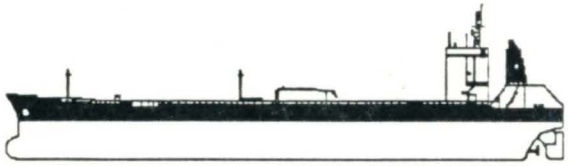
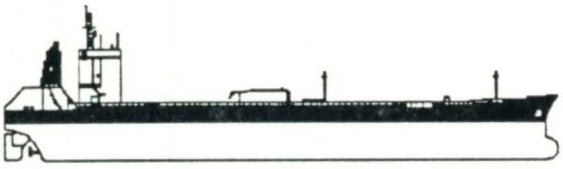


Outlook for the U.S. Shipbuilding and Repair Industry - 1996 -



Outlook for the U.S. Shipbuilding and Repair Industry - 1996

Prepared by the Maritime Administration's Office of Ship Construction, this report contains an overview of the status of the U.S. shipbuilding industry. It also comments on its near-term outlook.

The report reflects progress being made to strengthen the industry's competitiveness in the international marketplace for the construction of large, oceangoing commercial ships. It also addresses existing orders and prospects for Navy construction projects.

In addition to shipyards considered to be part of the U.S. Major Shipbuilding Base, the report discusses small and medium-size shipyards. Their activities include new construction and repair of smaller vessels such as tugs and towboats, barges, off-shore crew and supply boats, fire and rescue boats, and ferries.

The report contains summaries of construction projects financed with the assistance of the federal ship financing (Title XI) program and of the MARITECH program, a five-year effort to encourage the development and application of advanced technology.

The information is presented in the context of the world shipbuilding marketplace, including projections for future vessel demand.

OUTLOOK

FOR THE

U.S. SHIPBUILDING AND REPAIR INDUSTRY

1996

Prepared By:

Office of Ship Construction

Division of Cost Analysis and Production

April 1996

CONTENTS

TABLE OF CONTENTS

Charts and Tables

1996 OUTLOOK
FOR
U.S. SHIPBUILDING AND REPAIR

Overview

The United States shipbuilding industry has moved into a new era of growth with its reemergence as an active participant in both the domestic and international commercial shipbuilding markets. The catalyst for this evolution of the U.S. shipbuilding industry and its ability to aggressively enter and compete in these markets was the "National Shipbuilding and Conversion Act of 1993" and the expanded Title XI financing guarantee program.

The Maritime Administration (MARAD), during FY 1995, approved 13 applications for $419.2 million in Title XI loan guarantees to construct a total of 36 vessels at U.S. shipyards. One application involved the construction of product tankers for a foreign owner. During the first six months of FY 1996, 12 applications were approved for $468.3 million in Title XI loan guarantees to construct a total of 71 vessels at U.S. shipyards. One application involved the construction of chemical carriers for a foreign owner. Title XI financial guarantees have also been approved for four shipyard modernization projects, one in FY 1994, one in FY 1995 and two during the first six months of FY 1996.

The historic bulwark for the U.S. shipbuilding industry, Navy new ship construction, continues to decline forcing U.S. shipyards to explore new avenues for commercial work in order to survive. The Navy's proposed fiscal year (FY) 1996-2001 shipbuilding program will average six new ships a year,

compared to eight ships per year in the FY 1995-1999 shipbuilding program. This is in sharp contrast to the average of 19 new ships annually in the 1980's.

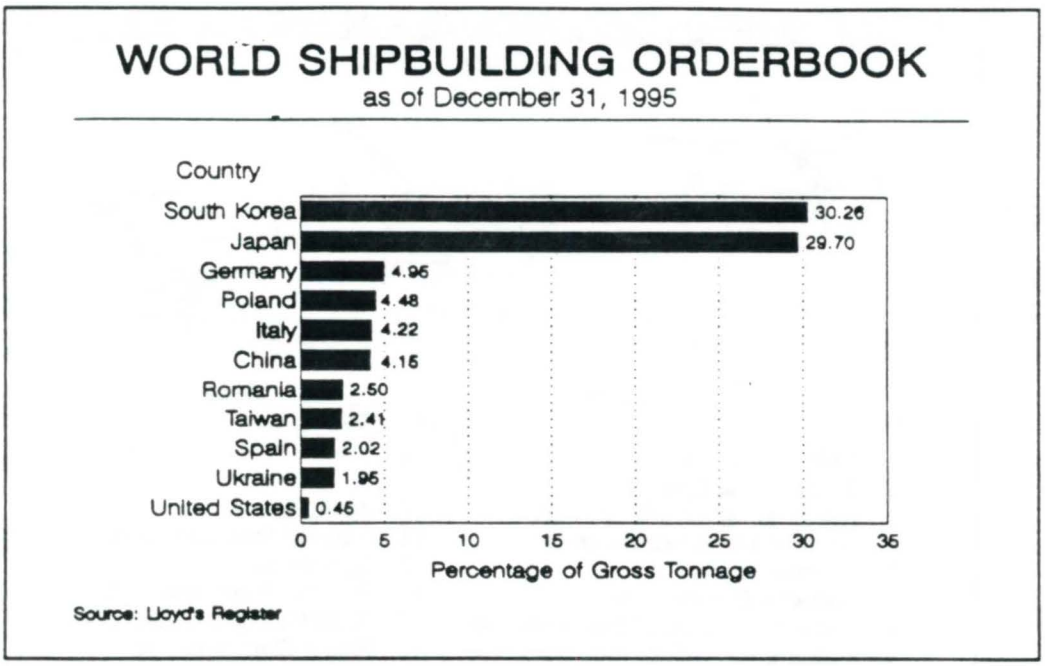
The shipbuilding industry and the U.S. government are focusing their efforts toward industry revitalization and market transformation. The second-tier shipyards, comprised of small or medium size facilities, continue to build an assortment of vessels for use on the inland and coastal waterways as well as the foreign markets. These shipyards are expected to continue to prosper for the remainder of this decade.

World Market

The number of ships on order or under construction in the world market increased significantly in 1995 from the previous year. As of December 1995, the world orderbook for merchant vessels, 100 gross tons (gt) and over, consisted of 2,655 vessels totaling 48.5 million gt. This reflects a 15 percent increase from the 2,316 vessels on order a year earlier, and a 6 percent increase in gross tonnage, from 45.8 million gt. The average size of merchant ships on order decreased by 7.5 percent from 19,772 gt to 18,277 gt.

By year end, South Korea had moved into the lead position in the world merchant shipbuilding market, surpassing the longtime leader, Japan. As of December 1995, South Korea commanded 30.26 percent of the gross tonnage of merchant ships on order, followed by Japan with 29.70 percent and Germany a distant third with 5 percent (Chart 1). The United States was 23rd, with only 0.45 percent of the world gross tonnage. This compares with 0.17 percent of the gross tonnage in the world orderbook a year earlier. The U.S. orderbook represents a 96 percent increase in the gross tonnage on order compared with last year.

Chart 1



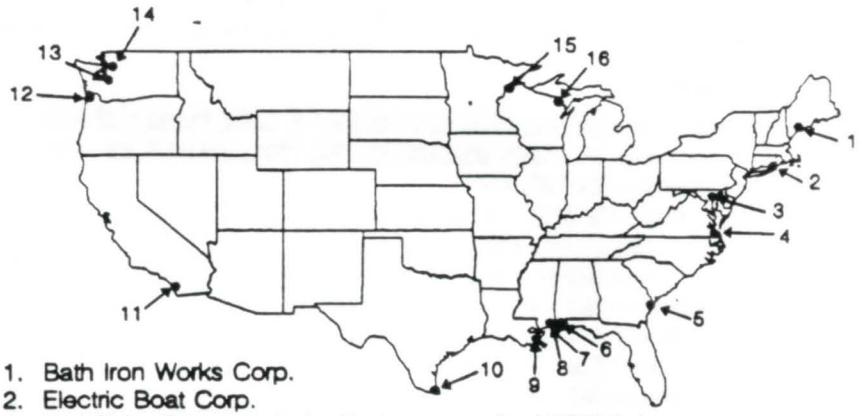
U.S. Shipbuilding

In past years the benchmark used for tracking the U.S. shipbuilding industry was the Active Shipbuilding Base (ASB), which was defined by shipyard capability and business criteria. As a consequence of the significant reduction in new ship construction in recent years, especially ships 1,000 gt/ldt and over, the ASB was replaced by a base defined primarily by shipyard capability. This new shipyard base, called the U.S. Major Shipbuilding Base (MSB), is defined as privately owned shipyards that are open, having at least one shipbuilding position, consisting of an inclined way, a launching platform, or a building basin capable of accommodating a vessel 122 meters in length or over. With few exceptions, these shipbuilding facilities are also major repair facilities with drydocking capability. Utilizing this definition, as of January 1, 1996, there were 16 major shipbuilding facilities in the United States (Chart 2).

Chart 2

MAJOR SHIPBUILDING FACILITIES IN THE UNITED STATES

JANUARY 1, 1996



1. Bath Iron Works Corp.
2. Electric Boat Corp.
3. BethShip, Sparrows Point Yard
4. Newport News Shipbuilding
5. Intermarine USA
6. Alabama Shipyard, Inc.
7. Halter Marine, Inc., Moss Point Div.
8. Ingalls Shipbuilding, Inc.
9. Avondale Industries, Inc.
10. AMFELS, Inc.
11. National Steel and Shipbuilding Co.
12. Gunderson, Inc.
13. Tacoma Boatbuilding Co.
14. Todd Pacific Shipyard Corp.
15. Fraser Shipyards, Inc.
16. Marinette Marine Corp.

According to the U.S. Department of Labor, aggregate employment in the U.S. shipbuilding and repair industry was 105,100 in October 1995, down 2,600 from year end 1994. The MSB shipyards employ about 66 percent of the total work force of the shipbuilding and ship repair industry. The remaining 34 percent were in the 550 additional establishments (with 10 or more employees) classified under Bureau of Labor Statistics SIC 3731 (Shipbuilding and Repairing). Not included in SIC 3731 are the eight Government owned shipyards, which do not engage in new construction, but rather overhaul and repair Navy and Coast Guard ships. As of October 1995, the total employment in the 8 Government owned shipyards was 39,484.

Federal Assistance Programs

MARAD provides financial assistance to U.S. shipowners through the Federal Ship Financing Program (Title XI) and the Capital Construction Fund (CCF) program.

The Title XI program was established by the Merchant Marine Act of 1936, as amended, and provides for a full faith and credit guarantee by the United States Government for the purpose of promoting the growth and modernization of the U.S. merchant marine and U.S. shipyards. The Title XI program provides for Federal Government guarantees of private sector financing or refinancing obligations for the construction or reconstruction of U.S.-flag vessels in U.S. shipyards. Vessels eligible for Title XI assistance include, but are not limited to, commercial vessels such as passenger, bulkers, cargo, tankers, tugs, towboats, barges, dredges, oceanographic research, pollution abatement, offshore oil vessels and floating drydocks.

In October 1993, the Clinton Administration issued a report *Strengthening America's Shipyards: A Plan for Competing in the International Market,* which outlines actions to assist the struggling U.S. shipbuilding industry. The President's five point plan includes:

- Ensuring fair international competition
- Eliminating unnecessary government regulation
- Assisting international marketing
- Financing ship sales through Title XI loan guarantees
- Improving commercial competitiveness with MARITECH

MARITECH is a five-year Federal effort to provide matching Government funds to encourage the shipbuilding industry to direct and lead in the development and application of advanced technology to improve its competitiveness and to preserve its industrial base. The program is jointly funded by Government and industry and administered through the Department of Defense's Advanced Research Projects Agency (ARPA), in collaboration with MARAD.

