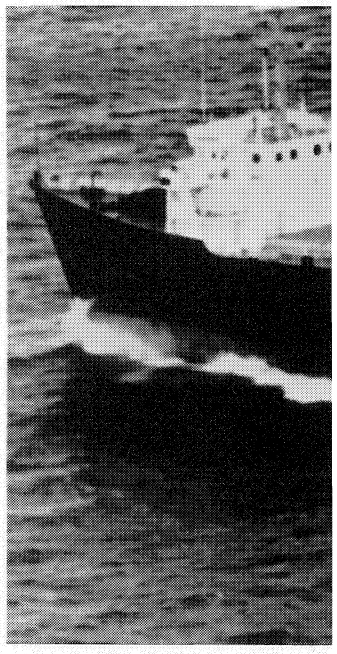
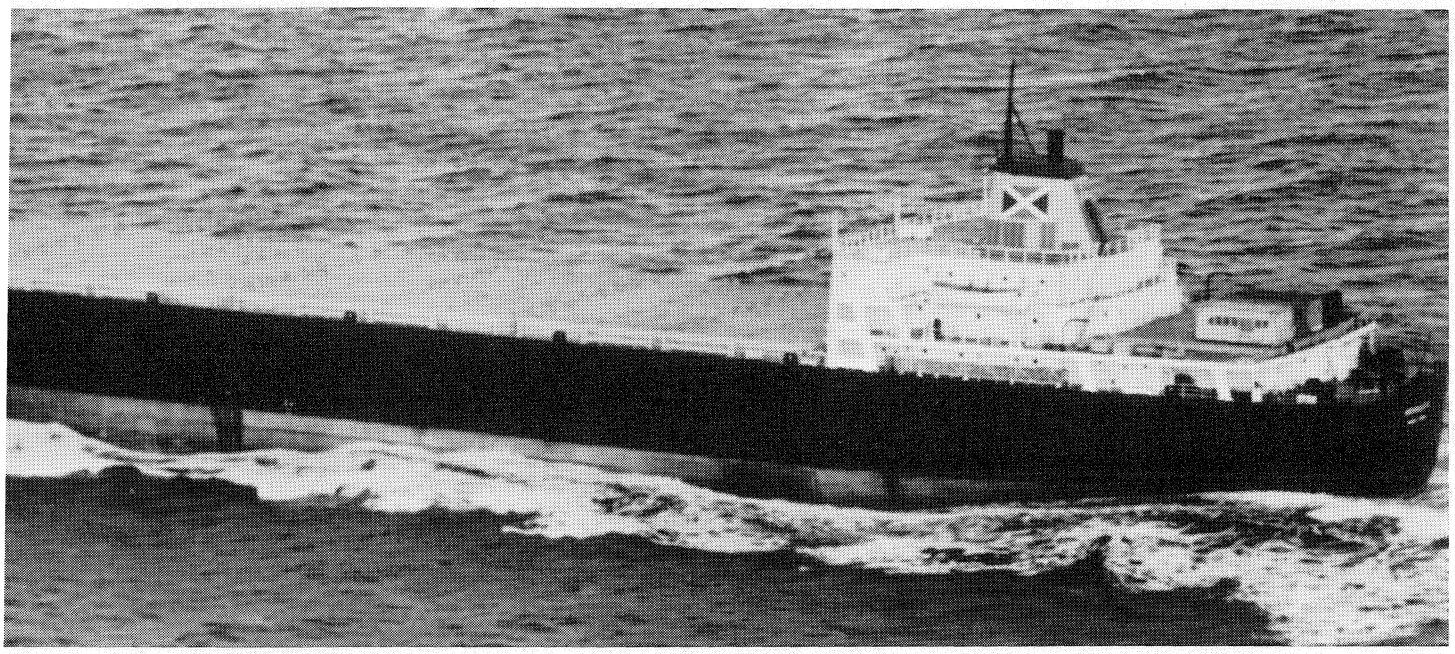


Table 8: CONSTRUCTION RESERVE FUNDS—SEPTEMBER 30, 1980

Company	Balance
Cargo Carriers Inc.	$ 3,154,904
Central Gulf Steamship Corp.	1,000
Chas. Kurz & Co., Inc.	4,277,821
Gulf Mississippi Marine Corp.	100
Ingram Industries Inc.	85,000
Joan Turecamo, Inc.	3,876
Mobil Oil Corp.	3,283,438
National Marine Service Inc.	3,181,203
Port Arthur Towing Co.	1,520,000
Total September 30, 1980	**$15,507,342**
Net Increase Fiscal Year 1980	**$ 5,390,974**

ARGONAUT, one of eight Bath class containerships in Farrell Lines' fleet, undergoes sea trials. Vessel was built by Bath (Maine) Iron Works Corp.



Chapter 2

Ship Operations

U.S. Fleet Profile

At the end of fiscal year 1980, the U.S. flag privately owned, deep-draft merchant fleet (including the Great Lakes fleet listed in Table 18) totaled 722 vessels with a record cargo-carrying capacity of 24 million deadweight tons (dwt.).

This segment of the U.S. fleet included 577 ocean-going vessels of 21 million dwt. (see Table 9), with 532 ships on active status and 45 inactive, averaging 36,435 deadweight tons, an age of about 17 years and a speed of about 17 knots.

The active oceangoing fleet, totaling about 18.9 million dwt., included 103 freighters, 249 tankers, 15 bulk carriers, 142 intermodal vessels (containerships, barge-carrying vessels, and Roll-On/Roll-Off, or RO/RO vanships), 5 combination passenger/cargo ships, 9 integrated tug/barge vessels, and 9 liquefied natural gas (LNG) tankers.

Of the 45 vessels in an inactive status, 24 were laid up and the remainder temporarily inactive, either awaiting cargoes or undergoing repairs.

Employment of the U.S.-flag oceangoing merchant fleet as of September 30, 1980, is shown in Table 10.

Compared to other merchant fleets of the world as of January 1, 1980, the privately owned U.S. fleet was ranked 8th on a dwt. basis and 11th on the basis of number of ships (see Table 11). In terms of average deadweight tonnage per ship, the U.S.-flag fleet was in fifth place.

In calendar year 1979, commercial cargoes carried by ships of all flags in U.S. oceanborne foreign trade reached 823.1 million tons with a value of $242.1 billion. The value of cargo carried by the U.S.-flag fleet was $35.7 billion and the tonnage 35 million.

Commercial cargoes carried in U.S. oceanborne foreign trade from 1970 through 1979 are shown in Table 12.

Operating Subsidy

The Maritime Administration is authorized to pay operating-differential subsidy (ODS) to U.S. shipping companies engaged in foreign trade to offset the higher cost of operating a U.S.-flag vessel in competition against its foreign-flag counterparts.

All modern cargo vessels, including bulk carriers, that operate in essential foreign trades are eligible for ODS. Total subsidy outlays during fiscal year 1980 amounted to $341.4 million.

Subsidy of some $2.8 million was paid to one liner company for voyages in the Great Lakes trade in calendar year 1980.

ODS accruals (excluding the Soviet grain program) from January 1, 1937, to September 30, 1980, totaled $6,066.6 million, recapture amounted to $238.2 million, and $5,680.3 million was paid out, leaving an estimated $148.1 million in net accrued liabilities at the end of this fiscal year.

Operating-differential subsidy accruals and expenditures from January 1, 1937, through September 30, 1980, are summarized in Table 13, and accruals and outlays by shipping lines for the same period in Table 14.

As the fiscal year ended, 22 operators (7 liner and 15 bulk) held 26 ODS agreements (see Table 15), with 165 subsidized vessels in operation on that date.

Corporate/Service Changes

During FY 1980, major rearrangements of corporate structures and/or services were accomplished by three ODS contractors.

Moore McCormack Resources, Inc., was restructured by removing Moore McCormack Bulk Transport Co. and Interlake Steamship Co. as subsidiaries of Moore McCormack Resources. Moore McCormack LNG Carriers also was removed as a subsidiary of Moore McCormack Bulk Transport and made a direct subsidiary of Moore McCormack Resources.

Farrell Lines, Inc., sold two vessels plus its rights to subsidized operation on Trade Route (TR) 15A to Moore McCormack Lines. Farrell also sold four vessels to Central Gulf Lines, one to African Purchasing & Supply Co., and two non-subsidized vessels to American Pacific Container Lines.

Waterman Steamship Corp. bareboat chartered three LASH vessels from Central Gulf Lines and acquired Central Gulf's rights to service TR 17 on a subsidized basis.

Contract Awards

No new long-term ODS agreements for liner or bulk operators were awarded in FY 1980. A short-term interim agreement was executed with Farrell Lines, Inc., pending consideration of the company's application for a new long-term agreement.

Pending Applications

Seven ODS applications, including two from non-subsidized operators, were actively pending on September 30, 1980. By company and services, the non-subsidized applicants included:

- Great Lakes-Atlantic Steamship Co.—to provide liner service between U.S. ports on the Great Lakes and St. Lawrence River, intermediate Canadian Great Lakes ports and other Canadian ports along the general track, and ports in the United Kingdom and Continental Europe.
- First American Bulk Carrier Corp.—to provide dry-bulk service between Oceania and the U.S. Gulf/East Coast and Europe. Unsubsidized container service also is to be provided between Europe and Oceania.

Table 9: U.S. OCEANGOING MERCHANT MARINE—SEPTEMBER 30, 1980[1]

	Privately Owned		Government Owned		Total	
	Ships	Deadweight Tons (000)	Ships	Deadweight Tons (000)	Ships	Deadweight Tons (000)
Active Fleet:						
Combo Passenger/Cargo	5	45	5	39	10	84
Freighters	103	1,406	10	83	113	1,489
Bulk Carriers	15	484	0	0	15	484
Tankers	249	13,147	2	21	251	13,168
Intermodal	142	2,929	2	39	144	2,969
Tug/Barge	9	260	0	0	9	260
LNG	9	646	0	0	9	646
Total Active Fleet	**532**	**18,917**	**19**	**182**	**551**	**19,099**
Inactive Fleet:						
Combo Passenger/Cargo	2	13	53	350	55	363
Freighters	9	123	190	2,056	199	2,178
Bulk Carriers	2	49	0	0	2	49
Tankers	19	1,496	21	329	40	1,825
Intermodal	9	143	3	40	12	183
Tug/Barge	0	0	0	0	0	0
LNG	4	283	0	0	4	283
Total Inactive Fleet	**45**	**2,106**	**267[2]**	**2,774**	**312**	**4,880**
Total Active and Inactive:						
Combo Passenger/Cargo	7	57	58	389	65	447
Freighters	112	1,529	200	2,138	312	3,667
Bulk Carriers	17	533	0	0	17	533
Tankers	268	14,643	23	349	291	14,993
Intermodal	151	3,073	5	79	156	3,151
Tug/Barge	9	260	0	0	9	260
LNG	13	928	0	0	13	928
Total American Flag	**577**	**21,023**	**286[3]**	**2,956**	**863**	**23,979**

[1] Vessels of 1,000 gross tons and over, excluding privately owned tugs, barges, etc.
[2] Includes 5 vessels in bareboat charter and 10 vessels in custody of other Agencies.
[3] National Defense Reserve Fleet consists of 262 ships, of which 22 are scrap candidates other than NDRF. Excluded are 64 vessels owned by U.S. Navy which are in custody of MarAd's Reserve Fleet.
NOTE: Tonnage figures may not add due to rounding.

Five companies with existing ODS contracts had applications pending to provide the following additional services:

- American President Lines, Ltd.—for amendment of its ODS agreement to increase by 26 the maximum number of sailings permitted on its subsidized Line A, California transpacific service, and to delete certain restrictions on the Line A service.
- Farrell Lines, Inc. (American Export Lines Service)—contract renewal for services from U.S. Atlantic and Gulf ports to ports in Western Europe, the Mediterranean Sea, India, the Persian Gulf, Red Sea, and Far East.
- Lykes Bros. Steamship Co., Inc.—for a new long-term contract for services between U.S. Atlantic and Gulf ports and ports in India, the Persian Gulf, Red Sea, and the Mediterranean (TRs 10 and 18). Lykes also has applied for additional service on its newly acquired TR 29.
- Prudential Lines, Inc.—for a long-term contract for services between U.S. Atlantic and Gulf ports and ports in India, the Persian Gulf, and Red Sea (TR 18).
- Waterman Steamship Corp.— for an increase in sailings from 40 to 70 annually on its TR 18 service, from U.S. Atlantic and Gulf ports to ports in India, the Persian Gulf, and Red Sea. Waterman has requested the following privilege service on its TR 18 service: Great Lakes/Africa, Red Sea, Persian Gulf, and India; South and East Africa; and Mediterranean Egypt. Waterman has applied for the addition of two or three vessels to provide its existing TR 18

Table 10: EMPLOYMENT OF U.S.-FLAG OCEANGOING FLEET—SEPTEMBER 30, 1980[1]

Status and Area of Employment	Total		Vessel Type: Combination Pass./Cargo		Freighters		Tankers[2]	
	No.	Deadweight Tons (000)	No.	Deadweight Tons (000)	No.	Deadweight Tons (000)	No.	Deadweight Tons (000)
Grand Total	**863**	**23,979**	**65**	**447**	**488**	**7,425**	**310**	**16,107**
Active Vessels:	**551**	**19,099**	**10**	**84**	**275**	**5,015**	**266**	**14,000**
Foreign Trade	200	5,029	4	37	180	3,617	16	1,375
Nearby Foreign[3]	13	321	1	9	6	52	6	260
Great Lakes-Seaway Foreign	2	29	0	0	2	29	0	0
Overseas Foreign	185	4,679	3	28	172	3,536	10	1,115
Foreign to Foreign	27	1,590	0	0	11	172	16	1,418
Domestic Trade	257	11,259	1	8	45	705	211	10,546
Coastwise	114	3,278	0	0	11	200	103	3,078
Intercoastal	64	3,795	0	0	1	26	63	3,769
Noncontiguous	79	4,186	1	8	33	479	45	3,699
Other U.S. Agency Operations	67	1,221	5	39	39	521	23	661
MSC Charter	48	1,039	0	0	27	399	21	640
Bareboat Charter & Other Custody	19	182	5	39	12	122	2	21
Inactive Vessels	**312**	**4,880**	**55**	**363**	**213**	**2,410**	**44**	**2,107**
Temporarily Inactive	21	807	0	0	6	113	15	694
Laid-Up (Privately Owned)	18	1,217	2	13	8	120	8	1,084
Laid-Up (MarAd-Owned/ Pending Disposition)[4]	11	151	1	10	9	113	1	28
National Defense Reserve Fleet[5]	256	2,623	52	340	190	2,064	20	301

[1] Excludes vessels operating exclusively on the inland waterways and Great Lakes, those owned by the U.S. Army and Navy, and special types such as tugs, cable ships, etc.
[2] Includes 18 dry-bulk vessels.
[3] Nearby foreign trade includes Canada, Mexico, Central America, West Indies, and North Coast of South America.
[4] Other than vessels in the National Defense Reserve Fleet.
[5] Includes 1 vessel of Pacific Far East Line, Inc., and 5 of States Steamship Co. berthed at NDRF.

service as well as the additional privilege service requested. The company also has applied for a new long-term contract for service between U.S. Atlantic and Gulf ports and ports in Indonesia, Malaysia and Singapore (TR 17), such service to be provided with two or three additional vessels.

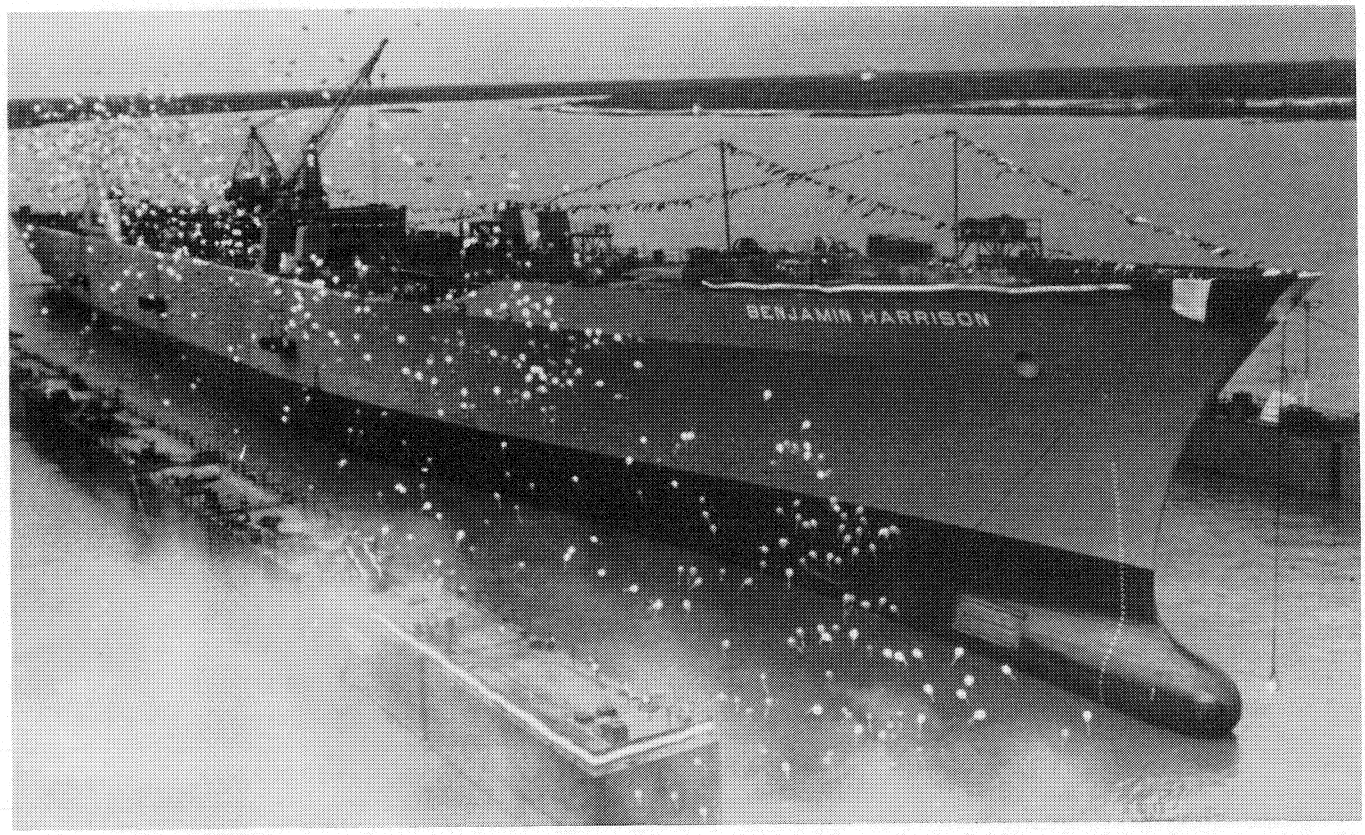
Subsidy Rates

The Subsidy Index System embodied in the Merchant Marine Act of 1970 provides for the payment of seafaring wage subsidies in per diem amounts. The rate of change in the index, computed annually by the Bureau of Labor Statistics, is used as the measure of change in seafaring employment costs.

The Maritime Subsidy Board establishes tentative wage subsidy rates within 90 days of the beginning of each fiscal year for which such rates shall be effective. The tentative FY 1980 rates for all subsidized vessels were completed in September 1979. Tentative rates for FY 1981 were completed in September 1980.

In addition, MarAd substantially completed all final 1977 subsidy rates applicable to liner and passenger vessels in liner service.

In the Soviet Grain Program, final rates have been completed for 320 of the 327 subsidized voyages by U.S. flag vessels since the inception of the program in FY 1973.



Waterman Steamship's LASH BENJAMIN HARRISON, engulfed by balloons as she is christened at Avondale Shipyards (top photo) in 1980, carries full load of lighters aboard ship (below) as she enters service.

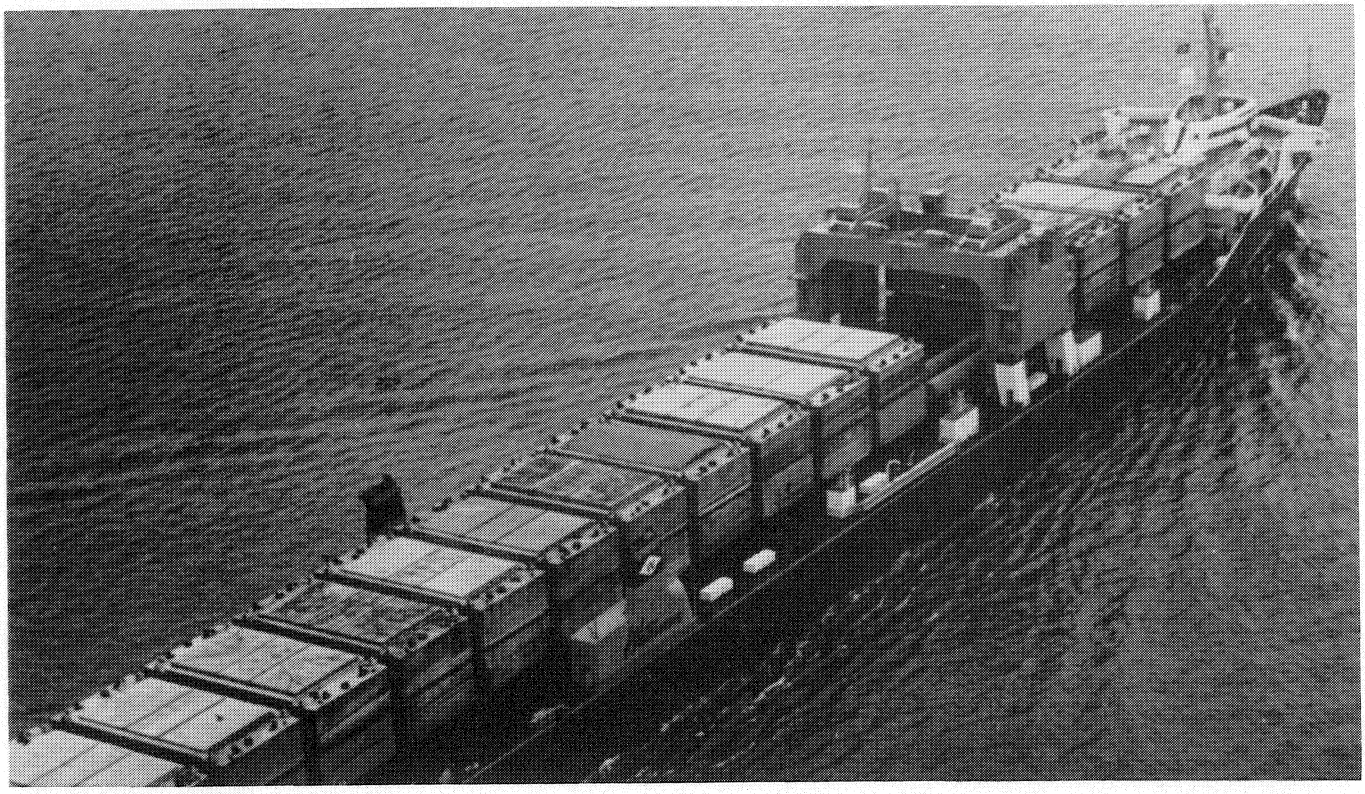


Table 11: MAJOR MERCHANT FLEETS OF THE WORLD—JANUARY 1, 1980

Country	No. of Ships[1]	Rank by No. of Ships[2]	Deadweight Tons	Rank by Deadweight Tonnage
Liberia	2,380	3	158,702,000	1
Greece	2,876	1	63,542,000	2
Japan	1,751	5	61,192,000	3
United Kingdom	1,110	6	41,937,000	4
Norway	632	9	39,494,000	5
Panama	2,347	4	35,257,000	6
U.S.S.R.	2,512	2	21,590,000	7
United States (Privately Owned)	569	11	20,540,000	8
France	359	17	19,884,000	9
Italy	624	10	18,489,000	10
Spain	506	12	12,656,000	11
Germany (Federal Republic)	502	13	12,485,000	12
Singapore	667	7	12,341,000	13
China (People's Republic of)	645	8	9,372,000	14
India	363	16	9,100,000	15
All others[3]	6,955		114,321,000	
Total	**24,798**		**650,902,000**	

[1] Oceangoing merchant ships of 1,000 gross tons and over.
[2] By number of ships, Cyprus ranked 14th with 457 vessels aggregating 2,991,100 dwt., and the Netherlands ranked 15th with 450 vessels aggregating 8,165,000 dwt.
[3] Includes 296 United States Government-owned ships of 3,049,000 dwt.

Soviet Grain ODS

The United States and the U.S.S.R. are parties to a 6-year maritime agreement, effective January 1, 1976, which facilitated U.S.-flag participation in bilateral trade between the two nations, including the carriage of grain exports to the Soviet Union. This agreement succeeded a 3-year pact signed in October 1972.

Since the first agreement was signed, more than 67.8 million metric tons of American grain have been purchased by the Soviet Union. U.S.-flag ships have carried 12.4 million tons of that total.

The exported grain is carried under a 5-year grain agreement which became effective October 1, 1976. The agreement calls for the Soviet Union to purchase at least 6 million metric tons of grain each year from U.S. suppliers with the option, within certain guidelines, of increasing these purchases to 8 million metric tons per year. Purchases beyond that level require U.S. Government approval. During the fiscal year, the President embargoed the sale of any grain to the U.S.S.R. in excess of the 8 million tons permitted under the guidelines.

As of September 30, 1980, 35 operators held short-term ODS agreements covering 49 vessels for the carriage of agricultural commodities from U.S. ports to the Soviet Union (see Table 16). Subsidy outlays during FY 1980 for previous voyages under the special Soviet grain agreements totaled $6.4 million (see Table 13).

These ODS agreements provide that within 1 year after termination of a grain voyage, operators shall submit their actual subsidized costs to determine the total subsidy due on each voyage completed.

Since the program was begun in FY 1973, operators have accrued $146.4 million in ODS. Of this accrual, $143.7 million has been paid, leaving an estimated unpaid balance of $2.7 million at the end of the fiscal year.

Grain Freight Rates

The U.S.-U.S.S.R. freight rate agreement for U.S.-flag vessels, in effect for grain voyages started after December 31, 1979, and continuing through December 30, 1980, provided for a charter rate to be determined monthly. The rate was calculated by multiplying an index ratio by the monthly average charter rate for the U.S. Gulf/Holland-Belgium grain trade, as published in the *Daily Freight Register*. In addition, a minimum rate of $25 per long ton was set for voyages by U.S.-flag vessels during calendar year 1980.

Rates calculated during the year ranged from a low of $28.18 in March to a high of $38 in August. (However, no U.S.-flag vessels were chartered in the U.S.-U.S.S.R. grain trade between January and October 1980, partly as a result of the grain embargo.)

