

**REPORT ON SURVEY OF U.S.  
SHIPBUILDING AND REPAIR FACILITIES**

**1994**

**Prepared By:**

**Office of Ship Construction**

**Division of Cost Analysis and Production**

**December 1994**

INTENTIONALLY LEFT BLANK

## CONTENTS

	<u>PAGE</u>
Introduction .....	1
General .....	3
Major Shipbuilding Base .....	4
Descriptions and General Arrangement Drawings for 20 Major U.S. Shipbuilding and Repair Facilities .....	5
Alabama Shipyard, Inc. ....	6
Exhibit 1 - Yard Drawing .....	7
Avondale Industries, Inc - Avondale Shipyards Division .....	8
Exhibit 2 - Yard Drawing .....	9
Bath Iron Works Corporation .....	10
Exhibit 3 - Yard Drawing .....	11
BethShip Sparrows Point Yard .....	12
Exhibit 4 - Yard Drawing .....	13
Erie Marine Enterprises, Inc. ....	14
Exhibit 5 - Yard Drawing .....	15
Fraser Shipyards, Inc. ....	16
Exhibit 6 - Yard Drawing .....	17
Gunderson, Inc.. ....	18
Exhibit 7 - Yard Drawing .....	19
Halter Marine, Inc., Moss Point Division .....	20
Exhibit 8 - Yard Drawing .....	21
Ingalls Shipbuilding, Inc. ....	22
Exhibit 9 - Yard Drawing .....	23
Intermarine USA .....	24
Exhibit 10 - Yard Drawing .....	25

	<u>PAGE</u>
Marinette Marine Corporation . . . . .	26
Exhibit 11 - Yard Drawing . . . . .	27
McDermott Shipyard . . . . .	28
Exhibit 12 - Yard Drawing . . . . .	29
National Steel and Shipbuilding Company . . . . .	30
Exhibit 13 - Yard Drawing . . . . .	31
Newport News Shipbuilding . . . . .	32
Exhibit 14 - Yard Drawing . . . . .	33
Peterson Builders, Inc. . . . .	34
Exhibit 15 - Yard Drawing . . . . .	35
Portland Ship Yard . . . . .	36
Exhibit 16 - Yard Drawing . . . . .	37
Tacoma Boatbuilding Company . . . . .	38
Exhibit 17 - Yard Drawing . . . . .	39
Tampa Shipyards, Inc. . . . .	40
Exhibit 18 - Yard Drawing . . . . .	41
Todd Pacific Shipyards Corporation - Seattle Division . . . . .	42
Exhibit 19 - Yard Drawing . . . . .	43
Trinity Marine Group - Beaumont Division . . . . .	44
Exhibit 20 - Yard Drawing . . . . .	45
Ship Repair Industry . . . . .	46
Repair (with Drydocking) Facilities . . . . .	46
Major Topside Repair Facilities . . . . .	46
Shipbuilding Industry and Activities - 1994 . . . . .	47
Major Shipbuilding and Repair Facilities in the United States - Map (Exhibit 21) . . . . .	48

	<u>PAGE</u>
Major U.S. Shipbuilding Facilities - Number of Building Positions by Maximum Length Capability (Exhibit 22) . . . . .	49
Major U.S. Ship Repair Facilities - Number of Floating Drydocks by Maximum Length Capability (Exhibit 23) . . . . .	50
Shipbuilding Industry Workload Projection (Exhibit 24) . . . . .	51
Commercial Ship Construction (Exhibit 25) . . . . .	52
U.S. Shipbuilding Orderbook (Exhibit 26) . . . . .	53
New Shipbuilding Orders - 1994 (Exhibit 27) . . . . .	54
Commercial Ship Deliveries - 1994 (Exhibit 28) . . . . .	55
Navy Ship Deliveries - 1994 (Exhibit 29) . . . . .	56
Navy's T-Ship Program (Exhibit 30) . . . . .	57
Projected Navy Shipbuilding Plan (Exhibit 31) . . . . .	58
Capital Investment (Exhibit 32) . . . . .	59
Total Employment in Private Shipyards (Exhibit 33) . . . . .	60
Average Earnings in U.S. Private Shipyards (Exhibit 34) . . . . .	61
Table 1 - Ship Construction Capability by Ship Type . . . . .	63
Table 2 - Number of Shipbuilding Positions by Length . . . . .	81
Appendix A - Standard Form 17 - Facilities Available for the Construction or Repair of Ships . . . . .	83
Appendix B - Major U.S. Shipbuilding, Repair, and Topside Repair Facilities . . . . .	93

INTENTIONALLY LEFT BLANK

## Introduction

In compliance with the Merchant Marine Act of 1936, as amended <sup>1/</sup>, the Maritime Administration (MARAD) conducts an annual survey to obtain information from the shipbuilding and ship repair industry to be used primarily to determine if an adequate mobilization base exists for national defense and for use in a national emergency. This report on the 1994 survey of U.S. shipyard facilities was prepared by the Division of Cost Analysis and Production, Office of Ship Construction, and is for general use within the Maritime Administration and other Government agencies.

---

### <sup>1/</sup> Section 210

"It shall be the duty of the Secretary of Transportation to make a survey of the American merchant marine, as it now exists, to determine what additions and replacements are required to carry forward the national policy declared in Section 101 of the Act, and the Secretary of Transportation is directed to study, perfect, and adopt a long-range program for replacements and additions to the American merchant marine so that as soon as practicable the following objectives may be accomplished: ...Fourth, the creation and maintenance of efficient shipyards and repair capacity in the United States with adequate numbers of skilled personnel to provide an adequate mobilization base."

### Section 211

"The Secretary of Transportation is authorized and directed to investigate, determine, and keep current records of ... (g) The number, location, and efficiency of the shipyards existing on the date of enactment of this Act or thereafter built in the United States."

### Section 502(f)

"The Secretary of Transportation with the advice of and in coordination with the Secretary of the Navy, shall, at least once a year, as required for purposes of the Act, survey the existing privately-owned shipyards capable of merchant ship construction, or review available data on such shipyards if deemed adequate, to determine whether their capabilities for merchant ship construction, including facilities and skilled personnel, provide an adequate mobilization base at strategic points for purposes of national defense and national emergency."

The statistical data accumulated by the survey are a major input into the Shipyard Evaluation Analysis System Model (SEAS), a quantitative assessment of the Nation's ship construction and ship repair capability. This capability is periodically compared with Department of Defense scenarios involving various contingency attrition rates and emergency civilian shipping requirements to assess the adequacy of the shipbuilding mobilization base, including ship repair and reactivation of the Maritime Administration reserve fleet and the U.S. Navy reserve fleet.

The survey also provides a database that is used to evaluate the feasibility of proposed shipbuilding programs. Determinations are made as to which existing shipyards might construct proposed ships consistent with ship size and delivery date requirements. The need for construction of new facilities to meet the demands of proposed shipbuilding programs can be also identified. The data gathered by the annual survey also are used extensively in MARAD responses to queries received from a variety of interests, including members of Congress, the Secretary of Transportation, the Department of Defense, the Office of Management and Budget, and other Government agencies.

Each year in late spring, Standard Form 17, "Facilities Available for the Construction or Repair of Ships," is mailed to some 280 U.S. shipbuilding and ship repair facilities. The survey form was developed jointly by MARAD and the Navy. A completed Form 17 represents a detailed description of a shipbuilding or ship repair facility, which is not available from any other source on a continuing and structured basis. The information requested, and available for official use, can be reviewed on a blank Form 17 shown herein as Appendix A. A graving dock characteristics summary and floating drydock characteristics summary are appended to Standard Form 17 to better identify the characteristics of the facilities.

Upon receipt of a completed Form 17 from a shipyard, MARAD forwards a copy to the Naval Sea Systems Command, Industrial Planning Division, which maintains records of available facilities and capacities of various shipyards and repair plants. This would enable the Department of Transportation and the Department of Defense to use such facilities to the best advantage in the event of national emergency.

The annual shipyard survey of 1994 has been completed. The information collected has been organized and condensed in the following narratives, exhibits, and tabulations to focus attention on those elements that are most often requested from this office.



## GENERAL

A major shipbuilding and repair facility is defined in this report as one that is open and has the capability to construct, drydock, and/or topside repair vessels with a minimum length overall of 122 meters, provided that water depth in the channel to the facility is at least 3.7 meters. Appendix B is a statistical abstract of data gathered from 101 companies responding to MARAD's annual survey which meet these criteria. It lists the facilities sorted on a coastal basis and displays information with respect to the size and type of each building position, drydock, berth space, employment, and remarks regarding principal shipyard activities.

Table 1 has been prepared to answer the frequent question as to the number of shipbuilding positions available to build a complete specified ship. With the exception of the mobilization ship, the ship types listed in Table 1 are those historically delivered to commercial service. Length overall and beam are given for all ships and, in addition, deadweight tonnage is indicated for the bulk carriers. A single shipway or basin may have several building positions depending on the size of the ships being constructed. For example, the 365 meter by 59 meter basin at BethShip's Sparrows Point Yard can accommodate one 265,000-dwt tanker or four of the smaller general cargo ships. The total number of building positions varies from 81 for the small cargo ship to three for a huge 265,000-dwt tanker. An important consideration that is not addressed in Table 1 is the common shipbuilding practice of laying a keel on a building position already occupied by another ship. For example, in a 213-meter basin, a complete 186-meter containership and the stern section of a second ship could be constructed simultaneously. This production procedure maximizes the use of shipbuilding facilities, minimizes the construction period, and increases the number of ships that can be produced in a given period of time. Table 1 addresses only the number of complete ships that can be constructed simultaneously in each building position(s).

Table 2 is a somewhat different presentation of shipyard capability. In lieu of actual ships, maximum ship length is used to determine the number of shipways or basins available. In this tabulation, the emphasis is on the number of individual facilities available and not on the number of ships that can be constructed. Again, using the BethShip Sparrows Point Yard as an example, Table 2 lists the 365 meter by 59 meter basin as one facility regardless of what type of ship is constructed in it. Table 1 indicates that there are six building positions for a ship 145 meter LOA at the Sparrows Point Yard, whereas Table 2 indicates that the yard has three individual building positions capable of constructing a ship about that length. Exhibit 22 is a histogram displaying the reduction in the number of available building positions as the maximum ship length increases.

## MAJOR SHIPBUILDING BASE

The Major Shipbuilding Base (MSB), as identified by the Navy and MARAD, is comprised of 21 privately owned U.S. shipyards that are open, having at least one shipbuilding position capable of accommodating a vessel 122 meters in length or over. In addition, these shipyards must own or have in place a long-term lease (1 year or more) on the facility in which they intend to accomplish the shipbuilding work, there must be no dimensional obstructions in the waterway leading to open water (i.e., locks, bridges), and the water depth in the channel to the facility must be a minimum of 3.7 meters. Exhibit 21 of this report identifies and graphically locates these 21 yards.

As of October 1994, the MSB shipyards employed roughly 71 percent of the U.S. shipbuilding and repair industry's total workforce, as reported by the Bureau of Labor Statistics under SIC 3731. At the same time 91 percent of the production workers in these 21 shipyards were engaged in Navy or Coast Guard ship construction and repair work.

As of year's end, eight of the 21 shipyards were engaged in construction and/or conversion of major combatant and auxiliary ships for the Navy. Four of the yards were engaged primarily in ship construction work provided by the Navy's T-Ship program. Nine of the yards had only repair and overhaul work, smaller Navy vessel orders, and non-ship construction work.

Employment projections for production workers are shown by Exhibit 24 of this report. These data are generated by overlaying Navy projected five-year shipbuilding and conversion programs onto the estimated work force required to complete a current orderbook.

The following is a brief description of 20 of the major U.S. privately-owned shipbuilding facilities. Exhibits 1 through 20 are general arrangement drawings of each yard's facilities. Exhibit 21 illustrates the geographical location of these shipyards in addition to the General Dynamics Corp.'s Electric Boat Division which, although a major privately-owned shipyard, is engaged exclusively in construction of submarines for the U.S. Navy.

**DESCRIPTIONS**  
**AND**  
**GENERAL ARRANGEMENT DRAWINGS**  
**FOR**  
**20 MAJOR U.S. SHIPBUILDING FACILITIES**

1. Alabama Shipyard, Inc.

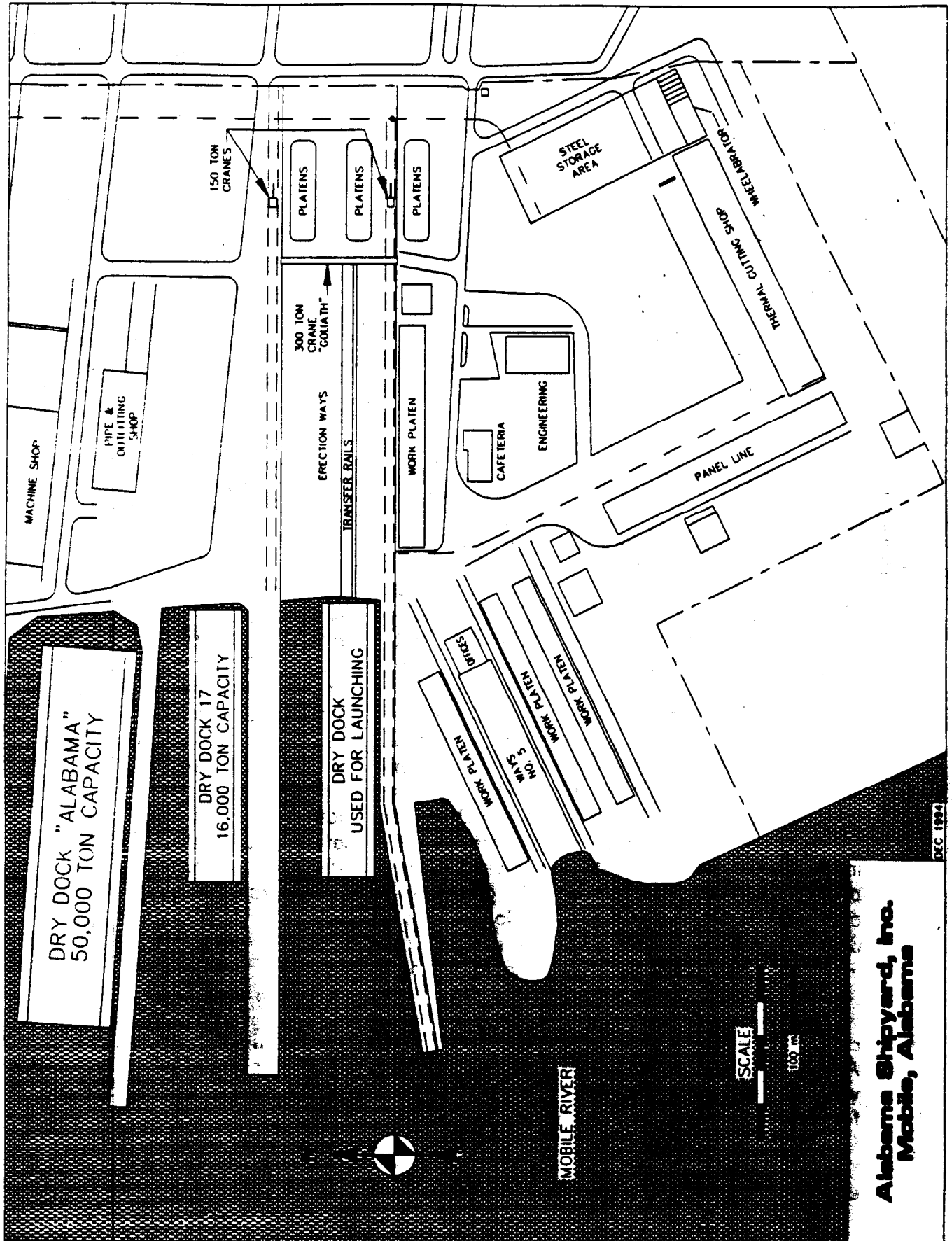
Alabama Shipyard, Inc. (ASI), is a wholly owned subsidiary of Atlantic Marine Holding Company of Jacksonville, FL. Alabama Shipyard, Inc., is a new construction facility specializing in both marine and industrial fabrication. The shipyard is located on the Mobile River, across the river from Mobile, AL, about 47 kilometers from the Gulf of Mexico. Acquired by Atlantic Marine in 1989, the yard has been in existence since 1916, and has constructed a variety of ships (both commercial and naval), barges and drill ships.

As of October 1, 1994, work underway at Alabama Shipyard included construction of two crane barges for Cooper T. Smith Stevedoring Company and two 110,000 bbl (10,000 dwt) double hull asphalt barges for Penn Maritime.

Alabama Shipyard, Inc., is capable of constructing ships up to a maximum size of 290 meters by 50 meters. The shipyard has 46,080 square meters of manufacturing space, 2,486 square meters of covered warehouse space, two finger piers with total usable pier space of 1,218 meters, and a 250-metric ton bridge crane. Various other gantry cranes, as well as a plate shop and a carpenter shop, are available for construction. The yard has a 4 meter by 0.5 meter high fully automatic (enclosed) blast and prime facility, both housed in a building 15 meters by 30 meters, as well as a 27 meter by 122 meter panel line shop. The panel line shop has a modified series arc submerged one sided butt welding station capable of welding up to 19.05 millimeter thick plates. The latest addition to the facilities is a newly installed automated steel handling facility.

Major improvements scheduled for 1994 included a new web line facility, a new steel fabrication platen area with a 150 ton gantry crane and a new engineering building which contains ASI's modern 3D computer structural design system.

As of mid-1994, Alabama Shipyard's employment totaled 330, up from 264 a year earlier.



DEC 1994

Alabama Shipyard, Inc.  
Mobile, Alabama

## 2. Avondale Industries, Inc. - Shipyards Division

Avondale's Shipyards Division is located on the west bank of the Mississippi River approximately 22 kilometers upriver from New Orleans, LA. Avondale, previously a wholly owned subsidiary of Ogden Corp., was sold in 1985 to its employees in an Employee Stock Ownership Plan (ESOP). Since 1938, Avondale has constructed a full range of Navy and commercial ships, as well as Coast Guard cutters and offshore drilling rigs, platforms, jackets, and production modules. It has the distinction of being the only American shipyard to have constructed LASH vessels.

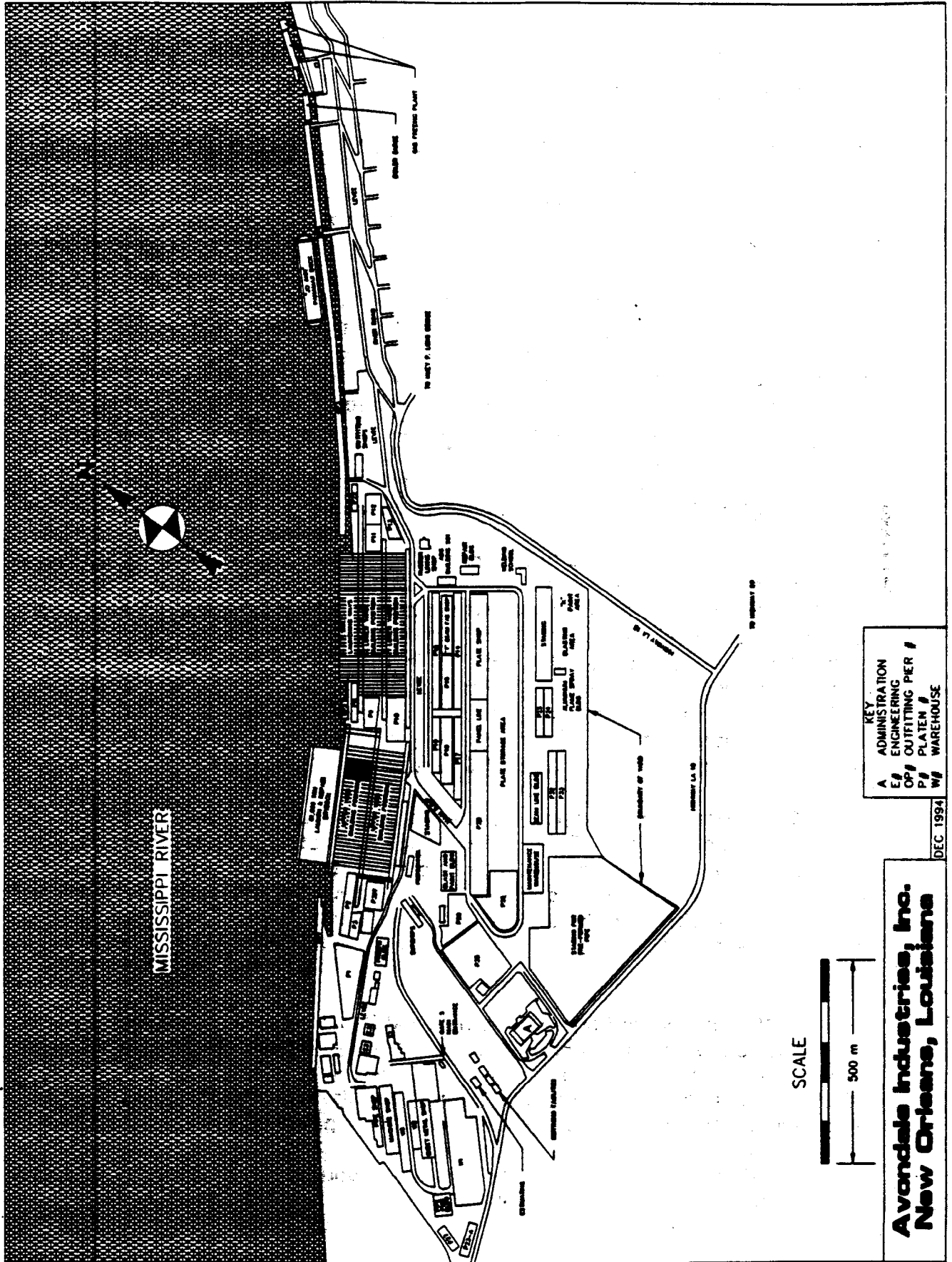
Avondale also maintains an active repair operation for commercial and naval vessels. Ships and offshore drilling rigs are repaired by Avondale's Shipyards Division. Inland waterway and offshore oil vessels are repaired by Avondale's Algiers Yard.

Avondale's new construction orderbook as of October 1, 1994, consisted of three double-hull fleet oilers (T-AO's), four dock landing ships (LSD's), one WAGB Polar icebreaker, and three Roll-On/Roll-Off Sealift Ships with an option for three additional Sealift Ships. The Boat Division has an orderbook consisting of one 19th century-style paddlewheel gaming vessel.

Avondale's Shipyards Division totals 108 hectares and contains three outfitting docks equipped with supporting shops and over 1,431 meters of pier space. The upper yard shipbuilding area has two large positions to accommodate vessels of up to 311 meters in length by 53 meters beam. The major part of one ship can be erected along with the stern section of a second ship on position No. 1, while a third hull is being completed on position No. 2. Ships constructed in the upper yard move laterally in three positions for launching by Avondale's 81,000-ton floating drydock, which can accommodate ships as large as 305 meters by 66 meters, with a lifting capacity of 82,296 metric tons. Avondale's lower yard has a side-launching construction area that has three large positions to accommodate ships as large as 366 meters by 38 meters. Ships built in the lower yard move laterally toward the river and parallel to the river in five positions. Up to five large vessels, greater than 213 meters LOA, can be constructed simultaneously in the lower yard. A 20,000-ton Panamax floating drydock, which can accommodate ships up to 229 meters by 35 meters and has a lifting capacity of 20,320 metric tons, is moored in this area.