MARITECH has both near-term and long-term objectives. In the near-term, it is to assist industry in making a penetration in the international marketplace with competitive ship designs, market strategies and modern shipbuilding processes and procedures. In the long-term, the program is meant to encourage advanced ship and shipbuilding technology projects for promoting continuous product and process improvement in order to maintain and enlarge upon the U.S. share of the commercial and international market; this, in turn, will ensure the availability of an experienced industrial base which is vital to national security in times of crisis. A recapitulation of FY 1995 proposals selected for MARITECH funding are summarized in Table 1.

Two Broad Agency Announcements (BAA) were issued in late 1995 for the purpose of soliciting project ideas for MARITECH funding in FY 1996. The first BAA solicited proposals to develop innovative, world-class designs with a specific market and/or customer in mind and the production processes and technologies required to construct them competitively for the international marketplace. The second BAA solicited proposals for advanced technology development projects that will dramatically improve the practices and processes used for the design and construction of ships in the United States.

On November 30, 1993, Congress passed the National Defense Authorization Act for FY 1994, which contained a section subtitled "National Shipbuilding and Shipyard Conversion Act of 1993." This Act provides the Secretary of

Summary of FY 1995 Proposals Selected for MARITECH Funding

Projects	Lead Contractor	FY 1995 Government Funding
Vessel Design Projects		
International Fast Ferry	Nichols Bros	$ 305,000
Large Fast Ferry	Halter Marine	$ 1,164,725
High-Speed Monohull Design	Bath Iron Works	$ 0
Midfoil SWAS Ship Design	Pacific Marine	$ 381,563
High-Tech Ship with Shallow & Variable-Draft, Self Loading/Unloading & Minimum Crew Design Features	SENESCO	$ 588,000
Handy-Size (27,000 DWT) Bulk Vessels	Alabama Shipyards	$ 1,666,750
Reefer 21, A Small Reefer Ship for Worldwide Trading	Bender Shipbuilding	$ 355,000
LNG Carrier	Newport News Shipbuilding	$ 1,299,413
Shipyard Technology Projects		
Process Tools	CTA	$ 928,290
STEP-Ship Product Model	Shipbuilding Consortium	$ 1,333,198
Light Weight Structure of SWATH High-Speed Ferry	SWATH INT	$ 450,000
Adaptive Control to SWATH & SLICE Ships	Lockheed Missiles & Space Company, Inc.	$ 385,053
Integrated Shipboard Information Technology (ISIT) Platform	Marine Mgmt. Systems, Inc.	$ 1,159,285
Smartbridge	Martin Marietta	$ 839,995
Vessel Optimization and Safety System (VOSS)	Sperry Marine	$ 999,917
Panel Line Welding	McDermott/Babcock & Wilcox	$ 1,175,750
Automated Welding of Structural Beam Erection Joints	CYBO Robotics	$ 515,595
Advanced Material Technology	University of California San Diego	$ 1,500,000
Composite Ship Superstructure System	Structural Composites	$ 500,000
High Power Waterjet Propulsor	Bird-Johnson	$ 697,500
American Underpressure Systems	MH Systems, Inc.	$ 100,434
New LNG Containment System and Vessel Design	Marinex International	$ 880,000
Design of the Stern Factory	McDermott Shipbuilding	$ 899,000
Total FY 1995 Government Funding		**$18,124,468**

Transportation with the authority to extend Title XI guarantees for eligible export vessels constructed, reconstructed or reconditioned in a U.S. shipyard and for shipyard modernization and improvement.

MARAD also permits U.S. operators to establish a Capital Construction Fund. The operator can use tax-deferred dollars in the Fund for qualified withdrawals to procure new or reconstructed vessels from U.S. shipyards.

In addition, the Federal Government continues to provide significant direct support to the industry through the purchase and repair of ships, and the procurement of goods and services from a large number of shipyards and related industries. Principal contracting government agencies include the Naval Sea Systems Command, the Military Sealift Command, the Army Corps of Engineers, the U.S. Coast Guard, the National Oceanic and Atmospheric Administration, the National Science Foundation and the Maritime Administration.

Commercial Ship Construction

In 1995, the U.S. shipbuilding industry received two new orders for the construction of four oceangoing commercial ships and one order for four tanker reconstructions. These new orders represent the largest number of commercial ships ordered from U.S. shipyards in a single year in almost two decades. Orders from foreign ship owners accounted for one hundred percent of the new construction contracts, bringing the total number of ships in the new construction orderbook to six. The major tanker reconstructions were ordered by an American company. Three large non-oceangoing 4,350 gt passenger/car ferries for the State of Washington were also ordered. During the first two months of 1996 an additional order for five product tankers was received by a U.S. shipyard.

On May 12, 1995, Avondale Industries, New Orleans, LA, executed a contract with American Heavy Liff Shipping Company for the reconstruction of four (two 38,757 dwt and two 38,289 dwt) U.S.-flag product tankers that will comply with the double hull requirements of the OPA-90. The reconstruction of the vessels involve cutting forebodies off four existing ships, construction of new double hulled forebodies and fitting the new forebodies on the refurbished sterns. These vessels represent the first U.S.-flag product carriers to be constructed in the United States in eleven years.

On July 5, 1995, Newport News Shipbuilding, Newport News, VA, signed an option to an existing contract to build two additional 46,500 dwt, "Double Eagle," double hulled petroleum tankers with Eletson Corp. (Fleves Shipping), a Greek shipping company.

On December 29, 1995, Alabama Shipyards, Mobile, AL, executed a contract with Dannebrog Rederi AS, a Danish shipping company, to construct two 16,000 dwt chemical carriers. The chemical carriers will be in compliance with the Oil Pollution Act of 1990 (OPA-90) requirements for double hulls.

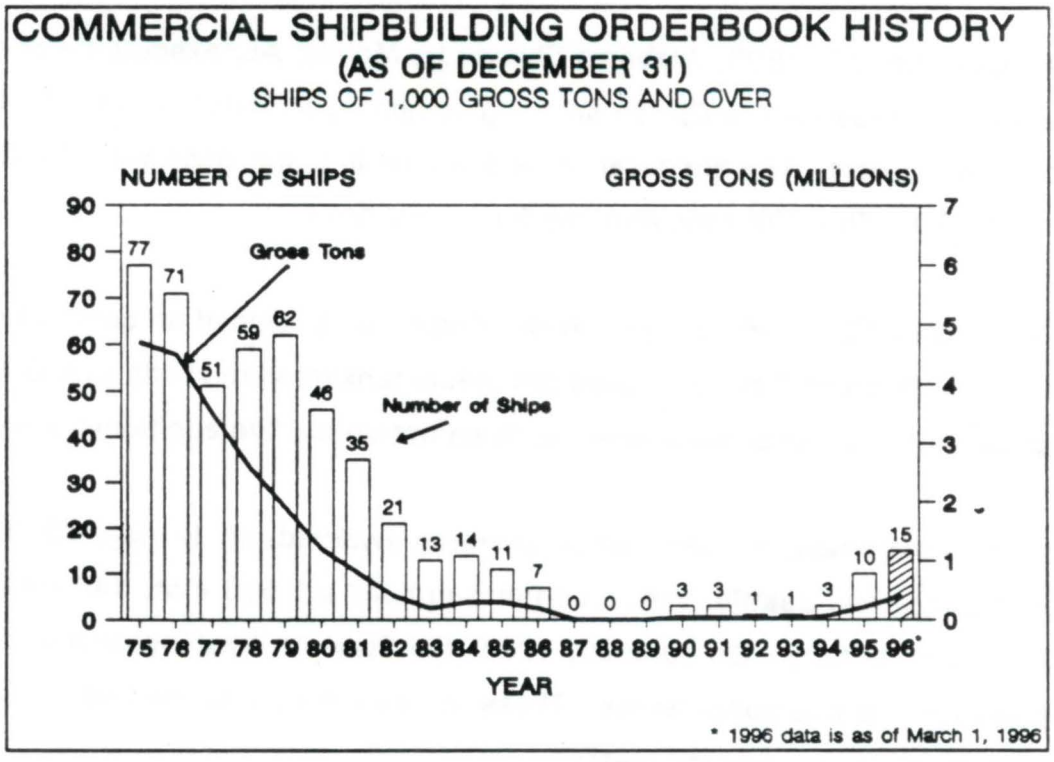
On February 12, 1996, Newport News Shipbuilding, signed an contract to build five "Double Eagle," double hulled petroleum tankers with Hvide Van Ommeren Tankers L.L.C., a U.S. shipowner, with an option for five additional tankers.

On the west coast, the State of Washington awarded, on January 10, 1995, to Todd Shipyards, Seattle, WA, a contract to build a 1,675 dwt, 140 meter passenger/car ferry. On June 20, 1995, the State of Washington exercised an option for two additional ferries. These ferries will service the Seattle-Bainbridge route which is in protected water.

The Newport News, Alabama, and Avondale contracts were all made possible with the assistance of the Maritime Administration's Title XI loan guarantee program. MARAD provided $535.4 million in financing guarantees under the recently expanded Title XI program to procure these vessels; the contracts were worth approximately $611.9 million.

As of March 1, 1996, the U.S. orderbook for commercial shipbuilding consisted of the nine 46,500 dwt, "Double Eagle," double hulled petroleum tankers at Newport News, two 16,000 dwt chemical carriers at Alabama, four 38,000 dwt class double hulled product tanker reconstructions at Avondale, and three 4,350 dwt non-oceangoing car/passenger ferries at Todd, Seattle. The self-propelled commercial oceangoing shipbuilding orderbook since 1975 is illustrated in Chart 3.

Chart 3



Military Ship Construction

During the 1980's, the U.S. Navy commenced the largest combatant ship construction program in peacetime history (nearly $100 billion was appropriated). Since 1991, however, Navy construction programs have been on the decline and they are projected to continue to wane throughout the remainder of the 1990's. In 1995, the Navy's ship construction projects continued to dominate the workload in U.S. shipyards, but at a much diminished scale.

During 1995, the Navy ordered five new ships, 1,000 light displacement tons (ldt) or larger, from U.S. private shipyards, while 17 new Navy vessels were delivered. In addition, 14 Navy craft/vessels (LCACs, PCs and MHCs) less than 1,000 ldt were also delivered.

In the first two months of 1996, one additional Navy ship was ordered and one was delivered. Three additional Navy craft/vessels were also delivered.

As of March 1, 1996, Navy vessels of 1,000 ldt or larger on order or under construction totaled 55 ships (Table 2). This tally included 46 new constructions, eight conversions, and one aircraft carrier undergoing refueling. Eighteen Navy vessels are scheduled to be delivered by the end of 1996. In addition, six Navy craft/vessels (LCACs and MHCs) are also scheduled to be delivered before the end of 1996.