A U.S.-U.S.S.R. conference to discuss the fifth year of the agree-

Table 12: U.S. OCEANBORNE FOREIGN TRADE/COMMERCIAL CARGO CARRIED

Tonnage (Millions)

Calendar Year	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979
Total Tons	473.2	457.4	513.6	631.6	628.9	615.6	698.8	775.3	775.6	823.1
U.S.-Flag Tons	25.2	24.4	23.8	39.9	40.9	31.4	33.8	34.8	32.1	35.0
U.S. Percent of Total	5.3	5.3	4.6	6.3	6.5	5.1	4.8	4.5	4.1	4.2
Liner Total Tons	50.4	44.2	44.6	51.3	51.4	44.3	49.8	47.8	56.5	57.0
Liner U.S.-Flag Tons	11.8	10.1	9.8	13.2	15.3	13.6	15.4	14.4	16.0	15.7
Liner U.S. Percent	23.5	22.9	21.9	25.8	29.8	30.7	30.9	30.2	28.3	27.5
Non-Liner Total Tons	240.7	220.7	242.6	281.9	282.7	275.3	289.6	289.0	308.8	342.7
Non-Liner U.S.-Flag Tons	5.4	4.8	3.8	4.5	5.0	3.8	4.9	5.7	4.5	3.6
Non-Liner U.S. Percent	2.2	2.1	1.6	1.6	1.8	1.4	1.7	2.0	1.5	1.0
Tanker Total Tons	182.1	192.5	226.4	298.4	294.8	296.0	359.4	438.6	410.3	423.4
Tanker U.S.-Flag Tons	8.0	9.5	10.2	22.2	20.5	14.0	13.6	14.6	11.6	15.7
Tanker U.S. Percent	4.4	4.9	4.5	7.4	7.0	4.7	3.8	3.3	2.8	3.7
					Value ($ Billions)					
Total Value	49.7	50.4	60.5	84.0	124.2	127.5	148.4	171.2	195.8	242.1
U.S.-Flag Value	10.3	9.9	11.1	15.9	22.0	22.4	26.4	28.0	30.7	35.7
U.S. Percent of Total	20.7	19.6	18.4	18.9	17.7	17.5	17.8	16.4	15.7	14.7
Liner Total Value	33.5	32.4	37.4	49.6	63.4	64.0	75.8	82.3	99.9	117.6
Liner U.S.-Flag Value	9.7	9.2	10.3	14.4	19.4	20.0	23.9	25.2	28.6	32.5
Liner U.S. Percent	28.8	28.4	27.7	29.1	30.6	31.2	31.6	30.7	28.6	27.6
Non-Liner Total Value	12.2	13.2	17.4	25.2	34.7	36.6	38.2	42.7	52.5	62.0
Non-Liner U.S.-Flag Value	.4	.4	.4	.7	.8	1.0	1.1	1.2	1.0	1.1
Non-Liner U.S. Percent	3.3	3.1	2.4	2.5	2.3	2.8	2.8	2.8	1.8	1.7
Tanker Total Value	4.0	4.9	5.7	9.2	26.0	26.9	34.4	46.2	43.4	62.5
Tanker U.S.-Flag Value	.2	.3	.4	.8	1.8	1.4	1.4	1.6	1.1	2.1
Tanker U.S Percent	5.6	5.5	6.2	9.1	6.9	5.1	4.2	3.5	2.7	3.4

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

ment was scheduled for December 1980.

Soviet Grain ODS Awards

During FY 1980, three new operators with one ship each were awarded short-term ODS contracts under the Soviet grain program, and five existing operators with a total of 15 ships terminated their contracts. Thus, net reductions of two operators and 12 vessels were recorded during the year.

China Maritime Agreement

The United States and the People's Republic of China (P.R.C.) signed an Agreement on Maritime Transport in September 1980. The agreement calls for a sharing of U.S.-P.R.C. bilateral trade cargoes on the basis of one-third each, with the remainder available to third-flag ships. A grain sales/purchase agreement also was signed by the two countries. It provides for the United States to sell the P.R.C. up to 24 million tons of grain over a 4-year period.

(For additional details on the maritime agreement, see Chapter 10.)

Trade-Ins

During FY 1980, one subsidized operator, Farrell Lines, Inc., traded in eight vessels against new construction, under Section 510 of the Merchant Marine Act of 1936, as amended. The ships—five C4 and three C3 vessels—were traded in against the delivery of the AUSTRAL PIONEER. The trade-ins continued in operation under a use-hire agreement until delivery of the new vessel.

Table 13: ODS ACCRUALS AND OUTLAYS—JANUARY 1, 1937, TO SEPTEMBER 30, 1980

Calendar Year of Operation	Accruals			Outlays		
	Subsidies	Recapture	Net Subsidy Accrual	In FY 1980	Total Amount of Net Accrual Paid	Net Accrual 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	179,727,400	4,929,404	174,797,996	-0-	174,467,393	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	222,862,970	3,673,790	219,189,180	-0-	219,189,180	-0-
1969	233,201,233	2,217,144	230,984,089	-0-	228,038,947	2,945,142
1970	232,686,761	(1,908,643)	234,595,404	-0-	234,449,812	145,592
1971	203,401,051	(2,821,259)	206,222,310	-0-	205,261,360	960,950
1972	192,512,930	-0-	192,512,930	-0-	190,732,158	1,780,772
1973	220,831,202	-0-	220,831,202	-0-	219,468,476	1,362,726
1974	228,590,811	-0-	228,590,811	-0-	218,554,166	10,036,645
1975	264,993,597	-0-	264,993,597	(1,371,429)	258,615,299	6,378,298
1976	283,679,736	-0-	283,679,736	(2,823,465)	269,037,444	14,642,292
1977	300,272,673	-0-	300,272,673	2,109,191	288,365,481	11,907,192
1978	292,991,393	-0-	292,991,393	3,450,153	276,780,116	16,211,277
1979	276,213,227	-0-	276,213,227	88,190,103	262,564,174	13,649,053
1980	313,139,000	-0-	313,139,000	245,397,837	245,397,837	67,741,163
Total Regular ODS	$6,066,557,998	$238,186,435	$5,828,371,563	$334,952,390	$5,680,279,858	$148,091,705
Soviet Grain Programs	$ 146,444,444	-0-	$ 146,444,444	$ 6,415,846	$ 143,741,984	$ 2,702,460
Total ODS	**$6,213,002,442**	**$238,186,435**	**$5,974,816,007**	**$341,368,236**	**$5,824,021,842**	**$150,794,165**

Passenger Service

During the fiscal year, the Maritime Administration agreed to extend the closing date for the sale of the UNITED STATES to March 17, 1981. The world's fastest passenger ship and the last of America's big transatlantic liners, this vessel was acquired by the Government in 1973 under provisions of Public Law 92–296. On September 29, 1978, United States Cruises, Inc., Seattle, Wash., signed a contract to purchase the ship for $5 million.

Also during this reporting period, the "Big U" was placed in drydock for inspection.

In addition, legislation was enacted in FY 1980 to permit the UNITED STATES and other subsidy-built passenger ships to operate in the domestic cruise service. The law also allows certain vessels which had been sold foreign to be re-flagged as U.S. cruise ships. In addition to the UNITED STATES, the MONTEREY, MARIPOSA, OCEANIC INDEPENDENCE, and SANTA ROSA are covered by the legislation.

Royal Hawaiian Cruise Lines, San Francisco, Calif., sought a Federal loan and loan guarantees to purchase and operate the MONTEREY in West Coast/Hawaii cruises. But, of the ships included in the legislation, only the OCEANIC INDEPENDENCE, operated by American Hawaii Cruises, Inc., San Francisco, began a full-ocean cruise service. In addition, American Cruise Lines operated two coastal cruising vessels along the Atlantic Coast.

On September 30, 1980, the active U.S.-flag seagoing passenger fleet consisted of four combination passenger/cargo vessels, the SSs SANTA MAGDALENA, SANTA MARIA, SANTA MARIANA, and SANTA MERCEDES, operated by Delta Steamship Lines, Inc. The ships offer 22 voyages a year with approximately 100 passenger berths per voyage. The ships depart from the U.S. West Coast and circumnavigate South America.

Limited accommodations aboard cargo ships for up to 12 passengers per vessel were available from six U.S.-flag liner operators: Farrell Lines, Inc.; Moore McCormack Lines, Inc.; Lykes Bros. Steamship Co., Inc.; Prudential Lines, Inc.; American President Lines, Ltd.; and Delta.

On the inland waterways, two traditionally styled steamboats provided a variety of cruises on the Mississippi and Ohio Rivers.

Table 14: OPERATING-DIFFERENTIAL SUBSIDY ACCRUALS AND OUTLAYS BY LINES—JANUARY 1, 1937, TO SEPTEMBER 30, 1980

Lines	Accruals			ODS Paid	Net Accrued Liability
	ODS	Recapture	Net Accrual		
Aeron Marine Shipping	$ 16,261,397	$ -0-	$ 16,261,397	$ 13,451,774	$ 2,809,623
American Banner Lines[1]	2,626,512	-0-	2,626,512	2,626,512	-0-
American Diamond Lines[1]	185,802	28,492	157,310	157,310	-0-
American Export Lines[2]	705,404,468	10,700,587	694,703,881	683,793,607	10,910,274
American Mail Line[3]	160,070,409	7,424,901	152,645,508	150,815,838	1,829,670
American President Lines[3]	751,886,607	17,676,493	734,210,114	720,378,716	13,831,398
American Shipping	5,824,089	-0-	5,824,089	4,792,368	1,031,721
American Steamship	111,751	-0-	111,751	76,462	35,289
Aquarius Marine Company	7,571,550	-0-	7,571,550	5,472,698	2,098,852
Aries Marine Shipping	16,883,809	-0-	16,883,809	14,002,996	2,880,813
Atlantic & Carribean S/N[1]	63,209	45,496	17,713	17,713	-0-
Atlas Marine Company	6,394,266	-0-	6,394,266	4,746,817	1,647,449
Baltimore Steamship[1]	416,269	-0-	416,269	416,269	-0-
Bloomfield Steamship[1]	15,588,085	2,613,688	12,974,397	12,974,397	-0-
Chestnut Shipping Company	12,199,093	-0-	12,199,093	9,833,047	2,366,046
Delta Steamship Lines	337,207,072	8,185,313	329,021,759	313,614,810	15,406,949
Ecological Shipping Co.	4,194,586	-0-	4,194,586	2,843,232	1,351,354
Farrell Lines	429,354,820	1,855,375	427,499,445	411,158,735	16,340,710
Prudential Lines[4]	579,925,595	24,223,564	555,702,031	548,019,077	7,682,954
Gulf & South American Steamship[5]	34,471,780	5,226,214	29,245,566	29,245,566	-0-
Lykes Bros. Steamship	887,702,209	52,050,599	835,651,610	808,076,937	27,574,673
Margate Shipping	30,469,154	-0-	30,469,154	26,937,639	3,531,515
Moore McCormack Bulk Transport	21,086,376	-0-	21,086,376	18,219,634	2,866,741
Moore McCormack Lines	571,086,027	17,762,445	553,323,582	543,872,749	9,450,833
N.Y. & Cuba Mail Steamship[1]	8,090,108	1,207,331	6,882,777	6,882,777	-0-
Oceanic Steamship[6]	114,749,126	1,171,756	113,577,370	112,775,925	801,445
Pacific Argentina Brazil Line[1]	7,963,939	270,701	7,693,238	7,693,238	-0-
Pacific Far East Lines[7]	292,197,331	23,479,204	268,718,127	260,823,724	7,894,403
Pacific Shipping Inc.	6,145,979	-0-	6,145,979	4,892,519	1,253,460
Prudential Steamship[1]	26,098,640	1,680,796	24,417,844	24,417,844	-0-
Sea Shipping[1]	25,819,800	2,429,102	23,390,698	23,390,698	-0-
States Steamship	228,265,238	5,110,997	223,154,241	219,703,580	3,450,661
U.S. Lines[8]	584,187,406	54,958,689	529,228,717	529,228,717	-0-
Waterman Steamship	153,163,325	-0-	153,163,325	147,030,474	6,132,852
Worth Oil Transport	6,626,011	-0-	6,626,011	5,599,950	1,026,061
Zapata Products	16,169,786	-0-	16,169,786	12,283,827	3,885,959
South Atlantic Steamship[1]	96,374	84,692	11,682	11,682	-0-
Total Regular ODS	$6,066,557,998	$238,186,435	$5,828,371,563	$5,680,279,858	$148,091,705
Soviet Grain Programs[9]	$ 146,444,444	$ -0-	$ 146,444,444	$ 143,741,984	$ 2,702,460
Total ODS	**$6,213,002,442**	**$238,186,435**	**$5,974,816,007**	**$5,824,021,842**	**$150,794,165**

[1] No longer subsidized or combined with other subsidized lines.
[2] AEL was acquired by Farrell Lines March 29, 1978.
[3] APL merged its operations with AML's October 10, 1973.
[4] Changed from Prudential-Grace Lines, Inc. August 1, 1974.
[5] Purchased by Lykes Bros. Steamship Co.
[6] Purchased by Pacific Far East Line, Inc.
[7] Went into receivership August 2, 1978.
[8] Ceased to be a subsidized line in November 1970.
[9] Included 35 subsidized operators as of September 30, 1980.

An extensive ferry system is operated in Alaska. This system provides passenger, vehicle, and some freight service, linking the State's ports with one another and with the lower 48 States through Seattle, Wash.

Section 804 Activities

Section 804 of the Merchant Marine Act of 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 U.S.-flag service, without prior approval by the Secretary of Commerce. The prohibition also applies to any officers, directors, agents, or executives of such an organization.

During FY 1980, MarAd granted or extended seven waivers under Section 804, as follows:

- Waterman Steamship Corp.— extensions of two existing waivers for foreign-flag operations of its affiliate Coordinated Caribbean Transport, Inc., between Miami, Central America, and Ecuador until December 31, 1980.
- Farrell Lines, Inc.—extensions of two waivers related to the award of a 1-year interim ODS agreement, to permit Farrell to continue to own an interest in Denco Shipping Lines, a feeder service at Monrovia, Liberia; and to permit Farrell to act as husbanding agent for Compagnie Maritime Zairoise in U.S. Atlantic ports. Farrell also received a 6-month waiver for the time charter of the STRIDER DIAMOND in a feeder

ARCO CALIFORNIA, designed and built by National Steel and Shipbuilding Co., San Diego, was delivered to Atlantic Richfield Co. in July 1980. Vessel is fourth in 188,500-deadweight-ton San Diego class delivered by NASSCO, second to ARCO.

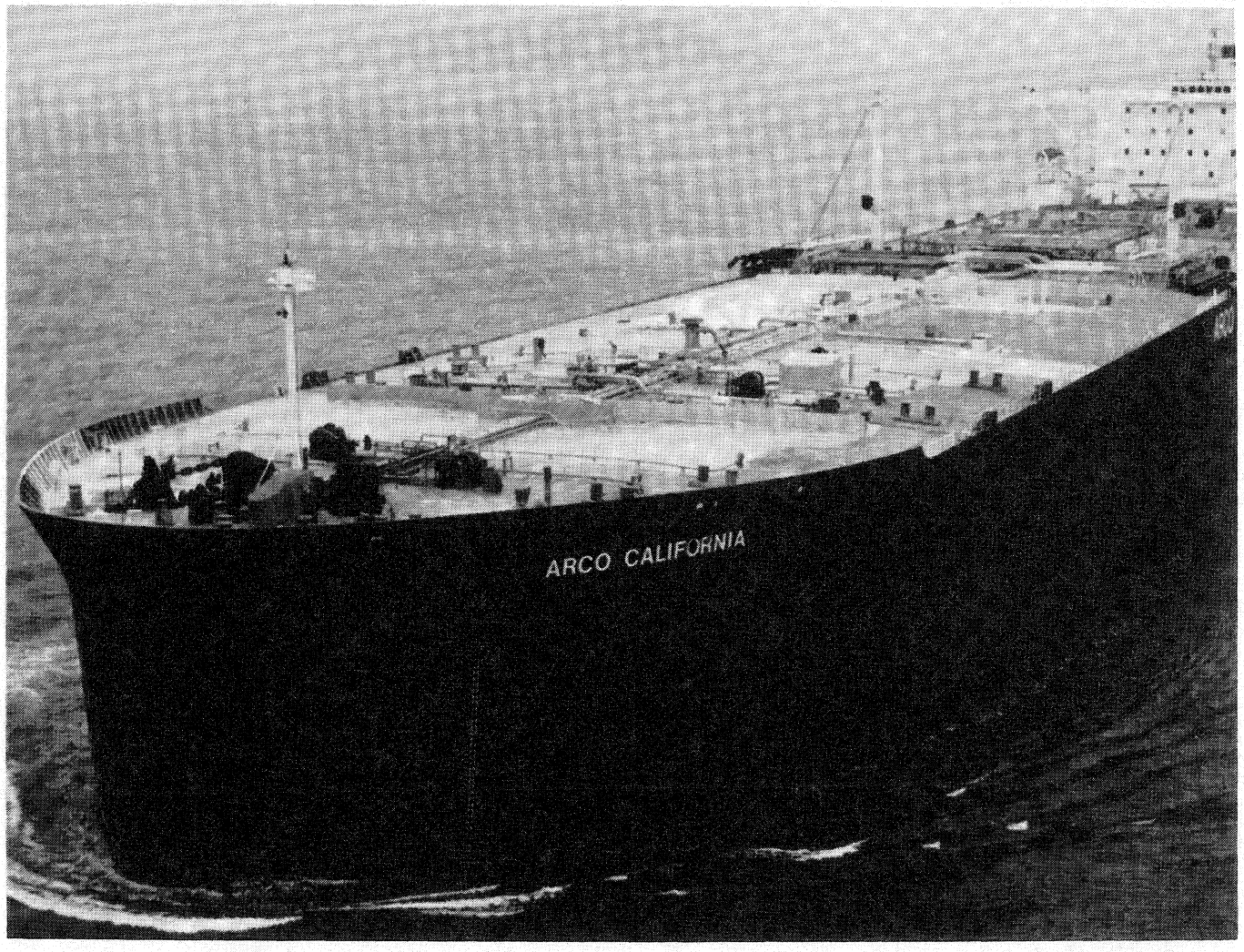


Table 15: ODS CONTRACTS IN FORCE—SEPTEMBER 30, 1980

A. Liner Trades:

Operator and Contract No.	Contract Duration	Number of Subsidized Ships	Service (Trade Route/Area)	Annual Sailings Minimum	Annual Sailings Maximum	
American President Lines, Ltd. MA/MSB-417	1-01-78 to 12-31-97	22	Transpacific Services:[1]			
			California/Far East Line A (TR 29)	50	82	
			California/Far East Line A Extension (TRs 17, 18, 29)[2, 3]	18	28	
			Washington-Oregon/Far East Line B (TR 29)	54	80	
			Washington-Oregon/Far East Line B Extension (TRs 28, 29)[4]	6	—	
Delta Steamship Lines, Inc. MA/MSB-353	1-01-76 to 12-31-95	11	U.S. Gulf/East Coast South America (TR 20)	26	Overall maximum not to exceed 77	
			U.S. Gulf/West Africa (TR 14-2)	24		
Delta Steamship Lines, Inc. MA/MSB-425	6-17-78 to 12-31-97	13	U.S. Atlantic/West Coast South America (TR 2)	48	62	
			U.S. Atlantic/Caribbean (TR 4)	22	33	
			U.S. Pacific/Caribbean, East and West Coasts South America, Mexico, Central America (TRs 23, 24, 25)	25	42	
Farrell Lines, Inc. MA/MSB-352	1-01-76 to 12-31-95	8	U.S. Atlantic/West Africa (TR 14-1)	20	Overall Maximum not to exceed 89	
			U.S. Atlantic & Gulf/Australia & New Zealand (TR 16)	16		
			U.S. West Coast/Australia & New Zealand (TR 27)	14	24	
Farrell Lines Inc. (American Export Lines Services) MA/MSB-462	1-01-80 to 12-31-80	16	1. U.S. Atlantic/Mediterranean-India Service (TRs 10, 13, 18)	68	95	
			a. Mediterranean Subservice	50	70	
			b. India Subservice	18	25	
			2. U.S. North Atlantic/Western Europe (TR 5-7-8-9)	40	55	
Lykes Bros. Steamship Co., Inc. MA/MSB-451	1-01-79 to 12-31-98	44	U.S. Gulf/U.K.-Continent (TR 21)	36	60[5]	Overall maximum not to exceed 318
			U.S. Gulf/Mediterranean (TR 13)	42	48	
			U.S. Gulf/Far East (TR 22)	36	60[6, 7]	
			U.S. Gulf/South & East Africa (TR 15-B)	18	24[5]	
			(TR 31)	24	36	
			U.S. Pacific/Far East (TR 29)	20	80[8]	
			U.S. Pacific/Far East (TR 17/29)	20		
Moore McCormack Lines, Inc. MA/MSB-338	1-01-75 to 12-31-94	13	U.S. Atlantic/East Coast South America (TR 1)	40	70	
			U.S. Atlantic/South & East Africa (TR 15-A)	13	20	
Prudential Lines, Inc. MA/MSB-421	1-01-78 to 12-31-97	3	U.S. North Atlantic/Mediterranean (TR 10)	24	36	

(Continued on page 24)

Table 15: (Continued)

Operator and Contract No.	Contract Duration	Number of Subsidized Ships	Service (Trade Route/Area)	Annual Sailings Minimum	Annual Sailings Maximum
Waterman Steamship Corp. MA/MSB-115	6-04-71 to 6-03-91	5	U.S. Atlantic-Gulf/India, Persian Gulf & Red Sea, Indonesia, Malaysia, Singapore,	30	40
			Brunei (TRs 18, 17)	30	40
Waterman Steamship Corp. MA/MSB-378	10-26-76 to 10-25-96	1	U.S. Atlantic-Gulf/Far East, Indonesia, Malaysia, Singapore, Brunei (TRs 12, 22, 17)	10	18[9]
Waterman Steamship Corp. MA/MSB-450	11-21-78 to 11-20-98	2	U.S. Gulf/Western Europe (TR 21)	24	35[10]
Total Liner Trades		**138**			

[1] Dual service privileges provide that sailings made by vessels calling at ports in both California (Line A) and Washington-Oregon (Line B) count toward the minimum and maximum sailings specified for each area with the outbound and inbound portions of the sailings being counted and applied separately to determine the number of sailings serving each area.
[2] Service to/from U.S. Atlantic ports is on a privilege basis with a maximum of 28 sailings.
[3] Includes required service to Indonesia, Malaysia (except Sarawak and Sabah) and Singapore. Numbers of required sailings are a portion of the required sailings on Line A.
[4] Includes required service to Indonesia, Malaysia and Singapore. Numbers of required sailings are a portion of the required sailings on Line B.
[5] Exclusively, Sea Barge Carriers operate on TR-21. Each sailing of a Sea Barge Carrier counts as two sailings toward the contractual minimum/maximum of 36/60; thus, actual sailing min/max for Sea Barge Carriers is 18/30.
[6] Lykes has the option to perform additional sailings on TRs 22 and 15-B over maximum sailings: On TR 22, 9 additional sailings; on TR 15-B, 5 additional sailings. The overall maximum must not exceed 318 annual sailings.
[7] Subject to the stipulation that a minimum of 12 and a maximum of 30 sailings per annum shall include ports in the following described area: Indonesia and Malaysia (including Singapore).
[8] Except on TR 17/29, one sailing by a C7-S-95a in any service of the operator shall count as 1¼ sailings against the contractually required minimum and maximum in such services. Dual service privileges provide that sailings made by vessels calling at both U.S. Gulf and U.S. Pacific ports count toward the minimum and maximum sailings on TR 22 and on TR 17/29.
[9] The minimum/maximum requirement of 10/18 sailings per annum is based upon the operation of five C4 Mariners on TRs 12 and 22. The five Mariners are to be replaced by two LASH vessels. The first LASH was delivered in this reporting period and the second was scheduled for delivery in late 1980. Minimum/maximum sailing requirements shall be reduced to 8/12 when the second LASH enters service.
[10] The minimum/maximum requirement of 24/35 sailings per annum is based upon the operation of four C4 vessels on TR 21. The four C4 vessels are to be replaced by two RO/RO container vessels. The first RO/RO container vessel is scheduled for delivery in April 1981 and the second RO/RO container vessel for delivery in July 1981. Minimum/maximum sailing requirements shall be reduced to 16/24 when the second RO/RO container vessel enters service.

service between Italy and India.
- U.S.S.R. grain carriage—three new waivers granted. In addition, previously granted waivers for 32 companies were updated and renewed to allow continued operations in the special Soviet grain ODS program.

International Bulk Trade

Generally depressed freight rates continued to plague the world liquid bulk trades during FY 1980. Rates declined as a result of a decreased demand for tanker vessels stemming, in turn, from increased conservation by oil-importing countries, worldwide economic conditions, continuing price escalation, and increasing supply manipulation by producing countries.

The market was also severely hurt by political upheaval in Iran and, late in the year, by the Iranian-Iraqi war which reduced crude exports from those two countries. This situation strongly affected freight rates for the ultra large and very large crude carriers (ULCCs and VLCCs, respectively). Industry experts do not expect world tanker supply and demand, especially for VLCCs and ULCCs, to balance again until the mid-1980s. Handy-size tankers in the 80,000-dwt. range continued to be the most sought after.

The world dry-bulk trades fared better overall than liquid-bulk trades. Freight rates remained strong in coal, metallic ores, and phosphate rock.

Foreign Transfers

During the fiscal year, the Maritime Administration approved the transfer of 58 ships of 1,000 gross tons and over to foreign firms. Thirty-two were sold for scrapping abroad (see Table 17).

Permission also was granted for the foreign transfer of 406 vessels of less than 1,000 gross tons during the fiscal year. These included 196 commercial and 210 pleasure craft.

In addition, MarAd approved charters to aliens for 91 U.S.-owned ships of over 1,000 gross tons and 910 under 1,000 gross tons.

Pursuant to Public Law 89–346 and 46 CFR 221.21–221.30, approval was granted during the year for 57

Table 15: (Continued)

B. Bulk Trades:

Operator and Contract No.	ODS Agreements: Contract Effective Date	ODS Agreements: Contract Termination Date	Number of Subsidized Ships 9/30/80	Service	Annual Sailings: Minimum No. of Days
Aeron Marine Shipping Co. MA/MSB-166	10-10-74	10-09-94	2	Worldwide Bulk Trade	335
American Shipping, Inc. MA/MSB-272	4-14-76	4-13-96	1	Worldwide Bulk Trade	335
Aquarius Marine Co. MA/MSB-309	10-15-75	10-14-95	1	Worldwide Bulk Trade	335
Aries Marine Shipping Co. MA/MSB-129	8-09-73	8-08-93	2	Worldwide Bulk Trade	335
Atlas Marine Co. MA/MSB-274	12-30-76	12-29-96	1	Worldwide Bulk Trade	335
Chestnut Shipping Co. MA/MSB-299	12-01-76	11-30-96	2	Worldwide Bulk Trade	335
Equity Carriers, Inc. MA/MSB-439	Not yet effective[1]	20 years from effective date	3	Worldwide Bulk Trade	335
Margate Shipping Co. MA/MSB-134	12-28-73	12-27-93	3	Worldwide Bulk Trade	335
Moore McCormack Bulk Transport, Inc. MA/MSB-295	12-10-75	12-09-95	3	Worldwide Bulk Trade	335
Pacific Shipping Inc. MA/MSB-273	7-24-76	7-23-96	1	Worldwide Bulk Trade	335
Suwannee River Finance, Inc. MA/MSB-440	Not yet effective[1]	20 years from effective date	1	Worldwide Bulk Trade	335
Suwannee River Phosphate Finance, Inc. MA/MSB-442	Not yet effective[1]	20 years from effective date	1	Worldwide Bulk Trade	335
Suwannee River Spa Finance, Inc. MA/MSB-441	Not yet effective[1]	20 years from effective date	1	Worldwide Bulk Trade	335
Worth Oil Transport Co. MA/MSB-271	2-20-76	2-19-96	1	Worldwide Bulk Trade	335
Zapata Products Tankers, Inc. MA/MSB-167	4-03-76	4-02-96	4	Worldwide Bulk Trade	335
Total Bulk Trades			**27**		

[1] These contracts have been approved, subject to delivery of the vessels and start-up of the proposed ODS service.

banks to be retained on the Roster of Approved Trustees. One new bank was approved as trustee and four requests for removal, without disapproval, from the Roster of Approved Trustees were granted.

