

MARAD '87



U.S. Department
of Transportation

**Maritime
Administration**

MARAD '87

The Annual Report of the
Maritime Administration
for Fiscal Year 1987

U.S. DEPARTMENT OF TRANSPORTATION
Maritime Administration

MAY 1988

Table of Contents

Transmittal Letter		Chapter 6—Research and Development	33
Foreword	v	Shipbuilding	33
Chapter 1—Shipbuilding and Conversion	1	Ship's Machinery	33
Shipyard Activity	1	Fleet Management Technology	33
Auxiliary Crane Ship Conversions	1	Government Shipping Research	34
Vessels on Order	1	Cargo-Handling Technology	34
Ship Deliveries	1	Military Sealift Technology	34
Title XI Guarantees	1	Effective Manning	35
Capital Construction Fund	4	CAORF	35
Construction Reserve Fund	4	Advanced Systems and Technology	35
Service Craft	5	Marine Science	36
Shipyard Improvements	5	Arctic Shipping	36
Chapter 2—Ship Operations	6	Chapter 7—Maritime Labor and Training	37
U.S. Fleet Profile	6	U.S. Merchant Marine Academy	37
Operating-Differential Subsidy	6	State Maritime Academies	38
Section 614 Activities	6	Supplemental Training	38
Subsidy Rates	6	Labor Relations	38
Passenger/Cruise Service	6	Longshore	38
Section 804 Activities	8	Seafaring	38
Corporate/Service Changes	9	Labor Data	38
Foreign Transfers	9	Merchant Marine Awards	38
Chapter 3—Domestic Operations	19	Chapter 8—National Security	41
Great Lakes	19	Reserve Fleet	41
Inland Waterways	19	Ready Reserve Force	41
Domestic Ocean Trades	20	Ship Design and Engineering	43
Charter Market Activity	20	Exchanges for Scrap	43
Offshore Drilling	21	Ship Sales	43
Chapter 4—Market Development	22	Fish Reef Program	43
Marketing Program	22	War-Risk Insurance	43
Market Analysis and Planning	22	Marine Insurance	45
Bilateral Cargo Monitoring	22	Emergency Operations	45
Preference Cargoes	22	Emergency Port Operations	45
Agencies Not in Full Compliance with Public Law 664	26	Chapter 9—International Activities	47
Ocean Freight Rate Differential	26	Maritime Negotiations with the Soviet Union	47
Department of Defense	26	Mission to Far East Countries	47
Strategic Petroleum Reserve	27	Maritime Negotiations with Taiwan and Korea	47
Eximbank	27	Maritime Discussions with Colombia	47
Chapter 5—Port and Intermodal Development	28	Maritime Negotiations with Peru	47
Port and Waterway Development	28	Consultative Shipping Group	47
Technical Assistance to Ports	28	Other International Conferences	47
Port and Intermodal Planning Program	28	Chapter 10—Administration	49
Port and Intermodal Operations Program	30	Maritime Subsidy Board	49
Technology Transfer	31	Legal Services, Legislation and Litigation	49
		Management Initiatives	50

Audits	50	4 Federal Ship Financing Guarantee (Title XI) Program Summary— September 30, 1987	4	14 Foreign Transfers and Other Section 9 Approvals— FY 1987	17
Information Management	50	5 Capital Construction Fund Holders—September 30, 1987	5	15 U.S. Great Lakes Fleet— September 30, 1987	19
Personnel	50	6 Construction Reserve Fund Holders—September 30, 1987	5	16 Government-Sponsored Cargoes— Calendar Year 1986	23
Safety Program	50	7 U.S. Oceangoing Merchant Marine May 1, 1987	8	17 Maritime Workforce Average Monthly Employment	39
Asbestos Control	50	8 Employment of U.S.-Flag Oceangoing Merchant Fleet—July 1, 1987	9	18 National Defense Reserve Fleet— September 30, 1987	42
Installations and Logistics	51	9 Major Merchant Fleets of the World— January 1, 1987	10	19 National Defense Reserve Fleet, 1945—1987	42
Real Property	51	10 U.S. Oceanborne Foreign Trade/Commercial Cargo Carried	11	20 Marine and War-Risk Insurance Approved in FY 1987	43
Accounting	51	11 ODS Accruals and Outlays— January 1, 1937, to September 30, 1987	12	Appendices:	
Maritime Administration Organization Chart	52	12 Operating-Differential Subsidy Accruals and Outlays by Lines— January 1, 1937, to September 30, 1987	13	I Maritime Subsidy Outlays-1936-1987	58
Maritime Administration Field Organization Chart	53	13 ODS Contracts in Force— September 30, 1987	14	II Combined Condensed Financial Statements of Companies with ODS Contracts	59
Financial Statements				III Research and Development Contracts Awarded Fiscal Year 1987	61
Exhibit 1 Statement of Financial Condition	54			IV Studies and Reports Released in FY 1987	68
Exhibit 2 Statement of Operations	56				
Notes to Financial Statements	57				
Tables:					
1 MARAD Managed Auxiliary Crane Ship Conversion Activity—September 30, 1987	2				
2 New Commercial Ships Delivered From U.S. Shipyards During FY 1987	3				
3 Worldwide Ship Deliveries— Calendar Year 1986	3				



THE SECRETARY OF TRANSPORTATION
WASHINGTON, D.C. 20590

The Honorable George Bush
President of the Senate
Washington, D.C. 20510

The Honorable James C. Wright, Jr.
Speaker of the House
of Representatives
Washington, D.C. 20515

Dear Sirs:

I have the pleasure of forwarding to you the annual report of the Maritime Administration for fiscal year 1987 as required by the Merchant Marine Act, 1936, as amended.

Sincerely,


Jim Burnley

Enclosure



The 21,000-deadweight-ton containership, SEA-LAND ANCHORAGE, was built by Bay Shipbuilding Corp. and delivered in fiscal year 1987.

FOREWORD

The Annual Report of the Maritime Administration (MARAD) for the fiscal year ending September 30, 1987, is submitted in accordance with Section 208 of the Merchant Marine Act, 1936, as amended.

It incorporates reports required by the Congress on the following topics: acquisition of obsolete vessels in exchange for credit; war-risk insurance activities; scrapping or removal of obsolete vessels owned by the United States; and U.S.-flag carriage of Government-sponsored cargoes. No reportable activities occurred during FY 1987 concerning the allocation of construction- and operating-differential subsidy to port ranges and the settlement of claims arising under the Suits in Admiralty Act.

Five new commercial vessels totaling 456,680 deadweight tons (dwt.) were delivered by U.S. shipyards in FY 1987. At the close of the reporting period, one 21,000-dwt. containership was under construction in an American shipyard. No new commercial contracts were awarded to U.S. shipyards.

Commercial shipyards continued to handle all new construction in the largest combatant shipbuilding program in the U.S. Navy's peacetime history. The Navy committed \$59.5 billion to this program in the last 5 years.

The Agency continued to experience a number of defaults under its Federal Ship Financing Guarantee (Title XI) Program in FY 1987. However, legislation was enacted amending the Bankruptcy Code to facilitate Government foreclosures on Title XI vessels under Chapter 11 proceedings. No new Title XI applications were approved during the period.

At the end of the reporting period, the U.S.-flag privately owned, deep-draft merchant fleet (including the Great Lakes fleet) totaled 549 vessels with an aggregate carrying capacity of 23 million dwt.

The report provides details on these topics and many other MARAD activities as well as on the state of the maritime industry.

JOHN A. GAUGHAN
Maritime Administrator

Chapter 1

Shipbuilding and Ship Conversion

Six new commercial vessels were delivered by U.S. shipyards in FY 1987.

Shipyard Activity

During FY 1987, commercial shipyards continued to participate in the largest combatant shipbuilding program in the U.S. Navy's peacetime history. The Navy committed \$59.5 billion to this program in the past 5 years. All new Navy construction contracts continue to be awarded to the Nation's commercial shipyards.

As of September 30, 1987, there were 59 naval vessels (excluding noncombatant T-Ships) under construction or on order in 10 privately owned U.S. shipyards. In addition, under the Navy's T-Ship program, 10 privately owned shipyards had 19 new T-Ships on order or under construction as well as 7 merchant ships being converted or under contract for major conversion. Seven T-Ships were delivered during the year. The prefix "T" designates civilian-manned ships, both Government-owned and privately owned, operated by or under charter to the Military Sealift Command.

Vessel types in the multi-billion dollar T-Ship procurement program include maritime prepositioning ships, fast sealift ships, fleet oilers, auxiliary crane ships and hospital ships. Ships in this program are mission-oriented, designed to perform a specific primary service, such as underway refueling or off-loading other ships which do not possess self-unloading capability.

No private contracts were awarded to U.S. shipyards for merchant vessels over 1,000 gross tons in fiscal year 1987. The Maritime Administration (MARAD) has requested no construction differential-subsidy (CDS) funds since FY 1981.

Auxiliary Crane Ship Conversions

Under a Memorandum of Understanding with the Navy, MARAD is responsible for administration of one aspect of the Navy's T-Ship Program. The Auxiliary Crane Ship (T-ACS) project involves the reactivation and conversion of 12 existing Ready Reserve Force (RRF) ships to auxiliary crane ships. Each is being equipped with either two or three sets of pedestal-mounted twin cranes with an outreach capable of unloading adjacent containerships lacking cargo-handling gear. They are intended to be utilized militarily in forward areas where cargo-handling facilities are limited, such as in underdeveloped ports or ports damaged by hostilities. As of September 30, 1987, three T-ACS ships were completed and available for military exercises, and five were under contract for conversion. (See Table 1.)

During FY 1987, MARAD supervised the substantial completion of the fourth auxiliary crane ship conversion for the Navy, the SS GOPHER STATE (T-ACS 4), formerly the containership EXPORT LEADER. The conversion work was performed by Norfolk Shipbuilding and Drydock Corp. (NORSHIPCO) of Norfolk, VA, under a three-ship competitive bid procurement contract. Also during FY 1987, MARAD supervised the ongoing conversion of the fifth and sixth auxiliary crane ships (T-ACS 5 and 6) at NORSHIPCO.

In September 1987, MARAD contracted for the conversion of the seventh and eighth auxiliary crane ships (T-ACS 7 and 8) with Tampa Shipyards Inc. of Tampa, FL. Their scheduled completion dates are in the first and second quarters of FY 1989, respectively.

Vessels on Order

At the end of FY 1987, one merchant vessel over 1,000 gross tons was under construction in a U.S. shipyard. This containership, being built by Bay Shipbuilding Corp., was scheduled for delivery in November 1987. Two incinerator ships previously under construction by Tacoma

Boatbuilding Co. have been removed from the orderbook until contract problems are resolved.

Ship Deliveries

Five new commercial vessels totaling 456,680 dwt. and one clamshell dipper dredge were delivered by U.S. shipyards in this reporting period. (See Table 2.) Delivered in FY 1987 were:

- Two 209,200-deadweight tons (dwt.) crude oil tankers, EXXON VALDEZ and EXXON LONG BEACH, built by National Steel and Shipbuilding Co.
- Two 21,000-dwt. containerships, SEA-LAND ANCHORAGE and SEA-LAND TACOMA, built by Bay Shipbuilding Corp.
- The 5,280-dwt. self-propelled hopper dredge, ATLANTIC AMERICAN, built by McDermott Shipyards, Inc.
- The 1,516-gross ton clamshell dipper dredge, CHICAGO, built by Southern Shipbuilding.

Table 3 shows merchant ship deliveries by major shipbuilding nations during calendar year 1986.

Title XI Guarantees

Title XI of the Merchant Marine Act, 1936, as amended, established the Federal Ship Financing Guarantee Program. As originally enacted, Title XI authorized the Federal Government to insure private-sector loans or mortgages made to finance or refinance the construction or reconstruction of American-flag vessels.

Title XI was amended in 1972 to provide direct Government guarantees of the underlying debt obligations, with the Government holding a mortgage on the equipment financed.

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 owners.

No Title XI guarantees were approved in principle by MARAD during FY 1987. Based on previous Title XI commitments, however, MARAD issued security agreements covering a total of three vessels during this reporting period.



The EXXON LONG BEACH, second of three 209, 200-deadweight-ton crude oil tankers built for Exxon Shipping Co., by National Steel and Shipbuilding Co., during sea trials. The vessel was delivered in March 1987.

Table 1: MARAD MANAGED AUXILIARY CRANE SHIP CONVERSION ACTIVITY DURING FY 1987

Project	Shipyard	No. Ships	Est. Redelivery Date	Total* Est. Price (Millions)
Conversions Completed				
T-ACS 3	Dillingham Shipyard (named GRAND CANYON STATE)	1	10/27/86** (actual)	\$26.1***
Total Completions		1		\$26.1
Conversions Underway				
T-ACS 4, 5 and 6	NORSHIPCO	3	3/88	\$42.4
Conversion Contract Awards				
T-ACS 7 and 8	Tampa Shipyards	2	2/89	\$43.2
Total Under Contract		5		\$85.6

* Variance in estimated total price is primarily due to the number of crane sets per ship.

** Actual delivery date.

*** Actual price.

Table 2: NEW COMMERCIAL SHIPS DELIVERED FROM U.S. SHIPYARDS DURING FY 1987

Owner	Builder	Vessel Type	Vessels
Exxon Shipping Co.	National Steel	Crude Oil Tanker	2
Sea-Land	Bay Shipbuilding	Containership	2
Atlantic Trailing Co.	McDermott Shipyard	Hopper Dredge	1
Great Lakes Dredge & Dock Co.	Southern Shipbuilding	Clamshell Dipper Dredge	1
Total Deliveries			6

Table 3: WORLDWIDE SHIP DELIVERIES—CALENDAR YEAR 1986 (TONNAGE IN THOUSANDS)

Country of Construction	No.	Total	Combination		Freighters		Bulk		Tankers	
		All Types Deadweight Tons	Pass. & Cargo Deadweight Tons	No.	Tons	No.	Tons	No.	Tons	No.
Total	524	17,286.3	5	15.2	235	3,045.8	171	9,425.2	113	4,800.1
United States	5	324.1	—	—	2	53.0	—	—	3	271.1
Argentina	2	120.1	—	—	—	—	2	120.1	—	—
Australia	1	5.5	—	—	1	5.5	—	—	—	—
Brazil	7	572.9	—	—	1	28.5	3	488.5	3	55.9
Bulgaria	6	104.6	—	—	3	34.7	2	62.5	1	7.4
China	10	142.4	—	—	5	30.5	3	101.5	2	10.4
Denmark	13	398.0	—	—	7	53.7	—	—	6	344.3
Finland	5	125.8	—	—	1	19.2	—	—	4	106.6
France	7	189.5	1	1.7	—	—	2	66.2	4	121.6
Germany (East)	11	184.0	—	—	9	136.4	2	47.6	—	—
Germany (West)	45	396.6	1	5.1	38	362.4	—	—	6	29.1
Greece	2	30.2	—	—	1	5.6	—	—	1	24.6
India	2	42.8	—	—	1	16.5	1	26.3	—	—
Italy	2	19.3	—	—	1	6.8	—	—	1	12.5
Japan	245	8,414.5	1	0.4	102	1,403.0	96	5,008.0	46	2,003.1
Korea (South)	80	4,352.2	—	—	21	479.1	38	2,504.1	21	1,369.0
Malaysia	1	3.5	—	—	—	—	—	—	1	3.5
Mexico	1	21.7	—	—	—	—	1	21.7	—	—
Netherlands	14	52.5	—	—	12	38.3	—	—	2	14.2
Norway	6	59.8	—	—	2	10.6	1	11.2	3	38.0
Poland	12	412.4	1	1.6	4	46.8	5	234.8	2	129.2
Portugal	2	52.4	—	—	—	—	1	37.6	1	14.8
Romania	7	138.5	—	—	6	74.5	1	64.0	—	—
Spain	9	114.7	—	—	9	114.7	—	—	—	—
Sweden	3	51.8	1	6.4	—	—	—	—	2	45.4
Taiwan	7	510.5	—	—	2	80.2	4	400.9	1	29.4
Turkey	4	20.2	—	—	4	20.2	—	—	—	—
United Kingdom	6	96.6	—	—	2	22.6	4	74.0	—	—
U.A.R (Egypt)	2	40.9	—	—	1	3.0	1	37.9	—	—
Yugoslavia	7	288.3	—	—	—	—	4	118.3	3	170.0

As of September 30, 1987, Title XI guarantees in force amounted to approximately \$4.3 billion. Active pending applications on that date represented approximately \$249.1 million in requests for additional guarantees. (See Table 4.)

During FY 1987, Congressional authority for the Title XI program had a cap of \$12 billion, with \$9.5 billion allocated to MARAD, \$1.65 billion reserved for use by the Department of Energy in ocean thermal energy conversion vessels and facilities, and \$850 million authorized to guarantee the financing of fishing vessels by the National Oceanic and Atmospheric Administration.

The insurance premiums and guarantee fees paid by users go into the Federal Ship Financing Fund, a revolving fund which may be used for payment of any defaults. During this reporting period, MARAD paid \$430.9 million as a result of 41 defaults involving a total of 405 vessels.

During FY 1987, the Federal Ship Financing Fund operated at a deficit of \$233.5 million. The cash balance of the fund on September 30, 1987, was \$67.6 million. The Federal Ship Financing Fund, a revolving fund, is not currently self-supporting. This

necessitated borrowings from the U.S. Treasury which totaled \$420 million as of September 30, 1987, compared with \$1,375,000,000 as of September 30, 1986. A supplemental appropriation was received in fiscal year 1987 to repay \$1,375,000,000 in borrowings of principal and interest due the U.S. Treasury.

Capital Construction Fund

The Capital Construction Fund (CCF) 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 certain deposits, as defined in Section 607 of the Merchant Marine Act, 1936, as amended.

The CCF program enables operators to build vessels for the U.S. foreign trade, Great Lakes, noncontiguous domestic trade (e.g., between the West Coast and Hawaii), and the fisheries of the United States. It aids in the construction, reconstruction, or acquisition of a

wide variety of vessels, including containerships, tankers, bulk carriers, tugs, barges, supply vessels, ferries and passenger vessels.

During calendar year 1986, \$248 million was deposited into these accounts. Since the program was initiated in 1971, fundholders have deposited \$4.7 billion in CCF accounts and withdrawn \$3.5 billion for the modernization and expansion of the U.S. merchant marine. As of September 30, 1987, a total of 102 companies (shown in Table 5) were parties to CCF agreements.

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 vessels 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

Table 4: FEDERAL SHIP FINANCING GUARANTEE (TITLE XI) PROGRAM SUMMARY
(Statutory Limit \$9.5 Billion) Principal Liability on September 30, 1987

Vessel Types	Contracts in Force		Pending Applications	
	Vessels Covered	Principal Amount	Vessels Covered	Principal Amount
Deepdraft Vessels:				
Tankers	68	\$1,437,846,228	1	\$ 26,700,000
Cargo	52	616,193,000	—	—
LNGs	10	739,056,000	—	—
Bulk/OBOs	22	327,158,442	—	—
Total	152	\$3,120,253,670	1	\$ 26,700,000
Other Types:				
Drill Rigs/Ships	28	214,631,278	—	—
Tugs/Barges/Drill Service	2,563	765,000,830	—	—
Miscellaneous	21	158,214,787	4	\$222,474,067
Total	2,612	\$1,137,846,895	4	\$222,474,067
Total Vessels	2,764	\$4,258,100,565	5	\$249,174,067
Shipboard Lighters	999	20,870,501	—	—
Total	3,763	\$4,278,971,066	5	\$249,174,067

waterways, and other trades not eligible for the CCF Program. Its benefits are not as broad as those of the CCF.

The number of companies with CRF balances decreased to eight during the 1987 fiscal year. (See Table 6). The total monies on deposit decreased from \$4.9 million to \$3.6 million.

Service Craft

During FY 1987, MARAD

completed construction of 12 service craft, which are being used as utility workboats by the National Defense Reserve Fleet. Eight were delivered in FY 1986 and four in FY 1987. The vessels were built at Quality Shipbuilders, Inc., of Moss Point, MS.

Shipyards Improvements

During FY 1987, the American shipbuilding and ship repair industry

invested over \$150 million in upgrading and expanding facilities. Plans were underway to spend at least \$70 million in FY 1988, mainly to improve efficiency and competitiveness for future participation in the Navy's construction, repair, and overhaul projects.

Since 1970, the U.S. shipbuilding and ship repair industry has invested approximately \$4.1 billion in facility improvements.

Table 5: CAPITAL CONSTRUCTION FUND HOLDERS—SEPTEMBER 30, 1987

Alaska Riverways, Inc.	Falcon Capital, Inc.	Moody Offshore, Inc.
Amak Towing Co., Inc.	Falcon Funding, Inc.	Moore McCormack Resources, Inc.
AMC Boats, Inc.	Falcon World Shipping, Inc.	Neuman Boat Line, Inc.
American President Lines, Ltd.	Farrell Lines, Inc.	Nicor, Inc.
American Shipping, Inc.	Foss Maritime Co.	North American Boat Rentals, Inc.
Andover Co., L.P.	Fred Devine Diving & Salvage, Inc.	Oceanic Research Services, Inc.
Aquarius Marine Co.	G&B Marine Transportation, Inc.	O.L. Schmidt Barge Lines, Inc.
Ashland Oil, Inc.	GATX Corp.	Ocean Shipholdings, Inc.
Atlantic Richfield Co.	General Electric Credit and Leasing Corp.	Oceanic Research Services, Inc.
Atlas Marine Co.	General Electric Credit Corp. of Delaware	Oglebay Norton Co.
Bankers Trust New York Corp.	General Electric Credit Corp. of Georgia	OMI Corp.
Bethlehem Steel Corp.	Gilco Supply Boats, Inc.	Overseas Bulktank Corp.
Binkley Co., The	Graham Offshore	Pacific Hawaiian Lines, Inc.
Blue Lines, Inc.	Great Lakes Towing Co.	Prudential Lines, Inc.
Brice, Inc.	Hannah Brothers	Ritchie Transportation Co.
Cambridge Tankers, Inc.	Hannah Marine Corp.	Rouge Steel Co.
Campbell Towing Co.	Hawaiian Tug & Barge Corp.	Seabulk Tankers, Ltd.
Canonie Offshore Co.	Hvide Shipping, Inc.	Sea-Land Corp.
Canonie Transportation Co.	Inland Steel Co.	Sea Salvage, Inc.
Cement Transit Co.	Inter-Cities Navigation Corp.	Sheplers, Inc.
Central Gulf Lines, Inc.	Intercontinental Bulktank Corp.	Smith Lighterage Co., Inc.
Citimarlease (Burmah I), Inc.	Interstate Marine Transport Co.	Schnitzer Steel Products Co.
Citimarlease (Burmah LNG Carrier), Inc.	Interstate Towing	State Boat Corp.
Citimarlease (Burmah Liquegas), Inc.	John E. Graham & Sons	Steel Style Marine
Citimarlease (Fulton), Inc.	Kinsman Lines, Inc.	Sun Co., Inc.
Citimarlease (Whitney), Inc.	L&L Marine Services, Inc.	Tidewater, Inc.
Crowley Maritime Corp.	Leppaluoto Offshore Marine, Inc.	Totem Resources Corp.
CSI Hydrostatic Testers, Inc.	Luedtke Engineering Co.	Union Oil Co. of California
Dillingham Tug & Barge Corp.	Lykes Bros. Steamship Co.	United States Cruises, Inc.
Edison Chouest Offshore, Inc.	Madeline Island Ferry Lines, Inc.	United States Lines, Inc.
Edward E. Gillen Co.	Matson Navigation Co.	United States Lines (S.A.), Inc.
Eserman Offshore Service, Inc.	Middle Rock, Inc.	Waterman Steamship Corp.
Exxon Corp.	Miller Boat Line, Inc.	Western Pioneer, Inc.
Falcon Alpha Shipping, Inc.		Windjammer Cruises, Inc.
		Young Brothers, Ltd.
		Zidell, Inc.

Table 6: CONSTRUCTION RESERVE FUND HOLDERS—SEPTEMBER 30, 1987

Arrow Tankers, Inc.	Joan Turecamo, Inc.	Kurz Marine, Inc.
Cargill Marine and Terminal, Inc.	Ingram Industries, Inc.	Mobil Oil Corp.
Central Gulf Steamship Corp.	Serodino, Inc.	

Ship Operations

U.S. Fleet Profile

On July 1, 1987, the U.S.-flag, privately owned, deep-draft merchant fleet (including the Great Lakes fleet listed in Table 15) totaled 549 vessels with an aggregate carrying capacity of about 23.1 million deadweight tons (dwt.).

The oceangoing segment of the privately owned fleet consisted of 451 vessels of 20.8 million dwt., of which 365 ships of 16.2 million dwt. were active. The latter comprised 39 breakbulk cargo ships, 112 intermodal vessels (containerships, barge-carrying vessels, and roll-on/roll-off vanships known as RO/ROs), 2 combination passenger-cargo ships, 192 tankers (including liquefied natural gas carriers), and 20 bulk carriers. (See Table 7.)

Of the 86 inactive vessels, 7 were temporarily inactive, either awaiting cargoes or undergoing repairs, and 79 were laid up.