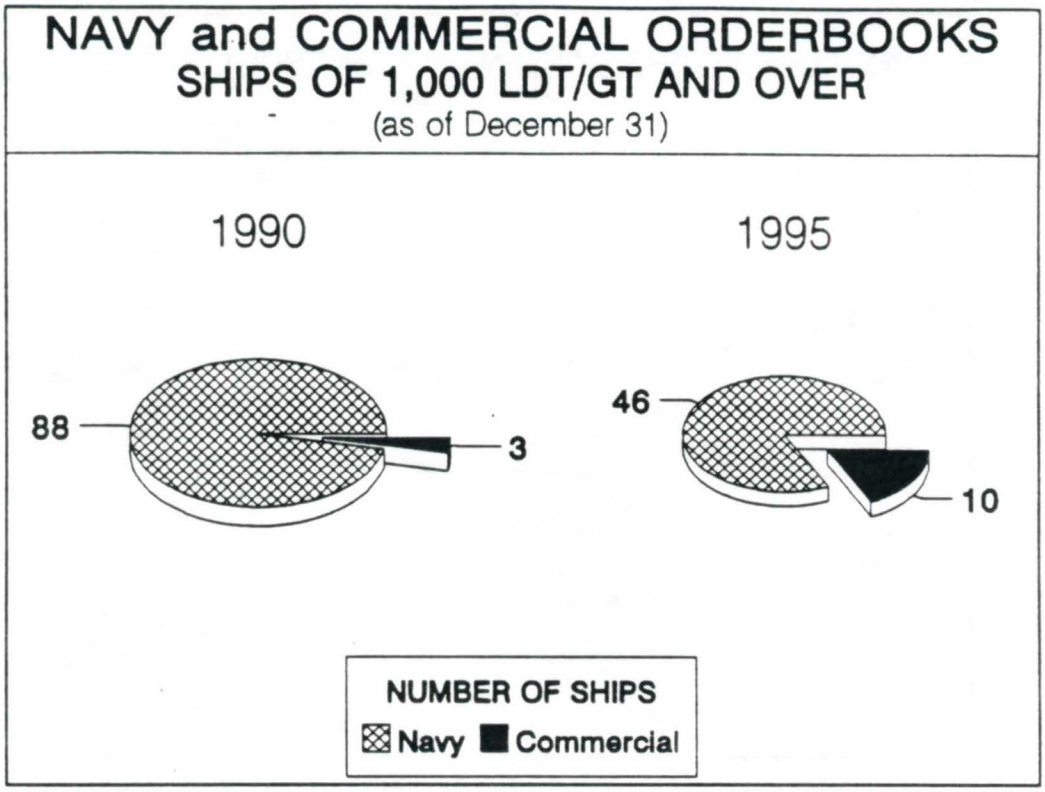
Table 2

Military Ships Under Construction
(1,000 ldt or Greater)
March 1, 1996

Symbol	Type	Number
New Construction		
AOE	Fast Combat Support Ship	1
CVN	Aircraft Carrier (Nuclear-powered)	2
DDG	Guided Missile Destroyer	17
LHD	Amphibious Assault Ship (Multi-purpose)	3
LSD	Dock Landing Ship	2
SSN-21	Attack Submarine (Nuclear-powered)	2
SSN-688	Attack Submarine (Nuclear-powered)	1
SSBN	Ballistic Missile Submarine (Nuclear-powered)	2
AGOR	Oceanographic Research Ship	3
T-AKR	Military Sealift Ship	8
WAGB	Ice Breaker	1
T-AGOS-23	Ocean Surveillance Ship	1
T-AGS-60	Ocean Survey Ship	2
T-AO	Fleet Oiler	1
	Sub-Total	46
Conversion		
CVN	Aircraft Carrier (Refueling)	1
MCS	Mine Countermeasures Ship	1
T-AKR	Military Sealift Ship	5
T-AFS	Combat Stores Ship	1
T-AE	Ammunition Ship	1
	Sub-Total	9
Total Military Ships		55

As a consequence of the austere Navy new construction budget, the Navy's shipbuilding program has declined dramatically in the last five years, from 88 vessels in 1990 to 46 vessels in 1995 (Chart 4), and will continue to decline during the remainder of this decade.

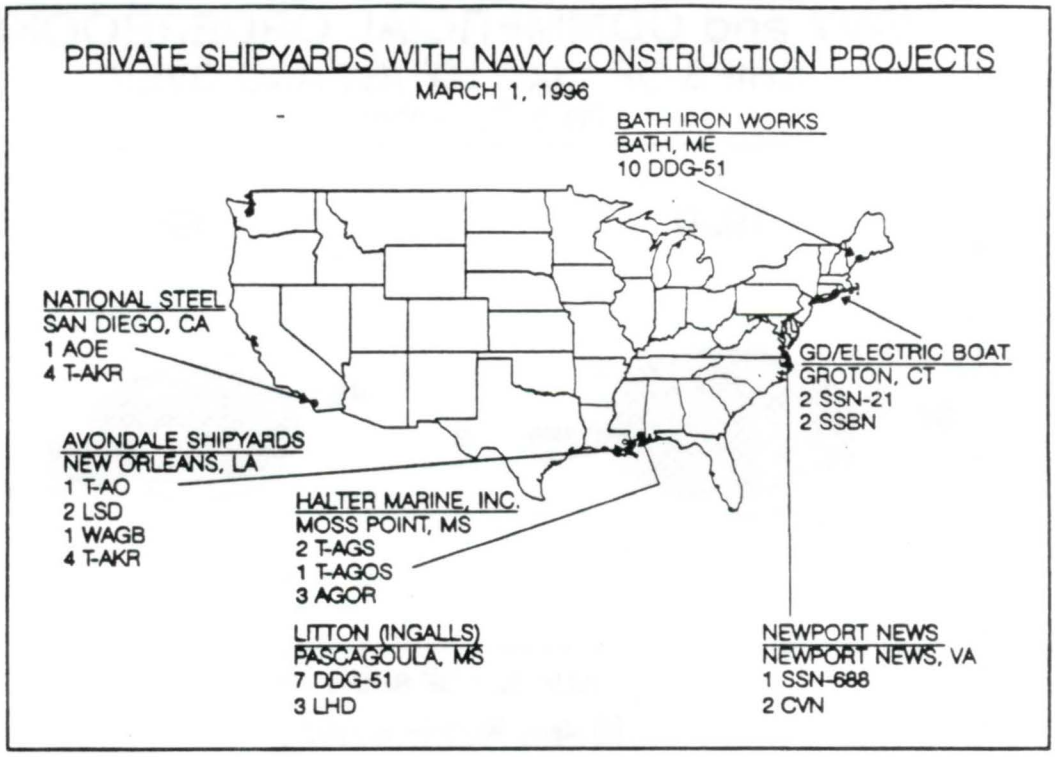
Chart 4



The naval shipbuilding orderbook includes a variety of vessels from ballistic missile submarines to fleet oilers and a Coast Guard icebreaker. The Navy's new construction backlog of 46 ships is comprised of 14 different types of ships, and the orders are dispersed among 7 private shipyards located on the Atlantic (3), the Gulf (3) and Pacific (1) coasts (Chart 5).

Most U.S. shipyards do not have the experience or expertise required to construct sophisticated naval combatant vessels. The Navy's T-ship projects, however, have in the past and are continuing to provide some work for private U.S. shipyards that have for the last decade relied on military ship construction. These projects are for the building of civilian-manned Navy auxiliary ships under control of the Military Sealift Command (MSC).

Chart 5



On September 2, 1993, MSC announced the award of the first contract for a military sealift ship detail design and construction to Avondale Industries, Inc., of New Orleans, LA. The contract was for one ship priced at $265.2 million. Since then Avondale Industries, Inc., has received contracts for three additional military sealift ships, and still holds the options for two more ships, for a total value of $1.3 billion. Contract completion is scheduled for April 30, 2001.

On September 15, 1993, MSC announced the award of a contract for the second military sealift ship detail design and construction to National Steel and Shipbuilding Co. (NASSCO) of San Diego, CA. The contract was priced at $269.1 million. NASSCO has since received contracts for three additional military sealift ships and is also holding the option for two more ships, for a total contract value of $1.3 billion. The contract is scheduled for completion by April 30, 2001.

As of March 1, 1996, there were 12 T-ships on order or under construction, down from 13 a year earlier. In addition there were seven T-ships undergoing conversion in three U.S. shipyards (Table 3). One T-ship (T-AGOS 23) was originally awarded on March 28, 1991 to Tampa Shipyards. On April 20, 1995 Tampa Shipyards assigned the contract for the completion of the T-AGOS 23 to Halter Marine, Moss Point.

Table 3

T-SHIPS ON ORDER OR UNDER CONSTRUCTION
(as of March 1, 1996)

Shipyard	Ship Identifier	Vessel Name	Estimated Delivery Date
New Construction			
Avondale	T-AO 203	LARAMIE	04/05/96
Halter Marine	T-AGS 62	BOWDITCH	07/21/96
Halter Marine	T-AGS 63	HENSON	11/07/97
Avondale	T-AKR 300	BOB HOPE	01/31/98
National Steel	T-AKR 310	- unnamed -	03/01/98
Avondale	T-AKR 301	- unnamed -	07/30/98
National Steel	T-AKR 311	- unnamed -	10/16/98
Halter Marine	T-AGOS 23	IMPECCABLE	12/18/98
Avondale	T-AKR 302	- unnamed -	01/31/99
National Steel	T-AKR 312	- unnamed -	04/16/99
Avondale	T-AKR 303	- unnamed -	07/30/99
National Steel	T-AKR 313	- unnamed -	03/30/2000
Conversion			
National Steel	T-AKR 295	SHUGHART	04/30/96
Norshipco	T-AFS 5	CONCORD	05/07/96
Norshipco	T-AE 32	FLINT	05/08/96
Newport News	T-AKR 296	GORDON	06/21/96
National Steel	T-AKR 297	YANO	10/31/96
Newport News	T-AKR 298	GILLILAND	11/25/96
National Steel	T-AKR 299	SODERMAN	04/17/97
TOTAL	19 Ships		

National Oceanic and Atmospheric Administration

The National Oceanic and Atmospheric Administration's (NOAA) Fleet Replacement and Modernization (FRAM) Program was begun in FY 1992. The program continues in FY 1996 with routine and critical maintenance of the existing fleet, construction of an oceanographic research ship, *Researcher,* at Halter Marine, Inc., Moss Point, LA, conversion of a T-AGOS vessel to a NOAA oceanographic ship *Ka'Imimoana* at Maritime Contractors, Inc., Bellingham, WA, and repair to extend (RTE) of the vessel *Delaware II* at Deytens Shipyards, Inc. of Mt. Pleasant, SC.

Ship Repair

The U.S. ship repair industry continues to persevere in the domestic and foreign markets aggressively marketing their experience and skill in both ship repair and conversion. The Navy is doing smaller yet more frequent maintenance and repair work on their ships; therefore, commercial maintenance and repair work has become more important to the industry's health.

In FY 1995, the U.S. Navy's primary resources for ship repair were 27 privately owned shipyards and 8 naval shipyards. U.S. shipyards, both large and small, have been turning to commercial ship repair work as a result of the continuing decline in the Navy's new shipbuilding activities and slow growth in new commercial shipbuilding orders to replace the world's aging merchant fleet.

U.S. shipyards benefit from their location in the United States (the world's most important trading nation) because of the large volume of goods transiting U.S. ports. Therefore, location, timeliness of repairs, and competitive prices can give U.S. shipyards an edge over many foreign repair yards.

The FY 1996 budget request for Navy ship repair and fleet modernization is $2.89 billion, which represents a decrease of about 10 percent from the FY 1995 budgeted level of $3.2 billion. The budget request is almost 29 percent lower than the FY 1992 appropriation, and 38 percent below the FY 1990 appropriation.

Each year the Navy accomplishes maintenance and modernization work on its ships through both the public and private shipyards. In FY 1995, the Navy completed 102 availabilities (overhaul/repair work) with a budgeted value of $3.2 billion. Of these, 34 were accomplished in the public sector's Naval shipyards for a budgeted value of $1.8 billion (56 percent) while the private sector completed 68 smaller, less complex availabilities reflecting approximately $1.4 billion (44 percent) in budgeted value. The FY 1996 projected split is for 30 scheduled availabilities representing approximately $1.95 billion (67 percent) of budgeted value for the public sector's Naval shipyards and 84 smaller, less complex scheduled availabilities representing $.94 billion (33 percent) of budgeted value in the private sector to reflect an aggregate Navy Maintenance and Modernization budgeted total of $2.89 billion for FY 1996.

Prior to 1985, Navy repair work was either allocated directly to public yards or awarded to private yards. The bulk of ship repair work is still distributed on an allocation basis. However, in FY 1985, the Navy launched its ship repair competition test program between public and private shipyards. Under competitive bidding, most submarine repairs have gone to the public shipyards, while the private sector has won the bulk of the contracts for surface ship repairs.