During the fiscal year there were 58 sale violations involving privately owned ships, of which 49 were mitigated or settled.

User charges for filing applications for foreign transfers and similar actions totaled $92,330, all of which was deposited as miscellaneous receipts in the U.S. Treasury. These charges were increased, effective May 1, 1980, for the first time since 1974.

Table 16: SOVIET GRAIN ODS CONTRACTS IN EFFECT SEPTEMBER 30, 1980

Company	Date Approved	Vessels
American Trading Transportation	12-14-72	WASHINGTON TRADER
	12-23-75	"
Anchorage Tankships	11-24-72	OVERSEAS ANCHORAGE
Connecticut Transport	11-24-72	CONNECTICUT
Cove Ships	12-31-79	COVE SAILOR
	"	COVE EXPLORER
	"	COVE NAVIGATOR
	07-13-76	COVE COMMUNICATOR
Cove Trading	09-13-78	COVE TRADER
Cove Ventures	07-06-78	COVE LEADER
Empire Transport	03-09-73	POTOMAC
Fredericksburg Shipping	12-16-76	FREDERICKSBURG
Ingram Ocean Systems	04-27-76	MARTHA R. INGRAM/BARGE IOS 3301
Intercontinental Bulktank	12-05-72	OVERSEAS ALASKA
	11-30-77	OVERSEAS ALICE
International Ocean Transport	01-18-73	ALLEGIANCE
	"	BRADFORD ISLAND
	05-03-73	BANNER
James River Transport	03-09-73	JAMES
Keystone Shipping	11-22-72	PERRYVILLE
Keystone Tankship	11-12-72	GOLDEN DATE
	03-01-74	"
Manhattan Tankers	11-28-72	MANHATTAN
Mathiasen's Tanker Industries	12-13-72	GLACIER BAY
	09-24-75	"
Mobil Oil	05-18-76	MOBIL AERO
	"	MOBIL LUBE
	"	MOBIL MERIDIAN
Mohawk Shipping	03-09-73	MOHAWK
Monticello Tanker	04-17-73	MONTICELLO VICTORY
Montpelier Tanker	04-20-73	MONTPELIER VICTORY
Mount Vernon Tanker	12-18-72	MOUNT VERNON VICTORY
Mount Washington Tanker	12-18-72	MOUNT WASHINGTON
Newport Tankers	03-05-73	ACHILLES
Ocean Transportation	11-24-72	OVERSEAS ALEUTIAN
	"	OVERSEAS ULLA
Ogden Leader Transport	04-08-80	OGDEN LEADER
Ogden Merrimac Transport	03-09-73	MERRIMAC
Ogden Sea Transport	03-09-73	COLUMBIA
Overseas Bultank	12-05-72	OVERSEAS ARCTIC
	02-15-77	OVERSEAS JUNEAU
	11-30-77	OVERSEAS VALDEZ
Overseas Oil Carriers	11-24-72	OVERSEAS JOYCE
Penn Tanker	01-03-73	OGDEN CHALLENGER
	"	OGDEN CHAMPION
Rio Grande Transport	04-08-80	OGDEN CHARGER
Sun Transport	03-21-78	AMERICA SUN
	"	PENNSYLVANIA SUN
	"	TEXAS SUN
Vivian Tankships	12-05-72	OVERSEAS VIVIAN
Wabash Transport	11-24-72	OGDEN WABASH
Willamette Transport	11-24-72	OGDEN WILLIAMETTE

Table 17: FOREIGN TRANSFER APPROVALS—FY 1980

U.S. Privately Owned:

	Pursuant to Section 9 (U.S. owned and U.S. documented)		
	No. of Vessels	Average Age	Gross Tons
Tankers	1	35	3,157
Cargo	32	42	307,493
Miscellaneous	25	27	57,282
Total	**58**	**17**	**367,932**
Recapitulation By Nationality:		Number	Gross Tons
British		3	3,384
Canadian		1	8,195
Ecuadorian		1	3,157
French		1	3,338
Korean		1	1,091
Mexican		3	3,867
Panamanian		9	34,704
Venezuelan		1	1,358
Total		**20**	**59,094**
Sales to Aliens Only		6	6,354
Sales to Aliens for Scrapping		32	302,484
Total		**38**	**308,838**
Grand Total/Privately Owned		**58**	**367,932**
U.S. Government Owned: Cargo vessel for scrapping		1	8,918

Chapter 3

Domestic Operations

The domestic segment of the American merchant marine carries more than one billion tons of cargo annually. These operations include the Great Lakes, the inland waterways, and the noncontiguous ocean, intercoastal, and coastwise trades.

Great Lakes

The U.S. Great Lakes fleet numbered 145 vessels at the close of fiscal year 1980—a decrease of 14 ships during this reporting period. However, the estimated deadweight tonnage (dwt.) remained constant at 2.9 million. (See Table 18.) This stability reflects the trend of replacing obsolete tonnage with new, larger, self-unloading bulk carriers. The average age of the Great Lakes fleet dropped to 39 years and 37 percent of its tonnage was concentrated in vessels less than 10 years of age as of September 30, 1980.

The downturn in the national economy during FY 1980 was particularly evident in Great Lakes bulk trades. Reduced demand for automobiles and steel sharply reduced the number of operating vessels. At the lowest point, 40 percent of the fleet was laid up.

Great Lakes ports also were affected severely by the diversion of import steel to other ports due to the Government's trigger pricing mechanism (TPM) and the uncertainty following the filing of a lawsuit by U.S. Steel Corp. Although a new TPM was established later in the year, no increase in steel imports through Great Lakes ports was expected.

The annual freeze-up of certain portions of the Great Lakes and St. Lawrence River results in a reduced shipping season, inhibiting the growth of both the domestic and international trade on the waterway. Joint Government efforts under the Winter Navigation Program succeeded in extending the commercial navigation season on the upper four Great Lakes and connecting channels beyond the historic closing date of December 16 during the demonstration years 1970–1979. Year-round shipping was achieved on the upper lakes during the last 5 years of the interagency program. Federal funding of this program ceased in FY 1980.

Meanwhile, the Maritime Administration continued to assist Great Lakes operators by analyzing data and providing information on Federal financial incentive programs, cargo flows, new shipboard equipment, shipboard labor requirements, and new marine technology.

Inland Waterways

During calendar year 1978 (the latest year for which totals are available), 615.4 million tons of traffic moved on the inland waterways of the United States, compared to 606.6 million in 1977. This traffic consisted primarily of energy products, raw materials, and agricultural commodities.

Among the key developments in this sector of waterborne transportation were the imposition of waterway user charges, the start of construction of a new Lock and Dam 26 at Alton, Ill., and studies of river pollution and traffic.

Public Law 95–502 (approved October 21, 1978) imposed a fuel tax on vessels in commercial waterway transportation for the first time in the Nation's history. The tax, initially 4 cents per gallon, became effective October 1, 1980. Under P.L. 95–502, the tax is scheduled to be increased each year until it reaches a maximum of 10 cents per gallon on October 1, 1985.

The law directs the Secretary of Transportation and Secretary of Commerce to "make a full and complete study with respect to inland waterway user taxes and charges." It also requires that a final report, with findings and recommendations, be submitted to the Congress by September 30, 1981. The Assistant Secretary for Maritime Affairs serves as co-chairman of the study.

Replacement of Lock and Dam 26 on the Mississippi River was approved by the Secretary of the Army in 1969 and funds were appropriated by the Congress in 1970 and 1974.

Lawsuits filed in August 1974 sought to halt the construction of the project, claiming that the U.S. Army Corps of Engineers' Environmental Impact Statement was inadequate and that specific Congressional authorization was required. A Federal court ruled in favor of the Corps in September 1979 and work on the first cofferdam was started at the site in January 1980. The new lock is expected to be in commercial use by September 1987.

Proposed U.S. Coast Guard rulemaking for new and existing tank barges to prevent oil pollution would have significant implications for the U.S. barge and towing industry. The proposals elicited many and varied comments. At the request of the U.S. Coast Guard, the National Academy of Sciences will re-evaluate the entire tank barge issue and recommend alternatives. The study was expected to be completed in early 1981.

MarAd and the Coast Guard jointly funded another study to analyze vessel traffic service on the lower Mississippi River. The report by The Center for Wetland Resources at Louisiana State University is scheduled to be completed in 1981.

Domestic Ocean Trades

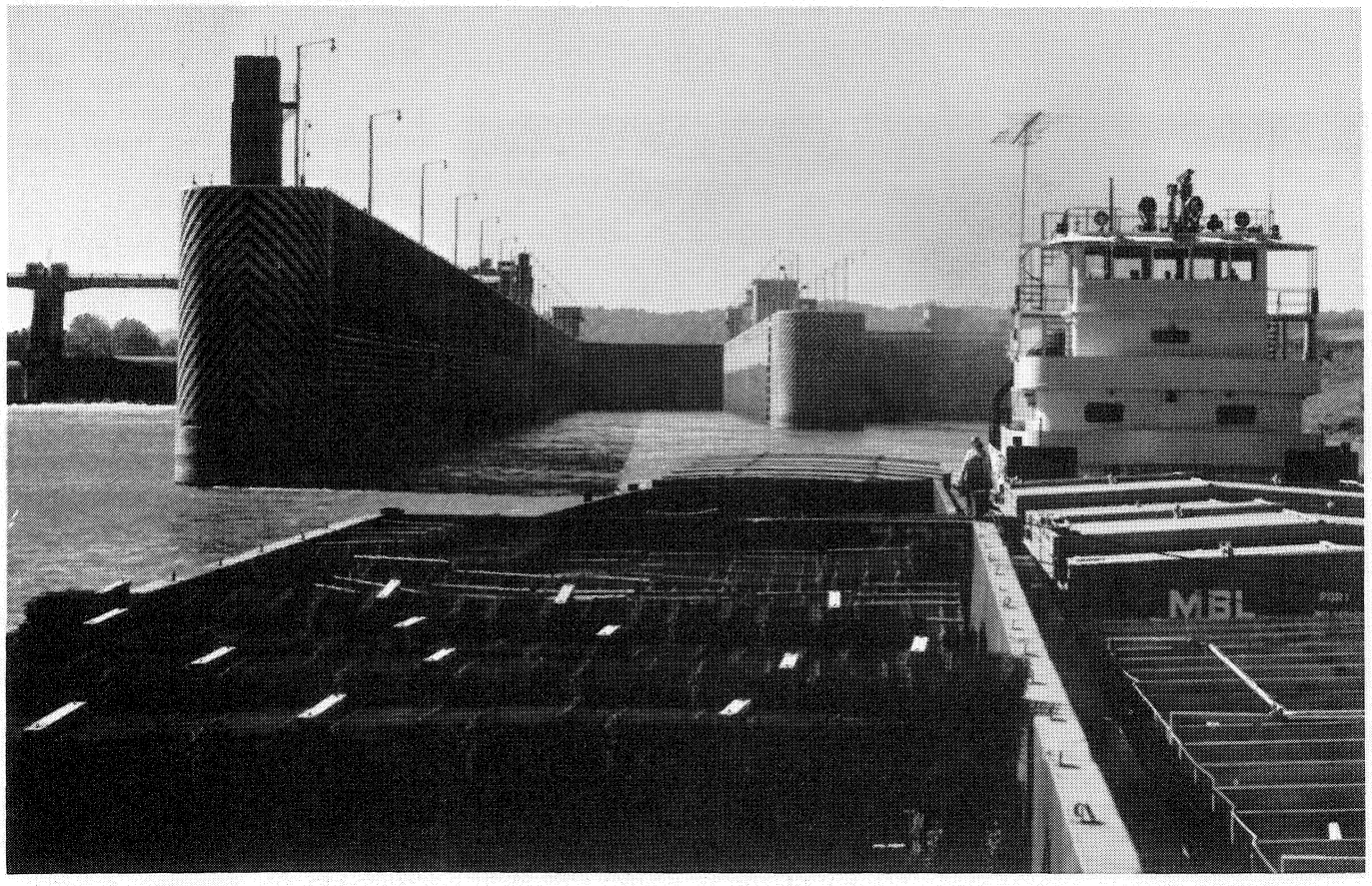
At the close of fiscal year 1980, there were 257 ships of 11.3 million dwt. operating in U.S. coastwise, intercoastal, and domestic offshore trades. Two new 188,500-dwt. tankers joined the fleet and entered the Alaskan oil trade. The West Coast-Hawaii trade received new tonnage in the form of a 26,600-dwt. containership with a capacity of 1,200

Table 18: U.S. GREAT LAKES FLEET—SEPTEMBER 30, 1980[1]

	Vessels	Gross Registered Tons	Estimated Deadweight Tons
Total	**145**	**1,691,653**	**2,938,170**
Bulk Carriers	130	1,622,352	2,897,527
Active	76	1,085,898	1,949,917
Temporarily Inactive	48	484,199	862,060
Laid-Up (Inactive for More than a year)	6	52,255	85,550
Tankers (All active)	6	29,326	40,643
Others[2]	9	39,975	[3]
Active	4	12,889	
Temporarily Inactive	3	19,982	
Laid-Up (Inactive for More than a year)	2	7,104	

[1] Self-propelled vessels of 1,000 gross tons and over. (Includes the integrated tug/barge vessel PRESQUE ISLE of 57,500 deadweight tons which, for operations purposes, is considered a self-propelled vessel).
[2] Includes railroad car ferries, auto ferries.
[3] Not available.

Dravo Mechling towboat PEACE clears lock at New Cumberland Dam on Ohio River.



containers of various sizes. The Puerto Rican trade also received a new triple-decked barge with a capacity of 374 trailers.

In FY 1980 Alaskan crude oil service, 52 tankers lifted 78.2 million long tons in 510 voyages from Valdez to various U.S. destinations, compared with 66.2 million long tons carried by 51 ships in 594 voyages during FY 1979. This increase in tonnage reflects the larger average size of vessels currently in this trade.

The Virgin Islands refined products trade saw U.S.-flag tankers increase their market share to 50 percent of commercial shipments to the mainland for the first 7 months of the fiscal year, compared with a 34 percent share in FY 1979.

Charter Market Activity

The movement of oil to the lower 48 States and crude and petroleum products from the U.S. Gulf to the U.S. Atlantic Coast accounted for the major share of the total domestic market.

The TransAlaska Pipeline throughput reached 1.5 million barrels per day and required about 7 million dwt. of tanker capacity to meet Alaska/West Coast/Panama Canal demand, thus providing stable employment for tankers in the domestic fleet.

In addition, in FY 1980 seven subsidized U.S.-flag vessels received permission to enter the Alaskan trade for up to 6 months of any 12-month period. Operators of those vessels were required to pay back a pro rata share of construction-differential subsidy for the periods spent in the Alaskan service.

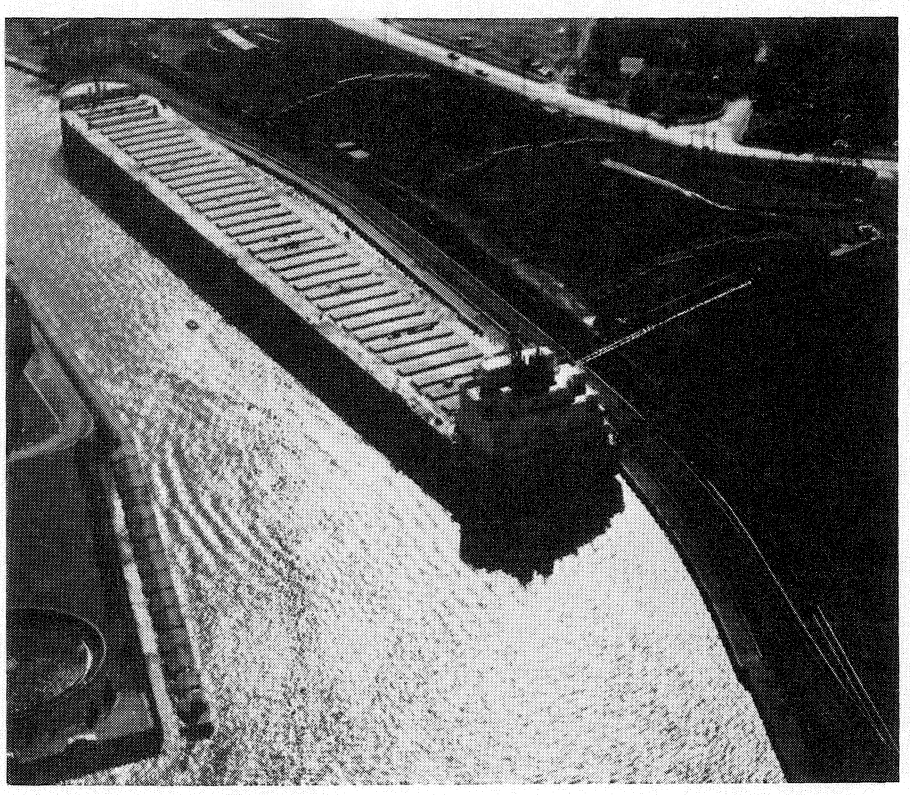
The U.S. Gulf-to-U.S. Atlantic Coast petroleum market showed a slight decline (3 percent per year on an historical basis), reflecting reduced petroleum consumption and increased stocks of petroleum products. However, the residual-fuel tanker demand is expected to remain strong until 1985 and will partially offset the decline in refined products moved by tanker. Further movements of petroleum products in this trade are expected to decline as oil is replaced by alternative energy sources, such as coal.

Trade Studies

During this reporting period, MarAd examined the competitive position of U.S. coastwise and intercoastal dry-cargo shipping in the domestic transportation market. It found that energy-efficient marine transport offers the prospect of significant fuel conservation and that mitigation of the high costs of market entry, service expansion, and vessel replacement are necessary for America to achieve the fullest utilization of its domestic shipping services. The analysis also indicated that a higher level of market awareness and service integration with other transport modes can improve the competitive position of domestic shipping.

In the area of energy transportation, MarAd also explored several alternative systems for the waterborne movement of steam coal from Middle Atlantic railheads to New England. Vessel designs were sketched, the costs estimated, and required freight rates developed.

A conventional tug and barge system using two self-unloading barges towed in tandem was found most suitable for this service. Integrated tug-barge units and self-propelled colliers were found capable of providing closely competitive freight rates.



Self-unloading bulk carrier JAMES R. BARKER, operated on the Great Lakes by Interlake Steamship Co., discharges iron ore pellets at Republic Steel terminal in Lorain, Ohio.

Chapter 4

Market Development

The Maritime Administration engages in a comprehensive marketing program designed to increase U.S.-flag carriage of the Nation's oceanborne foreign trade.

Marketing Program

The program is conducted at the Agency's Washington, D.C., headquarters and nine strategic locations throughout the country. During fiscal year 1980, trade specialists assigned to the four regional and five area offices continued their consultations with the transportation policymakers of firms engaged in foreign commerce, promoting the Agency's "Ship American" program.

Voluntary reports received from shippers and carriers since the marketing program began in 1973 indicate that it has produced $163.7 million in ocean freight revenue for U.S.-flag vessels that otherwise would have gone to foreign carriers.

Many firms drew on the resources of MarAd's Shipper Information and Market Lead Systems—twin systems designed to enhance the competitive marketing ability of U.S-flag operators.

The Shipper Information System provides trade intelligence on U.S. shippers and commodities gathered through marketing contacts and interviews conducted by MarAd's regional market development trade specialists. It generated 47 specialized automatic data processing reports in response to requests from U.S.-flag carriers.

The Market Lead System, drawing on market intelligence from private and Government sources, identified more than 2,200 individual business opportunities for U.S. operators during FY 1980.

Throughout the year MarAd sponsored seminars which brought together U.S.-flag carriers, shippers, and other maritime interests in order to foster greater utilization of U.S.-flag vessels.

A seminar on "U.S.-Flag Ocean Transportation of Perishables Through the 80s," sponsored by the Agency's Western Region, exemplified this effort. This conference brought shippers of perishables and frozen foods together with ocean carrier executives and appropriate Government representatives. They exchanged views and identified problems related to the ocean movement of foodstuffs such as fish, meat, produce, and citrus fruits, which are of growing importance to the U.S. balance of trade.

MarAd also joined other Commerce Department agencies and Federal, State, and local authorities in a variety of activities promoting U.S.-flag shipping. Agency offiicials prepared articles for trade journals and service publications in order to carry the "Ship American" message to specialized markets.

The Agency's marketing program focused attention on the need to modernize and expand the U.S.-flag bulk fleet. Market development trade specialists continued their liaison with the ocean charter market through consultation with vessel operators, shippers, and potential investors in new U.S.-flag bulk carriers.

Market Analysis and Planning

MarAd's Market Analysis and Planning Program supports the U.S.-flag carrier market planning efforts by sponsoring studies on market opportunities, requirements, economics, and information on strategic market planning.

During this fiscal year, assessments were begun on neobulk cargoes (large-lot size cargoes moving in both the liner and nonliner trades) and shipping supply and demand requirements for the ocean transportation of automotive products. A study was initiated of the options available to the U.S. merchant marine if the Code of Conduct for Liner Conferences proposed by the United Nations' Conference on Trade and Development is adopted worldwide.

MarAd completed studies of opportunities for U.S. passenger ocean cruise service and of the relationship between the terms of sale of imports and exports and the U.S.-flag carriage of these cargoes.

The Agency also established a system to keep a contractor on call to provide market analyses and other information services on fast-developing domestic or international situations affecting the competitive position of the U.S.-flag fleet.

In the strategic market planning program area, MarAd sponsored the development of accurate and easy-to-use, short-range trade forecasting techniques and began work on a maritime market strategy planning model which would enable U.S.-flag carriers to estimate the increases in market share likely to result from changes in services.

U.S.-U.S.S.R. Bilateral Cargo

Under terms of the U.S.-U.S.S.R. Martime Agreement, three U.S.-flag liner operators provided direct shipping services to the Soviet Union and two other operators participated in this trade with transshipment services during this reporting period.

In calendar year 1979, U.S.-flag ships carried 191,317 tons while Soviet ships carried 124,428 tons of the total 381,912 long tons of liner cargo which moved in this trade.

The U.S. accountable liner share for 1979 resulted in freight revenues totaling $21,687,203, compared with a Soviet share of $18,021,687.

Table 19: GOVERNMENT-SPONSORED CARGOES—CALENDAR YEAR 1979[1]

Public Law 664 Cargoes:

Shipper	U.S.-Flag Revenue ($1,000)	Total Metric Tons	U.S.-Flag Metric Tons	Percentage U.S.-Flag Tonnage
Action	7	6	5	83
Agency for International Development:				
Loans and Grants	61,659	1,938,363	718,726	37[2]
P.L. 480—Title II	104,685	1,417,907	874,575	62
Department of Agriculture:				
P.L. 480—Title I	148,730	4,271,502	2,072,046	48[2]
Other Agriculture Programs	34	326	28	9[3]
Department of Commerce:				
Industry and Trade Administration	198	2,652	2,586	97
U.S. Travel Service	35	173	86	50
Other	4	13	4	31[3]
Department of Defense:				
Military Assistance Program	2,913	5,724	5,084	89
Foreign Military Sales Credit	22,542	111,808	62,512	56
Corps of Engineers—NEGEV	18,395	27,217	27,217	100
Department of Energy:				
Bonneville Power Administration	133	2,559	1,061	42[2]
Strategic Petroleum Reserve	12,732	3,052,070	1,908,405	63
Other Energy Agencies	54	127	126	99
Department of Health, Education and Welfare	50	101	63	62
Department of the Interior:				
Bureau of Reclamation	81	708	410	58
Other Agencies	9	50	14	28[3]
Department of Justice	99	126	118	94
National Aeronautics and Space Administration	143	486	289	60
Smithsonian Institution	8	41	12	29[3]
Department of State:				
Sinai Support Mission	17	22	22	100
Foreign Buildings Office	52	77	61	79
Other Agencies (does not include AID)	4,751	9,117	5,193	57
Department of Transportation:				
Federal Highway Administration	1,077	1,781	1,777	99
Urban Mass Transportation Administration	482	1,318	662	50
Other Agencies	13	10	10	100
Tennessee Valley Authority	2,090	11,583	7,204	62
Department of the Treasury	12	23	12	52

Table 19: (Continued)

Shipper	U.S.-Flag Revenue ($1,000)	Total Metric Tons	U.S.-Flag Metric Tons	Percentage U.S.-Flag Tonnage
International Communications Agency	959	2,675	2,270	85
Other Agencies	28	48	42	87
Public Resolution 17 Cargoes:				
	Total Freight Revenue		U.S.-Flag Freight Revenue	Percentage U.S.-Flag
Export-Import Bank	$64,583,591		$45,777,301	71

[1] Civilian Agencies plus Department of Defense Foreign Military Sales Credit Program, Military Assistance Program, and U.S. Army Corps of Engineers—NEGEV. Other Department of Defense cargoes not included.
[2] These Agencies were below the required 50 percent participation due to the non-availability of U.S.-flag services as provided in P.L. 664.
[3] Cargoes of Agencies that generated less than 400 metric tons of cargo per year.

Preference Cargoes

The Cargo Preference Act (Public Law 83–664) requires that at least 50 percent of all Government-generated cargo subject to the law be shipped on privately owned U.S.-flag commercial vessels if such vessels are available at fair and reasonable rates. (All waterborne military cargo consigned for use by the United States must be shipped on U.S.-flag vessels.)

To assure that applicable cargo preference statutes are followed, the Maritime Administration monitors the shipping activities of 67 Federal agencies, including the Export-Import Bank of the United States (Eximbank) and the Military Assistance Program (MAP) and Foreign Military Sales (FMS) Program of the Department of Defense (DOD).

Except at Eximbank, statistics for these programs are maintained on a calendar-year basis. Eximbank records are maintained for the life of the loan or guarantee involved, and may extend over several years.

A computer-aided monitoring system and a concentrated interagency liaison program permitted MarAd to process 31,172 ocean bills of lading for 1979 cargoes covering Eximbank, other civilian agencies, and FMS credit shipments. Through the use of DOD tape reels this system processed the equivalent of 21,500 additional bills of lading for MAP and FMS cargoes. Total 1979 documentation, including the DOD equivalents, increased 23 percent over 1978 levels.

U.S.-flag participation in the shipment of Government-sponsored cargoes during calendar year 1979 is summarized in Table 19. During the year, U.S.-flag revenue declined 3.8 percent and U.S.-flag tonnage declined 37.4 percent, compared with 1978 levels.

These decreases were due to major tonnage declines in two programs: the Agency for International Development (AID) Loans and Grants Program, and the Strategic Petroleum Reserve (SPR) Program of the Department of Energy (DOE). U.S.-flag revenue from those programs declined $55 million in 1979, although total P.L. 664 revenue declined by only $15.8 million. New shipments made under the Negev Air Base project in Israel and gains in the P.L. 480 Title I and II programs significantly offset the losses.