Avondale's Boat Division, located at nearby Westwego, LA, facility is capable of building vessels 137 meters long by 27 meters beam. In 1988, Avondale long-term leased the ex-Todd Shipbuilding Corp.'s New Orleans yard which is now called the Avondale Algiers Repair and Overhaul Facility and is used for ship repair, conversion, and overhaul.

In mid-1994, the total employment was about 5,700, up from 5,000 a year earlier.



### **3. Bath Iron Works Corporation**

Bath Iron Works Corp. (BIW), a wholly owned subsidiary of Bath Holding Corp., is located on the Kennebec River in Bath, ME. The small iron foundry which was established on this site in 1826 became Bath Iron Works Ltd. in 1884, and the first shipbuilding began in 1889. This yard has constructed various type of ships including roll-on/roll-off cargo vessels, containerships, tankers, dredges, barges, and fishing vessels. Bath also has built 227 surface Navy combatants.

BIW was the lead shipbuilder for the Navy's guided missile frigate (FFG 7 Class) program and was awarded contracts for the construction of the 24 FFG 7 Class frigates. In 1982, the Navy selected BIW as its second source for the high-technology CG 47 Class AEGIS cruiser program, awarding the company contracts to build eight of these TICONDEROGA Class cruisers - the last of which was delivered in 1993. In 1985, BIW was selected as the lead shipbuilder for the design and construction of the Navy's DDG 51 Class guided missile destroyer program. The lead ship, USS ARLEIGH BURKE was delivered in 1991, and three follow-on ships have been delivered since then. Thirteen more DDG's have been ordered from BIW - the last is scheduled for delivery in the year 2000.

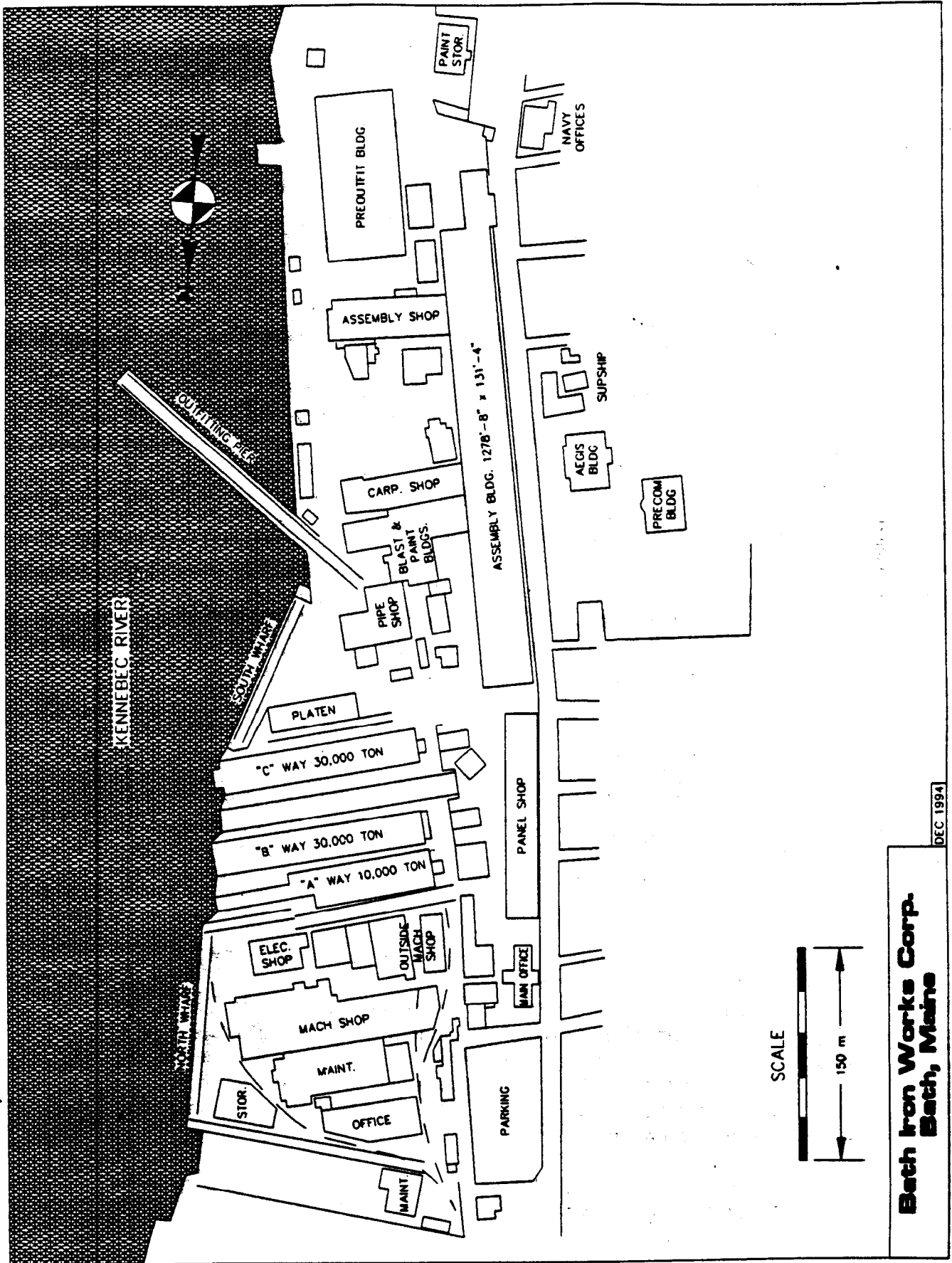
BIW's facilities include two shipways to accommodate ships of 219 meters in length, one with a maximum beam of 34 meters and the other a maximum beam of 39 meters, or two ships per way with a beam of 16 meters each; and a 220 metric ton level-luffing crane with sufficient outreach to erect units on both shipways. The pre-outfit building, opened in 1987, is 61 meters by 125 meters and has 18 work stations for 219 metric ton erection units. BIW also added a new 220 metric ton capacity revolver crane to serve the third shipway. The shipway can accommodate a ship 213 meters in length with a beam of 26 meters. Two wharves and a pier provide a total of 655 meters.

BIW operates two support facilities in East Brunswick, located 5 kilometers from the main plant. The 13 hectare Hardings fabrication plant is where the initial steel fabrication takes place. The 24 hectare East Brunswick facility is the location of the 113,000 cubic meter consolidated warehouse which uses state-of-the-art equipment to accomplish the transfer, handling, and storage of shipbuilding inventory. A new 11,148 square meter pipe and sheet metal fabrication facility was added in 1989.

BIW operates the Portland Overhaul and Repair Facility in Portland, ME. This facility has a large floating drydock with a lifting capacity of 65,000 metric tons, which can accommodate a vessel up to 257 meters by 41 meters. This facility also supports new construction programs as the site where sonar dome installations and Post Shakedown Availabilities are performed.

As of mid-1994, the company employed about 8,500 compared to 9,300 a year earlier.





**Beth Iron Works Corp.**  
**Bath, Maine**

DEC 1994

#### **4. BethShip Sparrows Point Yard**

The BethShip Sparrows Point Yard is located on the Patapsco River in the port of Baltimore, MD. Established in 1891, the yard became a part of the Bethlehem organization in 1916 and served as a major shipbuilder during two world wars. During World War II, Sparrows Point constructed 101 vessels of 16 different classes. During the 1950's, 1960's and 1970's, the yard was among the most active in the nation, specializing in series construction of standard size tankers up to VLCCs, freighters, and containerships.

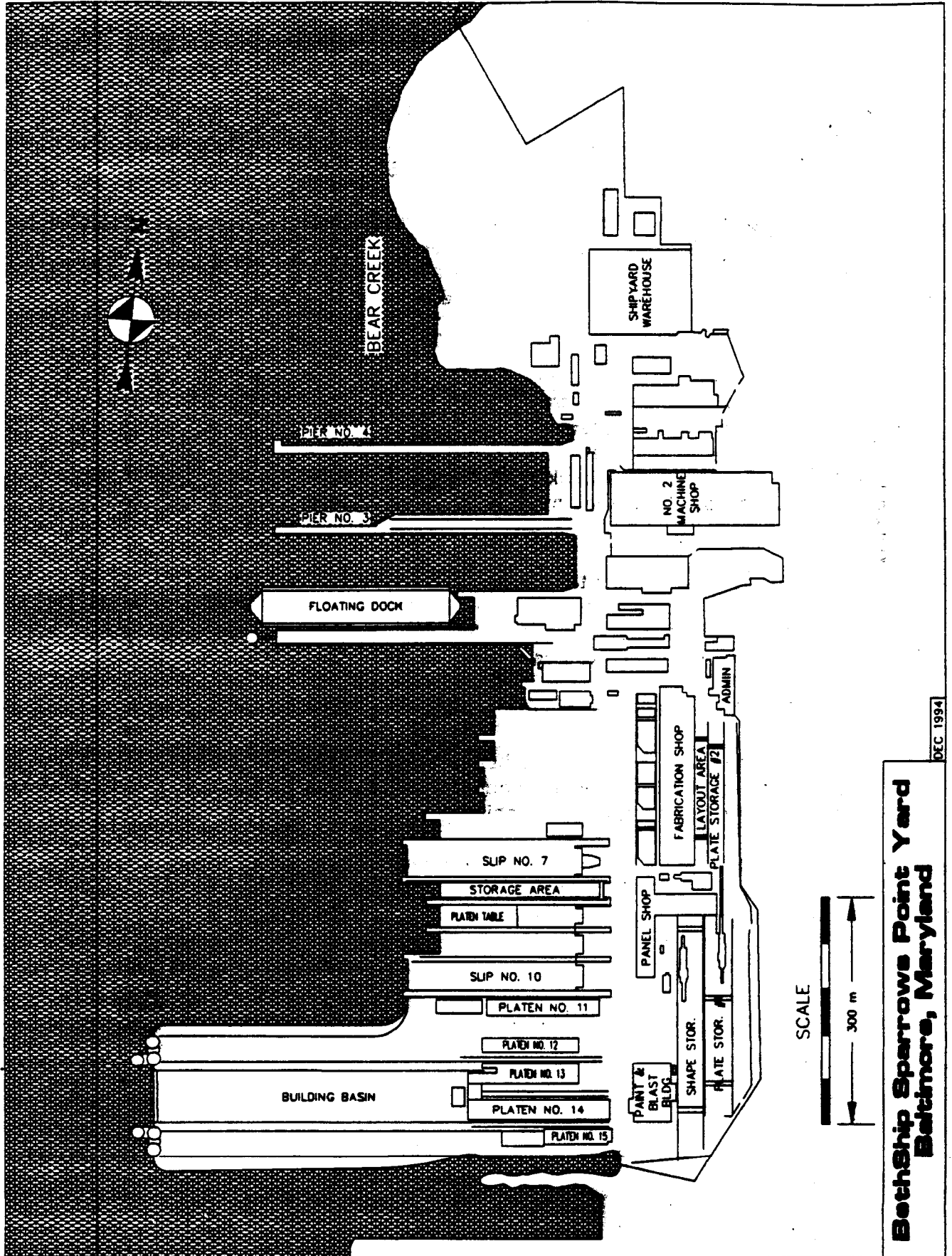
Since the beginning of 1981, the yard has constructed six Integrated Tug Barge (ITB) tankers, six offshore drilling rigs, two container feeder barges, and two oceanographic survey ships for the U.S. Navy. During this same period the yard has adapted to changing markets by increased efforts in ship conversion, repair and industrial fabrication. In addition to numerous drydockings and repairs on commercial and Naval ships, three RO/ROs have been converted to Maritime Prepositioning Ships, ten RO/ROs have been reflagged, and tunnel sections for a new Interstate 664 Hampton Roads Tunnel Complex and tunnel sections for the new Interstate 90 project in Boston have been completed.

Contracts at the yard as of the fourth quarter of 1994 included the drydocking and repair of a Military Sealift Command vessel, the conversion of two vessels for Maersk Line, and the general repair of one cruise ship and the drydocking of another cruise ship. In addition, BethShip is constructing a new barge, replacing a double bottom on a cement carrier and some other small vessel work.

The major component of this shipyard is the graving dock (the second largest in the U.S.) for construction or repair of ships as large as 365 meters by 59 meters up to about 300,000 dwt. A two-position intermediate gate has been installed to increase the flexibility of the graving dock by dividing it into two sections. In one position the graving dock sections are 274 meters and 91 meters in length. In the second position, the sections are 208 meters and 157 meters in length.

Complementing the large graving dock, which is served by four 181-metric ton revolving cranes, the shipyard has a floating drydock capable of lifting 44,735 metric tons. The drydock can accommodate vessels up to 274 meters in length with a beam of up to 40 meters and a draft up to 9 meters. The entry channel to the yard has a depth of 9 meters. Four outfitting berths are available with a combined length of 1,210 meters. The berths are served by five cranes with lifting capacities up to 45 metric tons. Several mobile cranes of various capacities are also available.

As of mid-1994, the total labor force at the BethShip Sparrows Point Yard was 828, up from 617 a year earlier.



**BethShip Sparrows Point Yard  
Baltimore, Maryland**

DEC 1994

5. Erie Marine Enterprises, Inc.

The Erie Marine Enterprises yard is located on Presque Isle Bay in Erie, PA. The yard is leased from the Erie-Western Pennsylvania Port Authority, which acquired it in 1990 from Litton Industries, the original builder and operator. Litton built two thousand-foot class Great Lakes carriers at the yard, the M.V. STEWART J. CORT in 1972 and the BARGE PRESQUE ISLE in 1973.

Since it reopened in 1991 as Erie Marine Enterprises, the yard has engaged primarily in repair of Great Lakes cargo vessels. It also performs large-scale metal fabrication and assembly. The yard is a subsidiary of The Jonathan Corporation of Norfolk, VA, which has 20 years experience in ship repair and overhaul, and shares resources with the parent.

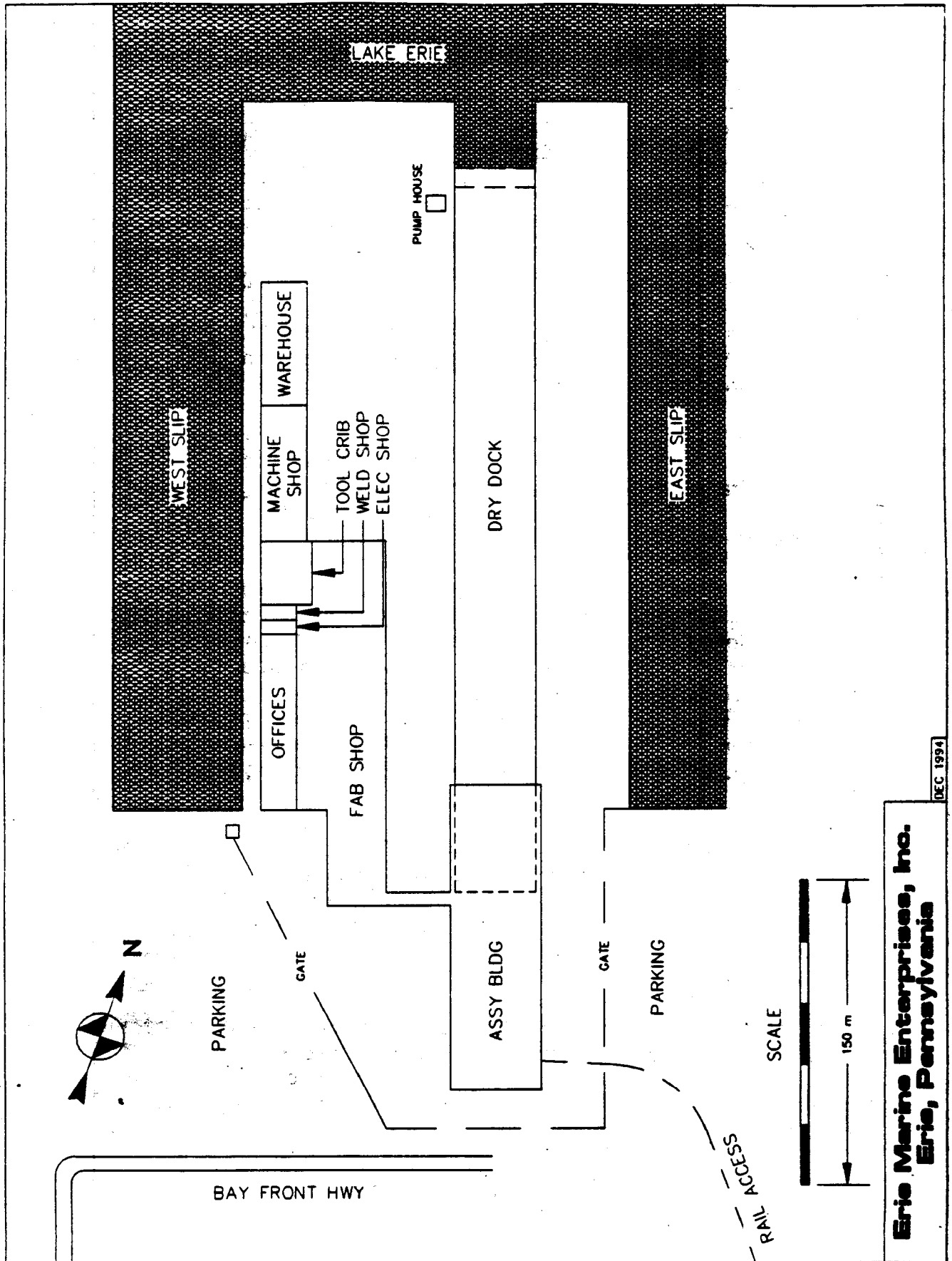
The facility contains over 18,581 square meters in three industrial buildings on an 18 hectare site. The graving dock is one of two on the Great Lakes which can accommodate the construction and drydocking of thousand-foot class vessels. The dock can accommodate ships up to 375 meters in length with a maximum beam of 35 meters. The dock is adjacent to the 6,600 square meter assembly building. The area is served by 90,720 metric ton and 18,140 metric ton overhead cranes.

The facility also contains a 5,760 square meter assembly building with three overhead cranes. There are 1,219 meters of pier space available for winter lay-ups with full dockside services. Two mobile cranes, 113,400 metric ton and 81,650 metric ton, are also available.

The third building contains the machine shop, warehouse and office space.

The company has invested heavily in rehabilitating and upgrading the graving dock, buildings and equipment. Equipment includes a 10 meter Baldwin Roll and a full range of metal fabrication machinery.

As of mid-1994, the company employed a total of 49 compared to 27 a year earlier.



DEC 1994

**Erie Marine Enterprises, Inc.**  
**Erie, Pennsylvania**

6. Fraser Shipyards, Inc.

The Fraser Yard, the only major American shipyard and drydock operation on the western end of the Great Lakes, is located on Howards Bay in Superior, WI. Since it was founded in the 1890's by Capt. Alexander McDougall, who built 42 of his famous "whaleback" steamers and barges there, this plant has had a succession of owners. From 1900 to 1926, Superior Shipbuilding Co. operated the yard and built more than 50 large Great Lakes ore carriers. The yard became a repair facility of the American Ship Building Co. from 1926 to 1945 and then became known as Knudsen Brothers Shipbuilding and Dry Dock Co. Fraser-Nelson Shipbuilding and Dry Dock Co. took over the plant in 1955, and the present name was adopted in 1964. In August 1977, the yard was sold to Reuben Johnson & Son, Inc., a Superior, WI, contracting and construction firm, but business continues under the Fraser name.

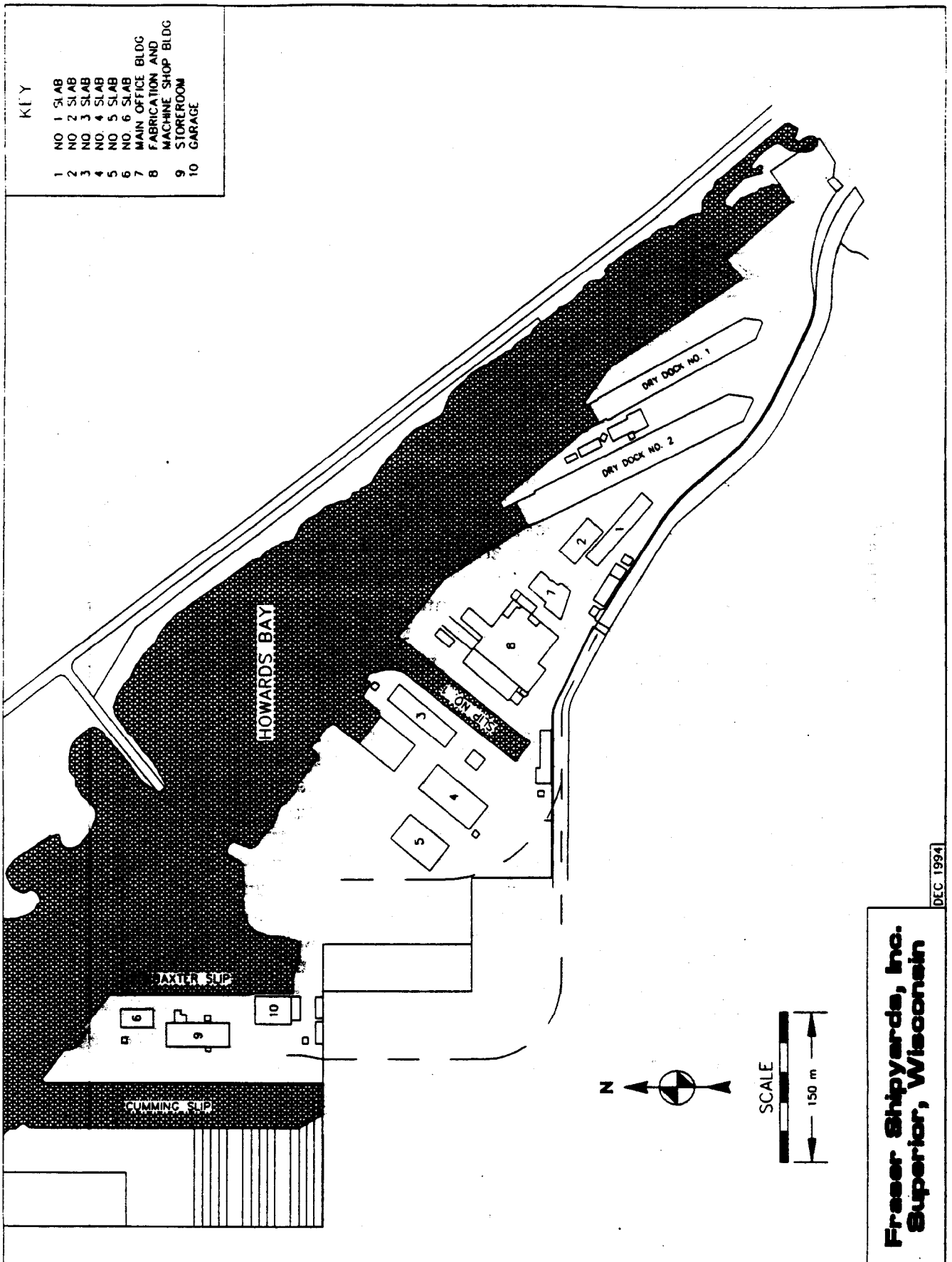
Since World War II, Fraser Shipyards, a complete shipbuilding and ship repair facility, has specialized in vessel repair and ship modernization. In the past 20 years, Fraser has performed most of the major ship lengthening work on the Great Lakes. At this shipyard, general ship repair also has been an important source of revenue.