In 1990, the Congress established a new set of procedures for military base closures (Title XXIX of P.L. 101-510). These procedures were valid for only five years with closures being proposed every other year -- 1991, 1993, and 1995. The closure of Navy shipyard facilities as a result of recommendations by the Base Closure and Realignment Commission appointed by the President, will have an impact on both public and private shipyards. As of October 1, 1993, the Commission recommended the closure of Philadelphia Naval Shipyard,

Philadelphia, PA, Mare Island Naval Shipyard, Vallejo, CA, and Charleston Naval Shipyard, Charleston, SC. In 1995, the Commission recommended the closure of Long Beach Naval Shipyard, Long Beach, CA. On September 15, 1995, the Philadelphia Naval Shipyard was closed after a 194 year illustrious history of serving the Navy in shipbuilding and repair. The Charleston Naval Shipyard is scheduled to be closed in May 1996 and the Mare Island Naval Shipyard in June 1996.

MARAD's National Defense Reserve Fleet (NDRF) provides a steady source of ship repair work. As of January 1, 1996, the fleet consisted of 220 merchant ships and 75 vessels held for other Government agencies on a reimbursable basis. Many of these ships can be activated to meet the shipping requirements of the United States in the event of a national emergency.

A key element of the NDRF is the Ready Reserve Force (RRF), which as of January 1, 1996, was composed of 92 ships. The National Defense Reserve Fleet and the RRF subset are funded by the Department of Defense through the National Defense Sealift Fund. The FY 1996 budget is $289 million for maintenance and operations. The 1997 budget is expected to be $261 million.

Although the RRF was projected to expand to 140 ships by the end of FY 1999, it appears that the future size of the RRF will remain at or below 100 ships. Two additional RO/RO's (roll on/roll off) were purchased for the RRF during FY 1995. The upgrade work for these two ships will be performed in U.S. shipyards and the ships are expected to enter the RRF during mid-1996. Past upgrades of this type averaged $10 million per ship.

MARAD upgraded eight ships in several East Coast shipyards for use by the U.S. Army as sealift assets, pre-positioned at strategic locations overseas. The eight ships, comprised of seven RO/RO ships and one auxiliary crane ship, were selected from the RRF fleet to meet the Army's requirements to deploy a divisional unit of equipment, supplies, and ammunition to a remote theater of

operation in a short time. The ships sortie on frequent training missions and participate in military exercises. It is envisioned that these ships will remain as part of the pre-positioned fleet until mid-1997, at which time they will be returned to MARAD.

Passenger and Cruise Vessels

In 1995, U.S. shipyards were not involved with any major construction or conversion projects of oceangoing passenger and cruise ships. The shipyards however, continue to be very much involved with maintenance and repair of cruise ships.

Some examples of maintenance and repair work performed on cruise ships in 1995 are:

> On the west coast, Cascade General Inc., Portland, OR, the sole ship repair contractor at the Portland Ship Yard, repaired damage sustained to the *Star Princess*, a cruise ship owned by Princess Cruises, when the ship went aground near Juneau, Alaska.
>
> On the gulf coast, Bender Shipbuilding and Repair Co., Inc. of Mobile, AL, performed work on the Kloster Cruise Line's *Royal Viking Queen,* Cunard Line's *Cunard Countess* cruise ship and on the *Americana*, a cargo/cruise ship owned by A/S Ivarans Rederi of Norway. Examples of the type of work performed include rework of the underwater equipment such as bow thrusters and stabilizers, propeller and shaft realignment, major piping work, compressor work and the replacement of the refrigerant freon 12 with an environmentally safe refrigerant.

Numerous U.S. shipyards continue to be involved in the design and construction of smaller passenger, cruise, dining and gaming vessels. These projects have been generated by the enactment of state legislation permitting riverboat gambling and the Flower Banks National Marine Sanctuary Act (Public Law 102-251), which allows gambling and gaming devices on board U.S.-flag ships on "cruises to

nowhere." Riverboat gambling is now legal in at least nine states and is under consideration in five more states.

Although the demand for casino boats is still high, interest in the other types of boats is also starting to grow. It is reported that there is a healthy market for passenger boats that are not casino boats, with the steady growth in the excursion and dinner cruise markets.

Some of the recent deliveries of smaller passenger and cruise vessels are listed in Table 4:

Table 4

RECENT DELIVERIES OF SMALLER PASSENGER AND CRUISE VESSELS

VESSEL NAME	VESSEL TYPE	BUILT BY	LENGTH x BEAM (m)
Alaskan Explorer	Excursion	Westport Shipyard, Inc.	29 x 7
American Queen	Paddlewheel/Steamboat	McDermott Shipyard	127 x 27
Anticipation IV	Entertainment Cruise	SkipperLiner Industries	34 x 7
Casino Rouge	Riverboat	Bender Shipbuilding & Repair	79 x 24
Cayo Notre	Oceangoing Ferry	Blount Industries, Inc.	48 x 12
City of Evansville	Steamboat/Gaming	Jeffboat	94 x 21
Kanesville Queen	Gaming	Atlantic Marine, inc.	83 x 24
Odyssey III	Dinner Cruise	Service Marine Industries, Inc.	73 x 19
Paradise II	Casino	Marine Builders, Inc.	35 x 9
Pocahontas	Vehicle Ferry	Moss Point Marine, Inc.	80 x 20
Queen of the West	Sternwheeler	Nichols Brothers Boat Builders	70 x 15
Showboat Branson Belle	Dinner/Theater	On-Site Marine Construction	73 x 23
Straits Express	Tour Catamaran	Marinette Marine Corp.	30 x 9

Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA)

The enactment of the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA) has provided the single biggest Federal boost in years for the ferry business. ISTEA's purpose is to develop an efficient and environmentally sound National Intermodal Transportation System (NITS), including all forms of transit.

ISTEA provides two incentives: first, a flexible funding program and second, authority for states, regions, and local agencies to decide whether funds should go for highways or transit, including ferries. The Act specified $151 billion for highways, transit, and safety programs over a five-year period from FY 1993-1997 of which $31.5 billion is for transit systems. The ferry industry has benefited from the Act's creation of a $100 million discretionary program from the Highway Trust Fund for ferry and ferry infrastructure projects at an 80/20 matching ratio. The Federal Government through the Department of Transportation picks up 80 percent of the cost.

In FY 1996, the Department of Transportation allocated $14.9 million for ferry boat projects. Selection and distribution of these funds were based on requests by the states and the eligibility of the projects submitted for additional federal funding. These funds were allocated among 15 states, the District of Columbia and Puerto Rico.

In FY 1997, the last year of this program, the Department of Transportation has allocated $18 million for ferry boat projects. Solicitation for projects to be funded is currently active.

Some examples of recent ferry orders or deliveries:

> Moss Point Marine, Inc. of the Trinity Marine Group completed the *Pocahontas*, an 80 meter, 500 passenger/70 vehicle ferry for the Virginia Department of Transportation. This is a cycloidal-drive ferry.
>
> Halter Marine, Inc., Lockport, LA, of the Trinity Marine Group was selected by the State of Alaska to design and build a 116 meter oceangoing passenger/ferry. The vessel will be designed to carry either 750 day-cruise passengers on Southeast Alaska routes or 500 overnight cruise-passengers on open ocean routes such as the Gulf of Alaska crossing. The ferry will be capable of carrying over 120 vehicles.

Halter Marine, Inc., Lockport, LA, of the Trinity Marine Group was awarded an $8.3 million contract from the State of Texas Transportation Commission for the construction of an 80 meter passenger/vehicle ferry. The *Ray Stoker, Jr.* is scheduled to be delivered in the fourth quarter of 1996.

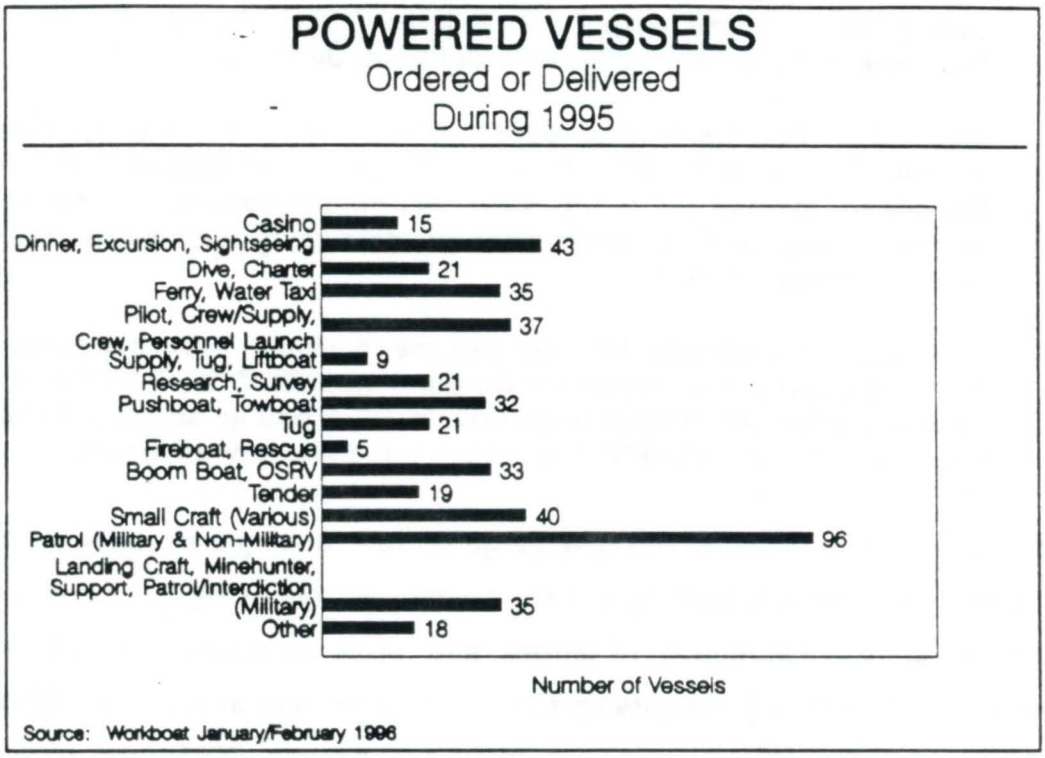
Todd Pacific Shipyards was awarded a contract by the State of Washington to build three jumbo Mark II Class ferries. The ferries will be 140 meters in length and will have the capacity to carry 218 cars and 2,500 passengers. The ferries will operate in protected water on the Seattle - Bainbridge route.

Second-Tier Shipyards

Small and medium-size shipyards, often referred to as 'second-tier shipyards', comprise an important sector of the U.S. shipbuilding and repair industry. These shipyards are primarily engaged in supporting inland waterway and coastal operators. Their activity consists of new construction and repair of smaller-type vessels, such as casino boats, water taxis, tug and towboats, off-shore crew and supply boats, ferries, fishing boats, shallow-draft barges, military and non-military patrol boats, and fire and rescue vessels.

According to *Workboat Magazine's* construction survey of 78 second-tier yards, small boat activity in 1995, vessels ordered or delivered, totaled 480 powered vessels. That is 170 fewer than was reported for 1994, but 50 more than in 1993. The passenger vessel sector, however, improved slightly, with a 25 percent increase in new ferries ordered/built in 1995 over 1994. On the other hand, casino boat activity decreased by the same amount. New orders/deliveries for the dinner, excursion, and sightseeing sectors remained constant, with about the same number as in 1994. Overall, 1995 was a year that saw relatively normal activity -- both for new construction and repair -- for all types of marine equipment. Chart 6 shows the types and quantities of power driven vessels ordered or delivered from U.S. shipyards during 1995.