Employment of the U.S.-flag oceangoing fleet (including Government-owned ships) at the end of the fiscal year is shown in Table 8.

As of January 1, 1987, the privately owned American-flag fleet ranked 8th in the world on a deadweight-ton basis and 11th on the basis of number of ships. (See Table 9.)

Commercial cargoes carried by ships of all flags in the U.S. oceanborne foreign trade totaled 674.8 million tons in calendar year 1986. U.S.-flag foreign trade tonnage increased from 27.3 million to 28.5 million tons, and the U.S.-flag share of total tonnage decreased from 4.3 percent in 1985 to 4.2 percent in 1986.

Commercial cargoes transported in U.S. oceanborne foreign trade from 1977 through calendar year 1986 are shown in Table 10. The table shows the total trade by tonnage and value, and the portion carried by U.S.-flag vessels.

Operating-Differential Subsidy

Operating-differential subsidy (ODS) is available to U.S.-flag vessels which operate in essential foreign trades. It is designed to offset certain lower ship operating costs of foreign-flag competitors. Net subsidy outlays during FY 1987 amounted to \$227.4 million.

ODS accruals and expenditures from January 1, 1937, through September 30, 1987, are summarized in Table 11. Accruals and outlays by shipping lines for the same period are shown in Table 12.

There was no subsidy paid for voyages in the Great Lakes trade in fiscal year 1987.

Section 614 Activities

Section 614 of the Merchant Marine Act, 1936, as amended, permits a company receiving ODS funds to elect to suspend its ODS agreement for all or a portion of its vessels, subject to certain conditions. Suspension of the ODS agreement includes suspending all attendant statutory and contractual restrictions in the agreement, except those pertaining to operation in the domestic trade.

During FY 1987, one company operated under a suspended ODS contract. United States Lines, Inc. suspended its ODS contract on the AMERICAN PIONEER and AMERICAN PURITAN effective June 6, 1986, and June 27, 1986, respectively. USL stopped operating the AMERICAN PURITAN on April 2, 1987, and the AMERICAN PIONEER on August 28, 1987.

During FY 1987, no bulk ships operated under suspended ODS agreements. The bulk vessels that previously operated under section 614 suspensions were reinstated on April 15, 1986, to qualify themselves under the Final Opinion and Order of the Maritime Subsidy Board in Docket Nos. S-755, Sub. 1, and S-764. This order, and subsequent actions, authorized the amendment of the ODS agreements of long-term subsidized bulk operators to permit their vessels to transport dry bulk preference cargoes

at fair and reasonable rates, without ODS, and subject to certain conditions.

Subsidy Rates

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

ODS rates also are calculated for subsistence (for passenger vessels only), maintenance and repairs, hull and machinery insurance, and protection and indemnity insurance for both premiums and deductibles.

MARAD has modified its procedures for determining ODS so that final subsidy payment can be maintained on a current basis. Regulations governing revised procedures for liner vessels were finalized and became effective October 30, 1986, for application to the wage rate year beginning July 1, 1984, and the rate year for other items beginning January 1, 1985. Similar procedures applicable to bulk vessels became effective on December 8, 1986, for application to the wage rate year beginning July 1, 1987, and the rate year for other items beginning on January 1, 1988.

For liner operators, MARAD had completed 1987 subsidy rates for wages and 1984 subsidy rates for all other eligible expenses. For bulk operators, MARAD has substantially completed 1987 subsidy rates for wages and 1984 subsidy rates for all other eligible expenses.

Passenger/Cruise Service

As of September 30, 1987, U.S.-flag oceangoing passenger service was provided by the cruise liners INDEPENDENCE and CONSTITUTION. These vessels are operated by American Hawaii Cruises, Inc. in the Hawaiian inter-island trade.

On the inland waterways, two traditionally styled steamboats



Cresote-coated utility poles being loaded aboard LASH barges at Mobile. Six barges loaded with 2,500 tons of poles were part of the cargo carried by a LASH mothership bound for the Red Sea and Gulf of Aquaba.



A LASH mothership being loaded at the Port of Mobile.

operated by Delta Queen Steamboat Co. provided a variety of cruises on the Mississippi and Ohio Rivers. Additionally, the Padelford Packet Boat Co. and American Cruise Lines offered cruises on the Upper Mississippi River and along the Gulf Coast.

Five operators provided cruise service with vessels carrying 100 or fewer passengers. American Canadian Line served the New England Coast, Great Lakes, Saguenay River of Canada, and the Caribbean; American Cruise Lines served the Atlantic Coast; Clipper Cruise Line and Coastal Cruise Line served the Atlantic Coast and Caribbean; and Exploration Cruise Lines operated on the U.S. and

Canadian Pacific Coast, including Alaska.

Under its Title XI program, MARAD received applications during FY 1987 to aid in financing the construction of two 1,200-passenger, oceangoing cruise ships and a 267-passenger paddlewheel cruise vessel. No applications for cruise vessels were approved in FY 1987.

Section 804 Activities

Section 804 of the Merchant Marine Act, 1936, as amended, prohibits 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 of the Secretary of Transportation. The prohibition also applies to any officers, directors, agents, or executives of such an organization.

In February and May 1987, MARAD amended its waiver of the provisions of section 804 granted to American President Lines, Ltd. in May 1986. Those waivers allowed the charter and operation of five foreign-flag vessels for feeder service between APL's Line A or Line B ports through May 1988. Three vessels are permitted to serve Singapore, Manila, and Thailand, and two may serve China.

Table 7: U.S. OCEANGOING MERCHANT MARINE—JULY 1, 1987¹

	Privately Owned		MARAD Owned		Total	
	Number Ships	Deadweight Tons (000)	Number Ships	Deadweight Tons (000)	Number Ships	Deadweight Tons (000)
Active Fleet:						
Passenger/Pass. Cargo	2	15	4	32	6	47
General Cargo	39	568	3	26	42	594
Intermodal	112	2,765	—	—	112	2,765
Bulk Carriers (Incl. TB)	20	852	—	—	20	852
Tankers (Incl. TKB & LNG)	142	12,020	1	17	193	12,037
Total Active Fleet	365	16,220	8	75	373	16,295
Inactive Fleet:						
Passenger/Pass. Cargo	6	59	20	147	26	206
General Cargo	9	110	186	2,134	195	2,244
Intermodal	33	1,108	34	893	67	194
Bulk Carriers (Incl. TB)	6	418	—	—	6	418
Tankers (Incl. TKB & LNG)	32	2,885	21	623	53	3,508
Total Inactive Fleet	86	4,580	261	3,737	347	8,317
Total Active and Inactive:						
Passenger/Pass. Cargo	8	74	24	179	32	253
General Cargo	48	628	189	2,160	237	2,838
Intermodal	145	3,873	34	833	179	4,706
Bulk Carriers (Incl. TB)	26	1,270	—	—	26	1,270
Tankers (Incl. TKB & LNG)	225	14,905	22	640	246	15,545
Total American Flag	451	20,800	269²	3,812	720	24,612

¹ Vessels of 1,000 gross tons and over, excluding privately owned tugs, barges, etc.

² Includes 249 National Defense Reserve Fleet vessels, 80 of which belong to the Ready Reserve Fleet.

NOTE: Tonnage figures may not add due to rounding.

Corporate/Service Changes

United States Lines, Inc. ceased subsidized operations in December 1986 on Trade Route (TR) 5-7-8-9/11 (U.S. Atlantic-Western Europe). The company's unsubsidized liner service on TR 29 (U.S. Pacific-Far East) ceased in April 1987.

Also in April 1987, United States Lines (S.A.) Inc. ceased its regular liner service on TR 1 (U.S. Atlantic-East Coast South America).

Foreign Transfers

During fiscal year 1987, MARAD approved the transfer of 74 ships of

1,000 gross tons and over to foreign firms. Twenty-six of these vessels were sold for scrapping abroad.

Permission also was granted for the foreign transfer of 306 vessels of less than 1,000 gross tons, including 295 commercial and 11 pleasure craft.

The Agency approved three contracts of affreightment, charters to non-citizens, in fiscal year 1987.

Table 8: EMPLOYMENT OF U.S.-FLAG OCEANGOING MERCHANT FLEET—JULY 1, 1987¹

Status and Area of Employment	Vessel Type (tonnage in thousands)											
	Total		Passenger/ Pass. & Cargo		General Cargo		Intermodal		Bulk Carriers ²		Tankers ³	
	Deadweight No.	Deadweight Tons	Deadweight No.	Deadweight Tons	Deadweight No.	Deadweight Tons	Deadweight No.	Deadweight Tons	Deadweight No.	Deadweight Tons	Deadweight No.	Deadweight Tons
Grand Total	720	24,612	32	253	237	2,838	179	4,706	26	1,270	246	15,545
Active Vessels	373	16,295	6	47	42	594	112	2,765	20	852	193	12,037
Privately Owned	365	16,220	2	15	39	568	112	2,765	20	852	192	12,020
U.S. Foreign Trade	121	3,704	—	—	30	439	65	1,677	8	500	18	1,088
Foreign-to-Foreign	13	643	—	—	—	—	5	104	—	—	8	539
Domestic Trade	177	10,397	2	15	1	18	22	408	10	290	142	9,666
Coastal	98	4,193	—	—	—	—	1	16	8	240	89	3,937
Noncontiguous	79	6,204	2	15	1	18	21	392	2	50	53	5,729
M.S.C. Charter	54	1,476	—	—	8	111	20	576	2	62	24	727
Government Owned	8	75	4	32	3	26	—	—	—	—	1	17
B.B. Charter & Other Custody	8	75	4	32	3	26	—	—	—	—	1	17
Inactive Vessels	347	8,317	26	206	195	2,244	67	1,941	6	418	53	3,508
Privately Owned	86	4,580	6	59	9	110	33	1,108	6	418	32	2,885
Temporarily Inactive	7	280	—	—	—	—	1	30	3	145	3	104
Laid-up	70	4,150	3	31	5	56	32	1,078	3	273	27	2,713
Laid-up (MARAD Custody)	9	150	3	28	4	54	—	—	—	—	2	68
Government Owned (MARAD Custody)	261	3,737	20	147	186	2,134	34	833	—	—	21	623
National Defense Reserve Fleet	249	3,300	17	130	186	2,134	28	635	—	—	18	401
Ready Reserve Force (RRF)	80	1,253	1	9	54	677	17	426	—	—	8	141
Other Reserve	145	1,831	6	57	123	1,372	7	158	—	—	9	244
Special Programs ⁴	8	84	1	5	3	28	4	51	—	—	—	—
Non-Retention ⁵	16	132	9	59	6	57	—	—	—	—	1	16
In Processing for RRF	4	152	—	—	—	—	4	152	—	—	—	—
Other Government Owned	8	285	3	17	—	—	2	46	—	—	3	222

¹ Excludes vessels operating exclusively on the Great Lakes, inland waterways, and those owned by the United States Army and Navy and special types such as cable ships, tugs, etc.

² Includes Tug Barges.

³ Includes Tanker Barges and LNG vessels.

⁴ Vessels unavailable for activation due to special status.

⁵ Vessels not actively maintained.

Fifty-five U.S.-owned ships of over 1,000 gross tons and 56 vessels under 1,000 gross tons were approved for charter to aliens in fiscal year 1987. Additionally, thirty-three charter approvals were either amended or modified.

User charges for filing applications for foreign transfers and similar actions totaled \$137,000 in fiscal year 1987. This total includes \$5,600 in fees filed pursuant to MARAD contracts reflecting prior domestic and foreign sales.

During FY 1987 a revision was made to the Code of Federal

Regulations (46 CFR 221) to allow increased flexibility in adjusting fees to equitably distribute the cost of processing applications.

Pursuant to Public Law 89-346 and 46 CFR 221.12-221.30, the Agency approved the retention of 56 banks on the Roster of Approved Trustees. One bank was removed, and three new banks were approved as trustees.

In FY 1987, 23 foreign violations were reported involving privately owned ships, and 24 violations were mitigated or settled.

MARAD's approval of the transfer of vessels of 3,000 gross tons and over to foreign ownership or registry, or both (whether for operation or scrapping) are subject to the terms and conditions of the Agency's Foreign Transfer Policy (46 CFR Part 221 Appendix). As of September 30, 1987, 70 vessels were subject to these terms and conditions, which accompany titles to the ships and remain in effect for the period of their remaining economic lives.

Vessel transfer activities under Section 9 of the Shipping Act, 1916, are summarized in Table 14.

Table 9: MAJOR MERCHANT FLEETS OF THE WORLD—JANUARY 1, 1987

Country	No. of Ships ¹	Rank by No. of Ships	Rank by Deadweight Tons	Deadweight Tonnage
Liberia	1,550	3	94,406,000	1
Panama	3,278	1	66,119,000	2
Japan	1,437	4	51,523,000	3
Greece	1,270	5	45,910,000	4
U.S.S.R.	2,453	2	24,563,000	5
British Colonies	543	8	21,908,000	6
Cyprus	904	7	21,481,000	7
United States (Privately Owned)	456	11	20,727,000	8
China	1,076	6	16,447,000	9
Philippines	486	10	12,495,000	10
Nassau Bahamas	222	29	12,299,000	11
United Kingdom	395	17	11,759,000	12
Singapore	416	16	11,717,000	13
Italy	516	9	11,354,000	14
Norway	279	23	10,828,000	15
All Others ²	8,337		157,693,000	
Total	23,618		593,229,000	

¹ Oceangoing merchant ships of 1,000 gross tons and over.

² Includes 269 United States Government-Owned Ships of 3,814,000 dwt.

Table 10: U.S. OCEANBORNE FOREIGN TRADE/COMMERCIAL CARGO CARRIED ¹
Tonnage (Millions)

Calendar Year	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
Total Tons	775.3	775.6	823.1	772.2	760.0	675.5	630.4	676.8	640.9	674.8
U.S.-Flag Tons	34.8	32.1	35.0	28.2	34.2	31.1	36.7	29.4	27.3	28.5
U.S. Percent of Total	4.5	4.1	4.2	3.7	4.5	4.6	5.8	4.3	4.3	4.2
Liner Total Tons	47.8	56.5	57.0	59.3	60.0	54.5	56.8	63.5	66.7	71.8
Liner U.S.-Flag Tons	14.4	16.0	15.7	16.2	16.5	14.3	14.0	13.8	14.0	14.3
Liner U.S. Percent	30.2	28.3	27.5	27.3	27.6	26.2	24.6	21.7	21.0	19.9
Non-Liner Total Tons	289.0	308.8	342.7	356.7	365.6	335.8	317.7	346.3	327.5	309.0
Non-Liner U.S.-Flag Tons	4.9	4.5	3.6	4.1	4.5	3.3	4.8	5.1	5.1	4.9
Non-Liner U.S. Percent	1.7	1.5	1.0	1.2	1.2	1.0	1.5	1.5	1.5	1.6
Tanker Total Tons	359.4	410.3	423.4	356.3	334.4	285.6	256.0	266.9	246.7	294.0
Tanker U.S.-Flag Tons	13.6	11.6	15.7	7.9	13.2	13.2	17.9	10.5	8.2	9.3
Tanker U.S. Percent	3.8	2.8	3.7	2.2	3.9	4.7	7.0	3.9	3.3	3.2
Value (\$ Billions)										
Total Value	171.2	195.8	242.1	294.3	315.4	281.2	267.4	302.7	311.0	320.5
U.S.-Flag Value	28.0	30.7	35.7	42.3	47.0	43.5	43.0	44.6	46.4	49.0
U.S. Percent of Total	16.4	15.7	14.7	14.4	14.9	15.5	16.1	14.7	14.9	15.3
Liner Total Value	82.3	99.9	117.6	136.9	148.0	140.6	139.6	164.0	181.2	199.9
Liner U.S.-Flag Value	24.2	28.6	32.5	39.2	41.7	39.1	37.9	41.2	43.4	46.5
Liner U.S. Percent	30.7	28.6	27.6	28.7	28.1	27.8	27.2	25.1	24.0	23.3
Non-Liner Total Value	42.7	52.5	62.0	74.1	81.0	72.0	69.8	78.6	77.2	83.2
Non-Liner U.S.-Flag Value	1.2	1.0	1.1	1.3	1.9	1.2	1.2	1.1	1.4	1.3
Non-Liner U.S. Percent	2.8	1.8	1.7	1.8	2.3	1.7	1.7	1.5	1.8	1.6
Tanker Total Value	46.3	43.4	62.6	83.6	86.4	68.5	58.0	60.1	52.6	37.4
Tanker U.S.-Flag Value	1.6	1.1	2.1	1.8	3.4	3.2	4.0	2.2	1.6	1.2
Tanker U.S. Percent	3.5	2.7	63.4	2.1	3.9	4.7	6.8	3.7	3.1	3.2

¹ Table includes Government-sponsored cargo; excludes U.S./Canada trans-lakes cargoes and certain Department of Defense cargoes.

Table 11: ODS ACCRUALS AND OUTLAYS—JANUARY 1, 1937, TO SEPTEMBER 30, 1987

Calendar Year of Operation	Accruals			Outlays		Net Accrual Liability
	Subsidies	Recapture	Subsidy Accrual	Paid in FY 1987	Total Amount of Net Accrual Paid	
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	179,396,797	4,929,404	174,467,393	-0-	174,467,393	-0-
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	230,256,091	2,217,144	228,038,947	-0-	228,038,947	-0-
1970	232,541,169	(1,908,643)	234,449,812	-0-	234,449,812	-0-
1971	202,440,101	(2,821,259)	205,261,360	-0-	205,261,360	-0-
1972	190,732,158	-0-	190,732,158	-0-	190,732,158	-0-
1973	219,475,963	-0-	219,475,963	-0-	219,475,963	-0-
1974	219,297,428	-0-	219,297,428	-0-	219,297,428	-0-
1975	260,676,152	-0-	260,676,152	-0-	260,676,152	-0-
1976	275,267,465	-0-	275,267,465	-0-	275,267,465	-0-
1977	294,779,691	-0-	294,779,691	-0-	294,779,691	-0-
1978	285,075,424	-0-	285,075,424	-0-	285,075,424	-0-
1979	279,347,897	-0-	279,347,897	-0-	279,347,897	-0-
1980	386,309,467	-0-	386,309,467	-0-	386,309,467	-0-
1981	352,060,560	-0-	352,060,560	230,943	352,060,560	-0-
1982	366,654,502	-0-	366,654,502	228,119	366,654,502	-0-
1983	277,342,844	-0-	277,342,844	482,365	277,342,844	-0-
1984	346,847,000	-0-	346,847,000	925,757	341,332,560	5,514,440
1985	365,391,198	-0-	365,391,198	452,391	365,391,198	-0-
1986	317,242,038	-0-	317,242,038	75,052,683	317,242,038	-0-
1987	178,311,299	-0-	178,311,299	150,053,845	150,053,845	28,257,454
Total Regular ODS	\$8,303,762,228	\$238,186,435	\$8,065,575,793	\$227,426,103	\$8,031,803,899	\$33,771,894
Soviet Grain Program ¹	\$147,132,626	-0-	\$147,132,626	-0-	\$147,132,626	-0-
Total ODS	\$8,450,894,854	\$238,186,435	\$8,212,708,419	\$227,426,103	\$8,178,936,525	\$33,771,894

¹ No longer operative.

Table 12: OPERATING-DIFFERENTIAL SUBSIDY ACCRUALS AND OUTLAYS BY LINES—JANUARY 1, 1937, TO SEPTEMBER 30, 1987

LINES	Accruals			ODS Paid	Net Accrued Liability
	ODS	Recapture	Net Accrual		
Aeron Marine Shipping	\$26,013,769	\$0	\$26,013,769	\$25,983,304	\$30,465
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	693,821,868	10,700,587	683,121,281	683,121,281	0
American Mail Lines ³	158,340,739	7,424,902	150,915,837	150,915,837	0
American President Lines ³	1,169,843,441	17,676,493	1,152,166,948	1,143,344,455	8,822,493
American Shipping	21,139,154	0	21,139,154	19,972,393	1,166,761
American Steamship	76,462	0	76,462	76,462	0
Aquarius Marine Co.	25,379,421	0	25,379,421	24,075,357	1,304,064
Aries Marine Shipping	25,349,168	0	25,349,168	25,266,107	83,061
Atlantic & Caribbean S/N ¹	63,209	45,496	17,713	17,713	0
Atlas Marine Co.	27,549,180	0	27,549,180	26,941,898	607,282
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 Co.	49,588,017	0	49,588,017	48,911,087	676,930
Delta Steamship Lines	575,053,817	8,185,313	566,868,504	566,868,504	0
Ecological Shipping Co.	4,968,943	0	4,968,943	4,968,943	0
Farrell Lines	597,816,448	1,855,375	595,961,073	594,522,526	1,438,547
Prudential Lines ⁴	642,057,851	24,223,564	617,834,287	616,788,736	1,045,551
Gulf & South American Steamship	34,471,780	5,226,214	29,245,566	29,245,566	0
Lykes Bros. Steamship	1,527,927,096	52,050,598	1,475,876,498	1,470,508,861	5,367,637
Margate Shipping	80,112,844	0	80,112,844	77,558,362	2,554,482
Moore McCormack Bulk Transport	70,016,929	0	70,016,929	65,368,783	4,648,146
Moore McCormack Lines ⁸	736,589,680	17,762,445	718,827,235	716,450,431	2,376,804
N.Y. & Cuba Mail Steamship	8,090,108	1,207,331	6,882,777	6,882,777	0
Oceanic Steamship ⁵	113,947,681	1,171,756	112,775,925	112,775,925	0
Ocean Carriers	37,938,592	0	37,938,592	35,852,232	2,086,360
Pacific Argentina Brazil Line ¹	7,963,936	270,701	7,693,235	7,693,235	0
Pacific Far East Line ⁶	283,693,956	23,479,204	260,214,755	260,214,755	0
Pacific Shipping Inc.	18,622,900	0	18,622,900	18,616,484	6,416
Prudential Steamship ¹	26,352,954	1,680,796	24,672,158	24,672,158	0
Sea Shipping	25,819,800	2,429,102	23,390,698	23,390,698	0
States Steamship	231,997,100	5,110,997	226,886,103	226,886,103	0
United States Lines ⁷	750,575,338	54,958,689	695,616,649	695,559,324	57,325
Waterman Steamship	270,575,097	0	270,575,097	269,680,831	894,266
Worth Oil Transport	17,851,195	0	17,851,195	17,407,185	444,010
South Atlantic Steamship ¹	96,374	84,692	11,682	11,682	0
Seabulk Transmarine I & II, Inc.	24,611,206	0	24,611,206	24,449,912	161,294
Equity	629,504	0	629,504	629,504	0
Total Regular ODS	\$8,303,762,228	\$238,186,435	\$8,065,575,793	\$8,031,803,899	\$33,771,894
Soviet Grain Programs ⁹	\$147,132,626		\$147,132,626	\$147,132,626	\$0
Total ODS	\$8,450,894,854	\$238,186,435	\$8,212,708,419	\$8,178,936,525	\$33,771,894

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 AMLs October 10, 1973.

⁴ Changed from Prudential-Grace Lines, Inc., August 1, 1974.

⁵ Purchased by Lykes Bros. Steamship Co., Inc.

⁶ Went into Receivership August 2, 1978.

⁷ Ceased to be subsidized line in November 1970 but returned as a subsidized carrier in January 1981.

⁸ Purchased by United States Lines October 1983.

⁹ No longer operative.