In the early 1980's, the Fraser yard instituted a major renovation of its fabrication capabilities, including a 40 percent increase in its platen table capacity and extension of its railroad trackage to increase steel unloading capabilities by 300 percent. An all-new steel cutting process with hydraulic loading and unloading tables was installed, as well as major repowering of the shipyard to support the expanding facilities and to improve existing capacity. New automated welding equipment and related modern techniques also were introduced to increase productivity. In 1990 Fraser installed a new metal-forming brake as well as a new shear.

Fraser maintains two graving docks suitable for ship construction, repair, and conversion work. One basin can accommodate a vessel 252 meters by 23 meters, and the other a vessel 189 meters by 17 meters. A small graving-type dock was added in 1973 to build new midbody sections for the lengthening of bulk-ore freighters under contract at that time.

Fraser's 10 mobile cranes, ranging from 14 to 136 metric tons can service all building docks, as well as outfitting and repair berths, and also can be floated on a crane lighter for work afloat. The company also operates an "outside" repair fleet totaling 12 units -- tugs, work launches, and barges -- capable of performing repairs on vessels while they are loading or unloading cargoes in Duluth-Superior harbor and adjacent ports.

In mid-1994, employment was about 90 people, up from 70 a year earlier.



**Fraser Shipyards, Inc.  
Superior, Wisconsin**

DEC 1994

7. Gunderson, Inc.

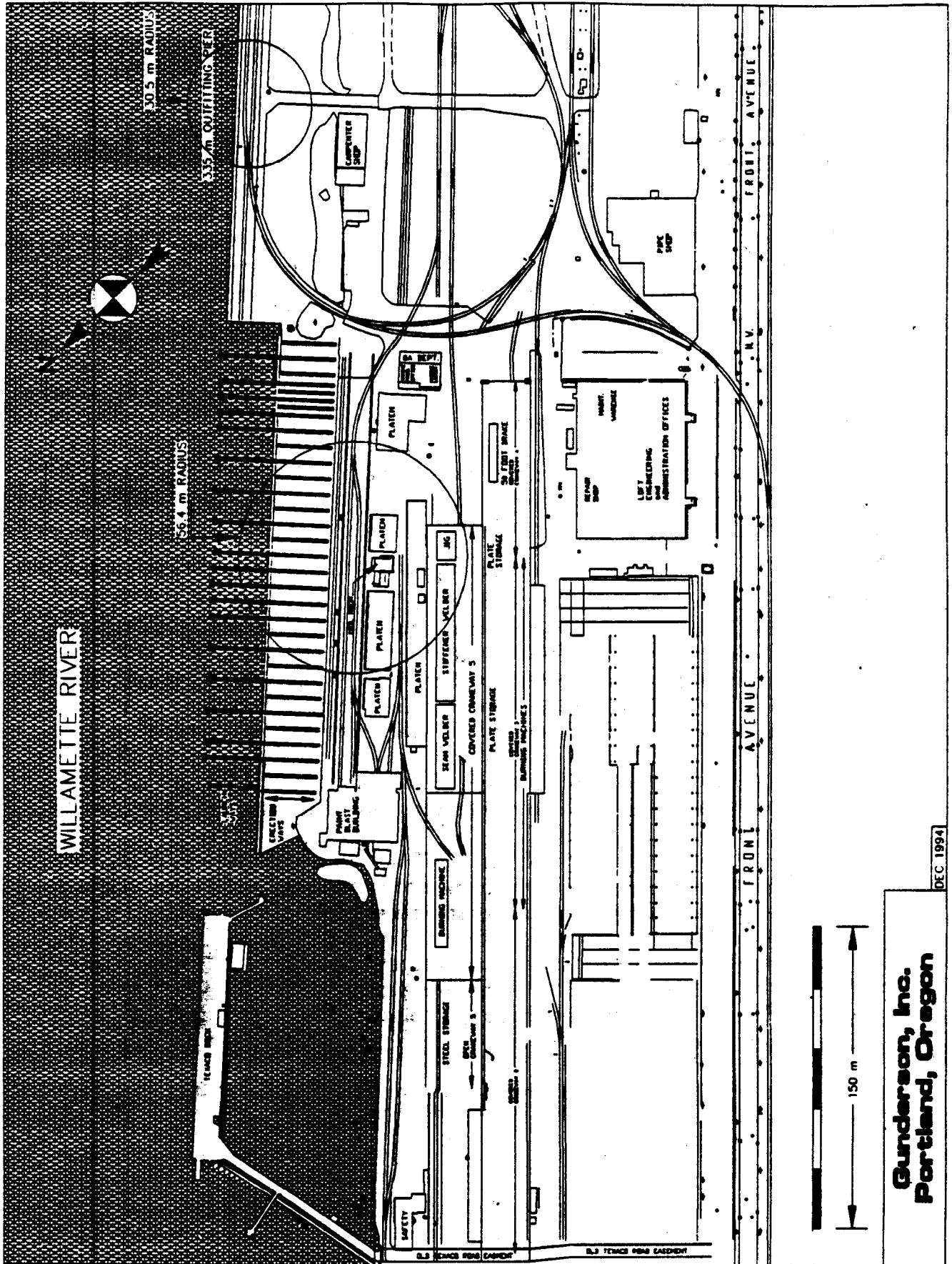
Established in 1919 as a steel fabricator, Gunderson has been a ship and barge builder since 1942. The primary marine work at Gunderson marine yard since the early 1970's was building oceangoing barges. From 1973-1977, the company built five double-hull, gas turbine-electric drive oil tankers for Chevron Shipping Company, San Francisco. After those tank ships, 38 barges, all oceangoing, and most exceeding 122 meters in length, were built. They include four of the world's largest triple-deck RO/RO barges, 177 meters by 32 meters, several 32 meters by 122 meters deck cargo and tank barges, four 76 meter split hull hopper barges, and a 128 meter crane barge equipped with a 500-ton helipad. Gunderson has also built military boats, landing craft, lifeboats, tugs, deckhouse, hopper and tank barges and a variety of other specialized marine craft.

From 1965 to 1985, Gunderson was owned by FMC Corporation, now based in Chicago, IL, and operated under the name of the Marine and Rail Equipment Division of FMC until The Greenbrier Companies bought the facility in February 1985. Gunderson will launch its first barge built since 1984, a 3,823 cubic meter capacity oceangoing split hull hopper barge, in December 1994. Gunderson's yard is located on a 30 hectare parcel with approximately 0.8 kilometers of frontage on the west bank of the Willamette River, about 3.2 kilometers downstream of the downtown Portland waterfront. As such, Gunderson has access to all three drydocks available at the Portland Ship Repair Yard and the services of the ship repair and outfitting contractors who regularly utilize their facility.

Gunderson's facilities and production workforce, which averages some 1,300 skilled and semi-skilled workers, can be and are utilized to build both marine equipment and railroad freight cars, including the most advanced designs in double-stack railcars. Capable of launching vessels up to 229 meters in length, 32 meters in breadth and weighing as much as 9,000 tons, Gunderson is currently focused on construction of large oceangoing deck cargo, open and closed hopper, deckhouse, crane and double hulled petroleum tank barges of up to 20,000 dwt capacity. Gunderson's launch capacity can be readily increased to accommodate vessels weighing as much as 14,224 metric tons and its steel throughput capacity for marine equipment is currently 1,016 metric tons per month. Gunderson is also well equipped to effect vessel modifications afloat alongside its 335 meter, crane served, outfitting pier.

As of mid-1994, employment at Gunderson Shipyard was 1,237 people.





**Gunderson, Inc.**  
**Portland, Oregon**

DEC. 1994

**8. Halter Marine, Inc., Moss Point Division.**

The Halter Moss Point (HMP) facility is located on the Escatawpa River in Moss Point, MS, a short distance from the Gulf of Mexico and Interstate 10. Significant features of the HMP yard include: a protected, deep-waterway location; large module fabrication and assembly platens; two launchways; lift capacity of up to 272 metric tons; full range of outfitting services; and full-service warehousing facilities.

During 1994 HMP delivered six 73 meter tow boat/inspection vessels for the Army Corps of Engineers and the lead T-AGS 60 class Oceanographic Survey Ship for the Navy. HMP is currently constructing three follow-on T-AGS 60 class Oceanographic Survey Ships, and three AGOR 23 class Oceanographic Research ships.

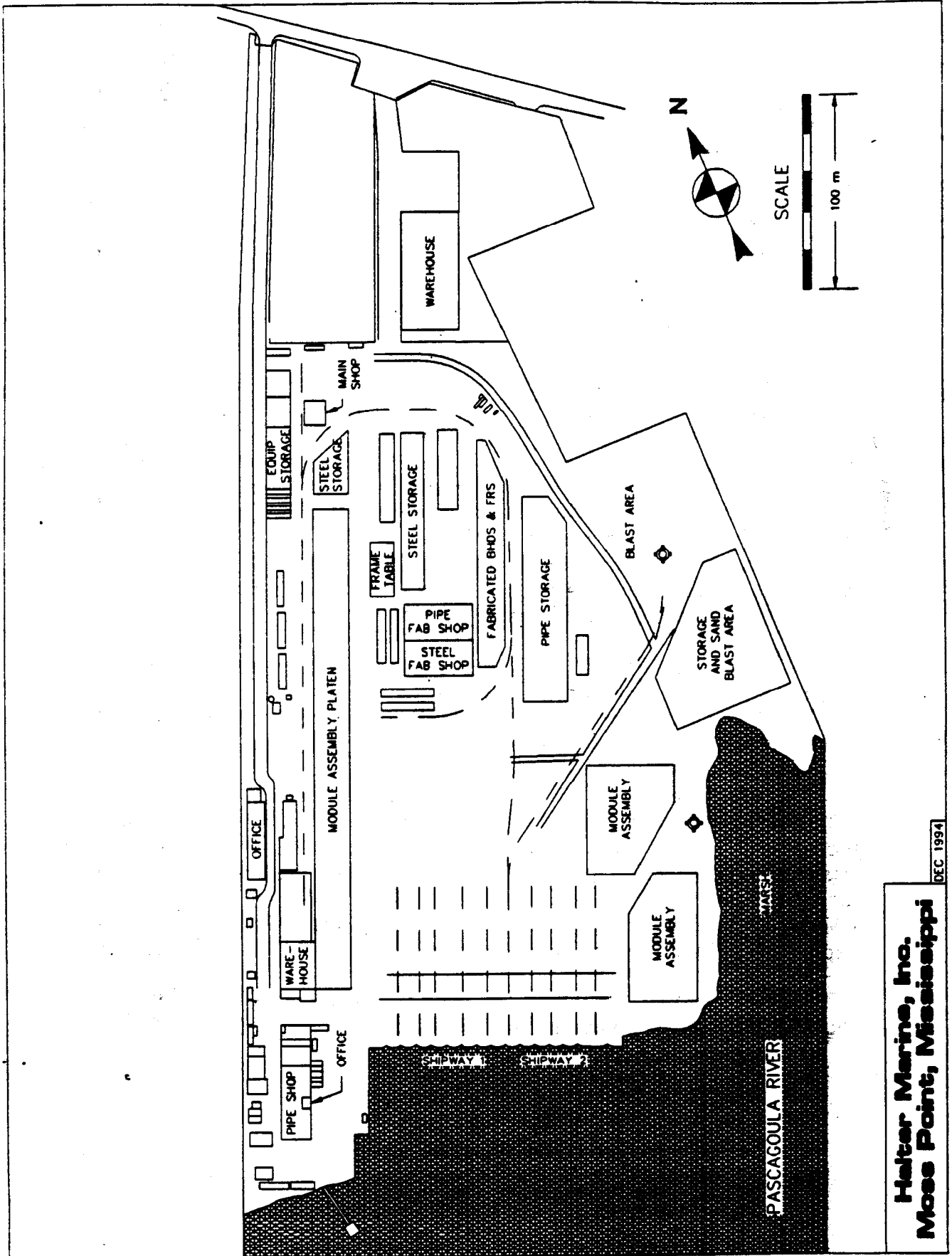
The Halter Moss Point facility is equipped and staffed to handle fabrication, assembly and delivery of high complexity ships up to 146 meters in length by 20 meters beam. The shipyard maintains moveable heavy-lift crane capacity of up to 272 metric tons.

The four-story main fabrication shop contains 929 square meters and is fitted with a five metric ton overhead crane serving its entire length plus an extension at each end, and a nine metric ton Gantry crane. The pipe shop covers 855 square meters. The building is serviced by four one-ton jibs and a five metric ton overhead crane and contains standard outfit of pipe fabrication tools and equipment, including six pipefitter work stations. The combined carpenter shop and electric shop contains 465 square meters. The carpenter shop contains a joiner, band saw, radial arm saw and complete outfit of portable tools and equipment. The electric shop contains portable test equipment, meters and instruments for continuity and polarity checks, insulation resistance testing, cable installation tools and equipment and battery service facilities.

The main warehouse contains 1,858 square meters of modern receiving and weatherproof storage space. Environmentally controlled warehouse space for the stowage and test of sensitive equipment is available on site.

The HMP yard has a steel fabrication throughput capacity of 400 tons per month. The pipe shop has the capacity to provide up to 22,859 meters of pipe per year. The paint shop has the capacity to blast and paint over 363 metric tons of steel per month.

As of mid-1994, employment at Halter Moss Point was 330, down from 407 a year earlier.



**Halter Marine, Inc.**  
**Moss Point, Mississippi**  
DEC 1994

9. Ingalls Shipbuilding, Inc.

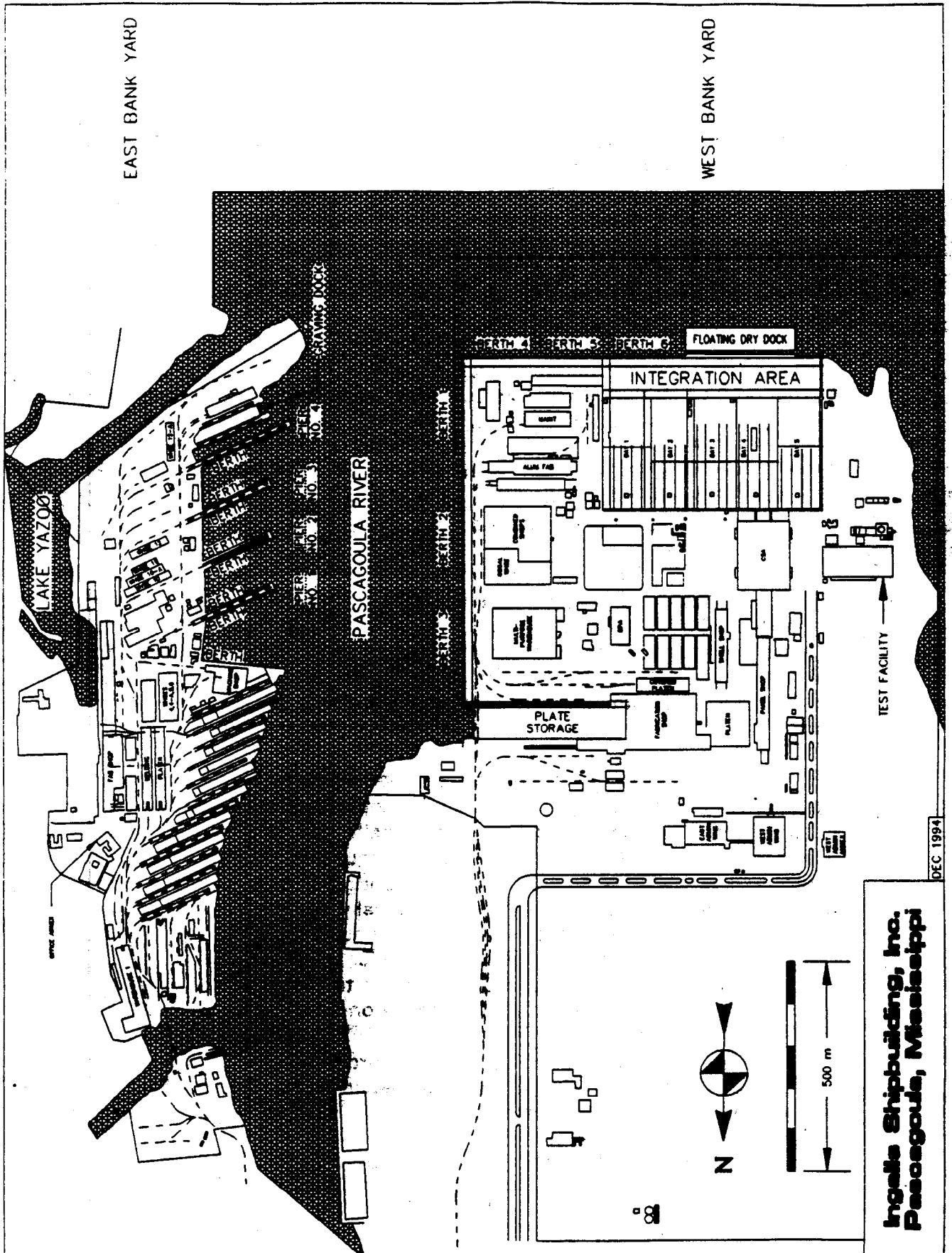
Ingalls Shipbuilding, Inc., a division of Litton Industries, Inc., is located on the Gulf of Mexico in Pascagoula, MS. Ingalls is a diversified shipbuilding facility experienced in the design, engineering, construction, modernization, conversion, overhaul and fleet support of Navy warships and auxiliaries. Since 1975, Ingalls has designed, built and delivered to the Navy 66 major surface combatant ships.

As of October 1, 1994, the company held orders for three Ingalls-designed multi-purpose amphibious assault ships (LHDs) for the Navy, as well as 12 new DDG-51 class guided missile destroyers. The Ingalls backlog also includes three SA'AR 5 corvettes for the Government of Israel.

Ingalls' 243 hectare West Bank facility, completed in 1970, does not have conventional inclined shipbuilding ways but is geared to assembly-line construction. Fabricated steel and subassemblies are brought from the various shops to the subassembly area where they are erected and pre-outfitted, then moved to the module assembly area. These areas are divided into five bays, each of which can produce 5,447 metric ton modules. After assembly and outfitting, the modules are moved to the integration area where they are erected into a complete ship. The ship is then moved to a floating drydock (resting on a submerged grid) which is subsequently floated and moved to a deep-water area where it is ballasted and the ship launched. The drydock can launch or recover a maximum ship size of 259 meters by 53 meters. Approximately 1,432 meters of berthing space, serviced by cranes up to 272 metric tons, are available for outfitting. In August 1988, about 16,721 square meters of the shipyard's slab area were brought under roof to increase the amount of early outfitting performed. Improved pipe production facilities, a machinery packaging facility, and a new blast and paint station in the steel fabrication complex have been added.

Ingalls' older East Bank facility has been in operation since 1938, engaged primarily in the construction of commercial cargo ships and tankers. Although there are six inclined shipways and a graving dock at East Bank, they were all taken out of service in 1989, along with three piers. Refurbishment of these facilities is anticipated to take at least two years. One pier remains providing 457 meters of berthing space serviced by cranes with up to 54 metric tons of capacity for outfitting and topside repair.

As of mid-1994, Ingalls employed a total labor force of 14,733, down slightly from 15,289 a year earlier.



**Ingalls Shipbuilding, Inc.  
Pascagoula, Mississippi**

DEC 1994

## 10. Intermarine USA

Intermarine USA was established in 1987 following a U.S. Navy contract to build large minehunters using composite materials. Intermarine completely renovated a shipyard in Savannah, GA, and converted it into a modern composite manufacturing facility.

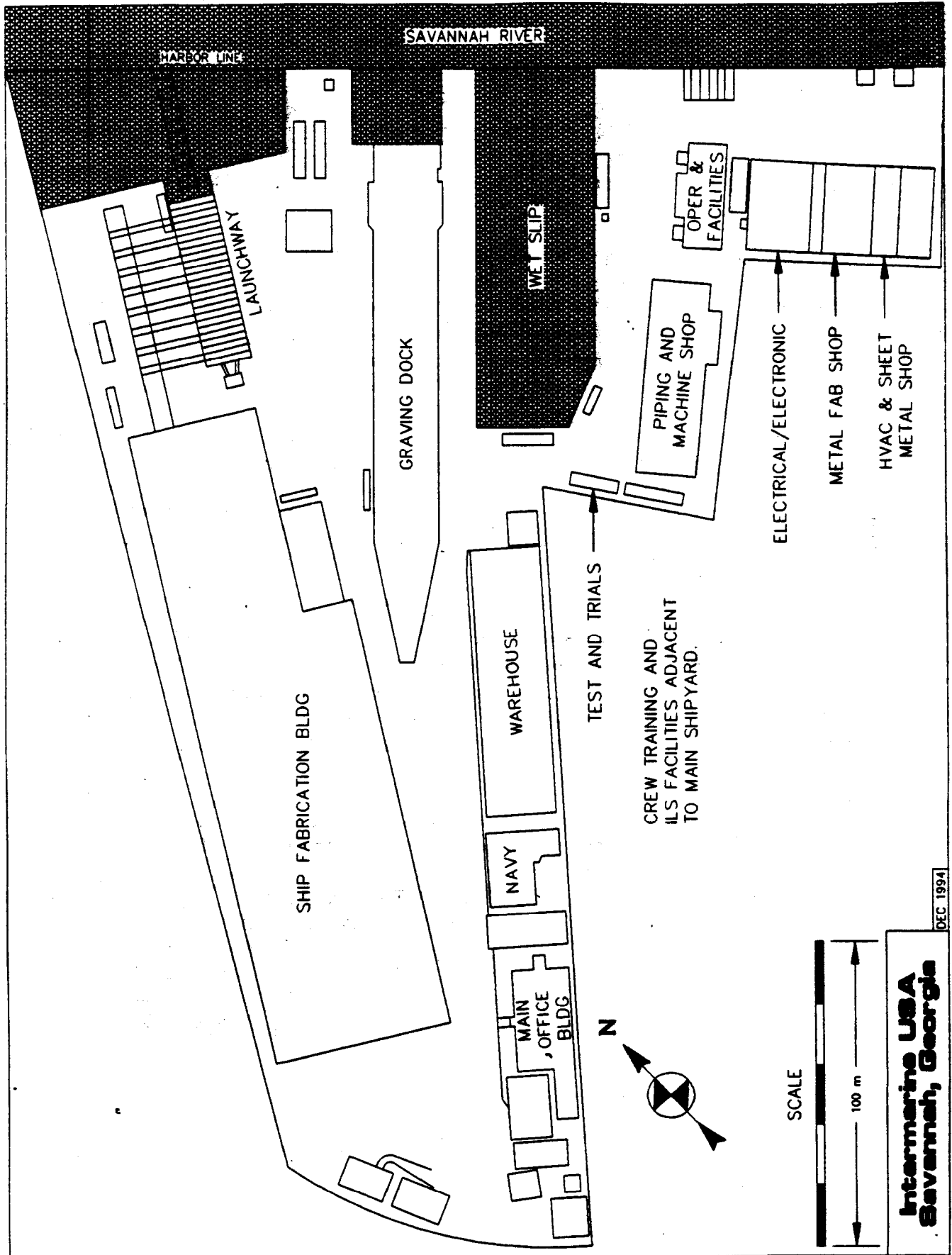
Intermarine USA started construction of OSPREY, lead ship of the MHC-51 Coastal Minehunter class, in May 1988, only one year after the original contract award. The class is 57 meters in length and a full load displacement of 900 metric tons. OSPREY was launched in March 1991. Intermarine USA's second MHC-51 class minehunter, HERON, was launched in March 1992. Construction of the third ship, ORIOLE, started in August 1991, with launching on May 22, 1993. In April 1992, the U.S. Navy awarded a contract to Intermarine USA for the construction of MHC-58, 59 and 60. The fourth ship, BLACK HAWK, was launched August 27, 1994. This was followed by awards for the MHC-61 and 62 in March 1993. These awards ensure continuous ship production through mid-1997. Delivery of the first ship, OSPREY, occurred on August 23, 1993, with the second ship, HERON, delivered on August 6, 1994.