AID's Loans and Grants Program declined in volume from 3.3 million tons in 1978 to 1.9 million tons in 1979 because of a change in the type of assistance offered the Government of Israel. Aid previously administered under a commodity import program was applied to a cash transfer arrangement. The latter funds are exempt from P.L. 664 restrictions.

Because sufficient U.S.-flag ships were not available in this reporting period, American-flag participation was less than 50 percent in three programs—AID's Loans and Grants Program; U.S. Department of Agriculture P.L. 480, Title I; and the Bonneville Power Administration project. If U.S.-flag ships had been available, all these programs—as well as those of Agencies not mentioned here—would have exceeded the minimum required percentage.

Strategic Petroleum Reserve

The Government has announced its intention to store 750 million barrels of crude oil in salt domes along the U.S. Gulf Coast as a Strategic Petroleum Reserve. At the end of calendar year 1979, 91.7 million barrels of crude oil had been stored at three SPR sites.

The Cargo Preference Act requires DOE to transport at least 50 percent of the oil in U.S.-flag tankers. In 1977 MarAd and DOE agreed that long ton/miles reflect commercial realities and compliance with this act more accurately than tonnage alone.

The SPR program was suspended in July 1979 because of unstable conditions in the Middle East. At that point U.S.-flag tankers had carried 1.9 million long tons (63 percent of the total) which resulted

in 2.8 billion ton/miles (30 percent) and their operators had received $12.3 million in revenue (62 percent). Because the program was interrupted unexpectedly, DOE was forced to cancel charters for several U.S.-flag tankers which would have brought the program into balance. This was the major reason U.S.-flag revenues declined some $40 million from 1978 levels. DOE has agreed to make up the shortfall.

Department of Defense

Both tonnage and revenues decreased under DOD's 1979 FMS program. This was primarily due to the fact that two countries ended the year with a temporary U.S.-flag deficit. (This deficit was eliminated shortly after the start of the 1980 calendar year.) In 1979, American-flag carriers received $22.5 million, or 64 percent, of the FMS revenues, and 62,512 metric tons, or 56 percent, of the total tonnage.

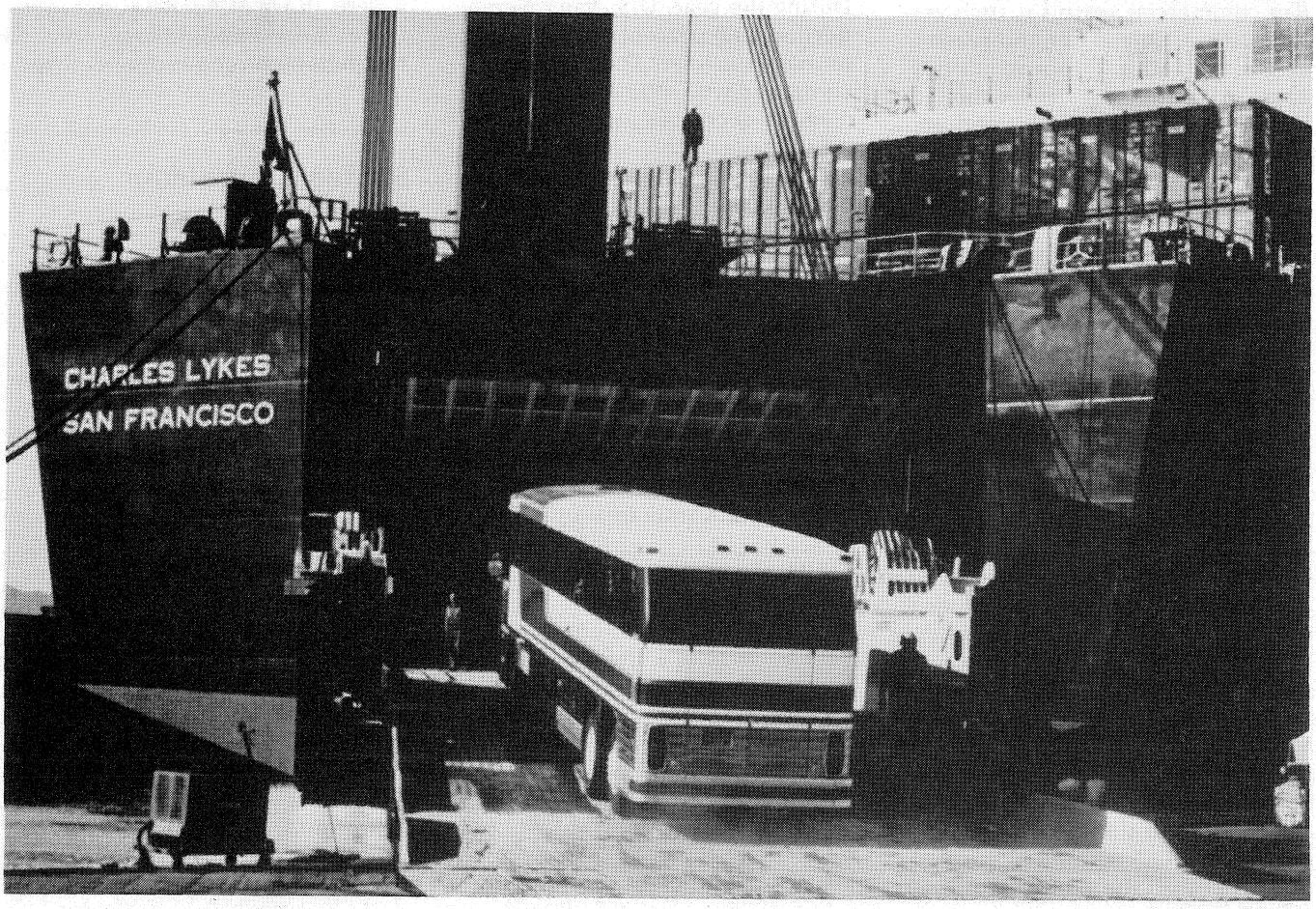
The 1979 Military Assistance Program, handled by the Military Sealift Command, experienced increases in both tonnage and revenue compared with 1978. U.S.-flag carriers received 89 percent of the tonnage and $2.9 million in freight revenue under this program.

Export-Import Bank

Public Resolution 17, 73rd Congress (P.R. 17), requires that all cargoes generated by Eximbank be shipped on U.S.-flag vessels unless a 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 vessels of a receipient nation to carry up to 50 percent of ocean cargoes generated by Eximbank loans, provided that U.S.-flag carriers are not subject to discrimination in trade with that nation.

Eximbank's disbursements on direct credits increased from $1.2 billion in 1978 to $1.8 billion in 1979. However, because of a significant increase in the exportation of aircraft and other items not susceptible to ocean shipment, total ocean revenue and U.S.-flag revenue decreased to $64.6 million and $45.8 million, respectively.

Passenger bus, part of 50-bus shipment to Taiwan in 1980, is driven aboard RO/RO CHARLES LYKES at San Francisco.



Chapter 5

Port and Intermodal Development

During fiscal year 1980, the Maritime Administration continued its support of national, regional, State, and local efforts to assist the American port industry and foster the development of intermodal transportation. Such efforts stimulate the economies of the municipalities and States involved, and ensure capability adequate to support national priorities in times of emergency.

The port development program continued to provide other Federal agencies, geographic regions, and individual ports with assessments of present and future port needs. The intermodal program carried out investigations and demonstrations which produced cost data and benefit measurements for new areas of port technology and contributed to major national port objectives.

As the industrial nations of the world began shifting to increased reliance upon coal, MarAd became a major participant in national bulk transport and port capability assessments, including the work of the President's Interagency Coal Export Task Force.

Technical assistance on port-related programs and projects provided to other Federal organizations during FY 1980 included: public port applications to the Economic Development Administration for Federal grants and loans; individual State plans for coastal zone management to the National Oceanic and Atmospheric Administration; and contributions to the navigational improvement studies of the U.S. Army Corps of Engineers and to the river basin studies of the Water Resources Council.

The Agency also continued its advocacy role with those Federal agencies whose regulations and programs affect port development, operations, and the flow of commerce. These included other Department of Commerce agencies, the Environmental Protection Agency, the U.S. Coast Guard, the U.S. Army Corps of Engineers, and the Departments of Interior, Energy, Transportation, Housing and Urban Development, and Treasury.

In addition, MarAd played key sponsorship or support roles in "Coastal Zone 80," the Urban Waterfront Action Group, the Commerce Cities Program, port and shipping meetings, technical seminars, and port economic impact workshops.

MarAd was a major sponsor of the Pacific Basin Development Conference, held in Hawaii. Other participants were the Departments of the Interior and Energy; other Commerce agencies; the State of Hawaii; the island governments of American Samoa, Guam, and the Northern Marianas; and the private sector. The meeting produced a long-range development plan dealing with fisheries, coastal zone management, ports, transportation, telecommunications, trade, tourism, municipal services, and energy. The plan calls for the implementation of 150 programs over a 5-year period at a cost of approximately $1.3 billion.

Port Planning Program

In FY 1980 the Maritime Administration continued its program of sharing the costs and actively cooperating in master planning studies with local and State agencies and regional port associations. During the year, 19 projects were contracted, underway or completed.

These studies included:

- *National Port Assessment*—an analysis of the capability of the Nation's ports and marine terminals to meet requirements of U.S. foreign and domestic waterborne commerce over the next 10 years.
- *Port Handbook for Estimating Marine Terminal Cargo Handling Capability*—a publication which provides a simple, reliable method for estimating the annual cargo throughput of U.S. ports.
- *Moving U.S. Coal to Export Markets*—an assessment of the U.S. transportation system's present and planned capabilities for moving coal to foreign markets; produced with the Departments of Energy, Transportation, and Defense.
- *Detroit Port Development Study*—an exploration of port planning assistance applied to local communities through the Department of Commerce Cities Program, specifically assessing long-range facility requirements of the Port of Detroit.
- *Port Public Liability Insurance/Risk Management Study*—an examination of U.S. public ports liability insurance problems and alternatives to traditional solutions; prepared under joint sponsorship with the Pacific Coast Association of Port Authorities.
- *Commercial Port Development and Urban Waterfront Development: An Analysis of the Interrelations*—this report develops a comprehensive method to examine opportunities for compatible commercial and recreational uses of port waterfronts.
- *Great Lakes Cooperative Port Planning Study*—a new data base for Great Lakes commodity flow and origin/destination analysis. The study defines market regions for selected Great Lakes ports.
- *Delaware River Regional Port Study*—an analysis of regional long-range port development requirements in the Delaware River estuary. The study, under the management of the Delaware River Port Authority, involves four major cities and two counties.
- *New England Port and Harbor Study*—a report which identifies future regional port development strategies. It was conducted in cooperation with the New England River Basin Commission and 10 ports in five States.
- *Oregon Ports Study*—an assessment of the need to develop additional commodities to counteract the leveling off of timber

S.S. ARCO ALASKA, largest oil tanker to dock in Port of Long Beach, arrives on her maiden voyage in December 1979. Ship is capable of delivering up to 188,500 tons (1.2 million barrels) of North Slope crude oil on each voyage down the Pacific coast from Valdez, Alaska.

production and product shipments.

- *Texas Port Study*—an analysis of Texas waterborne commerce and the demand it places on waterfront, wetland, and submerged land resources. Techniques to assess the impact of commerce on the State's economy are emphasized.

Equipment and Facilities Program

As in port planning, MarAd shares program costs with industry or other Federal or State agencies when assisting American port and terminal operators in increasing their competitiveness through improved equipment and expanded facilities.

During this reporting period MarAd:

- Completed the functional system and hardware for a 3-month, full-scale demonstration of a computer-based management control system at the Port of Oakland. (The system is designed to expedite the movement of containers through a public multi-user marine teminal.)
- Revised Chapter 19, Title 32A of the Code of Federal Regulations, concerning control and utilization of ports during periods of national emergency.
- Joined the Military Traffic Management Command in designating ports for control and utilization procedures during a national emergency.
- Completed planning and procurement of instrumentation for a full-scale test of tanker berthing in Puget Sound. (The test will evaluate the ability of one or more tugs to bring a large tanker safely to a stop under a simulated rudder and power failure. The U.S. Coast Guard and the American Institute of Merchant Shipping are funding the project with MarAd.)
- Completed acceptance tests for a lightweight firefighting module—developed under joint funding with the National Aeronautics and Space Administration and the U.S. Coast Guard—for demonstration and evaluation by U.S. ports. (The unit was demonstrated in St. Louis, Mo., as part of a 1-year test and evaluation program.)
- Conducted a seminar at the National Maritime Research Center, operated by the Agency at Kings Point, N.Y., on problems associated with marine firefighting.

Chapter 6

Research and Development

The Maritime Administration works closely with industry to improve the productivity of both shipbuilding and ship operations in the United States. During fiscal year 1980, the Agency obligated $18.5 million to research and development (R&D) contracts, which are listed in Appendix III. Of the MarAd total, some $648,000 was obligated for projects on the Great Lakes. An additional $5.5 million was contributed to MarAd contracts through direct and indirect cost-sharing by industry.

Close cooperation with industry is essential to the success of this program. It is in the shipyards and on the ships that new technology must be proven if it is ultimately to contribute to a more competitive shipbuilding industry and merchant marine.

Technical seminars are held annually around the country to disseminate the latest research findings and expedite their implementation by U.S. industry. Some of the seminars are fully funded by the Government; others are financed on a reimbursable basis through registration fees.

The research program is directed from MarAd's Washington, D.C., headquarters and its National Maritime Research Center in Kings Point, N.Y. Information on specific projects may be obtained at those locations or from the Maritime Research Information Service at the National Academy of Sciences, also in Washington.

Shipbuilding

A major effort to improve the productivity of U.S. shipbuilding is continuing with the major commercial yards. New technology, new management practices, and institutional improvements are being introduced to increase the industry's competitiveness.

One FY 1980 project dealt with automation of the welding process. Some advanced machines, essentially robots, were developed. These machines can speed up the process—and thus lessen the cost—of shipyard welding.

Another project seeks to reduce dependence on solvent-based coatings for ships. These solvents cause a variety of environmental problems. Water-based alternatives are being explored.

Sandblasting also causes environmental problems. New ways are being sought to tackle this job, or at least to provide safer ways of doing the blasting.

A semiautomated pipe fabrication facility begun in FY 1978 neared completion during this reporting period.

Work continued on a technology-transfer project begun in FY 1979 and designed to apply to American yards some of the expertise in building bulk ships developed by the Japanese. An American demonstration yard (Levingston) worked closely with a Japanese firm to implement such techniques as zone outfitting and group technology. All relevant information was then made available to other yards in this country.

A project promoting the development of shipbuilding standards which would simplify the construction processes also continued. This program employs resources of the American Society for Testing Materials.

Ship's Machinery

Bunkering costs continued to be a prime concern of the Agency and the shipping industry. Through research, ways are being sought to extract the last bit of energy from every ounce of fuel used aboard merchant vessels.

To improve the efficiency of marine boilers, for example, emulsifiers are being developed for mixing small amounts of water with fuel oil, thus improving the combustion process. Emulsified fuel (thin films of oil surrounding tiny droplets of water) burns uniformly and completely. The same process has been found useful in diesel engines.

To monitor another aspect of combustion, tests were begun on oxygen analyzers which carefully monitor the air entering the firebox of a ship's boiler. By adjusting the oxygen flow precisely, a boiler can be "tuned" from optimum performance.

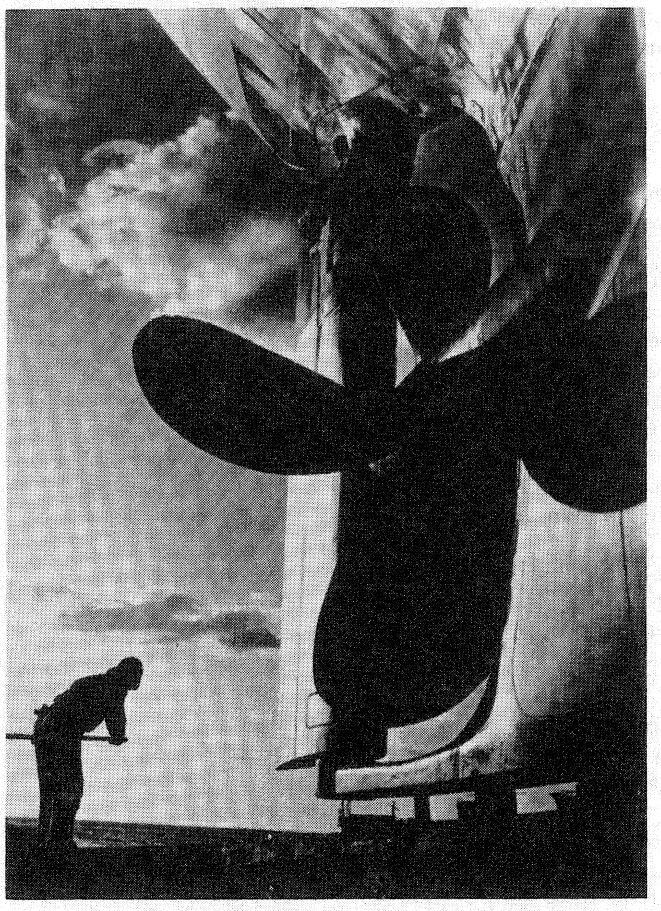
In addition to the escalating price of fuel, its declining quality and availability were continuing concerns in maritime research. One MarAd project sampled bunker oils in various world ports and reported on their heating values and impurities. Sampling enables ship owners to determine the characteristics of the fuel they are burning so that they can counteract any bad effects, such as the slagging of boiler tubes.

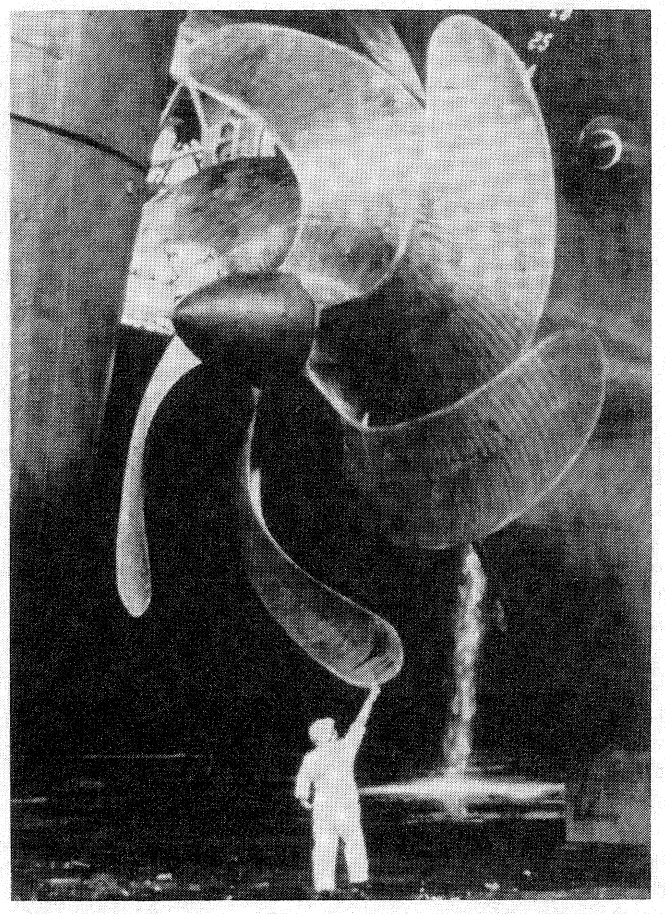
MarAd began another series of projects to prepare for alternate fuels as oil stocks decline. One obvious alternative, coal, is being readied for a comeback in marine propulsion systems. Modern ways to burn coal are being developed for a possible future fleet of colliers.

Fleet Management

In its fleet management program, the Maritime Administration studies the business aspects of marine transportation. This research seeks to determine where ships can be more profitably employed and how equipment utilization, financial performance, and booking and billing procedures can be improved. Fleet management research is carried out in close cooperation with U.S.-flag shipping companies.

One such project will use computers to provide industry with information and analytical management tools. The cornerstone of the





Photographs taken at Newport News (Va.) Shipbuilding and dry Dock Co. show contrast between conventional four-blade, merchant ship's propeller (left) and experimental six-blade, "skewed" propeller pictured at right and also on front cover.

project is a Financial Information and Retrieval System (FIRST), which stores data and prepares reports from the financial statements of U.S.-flag liner companies. The system will adjust financial statements for inflation, analyze return on investment, project revenues, and prepare an industry-level financial profile report.

The use of satellite terminals aboard ships for data transfer and management assistance is also under study. The terminals are connected, via satellite, to shipping offices in the United States and abroad through the Maritime Communications Center in Annapolis, Md. A host computer in Annapolis can perform all the necessary electronic switching, permitting the diverse computers of different companies to communicate with each other. A computer-assisted system for controlling tank barge operations on the inland waterways was also started during the year.

Cargo Handling

In cooperation with a group of U.S.-flag companies, MarAd initiated research designed to prevent cargo damage resulting from condensation by (a) improving air circulation within marine containers, (b) providing better container and trailer restraining systems and quicker turnaround times, and (c) developing new sources for cargo-handling technology. All of these efforts aim at more efficient handling techniques.

Research designed to enhance the military sealift capabilities of containerships was continued. Designated SEA-SHED, the project will develop jumbo-size transport units that can be fitted into a row of container cell guides. While in place they will accommodate military vehicles and outsized breakbulk cargoes. Less than 30 percent of the equipment of an Army mechanized division can now be containerized. It is believed SEA-SHED will permit 70 to 90 percent of this equipment to be carried in containerships. MarAd is working closely with the U.S. Navy on this concept, and a full-scale hardware test will be conducted in FY 1981.

Another MarAd project involves the development of an improved instrument for measuring the types of liquids and their levels in shipboard tanks. These measurements have become more complicated since recent regulations precluded any tank openings for simple mechanical measuring devices. One approach is a sonar oil thickness sensor (SOTS), which would improve upon current radar methods used to determine overall tank levels. The sonar equipment includes a transducer, which is mounted on the bottom of a cargo or ballast tank. The transducer sends a large number of acoustic pulses upward

through the tank, producing echoes which can be interpreted by a microprocessor. By sensing changes in physical properties between one layer and another, the sonar system can, for example, determine the levels of sludge, water, and oil in a tank. A SOTS prototype will soon be tested.

Navigation/ Communications

In response to a growing demand for maritime communications services, the Maritime Administration began research designed to expand the use of available frequencies by using radio waves with very low amplitudes which do not interfere with other communications in the same frequency range. A baseband receiver was demonstrated during the first phase of this work. The second phase extended the hardware to an intermediate frequency which will be tested via satellite.

MarAd continued work on an Inland Waterways Communication System to provide very high frequency radio service to vessels on Western U.S. rivers and a distress transmitter which can transmit emergency information via satellite from almost anywhere at sea.

Advanced Ship Systems

Work continued during this fiscal year to develop a standardized dry-bulk vessel which would serve the needs of a number of U.S.-flag carriers.

In an effort to find and apply new technology to the marine industry, MarAd turned to an age-old power source: a contract was signed for a new study of wind-powered ships. In 1975, a similar study indicated few trade applications in which sail power then was economically competitive with conventionally powered vessels. However, skyrocketing fuel prices led to a reevaluation. The modern wind-powered ships now under evaluation would employ auxiliary engines for use in calm weather and for maneuvering in harbors or restricted waterways.

MarAd also examined the economics of new shipping systems during the year. A feasibility study of Great Lakes trailerships was completed. The study assessed various vessel concepts, the market, and the constraints that such trailerships might encounter. It concluded that trailerships could capture a significant portion of the current truck traffic in the region.

A second study examined the future market for chemical product tankers and a third devised a method for interactive fleet forecasts which can determine how a number of variables can affect the future composition of the fleet.

Ship Performance and Safety

A number of projects were carried out to make shipping more efficient and safer.

Corrosion and fouling on ships are ever-present problems. The Agency completed the laboratory phase of a project to test the use of copper-nickel sheathing over a ship's hull. This sheathing could lead to substantially reduced maintenance costs, better fuel efficiency, and increased time between dry dockings. The laboratory research identified four possible methods of attaching the thin sheets to a steel hull. Each of these methods will be evaluated on a test ship.

The first phase of a study of human resources in ship operations also was completed during FY 1980. That work concentrated on shipboard environments and how they affect the quality of life for American mariners. Researchers found seafarers becoming increasingly isolated because of smaller crews and the dwindling amount of port time. Added to this are minor irritations such as portholes fixed in the closed position and uninsulated bulkheads which transmit noise from one compartment to the other. Among suggested remedies:

- Limit crew members' shipboard duty to 3 months of continuous service between vacations;
- Expand each person's work responsibilities while on board.

Two safety projects in this fiscal year were concerned with the transportation of liquefied natural gas (LNG). One tested the feasibility of using a nondestructive evaluation technique to detect incipient crack formations in LNG tanks under in-service conditions. The other project, carried out in cooperation with the Department of Energy, studied the conversion of liquefied natural gas to a gel, making its transportation easier. Gellation would reduce the hazard if LNG were spilled. The research indicated that, while the process does not significantly affect the pumping of LNG, it would increase delivery costs by an estimated 5 percent.

Research continued on airborne asbestos aboard ships. Fiber and dust levels were monitored before, during, and after certain routine maintenance operations involving the removal and replacement of asbestos-bearing insulating materials. Preliminary analysis of the samples indicated that, while the airborne fiber count rose—as expected, it was limited to a rather small radius from the site of action, and that simple protective methods can prevent inhalation.

Industrial Plant Vessels

Floating platforms are increasingly being used as sites for industrial plants. These offshore locations are often close to raw materials and away from populated areas. The technology of shipbuilding and the excess capacity of shipyards can be easily turned to the production of such platforms.

MarAd has been working on applications ranging from power plants utilizing the energy of the ocean's thermoclines to ships for the recycling of trash. During this fiscal year, a study identified the applications most likely to be economical in the near term: small ocean thermal plants, trash recycling plants, floating coal-fired

power generators, and plants to convert natural gas from marginal offshore fields into LNG or methanol.

A study of trash recycling indicated future promise for a process which recovers ferrous material and produces a refuse-derived fuel, even though none of the methods examined was currently economically feasible.

Several advantages were attributed to the use of waterborne platforms for municipal sewage sludge treatment. This method frees for other uses the limited land areas available near many large water-waste treatment plants; it affords the possibility of combining the treatment and transportation operations, since processing can be carried out enroute to the disposal site; and it minimizes the environmental impact.