Table 13: ODS CONTRACTS IN FORCE—SEPTEMBER 30, 1987

A. Liner Trades:

Operator and Contract No.	Contract Duration	Number Subsidized Ships	Service (Trade Route/Area)	Annual Sailing	
				Minimum	Maximum
American President Lines, Ltd. MA/MSB-417	1-01-78 to 12-31-97	23	Transpacific Services: 1	72	108
			California/Far East Line A (TR 29)		
			California/Far East Line A Extension (TRs 17, 28, 29) 2, 3	18	28
			Washington-Oregon/Far East Line B (TR 29)	54	80
			Washington-Oregon/Far East Line B Extension (TRs 17, 28, 29) 4	6	—
Farrell Lines, Inc. MA/MSB-352	1-01-76 to 12-31-95	3	U.S. Atlantic/West Africa (TR 14-1) 5, 6	20	38
Farrell Lines, Inc. MA/MSB-482	1-01-81 to 12-31-2000	4	U.S. Atlantic/Mediterranean Service (TRs 10, 13) 6	4	66
Lykes Bros. Steamship Co. Inc. MA/MSB-451	1-01-79 to 12-31-98	29	U.S. Gulf/U.K. Continent (TR 21)	36	60
			U.S. Gulf & S. Atlantic/Mediterranean (TR 13) 7	42	48
			U.S. Gulf/Far East (TR 22) 7, 9, 10	36	60
			U.S. Gulf/South & East Africa (TR 15-B) 7, 9, 11, 8	18	24
			U.S. Atlantic & Gulf/West Coast South America (TR 31/2) 12, 13	24	48
			Great Lakes/Mediterranean-India (Trade Area 4) 7	3	10
			U.S. Pacific/Far East, North (TR 29) 14	20	80
			U.S. Pacific/Far East, South (TR 17/29) 14	20	80
Prudential Lines, Inc. MA/MSB-421	1-01-78 to 12-31-97	3	U.S. North Atlantic/Mediterranean (TR 10) 15	24	36
United States Lines, Inc. 16 MA/MSB-483					
Addendum No. 4 to amended and restated MA/MSB-483	7-08-83 to 12-31-95	0	U.S. Atlantic & Gulf/Australia, New Zealand (TR 16)	16	21
United States Lines (S.A.) Inc. 16 MA/MSB-338 (formerly Moore-McCormack Lines, Inc.)	1-01-75 to 12-31-94	2	U.S. Atlantic/East Coast South America (TR 1)	40	70
			U.S. Atlantic/South & East Africa (TR 15-A)	22	36
MA/MSB-353 (formerly Delta Steamship Lines, Inc.)	1-01-76 to 12-31-95	3	U.S. Gulf/East Coast South America (TR 20)	26	53
MA/MSB-425 (formerly Delta Steamship Lines, Inc.)	6-17-78 to 12-31-97	8	U.S. Atlantic/Caribbean (TR 4)	22	33

Overall maximum not to exceed 330

Table 13: (Continued)

Operator and Contract No.	Contract Duration	Number Subsidized Ships	Service (Trade Route/Area)	Annual Sailing	
				Minimum	Maximum
Waterman Steamship Corp. MA/MSB-115	6-04-71 to 6-03-91	3 ¹⁷	U.S. Atlantic-Gulf/India, Persian Gulf & Red Sea, Indonesia, Malaysia, Singapore, Brunei (TRs 18, 17) ¹⁸	30	40
Waterman Steamship Corp. MA/MSB-378	10-26-76 to 10-25-96	0 ¹⁹	U.S. Atlantic-Gulf/Far East, Indonesia, Malaysia, Singapore, Brunei (TRs 12, 22, 17) ¹⁸	8	12
Waterman Steamship Corp.	11-21-78 to 11-20-98	0 ²⁰	U.S. Gulf/Western Europe (TR 21)	24	35
Total Liner Trades		78			

- ¹ Dual service privileges provide that full containerships may call at both California and Washington-Oregon, with voyages originating in California being Line A sailings, and voyages originating in Washington-Oregon being Line B sailings; however, both types of such voyages shall be counted toward maximum sailings in both Lines A and B, with the outbound and inbound portions of the sailings being counted and applied separately.
- 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 Farrell is also permitted to make 12 sailings annually from the U.S. Gulf to West Africa; and 26 sailings annually from U.S. Gulf to the East Coast of South America.
- ⁶ Farrell owns one LASH vessel, AUSTRAL RAINBOW, which is eligible to operate with subsidy on TR 10/13 or 14-1.
- ⁷ Lykes is permitted to make 24 sailings annually between U.S. North Atlantic and Mediterranean ports on a privilege basis in conjunction with required service on TRs 13, 15-B, 22, and TA 4. Lykes is permitted to make 48 sailings annually between U.S. Pacific and Mediterranean ports on a privilege basis in conjunction with required service on TR 13.
- ⁸ Lykes is permitted to make 24 sailings annually between U.S. Atlantic and South and East Africa on a privilege basis in conjunction with required service on TR 15-B.
- ⁹ Lykes has the option to perform additional sailings on TRs 22 and 15-B over maximum sailings if the minimum sailings are made on all other services: on TR 22, nine additional sailings; on TR 15-B, five additional sailings. The overall maximum must not exceed 330 annual sailings.
- ¹⁰ Subject to 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).
- ¹¹ Lykes is also permitted to make 12 sailings annually from the U.S. Gulf to West Africa on a privilege basis in conjunction with required service on TR 15-B.
- ¹² Lykes is permitted to make 26 sailings annually from U.S. Gulf to East Coast of South America on a privilege basis.
- ¹³ Caribbean Subservice—a maximum of 24 sailings per annum may provide limited TR 19 service exclusively between U.S. Gulf ports and ports on the Atlantic coast of the Republic of Panama, the former Panama Canal Zone, and the north coast of Colombia.
- ¹⁴ Lykes stopped service on TR 29 and TR 17/29 in July 1986.
- ¹⁵ Prudential Lines TR 10 service was suspended in May 1986.
- ¹⁶ USL/USL (S.A.), in bankruptcy, provides no service under the subsidy contract; contracts are to be assigned to Midlantic National Bank as Trustee.
- ¹⁷ Between March and July 1984, Waterman sub-bareboat chartered three of the six vessels assigned to the contract back to Central Gulf Lines, from which they had been bareboat chartered.
- ¹⁸ Waterman is to provide a minimum of 12 and a maximum of 18 sailings annually to the Indonesia, Malaysia, Singapore, Brunei (TR 17) area under Contract Nos. MA/MSB-115 and MA/MSB-378.
- ¹⁹ Both vessels which had previously been assigned to the contract were turned in to MARAD under custodial agreements, and are currently at NDRF Beaumont.
- ²⁰ Waterman is authorized to operate its LASH vessels assigned to other contracts on TR 21.

Table 13: (Continued)

B. Bulk Trades:

Operator and Contractor No.	ODS Agreements		Number of Subsidized Ships 9/30/87	Service	Annual Sailings
	Contract Effective Date	Contract Termination Date			Minimum No. of Days
Aeron Marine Shipping Co. MA/MSB-166	10-10-74	10-09-94	0 ¹	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
American Maritime Transport, Inc. MA/MSB-129	8-09-73	8-08-93	0	Worldwide Bulk Trade	335
American Maritime Transport, Inc. MA/MSB-166A	10-10-74	10-09-94	0	Worldwide Bulk Trade	335
Asco-Falcon II Shipping Co. MA/MSB-439	5-24-81	5-23-2001	1	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 I, Inc. MA/MSB-439	5-24-81	5-23-2001	1	Worldwide Bulk Trade	335
Equity Carriers III, Inc. MA/MSB-439	5-24-81	5-23-2001	0	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
Ocean Carriers, Inc. MA/MSB-167	4-03-76	4-02-96	0	Worldwide Bulk Trade	335
Seabulk Transmarine I, Inc. MA/MSB-440	3-27-81	3-26-2001	1	Worldwide Bulk Trade	335
Seabulk Transmarine III, Inc. MA/MSB-442	9-20-81	9-19-2001	1	Worldwide Bulk Trade	335
Total Bulk Trades			23		

¹ The vessel ARCHON has been approved for subsidized operation. However, Aeron has not executed a contract addendum to place the ship in subsidized service.

Table 14: FOREIGN TRANSFERS AND OTHER SECTION 9 APPROVALS—FY 1987 ¹

A. Program Summary:	Number	Gross Tons
U.S. PRIVATELY-OWNED VESSELS		
Transfer to foreign ownership		
and/or registry		
Vessels of 1,000 gross tons and over	74	535,126
Vessels under 1,000 gross tons		
Commercial Craft	295	84,794
Pleasure Craft	11	968
Subtotal	306	85,762
Total	380	620,888
Charters to Aliens		
Vessels of 1,000 gross tons and over		
Approvals	55	
Modifications	8	
Extensions	12	
Vessels of under 1,000 gross tons		
Approvals	56	
Modifications	9	
Extensions	4	
Contracts of Affreightment Approvals	3	
Violations		
Reported	23	
Mitigated or Settled	24	
Rescissions (Sales to Aliens)	1	
Stock Transfers to Aliens	4	
Modifications (Sales to Aliens)	2	
Mortgages to Aliens	3	
U.S. GOVERNMENT-OWNED VESSELS	0	0

¹ Approvals granted by the Maritime Administration pursuant to section 9, Shipping Act, 1916, as amended.

Table 14: (Continued)

B. FOREIGN TRANSFER APPROVALS—Vessels of 1,000 Gross Tons and Over

	Pursuant to Section 9 (U.S. Owned and U.S. Documented)		
	No. of Vessels	Gross Tons	Average Age
Tankers	4	143,839	27 yrs
Cargo	30	263,816	53 yrs
Miscellaneous	40	127,471	14 yrs
Total	74	535,126	30 yrs
Recapitulation by Nationality	Number	Gross Tons	
Argentine	1	1,087	
Canadian (British)	6	47,297	
Cayman Islands	3	9,961	
Cyprus	1	1,942	
Greek	1	3,641	
Indian	5	20,113	
Korea, Republic of (South)	2	2,195	
Liberian	2	34,795	
Mexican	3	6,169	
Netherlands	1	5,991	
Panamanian	4	25,599	
Singapore	1	1,454	
United Arab Emirates	1	2,584	
Vanuatu	1	1,042	
Venezuelan	2	2,228	
Total	34	166,098	
Sale to Domestic Alien-Controlled Corporation	14	49,568	
Sale to Alien for Scrapping	26	319,460	
Total	40	369,028	
GRAND TOTAL	535,126	74	

Chapter 3

Domestic Operations

The segment of the American merchant marine operating in the Great Lakes, on the inland waterways, and in the coastwise, intercoastal, and domestic offshore trades carries a combined total of over one billion short tons of cargo each year.

Great Lakes

As of September 30, 1987, the U.S. Great Lakes fleet consisted of 95 self-propelled vessels of 1,000 gross tons and over, of which 55 were active. (See Table 15.)

Dry bulk commodities such as iron ore, coal, and limestone are the primary cargoes for waterborne commerce shipped from U.S. Great Lakes ports. Through September of the 1987 shipping season, over 735 million net tons of these commodities were shipped from region mines to

various steel mills, power generating facilities, and other customers. The major commodity, iron ore, totaled 32.4 million tons, followed by coal with 23.3 million tons, and limestone with 17.8 million tons.

Lake vessel scrapping continued as fleet operators disposed of outdated vessels. A total of 15 vessels, 14 dry-bulkers and 1 tanker, aggregating 242,875 tons, were scrapped in fiscal year 1987.

In the last four years, 49 vessels of 768,722 tons, with an average age of 51 years, have been scrapped. At the end of FY 1987, the current average age of the active fleet was 38 years, a figure somewhat distorted by two vintage vessels.

The region's steel-producing industry continued to restructure during the period, with some mills beginning to show profits after several years of significant financial losses. Waterborne freight rates, however, continued at a low level.

Inland Waterways

For the first time in recent history, an inland waterway operator participated in the movement of military cargo. Canal Barge Line of

New Orleans successfully bid to transport 162 vehicles from the Arkansas River area to the Great Lakes via the Illinois River and return for the Arkansas National Guard (ANG).

MARAD undertook an analysis to determine how to encourage such operators to seek additional military shipments. Although such movements are rare for water carriers, MARAD is exploring possibilities of more participation by inland waterway operators in the movement of military cargo. As the ANG movement demonstrated, the inland waterways offer a less expensive mode of transportation, reducing Federal costs. Such movements contribute to the utilization of waterway equipment that would otherwise lie idle, and provide much needed revenue to an industry plagued with economic strife for the past several years.

Overtonnaging was a less serious problem during FY 1987 than at the beginning of the previous fiscal year. The volume of grain shipments increased, although freight rates remained relatively low.

In calendar year 1986, the last year for which statistics are available, 638

Table 15: U.S. GREAT LAKES FLEET 1—SEPTEMBER 30, 1987

	Vessels	Gross Registered Tons	Estimated Deadweight Tons
Total	95	1,254,957	2,332,128
Bulk Carriers	83	1,200,960	2,311,550
Active	55	943,875	1,869,140
Temporarily Inactive	3	25,097	42,900
Laid-Up Inactive (More than 12 months)	25	231,988	399,510
Tankers	3	14,022	20,578
Active	3	14,022	20,578
Temporarily Inactive	0	0	0
Others ¹	9	39,975	—
Active	1	3,968	—
Temporarily Inactive	0	—	—
Laid-up Inactive (more than 12 months)	8	36,007	—

¹ Self-propelled vessels of 1,000 gross registered tons and over.

² Includes railroad car ferries, auto ferries.

million short tons of traffic moved on the U.S. inland waterways, an increase of 5 percent over calendar year 1985. The major commodities handled were in bulk form. Coal or coal products, crude oil or refined products represented 46.3 percent; chemicals and allied products, 17 percent. Grains accounted for 9.5 percent of the total.

During 1987, the Maritime Administration (MARAD) participated on the Upper Mississippi River System Environmental Management Program's Coordinating Committee. The program involved construction projects and their possible impact on commercial navigation.

Domestic Ocean Trades

The domestic ocean fleet gained new tonnage during the year. Exxon Shipping Co. placed the 209,000 deadweight-ton (dwt.) crude carriers EXXON VALDEZ and EXXON LONG BEACH in service in the Alaska

North Slope oil trade, and Sea-Land Service, Inc. introduced the SEALAND ANCHORAGE, which is capable of carrying 700 40-foot containers or the equivalent into its Alaskan liner service. Two sister ships were expected to join the service in FY 1988.

United States Lines, Inc. ended its service to Hawaii from the Atlantic and Pacific Coasts and entered bankruptcy during FY 1987. The Pacific Coast to Hawaii portion of the service was picked up by Sea-Land on an interim basis.

By the end of the year, there had been a net increase of approximately 5 percent in the number and about 8 percent in the carrying capacity of vessels in domestic ocean service. A decline in intermodal and dry bulk vessels was more than offset by an increase in tankers in this reporting period.

In the Alaskan crude oil trade, 919 voyages were made from Valdez by 54 U.S.-flag and 8 foreign-flag tankers, carrying an estimated 98.3

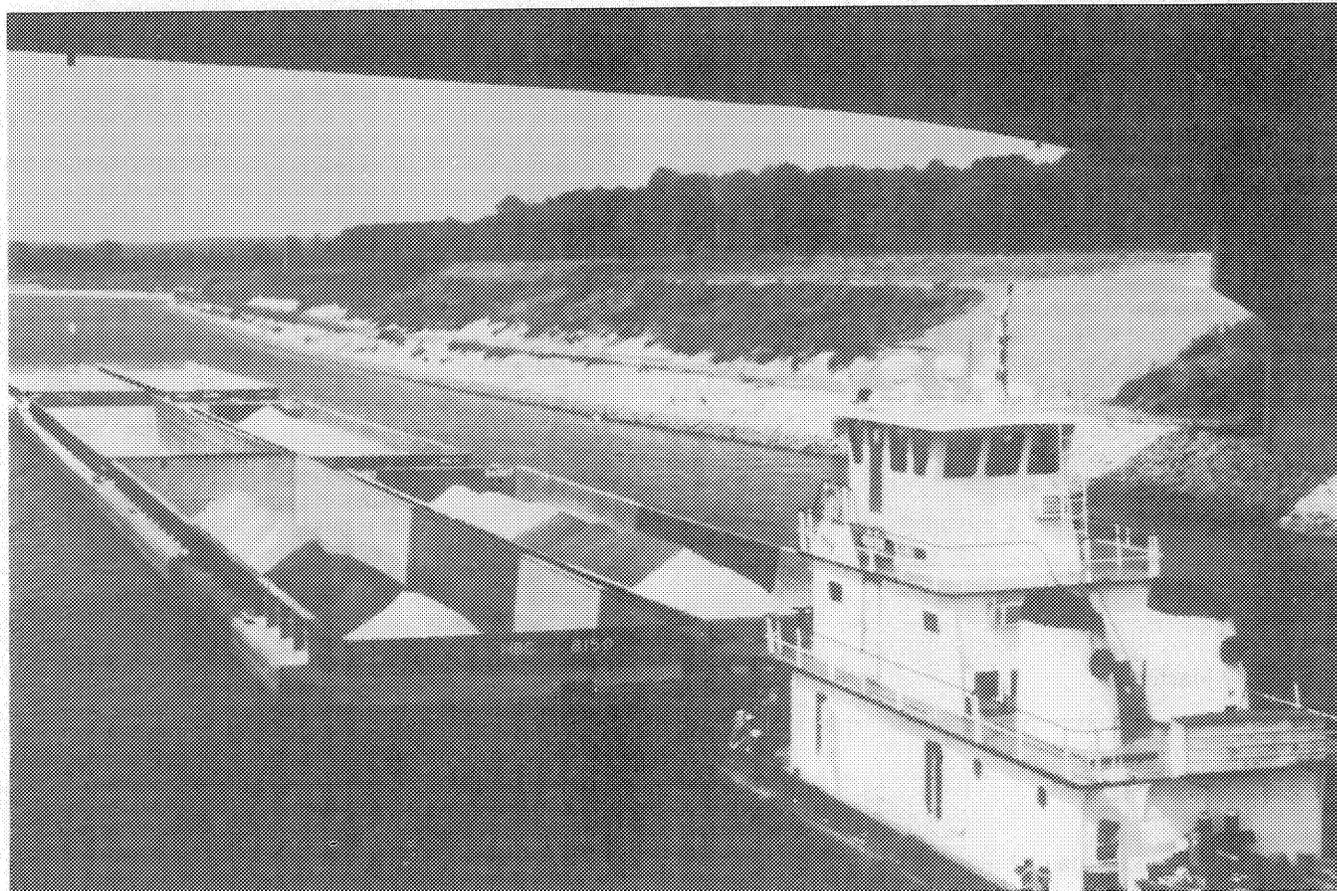
million long tons, an increase in cargo carried of 2.4 percent over FY 1986. The U.S. ships unloaded at ports on the Pacific Coast and in Alaska, Hawaii, and Panama, while the foreign-flag vessels discharged at St. Lucia, a storage point, and in the U.S. Virgin Islands for refining.

During FY 1987, the Chiriqui Grande terminal on the eastern end of the Trans-Panama Pipeline transferred 27.3 million tons of Alaskan crude oil to U.S.-flag tankers, which made 371 voyages to Atlantic and Gulf Coast ports.

Charter Market Activity

The Alaskan crude oil trade and product shipments between U.S. Gulf and Atlantic Coast ports continued to be two key trades for U.S.-flag tankers in FY 1987.

Sixteen tankers of 1.2 million tons were in lay-up for most of the fiscal year. As noted earlier, the Alaskan oil trade provided employment for much



A typical shot of tug and barge operations on the Tennessee-Tombigbee Waterway. The tonnage on this system, which was opened during fiscal year 1985, continues to grow.

of the remaining domestic tanker fleet.

The U.S. Gulf to East Coast tanker trades remained slow in FY 1987. This was primarily due to increased crude and refined petroleum imports and, secondarily, to increased pipeline throughput.

At the close of this reporting period, freight rates in the Jones Act tanker trades remained stable and were essentially unchanged from 1986 levels. Although the majority of tankers involved in this trade were proprietary vessels either owned or long-term chartered and operated by the oil companies, a significant single-voyage market continued for independent tanker operators.

Offshore Drilling

Of the 430 U.S.-owned drill rigs, 234 were active in U.S. waters as of

September 30, 1987. Of these, 227 were active in the Gulf of Mexico.

Utilization of offshore mobile drilling units in the Gulf rose from 27 percent in the third quarter of 1986 to 43 percent in January 1987 before falling to 34 percent in May. Utilization then climbed steadily to reach a high of 58 percent at the end of FY 1987. Available day rates also improved. For example, a cantilever jackup rated for operations in at least 250 feet of water could command a daily rate of \$9,500 to \$13,000 at the end of FY 1987. This compares to a range of \$6,500 to \$9,000 at the end of FY 1986. The improved utilization and day rates were due in part to a reduction in the available supply of rigs. During the fiscal year, the overall size of the world fleet declined by 12.8 percent. More importantly, however, was the stabilization of the price of OPEC crude oil at around \$17.50 per barrel,

compared to general industry expectation of \$15 per barrel.

Restructuring within the U.S. offshore industry continued through FY 1987. The number of rigs changing hands during the year accelerated markedly, and several fleet mergers also occurred. For example, Sonat Offshore and Dixilyn-Field combined their fleets into one operating unit. The Chiles Drilling Co. and Griffin-Alexander Drilling Co. also combined to form Chiles-Alexander Offshore.

As a result of foreclosure proceedings, MARAD had custody of eight jackup rigs at the end of FY 1987.

Also at the end of this reporting period, four semisubmersible offshore mobile drilling units rated for operations in 3,000 feet of water were on order for U.S.-based drilling contractors, but none of the orders were with U.S. yards.

Chapter 4

Market Development

The Maritime Administration (MARAD) conducts specialized marketing programs designed to increase U.S.-flag participation in the Nation's oceanborne foreign commerce. Programs are directed toward market research, improvement of communications between carriers and shippers, and individual consultation with firms active in international trade.

Marketing Program

MARAD's marketing program is conducted in cooperation with Agency offices strategically located throughout the country. During FY 1987, trade specialists assigned to these offices consulted with the transportation policymakers of 1,083 firms engaged in foreign commerce to encourage the adoption of a company policy to utilize U.S.-flag vessels for the carriage of their oceanborne commerce.

Voluntary reports from carriers and shippers indicate that some \$5,639,067 in additional ocean freight revenues for U.S.-flag vessels resulted from these policy consultations. Over the last 5 years, in excess of \$55 million in additional revenue for U.S.-flag carriers has been generated by this program.

During FY 1987, U.S.-flag operators continued to use MARAD resources to strengthen and reinforce their own competitive marketing initiatives. Under the Market Lead System, five notices providing market intelligence from private and Government sources were distributed to U.S.-flag vessel operators during FY 1987. These notices identified more than 200 individual business opportunities having cargo potential for these carriers.

MARAD actively participated in 71 seminars, forums, workshops, and other meetings dealing with international trade and distribution during the year. Attended by shippers, carriers, freight forwarders,

and other maritime interests, these meetings provided an opportunity for the exchange of information and views on transportation economics and practices. The meetings, held in such diverse places as New York, New Orleans, Seattle, and Kansas City, MO, also enabled the Agency to brief several thousand executives of firms involved in foreign trade on the national policy benefits which result from shipper utilization of U.S.-flag services.

Market Analysis and Planning

The Market Analysis and Planning Program is MARAD's primary area of research aimed at improving the U.S.-flag fleet's competitiveness by enhancing revenue and profitability.

In fiscal year 1987, an analysis of the shipping policies of developing Southeast Asian nations was completed. It reviewed their historical maritime policies, studied potential changes, and assessed their impact on U.S. trade and shipping. A major conclusion was that the mid-1980s economic downturn, coupled with pressure from exporters and domestic industries, triggered significant liberalization of shipping policies by the nations studied.

A report on U.S. imports and exports transshipped through Canada was published during the year. It indicated a slight downward trend for the year 1985, the most recent year for which final Bureau of the Census data were available.

During the reporting period, MARAD continued to improve its procedures to provide quick access to data on cargo movements. As a result, information concerning cargo movements between U.S. and foreign ports is available within 45 days after movement.

Bilateral Cargo Monitoring

MARAD continued monitoring cargo movements between the United States and its trading partners as part of its efforts to assure a fair transportation environment for U.S.-flag shipping. While numerous trades were examined on an ad hoc basis,

11 countries were monitored more closely due to changing trade conditions, unilateral actions on their part, or the existence of bilateral trade agreements. Because of a previous bilateral agreement and recurring talks concerning possibilities of a new agreement, trade between the United States and China was closely monitored. In calendar year 1986, the liner trade between the two countries totalled 4.7 million tons valued at \$5.3 billion, which represented an increase of \$400 million over the previous year. However, total tonnage in the trade fell by two million tons, primarily due to a decrease in log exports from the United States. U.S.-flag liner vessels lifted 9 percent of the overall liner trade by weight and 28 percent by value. PRC-flag vessels lifted 10 percent by weight and 17 percent by value. This represented a modest increase for U.S.-flag vessels over the year 1985. Monitoring this trade showed that Hong Kong is becoming increasingly important as a transshipment port for U.S.-flag vessels participating in the bilateral trade between the United States and China.

Preference Cargoes

MARAD is responsible for monitoring compliance with the cargo preference laws of the United States and encouraging Federal agencies to ensure that the U.S.-flag fleet receives the maximum cargo shares it is entitled to carry under these laws.

The three principal cargo preference laws are:

- The Cargo Preference Act of 1904, which requires all items procured for or owned by the military departments to be carried exclusively on U.S.-flag vessels. (MARAD's oversight responsibilities under the Merchant Marine Act of 1970 [Public Law 91-469] encompasses all of the Department of Defense's (DOD) ocean transportation requirements to ensure that at least 50 percent of the 100 percent requirement is met by

the use of privately owned U.S.-flag commercial vessels as required by Public Law 83-664.);

- Public Resolution 17 of the 73rd Congress, which requires that all cargoes generated by the Export-Import Bank (Eximbank) be shipped on U.S.-flag vessels, unless a waiver is granted; and
- (The Cargo Preference Act of 1954 (Public Law 83-664), which requires that at least half of all Government-generated cargo subject to the law be transported on privately owned U.S.-flag commercial vessels available at fair and reasonable rates.

Amendments made in 1985 to the Merchant Marine Act, 1936, further require that the percentage of certain agricultural cargoes moving on U.S.-flag vessels increase from 50 to 75 percent over a three-year period commencing in April 1986.