The company continues to contribute to U.S. Navy advanced composite materials studies in support of marine structural designs up to 73 meters in length. Intermarine USA also constructed a 20 meter catamaran yacht tender for service in the America's Cup competition. Fiberglass is also the primary material for a research project for road bridges. In addition, Intermarine USA has continuous ongoing naval and commercial ship repair work and is entering the super yacht market.

Intermarine USA has all the facilities necessary for military and commercial ship construction, including a certified 162 meter long graving dock and a 1,016 metric ton marine railway. The composite materials fabrication building has an area of over 14,860 square meters and is equipped with six semi-automatic resin/glass impregnators on fully-articulated bridge cranes. Materials storage areas and environmental controls have been specifically designed to meet all composite materials storage and manufacturing requirements. The facility is large enough to house six minehunter vessels or molds, all under cover, simultaneously. There are 4,180 square meters of shop space, in addition to the composite materials fabrication areas and ample warehouse space on-site.

In support of the ongoing construction programs, Intermarine has established Technical and Integrated Logistics Support departments staffed with experienced engineers, designers and logisticians.

As of mid-1994, Intermarine USA employment totalled 489, down from 583 a year earlier.



11. Marinette Marine Corporation

Marinette Marine Corporation (MMC) is a privately-owned shipbuilding company founded in 1942. Since inception, the yard has built nearly 1,300 vessels, including tugs, research vessels, torpedo weapon retrievers, mine counter-measure ships and yard patrol craft, and a variety of landing craft.

As of November 1994, MMC was engaged in the detail design and construction phases of two contracts with the U.S. Coast Guard. One contract is to design and construct two (with options for three more) 69 meter Oceangoing Buoy Tenders, the other to design and construct one (with options for 12 more) 53 meter Coastal Buoy Tenders. MMC is also constructing a 30 meter catamaran to be utilized as a passenger ferry for a local commercial business.

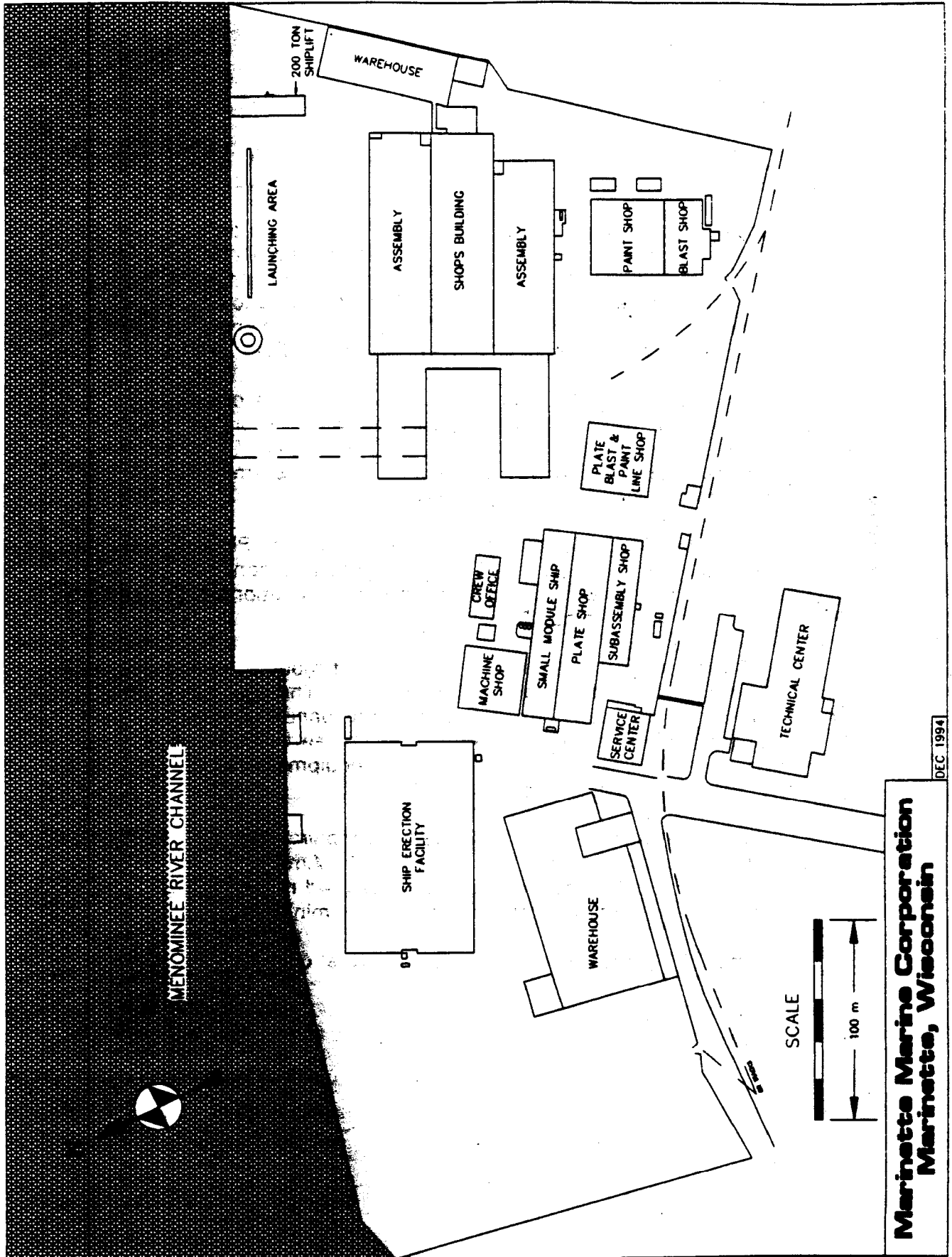
The shipyard covers 23 hectares and has approximately 150,000 square meters of enclosed workspace permitting year-round, uninterrupted construction of vessels. A modern design and administrative building, large fabrication shops and erection areas, a 200 metric ton ship lift, three launchways, and numerous berthing spaces along the 651 meter dockwall have been acquired or constructed to provide what is needed to satisfy multiple ship construction projects in assembly line fashion.

Strategically positioned fabricating, assembly and trade shops allow smooth and efficient movement of material, prefabricated components, and small modules through the ship construction process. Most shops are equipped with overhead bridge cranes. Crawler cranes service the outdoor erection areas. Large modules and completed vessels are transferred to erection and launching sites using a Dual Walking Beam ship transfer system that is capable of carrying up to 1,600 long tons.

Construction of the Oceangoing Buoy Tenders began in late 1993. Construction of the Coastal Buoy Tender commenced in mid-1994. MMC anticipates four additional (three Coastal and one Oceangoing) buoy tenders will be awarded for construction in 1995. The two programs will accommodate a total of approximately 400 people when production is at full strength.

Total employment at the yard in mid-1994 was 165, compared to 104 a year earlier.





DEC 1994

**Marinette Marine Corporation  
Marinette, Wisconsin**

## 12. McDermott Shipyard

McDermott Shipyard was established in 1959 to construct a variety of vessels for service offshore and on inland waterways. Today, its products range from small tugs and workboats to midsize supply vessels, and oceangoing bulk carriers and containerships. The yard also offers complete marine repairs, refurbishment and modification services for existing vessels.

McDermott Shipyard is located on a 33 hectare site on Bayou Boeuf near Morgan City, LA. Module assembly and erection are carried to completion in large construction buildings. With four drydocks, a machine shop, electrical shop, and carpentry shop, the yard is a complete maritime construction and repair facility. The yard also calls on the skills, equipment, and covered and open areas of McDermott Fabricators, located directly across Bayou Boeuf.

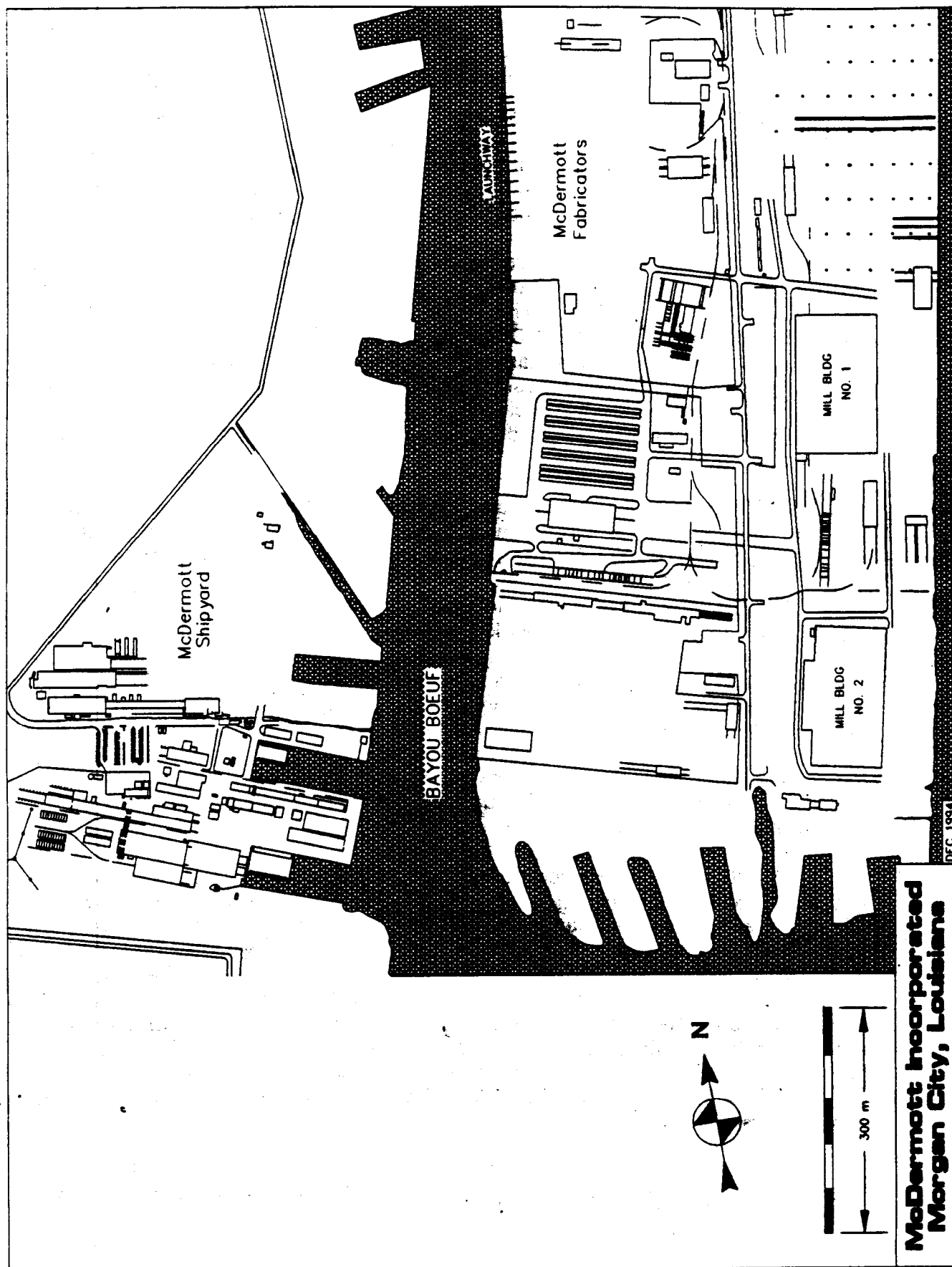
As of December 1, 1994, McDermott Shipyard has orders for two 26-meter oceangoing tugs; a 127-meter overnight paddlewheel excursion vessel; the modification of three inland barge rigs for service in Lake Mariccaibo; three 62-meter high pressure vessels barges; and five 91-meter 30,000 BBL double-skin tank barges.

On October 6, 1994, McDermott delivered the SULPHUR ENTERPRISE, a 160-meter molten sulphur carrier. McDermott has also constructed a 68-meter split-hull hopper dredge and three 50-MW power generation barges for use in Guatemala and the Dominican Republic.

McDermott Shipyard utilizes highly efficient modular shipbuilding techniques that their engineers and workmen helped develop. The yard has a panel production line that automatically positions, welds and turns panels of steel. Computer-assisted design, estimating, material takeoff, scheduling and drafting, along with numerically controlled plate cutting equipment, reduce costs while providing speed and accuracy on every job.

McDermott Shipyard has drydocked and repaired many vessels, rigs and barges. The machine shop is fully certified by the American Bureau of Shipping for welding 308L and 309L stainless steel, and for weld repairs to ABS Grade 2 and 4130 alloy shafting with defects and wear below minimum diameter.

At mid-1994, the company employed a total of 700 people.



**McDermott Incorporated  
Morgan City, Louisiana**

### **13. National Steel and Shipbuilding Company**

National Steel and Shipbuilding Co. (NASSCO), the largest shipbuilder on the West Coast, participates in both the commercial and the U.S. Navy shipbuilding, conversion, and repair markets. In the marine business since 1945, the company now occupies 59 hectares on the harbor in San Diego, CA. In 1989, NASSCO became an employee-owned company.

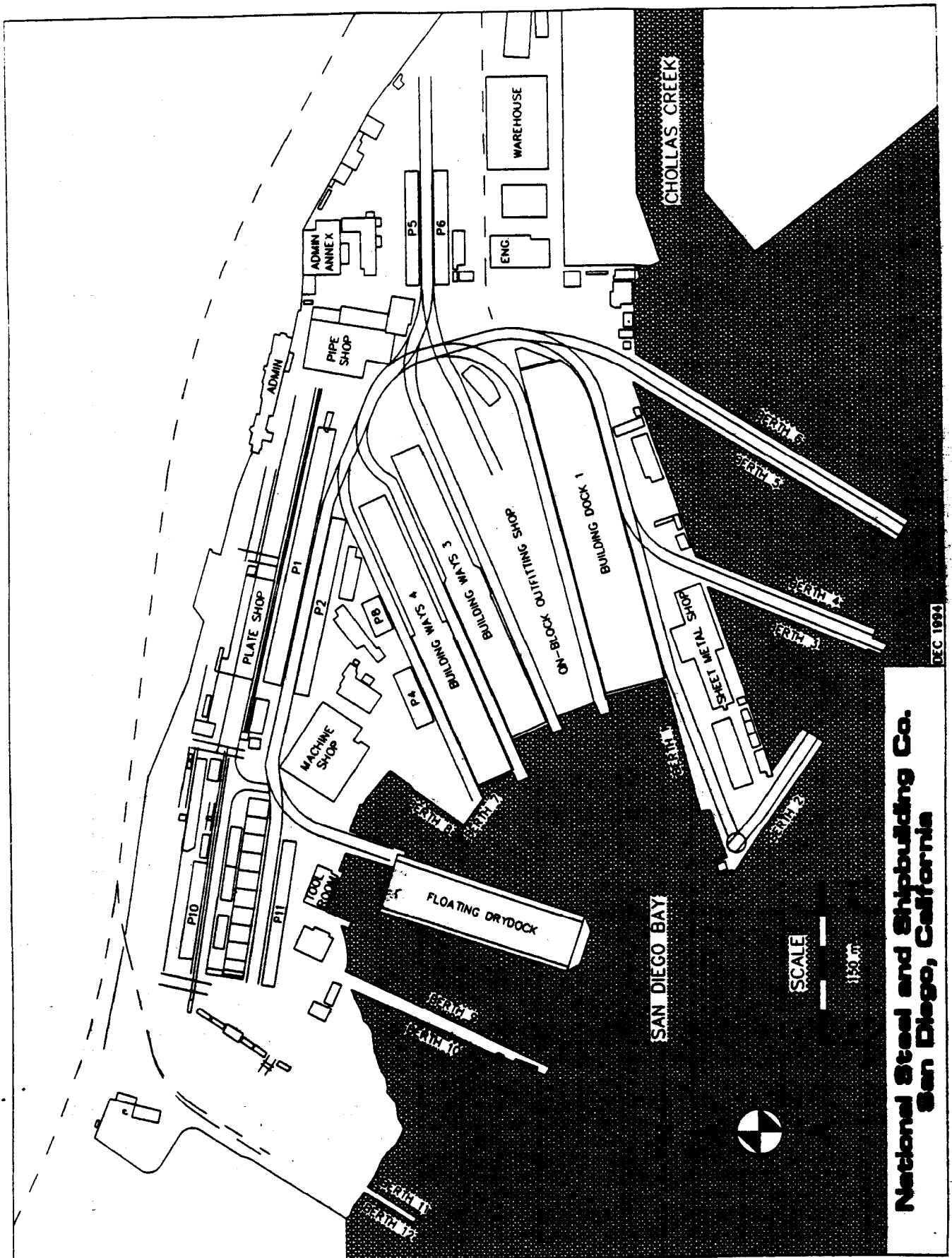
In the past, NASSCO has constructed ore-bulk-oil (OBO) carriers, very large crude carriers (VLCC) up to 209,000 dwt, product carriers, destroyer tenders, a large cable repair ship, a 1,910 TFEU containership, special purpose ships and a variety of Navy vessels. NASSCO conversion projects have included the conversion of two 90,000 dwt tankers to 1,000-bed hospital ships (T-AH), three containerships to Maritime Prepositioning Ships (T-AKX), and the reconstruction of three former Sea-Land SL-7 containerships to Fast Sealift Ships (T-AKR) for the Navy. Repair and overhaul work during the past few years consisted principally of Navy contracts.

NASSCO has contracts to design and construct two AOE class Fast Combat Support Ships for the Navy (two have already been delivered). NASSCO has a contract to convert three containerships to Fast Sealift RO/RO's for the Navy. NASSCO also has a contract to design and construct six (one firm and five options) Fast Sealift RO/RO's for the Navy. As of October 1, 1994, NASSCO was performing overhaul and repair work on a variety of Navy and commercial ships.

NASSCO's facilities include a building dock in which ships up to 303 meters by 52 meters can be constructed. In addition, the company operates two inclined building ways. Both can accommodate a maximum size ship of 274 meters by 34 meters. Cranes are available that can provide lifts up to 159 metric tons. Berthing is available at 10 full-service berths that can accommodate ships with drafts up to 11 meters and lengths up to 305 meters. NASSCO also operates a 25,400 metric ton floating drydock.

NASSCO has a full-service machine shop, carpenter shop, sheet metal shop and pipe shop with an automated pipe silo. The company's steel fabrication and assembly facilities, with a capacity of 1,816 metric tons per week, includes seven burning machines: one has a plasma arc and two have computer numerical control. Steel assembly facilities include a modern 16 meter panel line, eight assembly tables with a combined area of 11,472 square meters, a turning jig for curved steel blocks, and an enhanced pin jig area with two bridge cranes. There is also an automated line for blasting and priming steel plates and shapes. NASSCO offers full-service marine engineering and naval architecture, utilizing the latest technology, such as Computer-Graphics Augmented Drafting and Manufacturing System (CADAM).

As of mid-1994, the total labor force was 3,300, down from a year earlier. The labor force is expected to increase to over 4,000 employees by mid-1995.



**National Steel and Shipbuilding Co.**  
**San Diego, California**

#### 14. Newport News Shipbuilding

Newport News Shipbuilding, located at the Port of Hampton Roads in Newport News, VA, is the largest shipbuilding complex in the United States. The company, founded in 1886, is a subsidiary of Tenneco, Inc. Newport News has delivered 26 aircraft carriers, 49 nuclear-powered submarines, and over 120 other surface ships for the U.S. Navy. Commercial vessels delivered by the yard include 71 cargo ships, 85 tankers, 61 passenger ships, (most notably the famed superliner UNITED STATES), and more than 50 other self-propelled vessels. Newport News was a pioneer in the field of jumboizing ships, and since 1957, has completed 34 such operations.

Newport News is the nation's foremost builder of Navy nuclear warships. As of October 1, 1994, the yard was at work on two Nimitz class aircraft carriers and four attack submarines. Overhaul and repair of nuclear-powered submarines and surface ships for the Navy and commercial repair work are also a principal activity at Newport News. On October 31, 1994, Newport News signed a contract to build two 46,500 dwt "Double Eagle" double hulled petroleum tankers with Eletson Corporation, a Greek shipping company, with an option for two more tankers.

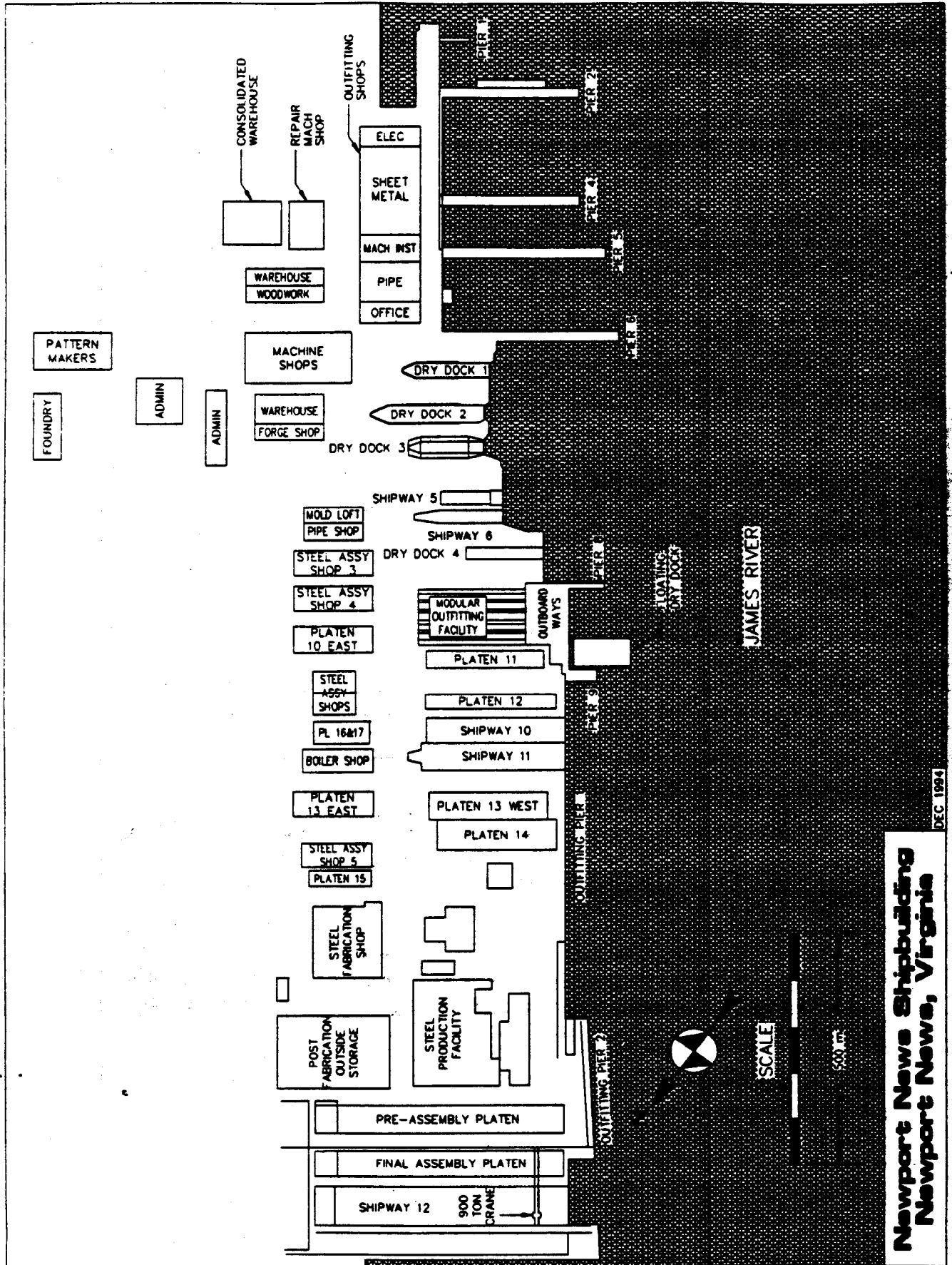
Included in Newport News major facilities are:

Docks and Shipways - There are eight separate docking facilities. Drydock 12, the largest building basin in the nation, can accommodate vessels up to 490 meters in length by 75 meters beam. It is currently being extended to 662 meters in length. Three positions for the intermediate gate expand the multi-ship construction capability of this dock, permitting simultaneous ship construction and repair. A 900 metric ton gantry crane, one of the largest in the world, can handle completely outfitted assemblies. This crane has a height of 71 meters overall, a girder clearance of 61 meters and a span between rail centers of 165 meters. Shipways 10 and 11 are used for construction work, as well as overhaul and repair, and are serviced by a 315 metric ton gantry crane. The other four graving docks (Dry Docks 1-4) are used mainly for ship repair and overhaul work. The floating drydock, which is 195 meters by 41 meters, is primarily used as a part of the submarine land level facility.