Chart 6



Barges and Tank Barges

U.S. exports, primarily of grain and coal, are up and are expected to continue to grow, especially the feed grains. To meet this additional volume, some industry experts are predicting that as many as 10,000 additional barge loads annually will be needed. With the availability of dry cargo barges having become much tighter in recent years, this projected additional tonnage should create a demand for the construction of new barge units. These new buildings would be in addition to the normal replacement of barges that are retired because of age. Some specific new equipment contracts during 1995 included:

Parker Towing Co., Inc. received delivery of 20 hopper barges during 1995. These barges were built by Trinity Marine, Nashville, Inc., Nashville, TN, and Jeffboat, Jeffersonville, IN.

Avondale Industries, New Orleans, LA has re-entered the barge market with a $26 million order from Ingram Barge Line, in Nashville, TN, for the construction of up to 100 open river hopper barges. The barges will be among the first construction projects using Avondale's new steel processing facility.

Jeffboat, Jeffersonville, IN, was also the recipient of another sizeable order. Marine Equipment Management Corporation (MEMCO), in St. Louis, contracted for 100 barges to be built in 1996 and an additional 100 for delivery in 1997. MEMCO has also ordered six new towboats.

A similar situation exists in the tank barge sector. Strong production at the nation's petrochemical plants is helping fuel the demand for tank barges. Present demand exceeds the available number of barges, and future increases in the volume of chemical shipments will heighten pressure on equipment availability. OPA-90 requirements (all tank barges must be double-skinned by 2015) plus the need to retrofit existing barges with vapor-recovery systems have increased the tank barge business at second-tier yards. As a result, construction costs and lead times are expected to increase. Nevertheless, there is not expected to be any large scale new construction; the absence of tax incentives should prevent any overbuilding, and most tank barges are being built for a specific service and mostly as replacement units.

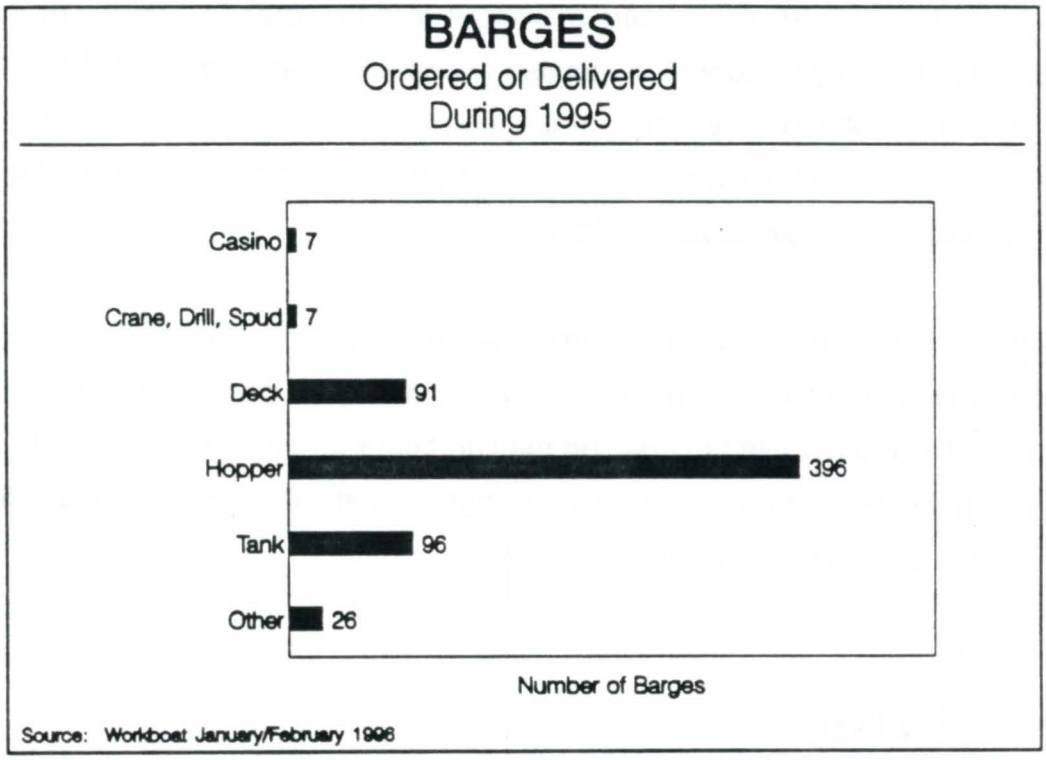
The tank barge fleet, which peaked at 4,200 in 1981, now numbers 2,870. 500 of the barges are single-hulled and must be replaced by 2015 as a result of OPA-90. There were 96 tank barges ordered or delivered during 1995. Two contracts are illustrated below:

Jeffboat, in Jeffersonville, IN, will build 68 double-skin tank barges for Ashland Oil. The first barge was completed in December 1995, to be followed by the others at the rate of one every other week. The barges will replace those being retired from Ashland's present fleet.

Tidewater Barge Lines, Vancouver, WA, initiated the first phase of a $30 million, five-year program to build new equipment (double-skin tank barges, grain barges, and tugs) and upgrade existing equipment. Tidewater will add two more large double-hull liquid barges to be built by Zidell Marine Corp., and three more jumbo 3,500 ton grain vessels to be built by Sundial Marine Corp. to its fleet.

Chart 7 shows the types and quantities of barges ordered and delivered from U.S. shipyards during 1996.

Chart 7



Riverboat Casinos

The riverboat gaming industry experienced some serious challenges during 1995. Contrary to the optimistic projections of some industry sources that predicted a market expansion of between 75 and 100 new boats on the Mississippi River

alone, the realities of too many casino boats and too few customers have had a sobering effect on this sector of the marine industry. The experience of seeing new, double-decker casino boats sitting idle, with the resultant financial and employment implications, has caused potential owners to proceed more cautiously in developing new projects and state authorities to be even more vigilant in approving new applications to operate casino boats. No new states have approved legalized riverboat gambling since 1994.

Casino gambling boats have been growing in size and grandeur, some of them being over 135 meters long and capable of accommodating at least 2,500 gaming positions and 3,400 passengers. In addition to other new boats, the industry delivered one of its largest vessels ever last year: the 122 meter *Grand Victoria*, built by Watch City Shipyard, in Elgin, IL.

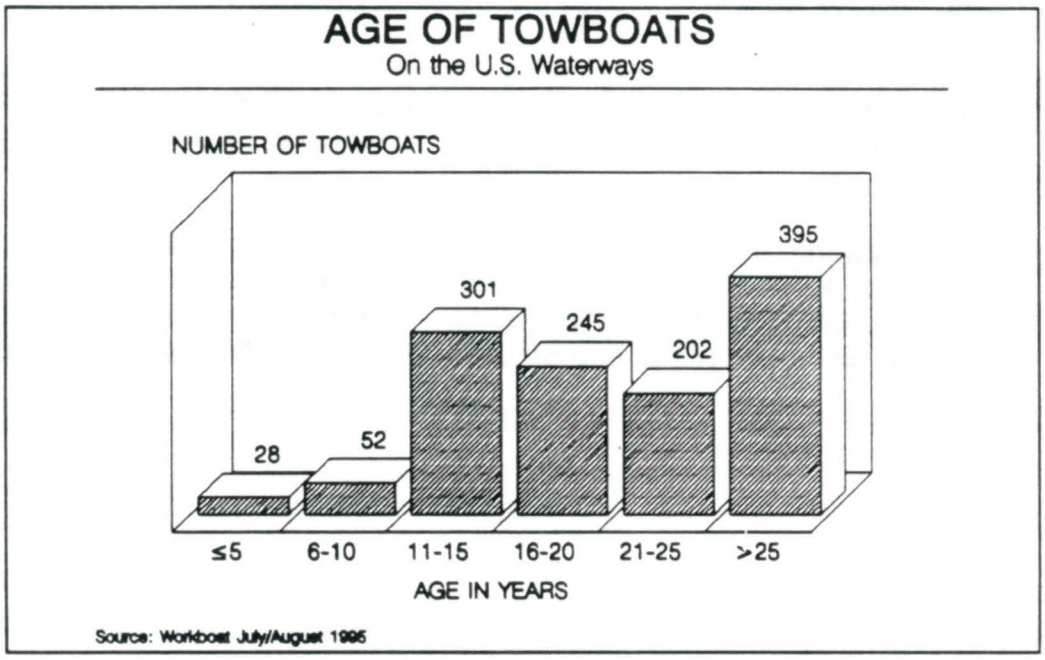
The number of U.S. second-tier ship yards involved in the construction of casino boats increased in recent years. The slowdown in new gaming boat orders has forced the yards involved in building gaming boats to look elsewhere to supplement the lost business. There is, however, optimism that future gaming boat projects could develop on the east coast.

Tow and Tug Boats

The towboat market is another area of potential newbuilds for the shipbuilding industry. The nation's fleet of 1,223 towboats (as of August 1994) is aging, with almost half of them having been in service longer than 20 years. Chart 8 shows the ages of towboats currently operating on U.S. waterways. There was a building boom for towboats in the 1970's and early 1980's. When barge traffic nosedived in the early 1980's the towboat builders were left with an excess supply of

towboats. The second-tier shipyards began looking for other areas to absorb the industry's excess capacity. One specific area the shipyards looked to was overseas. These shipyards believe that they must expand internationally in order to survive. The second-tier shipyards are continuing to look for ways that will allow them to participate in international markets for the construction of small ships.

Chart 8



Since the late 1980's, the barge industry has been making a comeback and new uses for towboats have been developed, as well as the sale of towboats to foreign buyers. Estimates are that the towboat market will expand within the next few years.

The tugboat market is one that has experienced steady growth in the past two years. This growth is expected to continue largely due to the benefits derived from healthy grain sales and the passage of the North American Free Trade Agreement

(NAFTA). Vessels now calling at ports are requiring tugboats to provide harbor assistance, ocean towing, anchor handling and firefighting.

Some examples of recent tug boat deliveries are:

> Moss Point Marine, Inc. of the Trinity Marine Group delivered the 39 meter oceangoing tug, *J. George Betz*, to Bouchard Transportation, Inc., Hicksville, NY.
>
> Atlantic Marine Inc., Jacksonville, FL, delivered a Z-drive tractor tug, *Broward*, to Hvide Marine Inc. The *Broward* is 30.5 meters in length and is designed to do ship-assist and tanker-escort work along the East Coast.
>
> Halter Marine, Inc., Lockport, LA, of the Trinity Marine Group delivered 2 - 6,700 HP Z-drive tugs, the *Kinsman Hawk* and *Kinsman Condor* to Bay Transportation Corp., Tampa, FL. Halter Marine is building a third tug for delivery in the spring of 1996. Each tug is 34 meters in length.

Export Orders

Second tier yards are fiercely competitive and innovative. Some of the second-tier shipyards are very competitive in the international marketplace and have successfully built vessels for export. Some examples of recent awards and buildings for the export market include:

> AMFELS, Brownsville, TX, built a 105 meter, 8 generator, 76 mega watt floating power facility for Watsila Diesel of Annapolis, MD, for employment in Jamaica, the West Indies.
>
> Bender Shipbuilding and Repair Co., Inc. of Mobile, AL completed two 22 meter shrimp boats for Kokai Corporation of Surinam.

Equitable Shipyards, Inc., part of Trinity Marine Group, Gulfport, MS, completed the *African Star 2*, a 41 meter, all aluminum, five-engine cargo/utility boat for O.K. Shipping, Ltd., Allschwill, Switzerland. The high speed vessel will transport containers and other cargo to the coasts of the West African nations of Angola, Congo, Equatorial Guinea, Gabon, Nigeria and Zaire. It will also service offshore facilities of those countries.

Halter Marine-Lockport, Lockport, LA, part of the Trinity Marine Group, delivered a 43 meter tow boat, *Capt. Otto Candies,* and 12 covered hopper barges to Otto Candies, Inc. who in turn has leased them to a company in Paraguay, for use on the waterways throughout South America.