To assure that all cargo preference laws are followed, MARAD monitors the shipping activities of 56 Federal agencies, independent establishments, and Government corporations. (See Table 16.) With the exception of the Eximbank, for which records are maintained over the life

of a loan or guarantee, statistics for all programs are maintained on the basis of a calendar-year (CY) or 12-month period.

A computerized reporting system enabled MARAD to process 21,600 bills-of-lading for 1986. These documents covered civilian agencies, some DOD contractor shipments, Eximbank, and most Foreign Military Sales Credit program (FMSC) cargoes. The equivalent of 36,000 bills of lading covering Military Assistance Program (MAP) and FMSC shipments also were processed using computer tapes provided by DOD.

Table 16: GOVERNMENT-SPONSORED CARGOES—CALENDAR YEAR 1986 ^{1 2 3}

Public Law 664 Cargoes:

Program	U.S.-Flag Revenue (\$1,000)	Total Metric Tons	U.S.-Flag Metric Tons	Percentage U.S.-Flag Tonnage
Agency for International Development (AID):				
Loans and Grants	56,203	1,965,846	840,746	43 ⁴
P.L. 480—Title II	112,354	1,670,668	1,085,959	65 ¹
Section 416	29,868	580,648	373,729	64 ¹
Department of Agriculture:				
P.L. 480—Title I/III	176,774	5,445,077	3,219,860	59 ^{1 4 13}
CCC African Food Assistance Program	1,080	22,053	22,053	100
Department of Commerce:				
Agencies	1,039	2,101	1,176	56
Department of Defense (DOD):				
Foreign Military Sales Credit and MAP Merger Programs	48,812	170,957	145,478	85 ³
Department of Energy:				
Bonneville Power Administration	79	411	180	44 ⁵
Strategic Petroleum Reserve	5,366	2,432,951	1,240,939	51 ⁶
Other Agencies	63	463	229	49 ⁵
Department of Health and Human Services				
	15	24	14	56
Department of Interior:				
Bureau of Reclamation	143	692	489	71
Department of Justice:				
Federal Bureau of Investigation	13	22	19	88
National Aeronautics and Space Administration				
	42	139	46	33 ⁵
National Science Foundation				
	40	67	36	53

Table 16: GOVERNMENT-SPONSORED CARGOES—CALENDAR YEAR 1986^{1 2 3}—(Continued)

Public Law 664 Cargoes:

Tennessee Valley Authority	0	902	0	0 ^{5 12}
General Services Administration	1,256	1,202	1,177	98
Department of Transportation:				
Urban Mass Transportation Administration	2,925	6,447	4,561	72 ³
Federal Aviation Administration	1	5	2	38 ⁵
Coast Guard	111	143	143	100
Federal Highway Administration	0	785	0	0 ⁵
U.S. Information Agency	394	1,605	939	58
Department of State:				
Foreign Building Office	526	2,167	1,607	74
Defense Attache Office	24	24	14	58
Other Agencies (not including AID)	3,334	8,256	6,433	78
Turnkey—Security Upgrade	43	87	87	100
Center Disease Control	21	40	21	53
Other Agencies	77	130	96	74 ⁷

Public Resolution 17 Cargoes:

	Total Freight Revenue	U.S.-Flag Freight Revenue	Percentage U.S.-Flag
Export-Import Bank	\$15,969,074	\$14,465,931	91 ⁸

Cargo Preference Act of 1904 Cargoes:

		Metric Tons	Percentage of Total Troop Support Cargoes
Department of Defense Troop Support Cargoes			
Military Sealift Command (MSC) ⁹			
U.S.-flag privately owned vessels		11,918,129	88.5
U.S.-flag vessels less than 3 years under U.S. registry		41,516	.3
U.S. Government-owned vessels		182,018	1.4
Total U.S.-flag carriage of MSC Troop Support Cargoes		12,141,663	
Program	U.S.-Flag Revenue (\$1,000)	Total Metric Tons	Percentage U.S.-Flag Tonnage
Department of Defense Commercial Contractor Cargoes ¹⁰			
Army Materiel Command	1,074	30,661	26
Air Force	1,476	2,674	86
Corps of Engineer	421	2,191	76
Defense Logistics Agency	8,523	126,939	15
Navy	4,293	16,024	95
Total U.S.-flag carriage of Department of Defense Commercial Contractor Cargoes	15,491	175,816	44,022

Table 16: GOVERNMENT-SPONSORED CARGOES—CALENDAR YEAR 1986^{1 2 3}—(Continued)

Cargo Preference Act of 1904 Cargoes:

Program	U.S.-Flag Revenue (\$1,000)	Total Metric Tons	U.S.-Flag Metric Tons	Percentage U.S.-Flag Tonnage
Agency for International Development (AID) Israeli Agreement-Cash Transfer Program:	\$25,892	1,533,927	769,724	50 ¹¹

¹ The Food Security Act of 1985 (P.L. 99-198) impacted on the P.L. 480 Title I, II and Section 416 programs through a change in report period from a calendar year basis to a 12-month period commencing April 1, 1986 through March 31, 1987 (the current report period for which a 60 percent requirement applies) and to increase the U.S.-flag share from 50 to 60, to 70, and finally to 75 percent over a 36-month period in 12 month increments. There was an initial transition quarter, January 1 through March 31, 1986, during which the affected programs performed as follows:

Program	U.S.-Flag Revenue (\$1,000)	Total Metric Tons	U.S.-Flag Metric Tons	Percentage U.S.-Flag Tonnage
P.L. 480-Title I/III	42,789	1,059,067	525,135	49*
P.L. 480 Title II	31,736	614,798	343,515	56
Section 416	2,820	32,780	20,421	62

* (Also see footnote 4 which is applicable.)

² Includes civilian agencies, Department of Defense (DOD) Foreign Military Sales Program, and a partial listing of DOD commercial contractor shipments. DOD Troop Support cargoes processed by the Military Sealift Command are also reported. MARAD is unable to verify the Troop Support cargo data since the complete data information was not made available in time for this report.

³ Several agencies' tonnages are reflected in metric tons for uniformity only. Cargo preference compliance for those programs involving high cube/low density cargo, is achieved on a gross revenue ton basis. Percentages reflected on a weight tonnage basis for such programs do not necessarily represent the exact extent of the program's compliance with the statute.

⁴ This program did not meet the minimum 50 percent U.S.-flag participation level. Sufficient U.S.-flag service was available on a timely basis which would have enabled the agency to meet the cargo preference compliance requirement.

⁵ Agencies complied with the statute. The imbalance in favor of foreign-flag shipments was due to nonavailability of U.S.-flag service.

⁶ MARAD accounts for the SPR program on the basis of long-ton miles (LTM). In CY 1986, this program provided a total of 1.7 billion LTM of which U.S.-flag carriers derived 853.8 million LTM or 50 percent.

⁷ Cargo of government and private agencies that generated less than 100 metric tons of cargo in 1986. The agencies which reported in 1986 are: Action; Agriculture Research Service; Drug Enforcement Administration; General Accounting Office; Geological Survey; Immigration and Naturalization Service; Labor Department; Library of Congress; National Oceanic and Atmospheric Administration; Smithsonian Institute; Treasury Department; U.S. Customs; Veterans Administration; and Board of International Broadcasting.

⁸ Compliance based on Freight Revenue only.

⁹ As MSC records liner cargo in measurement tons, MARAD has converted these to metric tons using a factor of .293 metric tons per measurement ton. Statistics are shown on Fiscal Year 1986 basis, since calendar year data was not provided.

¹⁰ DOD's contracting activities are subject to the Cargo Preference Act of 1904 (10 USC 2631). P.L. 664 impacts 10 USC 2631 by requiring that privately owned U.S.-flag vessels must be used for at least 50 percent of DOD's 100 percent U.S.-flag requirement. DOD's contractors must use privately owned U.S.-flag commercial vessels for 100 percent of their cargoes since such cargoes are processed totally within the commercial transportation environment. Data reflects only a partial listing of DOD's contracting activities for the year due to the delayed involvement of MARAD in these contracting activities, and the need by DOD to update its active contracts to reflect the U.S.-flag shipping provisions contained in the Federal Acquisition Regulation (FAR).

¹¹ While statistics are shown for CY 1986 shipments, Israeli cash transfer program is maintained on a fiscal year basis. This reflects the terms of the side letter executed each year between the Government of Israel (GOI) and AID. On a Fiscal Year 1986 basis, GOI shipped 50.0 percent on U.S.-flag vessels:

Program	U.S.-Flag Revenue (\$1,000)	Total Metric Tons	U.S.-Flag Metric Tons	Percentage U.S.-Flag Tonnage
AID/Israeli Cash Transfer FY 1986	27,741	1,634,221	817,876	50

¹² Due to transportation scheduling problems encountered by TVA, the U.S.-flag share which was scheduled to move in November 1986, was delayed until January 1987.

¹³ These statistics contain a total of 147,269 MT. tons (26,301 MT. U.S.-flag and 117,968 MT. foreign flag) for which bills-of-lading have not been provided to MARAD by USDA at the time this report was prepared. These tonnages are included in the statistics because other evidence has been obtained from USDA that the transactions actually were effected during the accounting period.

Agencies Not in Full Compliance with Public Law 83-664

For CY 1986 the Agency for International Development (AID) loans and grants program failed to meet the 50 percent requirement. AID was unable to substantiate the non-availability of U.S.-flag vessels for 267,370 metric tons of petroleum products from points outside of the United States.

USDA failed to achieve the statutory U.S.-flag participation for the P.L. 480, Title I Program for either the transition period, January 1, 1986 through March 31, 1986 or the Food Security Act of 1985's new calendar year reporting period of April 1, 1986 through March 31, 1987. The shortfall in the required U.S.-flag participation was not a result of the unavailability of U.S.-flag vessels, but appears to have resulted from a failure by USDA to adequately approve enough U.S.-flag vessels sufficiently in advance of the end of the accounting periods involved.

None of the Department of Defense's contracting agencies achieved the required U.S.-flag participation. However, MARAD does not view the significant foreign-flag vessel carriage of these agencies' cargoes as overt violations of either of the two governing cargo preference statutes, because in CY 1986 the DOD agencies were beginning full scale operations which addressed the cargo preference clauses and the drafting of procedures to implement these clauses in their contracts.

Ocean Freight Rate Differential

The 1985 amendments to the 1936 Merchant Marine Act require MARAD to reimburse the Commodity Credit Corporation (CCC) of the U.S. Department of Agriculture (USDA) for the ocean freight differential (OFD) costs for the increased U.S.-flag share of agricultural shipments exported under certain specified export programs (Public Law 83-480 and Section 416 programs). OFD cost is defined as the difference between the cost of shipping a cargo on a U.S.-flag vessel and a foreign-flag vessel.

USDA continues to be responsible for funding OFD costs for the first 50 percent share of cargo that must

move in U.S.-flag vessels under each program. MARAD is responsible for the OFD costs above 50 percent, not to exceed the legislated increments of 60 percent in the first USDA/CCC Cargo Preference Year (April 1, 1986 to March 31, 1987), 70 percent in the second year, and 75 percent in the third and subsequent years. MARAD borrows from the U.S. Treasury funds needed to reimburse USDA/CCC for the approved OFD amounts within agreed upon time periods. The 1988 appropriation provided funds for 1988 and future years to repay borrowings from Treasury. MARAD has reimbursed USDA/CCC for the approved OFD amounts within agreed upon time periods.

During the first year, which commenced April 1, 1986, MARAD's share of the OFD based on fully supported CCC invoices has amounted to \$21,779,732.89. It is estimated that this figure will be subject to an increase of approximately \$1,980,000 when final CCC billings for the year are completed.

The 1985 amendments also require that steps be taken as may be necessary and practicable, without detriment to any port range, to preserve for the Great Lakes ports each year through CY 1989 the percentage share or metric tonnage (whichever is less) of Public Law 480, Title II bagged, processed or fortified commodities as exported through these ports during CY 1984. According to the USDA, 245,338 metric tons, representing 20 percent of the total of these Title II commodities, were exported through Great Lakes ports during CY 1984. During the program calendar year which began on April 1, 1986 the quantity of these Title II commodities shipped through Great Lakes ports amounted to 230,458 metric tons. This is 5,714 metric tons less than the quantity needed to satisfy the 20 percent minimum requirement. USDA stated that they were restricted from taking special actions to comply with the Great Lakes provisions of the statute until after the Commodity Credit Corporation Procurement Regulation was amended in February 1987. Fluctuations in estimated program totals also made monitoring difficult.

Department of Defense

Under agreements executed by MARAD with the Departments of Army, Navy, and Air Force, the Corps of Engineers, and the Defense Logistics Agency covering their commercial contracting activities, the Agency assists DOD and its commercial contractors and suppliers in securing appropriate U.S.-flag shipping service.

The CY 1986 statistics shown in Table 16 include only a portion of the commercial contract cargoes generated by these agencies, because the vast majority of DOD's contracts did not contain bills of lading reporting provisions. MARAD will be able to secure these documents for future reports as contracts are modified to reflect MARAD's agreements with the defense agencies. Tonnages carried by U.S.-flag vessels for troop-support cargoes processed by the Military Traffic Management Command (MTMC) and the Navy's Military Sealift Command (MSC) are not included in Table 16's DOD contractor shipment statistics. However, DOD troop-support cargoes processed by MTMC and MSC are provided as a separate listing. A breakdown of this tonnage between U.S.-flag privately owned and U.S. Government-owned vessels is included. The data is provided by the MSC, with no independent MARAD verification. Precise revenue data from the MSC is not available. This report covers activities which occurred in FY 1986.

The Army, Navy, Air Force, and Corps of Engineers failed to achieve 100 percent U.S.-flag participation in their commercial contracting activities during CY 1986. Only a small portion of foreign-flag participation was due to the non-availability of U.S.-flag vessels. The primary reasons for the shortfalls were inconsistencies previously existing in the Defense Acquisition Regulation provisions, the absence of appropriate U.S.-flag provisions in a subsequent number of DOD's contracts, and some procuring agencies' lack of experience with cargo preference. These problems have been addressed by recent agreements between MARAD and the DOD contracting commands concerning implementation of the Federal

Acquisition Regulation (FAR), which became effective on April 1, 1984. The FAR clearly states that DOD cargoes are covered by the Cargo Preference Act of 1904, making them subject to a 100 percent U.S.-flag requirement.

Technically, each of the DOD contracting commands failed to meet the requirements of both the Cargo Preference Act of 1904 and Public Law 83-664.

Strategic Petroleum Reserve

In 1977, the U.S. Government 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 (SPR). At the end of CY 1986, 511.6 million

barrels of crude oil had been stored at five SPR sites.

The Cargo Preference Act requires the Department of Energy (DOE) to transport at least 50 percent of the oil in U.S.-flag tankers. In 1977, MARAD and DOE agreed that a long ton/mile formula would be used to determine compliance, rather than total tonnage carried.

In calendar year 1986, U.S.-flag tankers carried SPR cargo amounting to 853.8 million long ton/miles (50.4 percent). This carriage generated \$5.4 million in revenue. There has been a significant decline in the revenue from the 1985 level (\$26.7 million) due solely to the contraction of the program.

Eximbank

In the Eximbank program, total ocean freight revenues decreased from \$30.6 million in CY 1985 to \$15.9 million in 1986. During 1986, U.S.-flag operators earned \$14.4 million representing 91 percent of the total ocean freight revenues. The decline in the Eximbank program resulted from a reduction in the number of new large project activities and the winding down of the few remaining large projects. It appears that the era of the super-projects has waned and future financing will primarily concentrate on opportunities for smaller projects, shelf items and individual pieces of equipment.

Chapter 5

Port and Intermodal Development

The Maritime Administration (MARAD) provides technical assistance in port and intermodal planning and operations to State and local port authorities, private industry, and foreign governments. It also develops contingency plans for the utilization of ports and port facilities to meet defense needs in times of national emergency or war. (See Chapters 8 and 9.)

Port and Waterway Development

During FY 1987, MARAD continued to support the use of the Agency's marine research simulator, located at

its Kings Point Computer-Aided Operations Research Facility (CAORF), for testing alternative port channel designs to reduce the cost of maintenance dredging and deepening projects in U.S. harbors.

The Agency also participated in developing appropriate data bases and analytical systems required to estimate the costs of dredging and maintaining our Nation's navigable channels.

On April 21, 1986, the Agency transferred CAORF to Marine Safety International, New York, NY, which will operate the facility under a five-year cooperative agreement.

Technical Assistance to Ports

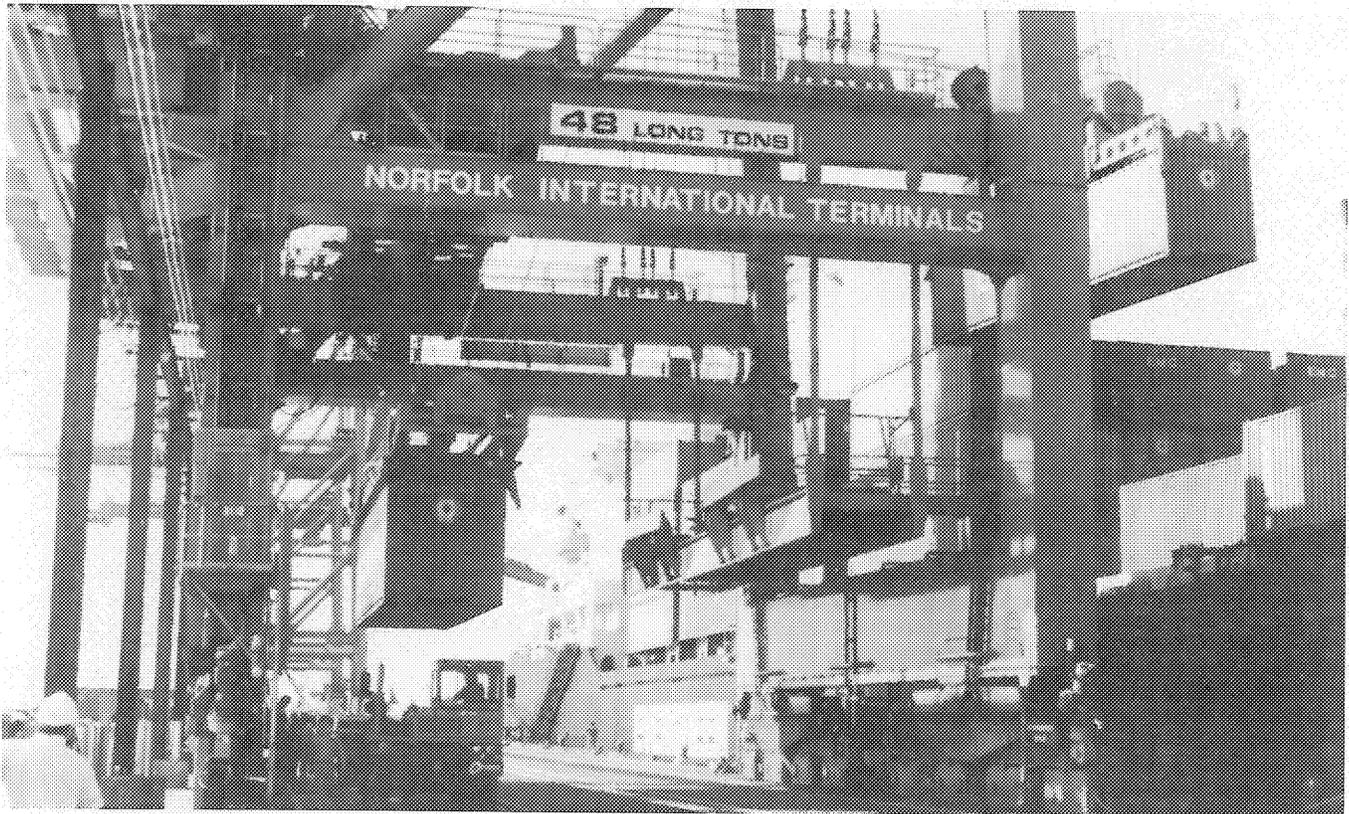
MARAD provided technical assistance through two major programs and several projects dedicated to strengthening the role of U.S. ports in national defense and economic development. This involved the development of various analytical reports, methodologies, and data systems for improving planning, productivity, and the general

efficiency of port management and marine terminal operations. MARAD funded these technical projects on a cost-sharing basis with appropriate State or local port authorities and private sector organizations.

Port and Intermodal Planning Program

MARAD's FY 1987 cost-shared port and intermodal planning program included cooperative port development studies with local, State, and regional port agencies and associations; port planning and management information systems, including database development; and financial and economic impact analyses projects. Emphasis during the year was placed on developing generic methodologies usable by any U.S. port or region. This included the development of the appropriate software for use on mini- or personal computers.

Projects under this program which were completed, continued, or initiated in FY 1987 are as follows:



One of three high-speed, dual-hoist container cranes in operation at Norfolk International Terminals. These cranes were designed to allow as many as 50 container movements per hour, or almost double the rate of conventional cranes.

Projects Completed	Description
Port Facilities Inventory Evaluation	Completed an in-house study of the Agency's automated <i>Port Facilities Inventory</i> to evaluate appropriate changes in the hardware, software, and datarecord configuration.
Socioeconomic and Technological Change at Ports	Completed a MARAD-sponsored university research project by the Massachusetts Institute of Technology on the impacts of socioeconomic and technological change on future U.S. port development.
Waterborne Trade Data Base	In conjunction with the Office of the Secretary of Transportation, completed development of an automated, international waterborne trade data base used to generate historical port and bilateral trade statistics.
Port Training Study	Completed a Department of Transportation-sponsored university research project by the Louisiana State University on port training needs in the Caribbean and Central America.
Port Training Seminars	Organized and participated in port security seminars in Tampico, Mexico, and Port of Spain, Trinidad, sponsored by the Organization of American States. The ports of New York-New Jersey, Baltimore, and Miami and the U.S. Coast Guard provided instructors for these one-week seminars, which addressed cargo theft and security measures to protect passengers and crews against terrorist acts.
Ongoing Projects	Description
Upper Mississippi River Transportation	Participated on the Steering Committee for the Upper Mississippi River Transportation Economic Study of that river's towing industry. A consortium of five Upper Mississippi River States and the Department of Agriculture are participating in this economic analysis and modeling of operating efficiencies for river towing companies.
National Port Assessment 1990-2000	Began planning the preparation of the second edition of the MARAD National Port Assessment (1990-2000).
MARAD/Corps of Engineers Memorandum of Understanding	Participated in semi-annual meetings of a joint working committee with the U.S. Army Corps of Engineers, addressing cooperative projects in marine transportation technology systems, port and waterway development, joint research, and applied engineering.
Small Port-Siting Evaluation System	Continued preparation of a report, computer software, and user's guide for an automated model to analyze and evaluate facility sites at small ports.
Laminar Flow/Boundary Air Technology Development	Continued efforts to achieve adequate testing and acceptance of this bulk cargo-handling system technology which offers significant cost savings potential for bulk grains moving under government-generated cargo programs.
Regional Port Marketing/Promotion Methodology	Continued preparation of a Regional Port Marketing and Promotional Methodology to provide a step-by-step process for ports to follow in developing a regional marketing and promotion program.
Port Facilities Inventory	Continued updating segments of Agency's automated Port Facilities Inventory including the ports of Morehead City and Wilmington, NC, and Jacksonville, FL, the Tennessee-Tombigbee and Black Warrior-Tombigbee Waterways, and the Alabama and Tennessee Rivers.
Projects Initiated	Description
Port Expenditure Survey	Began data analysis of industry-conducted survey to update the MARAD report <i>United States Port Development Expenditure Survey</i> , which profiles major expenditures for new construction, modernization, and rehabilitation.
Local Port Economic Impact Kit	Initiated conversion of the spreadsheet software of the MARAD Kit from SuperCalc 3 to Lotus 1-2-3 for use in two workshops scheduled to be held in Charleston, SC, and Long Beach, CA.
National Economic Impact of U.S. Port Industry	Began contractual development of a MARAD input-output model to conduct annual assessments of the national economic contributions of the U.S. port industry.
Strategic Planning Guide	In conjunction with the American Association of Port Authorities' Planning and Research Committee, began preparation of a guidebook on process of strategic planning for ports. This reference guide is designed to assist ports in evaluating their operating environment for long-term planning purposes.
U.S. Stevedoring and Marine Terminal Industry	In conjunction with the National Association of Stevedores, began updating this Agency report which discusses the nature, composition, and national economic contributions of the U.S. stevedore and marine terminal industry.

Projects Completed	Description
Port Training Program	Initiated a cost-shared contractual agreement with the Organization of American States to develop a 5-year seminar training program for mid-level and senior port officials in the Caribbean and Latin America.
Caribbean Port Tariff Analysis	In conjunction with the Office of the Secretary of Transportation, began contractual process for the conduct of a comparative analysis of marine terminal tariffs and tariff changes in Caribbean Basin ports.