Vessel Berthing - Newport News has two outfitting berths totaling 799 meters each serviced by 30 metric ton cranes. There are four piers totaling 2,577 meters serviced by cranes with capacities of up to 45 metric tons in addition to the two small piers included with the submarine land level facility.

Submarine Construction and Repair Complex - This land level facility is currently being used for construction of nuclear attack submarines. It includes a Modular Outfitting Facility (MOF), outboard ways, two small piers, a transporter and transfer system, and a floating drydock.

The labor force at Newport News in mid-1994 was about 20,900, compared to 22,500 a year earlier.



**Newport News Shipbuilding  
Newport News, Virginia**

DEC 1994

15. Peterson Builders Inc.

Peterson Builders, Inc. (PBI), of Sturgeon Bay, WI, established in 1933, is a privately owned, full service, construction and repair shipyard, which serves the government, commercial and service industries with its construction capabilities in wood, steel, fiberglass and aluminum, as well as design and production expertise.

The main yard, with about three hectares of buildings, provides inside construction and production facilities; total area is about five hectares. Extensive waterfront facilities provide berthing for vessels up to 152 meters in length. PBI operates two side launching shipways; one can accommodate a maximum ship length of 125 meters and the other 69 meters. Also, inside ship construction capabilities for vessels up to 70 meters by 18 meters are available. PBI's floating drydock has the capacity to accommodate a vessel up to 110 meters by 12 meters and is Navy-certified for 1,118 metric tons.

The Ingleside Division of Peterson Builders, Inc., is a two hectare shipyard on the Jewell-Fulton Canal in Ingleside, TX. This yard supports warranty and repair services for the mine countermeasure ships homeported at the Ingleside Naval Base, as well as offering commercial marine repair services. The yard has berthing available up to 137 meters. In 1994, the yard was expanded to include new dock-side services, a new 18 meter by 78 meter ship repair shop and office complex, and 216 square meters of covered storage.

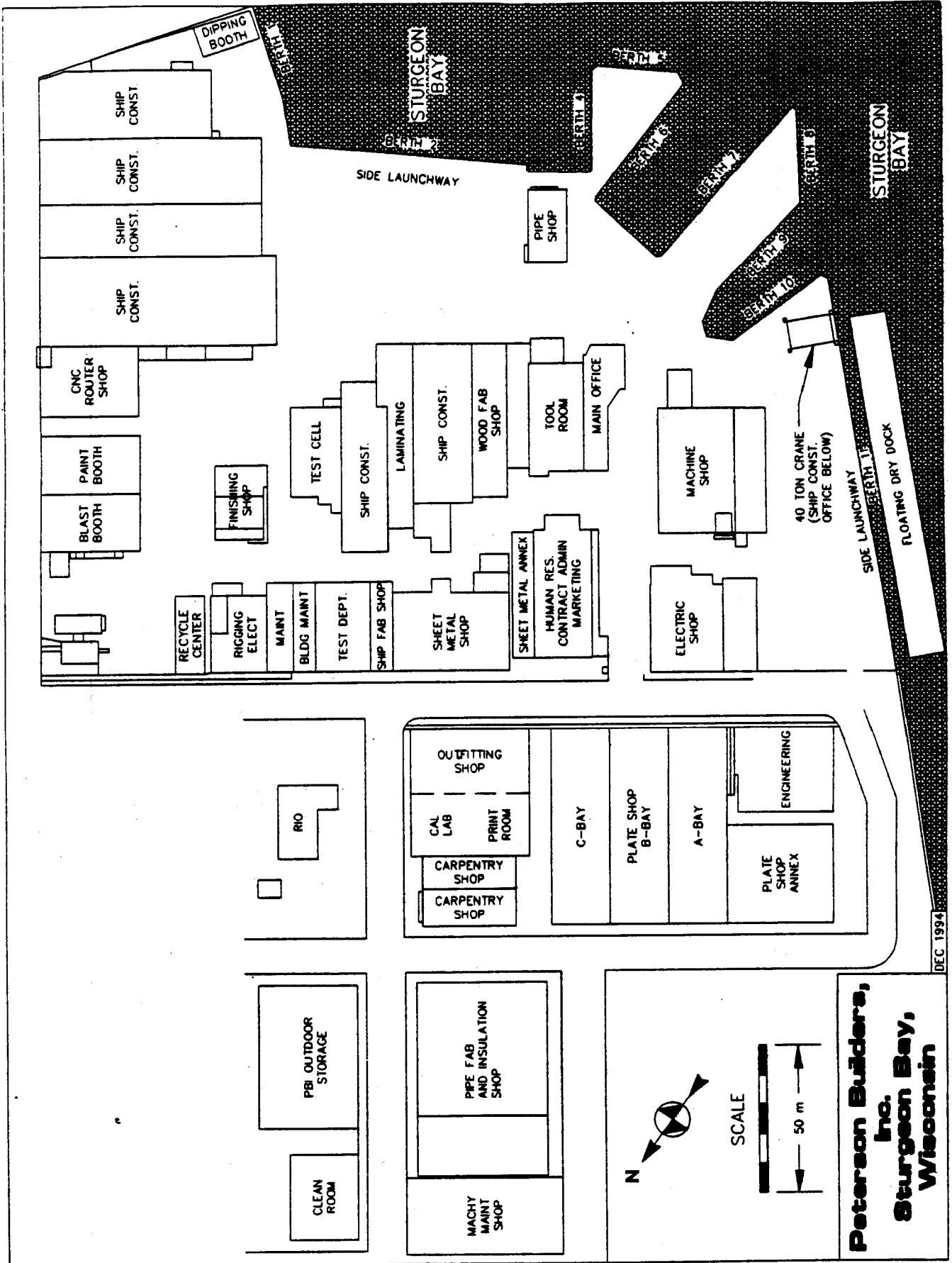
One MCM (68 meter Mine Countermeasure Ship) was delivered to the U.S. Navy in 1994. MCM-14 marked the end of the MCM contract at Peterson Builders. PBI has been a leader in minecraft construction since the early 1950's; longer than any other shipyard in the world. PBI also maintains a long standing history for excellent commercial vessels ranging from super tuna seiners, research ships, large passenger/car ferries, and a range of sizes of tugs. PBI is also actively marketing high speed ferries, casino vessels and high speed patrol vessels.

Under construction at the yard in 1994 were aluminum 6 meter Patrol Craft Fast (PCFs), fiberglass 11 meter Landing Craft Personnel Large (LCPLs) and aluminum 12.8 meter Patrol Craft Coastal (PCCs). Other drydock/repair work included the U.S. Coast Guard ships KATMAI BAY, BISCAYNE BAY, BUCKTHORN, NEAH BAY and SUNDEW.

In 1994 a contract was received from the United States Navy for four 7-meter Boom Handling Boats, as well as a contract from the U.S. Army Corps of Engineers for a 46-meter Floating Crane Barge.

Mid-1994 the company's average total employment was 380, compared to 652 a year earlier.





16. Portland Ship Yard

The Portland Ship Yard (PSY) is part of the Municipal Corp. of the Port of Portland. The 57-hectare shipbuilding and ship repair facility is located in Portland, OR, on the Willamette River. The yard was developed from the World War II Swan Island Shipbuilding facilities which delivered 1,076 oceangoing ships. Today's facility includes Dry Dock 4, the largest floating drydock in the Americas.

Projects in 1994 included reflagging of the CAPE ORLANDO (ex AMERICAN EAGLE) with major internal and external coating work; putting the DENALI (ex B.T. ALASKA) back into service after several years in lay-up; repair of the KEYSTONE CANYON after it collided with a bridge during high winds; repair of three cruise ships for Holland America (ROTTERDAM, WESTERDAM and NIEUW AMSTERDAM). All three cruise ships included passenger embarkation and/or disembarkation at the shipyard.

PSY maintains a quality, modern yard with dependable major equipment. All ship work is performed by private contractors who use PSY. Currently, Cascade General, Inc., is the contracted user of the facility.

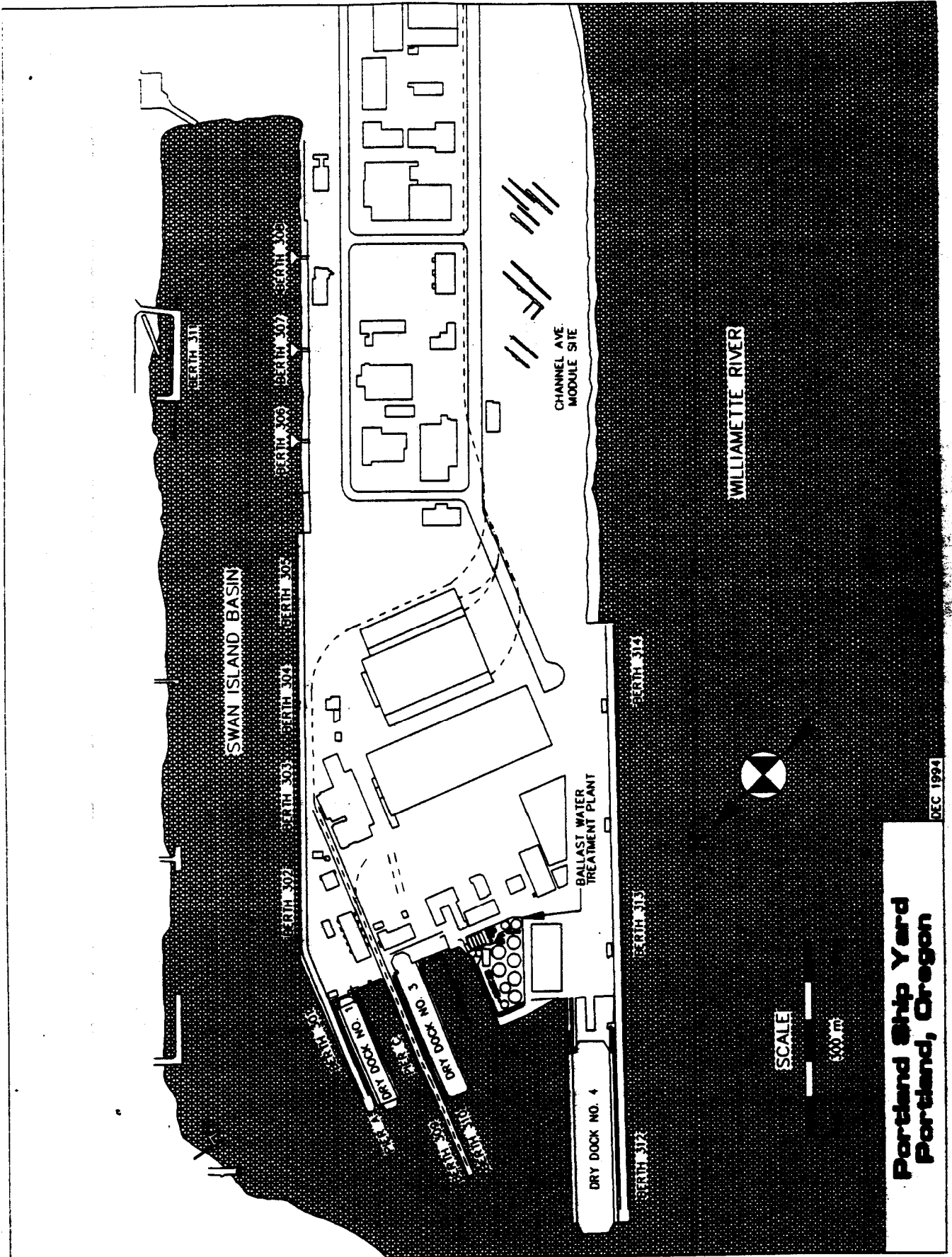
The shipbuilding facilities at the Portland Ship Yard are capable of producing modular-type units from 1,525 to 5,084 metric tons. Units are transported by rubber-tired vehicles, crawler or walker, via a launching bridge to two locations. At one ship construction location, a vessel 183 meters by 30 meters can be constructed using Dry Dock 1 for launching. At the other location, a vessel up to 305 meters by 55 meters can be constructed using Dry Dock 3 and Dry Dock 4 for launching.

Portland Ship Yard operates three drydocks. The largest two (No. 3 and No. 4) can accommodate vessels up to 247 meters by 33 meters, and 351 meters by 55 meters, respectively. A total of 3,078 meters of fully serviced pier space with 17 whirley-type cranes are employed for outfitting. In 1986, a layberth facility (Berth 315) was added which can accommodate two 335-meter VLCCs in lay-up status.

The yard has 46,500 square meters of fully enclosed service shops and warehouse space. The 11 module assembly bays are 98 meters long, 21 meters clear width, and 18 meters clear height.

The Portland Ship Yard is preparing to expand its modular construction capability by an additional 38,000 square meters, located in the Swan Island Lagoon. This facility will be suitable for constructing ship modules.

As of mid-1994 the shipyard employed about 1,080 people, down from 1,560 a year earlier.



**Portland Ship Yard  
Portland, Oregon**

DEC 1994

17. Tacoma Boatbuilding Company

In operation since 1926 in Tacoma, WA, this shipyard has designed, constructed, and repaired vessels for commercial customers, the Navy and Coast Guard, and foreign governments. Tacoma Boat's overall facilities consist of eight Hectares located on the Hylebos Waterway adjacent to Commencement Bay.

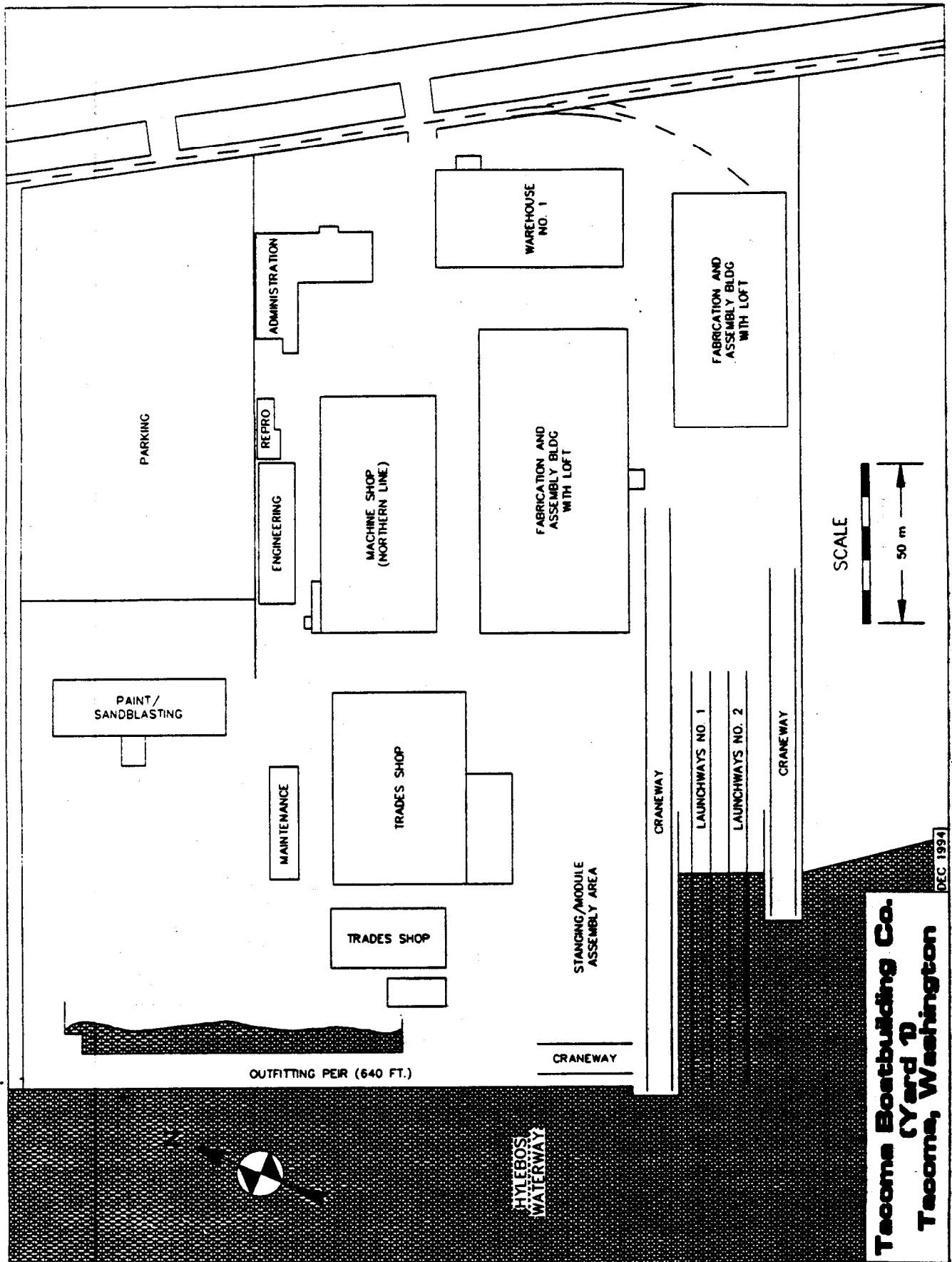
Tacoma Boat has constructed a variety of standard-class tuna purseiners, a semi-submersible offshore oil-drilling rig, barges and tug/supply vessels for the offshore oil industry, WYTM icebreaking tugs and WMEC cutters 82 meters long for the Coast Guard, revolutionary-design tractor tugs, and high-speed patrol ships, gunboats, and minesweepers for the Navy and/or foreign governments. The company also helped design and build an 80 knot surface effect ship (SES).

During the 1984 to mid-1991 period, Tacoma delivered 12 ocean surveillance ships (T-AGOS) to the U.S. Navy. This T-AGOS contract was a focal point for zone outfitting in which various portions or "zones" of a ship were built separately as virtually complete units and then assembled at the launchway.

The company's activity under present market conditions is primarily in the area of ship repair on both commercial and Government contracts and in its Northern Line Machine & Propeller Division for deck equipment construction and repair and propulsion system fabrication and repair.

Tacoma Boat's facilities include two end-launch ways which can accommodate new construction vessels up to 130 meters by 30 meters and the haulout of barges up to 28 meters and 4,000 tons. Available for outfitting and repair work are 212 meters of berthing space.

The total work force at Tacoma Boat at mid-1994 was 89, compared to 40 a year earlier.



**Tacoma Boatbuilding Co.**  
 (Yard D)  
 Tacoma, Washington

DEC 1994

HYLEBOS  
 WATERWAY

18. Tampa Shipyards, Inc.

Founded in 1948, Tampa Shipyards, Inc., (formerly Tampa Ship Repair and Drydock Co.) is a full service yard which was purchased by The American Ship Building Co. in 1972 and is located on the recently deepened 13 meter Sparkman Channel in Tampa, FL. This channel depth reduces to 10 meters approximately 457 meters from the shipyard.

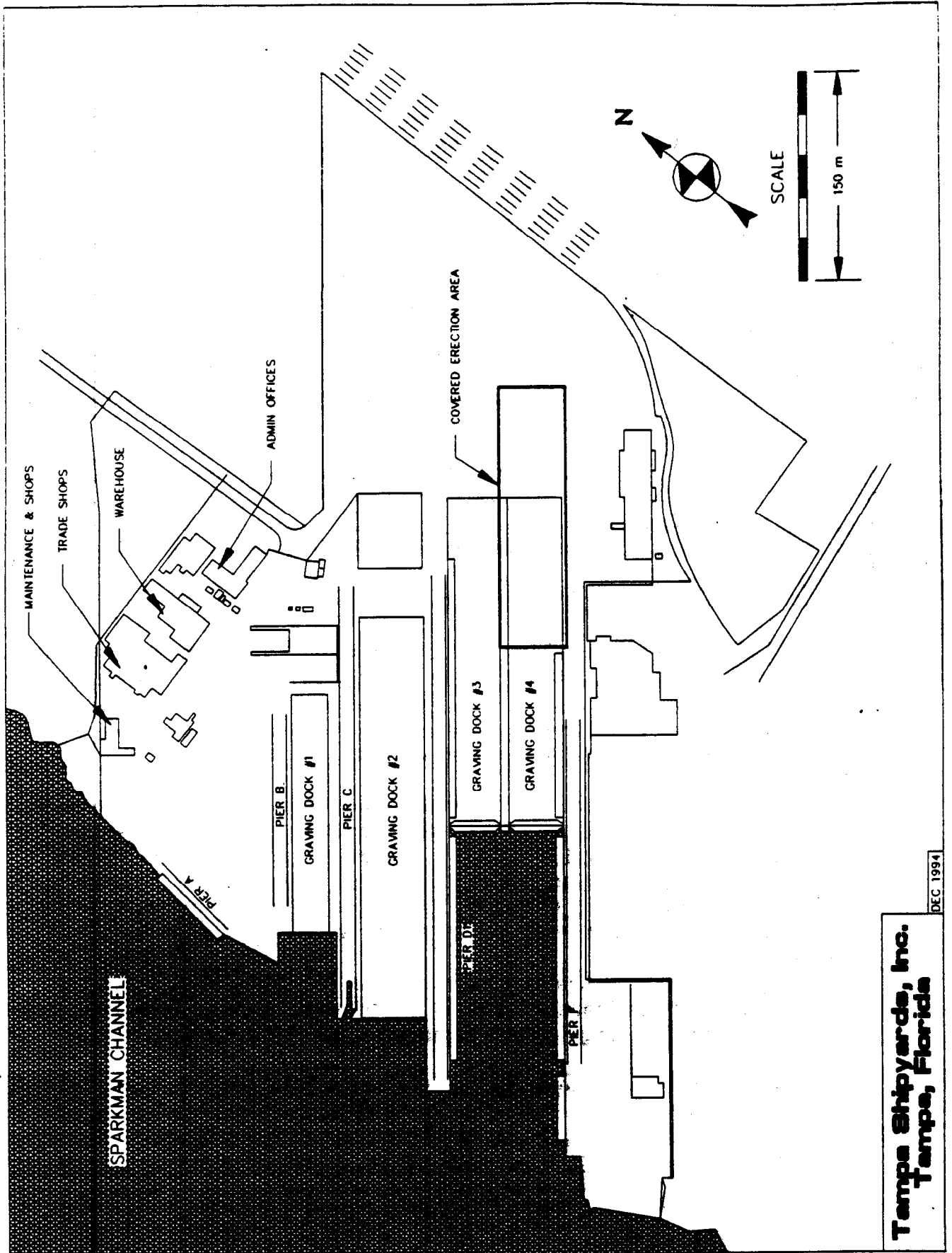
During World War II, the company built Navy auxiliary vessels and C2 cargo ships for the Maritime Commission. Since World War II, Tampa Ship has been a major Gulf Coast repair yard. During the 1980's significant projects completed by Tampa Ship included the conversion of four Moore-McCormack C4 cargo ships to larger self-sustaining breakbulk/container vessels and the construction of five 30,000 dwt clean-product, ice-strengthened tankers for charter to the Military Sealift Command.