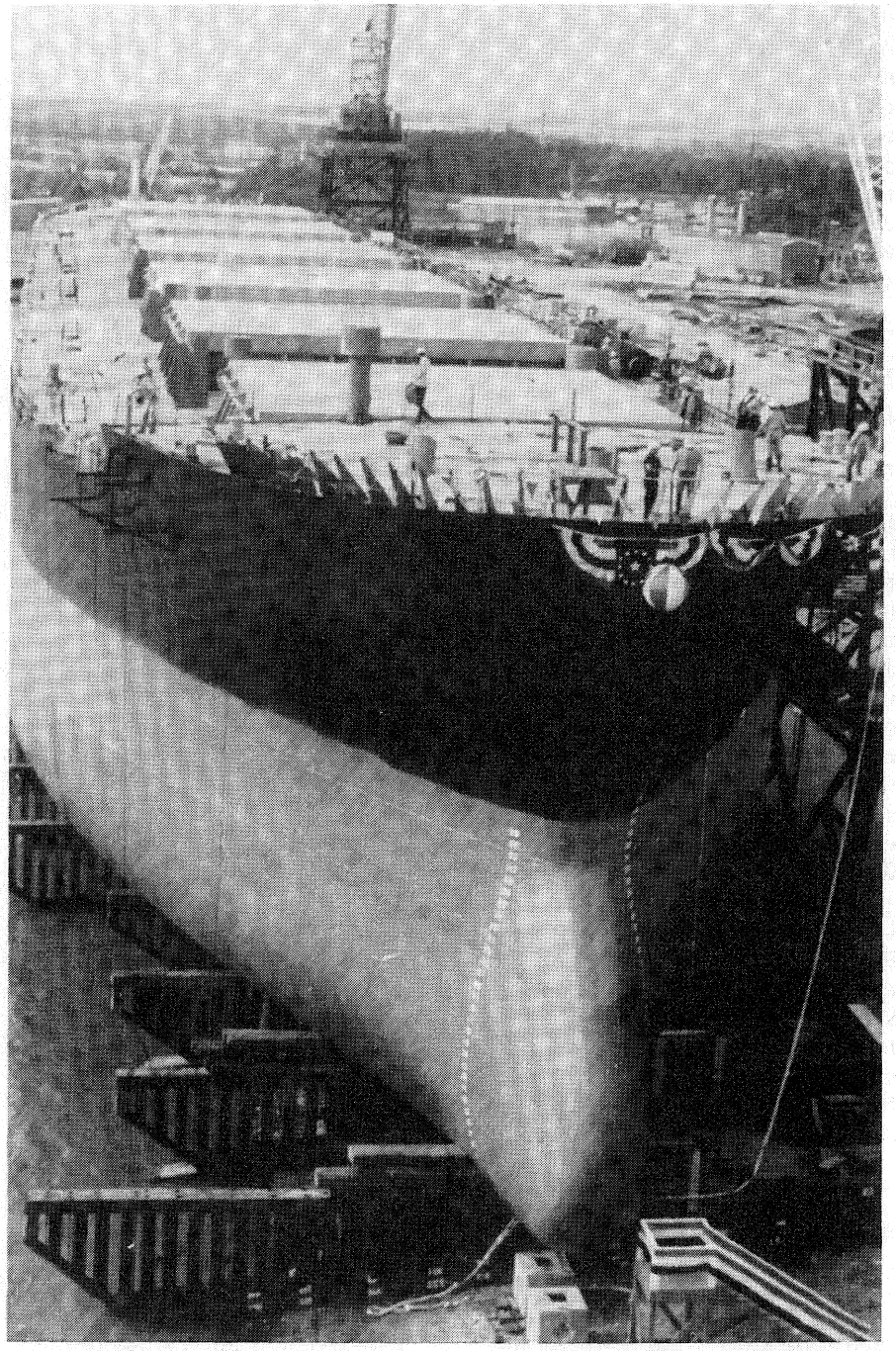
Marine Science

In its marine science program, the Maritime Administration studies the hydrodynamics and structural characteristics of ships.

During FY 1980, research in this area included a project which sought to optimize the hull configuration of ships and another which analyzed the influence of bow steering units at the head of the cluster of barges being pushed by river towboats.

Much of the power consumed as a ship moves goes into the production of waves—waves of water pushed aside by the ship's hull. The less wave resistance, the better the ship's fuel efficiency and speed.

Ship models have been used for generations to test form characteristics and strike a proper balance between fine lines and carrying capacity. The MarAd study developed a method of determining the optimum hull change that should be made between one model test and the next and of determining what reductions in resistance is possible. In experiments on two ship forms, various changes were made—for instance, a bow bulb was added to one and a set of port and starboard



PRIDE OF TEXAS, first of three ships in new series of dry-bulk vessels being built by Levingston Shipbuilding Co. at Orange, Texas, is prepared for launch. Construction of the new series was aided by a technology-transfer agreement between U.S. and Japanese shipyards.

protuberances to another. An instrument and data analysis system correctly predicted the results in each case. While further improvements are needed in techniques and equipment, this quick-change capability now is available for use in future model tests.

Another area in which computers are supplementing model tests is in ship motions. A numerical technique has been developed to predict the motion of a ship in various situations in confined waters. The computer uses Newton's laws of motion to calculate the hydrodynamic forces on a ship caused by the interaction of the ship and the boundary layer of fluid around it.

The river project seeks to evaluate the effectiveness of bow steering boats in handling large clusters of barges pushed by relatively small towboats past obstacles such as railroad and highway bridges and opposing traffic. Towboat captains require great skill to navigate the inland waterways; ways are always being sought to improve their ability to maneuver.

MarAd conducted a survey of the inland waterway industry to obtain information on the current use of bow steering units, to determine their advantages, and to identify trends in operation. Full-scale tests were performed with a tow consisting of two 23,000-barrel tank barges, a 660-horsepower towboat, and two bow boats of different designs.

University Research

This was the second year of a MarAd effort to get the U.S. academic community more involved in maritime research. Proposals were solicited from many universities for contributions to marine-related endeavors.

Work was completed on analyses of liquid sloshing in tanks, the maximum strength of ships' hulls, waste reception for chemical tankers, shipyard outfitting problems, and the effectiveness of tip sails for propellers.

Twelve new contracts were awarded during the year in the areas of economics, ship production, ship operations, and port technology.

CAORF

MarAd's Computer Aided Operations Research Facility (CAORF) at Kings Points, N.Y., completed its fourth year of operations in FY 1980. CAORF uses a bank of computers to generate radar signals and visual imagery on a 240-degree screen surrounding a ship's bridge mock-up. Almost anything encountered by a real ship can be duplicated aboard CAORF.

The facility is used for research on collision-avoidance techniques, control and maneuverability methods, harbor and waterways problems, ship bridge design, and on ways to train and certify watchstanders.

One experiment during this reporting period evaluated the various means used by pilots and people at the helm to sense the turn rate of a ship. CAORF measured their reactions to the usual visual indications (such as watching buoys pass) and to bridge instrumentation (such as rate-of-turn indicators).

Another series of tests evaluated operating procedures in various harbor and waterway situations, including LNG ships entering and leaving Lake Charles, La.; tankers moving in and out of Corpus Christi, Texas; and ship traffic among drilling rigs in the Santa Barbara, Calif., channel.

In cooperation with the U.S. Navy, MarAd conducted a precommissioning test of the ability of conning officers to handle the new Trident submarine. CAORF simulated various surface maneuvers to make sure the Trident crews are properly prepared to handle this new class of vessel.

To acquaint the marine industry with the results of these and other experiments, conferences are conducted at Kings Point each year. A large number of shipping executives from the United States and abroad attended the Fourth Annual CAORF Symposium September 29 and 30, 1980.

Chapter 7

The Marine Environment and Energy Conservation

The Maritime Administration conducts programs and participates in national and international efforts to preserve and improve the marine environment and encourage more efficient use of energy.

Environmental Protection

MarAd seeks to promote and maintain a pollution-free marine environment through its own programs and by assisting other agencies and organizations in the development of international ship-design, construction, equipment, and operational standards. The Agency's pollution-control measures protect the marine environment from vessel-dumping of oil, hazardous substances, sewage, and garbage and protect the atmosphere from vessel-stack and volatile-vapor emissions.

During this reporting period, MarAd co-chaired the Interagency Ad Hoc Work Group for the Chemical Waste Incinerator Ship Program with the Environmental Protection Agency (EPA). The Coast Guard and the National Bureau of Standards also participated in this effort. Their interagency report was released in September 1980 and approved by the Assistant Secretary of Commerce for Maritime Affairs and the Administrator of EPA with comments and directives.

From September 1 to December 30, 1979, the Maritime Administration conducted a survey of U.S.-flag tanker owners and operators to determine the impact of the Port and Tanker Safety Act of 1978 (P.L. 95–474) on the U.S.-flag tanker fleet. The results will help the Agency assess the capability of U.S. shipyards to perform the necessary retrofits, the availability of equipment, potential scrapping and new building plans, and the budgetary implications related to the MarAd construction-differential subsidy and ship financing guarantees programs.

Forty owner/operators of U.S.-flag tank vessels were queried. Twenty-three owners, representing 217 vessels, responded.

Owners of 91 of the affected vessels reported that the mandated retrofits had been or soon would be performed. The owners of 10 vessels planned to request dedicated trade exemptions. Another 26 vessels were scheduled for scrapping before 1986. The owners of 77 other vessels indicated they had not yet decided their course of action. The remaining 13 ships covered in this survey were under charter to the Military Sealift Command and thus exempt from the provisions of P.L. 95–474 for the duration of their charters.

In FY 1980, research under Phase III of MarAd's Bulk Carrier Operations Safety Enhancement Project was completed. A two-volume report was published in July 1980. Volume I of this study reports on full-scale gas concentration measurements taken in cargo tanks of a 390,000-deadweight-ton tanker during shiptank gas-atmosphere control operations. The information was used to validate the scale-modeling methodology and the conclusions derived from its application in Phase II of the project. Volume II summarizes measurements of shipboard electrostatic conditions taken on the initial ballast voyage of a 390,000-dwt. tanker during tank washing and inerting, and in the gas distribution system.

Information gained from the shipboard test, together with implications drawn from previous laboratory studies, were used to formulate certain precautionary guidelines for electrostatic hazard control aboard ultra-large crude carriers.

MarAd continued development of the Presidential Oil Pollution Insurance Study to determine whether adequate private oil-pollution liability insurance is available to the owners and operators of vessels and marine facilities.

During FY 1980, the Agency completed studies on port planning strategies and policy alternatives governing waste reception facilities for chemical tankers, the technology and economics of waterborne trash recycling plants, the disposal of sewage and other wastes generated by commercial vessels on the Great Lakes, and the feasibility of using waterborne platforms for the ultimate disposal of municipal sewage sludge.

In other environmental actions, MarAd:

- Began the second phase of research on the extent to which American merchant seamen are exposed to asbestos fibers while maintaining, repairing, and serving on U.S.-flag ships.
- Initiated development of a comprehensive environmental impact statement (EIS) for all MarAd maritime aid programs.
- Supported a feasibility study of waterborne alcohol production plants which would use municipal wastes (refuse and sewage sludge) to produce methane fuels.
- Participated in the activities of the Intergovernmental Maritime Consultative Organization's Maritime Safety and Marine Environment Protection Committees (see Chapter 10).

Environmental Impact Statements

In FY 1980, MarAd issued *An Environmental Assessment for the Control of Asbestos Hazards in MarAd Programs* that examined all aspects of the Agency's asbestos-related activities. The Agency plans to modify its procedures

involving the use and control of asbestos in accordance with the study's findings. The goal is to minimize the exposure of MarAd and non-MarAd personnel involved in the Agency's activities to airborne asbestos fibers.

During this reporting period, MarAd reviewed and commented on EIS drafts from other Agencies on various issues involving the marine environment.

Oil-Pollution Insurance

The Agency has awarded a contract for a study required under the Outer Continental Shelf Lands Act Amendments of 1978. The study relates to the availability and affordability of private insurance for onshore and offshore oil pollution liability. It is scheduled to be completed in 1981.

Energy Conservation

MarAd continued efforts to enhance the efficient use and conservation of energy throughout the U.S. maritime industry.

At its three National Defense Reserve Fleet (NDRF) sites the Agency continued the frugal use of electricity and diesel fuel, a concerted effort which it began following the oil embargo of 1973–74. Compared with the base year, FY 1973, NDRF's consumption of electricity in FY 1980 was reduced by 2,124,456 kilowatt hours, while the 1980 use of diesel fuel was 1.8 percent less than in the base year.

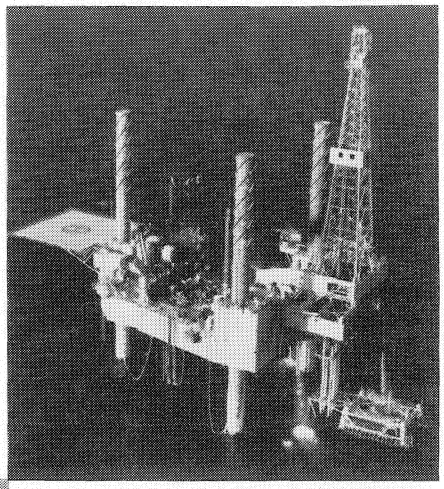
During this reporting period, the U.S. Merchant Marine Academy at Kings Point, N.Y., received a $145,000 Federal grant to install solar hot-water heating systems for its six dormitories. The solar systems are expected to provide half of the Academy's annual hot water needs.

Acquisition of a new medium-speed diesel automation system trainer enabled the Academy to diversify its diesel engineering training program. The Academy established its diesel engineering course in FY 1978 to provide hands-on training in the operation of energy-efficient diesel propulsion systems.

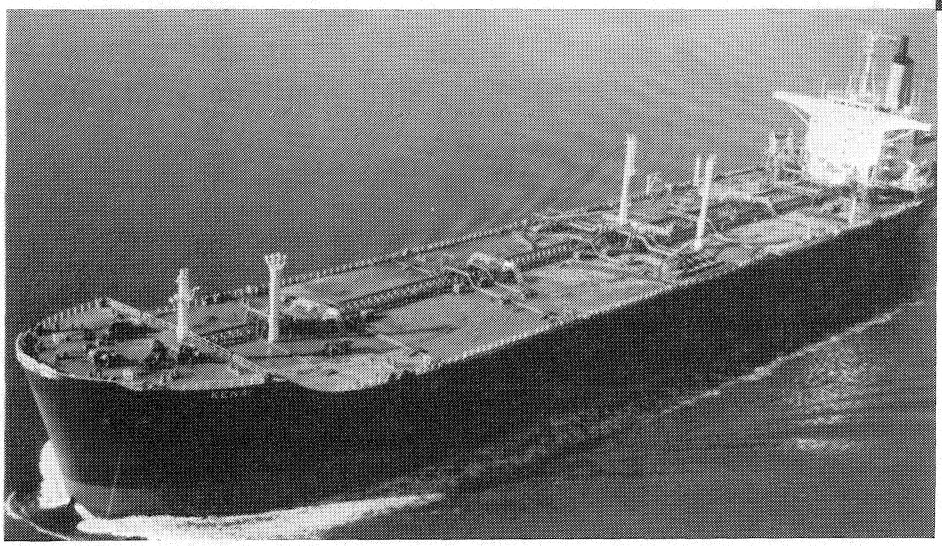
The Agency continued its support of diesels in the U.S.-flag fleet.

The Maritime Subsidy Board approved construction differential subsidy (CDS) to cover a change to slow-speed diesel propulsion for three American President Lines, Ltd., 32,800-deadweight-ton containerships. These vessels, being built with CDS participation by Avondale Shipyards, Inc., will be powered by the first slow-speed diesel engines ever built in the United States.

Other diesels are expected to join the American fleet soon. Of 45 deepdraft, merchant ships under construction or on order in American shipyards at the end of this fiscal year, 32 will be diesel powered.



This jackup rig, built by Bethlehem Steel's Beaumont, Texas, Shipyard for Dixilyn-Field Drilling Co., is capable of drilling to 20,000 feet in waters up to 200 feet deep.



Tanker KENAI, designed and constructed by Sun Shipbuilding and Dry Dock Co., Chester, Pa., is among new "ecology" class of oil-carrying vessels. Ship's double bottom provides added safety factor against pollution of marine environment in event of accident.

Chapter 8

Maritime Labor and Training

Through its maritime labor and training programs, the Maritime Administration helps ensure the continuous capability of the American merchant marine in meeting the Nation's shipping requirements for commercial trade and national defense. The Agency provides training to qualified seafarers, coordinates maritime labor policies with national and international organizations, promotes peaceful labor relations, and sets workforce levels for subsidized vessels.

Maritime Training

During fiscal year 1980, construction was completed on MarAd's new standardized merchant marine firefighting training facility in New Orleans, La. This school (opening in early FY 1981) will serve merchant marine, towing, oil, and mineral industry personnel in the Gulf Coast and Mississippi Valley region.

MarAd has also expanded existing firefighting training facilities at Earle, N.J., and awarded an architectural design contract for construction of a new Great Lakes facility in Toledo, Ohio. On the West Coast, firefighting training for merchant seafarers is provided under an agreement with the U.S. Naval Support Activity at Treasure Island (San Francisco), Calif.

During fiscal year 1980, 3,071 merchant seamen attended firefighting and damage control courses at Earle and Treasure Island in cooperation with the U.S. Navy's Military Sealift Command and the U.S. Coast Guard.

The Agency published the first comprehensive firefighting text for U.S. maritime personnel, *Marine Fire Prevention, Firefighting and Fire Safety*. Technical assistance and guidance in the compilation of this important addition to maritime training was provided by the Maritime Training Advisory Board.

Also during this reporting period, MarAd upgraded its Radar Training Centers in New Orleans, New York City, San Francisco, Seattle, and Toledo. The centers provided instruction to 2,700 qualified mariners in collision-avoidance radar, gryocompass, and LORAN.

Special radar units with automatic radar plotting aids were installed at each center. Outmoded electronic radar training simulation equipment and radar display learning stations were replaced at the San Francisco and Toledo sites. The Agency also modernized the classrooms of the San Francisco center.

During the year, 103 licensed merchant marine engineering officers completed the diesel engineering course at the U.S. Merchant Marine Academy in Kings Point, N.Y. A new medium-speed diesel engine automation system trainer was installed at the Academy, further upgrading its diesel program.

U.S. Merchant Marine Academy

The U.S. Merchant Marine Academy, which trains young men and women to become officers in the American merchant marine, graduated a class of 242 in June 1980.

In addition to classroom training at Kings Point, midshipmen spend a year at sea on American-flag vessels. All graduates receive U.S. Coast Guard licenses (as deck or engineering officers or both) and bachelor of science degrees. Most graduates are also commissioned as ensigns in the U.S. Naval Reserve.

The Class of 1980 included 110 third mates, 108 third assistant engineers, and 24 graduates who completed the dual deck/engine program. Fifteen women were graduated in this class.

Approximately 85 percent of the graduates found employment on commercial vessels or were assigned to active duty in the Navy or Coast Guard.

On an interagency reimbursable basis the Academy provides facilities and services for the Office of Personnel Management's Executive Seminar Center and for the National Oceanic and Atmospheric Administration's uniformed corps training program. During the year quarters, subsistence, and other support services were furnished for 675 participants in OPM seminars and 62 participants in NOAA's training program at Kings Point.

Thomas A. King, former director of MarAd's Eastern Region, was appointed Superintendent of the Academy with the rank of rear admiral in the U.S. Maritime Service in July 1980.

Average enrollment at the Academy during the year was 1,104.

At the beginning of the 1980–81 school year the regiment of midshipmen included 93 women, 12 of whom were scheduled for graduation in June 1981.

Members of Congress nominated 2,892 constituents for the Class of 1984. From this group 347 appointments were made during this fiscal year.

State Maritime Academies

In addition to operating the Federal Academy, MarAd provides financial aid to six State maritime academies in the United States in accordance with the Maritime Academy Act of 1958. This enables the States to train merchant marine officers to meet the national objectives stated in the Merchant Marine Act of 1936.

The academies are located in Vallejo, Calif.; Castine, Maine; Buzzards Bay, Mass.; Traverse

Table 20: MARITIME WORKFORCE AVERAGE MONTHLY EMPLOYMENT

	Average Monthly Employment in Fiscal Year:	
	1979	1980
Seafaring Shipboard Jobs:	**26,979**	**25,915**
Shipyard:	**115,174**	**116,361**[1]
Production Workers	95,767	94,925
Management and Clerical	19,407	21,436
Longshore:	**49,103**	**48,747**

[1] Monthly averages prior to February 1, 1980, reflected employment in all commercial yards able to construct ships 475 by 68 feet; after February 1, 1980—commercial yards in the Active Shipbuilding Base, constructing new ships and/or seeking new construction orders.

City, Mich.; Fort Schuyler, N.Y.; and Galveston, Tex.

Some 705 midshipmen graduated from the six academies in June 1980. About 65 percent found employment afloat or went on active duty in the Navy or Coast Guard.

Labor Relations

Good labor relations continued throughout the U.S. seafaring, shipyard, stevedoring, warehousing, and minerals and offshore industries during FY 1980.

The International Longshoremen's Association (ILA) AFL-CIO, and Atlantic and Gulf Coast employers signed a master agreement on May 27, 1980. For only the second time in the last 30 years, a strike-free settlement was reached prior to the expiration date of a current ILA contract.

Labor Data

During this reporting period, average monthly U.S. seafaring employment in all sectors (private, Government contract, and Great Lakes) decreased from 26,979 to 25,915, a 3.9 percent decline from FY 1979 (see Table 20). Meanwhile, the total workforce in selected U.S. commercial shipyards increased by 1 percent, from 115,174 to 116,361, and average longshore employment declined from 49,103 to 48,747.

Merchant Marine Awards

The Merchant Marine Medals Act of 1956 authorizes the Secretary of Commerce to grant medals and decorations for outstanding and meritorious service or participation in national defense action. Ships are also honored for outstanding or gallant action in marine disasters or other emergencies.

During this fiscal year, Gallant Ship Awards were presented to the JAMES E. SMITH, CAPTAIN ED, BONNIE PALMER, KYLE SMITH, and OKALOOSA for their actions in controlling the flaming and drifting Liberian tanker PINA on the Mississippi River at New Orleans on December 19, 1979. Merchant Marine Meritorious Service Medals were presented to the captains of the rescuing vessels and Letters of Commendation to their crews.

A Meritorious Service Medal was awarded to the captain and Letters of Commendation to the crew of the POINT CLEAR for rescuing crew members of the PINA and transporting them to safety. Masters and crew members of the SHANE C and FORT PIKE received Letters of Commendation for their assistance.

Merchant Marine Meritorious Service Medals were also presented to Able Seaman John McManus, Carpenter/Mainteranceman Antone Souza, and Midshipman Paul Rubino of the PRESIDENT WILSON for their heroism in rescuing Indochinese refugees near Hong Kong on July 17, 1979.

The Meritorious Service Medal was awarded to Seaman Lawrence Briggs of the tug WALTON for rescuing and providing first aid to an injured seaman in Boston on September 5, 1979.

The Meritorious Service Medal was also awarded to Chief Mate Fred J. Gloor, Jr., of the PRESIDENT TYLER for his heroic action in rescuing a seaman who fell while attempting to board the ship's launch in Pusan, Korea, on December 31, 1979.

A Letter of Commendation was presented to Capt. Robert J. Sutter of the SEA-LAND FINANCE for his prompt response and skill in rescuing the crew of a sinking Panamanian tanker in the East China Sea on September 27, 1979.

Members of Class of 1980 toss hats into air, climaxing commencement exercises at U.S. Merchant Marine Academy, Kings Point, N.Y.

Chapter 9

National Security

Developing and administering programs which enhance the ability of America's merchant marine to support any U.S. emergency or defense effort is one of the Maritime Administration's primary missions. The Agency maintains the National Defense Reserve Fleet (NDRF) as a ready source of vessels in times of national need and assists the U.S. maritime industry in fulfilling its traditional role as America's fourth arm of defense.

MarAd also cooperates with the U.S. Navy and other Government Agencies in joint programs designed to improve the national defense posture of the American shipping and shipbuilding industries.

Reserve Fleet

Vessels of the reserve fleet are available for use in both military and nonmilitary emergencies. The NDRF includes inactive merchant ships and naval auxiliaries anchored at three locations—James River, Va.; Beaumont, Tex.; and Suisun Bay, Calif. (See Table 21.)

On September 30, 1980, the fleet contained 320 ships. (See Table 22.) This figure excluded one ship which had been sold but not delivered, one ship undergoing pre-activation as part of the Ready Reserve Fleet (RRF) program, one ship participating in an RRF No-Notice Activation Test, and one ship participating in REFORGER '80, a military exercise of the North Atlantic Treaty Organization (NATO). Also excluded were one Pacific Far East Line, Inc., Roll-On/Roll-Off ship moored in the James River and five States Steamship Co. cargo vessels moored alongside the Suisun Bay Reserve Fleet at the request of the U.S. District Court, Northern District of California.

During this fiscal year, 32 ships were added to the NDRF and 33 were withdrawn. The number of vessels in the fleet preservation program increased from 220 to 243. This is a select group of reserve ships.

Ready Reserve Fleet

An even more select component of the NDRF is the Ready Reserve Fleet, established in 1975 as a joint program of the Maritime Administration and the U.S. Navy. The RRF provides merchant vessels which can be activated for sealift operations on 5 to 10 days' notice, compared with an average of 4 weeks required to activate other NDRF vessels.

During FY 1980, this fleet was increased from 13 to 24 ships.

To ensure military readiness, activation tests are periodically carried out in the RRF without advance warning. This operation entails activating the ship, crewing, storing, fueling, conducting 24-hour seatrials, and then positioning the ship on a military loading berth ready to load—all within a period of 5 to 10 days.

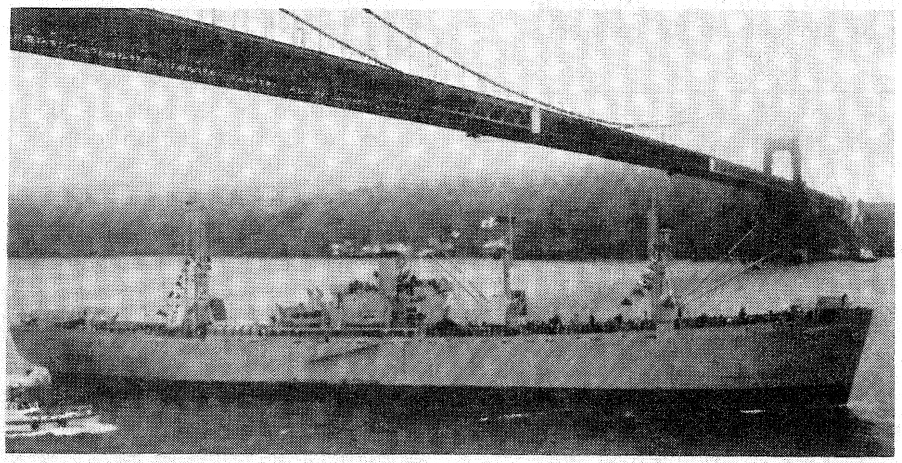
The LINCOLN, berthed at Suisun Bay, was activated by a Chief of Naval Operations No-Notice Test on August 13, 1980, and was ready to receive cargo on August 18. In addition to the No-Notice Test, the LINCOLN participated in a U.S. Navy-Marine Corps amphibious exercise off the California coast.

REFORGER '80

A component of the Ready Reserve Fleet also participated in a NATO exercise, "Return of Forces to Germany" (REFORGER '80), designed to test the military strategic mobility system. The WASHINGTON was designated for the exercise by the Navy's Military Sealift Command (MSC).

Activated in August 1979, the vessel proceeded to Port Arthur, Tex., where she loaded about 11,000 measurement tons of military cargo for Europe. The WASHINGTON delivered the cargo on schedule, took part in a second NATO convoy exercise, and was utilized in the redeployment phase of REFORGER '80 to return military equipment from Europe to the United States.