Port and Intermodal Operations Programs

This cost-shared program helps improve productivity in the operation of facilities, equipment, and waterways. It also provides planning for emergency operating conditions in time of crisis or war. FY 1987 projects are described below:

Completed Projects	Description
Container Terminal Productivity Study	Completed a study and symposium on improving productivity in U.S. marine container terminals prepared by an industry committee established by the National Research Council's Marine Board. Scheduled a 2-day roundtable of industry and labor leaders to discuss ways to carry out the study's recommendations.
Intermodal Equipment Inventory	Prepared and distributed 1986 Inventory of Intermodal Equipment owned by American steamship companies and major leasing organizations operating in the United States.
Coal Export Marine Terminal Capacity	Prepared and distributed MARAD publication <i>Existing and Potential U.S. Coal Export Terminals</i> .
Air Quality Vessel Regulation	Submitted to the Environmental Protection Agency (EPA) proposed amendments to the Clean Air Act, which would give the Government exclusive jurisdiction over the regulation of air pollutants emitted from commercial vessels. These amendments would encourage the development of uniform regulations by EPA and the Coast Guard.
Maritime Security Training	Assisted the Department of State's Bureau of Diplomatic Security in conducting two maritime security training courses for allied foreign countries. MARAD's Ready Reserve Force vessels and U.S. port authority marine terminals were made available for field exercises.
Marine Board Vapor Emissions Study	Acted as liaison to the industry committee, established by the National Research Council's Marine Board, which completed an investigation of the state of technology in controlling and recovering hydrocarbon vapors from ships and barges.
Port and Shipping Safety and Environmental Protection	Prepared and distributed four issues of MARAD's quarterly report on this topic.
Ongoing Projects	Description
Regional Automated Cargo Release System	Continued cost-shared study with the Golden Gate Ports Association to develop a generic design of an automated import cargo release system for U.S. ports planning to use the U.S. Customs' Automated Commercial System.
Maritime Security Inter-agency Coordination	As a member of the inter-agency Working Group on Maritime Security, chaired by the Office of the Secretary of Transportation, assisted in assessing domestic and international security measures, providing maritime security training, and preparing a report to the Congress in accordance with the requirements of the International Maritime and Port Security Act (PL 99-399).
Chemical Transportation Advisory Committee (CTAC)	Represented MARAD at various meetings of the Subcommittees on Vapor Control and on Occupational Health and Safety.
Automated Spill Response Information System	In cooperation with the Coast Guard, continued to coordinate this DOT-sponsored university research by Dillard University on an automated hazardous spill response information system. It is designed to enable Coast Guard regional response teams to use microcomputer mapping and laser video disks to expedite containment and cleanup operations in U.S. ports.
IMO Shipping Coordinating Committee	Participated in various meetings of the Shipping Coordinating Committee in preparation for sessions of specific International Maritime Organization Committees (including the Marine Environment Protection Committee, Maritime Safety Committee, and the Dumping Convention).

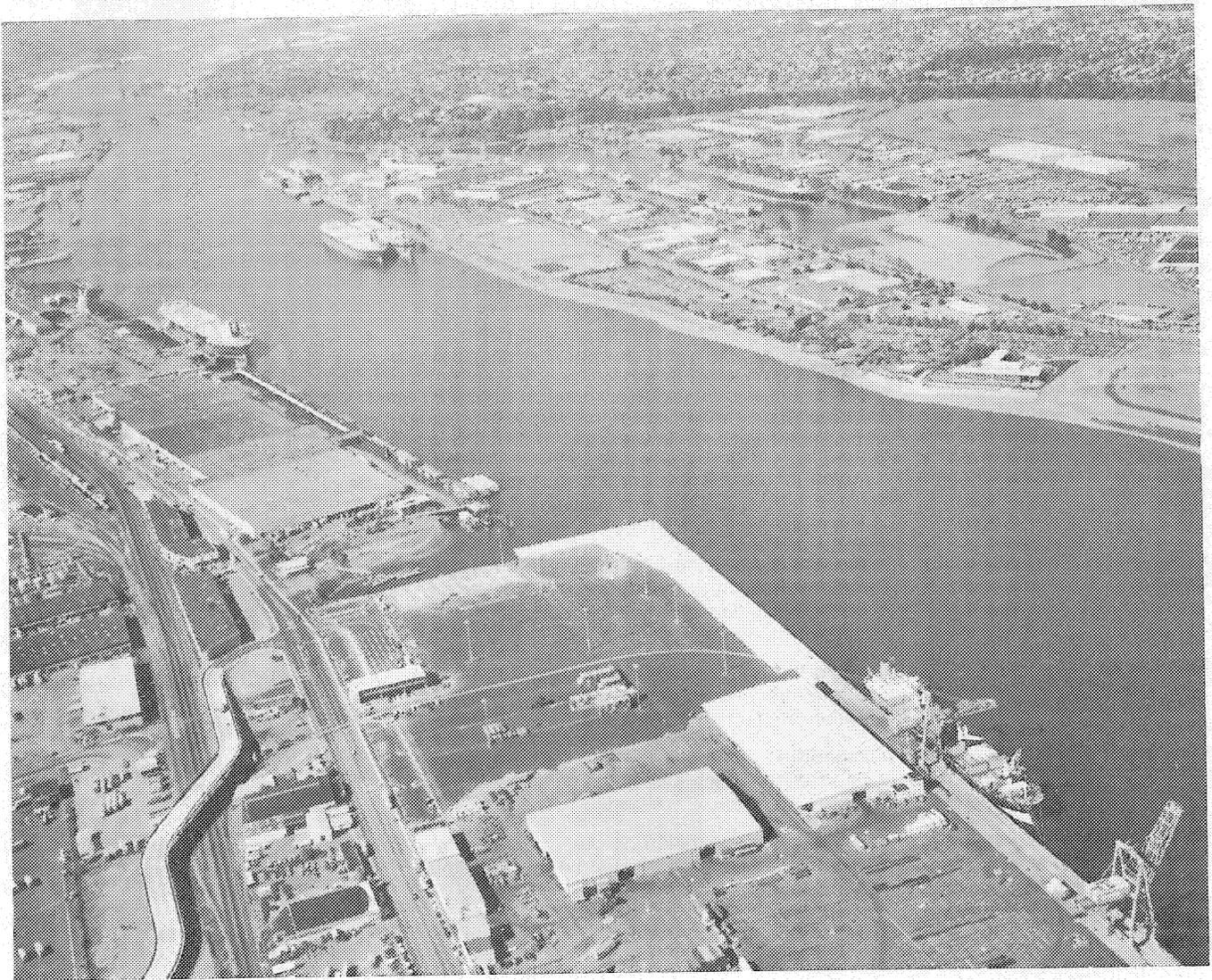
Technology Transfer

Many projects and activities undertaken by MARAD are initiated at port industry request or are proposed as a response to port industry needs. The results are designed to serve the

needs of the widest spectrum of port users as well as the proponent in each case. Consequently, the Agency has an active program to acquaint the port industry with available tools, their

benefits and the procedures for obtaining materials. During FY 1987 the following technology-transfer activities occurred:

Transfer Projects	Description
Conference on Offshore Barges and River/Ocean Vessels	Co-sponsored with the National Waterways Conference, Inc. and Louisiana State University's Ports and Waterways Institute a seminar on the 'Potential for General Cargo in Offshore Barges and River/Ocean Vessels.'
Conference Report on Barge Fleeting	Prepared and distributed the final report of the first National Conference on Barge Fleeting, which was co-sponsored with Inland Rivers Ports and Terminals, Inc.
Container-on-Barge Study and Seminar Report	Prepared and distributed final report of the study and seminar conducted by MARAD and Louisiana State University's Ports and Waterways Institute on present and potential container-on-barge movements.
Computer-Aided Operations Research Facility (CAORF)	Promoted increased government and industry awareness of the increasing use of MARAD's ship simulator at CAORF in simulations of several U.S. ports to optimize channel improvement designs and reduce dredging costs.
Inland River Port Information System	Prepared and distributed the final report of this prototype management information system for shallow-draft ports. The automated system, consisting of 14 software modules with diskettes, available from the National Technical Information Service, addresses inland river port data requirements for planning, management, marketing, and operations.
Lightweight Firefighting Module (LFFM)	Extended the temporary transfer of the LFFM to the U.S. Navy for three additional years under a memorandum of understanding, in order to assist the Navy in testing and evaluation, protection of its assets, and upgrading of its firefighting capabilities.
Port Vessel Emissions Model	Published and distributed the MARAD Port Vessel Emissions Model, developed by the Port of Long Beach, which calculates both propulsionrelated and cargorelated vessel air polluting emissions.
Port Administration and Operations Seminar	Made a major presentation on port economics and port pricing at this annual seminar for senior port managers conducted by the Port Authority of New York and New Jersey's World Trade Institute.
MARAD/Port Directors Meeting	Made a presentation MARAD's port and intermodal programs and projects to U.S. port directors at the American Association of Port Authorities' Annual Meeting in Miami, FL.



Aerial view of the new \$46 million terminal, shown behind the Portland Ship Repair Yard in the Port of Portland. Renovation of the 60-year-old terminal included remodeling two berths and a low-level dock for barge and roll-on/roll-off service.

Chapter 6

Research and Development

Fiscal Year 1987 was the last year of a separately funded Maritime Administration (MARAD) Research and Development program. The descriptions contained in this report are generally of work that was being brought to conclusion as the program terminated. Some limited, related activity will continue, however, under a new Office of Technology Assessment within MARAD. This ongoing work will focus on the opportunities offered by technological innovation to more efficiently and effectively meet Government requirements.

Research activities of note, initiated during and prior to fiscal year 1987, will continue to be reported in the Agency's Annual Report to Congress.

Research and development (R&D) contracts and cooperative agreements awarded in FY 1987 are listed in Appendix III.

Shipbuilding

The National Shipbuilding Research Program (NSRP) in FY 1987 continued its technical research activities in all ship construction processes. Despite reduced funding, the high level of interest in the program by participating shipyards continued. As a result, research funds were used to complete ongoing projects and to facilitate the transfer of advanced technologies to help solve complex manufacturing problems and improve productivity.

Participants in this program included experts from all major U.S. shipyards, supplier industries, marine industry consultants, Government agencies, and academic institutions. During the reporting period, these technical experts performed, administered, and monitored previously authorized research.

The projects included:

- *Evaluation of High-Strength Steels Produced by Advanced*

Metallurgical Processes shows the applicability of newly developed high-strength steels for low-temperature and offshore applications.

- *Flexible Production Indices* relates man-hours required to physical characteristics of materials to be fabricated, assembled, or painted during construction of ships.
- *Multi-Skilled Self-Managing Work Teams in a Zone-Construction Environment* describes efforts to develop and test a new production workforce organization corresponding to the technical requirements of product-oriented work-breakdown structure.
- *Implementation of Advanced Technology in the Shipbuilding Industry—Pilot Workshop Report* outlines the development of the workshop, tools used to execute the workshop design, and the lessons learned.

Important major technology transfer functions which continued in FY 1987 included publication of the quarterly *Journal of Ship Production*, dedicated to presenting results of technical research relevant in the shipbuilding industry. Also in this reporting period, the microfiche library of completed shipbuilding research reports was updated and distributed.

The Third National Shipbuilding Research Program Annual Technical Symposium was held in New Orleans, August 26-28, 1987. More than 20 technical papers were delivered and approximately 400 representatives of industry, Government, and other interested organizations attended.

FY 1988 will be a transition year for the NSRP as MARAD coordinates the transfer of direct management and control of the program to the Navy.

Ship's Machinery

The goal of the Ship's Machinery and Outfitting Program has been to accelerate the implementation of advanced and emerging technologies applicable to shipboard power generation and conversion equipment to reduce operating (fuel and maintenance) costs.

In FY 1987, over 14,000 hours of the in-service testing of thin-film zirconia-based ceramic coatings in a high-speed marine towboat diesel engine was completed. Also completed was shore-based dynamometer testing of thick-film zirconia-based ceramic coatings in an eight-cylinder marine diesel engine. Both series of tests showed that high quality zirconia-based ceramic coatings have acceptable levels of durability and offer improvements in engine performance.

In cooperation with a major engine manufacturer, a variable-timing, electronic fuel-injection system was assembled and installed aboard an inland waterway towboat in this reporting period. The system represents the 'upscaling' and 'marinization' of technology offered in the 1986 model year of the manufacturer's truck-size engines. Under another contract with this same engine manufacturer, the design and development of a novel turbocharger for marine diesel engines were completed. Known as a three-wheel turbocharger, the device will provide improved fuel economy and transient-torque engine response across the broad load profile of the typical inland waterway towboat.

Another project applied technology offered by European manufacturers of large-bore, low-speed and moderate-bore, medium-speed marine diesel engines to two-stroke, high-speed marine diesels typically found aboard inland waterway towboats. The design and fabrication of an air-induction system consisting of a hydraulically driven blower and freewheeling turbocharger were also completed. The system, which replaces an existing clutch-driven turbocharger, is scheduled to be installed and tested aboard an inland waterway towboat in calendar year 1988.

Fleet Management Technology

The application of artificial-intelligence and expert-systems technology to shipboard and shoreside operations of U.S.-flag shipping companies was the major thrust of the Fleet Management Technology Program in FY 1987.

Among the projects completed during the year were a survey of artificial-intelligence applications to the marine industry and prototype expert system for vessel energy management and vessel piloting.

For the survey of artificial-intelligence applications to the marine industry, an introduction to the technology was presented and followed by a discussion of appropriate types of problems which can be solved with this technology. A wide range of potential applications were evaluated and cost/benefit analyses conducted. Some existing hardware and software tools were described in the report.

The prototype expert system for vessel energy management uses expert knowledge about problems related to energy management as they apply to the maintenance of medium-speed, diesel-power plants. The prototype consists of three major components: a knowledge base of rules, an inferencing system, and a natural language interface. The system provides a valuable reference for the further development of a shipboard system.

A prototype expert system for vessel piloting in restricted waters was developed and 'debugging' and operational testing were begun. The system incorporates the 'Rules of the Road' as well as the expert knowledge of experienced pilots and includes a graphical representation of New York Harbor. Use of the system as a training device is being considered.

Other projects conducted during FY 1987 included vessel weather routing and a voice response system for cargo status information.

Government Shipping Research

During FY 1986, a request for proposals was issued for research projects with the potential for reducing ocean freight charges for transporting Government-impelled cargo. As a result, four contracts were awarded in FY 1987. They cover a broad spectrum of research activities, including the technical and economic feasibility of using mobile,

offshore-drilling units as bulk-unloading platforms, analysis of transportable floating grain-handling systems, the feasibility of developing an automated-bagging system at port locations, and transmission of weather data to ships at sea.

Cargo-Handling Technology

With the goal of increasing productivity in marine terminals and intermodal transportation, MARAD's Cargo-Handling Cooperative Program (CHCP) conducted research, development, test, and evaluation projects with three U.S.-flag liner carriers during FY 1987.

Four projects, jointly conducted and funded with Department of Defense (DOD) agencies, expand the application of microchip technology in logistics. They involve testing systems to produce automated electronic manifesting and tracking of containerized cargo; automated maintenance and repair data for cranes, tractors, and other mobile equipment; automated storage and transportation information for hazardous materials; and automated updating of the condition of equipment as it passes through the repair cycle. The Army also was testing the capabilities of microchip hardware under all transport and handling conditions. These tests are directed jointly by the CHCP and DOD.

The non-compatibility of radio-frequency identification systems among manufacturers was being addressed by the CHCP by calling together potential transportation industry users and systems manufacturers. An effort has been initiated to develop national and international standards.

The CHCP also was conducting a comprehensive evaluation of automatic-identification technologies by researching technologies, conducting field and laboratory tests, and pushing for the development of an industry standard.

During FY 1987, the CHCP developed two simulation models. One is the Marine Terminal Simulation Model, developed to

assist in decisionmaking for long-term capital improvements. The Terminal Operations Simulation Program (TOPS) was designed to assist in complex day-to-day planning. The CHCP worked with selected terminals of each member carrier to ensure maximum utilization of the models while measuring the impact of the models on terminal productivity.

Another new automation technology being tested by the CHCP was voice recognition. Voice systems allow users to enter data into a computer by simply speaking into a microphone. A test of voice technology was underway at Sea-Land Service, Inc.'s Tacoma, WA, facility. Users wearing mobile headsets respond to questions concerning container location and condition as containers proceed through the terminal yard. Data are captured on a local personal computer and concurrently update a mainframe computer in New Jersey. The system will increase container equipment utilization significantly.

An industrial engineering analysis was conducted at four carrier terminals in southern California to identify impediments to crane productivity and, in turn, cargo throughput. Based on the analysis, the CHCP has determined specific ways to substantially increase crane productivity.

Military Sealift Technology

With the assistance and cooperation of the U.S. Navy's Strategic Sealift Division, MARAD requested proposals for a program directed toward the development of low-cost, efficient systems to facilitate the rapid transition from commercial shipping to military sealift in times of national need. Five contracts were awarded for research beginning in FY 1987.

Emphasis is placed on commercially sound developments which meet military logistics needs, as well as those which modify existing commercial systems to meet sealift requirements.

The contracts cover a broad spectrum of research including improved crane technology, a new method for loading and discharging breakbulk cargo, improved utilization of domestic water transportation assets for commercial and military sealift benefit, development of modularized, acoustic-quieting systems for merchant ships, and examination of the technical feasibility of using mobile offshore-drilling units for temporary offshore port facilities.

Effective Manning

The objective of MARAD's Effective Manning Program is to reduce ship operating costs by developing conditions which increase productivity and enhance safety through new and improved organizational methods. Two projects were completed in FY 1987, one with Pacific-Gulf Marine and one with American President Lines. Each involved cooperative shipboard and shoreside experiments. MARAD provided for the use of expert consultants in implementing technology transfer to the participating ship-operating companies, and from them to other U.S. operators. These projects demonstrated that it is possible to operate a U.S.-flag ship efficiently with a 21-person crew. The importance of shoreside organization to overall operational efficiency also was demonstrated, confirming prior results achieved in Europe and Japan.

Following up on this work, a solicitation was issued late in the fiscal year for a 12-month study to define requirements for a U.S.-flag 'Ship-of-the-Future.' Some of the requirements to be identified are management, organization, manning, and technology.

CAORF

MARAD's Computer-Aided Operations Research Facility (CAORF) at Kings Point, NY, is a highly sophisticated ship-maneuvering research simulator, dedicated exclusively to solving maritime problems. CAORF

realistically simulates vessel operations in port or at-sea in real time using a full-scale mock-up of a ship's bridge and a full-color projected image on a 60-foot-diameter screen providing 240 degrees of visibility. A wide variety of safety-related problems can be studied. These include ship control and navigation, bridge layout, collision-avoidance procedures, and the design of equipment and harbor and restricted-waterway configurations, including the placement of navigational aids.

In April 1987, the Maritime Administration entered into a cooperative agreement with Marine Safety International for the private management and operation of CAORF. The five-year agreement called for the Government to provide \$1.7 million to assist the firm in undertaking immediate capital improvements to upgrade and refurbish CAORF. All other costs of operating and maintaining the facility are to be borne by the private company. The agreement includes a provision for a five-year extension.

Many research activities continued during the transition period.

The major program effort was in harbor and waterway development, including channel design and waterway improvements to identify optimal dimensions which will permit safe ship transits while minimizing dredging and maintenance.

CAORF also completed an extensive multi-year study of the Panama Canal. Modifications to allow two-way traffic of Panamax-size vessels in the Gaillard Cut were developed and simulation studies used to minimize costs. Studies of harbor design modifications in Oakland, CA, and Miami, FL, also were completed in FY 1987, as were evaluations of proposed alternative turning-basin designs for TRIDENT submarines for the Navy' Strategic Systems Program Office. Simulation of TRIDENT submarine operations will help determine tug-assist requirements for the U.S. Navy at Kings Bay, GA.

In the training area, CAORF continued to be used at the U.S. Merchant Marine Academy to provide simulated ship-handling experience

for deck cadets. The simulator training substitutes for at-sea experience required for deck-officer licensing by the U.S. Coast Guard. A series of courses for master mariners to prepare them for emergency readiness also were held in FY 1987. Additionally, an extensive set of studies to improve the effectiveness of submarine-simulator trainers was performed for the Naval Training Systems Center.

MARAD continued working with the U.S. Army Corps of Engineers (USACE) on a comparative study of Ship Simulator Capability and Channel Design. The study reviewed the capabilities of CAORF and two part-task simulators, the USACE simulator at Vicksburg, MI, and the similar U.S. Coast Guard simulator in Washington, D.C. Current and future applications of ship-handling simulation to the channel-design process were found to be a valuable and important tool.

Advanced Systems and Technology

During the fiscal year, MARAD completed the second volume of the navigation/communications study for the Great Lakes and Saint Lawrence River system. This report, Volume II: Requirements Definition Statement, attempts to place quantitative magnitudes on ship-maneuvering accuracy requirements in restricted waterways using results from ship simulators which have been controlled by humans.

MARAD continued participation in the Department of Transportation Small Business Innovative Research Program by supporting a U.S. Coast Guard contract involving an innovative magneto-optic nondestructive-testing concept to find flaws in metals, including those hidden under a layer of paint.

The Agency completed work with the WATERCOM inland waterways communications system in this reporting period. This project was identified as a requirement by the participants in the 1972 Domestic Shipping Conference sponsored by MARAD. A contract for a conceptual design was awarded to Waterway

Communication Systems, Inc. in 1973, and a cost-shared, system-development contract was awarded in 1975. In 1987, the final steps associated with that contract were taken to install a fully commercialized system. All hardware and installation costs for the final system were covered by the private sector.

In FY 1987, MARAD continued to support basic research conducted by the National Academy of Sciences' Marine Board.

In addition, the Agency represented the U.S. maritime community in the DOD/DOT Navigation Working Group (responsible for development of the Federal Radionavigation Plan); subcommittees and ad-hoc panels within the Radio Technical Commission of Maritime Services; working groups on Safety of Life at Sea; and Navy advisory groups dealing with merchant ship survivability.

Marine Science

MARAD's Marine Science Program encompasses ship hydrodynamics, structures, and propulsion systems.

Ship maneuvering remains a central concern. A new instrumentation package, the Maritime Coefficient Identification System (MARCIS), has been under development. Following successful prototype tests, MARCIS was being upgraded during the reporting period and nearing completion. The system will enable naval architects to determine the coefficients of maneuvering-response equations directly from ship trials. MARCIS is expected to increase the level of confidence in model-test predictions for new design, and provide better insight into design features which improve maneuverability.

MARAD also continued its involvement in cooperative ship structural research in fiscal year 1987 through the inter-governmental Ship Structure Committee.

Arctic Shipping

Field tests to analyze Arctic shipping conditions and to develop design and operating criteria for ships operating in the Arctic were conducted from FY 1978 to FY 1986.

Coordinated by MARAD and performed on U.S. Coast Guard Polar-Class icebreakers, these tests were also supported by other U.S. Government agencies, the State of Alaska, the Canadian Government, and private U.S. companies.

Over the past nine years, this program has produced extensive information on ice conditions over potential Arctic tanker routes and their effects on ships' hulls and performance. Many ice ridges have been profiled and ice cores taken in the Beaufort, Chukchi, and Bering Seas. As a result of these tests, year-round operations have been shown to be feasible in the Bering Sea.

During FY 1987, several wrap-up projects were funded to consolidate the data collected and to develop design information for ice-transiting ships.

Chapter 7

Maritime Labor and Training

The Maritime Administration (MARAD) supports the training of merchant marine officers and supplemental training related to safety in U.S. waterborne commerce. The Agency also monitors maritime industry labor practices and policies in conjunction with national and international organizations, and promotes consonant labor relations.

U.S. Merchant Marine Academy

The U.S. Merchant Marine Academy at Kings Point, NY, which MARAD operates, trains young men and women to become officers in the

American merchant marine. In addition to classroom training, midshipmen are required to 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. U.S. citizen graduates are obligated to apply for, and accept commissions as ensigns in the U.S. Naval Reserve.

The Class of 1987 comprised 80 third mates, 113 third assistant engineers, and 19 graduates who completed the dual deck/engine program. There were 15 women among the graduates. Within 90 days following commencement, approximately 93 percent of the 212 graduates had already found employment in the maritime industry, aboard ship or ashore, or were serving on active duty in the U.S. military service.

Average enrollment at the Academy during the year was 898.

At the beginning of the 1987-88 school year, the regiment of

midshipmen included 74 women, 17 of whom are scheduled to graduate in June 1988.

Members of Congress nominated 2,059 constituents for the Class of 1991. A total of 266 appointments were made in FY 1987. All classes of the Academy are under mandatory service obligation contracts to serve 5 years in the U.S. merchant marine or in maritime-related employment, maintain a Naval Reserve Commission for 8 years, and renew their 5-year U.S. Coast Guard license at least once after graduation.

The Academy is accredited by the Middle States Association of Colleges and Schools. The Marine Engineering Systems curriculum is accredited by the Accreditation Board of Engineering and Technology.

Rear Admiral Thomas A. King, USMS, retired in June 1987 as the Academy Superintendent after 7 years in that post. He was succeeded by Rear Admiral Paul L. Krinsky, USMS.



Hats fly from the heads of Kings Point graduates after a commencement address by Navy Secretary James Webb (inset).

State Maritime Academies

MARAD rendered financial assistance to six State maritime academies in accordance with the Maritime Education and Training Act of 1980 (Public Law 96-453). The legislation provides for the training of merchant marine officers to meet national objectives stated in the Merchant Marine Act, 1936, as amended.