During 1989, Tampa Shipyards completed the conversion of two freighters to auxiliary crane ships, T-ACS 7 and 8, for the Maritime Administration. The keel of the T-AGOS ocean surveillance ship, IMPECCABLE, was laid in March 1992 and construction began in July 1993 on the first of six 41-meter, 6,700 hp tractor tugs for Bay Transportation.

Major facility installations were integrated into Tampa's ship construction program in 1984. The additions include: a concrete pier, two graving docks, two wet berths, additional shops, and an erection/assembly building. The erection/assembly building is 183 meters by 44 meters by 35 meters, and is serviced by three overhead bridge cranes with a combined lifting capacity of 908 metric tons. About 107 meters of this building straddles one of the graving docks, allowing pre-assembled units weighing in excess of 908 metric tons to be erected in a covered environment. The company currently has four graving docks operational. The largest can handle ships up to 273 meters by 44 meters. Two of the drydocks can accommodate a vessel as large as 226 meters by 32 meters.

To provide additional fabricating capability, Tampa Ship currently operates the Westinghouse heavy steel fabricating facility on Tampa's Westshore Blvd. This facility provides over four hectares of covered fabrication floor, bridge cranes up to 817 metric ton capacity, and barge loading facilities. The building is two hours by tow from Tampa Ship. This heavy steel fabricating facility is now referred to as the Westshore Facility. In addition, Tampa Ship currently leases two wet berths north of the main yard at South Slip. These wet berths are 256 meters and 213 meters long.

As of mid-1994, 250 people were on Tampa's payroll, down from 1,410 a year earlier.



DEC 1994

**Tempe Shipyards, Inc.**  
**Tempe, Florida**

19. Todd Pacific Shipyards Corporation - Seattle Division

Todd's Seattle Division is located at the northwest corner of Harbor Island in Elliot Bay, less than 10 minutes from downtown Seattle, WA. From 1898 until 1916, when the William H. Todd Co. of New York bought the shipyard from the Seattle Construction and Drydock Co., a variety of vessels were produced, including the world's finest six-masted barkentine and (at that time) the world's fastest single-screw steamer. This 21 hectare yard has been a prime supplier of fighting ships for the Navy. During World War II, Todd-Seattle constructed over 125 ships and repaired and serviced some 2,700 deep draft vessels of all sizes, types, and flags. Since 1952, the yard has built 80 vessels of 20 different types.

As of October 1, 1994, work in the yard included the repair and overhaul of numerous factory trawlers, containerships, barges, tugs, and ferries. Ongoing is the phased maintenance work on the USS CAMDEN and SACRAMENTO which provides a solid base for Todd's skilled labor force.

Todd-Seattle has a dual shipway for simultaneous construction of two ships with a maximum length of 168 meters by 18 meters beam. Combining the two shipways, Todd-Seattle can handle a ship up to 168 meters by 29 meters. A small side-launch building way is also available. In addition to the 40,640 metric ton drydock, there are two other floating drydocks, the larger of which can accommodate ships up to 287 meters by 41 meters.

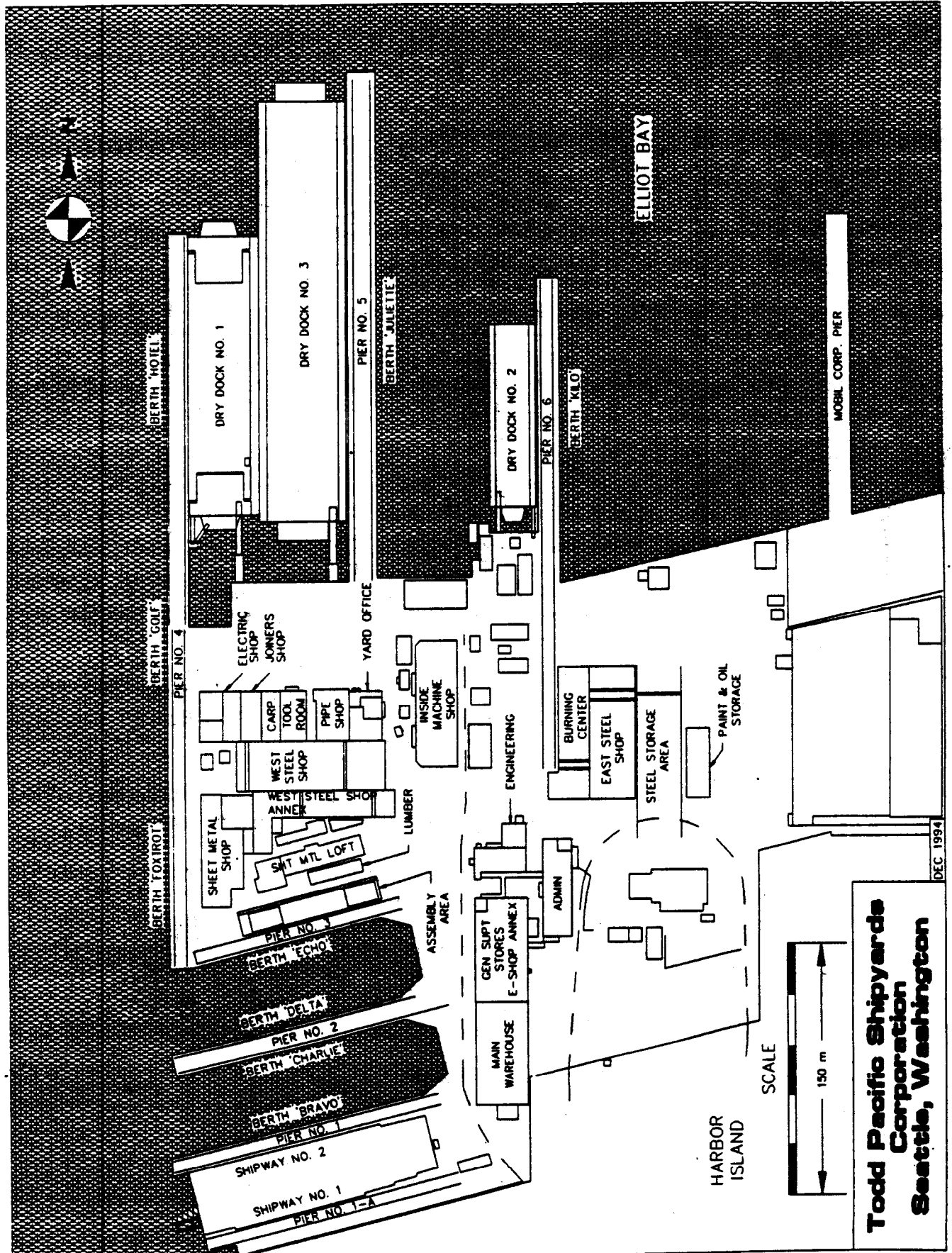
In July 1982, the company transferred a 40,640 metric ton floating drydock from its San Francisco Division to Seattle. A new 137 metric ton traveling whirley crane on the adjacent 305 meter concrete pier serves the floating drydock and the adjacent berths. A second pier was rebuilt in concrete and lengthened to give the yard a 427 meter berth with a 12 meter water depth.

In the summer of 1994, the company relocated the main warehouse from the easternmost part of the yard to a smaller and more efficient space in the building due east of the building ways (the building formerly used as the South Steel Shop). The intent of this move was to relocate the materials closer to the building and repair sights in order to facilitate a smoother flow of material throughout the yard and to trim the potential for excess inventory.

Two wharves and five piers provide a total of 1,834 meters of berthing space for outfitting and repair. The yard is serviced by 15 whirley traveling cranes, with lifting capacities ranging from 23 metric tons to 136 metric tons.

In mid-1994, total employment at the Seattle plant was 700, down from 900 a year earlier.





**Todd Pacific Shipyard  
 Corporation  
 Seattle, Washington**

DEC 1994

## **20. Trinity Marine Group - Beaumont Division**

This shipyard, located on the Neches River in Beaumont, TX, was established in 1917 by Beaumont Shipbuilding and Drydock Co., which built C1-A cargo ships and Navy minesweepers during World War II. In 1947, the yard was acquired by Bethlehem Steel Corp., which pioneered the design and production of mobile offshore drilling rigs, drill ships, offshore oil and gas facilities and barges. After closure in mid-1988, the yard was acquired and reopened in mid-1989 by Trinity Industries, Inc., of Dallas, TX.

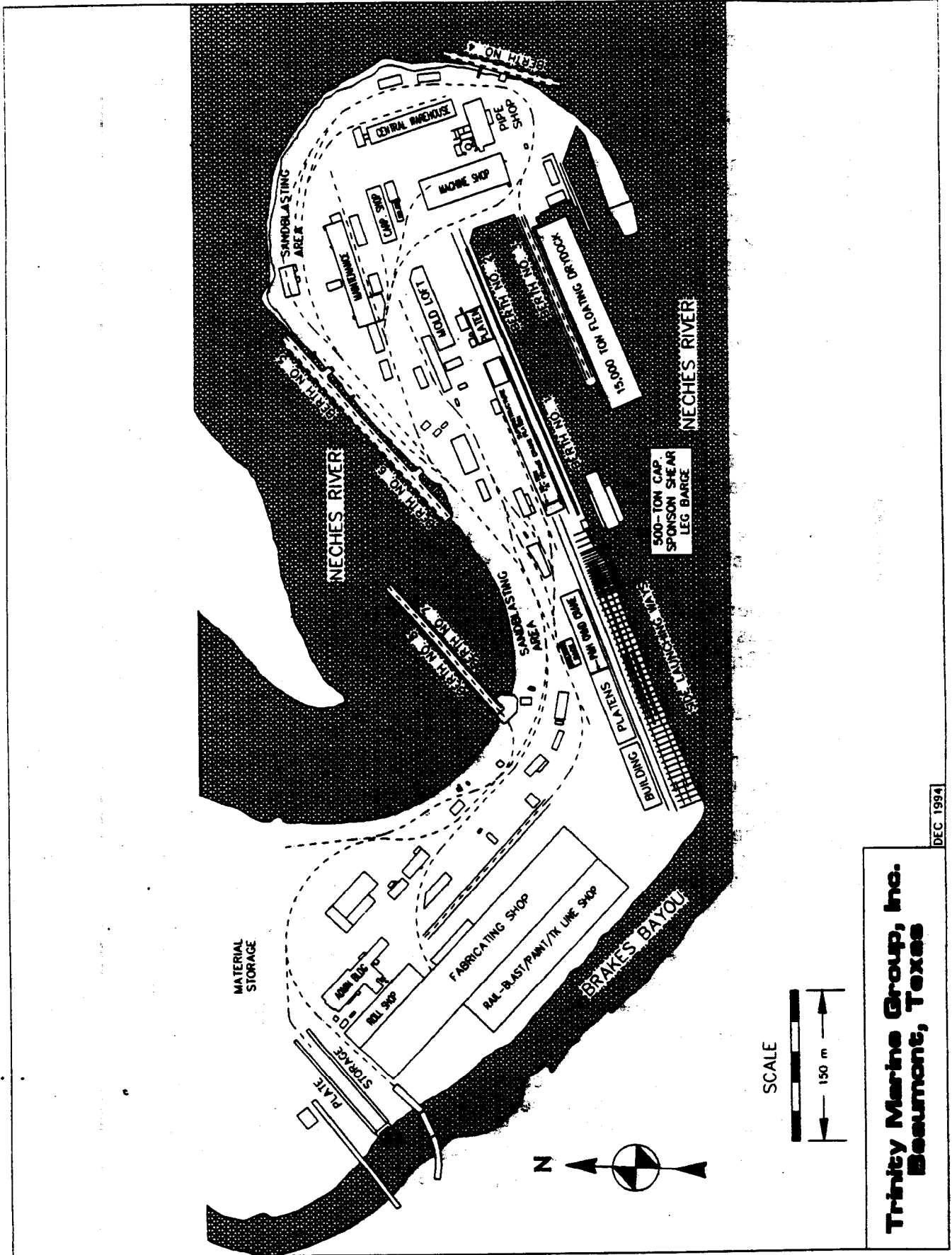
Trinity's Beaumont yard is highly mechanized. In the early 1970s, a multimillion-dollar panel line and material handling facilities were installed. In recent years, capital improvements included installation of a CNC plasma burning machine, larger plate bending rolls, larger overhead bridge cranes, pipe burning and bending equipment, a pipe fabrication shop, improved welding equipment, mobile cranes, and improved building platens.

Trinity-Beaumont has one side-launching way that can accommodate ships up to approximately 259 meters by 32 meters. Also, the yard has recently acquired under lease a floating drydock (AFDM-2) from the Navy. This drydock can accommodate a vessel up to 183 meters in length with a beam of 25 meters. Trinity Beaumont has also recently acquired an additional floating drydock that can accommodate a vessel up to 198 meters in length with a beam of 32 meters.

There are 1,402 meters of fully-serviced piers and wharves and mobile equipment for servicing ships or other vessels at pierside or anchorage. With a 508 metric ton lift capacity, the company's barge-mounted "Big Bessie" is the largest floating derrick between Houston and New Orleans.

While awaiting a major marine construction contract, Trinity is utilizing the yard's flexibility by repairing and servicing railcars, building LPG tank barges, both inland and ocean hopper barges, and recently began construction of one 61 meter casino barge, one 100 meter tank barge, and accomplished miscellaneous docking and repairs to various types of commercial vessels.

Employment at Trinity's Beaumont facility at mid-1994 was 103, down from 218 a year earlier.



**Trinity Marine Group, Inc.  
Beaumont, Texas**

DEC 1994

## SHIP REPAIR INDUSTRY

While over 200 privately owned firms of varying capabilities are involved in repairing ships in the United States, only 32 yards are capable of drydocking vessels 122 meters in length and over. For ships this size, the U.S. shipbuilding and repair industry is currently operating a total of 46 floating drydocks, 30 graving docks, and 3 marine railways. However, some of these graving docks are committed to new construction. The large organizations which have drydocks generally have extensive waterfront acreage and are capable of all types of ship repair and maintenance. Major shipyards usually combine repair, overhaul, and conversion with shipbuilding capabilities, and employment usually numbers in the thousands. It is difficult to draw a sharp line between shipbuilding yards and ship repair yards, as many of the two engage in both types of work.

### Repair (with Drydocking) Facilities

Major drydocking facilities are defined as those yards having at least one drydocking facility that can accommodate vessels 122 meters in length and over, provided that water depth in the channel to the shipyard itself is at least 3.7 meters. These facilities may also be capable of constructing a vessel less than 122 meters length overall. Exhibit 23 is a histogram displaying the reduction in the number of available floating drydocks as the maximum ship length increases.

Appendix B tabulates information updated through 1994 on 32 of these repair yards by geographical location. Additional information is available in the Office of Ship Construction.

### Major Topside Repair Facilities

Major topside repair facilities are those that have sufficient berth/pier space for topside repair of ships 122 meters in length and over, provided that water depth in the channel to the facility itself is at least 3.7 meters. These facilities may also have drydocks and/or construction capability for vessels less than 122 meters in length. Services rendered by these firms vary from a simple repair job to a major topside overhaul, particularly when the work on oceangoing ships can be accomplished without taking the ships out of the water. It is common practice for a shipyard to send its personnel and equipment to provide voyage repairs while the ship is at anchor or working cargo at a commercial marine terminal. There is an increasing trend worldwide to send ship repairers to the ship rather than to bring the ship to the shipyard, thus calling for greater mobility of ship repair personnel.

Appendix B also tabulates information through 1994 on the topside repair yards' facilities (berth/pier space). The yards' building ways, drydocks, marine railways, etc., are not addressed herein as they cannot accommodate vessels 122 meters in length and over. However, detailed data for these facilities were obtained during the MARAD annual shipyard survey and are available in the Office of Ship Construction.

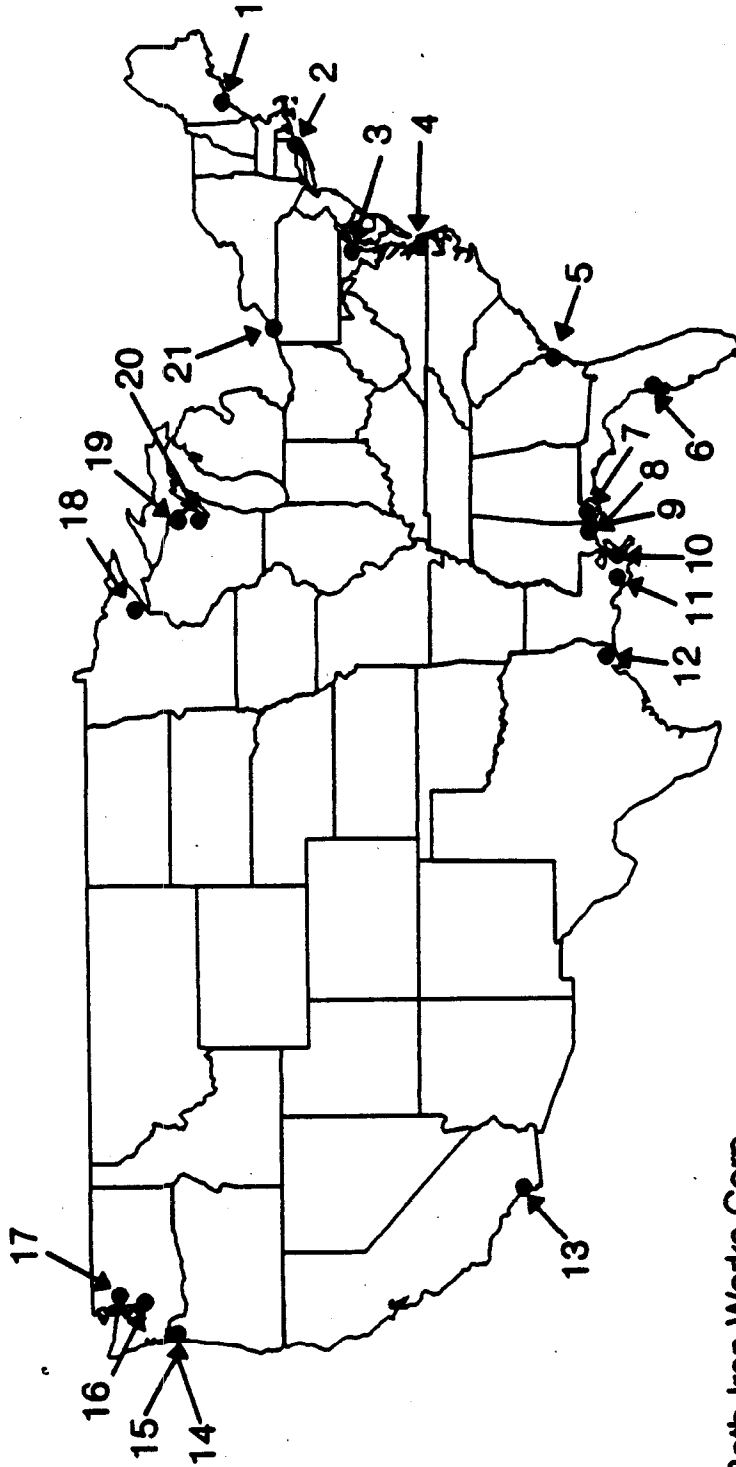
SHIPBUILDING INDUSTRY

AND

ACTIVITIES

1994

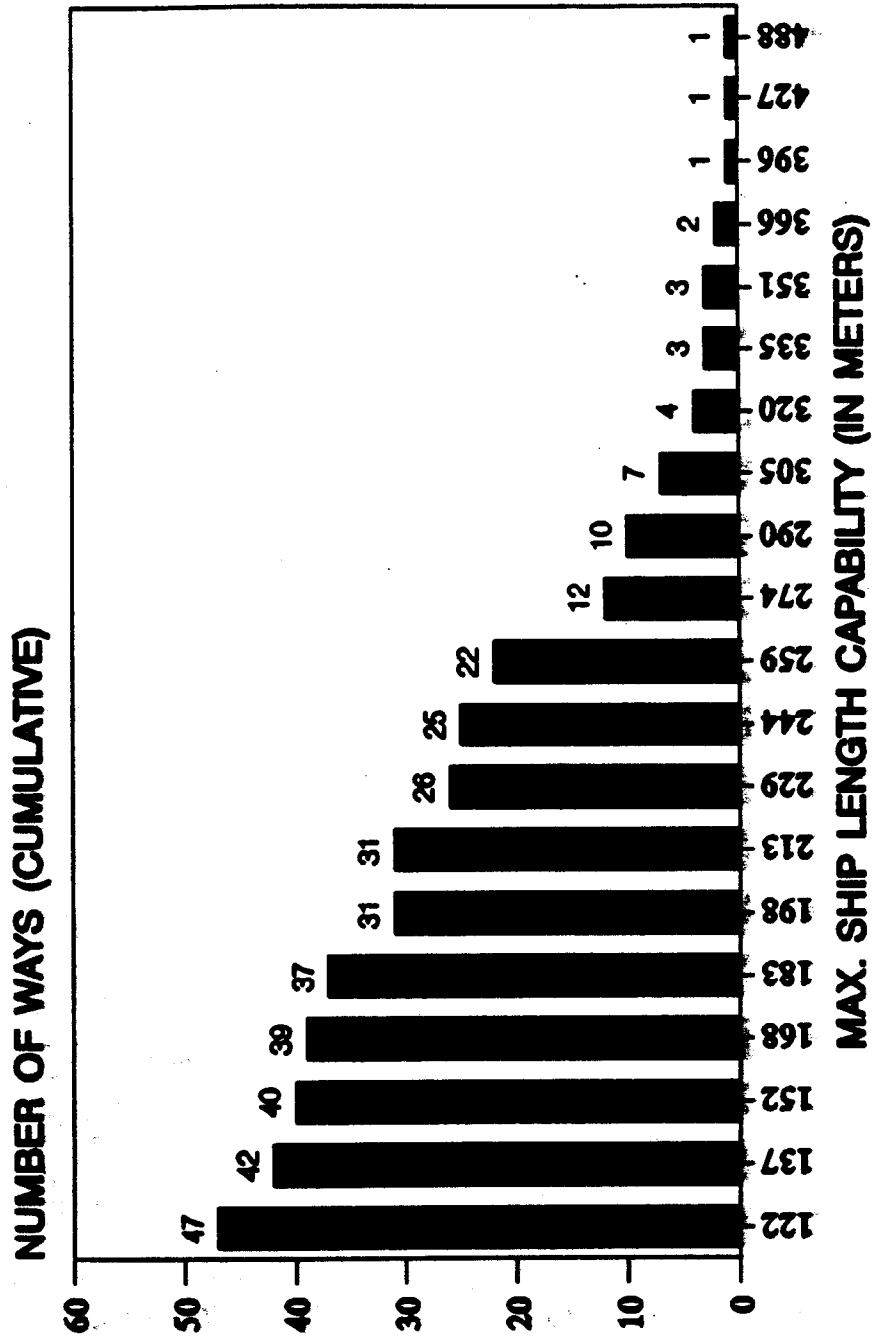
**MAJOR SHIPBUILDING AND REPAIR FACILITIES IN THE UNITED STATES**