Halter Marine, Inc., and Equitable Shipyards, Inc., two shipyards of the Trinity Marine Group, teamed in the construction of a 31 meter lightweight steel and aluminum security boat, *Frah Al-Fraih*, for the Arabian Gulf Mechanical Services & Contracting Co., Ltd. of Kuwait.

The second tier shipyards also have been busy building larger and faster offshore supply vessels and crew boats, as well as dinner-cruise/sightseeing boats. A few examples of contracts for this type of work include:

Switftships, Inc., Morgan City, LA, constructed a 43.3 meter jet-powered crewboat, *Mr. Mel*, for Diamond Services Corp. The crewboat will be used to deliver workers and supplies to oil rigs in the Gulf of Mexico. Diamond has since ordered two additional crewboats, of the same design, from Swiftships.

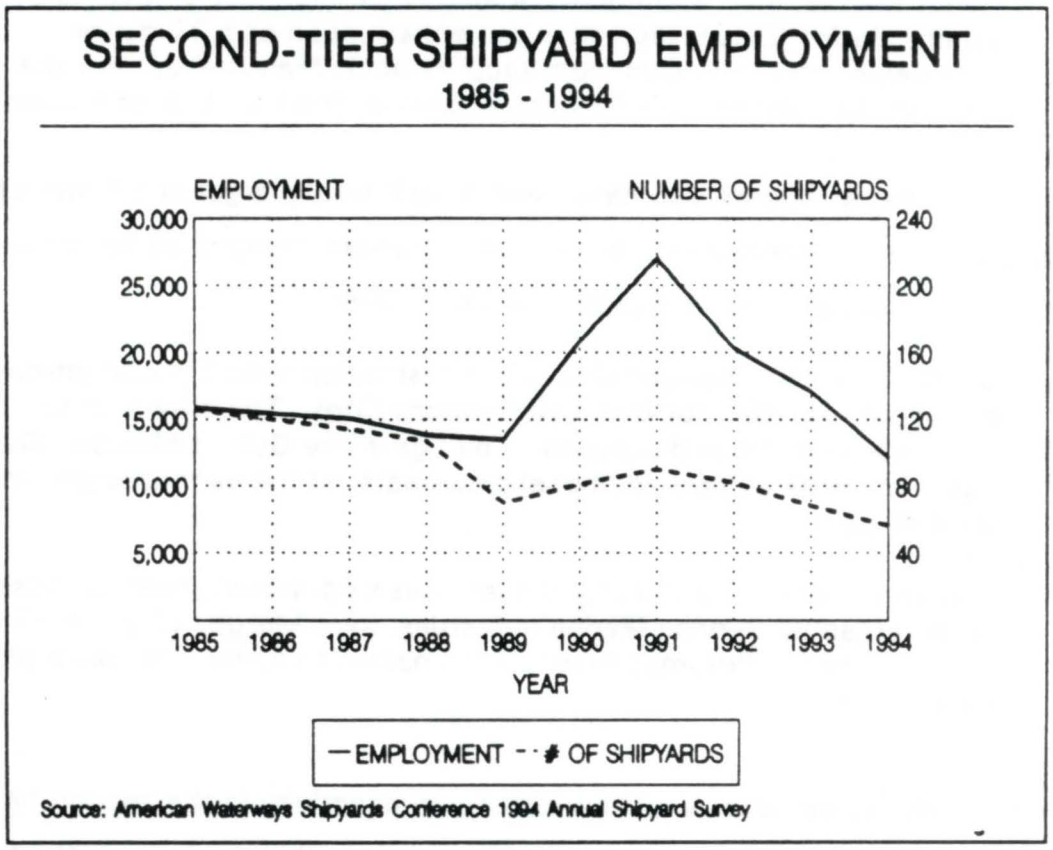
A 600-passenger 73.2 meter dinner-cruise/sightseeing boat, *Odyssey III,* was constructed by Service Marine Industries, Inc., Morgan City, LA. The vessel operates on the Potomac River, in the nation's capital, and has a glass superstructure.

During 1995, however, overall new construction activity in the second-tier shipyards decreased by approximately 25 percent with only the construction of ferries and passenger vessels increasing in the powered vessel category.

Employment

Employment in the second-tier shipyards comprised approximately 11 percent of the 1994 total U.S. shipyard employment of 107,200, as reported by the Bureau of Labor Statistics (SIC 3731). The 1994, second-tier shipyard employment reached the lowest point, of 12,122, in the past ten years. The ten year employment history for second-tier shipyards is depicted in Chart 9.

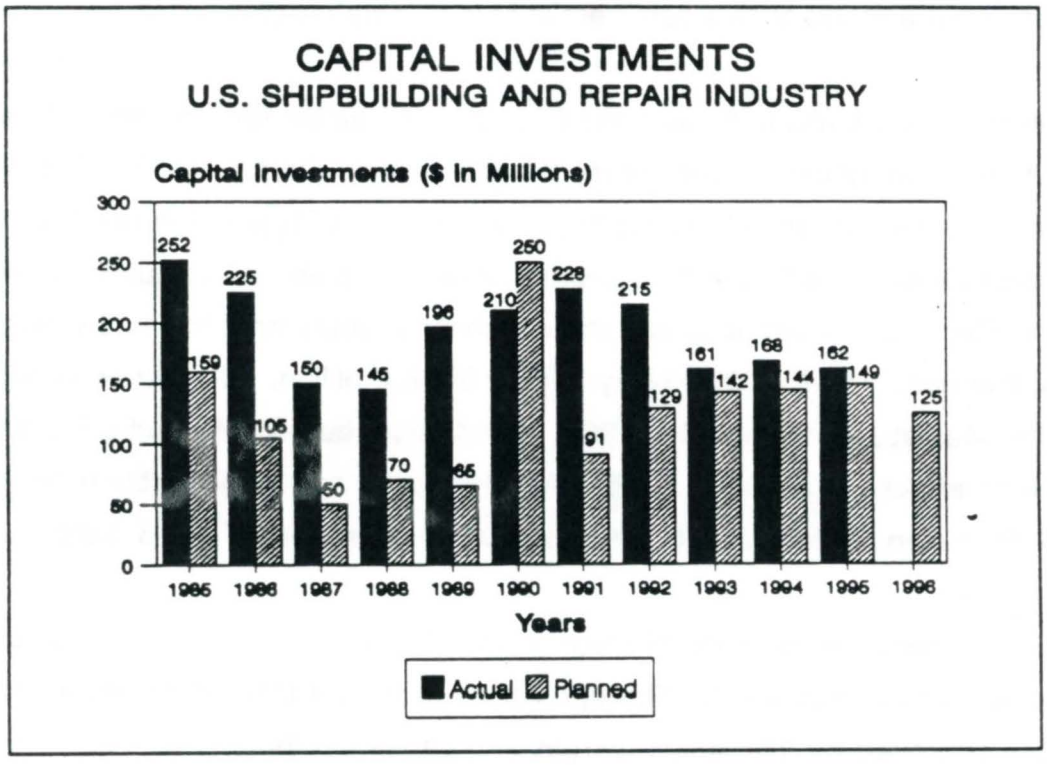
Chart 9



Capital Investment

During FY 1995, the U.S. shipbuilding and repair industry invested more than $162 million in the upgrading and expansion of facilities. Much of this investment went to improve the efficiency and competitiveness of the shipyards. Capital investments included infrastructure improvements, new shipyard layouts, new under roof fabrication buildings, new pipe shops, new panel lines, and the purchase of new cranes and transporters. Emphasis has been put on introducing modular techniques--the fabrication of large sub-assemblies and pre-outfitting of ship components. In 1996, the industry is forecast to spend $125 million, according to data received by MARAD. The industry's estimated capital investments since 1970 have totaled approximately $5.6 billion, and actual expenditures since 1985 have consistently exceeded those planned, except in 1990 (Chart 10).

Chart 10



Outlook for 1996

U.S. shipyards continue to expand their penetration of the domestic and international commercial shipbuilding markets. New orders for the construction of four product tankers and two chemical carriers for foreign owners, five product tankers and four vessel reconstructions for domestic owners will provide work for three shipyards through 1998. The order for three domestic ferries will provide work for one additional shipyard through the first quarter of 1999. The healthy backlog of Title XI applications portends the possibility of the continued expansion of the U.S. shipbuilding orderbook in the near future.

Navy shipbuilding, conversion and repair work continues to dominate the U.S. shipbuilding and repair industry, although at a significantly lower level of activity than was experienced during the past decade. Navy work, due to its complexity, will continue to dominate the industry in the future absent any significant and expansive commercial shipbuilding program.

The Navy shipbuilding budget has been on the decline for a number of years and will continue its overall decline for the foreseeable future; the FY 1996 Navy budget, however, increased slightly. This slight increase is the result of authorization for a Seawolf submarine, a new amphibious assault ship, an amphibious transport dock and the advanced procurement for a new class for submarines. The FY 1996 Navy budget is $6.6 billion, 18 percent higher than what was appropriated in FY 1995. In addition, both public and private shipyards will be affected by the FY 1996 Navy ship repair and modernization budget of $2.89 billion, which is a 10 percent decrease from the FY 1995 budget.

The expansion of the Title XI program in FY 1994, has resulted in U.S. shipyards receiving additional work. Through April 1, 1996, a total of 31 applications had been approved for 155 ships, barges and power plants.

Major Shipyards

The 1980's saw the commencement of the Navy's long-term fleet expansion program. The goal of this pronounced program was a modern 600-ship fleet, but the program died as a consequence of the cessation of the Cold War. Reductions in the Navy ship procurement program along with the scheduled and early decommissioning of Navy ships, combatants and auxiliary vessels, have led to a smaller active U.S. Navy fleet. The Navy's active fleet declined by 168 ships or 31 percent between the end of FY 1985 and the end of FY 1995, falling from 541 ships to 373 ships.

The U.S. Navy's shipbuilding plan for FY 1996-2001 (Table 5) includes the construction of 37 new ships costing about $41.7 billion. The overall plan includes 29 naval ships, 8 military sealift new construction vessels, the refueling of a nuclear aircraft carrier and the conversion of 9 ships. At an average of 6 new ships per year, the Navy's six-year shipbuilding program represents a 68 percent reduction in the quantity of ships to be procured, compared with the average of 19 ships annually for Navy programs during the 1980's. Two military sealift new construction vessels have been contracted for in each fiscal year since 1993 for a total of eight currently under construction. The military sealift construction program will conclude after 14 new construction vessels have been procured.

The complex characteristics of military ships require many subcontractors to assist in the construction and installation of the multitude of shipboard systems (weapons, radar, etc.). These complex systems increase the total cost of military ships. The value of the shipyard contract is only about one-third of the $41.7 billion budget; the remainder goes to such items as Government-furnished equipment placed aboard the vessels, and to Government program costs.

Table 5

NAVY SHIPBUILDING PLAN
Fiscal Years 1996 - 2001

Ship Class	1996	1997	1998	1999	2000	2001	TOTAL
New Construction							
NEW ATTACK SUB	-	-	1	-	1	-	2
SSN	1 *	-	-	-	-	-	1
DDG-51	2	3	2	3	3	3	16
LHD	1	-	-	-	-	-	1
LPD	1	-	1	-	2	2	6
T-AGOS	-	-	-	1	-	-	1
T-AGS/AGOR	-	-	-	1	-	-	1
T-AKR (Military Sealift)	2	2	2	2	-	-	8
ADCX	-	-	-	-	1	-	1
Sub-Total	7	5	6	7	7	5	37
Conversion/Major Overhaul							
CVN (Refueling)	-	-	1	-	-	-	1
AOE SLEP	-	-	-	1	-	-	1
T-AE (Conversion)	2	2	2	-	-	-	6
T-AFS (Conversion)	2	-	-	-	-	-	2
Sub-Total	4	2	3	1	-	-	10
Total	11	7	9	8	7	5	47

* This ship was only partially funded, it may slip to a FY-97 ship.
Ships listed for FY 97-01 represent the OSD/OMB Budget Submission.