Altogether this RRF vessel was in active MSC service for about 4 months before returning to the Beaumont Reserve Fleet.



S.S. JEREMIAH O'BRIEN, last of U.S. World War II Liberty ships in operating condition, passes under Golden Gate Bridge as part of 1980 National Maritime Day observance in San Francisco Bay area. Ship is being restored as a public maritime museum, berthed at Fort Mason in Golden Gate National Recreation Park.

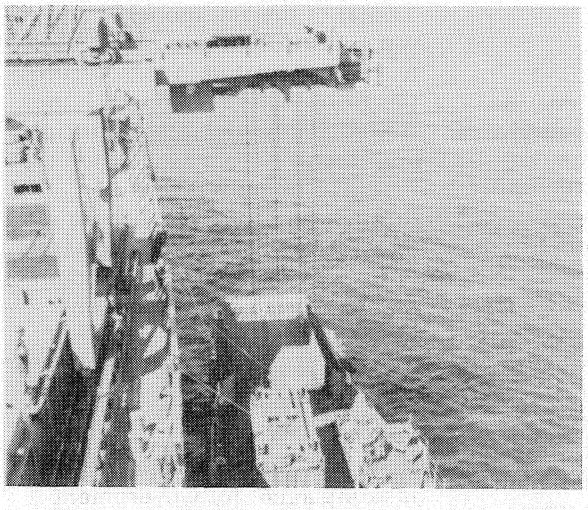
The GLOMAR EXPLORER

On April 25, 1980, the U.S. Navy redelivered the GLOMAR EXPLORER to MarAd at the Agency's Suisun Bay NDRF. The ship had departed Suisun Bay in June 1978 for a commercial deep sea mining project.

The JEREMIAH O'BRIEN

The Liberty ship JEREMIAH O'BRIEN was transferred to the National Park Service, activated by a crew of volunteers from California maritime industries, and departed Suisun Bay Reserve Fleet on October 6, 1979. Following restoration and repairs the ship was dedicated as a monument to the U.S. merchant marine on National Maritime Day, May 21, 1980, and sailed to a berth at Pier 3, Fort Mason, in the Golden Gate National Recreation Park.

When the JEREMIAH O'BRIEN's restoration is complete the ship will be opened to the public as a maritime museum. The project is being financed in part by a $436,532 grant from the National Maritime Heritage Program of the Department of the Interior. Volunteers provided additional funds, labor, and material to match the grant during the first phase of the restoration and continued to do so throughout this reporting period.



S.S. LINCOLN, National Defense Reserve Fleet containership (above), loads commercial container into U.S. Navy landing craft off California Coast during joint Navy-MarAd military sealift exercise. Amphibious vessel with containers aboard heads for beachhead (below).

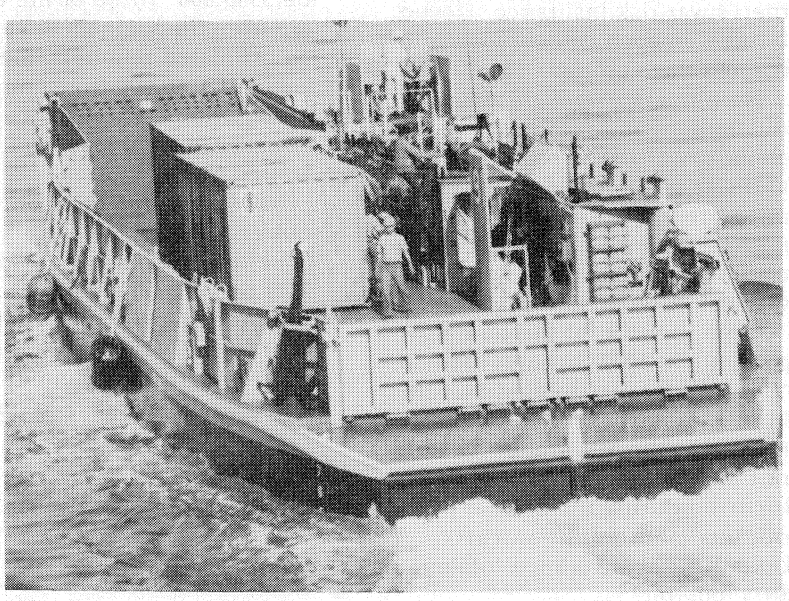


Table 21: NATIONAL DEFENSE RESERVE FLEET—SEPTEMBER 30, 1980

Fleets	Retention[1]	Scrap Candidates	Special Programs	Totals
James River, Va.	110	17	41	168
Beaumont, Tex.	44	2	7	53
Suisun Bay, Calif.	82	6	11	99
Total	**236**	**25**	**59**	**320[2]**

[1] Vessels maintained for emergency activation under the fleet preservation program.
[2] Excludes one ship sold but not delivered, 3 Ready Reserve Fleet ships, 5 ships moored alongside Suisun Bay, Calif., Reserve Fleet on behalf of the U.S. District Court, Northern District of California, and the ATLANTIC BEAR moored alongside the James River Reserve Fleet.

War-Risk Insurance

Title XII of the Merchant Marine Act of 1936, as amended, empowers MarAd to administer the war-risk insurance program, which insures operators and seamen against losses resulting from hostile actions under circumstances in which commercial insurance is not available.

At the end of this reporting period, 1,618 binders were outstanding under this program. These binders would cover shipowners for 30 days in the event their commercial war-risk insurance was terminated. Binders outstanding on September 30, 1980, included 566 for war-risk hull and machinery insurance, 566 for war-risk protection and indemnity insurance, and 486 for second seamen's war-risk insurance. Eleven binders in each category were for foreign-flag vessels.

No binders or policies were outstanding in MarAd's related standby war-risk cargo insurance and war-risk builder's risk insurance programs. However, 38 commercial underwriting agents were under standby contracts for the war-risk cargo insurance program.

From the start of the binder program in 1952 through June 30, 1980, binder fees totaled $1.4 million, while expenses totaled $1.5 million. Although binder fees did not meet all the expenses incurred during the 28-year period, income from the war-risk builder's risk insurance totaled $3.5 million.

At the request of the U.S. Navy, MarAd also provides second seamen's war-risk insurance without premium charge but on a reimbursable basis for losses incurred, as authorized by Section 1205 of the 1936 act. Crews of 5 Government-owned tankers operated on the account of MSC and 13 privately owned U.S.-flag tankers under bareboat charter to that command are insured under this program. Net savings to the Navy under this 26-year-old program are estimated to be $1.9 million (after deducting claims payments of $110,740).

Under the authority of Section 1208(a) of the act, money in the war-risk insurance revolving fund may be reinvested in U.S. securities or in securities on which the United States guarantees principal and interest. From 1962, when the first investment was made, through June 30, 1980, earned interest totaled $5.42 million. Assets of the war-risk revolving fund on that date totaled $8.25 million.

Marine Insurance

MarAd continued to act as the insuring agent for Government-owned vessels during the fiscal year. On September 30, 1980, 16 protection and indemnity claims were oustanding, 3 of which were in litigation. The total settlement value of all cases was estimated to be $500,000. Three of the claims are from the Vietnam era and have an estimated reimbursement value of $258,000 from commercial underwriters. The balance of $242,000 is for the account of the United States.

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

Insurance amounts approved during FY 1980 are shown in Table 23.

Emergency Readiness

Exercises were conducted in FY 1980 to test the procedures of the Department of Defense (DOD), Maritime Administration, and NATO for provisioning ships for military use on short notice under emergency conditions. These exercises led to development of a comprehensive memorandum of agreement between DOD and the Department of Commerce on operating procedures and to a refinement of arrangements between the United States and NATO.

At MarAd's request, the Maritime Transportation Research Board of the National Academy of Sciences completed an analysis of the defense utility of various types of privately owned vessels and small craft which are not normally included in military contingency planning. The study provides a basis for coordinated action by DOD and MarAd to acquire private vessels and small craft for such defense functions as salvage operations, minesweeping, and overseas port operations in a national emergency or mobilization.

During FY 1980, MarAd continued working with DOD to revitalize the Industrial Preparedness Planning Program. Its objective is to ensure that the marine industrial production base would be capable of satisfying marine material and equipment requirements in the event of a national emergency. Contacts with vendors and subcontractors were strengthened and a new source of supply for heavy marine steel forgings was sought.

A regular program of meetings between the Assistant Secretary for Maritime Affairs, the Secretary of the Navy, and the shipping and shipbuilding industries was begun.

Industry representatives joined the MarAd staff in conducting national mobilization exercises. The Agency also responded to industry concerns about terrorist threats against U.S.-interest shipping and established procedures for coordinating movements of merchant ships under emergency conditions.

Legislation enacted this year authorized the retrofitting of national defense features to existing ships and the procurement and storage ashore of national defense feature equipment for use in emergencies. The legislation also permits referral of plans and specifications for vessels built for the domestic trade to the Secretary of Commerce and, ultimately, to the Secretary of the Navy for determination of the need for national defense features. These new regulations will enable MarAd to improve substantially the defense utility of the merchant fleet.

Table 22: NATIONAL DEFENSE RESERVE FLEET, 1945-1980

Fiscal Year	Ships	Fiscal Year	Ships
1945	5	1963	1819
1946	1421	1964	1739
1947	1204	1965	1594
1948	1675	1966	1327
1949	1934	1967	1152
1950	2277	1968	1062
1951	1767	1969	1017
1952	1853	1970	1027
1953	1932	1971	860
1954	2067	1972	673
1955	2068	1973	541
1956	2061	1974	487
1957	1889	1975	419
1958	2074	1976	348
1959	2060	1977	333
1960	2000	1978	306
1961	1923	1979	317
1962	1862	1980	320

Table 23: MARINE AND WAR-RISK INSURANCE APPROVED IN FY 1980

		Percentage	
Kind of Insurance	Total Amount	American	Foreign
Marine Hull	$7,379,000,000	58	42
Marine Protection and Indemnity	[1]		
War-Risk Hull	7,387,000,000	54	46
War-Risk Protection and Indemnity	7,387,000,000	54	46

[1] Protection and indemnity insurance coverage is obtained principally from international assessable mutual associations managed in the British market, and is unlimited, thereby making it impossible to arrive at the total or amount or percentage figures for American and foreign participation.

Chapter 10

International Activities

The most significant international event in which MarAd participated during fiscal year 1980 was the signing of a bilateral maritime agreement between the United States and the People's Republic of China (P.R.C.). The Agency also held bilateral talks with the Soviet Union, Argentina, and Brazil; participated in a number of international conferences; and continued to assist American maritime and trade interests abroad through the offices of its representatives in London, Brussels, Athens, Rio de Janeiro, and Tokyo.

U.S.-P.R.C. Maritime Agreement

In a ceremony at the White House on September 17, 1980, President Carter and Chinese Vice-Premier Bo Yibo formally signed a bilateral maritime agreement between the United States and the P.R.C. The 3-year agreement had been initialed earlier in Beijing (Peking) by Assistant Secretary of Commerce for Maritime Affairs Samuel B. Nemirow and Dong Huamin, Director, Bureau of Foreign Affairs, Ministry of Communications. The agreement is designed to facilitate trade between the two countries and to assure the merchant fleet of each party a substantial share of the cargo transported between them.

Under the agreement, a substantial number of U.S. ports are open to entry by P.R.C.-flag vessels on 4 days' notice. All other U.S. ports are open to P.R.C.-flag ships on 7 working days' notice; however entry may be denied for reasons of national security. All Chinese ports have been opened to U.S.-flag vessels on 7 days' notice.

Under the cargo-sharing provisions, the U.S. and P.R.C. merchant fleets are each entitled to carry at least a third of the bilateral trade.

Meetings are to be held annually by designated representatives of the two countries to determine the progress made under the agreement. They will review the port-access and cargo-sharing provisions and seek to resolve any problems which may arise during the course of the agreement.

The accord is to remain in force through September 17, 1983, subject to earlier termination by either party on 90 days' notice.

Latin American Maritime Agreements

In March 1980 U.S. delegations led by the Assistant Secretary of Commerce for Maritime Affairs met with counterparts from Argentina and Brazil to review implementation of the bilateral maritime agreements which the United States has with each of these Latin American countries.

Both agreements provide for equal access to government-controlled cargoes and are implemented by means of cargo-revenue pooling agreements. In both instances, it was concluded that the pools were working satisfactorily. Problems related to documentation and facilitation were also discussed at the meetings.

International Conferences

MarAd was represented on the U.S. delegation to the 13th session of the Intergovernmental Maritime Consultative Organization's (IMCO) Marine Environment Protection Committee (MEPC) held in London from June 9 through June 13, 1980. At this session of the United Nations agency, major revisions to the Comprehensive Anti-Pollution Manual (Prevention) were discussed. As a result, MarAd has undertaken the task of revising the manual to reflect the International Convention for the Prevention of Pollution of the Sea by Oil, 1954 (as amended in 1962), and the International Convention for the Prevention of Pollution from Ships, 1973 (1973 MARPOL).

MarAd also participated as a member of the U.S. delegation in the 41st and 42nd sessions of the IMCO Maritime Safety Committee held in London from October 8 through October 12, 1979, and May 19 through May 23, 1980, respectively. A major concern at these sessions was implementation of the 1978 Protocol of the Convention on the Safety of Life at Sea, 1974 (SOLAS-1974).

Altogether, MarAd representatives participated in more than 40 regularly scheduled international conferences and attended a number of *ad hoc* discussions on various international shipping matters during FY 1980.

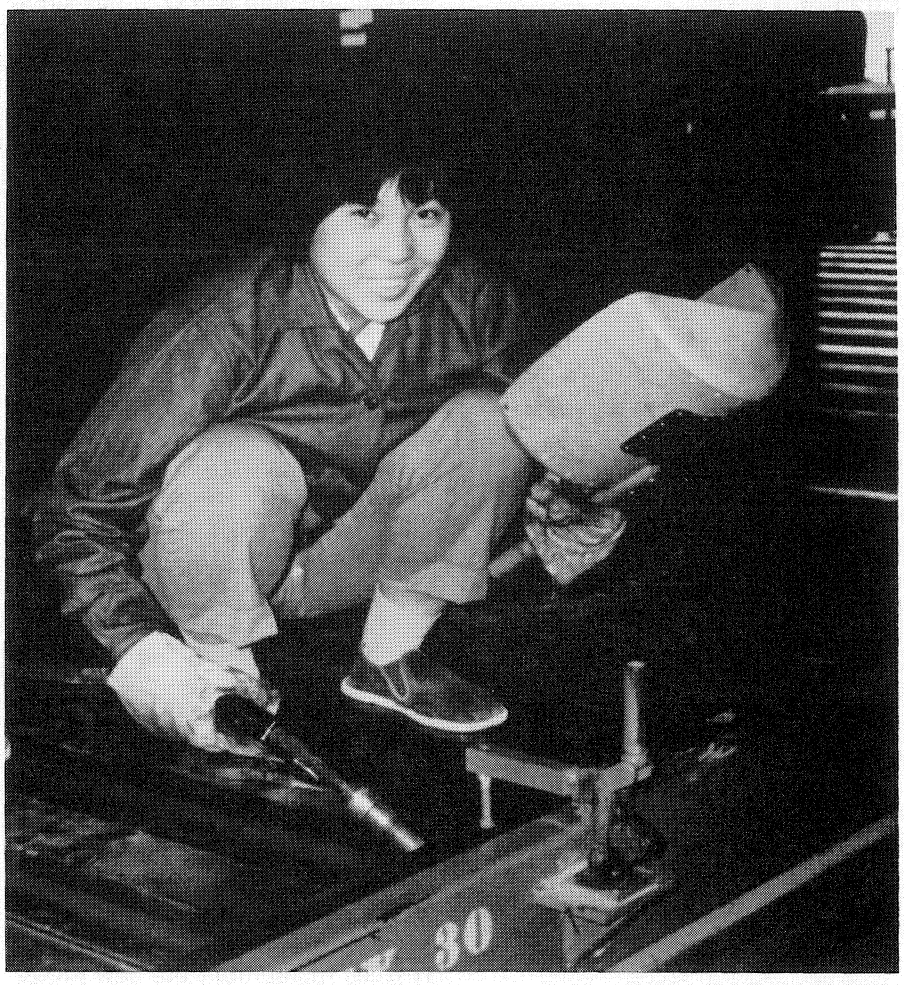
In addition to IMCO, these included meetings of two other United Nations agencies—the Organization for Economic Cooperation and Development (OECD) and the United Nations Conference on Trade and Development (UNCTAD)—which convene regularly to discuss subjects of importance to the U.S. merchant marine.

During this reporting period MarAd representatives attended IMCO conferences dealing with subdivision, stability and load lines, as well as maritime safety and environmental pollution.

UNCTAD meetings attended by the Agency's representatives included the *Ad Hoc* Committee on the Genuine Link Between the Flag of Registry and the Ownership of Merchant Vessels, and a meeting on the Code of Conduct for Liner Conferences.

Additionally, MarAd representatives attended meetings of the North Atlantic Treaty Organization (NATO) Planning Board for Ocean Shipping; four NATO groups—the Defense Shipping

Authority Group, Shipping War Losses Working Group, Freight Rates Study Group, and the Maritime Emergency Radio Communications Study Group; the OECD's Marine Transport Committee and Study Group on International Shipping; the Sixth International Conference and Exhibition on Liquefied Natural Gas; a port safety and security seminar in Mexico; and a technical sales seminar in East Europe.



Woman welder removes her mask momentarily at Guangzhou Shipyard Container Factory in People's Republic of China. First container built in China was designed under P.R.C. "Compensation Trade Agreement" by CTI-Container Transport International, White Plains, N.Y. Women comprise 35 percent of factory's 550-member Chinese workforce. U.S., P.R.C. signed a bilateral maritime agreement in FY 1980.

S.S. AUSTRAL PURITAN, newest and last of four 813-foot containerships to join Farrell Lines fleet, moves through Sydney Harbor with Opera House in immediate background. New Class-8 ships, operated in Farrell's liner service between U.S. East and Gulf Coasts and Australia and New Zealand, have container carrying capacity of 1,712 twenty-foot equivalent units (TEU).

Chapter 11

Administration

Maritime Subsidy Board

The Maritime Subsidy Board (MSB), by delegation from the Secretary of Commerce, awards, amends, and terminates contracts subsidizing the construction and operation of U.S.-flag vessels in the foreign commerce of the United States. To perform its functions, the MSB holds public hearings, conducts fact-finding investigations, and compiles and analyzes trade statistics and cost data. MSB decisions, opinions, orders, rulings, and reports are final unless reviewed by the Secretary of Commerce.

The Assistant Secretary of Commerce for Maritime Affairs, as ex-officio Maritime Administrator, is MSB Chairman. Other members are the Deputy Assistant Secretary and MarAd's General Counsel. The Secretary to MarAd and the MSB acts as an alternate member.

The MSB met 65 times during fiscal year 1980. It considered and acted on 285 items and issued 26 formal opinions, rulings, and orders. It also published 75 notices in the *Federal Register* on such matters as required statutory hearings and the development and adoption of rules and regulations implementing the Merchant Marine Act of 1936. The Secretary of the board, as Freedom of Information and Privacy Act Officer, received and processed approximately 230 Freedom of Information Act requests and 7 Privacy Act requests.

One MSB final decision, served July 10, 1980, found that Section 605(c) of the 1936 act was no bar to the award to American President Lines, Ltd., of requested operating-differential subsidy (ODS) for 26 additional sailings on its Trade Route 29 service between California and the Far East. Section 605(c) prohibits the award of subsidy for operations that would be in addition to existing U.S.-flag service unless it is determined that U.S.-flag service is inadequate and that the proposed additional service would further the purposes and policy of the act.

Other actions of interest taken by the MSB during FY 1980 included modification of regulations governing the payment of ODS to operators of bulk cargo vessels. Under this change, the amount of ODS payable will no longer vary directly with the percentage of total cargo carried in U.S. foreign commerce. Rather, 100 percent of subsidy otherwise payable under an ODS agreement will be paid to the operator.

On May 28, 1980, after extensive consultations with industry representatives, the MSB amended Part 283 of Title 46, Code of Federal Regulations, to adopt a new dividend policy for operators receiving ODS. The new policy is significantly less restrictive, in recognition of the need of shipping companies to provide an adequate return to shareholders in order to stimulate further investment. It also is designed to ensure that subsidized operators retain sufficient capital for timely replacement of existing vessels. In addition, the new policy reduces subsidized operators' reporting requirements.

In court action regarding the MSB's authority, the Supreme Court of the United States determined that MarAd may lift domestic trade restrictions on a vessel built with construction-differential subsidy (CDS) in return for the repayment of CDS (*Seatrain Shipbuilding Corp., et al. v. Shell Oil Co., et al.*, 100 S. Ct. 800, February 20, 1980). In light of the decision, on May 5, 1980, the MSB republished a notice in the *Federal Register* of proposed rulemaking to provide interested parties with the opportunity to comment further on the proposed policy to govern the total repayment of CDS by vessel owners.

Administrative Law Proceedings

MarAd's administrative law judges (ALJs), in conjunction with the Agency's executive staff, conduct public hearings necessitated by merchant marine and shipping statutes and prepare initial or recommended decisions. Cases are referred to ALJs by the Assistant Secretary of Commerce for Maritime Affairs or the MSB.

At the beginning of FY 1980, 20 proceedings were pending before the ALJs. Of these, 6 involved ODS and 14 concerned appeals of final decisions of contracting officers in disputes between shipowners or shipyards and the Maritime Administration, including the MSB.

During the year, two additional ODS cases were referred for hearing. Of the total docket, two initial decisions were issued and hearings were completed in another two cases. Twelve proceedings were either settled, withdrawn, or dismissed; one was returned to be handled administratively; and eight were certified to the MSB for final decisions. Only one case was pending before an ALJ at the close of the period.

Reduction in demand for administrative hearings may be attributed to new contracts which provide for the commercial arbitration of shipconstruction controversies, the financial reorganization of several carriers, and the completion of the processing of 20-year renewable ODS applications. Because the workload is expected to remain at a lower level over a long period, only one ALJ has been retained to handle MarAd cases.

Legal Services, Legislation, and Litigation

The General Counsel of the Maritime Administration, in addition to duties as a member of the Maritime Subsidy Board, provides legal services to all components

of the Agency. During FY 1980, this effort emcompassed all maritime aid programs, domestic and international shipping matters, rulemaking, litigation, and legislation.

The most significant case litigated, as mentioned above, ended with the unanimous decision of the Supreme Court that the Secretary of Commerce possessed the statutory authority to relieve a vessel built with CDS from the prohibition against permanent operation in domestic trades upon full repayment of the subsidy.

Another case, pending as a petition before the Supreme Court at the end of the period and opposed by the Government, held that commercial competitors lack standing to challenge Agency approvals of guarantees for vessel construction financing loans (*Great Lakes International v. Secretary of Commerce, et al.*, No. 80–336, unreported).

In FY 1980, Agency officials testified before Congressional committees on a number of major legislative proposals. Topics of maritime measures enacted into law during or subsequent to this reporting period included: extension of the war-risk insurance program (P.L. 96–195); continuation of authority to negotiate contracts for construction of subsidized vessels (P.L. 96–210); maritime education and training (P.L. 96–453); and the Agency's authorization act for fiscal year 1981 (P.L. 96–459).

Regulations, contract forms, and procedures were developed to enable the Agency's research and development program to take full advantage of the Grant and Cooperative Agreements Act of 1977.

Other significant projects and activities for which substantial legal support was provided included:

- The Maritime Prepositioning Ship program.
- Cooperation with the Environmental Protection Agency toward the development of a U.S.-flag incinerator ship.
- The processing of a large increase in applications under the Federal Ship Financing Guarantees Program.
- Implementation of Executive Order 12044, designed to improve Government rules and regulations.

Management Initiatives

Procedural and organizational reviews conducted during the year included studies of the offices of Shipbuilding Costs and Personnel. In addition, functional responsibilities, authorities, and procedures for the Ready Reserve Fleet (RRF) program were established.

Staffing adjustments were made in Agency activities to accommodate changes in workload patterns and in priorities of specific programs. The Agency absorbed a personnel ceiling reduction of 16 permanent positions while allocating a small increase to regional and National Defense Reserve Fleet staffs for RRF work.

Audits

The Office of the Inspector General, Department of Commerce, submitted to MarAd one internal audit report: *Audit of the Maine Maritime Academy, Castine, Maine*.

The General Accounting Office submitted two reports: *Emergency Planning Procedures of the Maritime Administration* and *Civilian Agencies Need Effective Planning Procedures to Eliminate Year-End Procurement Problems*.

MarAd agreed with the recommendations in these reports and has taken appropriate action to implement them.

Financial Analysis

Three studies to improve the analysis of the U.S.-flag liner industry were completed during FY 1980. These studies developed:

- A standard definition of "return on investment" on a trade-route basis, including allocation principles for investments shared among trade routes.
- A technique to measure the impact of inflation on the balance sheets and income statements of U.S.-flag liner companies.
- A revenue forecasting procedure based on projections of cargo tons, commodity mix, and tariff rates.

An investigation of the relationship between revenue generated by carriers and the economic performance of countries on a given trade route was suspended due to a lack of economic data, particularly for less developed countries. Further study, using data from the International Monetary Fund, is planned.

A computer program based on the return-on-investment study was written to explore its application to trade routes on which subsidized U.S.-flag liner companies are deployed. The program will be integrated into the Agency's Financial Information and Retrieval System (FIRST), oriented toward liner shipping.

Work continued on a similar system for deepdraft liquid and dry bulk carriers, barge and inland waterway carriers, and drilling rig and supply boat industries. Called FIRST XI, it will be capable of examining financial information related to industry segments included in the Title XI program.

Management Information

The Maritime Administration continued to expand the use of automation in the management and support of its programs during this reporting period.

The number of special analyses and reports prepared in response to requests from the maritime industry, the Congress, the Office of Management and Budget, other agencies and departments, as well as the Maritime Administration itself, increased substantially.

One of the new systems devel-

oped in FY 1980 is the Tentative Subsidy Rate Calculation System. Its objective is to enable MarAd to calculate tentative operating subsidies for eligible ship operators with data much more current than previously available. One result is to relieve operators of undue financial burdens.

Steps were taken during the year to give MarAd program managers independent access to foreign-trade data. Analyses obtainable include port-to-port cargo flows, statistics on foreign-flag competition, and trade route activity by ship type.

During FY 1980 the United States Merchant Marine Academy acquired a minicomputer to be used with the headquarters computer system to automate the nomination, admission, and registration of midshipmen.

Actions to improve the MarAd computer system included the installation of programming methods to increase productivity and to make computerized data accessible to individuals without technical training.

Personnel

Total employment in the Maritime Administration decreased from 1,456 to 1,381 in FY 1980. Minority employees represented 28 percent of the total workforce, occupied 17 percent of the supervisory positions, and held 10 percent of the GS-12 and above positions. Female employees represented 31 percent of the total workforce, occupied 14 percent of the supervisory positions, and held more than 9 percent of the GS-12 and above positions. Eight percent of MarAd's employees were designated as handicapped; more than one-half of those employees were disabled veterans.

During this reporting period, total MarAd employee attendance at formal Agency-sponsored training programs exceeded 1,600. The Agency continued to emphasize in-house training; 55 courses were offered within its facilities during FY 1980. The increased use of nontraditional instruction methods, such as programmed texts and video and audio tapes, made it possible for more employees to receive training at minimal cost.