The State academies are located at Vallejo, CA; Castine, ME; Buzzards Bay, MA; Traverse City, MI; Fort Schuyler, NY; and Galveston, TX. Graduates from the six State maritime academies in 1987 totaled 605.

In addition to U.S. Coast Guard licenses, graduates of five academies receive Bachelor of Science degrees (associate degrees are awarded by the Great Lakes Maritime Academy in Traverse City, MI). In 1987, 341 graduates accepted inactive naval reserve commissions while 64 graduates accepted active duty commissions in the armed services.

After graduation, 71 percent of the graduates found employment in the maritime industry aboard ship or ashore, or were serving on active duty in the U.S. Navy or Coast Guard.

Public Law 96-453 provides for a mandatory 3-year service obligation in the U.S. merchant marine for any subsidized student as a condition to receiving annual Federal student incentive payments of \$1,200 each for all graduating classes entering after April 1982.

Under this same law, MARAD also provides training vessels to each of the five salt-water academies for use in at-sea training and shoreside laboratories.

Supplemental Training

MARAD's supplemental training provides classroom instruction and hands-on training in maritime fire-fighting, diesel engineering and defense readiness.

During FY 1987, MARAD trained 1,711 maritime personnel in ship and

barge fire-fighting. Participants were largely U.S. seafarers, but included others concerned with maritime fire safety such as Coast Guard personnel and port-city professional firefighters.

MARAD-sponsored basic fire-fighting training is offered at the Agency's fire school at Swanton, OH, the U.S. Navy-Military Sealift Command/MARAD fire-training facility in Earle, NJ, and the U.S. Navy fire training installation, Treasure Island, San Francisco, CA. A fee of \$25 per student training day is charged for MARAD fire-training courses. In anticipation of a U.S. Coast Guard initiative that would require licensed officers to have advanced fire-fighting training, appropriate modifications to MARAD's Fire-Fighting Training Program were under review at the close of the fiscal year.

The Agency's Continuing Education Marine Diesel Program conducted at Kings Point, NY, provided 116 industry personnel with special courses on the operation and maintenance of the slow-speed diesel power plant. Slow-speed diesel training is a key element in MARAD's training activities reflecting the increased number of such engines in U.S.-flag commercial vessels as replacements for older vessels with less efficient steam-propulsion power plants.

In cooperation with the U.S. Navy's Strategic Sealift Division, MARAD renewed Navy-funded contracts to two maritime industry radio officer training schools. This program facilitates improved communications between U.S. Navy and U.S. merchant marine ships. Such communications capabilities would be vital in event of a military contingency. Concurrently, 62 shipmasters participated in the ongoing 'Master Mariners Readiness Training Course,' funded by MARAD and conducted at the U.S. Merchant Marine Academy during FY 1987. The course provides currently employed captains and their prospective replacements with instructions governing joint U.S. Navy/U.S. merchant marine operational practices and procedures.

Labor Relations

Longshore

The International Longshoremen's and Warehousemen's Union (ILA) renegotiated a major contract which expired July 1, 1987, with the Pacific Maritime Association covering West Coast longshoremen and clerks. Tentative agreement was reached in July and ratified in September with workers remaining at their jobs. A timely and peaceful settlement was achieved preserving the confidence of shippers in the stability of the West Coast longshore industry. There was increased activity, however, involving renegotiation of the Container Freight Station Supplement to the agreement as a result of the National Labor Relations Board (NLRB) decision to apply the work preservation objective to only member companies of the labor agreement.

The Federal Maritime Commission (FMC) decided in August that the '50-mile rule' in the contract between Atlantic and Gulf Coast Port Associations and the International Longshoremen's Association (ILA) is discriminatory under Federal shipping laws and called for its elimination. The U.S. Court of Appeals in Washington, DC ruled the FMC decision would not be enforced until the court heard arguments in December on the FMC decision.

John M. Bowers, who succeeded Thomas W. Gleason as ILA president, gave notice in September that the contract would be reopened to negotiate alternatives to the rule. Management officials from Maine to Texas met to discuss alternatives. Replacing the rule and achieving the ILA's goal of returning container packing and unpacking to the pier may require local solutions that differ from port to port.

Seafaring

The National Maritime Union (NMU) representing 7,500 unlicensed seamen, reached 3-year agreements with the Tanker Service Committee and the Maritime Service Committee. Union membership ratified the agreement in June. Contracts with other maritime unions scheduled to expire in June were renegotiated earlier in the year and do not expire until 1990.

Presidents of the National Maritime Union (NMU) and District 1 of the Marine Engineers Beneficial Association (MEBA) in August signed an agreement to merge. The MEBA, founded in 1875, claims to be the Nation's oldest maritime union. It represents licensed engineering officers. Membership numbers 30,000, of whom 8,500 work at sea. The NMU has 25,000 to 30,000 members, including about 14,000 shoreside workers. The NMU was formed in 1937 by rank and file seamen from the AFL's International Seamen's Union. It represents unlicensed workers in the deck, engine and stewards departments. Both MEBA and NMU are part of the AFL-CIO. An NMU spokesperson said the yet-unnamed new union would have two divisions, one representing licensed officers and one representing unlicensed crews. The unions plan to merge their pension and welfare organizations and eliminate duplicate facilities in order to pare union operating costs.

Labor Data

During FY 1987, average monthly U.S. seafaring employment in all sectors (private, Government contract, and Great Lakes) decreased to 14,639, off 9.5 percent from the FY 1986 average of 16,182. (See Table 17.) The total work force in selected U.S. commercial shipyards decreased 5.6 percent from 99,500 to 93,939, and average longshore employment declined from 28,421 to 26,904, down 5.3 percent.

Merchant Marine Awards

The Merchant Marine Medals Act of 1956 authorizes the Secretary of Transportation to grant medals and decorations for outstanding and meritorious service or participation in national defense action.

The Meritorious Service Medal was presented to James W. Eccles, port engineer for the vessel operator, American Foreign Shipping Co., in recognition of his November 15, 1986, action in preventing extensive damage and loss of the Ready Reserve Force vessel CAPE ARCHWAY. Fire had erupted onboard while the vessel was undergoing repairs at Eastern Technical Services in Virginia Beach, VA.

The Meritorious Service Medal was also presented to Greg C. White, utility systems operator/repairer employed with MARAD's James River Reserve Fleet. It was awarded in recognition of his August 21, 1985, actions which prevented the tug TD-23 from sinking or sustaining severe damage.

Letters of Commendation were approved by the Maritime Administrator for the captains and crews of the following vessels for their actions as noted:

- The M/V ROVER, operated by Ocean Carriers, Inc., for outstanding service in the rescue of 63 Indochinese refugees from a small wooden craft in the South China Sea on December 13, 1985;
- The M/V DAROL TIDE, an offshore towing-supply vessel of Tidewater,

Inc., for the evacuation of personnel from a collapsing drilling rig and directly assisting in the rescue of additional personnel from another threatened drilling rig in the Gulf of Mexico on October 28, 1985;

- The M/V HALE TIDE and M/V PAUL TIDE offshore towing-supply vessels of Tidewater, Inc., for the rescue operation of survivors from the sunken vessel HUICHOL in the Bay of Campeche, Mexico on December 14, 1985;
- The M/V GADGET, a tug owned by Progressive Marine, for the rescue of crew members of the M/V BAYOU BOEUF and averting a maritime disaster on the Mississippi River on October 28, 1986; and
- The M/V PEGASUS SEAL, a Seal Fleet supply boat, for the rescue of the crew members of the TRITON IV, a drilling rig off Galveston on December 22, 1986.

Special recognition, a Letter of Commendation, and other special honors were given to Chief Mate William Gatchell of the LNG ARIES of Energy Transportation Corp., for his humanitarian act involving the rescue and administration of medical aid to Indochinese refugees from a disabled boat in the South China Sea. Mr. Gatchell was given special recognition by the Surgeon General, United States Public Health Service, and the United Nations High Commissioner for Refugees for his exemplary efforts in connection with the rescue of refugees in distress at sea.

Table 17: MARITIME WORKFORCE AVERAGE MONTHLY EMPLOYMENT

	Average Monthly Employment in Fiscal Year	
	1986	1987
Seafaring Shipboard Jobs:	16,182	14,639
Shipyards ¹:	99,500	94,363
Production Workers	72,866	65,787
Management and Clerical	26,634	28,576
Longshore:	28,421	26,904

¹ Commercial yards in the Active Shipbuilding Base, constructing new ships and/or seeking new construction orders.



Maritime Administrator John Gaughan (left) presents Letter of Commendation to Chief Mate William Gatchell, LNG ARIES, for his outstanding humanitarian act in administering medical care to refugees picked up in the South China Sea. Gatchell's son, William, Jr., looks on.

Chapter 8

National Security

The Maritime Administration (MARAD) maintains the National Defense Reserve Fleet (NDRF) as a ready source of vessels for use during national emergencies and assists the U.S. maritime industry in fulfilling its traditional role as the Nation's fourth arm of defense in logistically supporting the military when needed. Within the NDRF, vessels designated as Ready Reserve Force (RRF) vessels are maintained in an advanced state of readiness for quick activation.

Reserve Fleet

The NDRF is an inactive supply of ships that would be activated to meet the shipping requirements of the United States during national emergencies. NDRF vessels are available to meet waterborne transportation shipping requirements in military and nonmilitary emergencies. Vessels in the NDRF include inactive merchant ships and several naval auxiliaries.

On September 30, 1987, the NDRF consisted of 326 ships assigned to three different locations: James River, VA; Beaumont, TX; and Suisun Bay, CA. (See Tables 18 and 19.) Of the 326 ships, 252 are in the Fleet Preservation Program, which includes conventional preservation, dehumidification, and cathodic protection.

In FY 1987, a \$4 million contract was signed with the U.S. Army Corps of Engineers to design, engineer, and begin implementation of a project to significantly upgrade the Beaumont reserve fleet location. The project includes dredging from 18 to 28 feet, installation of new mooring stakes, and an electrical distribution system. This upgrade will allow the site to accommodate Ready Reserve Force vessels of much greater draft and cargo carrying capacity.

Ready Reserve Force

The Ready Reserve Force was established in November 1976 to provide the nation with strategic sealift capability. Under the terms of a 1982 Memorandum of Agreement, MARAD administers the program to maintain RRF vessels in a high state of readiness, which enables their activation in 5, 10, or 20 days.

As of September 30, 1987, the RRF consisted of 86 ships, with a planned expansion to at least 120 ships by FY 1992.

Nine vessels were purchased for the RRF in FY 1987, including three breakbulk ships, three roll-on/roll-off (RO/RO) ships, two tankers and one combination breakbulk and RO/RO vessel. As of September 30, 1987, two of the vessels had been delivered to the RRF. The others were expected to be delivered during fiscal year 1988.

In FY 1985, an outporting plan was adopted providing for certain RRF vessels to be berthed at or near activation sites and expected load-out ports. As of September 30, 1987, 20 ships had been outported at layberths on the East Coast; 16 ships on the West Coast; and 7 ships on the Gulf Coast. Additionally, two vessels are outported in Japan and one in Hawaii.

In continuing tests of the readiness of vessels in the RRF, there were seven activations in FY 1987:

- The CAPE DOUGLAS was activated from its layberth in Jacksonville, FL, and was participating in Military Sealift Command exercises at the end of FY 1987.
- The PIONEER CONTRACTOR, CAPE HORN, and CAPE BORDA also were activated from Gulf, East, and West Coast sites, respectively, and carried military cargo during the TEAM SPIRIT-87 exercise for a total of 278 days of combined operating services.
- The CAPE HUDSON and CAPE HENRY were activated to carry cargo for the exercise BRIGHT STAR-87.
- The CAPE BRETON was activated for an amphibious exercise.

- The schoolship EMPIRE STATE, normally the New York State University Maritime College training ship, was activated and used in a military exercise.

MARAD's Reserve Fleet personnel, assisted by general agents, conducted all seven activations within the required times. The test activation and operation of the RRF vessels confirmed the program's capability to deliver reserve fleet vessels to meet sealift mobilization requirements.

During FY 1987, Underway Replenishment Consolidation (UNREP CONSOL) System and Vertical Replenishment (VERTREP) Platform modifications were completed on RRF ships. The UNREP CONSOL SYSTEM (DRY CARGO AMMO) will permit underway ship-to-ship transfer of cargo. A VERTREP Platform provides a raised deck on the ship's stern for helicopter take-offs and landings. Other Sealift Enhancement Features installed on selected RRF vessels include vehicle tiedowns, lighter stowage ancillaries, alongside lighter moorings, and nuclear/biological/chemical washdown system clips.

During FY 1987, MARAD accepted the task of managing two vessels in the Aviation Logistic Support Ship (T-AVB) Program. The USNS WRIGHT is layberthed in Philadelphia, PA, and serves as a training platform for the Marine Corps. A second vessel, the USNS CURTISS, will be layberthed at Port Hueneme, CA, and serves as a training platform for military units. Both ships will be maintained in a state of readiness to support sealift from the continental United States to any area of the world.

During FY 1987, military cargo-handling units received training in the operation of automatically controlled, cargo-handling crane equipment aboard the KEYSTONE STATE, an RRF auxiliary crane ship (T-ACS) and training exercise plans were formulated for unassisted ship-to-ship mooring using T-ACS ships.

A simulated activation of the RRF Command Center was conducted in October 1986. The CPX BREAKOUT-87 exercise, to test MARAD's procedures for activation of

Table 18: NATIONAL DEFENSE RESERVE FLEET—SEPTEMBER 30, 1987

Fleet Sites	Retention ¹	Scrap Candidates	Special Programs	Totals
James River, VA	103	11	16	130
Beaumont, TX	63	7	29	99
Suisun Bay, CA	86	0	11	97
Totals:	252	18	56	326

¹ Vessels maintained for emergency activation under the Fleet Preservation Program, including RRF.

Table 19: NATIONAL DEFENSE RESERVE FLEET, 1945—1987

Fiscal Year	Ships	Fiscal Year	Ships
1945	5	1967	1152
1946	1421	1968	1062
1947	1204	1969	1017
1948	1675	1970	1027
1949	1934	1971	860
1950	2277	1972	673
1951	1767	1973	541
1952	1853	1974	487
1953	1932	1975	419
1954	2067	1976	348
1955	2068	1977	333
1956	2061	1978	306
1957	1889	1979	317
1958	2074	1980	303
1959	2060	1981	317
1960	2000	1982	303
1961	1923	1983	304
1962	1862	1984	386
1963	1819	1985	300
1964	1739	1986	299
1965	1594	1987	326*
1966	1327		

* As of September 30, 1987. Includes 249 vessels which are not merchant ships and/or which are below 1,000 gross tons.

Table 20: MARINE AND WAR-RISK INSURANCE APPROVED IN FY 1987

Kind of Insurance	Total Amount	Percentage	
		American	Foreign
Marine Hull & Machinery	\$ 6,972,500,099	.57	.43
Marine Protection and Indemnity ¹			
War-Risk Hull and Machinery	5,786,978,514	.53	.47
War-Risk Protection	5,786,978,514	.53	.47

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

the entire RRF, utilized the staffs of MARAD's region offices, Reserve Fleet general agents, and outport layberth operators. It also included assistance from the U.S. Coast Guard and various regulatory supporting organizations. A major objective of the exercise was to survey and verify the adequacy of U.S. shipyard facilities for vessel reactivation.

In FY 1987, MARAD issued a Request for Proposal (RFP) for the retention and maintenance of 70 RRF vessels. Awards issued under the RFP would replace general agency agreements with ship management contractors. The contract awards are planned for FY 1988.

Ship Design and Engineering

In FY 1987, the Naval Sea Systems Command (NAVSEA) identified a need to perform full-scale trials on various oceanographic systems intended for use on their T-AG(X) (Oceanographic Research Ship) design project. At NAVSEA's request, MARAD began investigating the feasibility of several ship types for use in these trials. MARAD owns several potentially suitable ships and has been developing cost estimates for converting and operating various vessel designs for use by Navy. The studies are scheduled for completion in the first quarter of FY 1988, at which time plans call for MARAD to convert and operate the test platform for NAVSEA.

Exchanges for Scrap

Pursuant to Section 510(i) of the Merchant Marine Act of 1936, as amended, 4 tankers, 2 cargo vessels, and 2 heavy-lift vessels were traded-in to the Government in return for 15 National Defense Reserve Fleet vessels, all of which have been sold for scrapping. The value of the traded-out vessels exceeded the value of the trade-in vessels by \$2,988,047.52.

Ship Sales

One Government-owned vessel was offered for sale to U.S. citizens during the year for scrapping within the United States or for nontransportation purposes. No acceptable offers were received.

From 1958 through 1984, a total of 2,318 vessels were sold for scrap or nontransportation purposes for a total return to the Government of \$202.9 million. Those sold to U.S. citizens for nontransportation use were subject to the condition that their eventual scrapping take place within the United States. During FY 1987, in the absence of shipbreaking activity in this country, six of the approvals were modified to permit resale of the vessels to noncitizens for scrapping in foreign locations.

Fish Reef Program

In fiscal year 1987, four vessels were transferred pursuant to Public Law 92-402, as amended by Public Law 98-623, for sinking as artificial reefs:

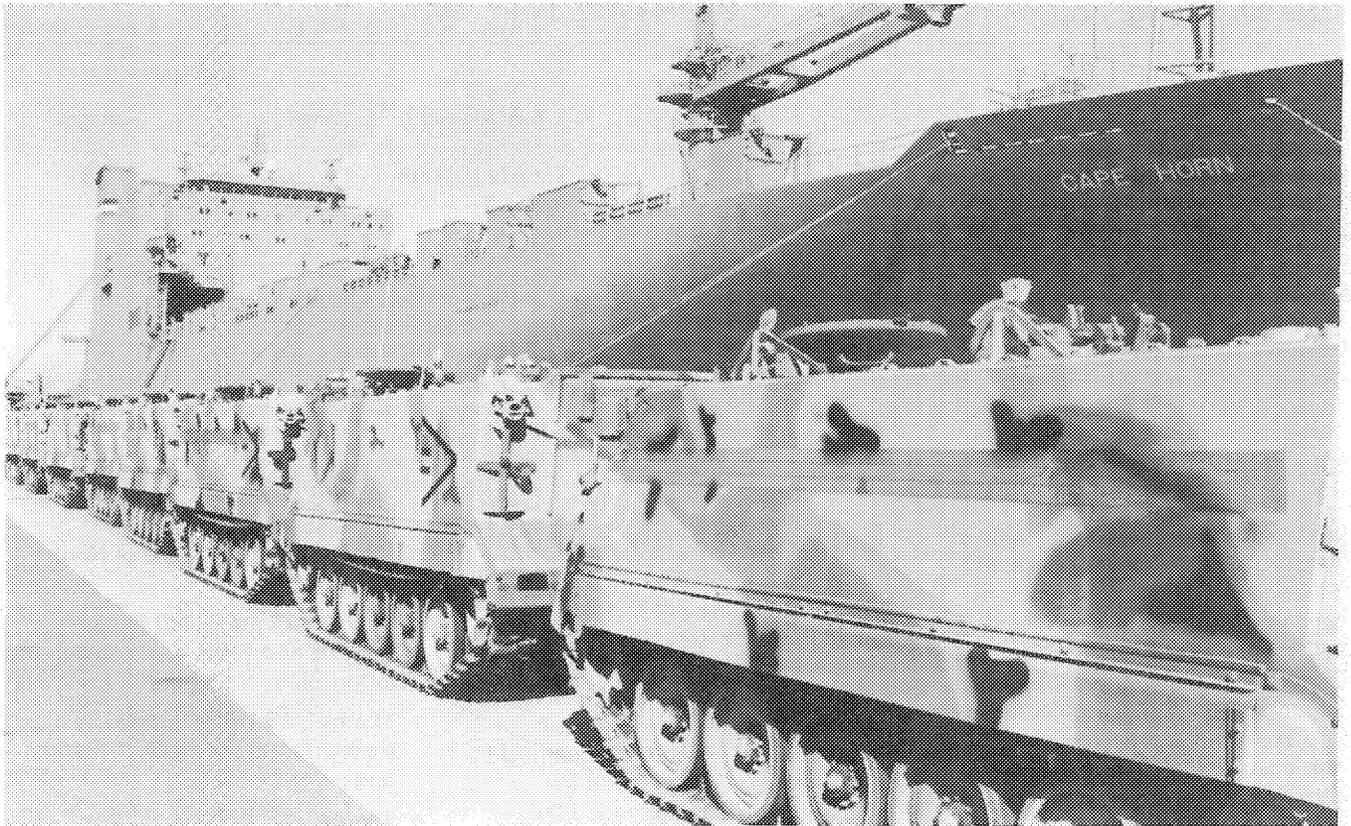
- The ex-USS AEOLUS was transferred to the State of North Carolina;
- The U.S. Coast Guard cutters DUANE and BIBB were transferred to the State of Florida;
- The ex-USS RANKIN was transferred to the State of Florida; and
- The ex-USS VERMILLION will be transferred from the James River Fleet to the State of South Carolina, pending acceptance by the State of the terms of transfer.

Four states are on the waiting list to receive vessels as they become available for the fish reef program.

War-Risk Insurance

MARAD administers the standby emergency war-risk insurance program in accordance with Title XII of the Merchant Marine Act, 1936, as amended. This authority is effective through June 30, 1990, as reinstated on July 3, 1985, by Public Law 99-59. The program encourages the continued flow of U.S. foreign commerce when commercial insurance cannot be obtained on reasonable terms and conditions to protect vessel operators and seafarers against losses resulting from war or warlike actions.

Between 1952 and September 30, 1984, when previous authority for the program expired, binder fees totalled \$1.45 million, builder's risk insurance totalled \$2.58 million, builder's risk insurance income totalled \$3.5 million, and investment income totalled \$9.8 million.



The 750-foot Roll-on/roll-off, MV CAPE HORN, became the first RRF ship on the West Coast to pick up cargo for the military exercise Team Spirit '87.



The conversion work on the SS GOPHER STATE (T-ACS 4), formerly the EXPORT LEADER, the fourth auxiliary crane ship conversion, was completed in FY 1987 by Norfolk Shipbuilding and Drydock Corp.

As of September 30, 1987, 2,016 vessels were covered by binders issued since Public Law 99-59 reinstated statutory authority for the program. These binders make war-risk insurance available on vessel hulls as well as provide protection and indemnity insurance. The total includes 312 vessels which also have second seamen's war-risk insurance coverage provided by binders. All binders would be effective for 30 days following any automatic termination of commercial insurance.

The binders issued under Public Law 99-59 have generated \$77,875 in binder fees. During this same period, \$3,305,824 has been generated in investment income as provided by section 1208(a) of the 1936 Act. Since reinstatement of the statutory authority, the war-risk revolving fund assets have increased to approximately \$16.9 million as of September 30, 1987. Program expenses under Public Law 99-59 have totalled \$429,833.50.

No binders or policies related to MARAD's standby war-risk cargo insurance and builder's risk insurance programs have been issued under the reinstatement authority. However, 26 commercial underwriting agents were under standby contracts for the war-risk cargo insurance program.

Marine Insurance

The Agency continued to act as the claim agent for Government-owned vessels during fiscal year 1987. As of September 30, 1987, 16 protection and indemnity claims were outstanding, of which 12 were in litigation. Total settlement value of all cases was estimated to be \$500,000.

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

Table 20 shows marine and war-risk insurance approved in FY 1987.

Emergency Operations

Attacks on merchant shipping in the Persian Gulf continued to confront the global shipping community in FY 1987. MARAD assisted the U.S. Navy by providing operating and communications instructions for U.S.-flag merchant vessels in this area of the world. Also as a result of hostile acts by Iran, the Agency briefed the masters of reflagged Kuwaiti tankers and naval escort liaison officers on operations in this area. It also assisted U.S.-flag operators, sailing in regular liner service in the Gulf region, on operational liaison matters with U.S. Navy forces.

In 1987, it was no longer clear whether the total capacity of suitable U.S. and European NATO merchant ships was sufficient to meet military requirements. One nation set up a

Emergency Port Operations

In FY 1987, MARAD carried out the following preparations for the operation of U.S. ports in

'second register' to keep ships under the national flag by offering some of the economic benefits of open registries. Other nations are considering similar action. European shipping authorities also investigated various means of securing the wartime use of ships owned by their citizens and operated under foreign flags. Establishment of European reserve fleets was considered, but no nation was prepared to follow the United States' example.

At the end of FY 1987, there was some prospect of a marginal increase in the number of European ships available for military support of the alliance. However, the overall NATO shipping capability appeared inadequate to sustain a defense of Europe if substantial numbers of ships were lost.

emergencies which threaten national security.