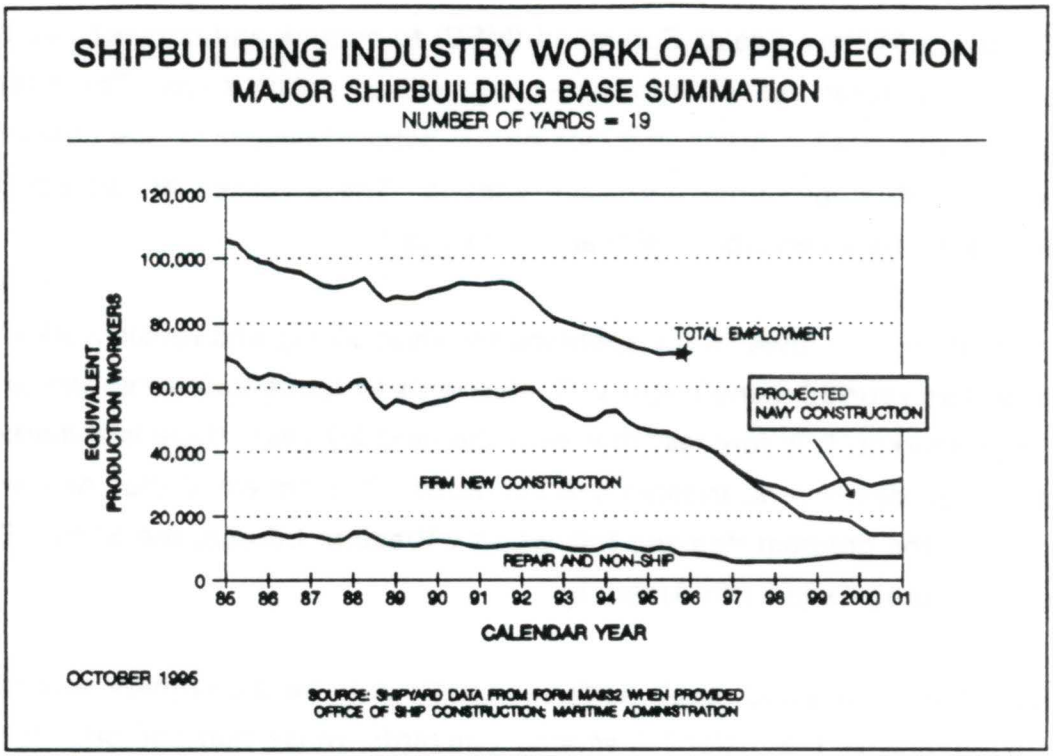
National Steel and Shipbuilding Co., San Diego, CA, and Newport News Shipbuilding Co., Newport News, VA, were awarded contracts in July 1993, by the Navy's Military Sealift Command (MSC) to acquire and convert five foreign-flag commercial cargo vessels into high-speed military sealift ships. The combined contracts total $1.1 billion and include the detailed design for the conversion of these RO/RO ships to military sealift vessels. These vessels are scheduled to be redelivered between April 1996 and April 1997.

The prospect for lower Navy spending for shipbuilding and repair work in the years ahead has spurred many major U.S. shipyards to focus their attention to the foreign market. It is forecast that over the next 20 years there is a market for about 180 destroyers, frigates and corvettes. It is projected that Asia will generate the greatest demand followed by Western Europe, the Middle East, Eastern Europe and Latin America.

Navy shipbuilding and repair work will continue to be the primary source of employment for the major full service shipyards, those that comprise the MSB, for the rest of the decade. Since mid-1992, the major shipyards have experienced a sharp decrease in employment, a consequence of the absence of significant orders for commercial shipbuilding, deep reductions in new Navy shipbuilding orders and the decline in complex Navy repair activity. The continued reduction in the Navy's shipbuilding plan, the decrease in complex Navy ship repair activity and the slow revitalization of the commercial shipbuilding activity, forebodes a continued decline in shipyard employment through the end of 1998. The projected employment is then projected to increase slightly and then level out in the beginning of the next century.

The rising expectation of an increase in new orders for oceangoing commercial ships, 1,000 gt and over, in U.S. shipyards is not reflected in the workload projection (Chart 11). This projection reflects the manpower requirement for the confirmed shipbuilding orders as of October 1995, and the proposed Navy FY 1996 - 2001 shipbuilding plan.

Chart 11



Shipbuilding analysts continue to forecast a significant rise in new orders for commercial ships into the next century. The anticipated increase in new orders flows from the forecast for high growth in the seaborne trade for oil and dry bulk cargoes, as well as the continued demand for replacement ships due to the aging of the world fleet. Drewry Shipping Consultants, Ltd., for example, projects that between 1996 - 2001 the total new worldwide shipbuilding demand will be approximately 202.5 million dwt. Drewry forecasts that the greatest demand will arise between 1999 - 2000, when more than 76.6 million dwt will be required. The bulk of this growth is expected to occur with tankers and dry bulk carriers. (Table 6)

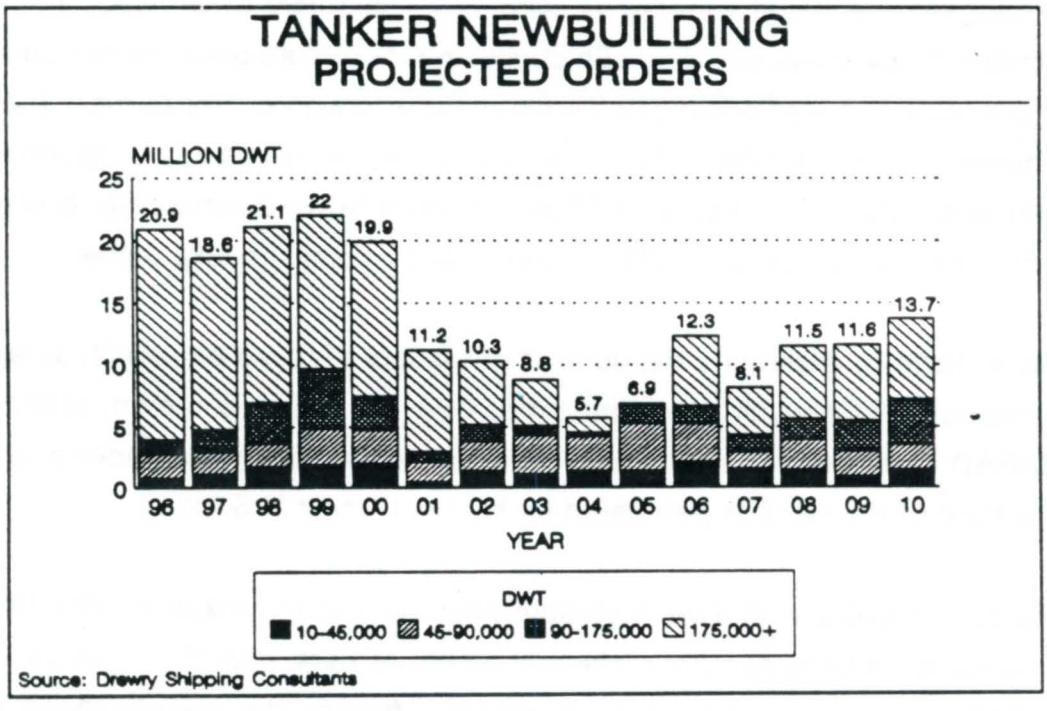
Table 6

WORLD NEWBUILDING DEMAND
1996 - 2001
(million dwt)

Type	1996	1997	1998	1999	2000	2001	Total
Tanker	20.9	18.6	21.1	22.0	19.9	11.2	113.7
Bulk Carrier	7.2	5.2	5.2	9.3	12.4	11.2	50.5
Chemical	0.2	0.3	0.3	0.3	0.4	0.1	1.6
Container	2.6	2.7	1.9	1.9	1.9	2.0	13.0
Other	4.1	3.9	4.0	4.2	4.3	3.2	23.7
Total	35.0	30.7	32.5	37.7	38.9	27.7	202.5

Orders for new tankers are expected to surge during the 1996 - 2000 period (Chart 12). The U.S. shipbuilding industry has already begun to benefit from the increasing demand for double-hulled tankers with a total of 11 (9 product and 2 chemical tankers) new constructions and 4 major reconstructions on the orderbook.

Chart 12



Oil Pollution Act of 1990 (OPA-90)

The August 18, 1990 signing by President Bush of the Oil Pollution Act of 1990 (OPA-90) was seen not only as a great step in reducing the environmental danger from shipping petroleum and petroleum products, but an opportunity for the U.S. shipbuilding industry to renter the commercial shipbuilding market with the construction of double-hulled tankers. OPA-90 established the requirement that all tankers entering U.S. ports by the year 2015 have double-hulls. In order to meet the double-hull objective, the new law put into place a phase-out schedule, that began January 1, 1995, for all existing single-hull tankers, based on the vessel's age and gross tonnage. OPA-90 affects the existing U.S. tanker fleet, as well as foreign tankers entering U.S ports. It was anticipated that the U.S. shipbuilding industry could demonstrate its expertise and be able to capture a comfortable percentage of the worldwide demand for replacement tonnage in the world tanker fleet.

U.S. shipyards have constructed a large number of double-hulled barges for ocean service and the inland waterways, since the enactment of OPA-90. In October 1994, Newport News Shipbuilding received an order for the construction of two double-hulled oceangoing tankers for a foreign owner to meet the requirements of OPA-90. The owner subsequently exercised his option for two additional tankers. In February 1996, Newport News Shipbuilding received another order to build five double-hulled tankers from a domestic ship owner.

It is difficult to determine the number of tankers that will be rebuilt, scrapped, or constructed as a result of enactment of OPA-90. What is known, according to MARAD data, is that about 1,500 tankers involved in foreign trade--or about one-third of the world's petroleum tanker fleet--enter U.S. ports.

The early 1970's witnessed a shipbuilding boom as the major shipbuilding nations constructed a large number tankers and bulk carriers, especially VLCCs. More than half of the tankers in the world's operational fleet by deadweight tonnage were

built before 1980. The world tanker fleet continues to age. By the year 2000, about 40 percent of the current world tanker fleet will be more than 25 years old, and over 20 percent will be at least 30 years old. A heavy concentration of tankers were built between 1972 and 1977. Many of these ships have to be replaced with new ships in the 1990's and early in the next century to be able to enter U.S. ports.

Shipbuilding analysts continue to predict a surge in new tanker construction in the second half of the 1990's and into the next century to replace much of this tonnage. In addition, it is believed that the requirements of OPA-90 for double-hulled tankers which have started to be seen in both U.S. and foreign shipyards will be the catalyst for additional orders for double-hulled tankers. Major U.S. shipyards are making significant capital investments to improve their facilities and increase their productivity in order to participate in the expected opportunities to replace the aging fleet and to build or retrofit tanker tonnage as a result of OPA-90.

Organization for Economic Cooperation and Development (OECD)

In December 1994, the world's key shipbuilding nations (the United States, Japan, Korea, the European Union and Norway) signed an agreement to eliminate shipbuilding subsidies and other trade distorting practices. Negotiated under the auspices of the Organization for Economic Cooperation and Development (OECD), the agreement is now expected to enter into force by July 15, 1996. An earlier target for the agreement to go into effect on January 1, 1996 was not met because of ratification delays in the United States and Japan. All other parties have ratified the agreement.

The accord eliminates virtually all direct and indirect subsidies, establishes common rules for government assisted financing, creates an injurious pricing mechanism to prevent ship dumping, and provides a binding dispute settlement mechanism.