During this fiscal year, 15 MarAd employees received high honors. One was recognized by the President as a Distinguished Executive. Five were awarded Silver Medals by the Department of Commerce, and nine employees received Bronze Medals, MarAd's highest honor award. In addition, two individuals were recognized for their contributions to the Equal Employment Opportunity Program. Performance awards were granted to 127 Maritime Administration employees. Included were 51 Quality Step Increases and 76 Special Achievement Awards.

Six Upward Mobility positions were established in this period, primarily through job restructuring. As a result of the recent Part-Time Employment Act, a vigorous program was launched to review vacant jobs for possible filling by individuals who do not wish to or cannot work full time.

Installations and Logistics

Real Property

At year's end the Maritime Administration's real property included the National Defense Reserve Fleet sites at Suisun Bay, Calif.; Beaumont, Tex.; and James River, Va.; a warehouse at Kearney, N.J.; the U.S. Merchant Marine Academy at Kings Point, N.Y.; and the Wilmington, N.C. Maritime Facility.

Radar training schools are operated at San Francisco, Calif.; New Orleans, La.; Toledo, Ohio; Seattle, Wash.; and New York, N.Y., and facilities for training maritime firefighters at Earle, N.J., and Treasure Island, Calif. Regional offices are operated in San Francisco; Cleveland, Ohio; New Orleans; and New York City. Market Development Offices are maintained in Long Beach, Calif; Chicago, Ill.; Seattle; Houston, Tex.; Atlanta, Ga.; and in the four regional headquarters.

The Agency maintains the National Maritime Research Center at Kings Point, N.Y., and a Ship Management Office in Norfolk, Va.

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

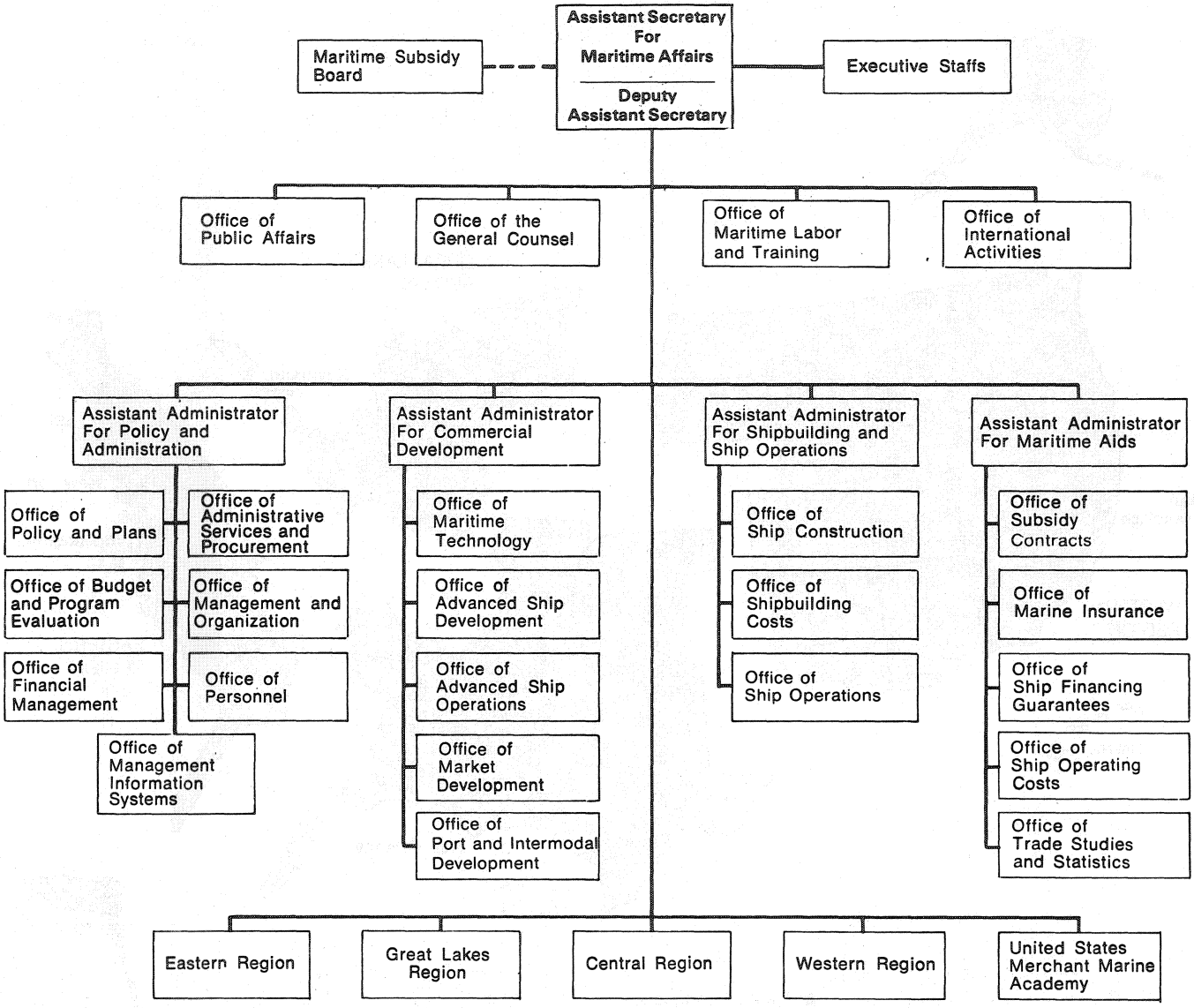
During the period MarAd terminated its contract with Todd Shipyards Corp. for various support services for the former National Maritime Research Center, Galveston, Tex. No MarAd property remains at that location.

Accounting

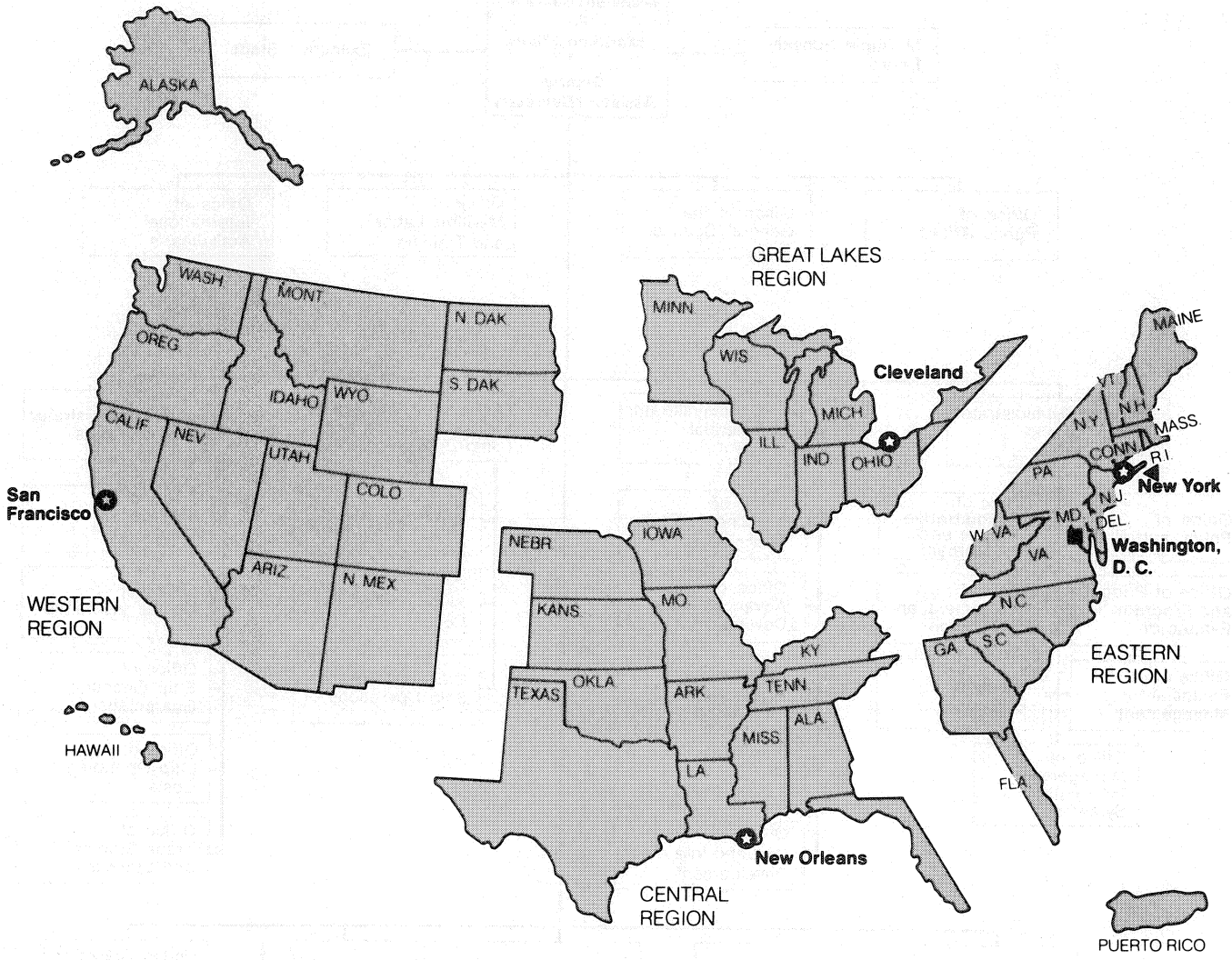
The accounts of the Maritime Administration were maintained on an accrual basis in conformity with generally accepted accounting principles and standards, and related requirements prescribed by the U.S. Comptroller General. The net cost of combined operations of the Maritime Administration for the year totaled $586.8 million. Total costs included $546.7 million for ODS and CDS, $24.3 million for research and development, $29 million for administrative expenses, $6.6 million for maintenance and preservation of reserve fleet vessels, and $9.2 million for financial assistance to State maritime academies. MarAd received $29 million in other operating income, net of expenses.

Financial statements of the Agency appear in Exhibits 1–3.

Maritime Administration
Organization Chart



Maritime Administration
Field Organization



■ MarAd Headquarters

Region Headquarters

▲ U.S. Merchant Marine Academy
Kings Point, N.Y.

FINANCIAL STATEMENTS

U.S. Department of Commerce—Maritime Administration

Exhibit 1. Statement of Financial Condition

September 30, 1979, and September 30, 1980

ASSETS

	September 30	
	1980	**1979**
Selected Current Assets		
Fund Balances with Treasury:		
Budget Funds	$ 404,476,852	$ 614,643,201
Deposit Fund	366,471	861,246
Allocations from Other Agencies	9,572,645	6,094,182
Budget Clearing Accounts	—	—
	414,415,968	621,598,629
Federal Security Holdings	139,671,000	100,096,000
Accounts Receivable:		
Government Agencies	4,968,172	2,090,416
The Public	2,148,322	3,061,450
Allowances (−)	−2,049,429	−889,241
	5,067,065	4,262,625
Advances To:		
Government Agencies	—	—
The Public	108,187	110,997
	108,187	110,997
Total Selected Current Assets	**$ 559,262,220**	**$ 726,068,251**
Loans Receivable:		
Repayment in Dollars	134,719,326	131,926,664
Allowances (−)	−55,940,521	−55,940,522
	78,778,805	75,986,142
Inventories:		
Raw Materials and Supplies	5,481,281	5,508,416
Real Property and Equipment:		
Land	6,419,234	5,811,757
Structures and Facilities	39,415,625	39,218,895
Equipment and Vessels	1,251,255,407	1,297,392,741
Leasehold Improvements	92,119	92,119
Allowances (−)	−1,202,302,229	−1,249,598,999
	94,880,156	92,916,513
Other Assets:		
Works-in-Process—Other	9,802,166	6,340,651
Material and Supplies	787,880	740,526
Non-Current Assets	4,262,443	4,221,991
Notes Receivable	25,791,364	26,801,418
Allowances (−)	−121,102	−121,102
	40,522,751	37,983,484
Total Assets	**$ 778,925,213**	**$ 938,462,806**

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

FINANCIAL STATEMENTS

U.S. Department of Commerce—Maritime Administration

Liabilities

	September 30	
	1980	1979
Selected Current Liabilities (Note 2)		
Accounts Payable (Including Funded Accrued Liabilities):		
Government Agencies	$ 2,167,311	$ 1,541,650
The Public	160,370,875	190,951,020
	162,538,186	192,492,670
Advances From:		
Government Agencies	9,706,048	6,094,182
The Public	17,216,341	15,907,114
	26,922,389	22,001,296
Total Selected Current Liabilities	**$189,460,575**	**$214,493,966**
Deposit Fund Liabilities	366,471	861,246
Unfunded Liabilities:		
Accrued Annual Leave	2,829,484	2,748,437
Other Liabilities:		
Vessel Trade-In Allowance	8,095,703	16,045,465
Total Liabilities	**$200,752,233**	**$234,149,114**
Government Equity		
Unexpended Budget Authority:		
Unobligated	252,796,639	164,836,639
Undelivered Orders	268,522,703	477,523,420
	521,319,342	642,360,059
Unfinanced Budget Authority (−):		
Unfilled Customer Orders	−2,747,998	−1,704,663
Contract Authority	−149,136,172	−129,942,357
	−151,884,170	−131,647,020
Invested Capital	208,737,808	193,600,653
Total Government Equity	**$578,172,980**	**$704,313,692**
Total Liabilities and Government Equity	**$778,925,213**	**$938,462,806**

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 Years Ended September 30, 1980, and September 30, 1979.

	Years Ended September 30	
	1980	**1979**
Balance Beginning of Fiscal Year	$704,313,692	$814,466,485
Additions:		
Funds Appropriated by Congress	$484,656,000	$482,391,000
Deductions:		
Net Cost of Combined Operations (Exhibit 3)	$586,771,453	$567,179,448
Payments into General Funds Receipts	18,350,073	11,400,049
Property Capitalized with Use of Funds	—	11,084,311
Property Transferred and Donations	5,675,186	2,254,985
Appropriation Transferred Out	—	625,000
	$610,796,712	$592,543,793
Balance, Close Accounting Period (Exhibit 1)	**$578,172,980**	**$704,313,692**

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 Years Ended September 30, 1980, and September 30, 1979

	Years Ended September 30	
	1980	**1979**
OPERATIONS OF THE MARITIME ADMINISTRATION:		
Net Costs of Operating Activities		
Reserve Fleet Programs:		
Depreciation on Vessels	$ 340,562	$ 341,455
Maintenance and Preservation	6,624,273	5,464,246
	6,964,835	5,805,701
Maritime Training Program	$ 14,151,735	$ 12,934,502
Maintenance of Shipyard and Warehouse	$ 13,332	$ 8,667
Direct Subsidies and National Defense Costs:		
Operating-Differential Subsidies	319,708,815	319,967,661
Construction-Differential Subsidies	226,986,682	201,495,276
Costs of National Defense Features	1,808,384	2,207,730
	$548,503,881	$523,670,667
Administrative	28,968,906	28,568,685
Research and Development	24,332,028	12,611,509
Financial Assistance to State Marine Schools	9,177,751	5,609,905
	$ 62,478,685	$ 46,790,099
Other Costs (Net of Income):		
Income on Sale of Obselete Vessels	−2,952,127	−428,786
Loss on Sale of Other Assets	1,184,593	3,688
Inventory and Property Adjustments	202,559	—
Interest Income	−2,623,534	−1,106,525
Miscellaneous (Net)	1,290,440	2,628,753
	−2,898,069	1,097,130
Net Cost of Maritime Administration Operations	**$629,214,399**	**$590,306,766**
OPERATIONS OF REVOLVING FUNDS (—Income):		
Vessel Operations Revolving Fund	$ 489,904	$ 2,898,405
War-Risk Revolving Fund	−713,222	−444,136
Federal Ship Financing Fund, Revolving Fund	−42,219,628	−25,581,567
Net Cost of Combined Operations (Exhibit 2)	**$586,771,453**	**$567,179,448**

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

Notes to Financial Statements—September 30, 1980, and September 30, 1979

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. The Maritime Administration was contingently liable under agreements insuring mortgages and construction loans payable to lending institutions totaling $5,932,663,342 on September 30, 1980, and $5,438,498,665 on September 30, 1979. Commitments to insure additional loans and/or mortgages amounted to $1,282,157,004 on September 30, 1980, and $938,459,219 on September 30, 1979. U.S. Government Securities and cash of $308,559,219 on September 30, 1980, and $265,121,307 on September 30, 1979, 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, 1980.

3. On September 30, 1980, the U.S. Treasury held in safekeeping for the Maritime Administration $180,000 of U.S. Government Securities which had been accepted from vessels, charterers, subsidized operators, and other contractors as collateral for their performance under contracts. On September 30, 1979, the amount was $300,000.

Appendix I: MARITIME SUBSIDY OUTLAYS—1936-1980

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	181,918,756	320,631,994
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	300,983,958
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	412,279,467
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	243,152,340	482,948,003
1976[2]	233,826,424	9,886,024	243,712,448	386,433,994	630,146,442
1977	203,479,571	15,052,072	218,531,643	343,875,521	562,407,164
1978	148,690,842	7,318,705	156,009,547	303,193,575	459,203,122
1979	198,518,437	2,258,492	200,776,929	300,521,683	501,298,612
1980	262,727,122	2,352,744	265,079,866	341,368,236	606,448,102
Total	**$3,135,809,321**	**$202,007,125**	**$3,337,816,446[3]**	**$5,824,021,842**	**$9,161,838,288**

[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 to 1955.
[2] Includes totals for FY 1976 and the Transition Quarter ending September 30, 1976.
[3] Includes approximately $26 million in CDS outlays repaid to the Federal Government as of September 30, 1980. Nearly $25.3 million of this total represents subsidy granted in the construction of the tanker STUYVESANT.

Appendix II: COMBINED CONDENSED FINANCIAL STATEMENTS OF COMPANIES WITH OPERATING-DIFFERENTIAL SUBSIDY CONTRACTS

Statement A—Combined Condensed Balance Sheets as of December 31, 1979, and 1978[1] (Amounts Stated in Thousands of Dollars)

ASSETS	**1979**	**1978**
Current Assets:		
Cash	$ 32,388	$ 28,332
Marketable Securities	75,556	105,939
Accounts Receivable	376,075	306,841
Other Current Assets	46,502	55,788
Total Current Assets	$ 530,521	$ 496,900
Special Funds and Deposits	163,080	207,501
Investments	20,701	23,537
Deferred ODS Receivable (See Contra)[2]	(31)	(31)
Property and Equipment Less Depreciation:		
Vessels	982,380	928,367
Other Property and Equipment	268,693	111,952
Other Assets	163,547	151,179
TOTAL ASSETS	**$2,128,891**	**$1,919,405**
LIABILITIES AND STOCKHOLDERS' EQUITY		
Liabilities:		
Current Liabilities:		
Accounts and Notes Payable	$ 270,017	$ 222,259
Current Portion of Long-Term Debt	21,829	64,180
Other Current Liabilities	159,946	139,965
Total Current Liabilities	$ 451,792	$ 426,404
Voyages in Progress (Net)	77,621	57,742
Long-Term Debt	774,559	625,875
Recapture ODS (See Contra)[2]	(31)	(31)
Other Liabilities	194,599	167,374
Total Liabilities	$1,498,540	$1,277,364
Stockholders' Equity:		
Capital Stock	85,745	89,025
Paid-in Capital	170,510	166,585
Retained Earnings	374,096	386,431
Total Stockholders' Equity	$ 630,351	$ 642,041
TOTAL LIABILITIES AND STOCKHOLDERS' EQUITY	**$2,128,891**	**$1,919,405**

[1] Data from Forms MA-172 filed by 18 subsidized companies.
[2] Represents ODS recapturable by Government pending settlement of 10-year subsidy recapture period.

Appendix II: (Continued)

Statement B—Combined Condensed Income and Retained Earnings for the Years Ending December 31, 1979, and 1978 (Amounts Stated in Thousands of Dollars)

	1979	1978
Shipping Operations:		
Revenue		
Terminated Voyages	$1,928,217	$1,627,054
Other Shipping Operations	6,359	1,203
Total Revenue	$1,934,576	$1,628,257
Expenses:		
Vessel Expense	955,106	824,265
Operating-Differential Subsidy (ODS)	(312,044)	(279,487)
Voyage Expense	910,710	725,488
Total Vessel/Voyage Expense (Net of ODS)	$1,553,772	$1,270,266
Overhead	197,713	180,219
Depreciation and Amortization on Shipping Property and Equipment	66,994	58,150
Other Expenses	16,618	14,534
Total Expenses	$1,835,097	$1,523,169
Shipping Operations Gross Profit	99,479	105,088
Other Income	28,795	36,113
Other Deductions	(73,765)	(68,372)
Shipping Operations Net Profit	$ 54,509	$ 72,829
Non-Shipping Operations Net Profit (Loss)	$ (363)	$ 6,453
Ordinary Income Before Income Taxes	$ 54,146	$ 79,282
Provision for Income Taxes	(16,379)	(17,028)
Ordinary Income After Income Taxes	$ 37,767	$ 62,254
Extraordinary Items—Income (Expense)	(379)	4,735
Income Taxes Thereon (Expense)	-0-	-0-
NET INCOME	**$ 37,388**	**$ 66,989**
Retained Earnings Beginning of Year[1]	382,998	395,572
Changes:		
Dividends	(48,495)	(74,991)
Other	2,205	(1,139)
Retained Earnings End of Year[1]	**$ 374,096**	**$ 386,431**

[1] Difference between 1978 Retained Earnings ending balance and 1979 Retained Earnings beginning balance is due to various accounting adjustments.

Forty-five-ton crane lifts container from truck to ship at Alabama State Docks, Port of Mobile.

Appendix III: RESEARCH AND DEVELOPMENT CONTRACTS AWARDED—FISCAL YEAR 1980

Project	Task	Vendor	Contract Number	Amount[1]
	Advanced Ship Development			
Shipbuilding Research:				
Shipyard Training Course	To assist the marine academic community prepare material for a course in ship production technology and ship construction planning at the University of Michigan.	National Oceanic and Atmospheric Administration Rockville, Md.	400-09014	$ 43,630
Research Engineering Applied to Productivity in Shipbuilding (REAPS) Product Information System, Task I*	To complete the data development requirements of the shipbuilding function relating to ship structure.	IIT Research Institute Chicago, Ill.	0-01089	259,596
AUTOKON Support Services	To support widespread implementation of advanced U.S. shipbuilding manufacturing technology to assist in reduction of shipbuilding costs.	IIT Research Institute Chicago, Ill.	5-38072	40,000
Surface Preparation and Coatings	To develop alternatives to silica abrasives and a system to recover abrasive minerals, and to design parameters to reduce painting costs in shipbuilding.	Avondale Shipyard Pascagoula, Miss.	5-38071	631,000
Controlled Cavitation Blasting for Surface Preparation of Structural Steel*	To design, construct, and demonstrate a system for controlled cavitation blasting of structural steel and to develop optimum parameters to produce a satisfactory surface for painting.	Federal Highway Administration Washington, D.C.	400-09003	50,000
Shipbuilding Technology Transfer	To transfer all engineering data developed under contract with IHI and Levingston Shipyard to microfiche for MarAd.	Levingston Shipyard Orange, Tex.	8-3036	15,000
Long-Range Facility Plans for U.S. Shipyards*	To develop a set of cost-effective, long-range plans to reduce labor costs and material-handling costs for ship construction.	National Steel and Shipbuilding San Diego, Calif.	01035	165,887
		Petersen Shipbuilders, Inc. Sturgeon Bay, Wis.	01030	55,000
		Todd Shipyards Los Angeles, Calif.	01029	41,650
		Avondale Shipyards New Orleans, La.	01031	130,237

[1] "Amount" = MarAd Funding in FY 1980.
*Asterisk indicates project is cost-shared. See Chapter 6.