Completed	Projects Description
Federal Port Controller Contracts	Executed Federal Port Controller contracts which brought to 48 the ports engaged in the program.
Title 46 CFR Part 340	Completed an extensive education program with industry and Federal agencies on MARAD's responsibilities in issuing planning orders (documents that indicate U.S. port facilities may be needed during an emergency period) as authorized under 46 CFR Part 340.
Port Emergency Operations Handbook	Prepared and distributed the MARAD <i>Port Emergency Operations Handbook for Federal Port Controllers</i> . This training and reference manual is for personnel involved in port emergency planning and operations at the national, regional, and local port level.
Port Facilities Inventory	Completed a revision of the record format used by the Federal Emergency Management Agency to incorporate data from MARAD's automated <i>Port Facilities Inventory</i> .
CORE Team	Participated on the Military Traffic Management Command's national Contingency Response team to promote military mobilization and defense preparedness planning.

Ongoing Projects	Description
Federal Port Controller Contracts	Continued negotiations with U.S. ports expected to be under Federal Port Controller contracts. By the end of FY 1988, all necessary ports are expected to have contracted with MARAD's National Shipping Authority to serve as agents for the Federal Government in the event a declared emergency would require a federal port network.
National Port Readiness	Chaired both the National Port Readiness Steering and Working Groups, comprised of representatives of MARAD and the Military Sealift Command, the Military Traffic Management Command, the Naval Control of Shipping Organization, the U.S. Army Corps of Engineers and the U.S. Coast Guard. The steering group coordinates the agencies' port readiness policies. The working group directs the activities of local port readiness committees.
Port Mobilization Master Plan	In conjunction with the five federal agencies with port emergency responsibilities, listed above, contracted with the U.S. Army Corps of Engineers to study and document the interrelated activities of agencies in time of a mobilization at one selected U.S. port.

Projects Initiated	Description
Training	Developed and coordinated a series of regional training seminars for port emergency planning and operations personnel, including MARAD Federal Port Controllers.
Emergency Port Study	Initiated a study on behalf of the Data National Port Readiness Steering Group to enhance the utilization of existing port-related data systems maintained or used by its six federal agency members.
Alternate Ammunition Ports Study	Made preparations to study the feasibility of using selected commercial U.S. public ports as alternatives to existing military ammunition ports if necessary.
Federal Port Controller Management System Information System	Contracted for the development of an automated model to organize emergency information needed by individual Federal Port Controllers at four selected U.S. ports. The model also will include regional and national headquarters data. Eventual inclusion of about 45 other ports is envisioned.

Chapter 9

International Activities

Throughout fiscal year 1987, the Maritime Administration (MARAD) continued its efforts to provide U.S.-flag carriers with an equitable opportunity to participate in world trade. The Agency participated in bilateral discussions with the Soviet Union, Japan, Peoples Republic of China, Taiwan, South Korea, Colombia, and Peru, as well as several multilateral conferences.

Maritime Negotiations with the Soviet Union

An interagency delegation, headed by the Maritime Administrator, held negotiations with the Soviet Union on a maritime agreement in January 1987. These discussions were a continuation of negotiations begun in 1985 dealing with cargo sharing and other bilateral issues.

Mission to Far East Countries

The Department of Transportation's Deputy Secretary, accompanied by the Maritime Administrator, led an interagency mission to Korea, Japan, China, and Hong Kong in November 1986 to voice U.S. concerns about unfair practices in Far Eastern countries that restrict the operations of U.S. carriers. The delegation held meetings with senior transportation officials in these countries and a subgroup of the delegation met separately with Taiwan officials. In Hong Kong, a major transshipment port for container cargoes in the Far East, the delegation met with U.S. carriers to discuss the problems they face in the Pacific Ocean trades. A follow-up trip by the Maritime Administrator is planned for April 1988.

Maritime Negotiations with Taiwan and Korea

In FY 1987, MARAD officials chaired discussions on shipping and related transportation issues with officials of the governments of Taiwan and Korea. The talks with Taiwan were held in Rosslyn, VA, April 6-7; those with Korea took place in Washington, DC, May 6-7. During these discussions, the United States received commitments to improve conditions for U.S. carriers. In the case of Taiwan, these commitments included permission for U.S. carriers to operate their own port container terminals and to own and operate dockside container-handling equipment. The outcome of the discussions with Korea included the right to establish full-service shipping agencies by mid-1988, national treatment in the use of container terminals by January 1988, and permission to form a shipowners association to represent U.S. and other foreign shipowners in that country.

Maritime Discussions with Colombia

As a result of complaints from U.S. and third-flag carriers concerning Colombian cargo reservation practices in the bilateral trade, the United States and Colombia held maritime discussions in Washington, DC. MARAD was a member of the U.S. delegation. The problem was resolved without recourse to the imposition of countervailing measures by the United States.

Maritime Negotiations with Peru

MARAD was part of a U.S. delegation which held negotiations with a Peruvian delegation in Washington, DC, in mid-1987. The negotiations concluded with the signing of a Memorandum of Understanding, the aim of which is to ensure third-flag carriers access to the U.S./Peru trade in the face of a Peruvian cargo reservation regime which would otherwise exclude such carriers.

Continued discontent among third flag carriers in the trade led to further discussions in which MARAD participated in Lima, Peru, in March 1988. After this meeting, a number of third flag carriers entering into commercial arrangements with Peruvian operators.

Consultative Shipping Group

In March 1987, a MARAD representative served as a member of the U.S. delegation which met with the Consultative Shipping Group (CSG) in London. The CSG consists of government representatives of the principal European maritime nations and Japan. The meeting was principally held to exchange information on common problems faced by U.S. and CSG carriers concerning equitable access to trades with third countries and to acquaint the U.S. representatives with the European Community's recently adopted common shipping policy.

Other International Conferences

In November 1986, MARAD was part of the U.S. delegation participating in the 12th session of the Committee on Shipping of the United Nations Conference on Trade and Development (UNCTAD). The committee meets biennially to address a broad range of economic problems facing world shipping, with particular emphasis on the role of developing countries in the liner and bulk trades.

Additionally, MARAD was part of the U.S. delegation to the regularly scheduled meetings of the Maritime Transport Committee (and its subordinate bodies) of the Organization for Economic Cooperation and Development (OECD) in Paris. The meetings pursued two principal themes in FY 1987: coordination of developed-country positions for meetings within UNCTAD and the adoption of a common statement of OECD members' shipping policy vis-a-vis non-members (developing countries and state trading countries), as well

as reevaluation and restatement of intra-OECD shipping policy.

Additionally, during FY 1987, MARAD, as a member of a Department of Transportation multimodal team, assessed the existing transportation and port needs in Haiti and recommended areas in which technical assistance could be provided. MARAD also rendered technical assistance to the Agency for International Development's Food for Peace Program in port development and logistics management for distribution of food-aid shipments in Africa. The

Agency also provided port environmental planning assistance to the East-West Center, a nonprofit educational institution in Hawaii, that conducts research for Pacific Rim nations.

Also in FY 1987, MARAD represented the United States on the container-on-barge transportation committee of the Permanent International Association of Navigation Congresses (PIANC), and participated in PIANC's annual meeting in Agadir, Morocco.

During the reporting period, the Agency briefed senior port and

maritime officials from Spain and Morocco on the economic and technological changes currently affecting several port and shipping areas, and assisted in training programs of the International Maritime Organization's World Maritime University and Brazil's Ministry of Transport. These activities involved training and visits at selected U.S. ports with container and grain-handling facilities.

MARAD participated, along with other representatives of DOT, in the discussions leading to a Free Trade agreement with Canada.

Chapter 10

Administration

The administrative actions taken in support of the mission and programs of the Maritime Administration (MARAD) in fiscal year 1987 are summarized below.

Maritime Subsidy Board

The Maritime Subsidy Board (MSB), by delegation from the Secretary of Transportation, principally 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 the Secretary of Transportation undertakes review of these actions.

The MSB is composed of the Maritime Administrator, who acts as Chairman, the Deputy Administrator, and the Agency's Chief Counsel. The Secretary of MARAD and the MSB acts as an alternate member in the absence of any one of the three permanent board members.

The MSB met 25 times in FY 1987. It considered and acted on 56 items and issued 13 formal opinions, rulings, and orders. MARAD also published 50 notices in the Federal Register relating to required statutory hearings and to the development and adoption of rules and regulations in the implementation of the Merchant Marine Act, 1936, as amended. The Secretary of MARAD, as Freedom of Information Officer, received and processed approximately 206 Freedom of Information Act requests.

During FY 1987, the MSB took several actions to help strengthen the U.S. Merchant Marine. Several service expansions were approved for subsidized U.S.-flag operators to

maintain routes formerly served by United States Lines, Inc. (USL), adding trading flexibility for these operators. In the Pacific trades, American President Lines, Ltd. (APL) was given approval to increase its West Coast to Guam service from a biweekly to a weekly frequency. The permission requires a minimum of 24 calls annually and was effective upon the cessation of USL's service.

Similarly, applications from both Lykes Bros. Steamship Co., Inc. and Farrell Lines, Inc. were approved, adding service to the East Coast of South America, following the termination of USL service, for a total of up to 53 sailings annually. In the case of Lykes Bros., these operations, consisting of up to 26 sailings annually, are in conjunction with its West Coast of South America, and South and East Africa trades. For Farrell, its 26 new sailings per year would be added to its West Africa services.

In the area of increasing operational flexibility to subsidized operators, APL and Lykes Bros. were allowed to make a multi-vessel exchange for 3 years. APL chartered four new Pacific class container vessels from Lykes Bros. which, in turn, chartered three C6-S-69c container vessels and one C5-S-75a vessel from APL. This reciprocal arrangement provided these U.S.-flag operators with vessels having cargo capacities better suited to their specific services.

The MSB also took steps to clarify the implementation of the December 29, 1986, revocation of rules restricting subsidized operators from performing non-subsidized service while on an otherwise subsidized voyage. These implementing methods facilitate liner operations by eliminating requirements for prior approval and encouraging greater competition in the marketplace.

Legal Services, Legislation, and Litigation

MARAD's Office of Chief Counsel provides legal support and assistance for all program and administrative activities conducted by

MARAD headquarters, the regional offices, and the U.S. Merchant Marine Academy. Specialized legal services are made available to other Federal agencies for the acquisition and conversion of commercial vessels. Litigation support is provided to the Department of Justice on all court cases involving MARAD.

The November 1986 bankruptcy filing by McLean Industries, the parent corporation of United States Lines, Inc., and the subsequent termination of all USL services in the foreign and domestic trades increased Title XI default and vessel transfer activities for the entire fiscal year. In a more positive development, Sea-Land Service, Inc., was acquired by the CSX Corp., in Interstate Commerce Commission (ICC) Finance Docket 30900.

Also, in FY 1987, legislation was enacted modifying the Capital Construction Fund program and amending the Bankruptcy Code to facilitate Government foreclosures on Title XI vessels under Chapter 11 proceedings.

Congressional oversight hearings were conducted on the cargo preference programs, and an Attorney General's opinion was requested to resolve conflicting interpretations of the applicability of the 1904 Act to cargoes generated by the military services.

Comprehensive draft legislation to reform the Operating-Differential Subsidy (ODS) program was prepared for submission to the Congress. The primary purpose of this legislation is to assist U.S.-flag liner operators competing in international trade. The proposed legislation would provide a one-year window for operators to enter into the ODS program, greatly expand operating flexibility, authorize worldwide acquisition of vessels, improve cash flow in the payment of ODS, and make a number of other improvements in existing law as an impetus to revitalizing the U.S.-flag liner fleet.

During the reporting period, MARAD promulgated regulations to simplify the payment of ODS for liner and bulk vessels, the application process for ODS operators to obtain approval for nonsubsidized voyages,

and the methodology for determining fair and reasonable rates for the carriage of bulk preference cargoes. Administrative claims and court actions against the Agency relating to occupational exposure to asbestos continued to increase, with approximately 9,200 administrative claims under the Federal Tort Claims Act and the Suits in Admiralty Act, and 4,000 lawsuits pending as of September 1987.

Management Initiatives

During FY 1987, several ship-operating assistance functions under the Associate Administrator for Maritime Aids were realigned. The Office of Ship Operating Costs was renamed the Office of Ship Operating Assistance; the Division of Subsidy Analysis was redesignated the Division of Industry Analysis; and the Offices of Trade Studies and Subsidy Contracts and Marine Insurance were reorganized as one new office, designated the Office of Trade Analysis and Insurance. A new Division of Marine Insurance was created and the Division of Subsidy Rates was redesignated the Division of Ship Operating Costs. These actions were taken to streamline management of MARAD's ship-operating assistance programs and to simplify their coordination and control.

Two new divisions were established within MARAD's Office of Port and Intermodal Development. The Division of Port and Intermodal Operations and the Division of Port and Intermodal Planning were created to strengthen MARAD's performance and responsibilities in these important program areas.

Audits

During FY 1987, the Department of Transportation's Office of Inspector General submitted the following final principal internal audit reports to MARAD: *Report on the Management and Control of Vessel Spare Parts and Report on Audit of Food Service Operation at the U.S. Merchant Marine Academy.*

The General Accounting Office also issued a final audit report to the Secretary of Transportation and the Maritime Administrator entitled *Efforts to Improve Data on the Federal Ship Financing Program*. The report contained recommendations for strengthening the financial reporting and data gathering methods associated with the administration of the Title XI Ship Financing Guarantee program.

Information Management

The use of information-resource management technology significantly expanded in FY 1987 to meet the Agency's need for increased information and information-processing capabilities. Utilizing the latest state-of-the-art technology, the number of microcomputer terminals in the office-automation system was increased. Every program and administrative office, including regional offices, National Defense Reserve Fleets, and the Merchant Marine Academy, now have MS-DOS based microcomputer work stations. Functions and capabilities of the microcomputers are being expanded to permit interoffice connection of these microcomputers to form local and wide-area networks. Enhancements to the minicomputer in the Operations Center have provided increased accessibility and additional communications capabilities to the Maritime Aids Program and private sector interests.

Through a major conversion effort from a Honeywell 6000 computer to the TCC Amdahl computer, significant Agency cost savings and increased efficiency levels are expected. The conversion effort also increased the amount of available information-processing capabilities and resources to Agency employees.

Initiatives to improve the timeliness and usefulness of maritime statistical information included accelerating the development of a corporate-level data base which will provide new ways of processing maritime-related trade data. The Agency's Strategic Information Resources Management Plan improved MARAD's ability to commit information management and

automation resources and produce special reports used by the Department of Transportation and other Executive Branch agencies.

Personnel

MARAD employment totaled 1,038 at the end of FY 1987. The percentage of MARAD's female and minority employees and their representation in supervisory positions remained stable during the period, as did the percentage of handicapped employees.

Twenty-one MARAD employees received high honors in FY 1987. Four Silver Medals, 12 Bronze Medals, and five Secretary's Awards for Excellence were approved. Additionally, performance awards went to 115 Agency employees—44 Quality Step Increases and 71 Special Achievement Awards.

Safety Program

Asbestos Control

In FY 1987, MARAD continued its Action Plan for the Control of Asbestos Exposures and Uses in MARAD Programs. Agency policy is to prevent or stringently limit personnel exposure to airborne asbestos fibers.

The Action Plan seeks to eliminate asbestos materials from MARAD programs, repair or replace asbestos materials already installed, modify work procedures, and provide employee training.

MARAD's Asbestos Medical Surveillance Program provides preplacement, fit-for-duty determinations, and pre-separation examinations in addition to periodical medical examinations to designated MARAD employees exposed or potentially exposed to hazardous substances or conditions. Employees assigned to MARAD Headquarters, the Beaumont, James River and Suisun Bay National Defense Reserve Fleets (NDRF), and the Eastern, Central, and Western Region offices, were provided medical examinations.

In conjunction with the Medical Surveillance Program, the Agency

also provides NDRF sites and the U.S. Merchant Marine Academy with industrial hygiene services to conduct periodic surveys of the facilities and to target all safety and health hazards.

MARAD gives an 'Asbestos Safety Course' to employees assigned to NDRF sites and the U.S. Merchant Marine Academy to train workers and supervisors to recognize potentially dangerous asbestos hazards. The course emphasizes correct work practices and outlines protective measures to prevent exposure to and release of asbestos. Employees also learn to protect themselves from poisonous fumes.

The Agency also conducts safety and health inspections of its work sites.

Installations and Logistics

Real Property

As of September 30, 1987, MARAD's real property included NDRF sites at Suisun Bay, CA, Beaumont, TX, and James River, VA; a warehouse at Kearny, NJ; and the U.S. Merchant Marine Academy at Kings Point, NY.

The Wilmington, NC, maritime facility was disposed of in FY 1987; the North Carolina State Ports Authority purchased 8.2 acres and the remaining 3.08 acres were transferred to the U.S. Navy. The Kearny, NJ, warehouse was declared excess property and its sale by the General Services Administration was pending at the end of this reporting period.

Facilities for training maritime firefighters were operated at Earle, NJ, and Treasure Island, CA, under MARAD agreements with the U.S. Navy; by Delgado College at New Orleans, LA; and by MARAD at Toledo, OH.

Regional headquarters offices were maintained in New York, NY, New Orleans, LA, Chicago, IL, and San Francisco, CA. Maritime Development Offices were maintained in Long Beach, CA, Seattle, WA, Houston, TX, Portland, OR, and at the four regional headquarters. Ship Management offices were maintained in Norfolk, VA, Cleveland, OH, Port Arthur, TX, and New York.

During FY 1987, MARAD entered into a cooperative agreement with Marine Safety International of New York, NY, to provide management and operation of the Agency's

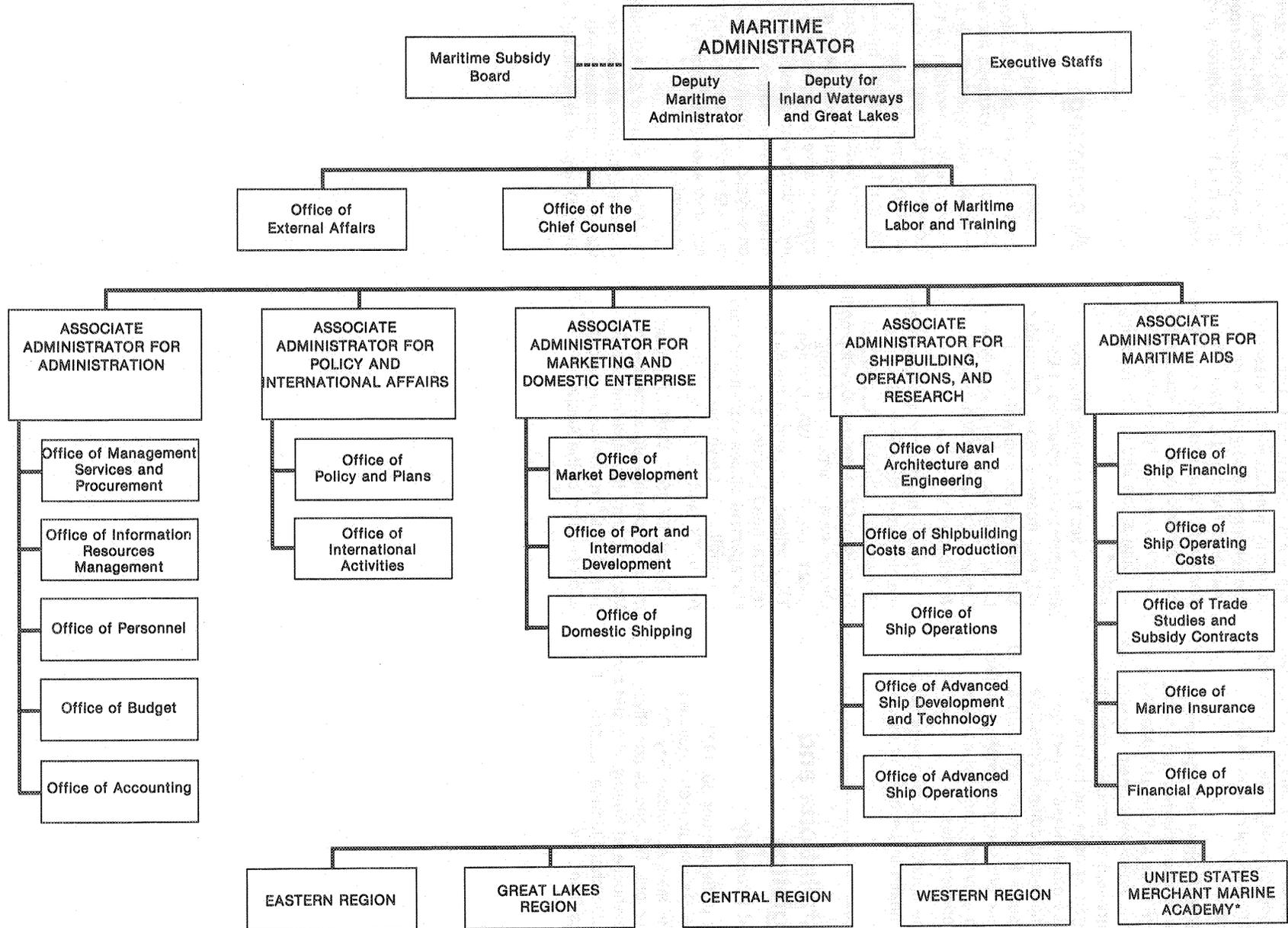
Computer-Aided Operations Research Facility (CAORF). The facility, located at Kings Point, NY, was turned over to private management and operation as part of the President's privatization program.

Accounting

MARAD's accounts are maintained on an accrual basis in conformity with generally accepted accounting principles and standards, and related requirements prescribed by the Comptroller General. The cost of MARAD's combined operations for the year totaled \$542.4 million. This included \$252.9 million in operating-differential subsidies, \$43.5 million for administrative expenses, \$7.5 million for research and development, \$6.8 million for maintenance and preservation of reserve fleet vessels, and \$12.1 million for financial assistance to State Maritime Academies.

MARAD incurred \$219.6 million in other operating expenses, net of income. Financial statements of MARAD appear as Exhibits 1 and 2.

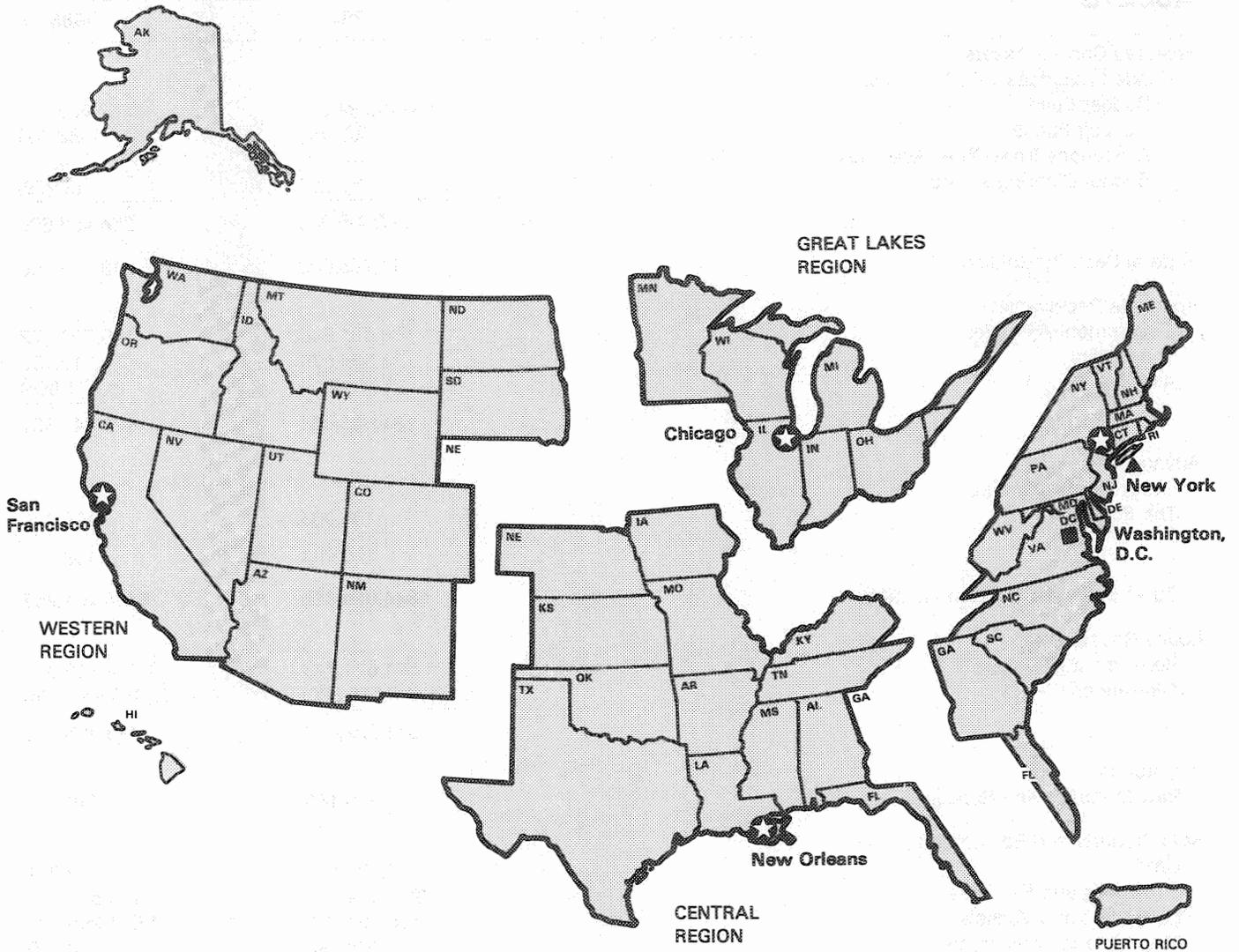
MARITIME ADMINISTRATION ORGANIZATION CHART



* Kings Point, N.Y.