When the agreement takes effect, the Title XI program will be modified to meet its terms, which provides for a maximum repayment period of 12 years and a maximum financing coverage of 80 percent. The current Title XI program allows for a maximum 25 year repayment period and a maximum financing coverage of 87.5 percent.

The OECD agreement fulfills a long-sought goal of the United States which President Clinton pledged to achieve--to ensure fair international competition for U.S. shipyards. The agreement is expected to be of great help in restoring the competitiveness of American shipbuilding in the world market, since it requires other countries to give up the much more substantial support they have provided to their yards, while relatively modest changes will be required in our programs.

Title XI

As a result of the extension of availability of Title XI financing guarantees to foreign shipowners and to shipyard modernization projects, MARAD has experienced a surge in Title XI applications. Title XI applications reflect potential future work for numerous U.S. shipyards ranging from assorted barge projects to various vessels including multi-purpose cargo ships and double-hulled product tankers. Also included were numerous applications for shipyard modernization projects.

In FY 1995, MARAD approved a total of 14 Title XI applications, filed by 11 companies and one shipyard, including one for shipyard modernization, representing projects of approximately $502 million and Title XI financing of approximately $437 million. During the first six months of FY 1996 MARAD approved an additional 14 Title XI applications, filed by 12 companies and two shipyards, including two for shipyard modernization, representing projects of

approximately $716 million and Title XI financing of approximately $477 million[1]. The following table (Table 7) shows the Title XI applications approved during FY 1995 and the first six months of FY 1996.

Table 7

FY 1995 - 1996
APPROVED TITLE XI APPLICATIONS
as of April 1, 1996

Company	Reason or Number Type of Ships	Loan Guarantee Amount ($M)
SHIP PROJECTS		
Eletson (Fleves Shipping) Corp.	Four Product Tankers	$133.5
Edison Chouest Offshore	One Undersea Warfare Surface Support Ship	$11.7
Bay Transportation Inc. d/b/a/ St. Phillips Towing	Two Stern Drive Tractor Tugs	$10.2
American Heavy Lift Shipping Company	Four Product Tankers	$139.4
Surf Express, Inc.	One Wave Piercer Catamaran Ferry	$1.5
Alpha Marine Services, Inc.	Six Tractor-Type Tugs	$11.8
Canal Barge Company, Inc.	Four Steel Liquid Tank Barges, One 79 meter Deck Barge and One 37 meter Deck Barge	$4.4
Manson Construction & Engineering	Three Dump Barges	$8.5
Maryland Marine, Inc.	Four Double-Skin, Unmanned Tank Barges	$4.5
Martin Gas Marine, Inc.	Two Tug/Barge Units	$14.9
Great AQ Steamboat Company	One Paddlewheel Steamboat	$60.7
Alpha Marine Services, Inc.	One Deepwater Supply Vessel	$5.3
Edison Chouest Offshore, Inc.	One Self-Sustaining Breakbulk Container Vessel	$12.9
SEAREX, Inc.	Four Self-Propelled, Self-Elevating	$44.0
Great Independence Ship Co.	One Twin Steam Turbines, Deep Sea Passenger Vessel	$33.3
Parker Towing Company, Inc.	20 Hopper Barges, One Rake Deck Barge and One Rake Deck Crane Barge	$5.6
Tugz International L.L.C.	Two Tractor Tugs	$6.5
Dannebrog Rederi AS	Two Double Hulled 16,000 dwt Chemical Carriers	$46.6
Smith/Enron Cogeneration Limited Partnership	Two ABS Classed, Power Barges	$50.0
Canal Barge Company, Inc.	20 Steel Liquid Tank Barges and One 79 meter Deck Barge	$17.8
Bay Transportation Corporation	Two 6,700 HP Stern Drive Tractor Tugs	$10.9
Hvide Van Ommeren Tankers L.L.C.	Five Double Eagle Product Tankers	$215.9
Port Imperial Ferry Corp.	Five 29 meter Aluminum Monohull Vessels	$5.1
Alpha Marine Services, Inc.	One Deep Submergence Rescue Vehicle Sup. Ship	$13.0
Global Industries, Ltd.	One Launch Barge, Two Lift Boats and One Deck Barge	$19.7
SHIPYARD PROJECTS		
Avondale Industries, Inc.	Yard Modernization	$17.8
North American Shipbuilding, Inc.	Yard Modernization	$6.4
T.T. Barge Services, Inc.	Yard Modernization	$2.6

1. The Title XI financing amount may be adjusted as applicable.

As of April 1, 1996, MARAD had Title XI applications pending involving 16 shipyards, 20 companies and 192 vessels. Table 8 lists the pending Title XI applications, including the four applications for shipyard modernization.

Table 8

PENDING TITLE XI APPLICATIONS
as of April 1, 1996

SHIP PROJECTS

SHIPYARD	SHIP TYPE	OWNER	QTY
Bender Shipyard	Cargo Ships (Refrigerated)	Dalmore Produkt Holding	7
Marine Energy	Electrical Power Generating Vessels	Maritime Power & Light	6
McDermott Shipyards	Power Barges	Western Power Co.	2
Alabama Shipyards	Chemical Carrier	Dannebrog Rederi AS, Denmark	1
Bender Shipyards	Anchor Handling/Tug Supply Vessel	Astro Offshore Corporation	1
Dakota Creek Industries	RO/RO Vessels	Compagnie Labiad De Navigation S.A.M.	2
Breaux's Bay Craft	Twinhull Crewboat	Trico Marine Services	1
Poseidon Shipbuilding	Catamaran Passenger Vessels	U.S. Water Jet Express	4
Leevac Shipyards	Hotel River Barges	Riverbarge Excursion Lines	2
Trinity Marine	Passenger/Vehicle Ferries	Cenargo Fast Ferry	2
Leevac Shipyards	Articulated Tug/Barge Units	River/Ocean Systems Corp	10
TBD	Lift Boats	Power Marine Investments	3
Barnett Shipyards	Deck Barges	Barnett Marine	44
Trinity - Madisonville	Covered Hopper Barges	R.S.I. Barge Company	90
Bollinger Shipyards	Passenger Commuter Vessels	Mersea Ships	2
Avondale Industries	Double Hulled Tankers	Maritrans Ocean Transport	6
Bender Shipbuilding	SS FREDERICKSBURG	Fredricksburg Shipping Co.	1
Dakota Creek	Rescue Towing Vessel	SRV Vigilant L.L.C.	1
Massachusetts Heavy Ind.	Product Tankers	Intermare Navigation S.A.	6
LeTourneau, Inc.	Jack-up Rig	Rowan Companies, Inc.	1
TOTAL			192

SHIPYARD PROJECTS

SHIPYARD	PROJECT TYPE
Marine Energy Systems Corp	Yard Modernization
Metro Machine of Penn, Inc.	Yard Modernization
Barnett Shipyard	Yard Modernization
Massachusetts Heavy Ind.	Yard Modernization

Second-Tier Shipyards

The second-tier shipyards have a healthy and diverse orderbook for a variety of smaller vessels, and it is anticipated that they will experience a healthy influx of new orders in the near future. These shipyards should be busy building double-hulled barges, barge mounted projects, tug/barge units, larger and faster offshore supply vessels, ferries, passenger/cruise ships and casino boats.

Although there is continued interest in the use of gaming boats as floating casinos, the demand for various gaming vessel types ranging from dockside gaming barges to paddlewheelers and high tech catamarans seems to have slowed down and leveled off. If legalization of gambling continues to spread across the United States, the demand for these vessels should increase. The consensus is that while there is still a fair amount of growth potential, it's going to be cautious growth. New boats will not be built on speculation, as in the past.

New orders for ferries should also continue to provide work for the second-tier shipyards. The enactment of ISTEA continues to provide a significant boost to new ferry projects. In addition, MARAD has a Title XI application pending for the construction of two passenger/vehicle ferries for a foreign owner, valued at more than $171 million. Demand will come from the continued promotion by states of ferries for use in their tourist industries, as well as in transportation/commuting, as an alternative to building additional expensive infrastructure projects such as a highways and bridges. The recent award of a $181 million contract to Todd Seattle for three 2,500 passenger ferries and the solicitation for proposals for two additional 350 passenger ferries by the State of Washington, is an added sign that the ferry industry is strong. On the private sector side, there is a demand for the deployment of high speed, high tech ferries in the passenger excursion industry.

MARAD data continues to indicate that the second-tier shipyards are planning to invest money in upgrading and improving their capital equipment. This should

enable them to expand and increase productivity to meet the expected increase in demand for construction and repair services.

Conclusion

The extension of Title XI guarantees for eligible vessels constructed, reconstructed or reconditioned in U.S. shipyards has been the impetus to a rejuvenation of commercial shipbuilding in U.S. shipyards. The current relatively healthy orderbook in several shipyards portends continued long-term employment at these facilities. The vigorous Title XI application backlog indicates significant additional commercial orders for a variety of tonnage. The U.S. shipbuilding industry has shown that it can compete in the international market and attract orders from foreign shipowners. This experience should help the U.S. shipbuilding industry capture a an increasing share of the newbuilding tonnage demand generated by OPA-90, the projected growth in world trade and the projected demand for replacement tonnage.

The U.S. shipbuilding industry continues to make significant investments to improve its competitive posture through productivity improvements. With the assistance of the MARITECH and Title XI programs, U.S. shipyards are developing advanced ship designs, marketing plans and shipyard modernization efforts which will enable them to better compete in the world shipbuilding market. The bottom line is that the Federal Government, suppliers, shipyard managements and labor are working together to achieve increased market penetration through cost effective production of quality ships and products.

The anticipated increase in the demand for new ships for the world fleet affords U.S. shipyards the opportunity to demonstrate their quality and competitive strength, as well as to secure a foothold in the foreign and domestic commercial shipbuilding markets.

Office of Ship Construction, Maritime Administration, U.S. Department of Transportation, (202) 366-5841, April 1996.

References

Marine Log, Simmons-Boardman Publishing Corporation, 345 Hudson St., New York, NY 10014. Telephone: (212) 620-7263.

Maritime Reporter and Engineering News, Maritime Activity Reports, Inc., 118 East 25th St., New York, NY 10010. Telephone: (212) 477-6700.

Workboat Magazine, Journal Publications, 120 Tillson Ave., Suite 201, P.O. Box 908, Rockland, ME 04841-0908. Telephone: (207) 594-6222

Maintenance, Repair and Modernization of U.S. Navy Ships; Ferries and Small Passenger Vessels in the U.S.; Assessment of the U.S. Navy Sealift Program; Five Year Outlook for the U.S. Marine Industry; and Impact of Fleet Downsizing on the Economics of U.S. Navy Ship Maintenance, IMA Associates, Inc., 600 New Hampshire Ave. NW, Suite 140, Washington, DC 20037. Telephone: (202) 333-8501.

Merchant Shipbuilding Return, Lloyd's Register of Shipping, 71 Fenchurch St., London, England EC3M4BS. Telephone: 071-709 9166.

1994 Annual Shipyard Survey, American Waterways Shipyard Conference of the American Waterways Operators, 1600 Wilson Blvd., Suite 1000, Arlington, VA 22209. Telephone: (703) 841-9300.

Ship Construction, Ship Repair, Manpower and Labor Issues, Contracts/Financial (annual reports); and Shipyard Chronicle (newsletter), Shipbuilders Council of America, 901 North Washington St., Alexandria, VA 22314. Telephone: (703) 548-7447.

The World Shipbuilding Market - Analysis and Forecast of World Shipbuilding Demand; March 1995. Drewry Shipping Consultants, Ltd., 11 Heron Quay, London, England E14 45F. Telephone: 071-538 0191.

1995 Report on Survey of U.S. Shipbuilding and Repair Facilities, Maritime Administration, U.S. Department of Transportation, Office of Ship Construction, 400 Seventh Street, SW, Washington, DC 20590. Telephone: (202) 366-5841.