Appendix III: (Continued)

Project	Task	Vendor	Contract Number	Amount
Automated Shipyard Facilities Development	To conduct a feasibility study and develop the recommended design of an automated facility for fabrication and erection of ship hull modules.	Avondale Shipyards New Orleans, La.	01017	$498,382
Improved Welding Technology	To evaluate the use of robot welders in U.S. shipyards and develop standard weld inspection criteria acceptable to industry and governmental organizations. To develop improved devices for fit-up and fairing steel prior to welding and to develop special studies aimed to improve welding technology in shipyards.	Sun Shipbuilding Chester, Pa.	01041	500,000
Improved Outfit and Production Aids*	To prepare handbooks and work manuals on logic, principles, and production engineering methods for new shipbuilding technology.	Todd Shipyards Seattle, Wash.	01107	332,000
Industrial Engineering	To conduct shipbuilding seminars on production planning and control.	Bath Iron Works Bath, Maine	01105	196,863
Ship Producibility	To develop proposed labor standards for U.S. shipyards.	Bath Iron Works Bath, Maine	3-36233	60,931
Shipbuilding Standards Development	To develop proposed labor standards for the U.S. shipbuilding industry in the areas of mechanical design/construction and piping systems.	Bath Iron Works Bath, Maine	01106	252,000
Research Engineering Applied to Productivity In Shipbuilding (REAPS) System Manager*	To assist U.S. shipbuilders in developing and implementing technological improvements in shipbuilding productivity.	IIT Research Institute Chicago, Ill.	5-38072	88,338
Ship Machinery and Outfitting:				
Merchant Vessel Propulsion Service Margin	To analyze the proper propulsion margins to be applied to various type vessels by marine diesel, gas and steam turbine engines, and to develop the appropriate combination of margins for each application.	Baham Corp. Columbia, Md.	01067	145,203

*Cost-Shared

Appendix III (Continued)

Project	Task	Vendor	Contract Number	Amount
Worldwide Analysis of Marine Bunker Fuel and Marine Plant System Analysis	To define both quantitatively and qualitatively a broad spectrum of characteristics of marine residual fuel oil as bunkered aboard steam-turbine ships.	Presearch, Inc. Arlington, Va.	01005	$ 36,840
Cavitation Erosion Resistant Repair System	To provide a method to repair and patch surface damage due to cavitation erosion to rudder horns, propellers, and other ship components.	Bell Aerospace Textron Niagara Falls, N.Y.	01058	34,009
Condensate Polishing*	To conduct tests of condensate polishing equipment aboard ship.	Drew Chemical Co. Boonton, N.J.	83117	24,300
Condenser Operation and Maintenance Improvement	To identify methods for monitoring and improving the performance, operation, and maintenance of shipboard main condensers.	Baham Corp. Columbia, Md.	01060	145,000
Arctic Transportation:				
Arctic Research and Development Plan	To develop a comprehensive set of research and development plans for MarAd's 5-year arctic marine transportation system and to assist in identifying other potential areas of ice-operating transportation systems.	Arctic Enterprises, Inc. Annapolis, Md.	01018	63,996
Operational Assessment of Commercial Ice-Breaking Ships*	To develop operational plans to conduct a joint test program.	Arctec, Inc. Columbia, Md.	900035	46,000
Assessment of Automation and Control Requirements for Diesel Propulsion	To evaluate and analyze shipboard automation and control requirements in order to develop a guide for the application of existing requirements.	Seaworthy Engine Systems Essex, Conn.	01039	75,119
Improved Utilization of Marine Bunker Fuels*	To evaluate the changes and benefits in performance and operation of medium-speed diesel engines fueled by various grades and blends of bunker fuels emulsified with water.	Transamerican De Laval, Inc. Oakland, Calif.	01059	360,810
Coal-Oil Mixture as a Marine Fuel	To examine the practical aspects of a coal-oil slurry fuel for marine boilers.	Babcock & Wilcox New Orleans, La.	01037	445,000

*Cost-Shared

Appendix III (Continued)

Project	Task	Vendor	Contract Number	Amount
Atomization of Residual Fuels for Marine Boilers	To evaluate a variety of techniques to improve atomization of high viscous marine residual fuels.	Combustion Engineering Windsor, Conn.	7-38010	$239,121
Machinery Conditioning Monitoring Techniques	To conduct research on techniques for ship's machinery wear to provide a basis for flexibility in the intervals between machinery overhaul and to reduce unscheduled downtime.	Mara-Time Service Corp. Northport, N.Y.	MA5-0107	148,356
	Advanced Ship Operations			
Fleet Management:				
Shipping Operations Financial Performance System	To enhance the U.S.-flag steamship operators' Financial Information Retrieval System to provide annual financial reporting and revenue forecasting.	RDW Systems Inc. Arlington, Va.	83078	73,735
Fleet Management Technology Support Services	To augment the internal MarAd program management team to permit increased Government/industry review and planning.	Simat, Helliesen & Eichner Inc. Washington, D.C.	01048	68,838
Shipping Management Center Requirements	To develop and implement advanced management techniques, procedures, and analytical tools for U.S.-flag ship operations.	Marine Management System, Inc. Stamford, Conn.	01070	138,914
Financial Management Seminar for American-Flag Ship Operators	To prepare and conduct a financial management seminar for U.S.-flag ship operators.	Paul Richardson Associates Holandel, N.J.	01071	45,352
Cooperative Research and Development	To conduct cooperative research to increase cargo productivity and corporate capability in an effort to improve performance on U.S.-flag water carriers.	American Steamship Co. Buffalo, N.Y.	01052	136,094
Preventative Maintenance and Machinery History	To develop a computer-based preventative maintenance and machinery history system for shipboard and shoreside requirements.	Pacific Gulf Marine, Inc. New Orleans, La.	01110	91,737

Appendix III (Continued)

Project	Task	Vendor	Contract Number	Amount
Fleet Operational Management System	To develop, evaluate, and conduct a demonstration of a personnel information system for shipboard use, including records of accidents, payroll, and employment.	Lykes Bros. Steamship Co., Inc. New Orleans, La.	01111	$105,904
Inventory Management of Spares	To analyze and evaluate the shipboard inventory-control process; designed to encompass inventory control interfacing with shoreside procurement.	Sun Transport, Inc. Claymont, Del.	01109	121,000
Ocean Shipping System Dynamics	To develop an Ocean Shipping System Dynamics capability for U.S.-flag ocean carriers.	Pugh Roberts Associates, Inc. Cambridge, Mass.	900072	37,248
Ship Performance and Safety:				
Hull Roughness Measurement	To provide a methodology for economic evaluation of ship hull roughness measurement and to assist industry in employing commercial hull management assessments.	Santa Fe Corp. Alexandria, Va.	900052	104,593
Human Resources in Ship Operations	To identify physical and organizational changes for increased safety and an individually satisfying industrial environment aboard merchant vessels.	Harry Lundeberg School Piney Point, Md.	01023	368,051
Internal Friction of Nondestructive Evaluation Technique for Liquefied Natural Gas Tanks*	To develop and produce an instrumentation package for friction-testing in-service LNG tanks.	Daldalean Associates, Inc. Woodbine, Md.	01065	284,709
Monitoring Airborne Asbestos Particles	To conduct Phase II to monitor potentially hazardous maintenance activity of airborne asbestos in marine vessels.	IIT Research Institute Chicago, Ill.	01008	48,771
Liquefied Natural Gas Technology Program/ Materials for LNG Application	To develop properties for concrete and aggregate at cryogenic temperatures.	National Bureau of Standards, National Engineering Laboratory Boulder, Colo.	400-09005	100,000
Liquefied Natural Gas Technology Research Program	To conduct field tests of LNG measurement devices to determine heating values of concrete and aggregate for LNG uses.	National Bureau of Standards, National Engineering Laboratory Boulder, Colo.	400-09006	100,000

*Cost-Shared

Appendix III (Continued)

Project	Task	Vendor	Contract Number	Amount
Skill Requirements fc. Great Lakes Fleet Personnel*	To analyze Great Lakes licensed personnel activity to identify specific skills required to improve the efficiency and operations of Great Lakes vessels.	The Stanwick Corp. Norfolk, Va.	01053	$ 65,128
Multi-Collision Avoidance System	To develop and implement a computer generated interactive multiship collision-avoidance system.	Systems Control Palo Alto, Calif.	00003	143,838
Cargo Handling:				
Technical Tasks for Research and Development in Cargo Handling	To provide and develop a plan for conducting research and development of waterborne cargo handling.	Advanced Technology, Inc. McLean, Va.	01049	106,998
Improved Air Distribution for Refrigerated Containers*	To develop, evaluate and demonstrate specific improvements in the distribution of air movement systems in refrigerated van containers.	U.S. Department of Agriculture Washington, D.C.	400-09009	80,000
Self-Unloaders for U.S. Dry-Bulk Vessels	To examine the economic and operational feasibility of self-unloading cargo-handling systems for U.S. dry-bulk ocean carriers.	COR, Inc. Falls Church, Va.	01068	100,000
Shipboard Cargo Handling for Dry-Bulk Carriers	To compile a document containing the various components and systems for use in marine operations and the maritime industry in planning to meet the critical needs of handling dry-bulk cargo.	C.R. Cushing, Inc. New York, N.Y.	01057	79,650
Cargo Restraining Systems*	To develop a guide for use by merchant vessel operators and designers in selecting container and trailer restraint systems.	C.R. Cushing, Inc. New York, N.Y.	01047	42,619
SEA-SHED Test and Evaluation*	To validate the engineering design and operational analysis of the SEA-SHED System.	Information Spectrum, Inc. Arlington, Va.	01091	199,080
Sealift Containership Readiness	To examine the use of non-ISO size containers in the SEA-SHED System for transport of military cargo.	Information Spectrum, Inc. Arlington, Va.	900073	32,933

*Cost-Shared

Appendix III (Continued)

Project	Task	Vendor	Contract Number	Amount
Liner Vessel Port Time Analysis	To conduct an engineering and economic analysis of liner vessel port time for identifying near-term improvements to assist in reducing vessel operating costs.	Epoch Engineering, Inc. Gaithersburg, Md.	01102	$ 66,166
	Port and Intermodal Development			
Equipment and Facilities:				
Marine Terminal Automated Management Control System*	To conduct a pilot demonstration of a computer-generated, automated management system in a public marine terminal.	ARINC Research, Inc. Annapolis, Md.	01004	230,355
Tanker Berthing Evaluation	To develop a simulation device to assist MarAd's Computer-Aided Operations Research Facility develop tugboat berthing procedures.	Hydronautics, Inc. Laurel, Md.	900087	212,000
Bulk Commodity Simulation Model	To provide increased capability for analysis of grain shipment, port congestion, scheduling, and interchange between the inland modes.	Martin Thomas & Co. Washington, D.C.	01098	12,180
Port Planning:				
Appropriate Tariff Rates for Ports	To develop a ratemaking formula for individual port authorities and conferences to enable the development of compensatory tariff rates on marine services.	Applied Systems Institute, Inc. Washington, D.C.	01009	145,556
National Planning Data Symposium	To plan and manage a national data planning conference to analyze management data problems submitted by organizations in the maritime and port industry.	International Services and Technology Institute Washington, D.C.	901006	32,171
Update Port System Study of Washington State and Portland, Oregon, Ports	To update existing data to provide an economic framework of cargo and transportation data enabling ports of the region to develop a port planning system.	Washington State Public Ports Association Olympia, Wash.	01019	48,435

*Cost-Shared

Appendix III (Continued)

Project	Task	Vendor	Contract Number	Amount
New England Ports and Harbors Study	To conduct a study of the impact of port traffic on the transportation networks of the region and develop a Transportation Management System to assist in port planning.	New England River Basin Commission Boston, Mass.	01043	$ 75,000
Delaware Regional River Study	To analyze the impact of port traffic on the transportation network in the region, identify potential port sites, and estimate future demands for terminal facilities.	Delaware River Authority Camden, N.J.	01044	102,500
City of Hartford Feasibility Study	To assess the feasibility of commercial port operations as an alternative plan for the city riverfront.	City of Hartford Planning Development Office Hartford, Conn.	01045	30,000
	Maritime Technology			
Advanced Ship Systems:				
Future Maritime Fleets*	To predict the future maritime environment which the U.S. Coast Guard and MarAd's research and development programs will encounter.	Forecasting International Ltd. Arlington, Va.	83023	10,000
Marine Transport of Alaska Coal*	To investigate the opportunity for domestic carriage of Alaskan steam coal and to prepare recommended vessel designs and economic analyses.	Placer Amex, Inc. San Francisco, Calif.	01069	56,728
Advanced Ship Power Systems	To produce a new high performance ship power system concept.	Baham Corp. Columbia, Md.	01072	64,936
Maritime Transportation Research Board*	To analyze critical maritime technological issues, including barriers to innovation, shipbuilding personnel requirements, and alternative fuels for maritime use.	Office of Naval Research Arlington, Va.	400-99007	141,643
Commercial Sailing Ships	To explore the technical, economic, and operational aspects of sail propulsion for commercial merchant ships carrying specified classes of commodities.	Wind-Ship Development Co. Norwell, Mass.	01027	138,840

*Cost-Shared

Appendix III (Continued)

Project	Task	Vendor	Contract Number	Amount
Pacific Bulk Coal Slurry Transportation	To analyze the recommendations of alternative coal slurry systems to export U.S. coal to the Far East.	Boeing Engineering and Construction Co. Seattle, Wash.	83038	$ 20,614
National Petroleum Reserve Marine Transport	To revise the cost basis and insert new data to examine alternatives for a national petroleum reserve.	J.J. McMullen Associates, Inc. New York, N.Y.	83082	64,712
Twenty-Five-Year Fleet Forecast	To prepare data to revise MarAd's Cargo/Ship Data Base for the fleet forecast and to provide a new series of reports on international trade and vessel analyses for U.S. ports.	Temple, Barker and Sloane, Inc. Lexington, Mass.	01101	42,975
Mobilization Ship Design*	To support design of a Security Class vessel.	M. Rosenblatt & Son, Inc. Arlington, Va.	9-00064	49,578
Mobilization Ship Model Tests*	To evaluate the performance of the Security Class vessel with experimental data.	Hydronautics, Inc. Laurel, Md.	9-00053	72,965
Security Class Mobilization Ship Design	To prepare the design of the Security Class vessel.	M. Rosenblatt & Son, Inc. Arlington, Va.	9-00064	355,311
Marine Science:				
Estimation of Full-Scale Hydrodynamic Coefficients	To design and assemble an instrumentation package for recording dynamic performance data from which hydrodynamic coefficients for ship equations of motion will be derived.	Systems Control, Inc. Palo Alto, Calif.	01092	436,491
Improved Maneuvering of Great Lakes Vessels in Critical Channels	To validate a model of maneuvering characteristics on the Great Lakes, employing full-scale data obtained from actual transits.	Stevens Institute of Technology Hoboken, N.J.	83083	10,620
Full-Scale Maneuvering Coefficients	To develop a systems identification procedure for obtaining full-scale maneuvering coefficients to improve the accuracy of simulations relating to ship design.	Massachusetts Institute of Technology Cambridge, Mass.	5-38073	21,970

*Cost-Shared

Appendix III (Continued)

Project	Task	Vendor	Contract Number	Amount
Large-Diameter Light Weight Propeller	To study technical problems and examine benefits and opportunity for developing new technology for building propellers.	Hydronautics, Inc. Laurel, Md.	01061	$112,719
Sources of Hull Vibration Induced by Propeller Cavitation	To develop a computer program which will predict propeller forces of cavitating and non-cavitating propellers.	Massachusetts Institute of Technology Cambridge, Mass.	900032	101,000
Propeller-Induced Harmonic Forces Vibration Criteria	To develop a model employing methods for examining propeller and hull forces to determine acceptable levels of vibration and to identify proposed standards for structural response of the ship.	Littleton Research Co. Littleton, Mass.	0-2269	10,000
Non-Linear Ship Springing*	To develop and validate a linear theory for springing response due to short wave action.	American Bureau of Shipping, New York, N.Y.	7-38060	49,600
Collapsing Bow of a Striking Ship	To develop a methodology for analyzing the collapsing bow of a striking ship.	Hydronautics, Inc. Laurel, Md.	01051	92,350
University Research:				
Inland Waterway Port Model	To implement an inland waterway port model to provide improved estimates of port and terminal operating characteristics to be used with advanced analytical methodologies to plan an inland marine transportation model of U.S. waterways.	University of Tennessee Knoxville, Tenn.	01042	48,053
Biofouling Control Through Electrochemical Modification on Interfaces	To demonstrate the expected interfacial properties on control fouling in the marine environment.	University of Miami Coral Gables, Fla.	01078	49,996
Application of Experimental Means of Assessing and Optimizing for Reducing Wave Production Power of Ships	To employ a recently developed and proven method to carry out method wave surveys, optimization schemes, and wake measurements on a model of MarAd hull design.	Webb Institute of Naval Architecture Glen Cove, N.Y.	01079	30,970
The Characteristics of a High Performance, Systematic Series of Tandem Propellers	To define the characteristics of an extensive high-performance, systematic series for use in the design of ships with tandem propellers.	Webb Institute of Naval Architecture Glen Cove, N.Y.	01080	23,040

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Appendix III (Continued)

Project	Task	Vendor	Contract Number	Amount
Maximum Strength of Ship Hulls	To develop an analytical method for determining the maximum strength of ship hulls subjected to a combination of bending, shear, torsion, and normal water pressure.	Lehigh University Bethlehem, Pa.	01081	$ 49,990
Stress and Deflection Analysis of Machinery Components on Great Lakes Vessels	To analyze the stress and deflections of machinery components caused by hull deflection and to demonstrate those deflections on components design.	University of Michigan Ann Arbor, Mich.	01082	48,151
A New Propulsion System for Ships	To analyze the use of contra-rotating propeller arrangement employing the new propulsion system in a surface vessel.	University of Rhode Island Kingston, R.I.	01083	48,000
Identification and Minimization of Propulsion Losses Related to Ship Steering	To conduct model tests and computer simulation and control structure studies to quantify losses due to steering and to determine the derivation of controller structures to minimize losses.	University of Illinois Urbana, Ill.	01084	33,084
Formulation of Capital Budgeting Techniques in Port Development.	To develop a multistage capital budgeting technique to formulate and evaluate public and private budgeting alternatives for port development.	Washington University St. Louis, Mo.	01085	50,000
Improving Accuracy Control While Zone Outfitting in U.S. Shipyards	To prepare a descriptive educational program for welders in the art of flame welding and develop a system for accuracy control as it relates to joining of subassemblies.	University of Washington Seattle, Wash.	01086	41,976
Implications of Power Plant Coal Conversions on the Ports of New England	To analyze and determine optional transportation planning for the reuse and redevelopment of marine transport networks in the New England Region.	Boston University Boston, Mass.	01087	39,211
Model of Lightering Operations	To develop and validate an analytic model of lightering operations to evaluate decision variables relative to location of lightering operations to the port and the size of the lightering fleet to determine operating effectiveness.	Northwestern University Evanston, Ill.	01088	31,653

Appendix III (Continued)

Project	Task	Vendor	Contract Number	Amount
Information Exchange:				
Maritime Research Information Service	To provide a central clearing house for all maritime research references and information during fiscal year 1980.	National Academy of Sciences Washington, D.C.	5-38005	$200,000
Maritime Research Information Service	To provide for the acquisition, selection, storage, retrieval, and dissemination of references, research and development technical reports, and journal articles in the maritime field.	National Academy of Sciences Washington, D.C.	01100	210,000
Investigation of Anti-Fouling Coatings	To develop a system for reducing underwater hull roughness without causing permanent harm to the marine environment.	University of New Orleans New Orleans, La.	83049	63,765
Industrial Plant Vessels:				
Institutional Support for Industrial Plant Vessel Program	To identify institutional factors and develop appropriate recommendations to encourage construction of plant vessels	Technology Applications, Inc. Falls Church, Va.	01046	120,813
Siting Logistics of Industrial Plant Vessels	To evaluate the siting effects on logistic costs for plant vessels.	Logical Technical Services Corp. New York, N.Y.	01016	67,477
Waterborne Trash Recycling Plant	To analyze and prepare a proposed waterborne trash recycling system acceptable for use by municipal governments.	Global Marine Development, Inc. Newport Beach, Calif.	83081	99,850
Fish Processing Plant Ship	To evaluate the concept of using plantships to support the expanded U.S. fishing fleet jurisdiction.	Santa Fe Corp. Alexandria, Va.	01063	139,206
Navigation/Communication:				
Digital Selective Calling Operational Tests	To provide support for tests of Selective Calling (SELCALL).	Institute of Telecommunication Boulder, Colo.	400-09004	28,000
Satellite Testing	To modify existing laboratory equipment to conduct testing through the Pacific Marisat.	Mitre Metrek Division McLean, Va.	83108	16,620
Radio Technical Commission	To support the Radio Technical Commission for Marine Services in FY 1980.	U.S. Coast Guard/Federal Communications Commission Washington, D.C.	400-09001	18,000

Appendix III (Continued)

Project	Task	Vendor	Contract Number	Amount
Radio Frequency Management	To participate in the Radio Frequency Management Program	National Oceanic & Atmospheric Administration Rockville, Md.	400-09013	$ 11,350
Institute of Telecommunication Sciences Engineering	To participate in the development of advanced communications.	Institute of Telecommunication Sciences Boulder, Colo.	400-09004	64,000
Digital Selective Calling	To provide support to the U.S. position for standardization of protocols for Digital SELCALL.	U.S. Coast Guard Washington, D.C.	400-09007	15,000
Market Analysis:				
Neobulk Market Assessment	To develop U.S. international trade data to enhance a computer-generated foreign trade model of U.S. cargo movements.	Booz, Allen and Hamilton Bethesda, Md.	83036	33,435
Assessment of Maritime Transportation Requirements for the Auto Industry	To assess the supply and demand, requirements, and opportunity for U.S.-flag ocean carriers of products of the automobile industry.	Ecosometrics, Inc. Bethesda, Md.	01093	123,366
Market Assessment Support Capability	To identify and provide guide assessments of rapidly developing shipping market conditions which could affect the competitive position of the U.S.-flag merchant fleet.	Jack Faucett Associates Chevy Chase, Md.	01075	125,000
Implementation of the UNCTAD Liner Code	To develop and evaluate options available to the United States in response to the implementation of the Liner Code.	TRG Washington Group Washington, D.C.	01076	204,959
Maritime Market Strategy Model	To develop a market strategy analysis mechanism enabling U.S.-flag ocean carriers to predict changes in market share that will affect shipping services and operating conditions.	Market Facts, Inc. Chicago, Ill.	01096	249,804
North American Pleasure Cruise	To develop indepth market profiles for potential U.S.-flag cruise ship service to Hawaii and Alaska.	Centaur Associates, Inc. Washington, D.C.	900037	25,736

Project	Task	Vendor	Contract Number	Amount
		National Maritime Research Center		
Computer-Aided Operations Research Facility:				
Management and Operations*	To provide staff and technical expertise in the management of the simulator's operations at the Computer-Aided Operations Research Facility for the period January 1 to December 31, 1980.	Grumman Data Systems Bethpage, N.Y.	00002	$3,660,331
Engineering Maintenance and Support*	To provide engineering maintenance support services to the Computer-Aided Operations Research Facility January 1 through December 31, 1980.	Sperry Systems Management Great Neck, N.Y.	01040	1,992,285

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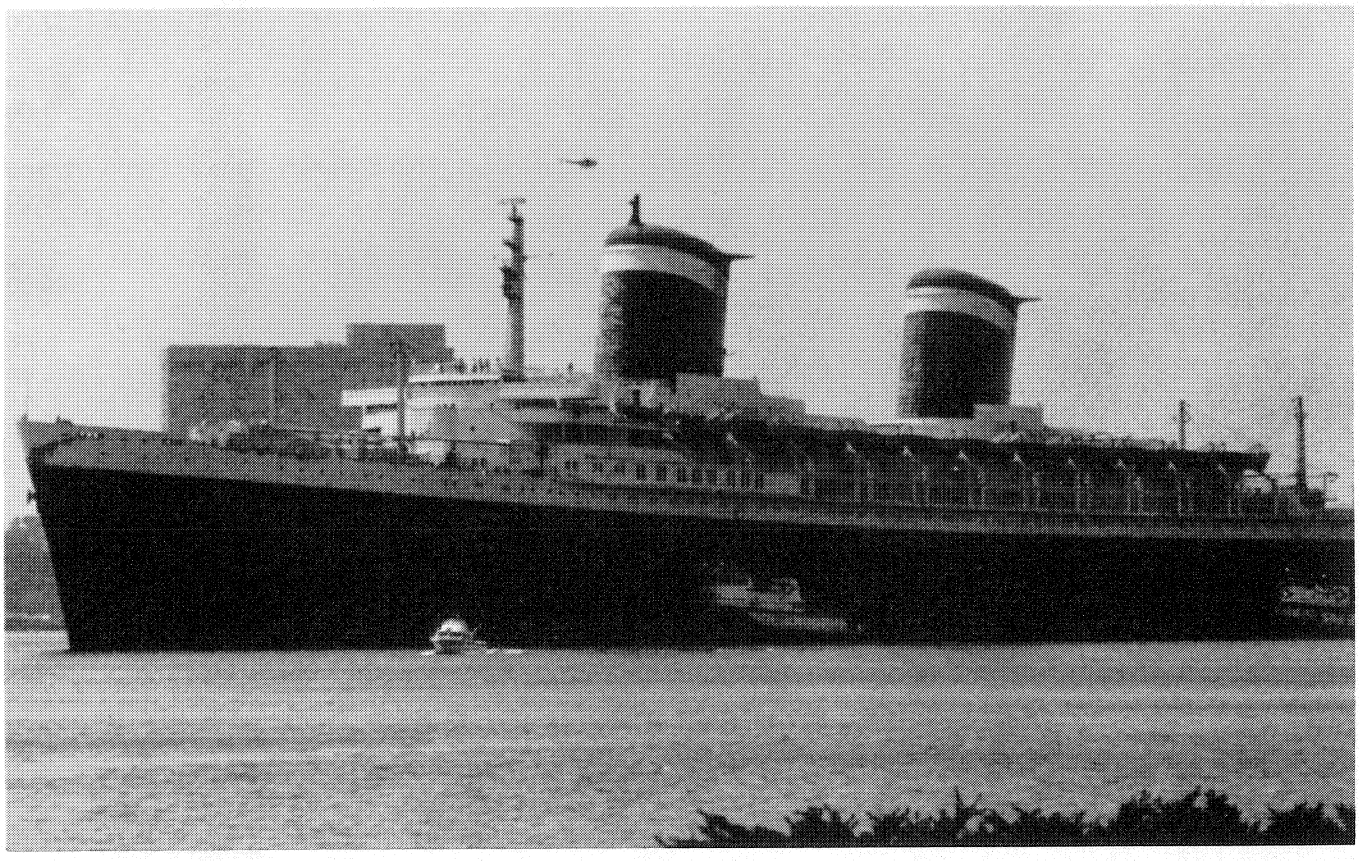
Helicopter circles overhead as tugs move S.S. UNITED STATES from her Norfolk, Va., berth to dry dock. Hull of former United States Lines luxury liner was inspected in connection with her sale by Federal Government to United States Cruises, Inc., Seattle, Wash. (see Chapter 2). Laid up since 1969, ship still holds transatlantic speed record for a passenger vessel.



Appendix IV: STUDIES AND REPORTS RELEASED IN FY 1980

The following major* studies or reports were released by the Maritime Administration during fiscal year 1980.

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 the 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 1979 (The Annual Report of the Maritime Administration for Fiscal Year 1979), 117pp $4.75 [GPO]

Index of Current Regulations of the Maritime Administration, Maritime Subsidy Board, National Shipping Authority (revised as of January 1, 1980) 43pp [MarAd]

Containerized Cargo Statistics, Calendar Year 1978, July 1980, 115pp [MarAd]

Vessel Inventory Report as of December 31, 1979, March 1980, 61 pp [MarAd]

United States Port Development Expenditure Survey, January 1980, 45pp $2.50 [GPO]

Standard Specifications for Slow Speed Diesel Merchant Ship Construction, July 1980, 450pp, PB-80-224074, $21 [NTIS]

Cost Impact of U.S. Government Regulations on U.S.-Flag Ocean Carriers, prepared by Ernst & Whinney December 1979 [NTIS]:

Executive Summary		43pp
PB-151384		$6.00
Final Report		150pp
PB-151392		$10.00
Appendix A-Volume I		314pp
PB-151400		$17.00
Appendix B-Volume II		288pp
PB-151418		$16.00
Appendix C-Work Manuals		143pp
PB-151426		$10.00
Set		$50.00
PB-151376		

A Special Report on Competition, prepared by Simat, Helliesen & Eichner, Inc. October 1979 [NTIS]:

Volume 1	Executive Summary	54pp
PB-80-161318		$7.00
Volume 2	Final Report	367pp
PB-80-161326		$19.00
Volume 3	Appendices	137pp
PB-80-161334		$10.00
Set		$33.50
PB-80-161300		

A Special Report on Finance, prepared by RDW Systems, Inc. February 1980 [NTIS]:

Volume 1	Executive Summary	24pp
PB-174121		$5.00
Volume 2	Performance Evaluation	104pp
PB-174139		$9.00
Volume 3	Appendices	73pp
PB-174147		$7.00
Set		$14.50
PB-174113		

A Special Report on Productivity, prepared by Econ, Inc., October 1979 [NTIS]:

Volume I	Executive Summary	71pp
PB-142748		$7.00
Volume II	Technical Methodology	172pp
PB-142755		$11.00
Volume III	Ship Summary-General Cargo	128pp
PB-142763		$10.00
Volume III [*sic*]	Ship Summary-Bulk Carriers	111pp
PB-142771		$9.00
Volume IV	Appendix	145pp
PB-142789		$10.00
Set		$42.50
PB-142730		

Pacific Bulk Commodity Transportation System, prepared by Boeing Engineering and Construction Co. August 1980 [NTIS]:

Volume 1	Executive Summary	23pp
PB-80-222565		$5.00
Volume 2	Final Report	448pp
PB-80-222573		$22.00
Volume 3	Appendices	573pp
PB-80-216229		$27.00

*Current reports and studies of the Maritime Administration are listed in "MARAD PUBLICATIONS—1980," which is available upon request from headquarters and field offices of this Agency.

Acknowledgments

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Alabama State Docks, Mobile
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CTI-Container Transport International
Don Maskell Photography
Dravo Mechling Corp.
Farrell Lines, Inc.
Interlake Steamship Co.
Levingston Shipbuilding Co.
Lykes Bros. Steamship Co., Inc.
National Steel and Shipbuilding Co.
Newport News Shipbuilding and Dry Dock Co.
Republic Steel Corp.
Sun Shipbuilding and Dry Dock Co.
Waterman Steamship Corp.

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