- |  |  |
|--|--|
| 1. Bath Iron Works Corp.                 | 12. Trinity Marine Group - Beaumont Div. |
| 2. General Dynamics - Electric Boat Div. | 13. National Steel and Shipbuilding Co.  |
| 3. BethShip, Sparrows Point Yard         | 14. Gunderson, Inc.                      |
| 4. Newport News Shipbuilding             | 15. Portland Ship Yard                   |
| 5. Intermarine USA                       | 16. Tacoma Boatbuilding Co.              |
| 6. Tampa Shipyards, Inc.                 | 17. Todd Pacific Shipyard Corp.          |
| 7. Alabama Shipyard, Inc.                | 18. Fraser Shipyards, Inc.               |
| 8. Halter Marine, Inc., Moss Point Div.  | 19. Marinette Marine Corp.               |
| 9. Ingalls Shipbuilding, Inc.            | 20. Peterson Builders, Inc.              |
| 10. Avondale Industries, Inc.            | 21. Erle Marine Enterprises, Inc.        |
| 11. McDermott Shipyard                   |  |

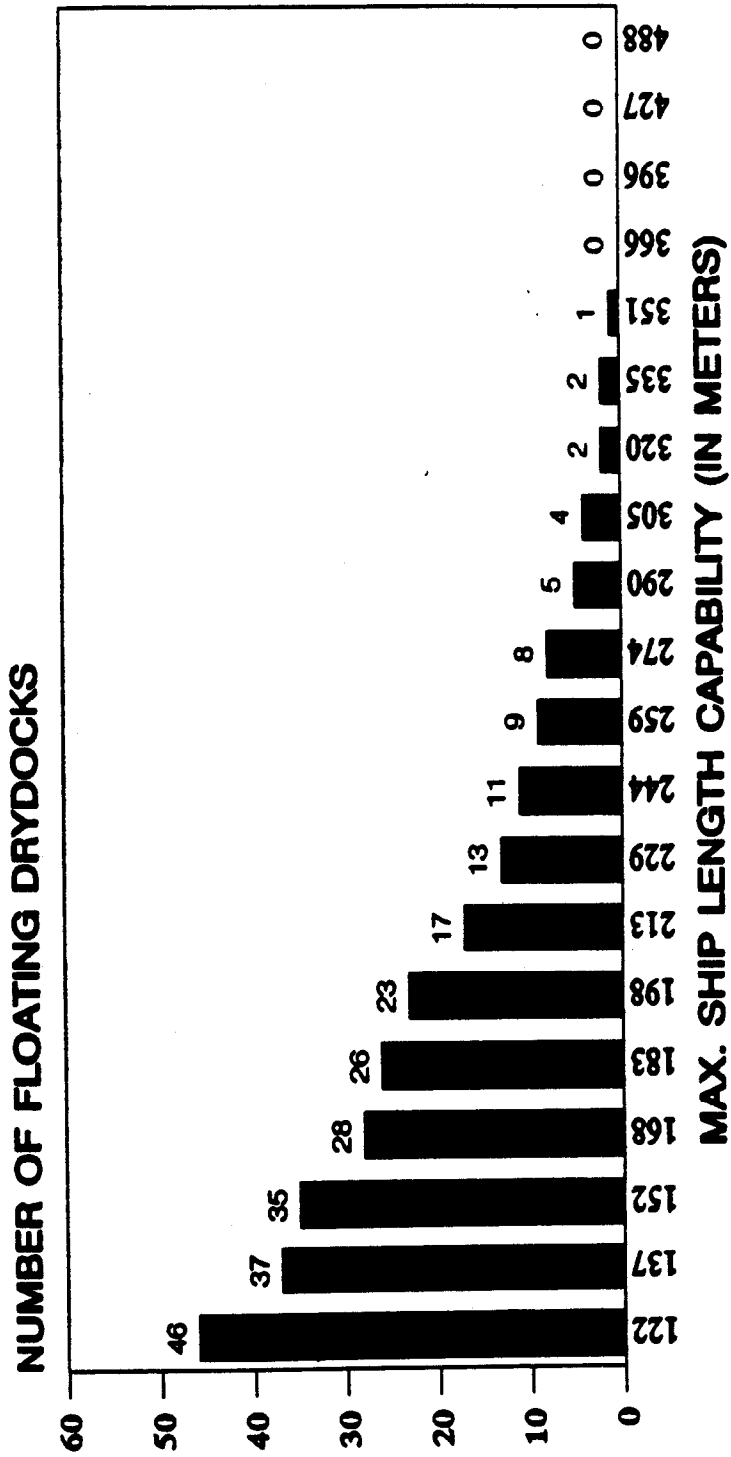
**1994**

**MAJOR U.S. SHIPBUILDING FACILITIES \*  
 NUMBER OF BUILDING POSITIONS  
 BY MAXIMUM LENGTH CAPABILITY  
 (OCTOBER 1, 1984)**



\* Shipways, Graving Docks and Land Level Positions

**MAJOR U.S. SHIP REPAIR FACILITIES \*  
 NUMBER OF FLOATING DRYDOCKS BY  
 MAXIMUM LENGTH CAPABILITY  
 (OCTOBER 1, 1994)**

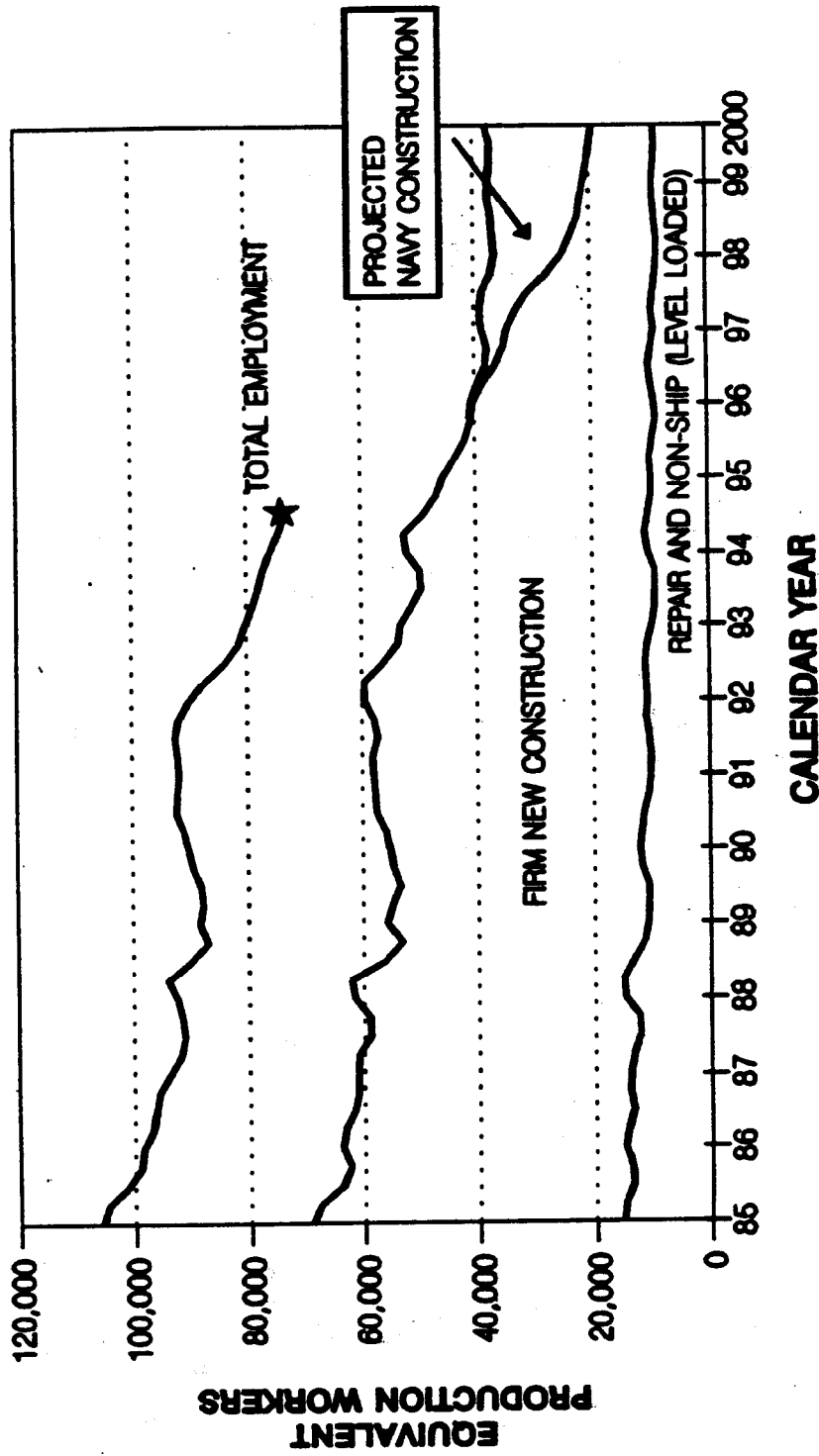


\* Includes Major Shipbuilding and Repair Yards with Drydock Facilities



# SHIPBUILDING INDUSTRY WORKLOAD PROJECTION MAJOR SHIPBUILDING BASE SUMMATION

NUMBER OF YARDS = 21



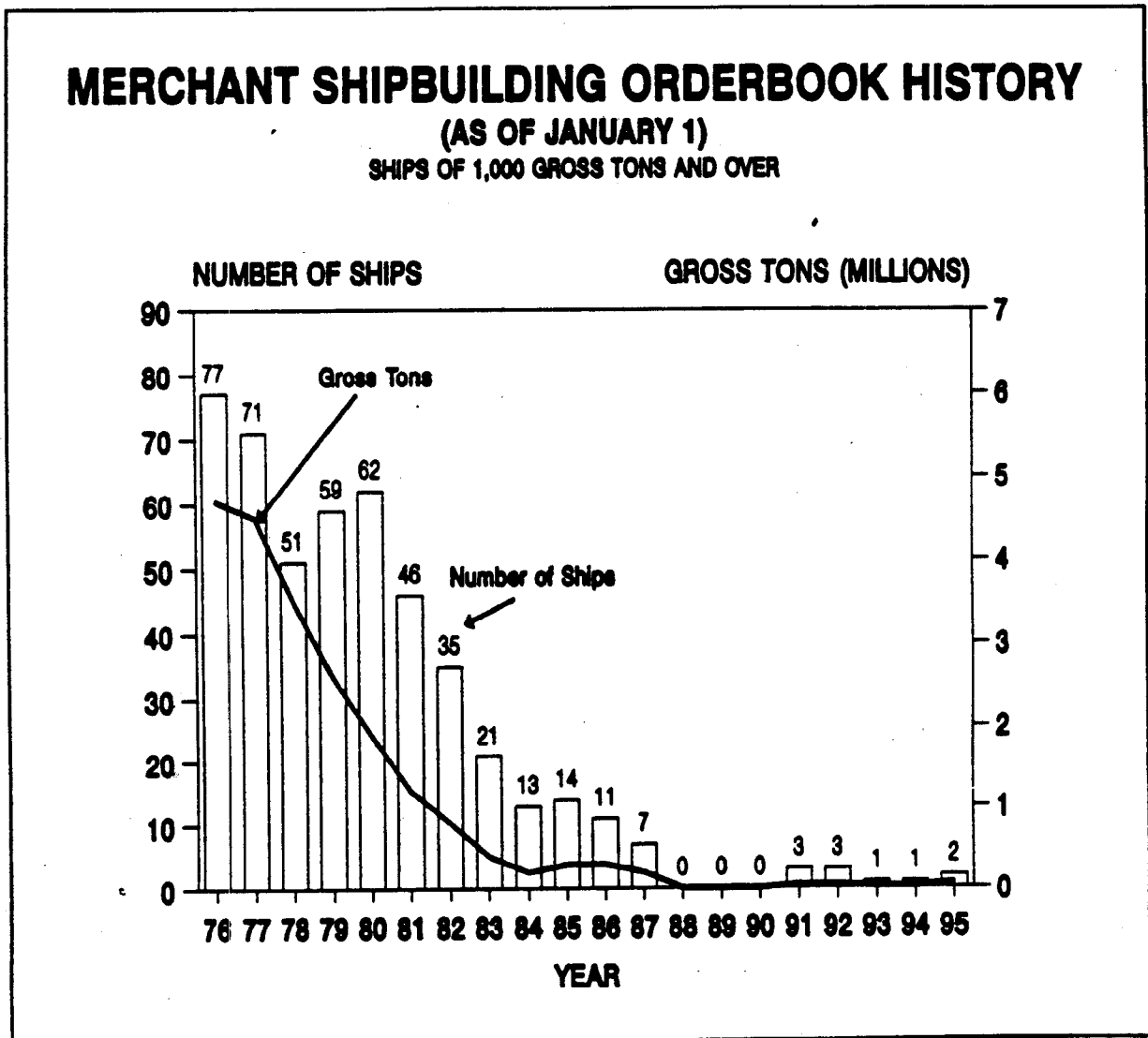
OCTOBER 1994

SOURCE: SHIPYARD DATA FROM FORM NA882 WHEN PROVIDED  
OFFICE OF SHIP CONSTRUCTION; MARITIME ADMINISTRATION

## COMMERCIAL SHIP CONSTRUCTION

In 1994, two new commercial oceangoing ships 1,000 gross tons (GT) or larger were ordered from U.S. shipyards. At the end of 1994, the U.S. orderbook for commercial shipbuilding consisted of two 46,000 deadweight tons (DWT) tankers at Newport News Shipbuilding. These two tankers were ordered by the Greek Fleevs Shipping Corporation for delivery in late 1996. These were the first commercial vessels ordered by a foreign buyer since 1957 and were made possible by the help of the U.S. Maritime Administration's Title XI loan guarantee program. It should be noted that although another vessel, the AMERICAN QUEEN, a 3,950 GT paddlewheel boat, is being built by McDermott it is not oceangoing. The orderbook since 1976 is illustrated in Exhibit 25.

Exhibit 25

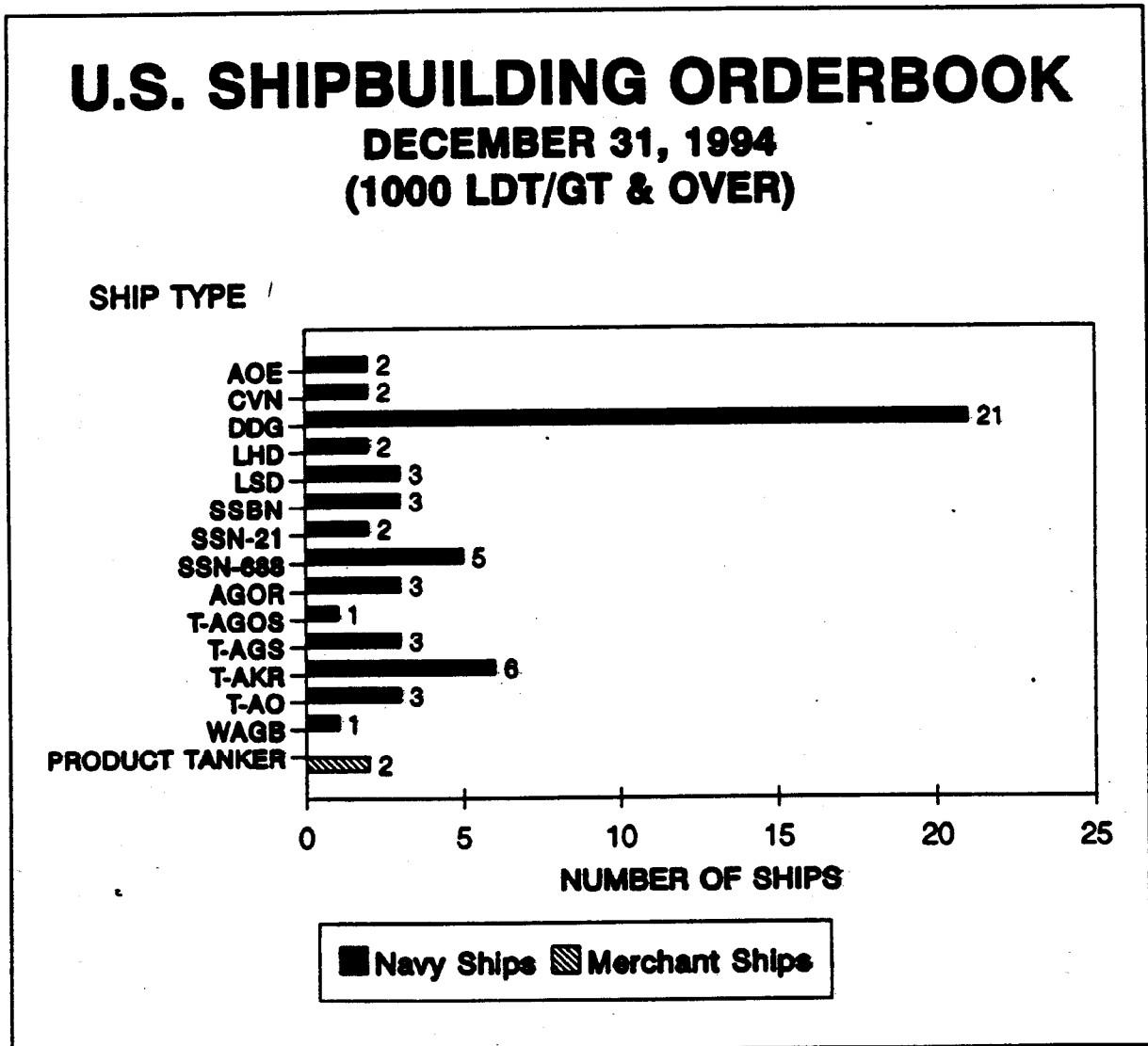


## U.S SHIPBUILDING ORDERBOOK

As of December 31, 1994, new ships on order or under construction (naval vessels 1,000 light displacement tons (LDT) and larger and commercial ships 1,000 GT and larger) in U.S. private shipyards totalled 57 naval and 2 commercial vessels (Exhibit 26).

Eight shipyards had contracts for the construction of naval and commercial vessels. The naval shipbuilding orderbook includes 38 ships scheduled for delivery in 1996 and later. One shipyard had an order for two commercial ships which are scheduled to be delivered in 1996. The naval orderbook is comprised of 14 different types of vessels.

Exhibit 26



## NEW SHIPBUILDING ORDERS - 1994

In 1994, U.S. shipyards received orders for the construction of 11 new naval ships (Exhibit 27). There were also two new oceangoing commercial vessels, for export, ordered. Contracts were placed for the construction of two oceanographic research ships (AGOR) and one ocean survey ship (T-AGS) at Halter Marine, Inc., Moss Point, MS; three vehicle cargo ships (T-AKR) at National Steel and Shipbuilding Co., San Diego, CA; two guided missile destroyers (DDG) at Bath Iron Works Corporation, Bath, ME; one guided missile destroyer (DDG) at Ingalls Shipbuilding, Pascagoula, MS; two vehicle cargo ships (T-AKR) at Avondale Industries, New Orleans, LA. The total contract value for these ships was approximately \$2.1 billion.

Exhibit 27

<b>NEW SHIPBUILDING ORDERS - 1994</b>					
(1,000 LDT or GT and OVER)					
SHIPYARD	SHIP CLASS and HULL NUMBER	APPROXIMATE CONTRACT PRICE (in Millions)	ESTIMATED LDT / GT	CONTRACT AWARD DATE	ESTIMATED DELIVERY DATE
<b><u>NAVAL SHIPS</u></b>					
National Steel Shipbuilding	T-AKR 310	\$269.1	36,114	02/01/94	06/01/98
Halter Marine - Moss Point	AGOR 25	\$33.7	3,300	02/14/94	04/20/97
Halter Marine - Moss Point	AGOR 26	\$33.7	3,300	02/14/94	08/15/97
Bath Iron Works	DDG 77	\$278.9	6,640	07/20/94	05/31/99
Ingalls Shipbuilding	DDG 78	\$278.9	6,640	07/20/94	08/31/99
Bath Iron Works	DDG 79	\$278.9	6,640	07/20/94	02/29/2000
Avondale Shipyards	T-AKR 301	\$210.0	34,408	09/27/94	04/30/98
Avondale Shipyards	T-AKR 302	\$210.0	34,408	09/27/94	10/30/98
National Steel Shipbuilding	T-AKR 311	\$218.0	36,114	10/19/94	04/30/98
National Steel Shipbuilding	T-AKR 312	\$218.0	36,114	10/19/94	01/30/99
Halter Marine - Moss Point	<u>T-AGS 63</u>	<u>\$47.2</u>	<u>2,815</u>	10/20/94	01/30/98
	11 Ships	\$2,076.4	206,493		
<b><u>COMMERCIAL SHIPS</u></b>					
Newport News Shipbuilding	TANKER	\$38.0	30,340 GT	10/31/94	08/31/1996
Newport News Shipbuilding	<u>TANKER</u>	<u>\$38.0</u>	<u>30,340 GT</u>	10/31/94	12/31/1996
	2 Ships	\$76.0	60,680 GT		

**COMMERCIAL SHIP DELIVERIES - 1994**

One commercial was ship delivered by U.S. shipyards during 1994 (Exhibit 28). The sulphur carrier SULPHUR ENTERPRISE was the third sulphur carrier delivered by McDermott Shipyards since 1992. The SULPHUR ENTERPRISE, a 160 meter, 16,617 GT ship, was ordered in May 1992.

Although 1993 saw U.S. shipyards deliver no new commercial ships, in 1992 U.S. shipbuilders delivered three new commercial vessels; two sulfur carriers and one containership. The WILLIAM MCWILLIAMS JR and the BENNO C. SCHMIDT, 121 meter sulfur carriers were built by McDermott Shipyard for Freeport McMoran. The R.J. PFEIFFER, a 217 meter container ship was built by National Steel Shipbuilding Co., (NASSCO) for Matson Navigation Co.