Maritime Administration

Field Organization



- Mar Ad Headquarters
- ★ Region Headquarters
- ▲ U.S. Merchant Marine Academy
Kings Point, N.Y.

FINANCIAL STATEMENTS

U.S. Department of Transportation—Maritime Administration

Exhibit 1. Statement of Financial Condition

September 30, 1986, and September 30, 1987

ASSETS	September 30	
	1987	1986
Selected Current Assets		
Funded Balances with Treasury:		
Budget Funds	\$146,794,518	\$267,939,778
Deposit Funds	560,340	562,809
Allocations from Other Agencies	—	—
Budget Clearing Accounts	50,227	(3,979)
	147,405,085	268,498,608
Federal Security Holdings	14,755,000	13,765,000
Accounts Receivable:		
Government Agencies	156,081,540	115,794,272
The Public	33,394,576	12,519,195
Allowances (—)	(7,810,278)	(6,371,866)
	181,665,838	121,941,601
Advances To:		
Government Agencies	—	—
The Public	198,903	199,746
	198,903	199,746
Total Selected Current Assets	\$344,024,826	\$404,404,955
Loans Receivable:		
Repayment in Dollars	1,611,621,243	1,474,816,847
Allowances (—)	(1,049,628,830)	(1,060,951,674)
	561,992,413	413,865,173
Inventories:		
Raw Materials and Supplies	4,519,188	4,519,188
Real Property and Equipment:		
Land	7,591,124	7,049,931
Structures and Facilities	218,014,461	100,637,463
Equipment and Vessels	1,538,904,721	1,554,296,128
Leasehold Improvements	168,335	92,119
Allowances (—)	(1,259,207,338)	(1,238,950,752)
	505,471,303	423,124,889
Other Assets:		
Works-in-Process—Other	18,969,471	18,969,472
Material and Supplies	3,440,187	3,440,185
Non-Current Assets	—	9,116,679
Notes Receivable	—	21,025,498
Allowances (—)	—	(728,667)
	22,409,658	51,823,167
Total Assets	\$1,438,417,338	\$1,297,737,372

The Notes to Financial Statements are an integral part of this statement.

FINANCIAL STATEMENTS

U.S. Department of Transportation—Maritime Administration

LIABILITIES	September 30	
	1987	1986
Selected Current Liabilities (Note 2)		
Accounts Payable (Including Funded Accrued Liabilities):		
Government Agencies	\$ 5,252,266	\$ 10,443,317
The Public	52,332,274	110,932,902
	<u>57,584,540</u>	<u>121,376,219</u>
Advances From:		
Government Agencies	—	—
The Public	—	—
	<u>—</u>	<u>—</u>
Total Selected Current Liabilities	\$ 57,584,540	\$121,376,219
Deposit Fund Liabilities	560,340	562,809
Unfunded Liabilities:		
Accrued Annual Leave	7,923,826	6,083,481
Debt issued under borrowing		
Authority: Borrowing from Treasury	420,000,000	1,375,000,000
Other Liabilities:		
Vessel Trade-In Allowance and Other Accrued Liabilities	31,611,129	1,062,513
Total Liabilities	\$517,679,835	\$1,504,085,022
Government Equity		
Unexpended Budget Authority:		
Unobligated	111,688,858	93,305,883
Undelivered Orders	2,468,210,498	262,279,818
	<u>2,579,899,356</u>	<u>355,585,701</u>
Unfinanced Budget Authority (—):		
Unfilled Customer Orders	(57,263,901)	(73,120,102)
Contract Authority	(2,260,186,626)	—
	<u>(2,317,450,527)</u>	<u>(73,120,102)</u>
Invested Capital	658,288,724	(488,813,249)
Total Government Equity	\$920,737,553	(\$206,347,650)
Total Liabilities and Government Equity	\$1,438,417,388	\$1,297,737,372

The Notes to Financial Statements are an integral part of this statement.

FINANCIAL STATEMENTS

U.S. Department of Transportation—Maritime Administration

Exhibit 2. Statement of Operations

For Years Ended September 30, 1986, and September 30, 1987

	Years Ended September 30	
	1987	1986
OPERATIONS OF THE MARITIME ADMINISTRATION:		
Net Costs of Operating Activities		
Reserve Fleet Programs:		
Maintenance and Preservation	\$ 6,776,000	\$ 11,261,022
Direct Subsidies and National Defense Costs:		
Operating-Differential	228,285,103	308,672,217
Construction-Differential	310,225	707,593
Ocean Freight Differential	24,337,626	
	252,932,954	309,379,810
Administrative	43,510,799	31,304,227
Research and Development	7,590,880	3,993,357
Financial Assistance to State Marine Schools	12,073,000	8,363,000
	63,174,679	43,660,584
Other Operating Income Net of Expenses	2,072,695	26,250,653
Net Cost of Maritime Administration	\$324,956,328	\$390,552,069
OPERATIONS OF REVOLVING FUNDS (– Income):		
Vessel Operations Revolving Fund	(\$14,405,127)	(\$128,757,524)
War-Risk Revolving Fund	(1,725,384)	(1,224,090)
Federal Ship Financing Fund	233,552,062	754,963,674
	217,421,551	624,982,060
Net Cost of Combined Operations	\$542,377,879	\$1,015,534,129

The Notes to Financial Statements are an integral part of this statement.

U.S. Department of Transportation— Maritime Administration

Notes to Financial Statements—
September 30, 1987, and
September 30, 1986 .

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.

2. The Maritime Administration was contingently liable under agreements guaranteeing obligations or insuring mortgages and construction loans payable to holders or lenders totaling \$4,278,971,066 on September 30, 1987, and \$4,995,351,554 on

September 30, 1986. Commitments to guarantee additional obligations amounted to \$8,962,000 on September 30, 1987 and \$34,972,000 on September 30, 1986. We estimate that \$350,000,000 in guaranteed loan losses will be incurred during the year ending September 30, 1987. U.S. Government securities and cash of \$2,212,646 on September 30, 1987 and \$10,111,602 on September 30, 1986, were held in escrow by the Government in connection with the guarantee of obligations or the insurance of loans and mortgages which were financed by the sale of bonds in the securities market. There were no conditional liabilities for prelaunching War-Risk Builder's Insurance on September 30, 1987.

3. On September 30, 1987, the U.S. Government securities which had been accepted from vessel owners, charterers, subsidized operators, and other contractors as collateral for

their performance under contracts amounted to \$180,000.

4. The Federal Ship Financing Fund, a revolving fund, is not currently self-supporting. This has necessitated borrowings from the U.S. Department of Treasury totaling \$420,000,000 on September 30, 1987, and \$1,375,000,000 on September 30, 1986. A supplemental appropriation was received in fiscal year 1987 to repay \$1,375,000,000 in borrowings of principal and interest due the U.S. Department of the Treasury.

5. The Maritime Administration wrote off loans receivable of \$195,624,667 for the Title XI Program during FY 1987.

6. The Maritime Administration has increased its liabilities to \$2,257,662,000 to recognize the estimated total of the contractual liability outstanding on the current Operating-Differential Subsidy contracts.

Appendix I: MARITIME SUBSIDY OUTLAYS—1936–1987

Fiscal Year	CDS	Reconstruction CDS	Total CDS	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	235,666,830	377,365,310
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
1981	196,446,214	11,666,978	208,113,192	334,853,670	542,966,862
1982	140,774,519	43,710,698	184,485,217	400,689,713	585,174,930
1983	76,991,138	7,519,881	84,511,019	368,194,331	452,705,350
1984	13,694,523	–0–	13,694,523	384,259,674	397,954,197
1985	4,692,013	–0–	4,692,013	351,730,642	356,422,655
1986	–416,673	–0–	–416,673	287,760,540	287,343,867
1987	420,700	–0–	420,700	227,426,103	227,846,803
Total	\$3,568,411,755	\$264,904,682	\$3,833,316,437	\$8,178,936,525	\$12,012,252,962

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.

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

Statement A—Combined Condensed Balance Sheets as of December 31, 1986 and 1985 (Amounts Stated in Thousands of Dollars)

ASSETS	1986	1985
Current Assets:		
Cash	\$ 109,537	\$ 45,594
Marketable Securities	57,538	50,697
Accounts Receivable	390,725	418,784
Other Current Assets	100,733	149,357
Total Current Assets	\$ 658,533	\$ 664,432
Restricted Funds	43,685	187,224
Investments	680	11,115
Property and Equipment (Net of Depreciation)	2,174,135	2,376,073
Other Assets	221,779	206,175
TOTAL ASSETS	\$3,098,812	\$3,445,019
LIABILITIES AND STOCKHOLDERS' EQUITY		
Liabilities:		
Current Liabilities — :		
Notes Payable	\$ 680,996	\$ 190,782
Accounts Payable	205,681	144,605
Other Current Liabilities	391,092	379,443
Total Current Liabilities	1,277,769	714,830
Long-Term Debt	1,149,174	1,668,979
Other Liabilities	121,066	307,935
Deferred Credits	72,224	81,617
Total Liabilities	\$2,620,233	\$2,773,361
Stockholders' Equity:		
Invested Capital	229,911	256,331
Retained Earnings	248,668	415,327
Total Stockholders' Equity	\$ 478,579	\$ 671,658
TOTAL LIABILITIES AND STOCKHOLDERS' EQUITY	\$3,098,812	\$3,445,019

* Data from Forms MA-172 filed by 19 subsidized companies for 1986 and 23 subsidized companies for 1985.

Appendix II: (Continued)

Statement B—Combined Condensed Income Statement for the Years Ending December 31, 1986 and 1985 (Amounts Stated in Thousands of Dollars)

	1986	1985
Shipping Revenue	\$2,044,737	\$2,843,610
Operating-Differential Subsidy	234,864	324,409
Other Shipping Operations Revenue	133,985	174,922
Total Revenue from Shipping Operations	<u>\$2,413,586</u>	<u>\$3,342,941</u>
Vessel Expense	\$ 682,354	\$1,093,552
Voyage Expense	1,331,876	1,589,611
Total Expense of Shipping Operations	<u>\$2,014,230</u>	<u>\$2,683,163</u>
Gross Income from Shipping Operations	\$ 399,356	\$ 659,778
General and Administrative Expense	334,739	412,025
Depreciation and Amortization Expense	108,020	115,958
Interest Expense	145,125	176,407
Shipping Operations Net Profit	\$ - 118,528	\$ - 44,612
Other Income	30,871	47,678
Other Expense	49,298	54,019
Net Income Before Income Taxes	\$ - 206,955	\$ - 50,953
Provision for Income Taxes	10,190	- 7,581
Net Income After Income Taxes	\$ - 217,145	\$ - 43,386
Extraordinary Items	7,353	- 1,386
NET INCOME	\$ - 209,792	\$ - 41,986

APPENDIX III: RESEARCH AND DEVELOPMENT CONTRACTS AWARDED -- FISCAL YEAR 1987

Project	Task	Vendor	Contract Number	Amount
ADVANCED SHIP DEVELOPMENT AND TECHNOLOGY				
Shipbuilding Research:				
Shipbuilding Facilities Engineering Research Program*	Technology transfer and direction including completion of ongoing projects for this technical area, and dissemination of research on advanced shipbuilding technology for increased productivity.	National Steel and Shipbuilding Co. San Diego, CA	MA-11984	\$ 59,200
Shipbuilding Design/ Production Integration Research Program*	Technology transfer and direction including completion of ongoing projects for this technical area, and dissemination of research on advanced shipbuilding technology for increased productivity.	Newport News Shipbuilding Newport News, VA	MA-11986	\$ 62,000
Shipbuilding Human Resources Research Program*	Technology transfer and direction including completion of ongoing projects for this technical area, and dissemination of research on advanced shipbuilding technology for increased productivity.	Bethlehem Steel Corp. Bethlehem, PA	MA-11987	\$ 64,488
Shipbuilding Digital Data Research Program*	Technology transfer and direction including completion of ongoing projects for this technical area, and dissemination of research on advanced shipbuilding technology for increased productivity.	Newport News Shipbuilding Newport News, VA	MA-12020	\$443,750
Shipbuilding Surface Preparation & Coating Research Program*	Technology transfer and direction including completion of ongoing projects for this technical area, and dissemination of research on advanced shipbuilding technology for increased productivity.	National Steel and Shipbuilding Co. San Diego, CA	MA-12121	\$ 85,000
Shipbuilding Welding Research Program*	Technology transfer and direction including completion of ongoing projects for this technical area, and dissemination of research on advanced shipbuilding technology for increased productivity.	Ingalls Shipbuilding Div. Litton Industries Pascagoula, MS	MA-12122	\$184,000
Shipbuilding Human Factors Research Program*	Technology transfer and direction including completion of ongoing projects for this technical area, and dissemination of research on advanced shipbuilding technology for increased productivity.	Bethlehem Steel Corp. Bethlehem, PA	84-41027	\$113,860

APPENDIX III: Continued

Project	Task	Vendor	Contract Number	Amount
Shipbuilding Industrial Engineering Research Program*	Technology transfer and direction including completion of ongoing projects for this technical area, and dissemination of research on advanced shipbuilding technology for increased productivity.	National Steel and Shipbuilding Co. San Diego, CA	84-41031	\$164,288
Shipbuilding Surface Preparation & Coating Research Program*	Technology transfer and direction including completion of ongoing projects for this technical area, and dissemination of research on advanced shipbuilding technology for increased productivity.	National Steel and Shipbuilding Co. San Diego, CA	84-41042	\$125,000
Shipbuilding Design/ Production Integration Research Program*	Technology transfer and direction including completion of ongoing projects for this technical area, and dissemination of research on advanced shipbuilding technology for increased productivity.	Newport News Shipbuilding Newport News, VA	84-41043	\$155,596
Shipbuilding Facilities Improvement Research Program*	Technology transfer and direction including completion of ongoing projects for this technical area, and dissemination of research on advanced shipbuilding technology for increased productivity.	National Steel and Shipbuilding Co.	84-41044	\$ 75,000
Shipbuilding Education and Training Research Program	Technology transfer and direction including completion of ongoing projects for this technical area, and dissemination of research on advanced shipbuilding technology for increased productivity.	University of Michigan Ann Arbor, MI	84-41045	\$127,506
Marine Science:				
Ship Structure Committee	MARAD's share to participate in the Ship Structure Committee FY 1987 Program.	U.S. Coast Guard Washington, DC	400-77002	\$ 50,000
High Latitude Marine Transportation Research*	To conduct ship icing studies and to consolidate eight years of high latitude environmental and ship performance data, and to develop improved design information for high-latitude ship operations.	Office of Naval Research Arlington, VA	400-77003	\$ 50,000

APPENDIX III: Continued

Project	Task	Vendor	Contract Number	Amount
High Latitude Marine Transportation Research*	To conduct ship icing studies and to consolidate eight years of high latitude environmental and ship performance data, and to develop improved design information for high-latitude ship operations.	ARCTEC Engineering Inc. Columbia, MD	84-41032	\$185,466
Transfer of an Auto Body Technology to Ship Hulls	To transfer auto body definition technology to ships.	University of New Orleans New Orleans, LA	87-70019	\$ 49,736
Optimum Design of Propellers Running At Two Different Speeds	To develop a design methodology to provide optimum propeller performance for a ship which must operate at two speeds.	Webb Institute of Naval Architecture Glen Cove, NY	87-70028	\$ 45,989

AGENCY SUPPORT

Advanced Ship Systems:

Small Business Innovative Research	To finance MARAD's share of the Department of Transportation's Small Business Innovative Research program for Fiscal Year 1987.	Transportation Systems Center Cambridge, MA	400-77004	\$ 33,600
Marine Board FY 1987*	To continue support of the Marine Board of the National Academy of Science.	Dept. of Interior Washington, DC	400-77001	\$ 60,000

ADVANCED SHIP OPERATIONS

Fleet Management Technology:

Expert Diesel Engine Maintenance System	Develop, test, and evaluate a computerized expert system to predict equipment failures of the diesel propulsion system before they occur. The results will be lower maintenance cost, reduced vessel down time, and improved safety.	American President Lines Oakland, CA	MA-12096	\$199,194
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APPENDIX III: Continued

Project	Task	Vendor	Contract Number	Amount
Decision Support to Masters, Pilots, and Mates on Watch At Sea and in Close Waters: An Application Expert Systems Technology	The Piloting Expert System is a prototype expert system being developed for a maritime shipboard piloting application. The prototype expert system is being developed to provide decision support to masters, mates and pilots on watch aboard merchant vessels in congested waterways by capturing the decision-making expertise of the local pilot by providing local environment (platform, port, pilot, weather, visibility, handling, etc.) particularly piloting recommendations to the operator.	Rensselaer Polytechnic Institute Troy, NY	85-50119	\$111,553
Fleet Management Technology Conference Support	Conduct planning for 1987 Fleet Management Technology Conference and provide support in all aspects of administering the conference.	Phillips Cartner & Co. Alexandria, VA	P.O. 71176	\$ 9,500
Government Shipping Research:				
Assess the Feasibility of an Automated Materials Handling System	This project is intended to locate automated handling systems, including bagging facilities, at port locations. Two concepts will be evaluated. One will be a fixed facility located in one port. This facility will be a totally automated facility capable of performing all material handling done between the mill and the port. The second concept is that of a mobile facility. This system could be transported from port to port as necessary. This project will assess the feasibility and estimate the economic impact of each these concepts.	Meehan Seaway Service Milwaukee, WI	87-70012	\$ 65,445
Transmission of Digital Weather Data Base for Shipboard Performance Evaluation	This project will develop economical methods of transmitting digital weather data obtained from the Naval Oceanographic Data Distribution System (NODDS) to merchant ships at sea. The purpose of this project is to test the feasibility of a wave data compaction scheme and user interface which can be utilized by U.S. flag operators, as well as the Navy and Coast Guard.	Ocean Systems Inc. Oakland, CA	87-70013	\$ 79,741

*Cost-Shared

APPENDIX III: Continued

Project	Task	Vendor	Contract Number	Amount
Transportable, Floating, Bulk, Grain Unloading Port Facilities	Floating transfer facilities represent a lower cost option to land-based facilities. They are common in many established ports and are normally used for unloading grain and grain derivatives. This project envisions a floating grain-handling system which would be readily transportable on board an ocean going vessel. This project will evaluate the technical and financial feasibility of the development of this type system.	Lembeck Associates, Inc. Overland Park, KS	87-70014	\$103,855
Use of Semi-Submersible MODU's as Temporary Bulk Offloading Terminals	This project seeks to examine ways of utilizing semisubmersible MODU's (Mobile Offshore Drilling Units) as temporary bulk off-loading (T-BOT). The objective is to establish potential methods and perform conceptual engineering on a variety of options for the conversion of MODU's to T-BOT's.	Arctec Engineering, Inc. Columbia, MD	87-70015	\$ 98,976
Cargo-Handling Technology:				
Cargo-Handling Cooperative Program*	Carry out research, development, test and evaluation of new technologies, systems, and methods directed at increasing the cargo handling productivity of U.S.-flag carriers.	American President Lines Matson Navigation Co. Sea-Land Service	MA-11715	\$ 949,364
Military Sealift Technology:				
Military Sealift Technology Conference	Provide administrative support for the Military Sealift Technology Conference. Prepare and mail announcements, agenda and other information, arrange for meeting rooms, meals, audio/visual equipment, register attendees, prepare program notes, record conference sessions and prepare proceedings.	Leeper, Cambridge, & Campbell, Inc. Alexandria, VA	P.O. 71300	\$ 9,500

*Cost-Shared

APPENDIX III: Continued

Project	Task	Vendor	Contract Number	Amount
Port and Intermodal				
MARAD Port Facility Data Project	To assess the port data systems maintained by the signatory organizations to the Port Center Readiness Memorandum of Understanding.	Transportation Systems Center Cambridge, MA	400-77005	\$ 25,000
Federal Port Controller Training Exercise	Review of the training requirements based on exercise held in seven U.S. ports. Contractor will prepare a one-day seminar based on conclusions to be presented to all Federal Port Controllers at one of three host ports.	Transportation Systems Center Cambridge, MA	400-77005	\$ 55,000
Mobilization Master Plan of Port Readiness	Detailed description, including maps and charts, of the activities of defense agencies when a deployment takes place in Wilmington, Wilmington, NC (as a typical port).	U.S. Army Corps of Engineers Wilmington, NC	87-077	\$ 33,000
OAS Port Training Program for Latin America	Purchase copy of OAS Port Training Program for Latin America Latin American including: Identification of port training needs based on survey material other sources; five-year pilot port training program based on port training needs.	Organization of American States Washington, DC	87-71782	\$ 9,500
Federal Port Controller Management Information System	To organize emergency information needed by four Federal Port Controller in a model system capable of electronic or hard-copy presentation.	Micro Computer Systems, Inc. Silver Spring, MD	86-60003	\$ 13,250
First North American Conference on Preparing for Climate Change	Co-sponsor the First North Conference on Preparing for Climate Changes (October 27-29, 1987) in Washington, D.C.	Climate Institute Washington, DC	87-71752	\$ 2,500
Conversion of PortKit Spreadsheet	To convert the spreadsheet used in the MARAD Port Economic Impact Kit from Sloane, Inc. SuperCalc 3 to Lotus 1-2-3. The Kit is used to derive port economic impacts for small and medium-sized port authorities.	Temple, Barker, and Sloane, Inc. Lexington, MA	87-71790	\$ 7,000
National Input-Output Model	To develop for MARAD the in-house capability to derive economic impact reports for various maritime related industries at the national level.	Temple, Barker, and Sloane, Inc. Lexington, MA	87-7003	\$ 88,947

*Cost-Shared

APPENDIX III: Continued

Project	Task	Vendor	Contract Number	Amount
RESEARCH FACILITIES				
Computer-Aided Operations Research Facility (CAORF):				
Privatization of CAORF*	To undertake immediate capital improvements to upgrade and refurbish CAORF.	Marine Safety International New York, NY	MA-11973	\$1,700,000
Engineering Maintenance Support**	To provide daily technical maintenance and engineering support to CAORF for the period October 1, 1985 through April 1987.	Sperry Systems Management Great Neck, NY	85-50124	\$ 760,771
Task Order Contract**	To provide technical research services on a task by task basis.	Ship Analytics Centerport, NY	87-70002	\$ 637,292
National Maritime Research Center (NMRC)-Kings Point:				
MARCIS Maneuvering Trials	Precise tracking and current measurement services to support KINGS POINTER/MARCIS trials.	Ocean Surveys, Inc. Old Saybrook, CT	P.O. 32327	\$ 10,000
Maritime Technical Literature Development & Control	Acquisition, cataloging, distribution and control of MMRC Study Center Resources.	Seatrack Great Neck, NY	30023	\$ 129,700
R&D Accomplishments Management	Final preparation and editing of R&D accomplishments report.	Barje Co. Bellmore, NY	54620	\$ 1,600

*Cost-Shared

**Costs are wholly or partially reimbursed by non-MARAD sources Vendor Number Amount

Appendix IV: STUDIES AND REPORTS RELEASED IN FY 1987

The following major studies or reports were released by the Maritime Administration during fiscal year 1987.

A limited number of copies of publications marked [MARAD] are available from the Office of External Affairs, Maritime Administration. Those labelled [NTIS] may be purchased from the National Technical Information Service, 5285 Port Royal Road, Springfield, VA 22161.

MARAD 1986 (The Annual Report of the Maritime Administration for Fiscal Year 1986) 64pp [MARAD].

Relative Cost of Shipbuilding, prepared by the Maritime Administration, October 1987, 37pp [MARAD].

Report on Survey of U.S. Shipbuilding and Repair Facilities, 1986, prepared by the Maritime Administration, December 1986, 131pp [MARAD].

Foreign Flag Merchant Ships Owned by U.S. Parent Companies, January 1, 1987, prepared by the Maritime Administration, 19pp [MARAD].

Port Handbook for Estimating Marine Terminal Cargo Handling Capability [NTIS].

Vol. 1 (Executive Summary)	PB87-121133/AS	\$11.95
Vol. 2 (Final Report)	PB87-121125/AS	\$18.95

Comparison of the Construction Planning Manpower Schedules for Building the PD211 General Mobilization Ship in a U.S. and a Japanese Shipyard [NTIS].

PB87-213161/AS \$18.95

MEMEX—An Expert System for Vessel Energy Management [NTIS].

Vol. 1 (Executive Summary)	PB87-179867/AS	\$ 9.95
Vol. 2 (Final Report & User's Manual)	PB87-179875/AS	\$18.95

A Standard Requirements Model & Conceptual Design for a Port Financial Management Information System [NTIS]. PB88-133731/AS \$25.95

Note: Reports prepared or issued by the Maritime Administration in previous years are listed in MARAD PUBLICATIONS, which is available upon request from headquarters and field offices of the Agency.

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