Exhibit 28

<b>COMMERCIAL VESSELS DELIVERED - 1994 (1,000 GT and OVER)</b>					
<b>SHIPYARD</b>	<b>DESIGN TYPE</b>	<b>VESSEL NAME</b>	<b>GROSS TONS</b>	<b>DELIVERY DATE</b>	<b>CONTRACT PRICE (In Millions)</b>
McDermott Shipyards	<u>SULPHUR CARRIER</u> 1 Ship	SULPHUR ENTERPRISE	<u>16,617</u> 16,617	10/06/94	<u>\$55.0</u> \$55.0

## NAVY SHIP DELIVERIES - 1994

During calendar year 1994, U.S. private shipyards delivered 15 new naval vessels, 1,000 LDT and larger. The naval vessels delivered totaled 158,057 LDT and had an initial contract value of approximately \$3.5 billion (Exhibit 29). By comparison, U.S. shipyards delivered 18 new naval vessels valued at approximately \$3.5 billion in 1993.

Ten different types of naval ships were delivered by eight shipyards during 1994: 2 - fast combat ships (AOE); 1 - guided missile cruiser (CG); 4 - guided missile destroyers (DDG); 1 - amphibious assault ship (LHD); 1 - dock landing ship (LSD); 1 - mine countermeasure ship (MCM); 1 - ballistic missile submarine (SSBN); 2 - attack submarines (SSN); 1 - coastal hydrographic survey ship (T-AGS); and 1 - fleet oiler (T-AO).

Exhibit 29

### NAVY NEW CONSTRUCTION VESSELS DELIVERED - 1994 (1,000 LDT and OVER)

SHIPYARD	SHIP CLASS and HULL NUMBER	VESSEL NAME	ESTIMATED LDT	DELIVERY DATE	APPROXIMATE CONTRACT PRICE (In Millions)
National Steel Shipbuilding	AOE 6	SUPPLY	20,732	01/31/94	\$290.9
Avondale Industries	T-AO 202	YUKON	14,586	03/25/94	\$97.5
Ingalls	CG 73	PORT ROYAL	7,009	04/25/94	\$192.3
Ingalls	DDG 55	STOUT	6,640	05/16/94	\$232.3
Bath Iron Works	DDG 56	JOHN S MC CAIN	6,640	05/27/94	\$203.3
General Dynamics, EB	SSBN 740	RHODE ISLAND	12,500	06/22/94	\$644.0
Peterson Builders	MCM 14	CHIEF	1,000	07/08/94	\$65.9
National Steel Shipbuilding	AOE 7	RAINER	20,732	08/25/94	\$199.4
Newport News Shipbuilding	SSN 766	CHARLOTTE	6,000	08/31/94	\$257.5
Ingalls	DDG 57	MITSCHER	6,640	10/03/94	\$232.2
Halter Marine, Moss Point	T-AGS 60	PATHFINDER	2,815	10/28/94	\$49.9
Avondale Industries	LSD 49 (CV)	HARPERS FERRY	11,890	11/01/94	\$157.4
General Dynamics, EB	SSN 768	HARTFORD	6,000	11/01/94	\$347.4
Ingalls	LHD 4	BOXER	28,233	11/21/94	\$341.4
Bath Iron Works	<u>DDG 58</u>	<u>LABOON</u>	<u>6,640</u>	12/02/94	<u>\$203.3</u>
TOTAL	15 Ships		158,057		<u>\$3,514.7</u>

## NAVY'S T-SHIP PROGRAM

The Navy's T-ship program continued to be an important segment of ship construction and conversion activity for U.S. shipyards. T-ships are auxiliary vessels funded by the Navy budget but designed to be civilian-manned and under the control of the Military Sealift Command. Since mid-1979, 16 U.S. private shipyards have been awarded contracts for the construction of 62 new ships and the conversion of 36 existing vessels. The initial contract value for these vessels totalled approximately \$8.3 billion.

During 1994, five new T-ship contracts were placed with U.S. shipyards. Avondale Industries, New Orleans, LA, received an order with an initial contract value of \$420 million to build two vehicle cargo ships (T-AKR), National Steel and Shipbuilding Co., San Diego, CA, received two orders with an initial contract value of \$705.1 million to build three vehicle cargo ships (T-AKR) and Halter Marine, Moss Point, Gulfport, LA, received an order with an initial contract value of \$47.2 million to build one ocean survey ship (T-AGS).

During 1994, deliveries included an ocean survey ship (T-AGS) by Halter Marine Moss Point, Gulfport, LA and one fleet oiler (T-AO) by Avondale Industries, New Orleans, LA.

As of December 31, 1994, 13 T-ships were under construction or on order at four shipyards (Exhibit 30). The value of this orderbook is approximately \$1.9 billion.

Exhibit 30

<b>T-SHIPS ON ORDER OR UNDER CONSTRUCTION</b>				
(as of December 31, 1994)				
SHIPYARD	SHIP CLASS and HULL NUMBER	VESSEL NAME	ESTIMATED DELIVERY DATE	APPROXIMATE CONTRACT PRICE (In Millions)
Halter Marine	T-AGS 61	SUMNER	05/01/95	\$42.9
Halter Marine	T-AGS 62	BOWDITCH	11/29/95	\$42.9
Halter Marine	T-AGS 63	- unnamed -	01/30/98	\$47.2
Tampa	T-AGOS 23	IMPECCABLE	01/31/95	\$58.6
Avondale	T-AKR 300	BOB HOPE	06/30/97	\$265.2
Avondale	T-AKR 301	- unnamed -	04/30/98	\$210.0
Avondale	T-AKR 302	- unnamed -	10/30/98	\$210.0
National Steel	T-AKR 310	- unnamed -	09/30/97	\$269.1
National Steel	T-AKR 311	- unnamed -	04/30/98	\$218.0
National Steel	T-AKR 312	- unnamed -	01/30/99	\$218.0
Avondale	T-AO 201	PATUXENT	06/07/95	\$106.3
Avondale	T-AO 203	LARAMIE	04/05/96	\$106.3
Avondale	<u>T-AO 204</u>	RAPPAHANNOCK	11/07/95	<u>\$97.5</u>
<b>TOTAL</b>	<b>13 Ships</b>			<b>\$1,892.0</b>

## PROJECTED NAVY SHIPBUILDING PLAN

The U.S. Navy shipbuilding plan for fiscal years 1995 - 1999 includes the construction of 38 new ships, 12 ship conversions and 1 carrier refueling, as illustrated in Exhibit 31. More than \$30 billion is proposed for this plan. Shipyard contract value accounts for about a third of this amount, while the remainder is attributed to Government-furnished equipment placed aboard the vessels and to other Government program costs.

The Navy's proposed FY 1995 - 1999 shipbuilding program represents a continued reduction in the amount of new shipbuilding work available to the nation's industrial base when compared with previous Navy programs. At an average of less than eight new ships per year, this program represents a 60 percent reduction in the quantity of ships to be procured compared with the 19 ships per year average for Navy programs during the 1980s.

The Navy's plan includes the construction of 1 nuclear aircraft carrier (CVN), 15 guided missile destroyers (DDG-51), 1 attack submarine (SSN-21) and 5 landing ships (LX). These four shipbuilding programs will probably consume more than 80 percent of the available funding.

Exhibit 31

<b>NAVY SHIPBUILDING PLAN</b>						
<b>Fiscal Years 1995 - 1999</b>						
Ship Class	1995	1996	1997	1998	1999	TOTAL
CVN	1	-	-	-	-	1
SSN	-	1	-	-	-	1
DDG-51	3	3	3	3	3	15
LX	-	1	-	2	2	5
T-AGOS	-	-	1	-	1	2
T-AKR (Fast Sealift)	2	2	2	4	2	12
MISC COMMAND	-	-	-	-	1	1
NAS	-	-	-	1	-	1
CVN (Refueling)	-	-	-	1	-	1
TAE (Conversion)	1	2	2	2	-	7
TAFS (Conversion)	1	2	-	-	-	3
TAO (Conversion)	-	-	1	-	1	2
<b>Total</b>	<b>8</b>	<b>11</b>	<b>9</b>	<b>13</b>	<b>10</b>	<b>51</b>



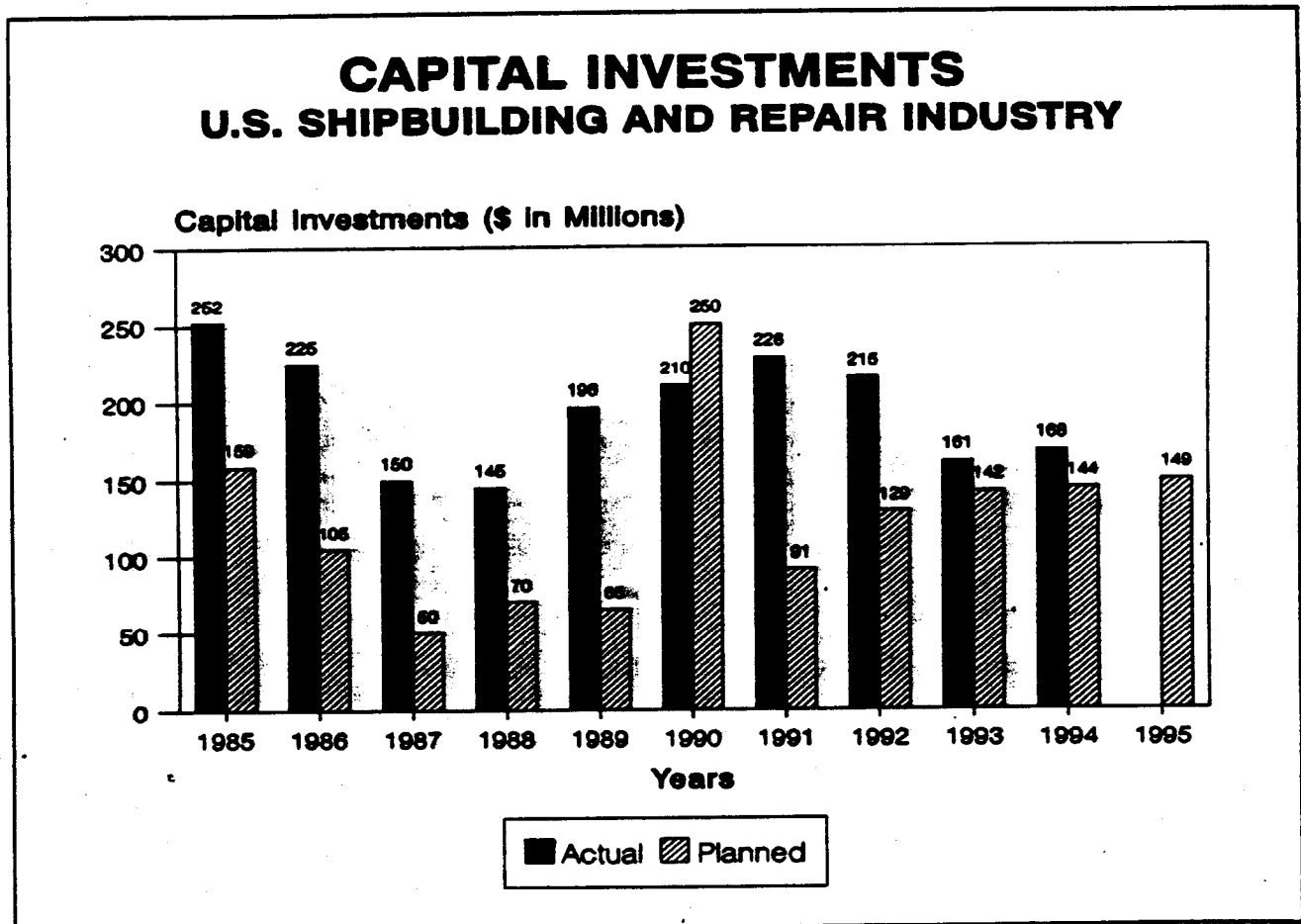
## CAPITAL INVESTMENT

During FY 1994, the U.S. ship construction and ship repair industry invested more than \$168 million in the upgrade and expansion of facilities (Exhibit 32). Much of this investment was to improve efficiency and competitiveness in the Navy's construction, repair and overhaul projects, which are considered the most consistent and stable element in the industry's projected market.

In 1995, the industry plans to spend about \$149 million in the upgrade and expansion of facilities, according to data received by the Maritime Administration. The industry's capital investments since 1970 have totaled more than \$5.3 billion. The actual expenditures between 1985 and 1994, with the exception of 1990, have consistently exceeded those planned.

These capital investments have included building basins, floating drydocks, cranes, automated equipment, and highly mechanized modular techniques - fabrication of large subassemblies and pre-outfitting of ship components.

Exhibit 32

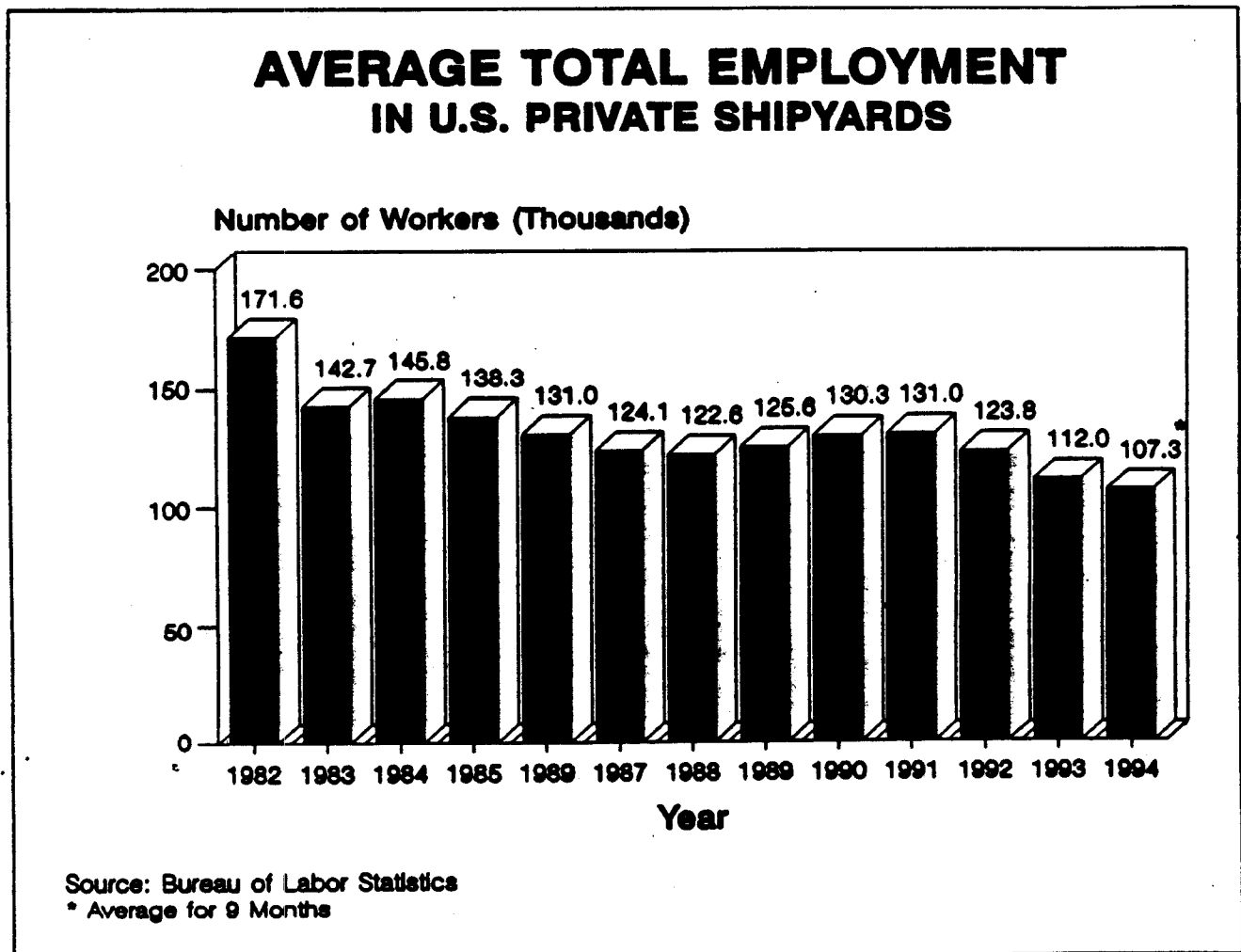


## TOTAL EMPLOYMENT IN PRIVATE SHIPYARDS

According to preliminary employment data published by the Bureau of Labor Statistics (BLS), U.S. Department of Labor, under the Standard Industrial Classification (SIC) Code 3731 (Shipbuilding and Repairing), the average total employment in U.S. private shipyards for the first nine months of 1994 was 107,300 (Exhibit 33). This total reflects a decline of 4.2 percent from the reported total average employment for the shipbuilding and repairing industry for 1993.

According to the data published by the BLS, total average employment in the shipbuilding and repair industry increased slightly between 1989 and 1991, but is currently projected to be lower than any level in the past 39 years. Despite the fact that the employment level increased during 1989 and 1991, it has steadily decreased in the last few years and it has remained considerably lower than that reported in 1982 when 171,600 people were employed in the industry.

Exhibit 33

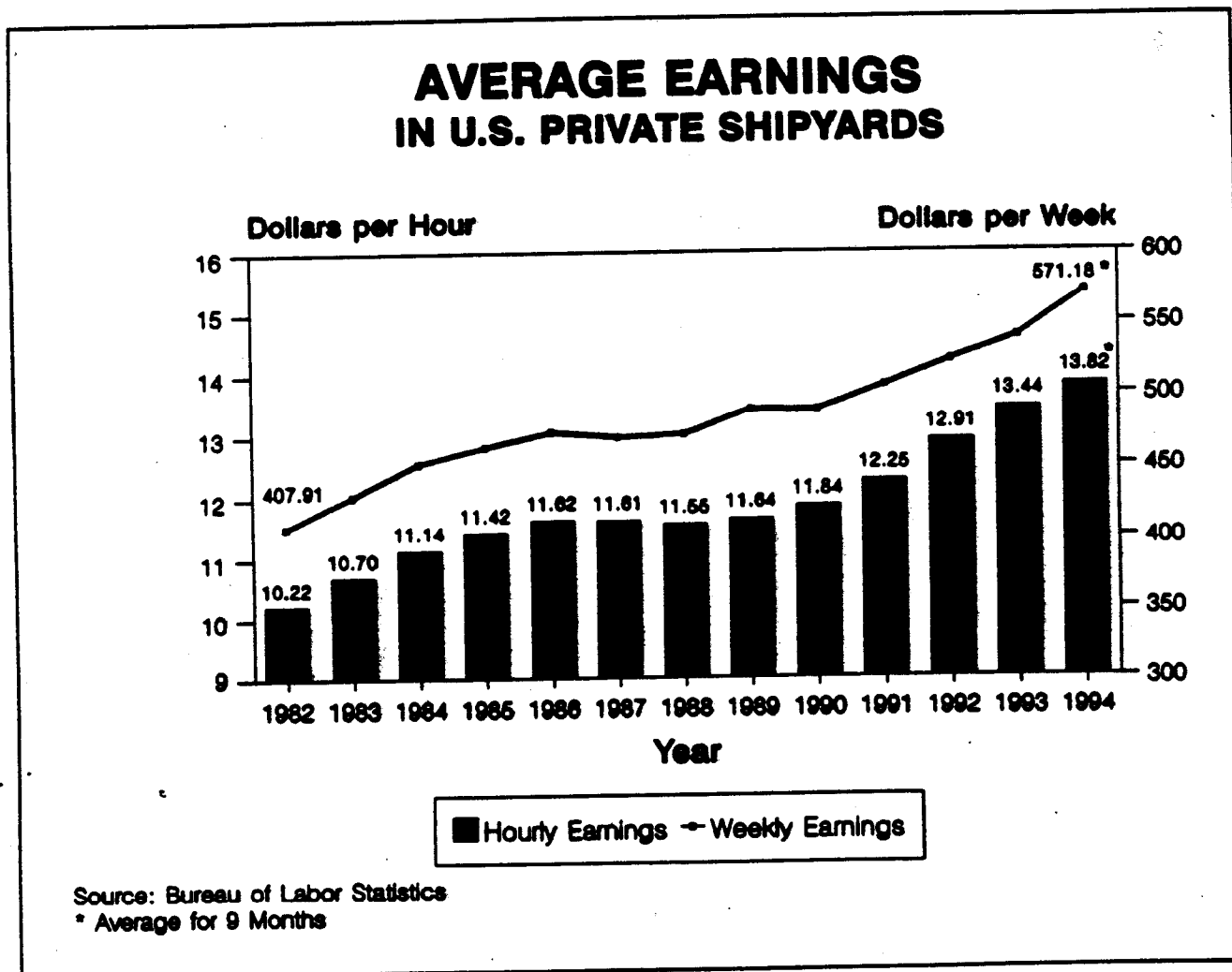


## AVERAGE EARNINGS IN U.S. PRIVATE SHIPYARDS

Average hourly earnings in the U.S. private shipyards are presented on a "gross" basis, reflecting not only changes in basic hourly and incentive wage rates, but also such variable factors as premium pay for overtime and late-shift work, as well as changes in output for workers paid on an incentive plan. Averages of hourly earnings differ from wage rates. Earnings are the actual return to the workers for a stated period of time; rates are the amount stipulated for a given unit of work or time. Gross average weekly earnings are derived by multiplying average weekly hours by average hourly earnings. Therefore, weekly earnings are affected not only by changes in gross average hourly earnings, but also by changes in the length of the workweek.

The annual average earnings of the private shipyards in the United States from 1982 through the first nine months of 1994 show an increase from \$10.22 to an average of \$13.82 (Exhibit 34). During the same period, the average weekly earnings rose from \$407.91 to \$571.18.

Exhibit 34



INTENTIONALLY LEFT BLANK

**TABLE 1**

**ANNUAL SHIP CONSTRUCTION CAPABILITY**

**BY**

**SHIP TYPES HISTORICALLY DELIVERED TO COMMERCIAL SERVICE**

**TABLE 1A: GENERAL CARGO AND DRY BULK**

**TABLE 1B: TANKER AND OBO**

## **BUILDING POSITION DEFINITIONS**

### **Maximum Ship Size (LOA x Beam)**

**SW = Shipway**  
**GD = Graving Dock**  
**FD = Floating Drydock**  
**MR = Marine Railway**  
**LL = Land Level Position**

**TABLE 1A**  
**ANNUAL SHIP CONSTRUCTION CAPABILITY**  
**BY**  
**SHIP TYPES HISTORICALLY DELIVERED TO COMMERCIAL SERVICE**

SHIPYARD	BUILDING POSITION (Qty) / Metric Units (m)	General Cargo					Dry Bulk DWT			
		Gen. Cargo	Mob. Cargo	Container	RO/RO	LASH	Container	21,300	51,000	100,000
	Length (m)	145	221	186	208	272	289	174	183	274
	Beam (m)	21	32	27	31	30	32	23	32	32
<hr/>										
<b>EAST COAST</b>										
Bath Iron Works	219 X 34 SW	1	1	1	1	0	0	1	1	0
	219 X 39 SW	1	0	1	1	0	0	1	1	0
	213 X 26 SW	1	0	1	0	0	0	1	0	0
		3	0	3	2	0	0	3	2	0
BethShip Sparrows Point Yard	(2) 244 X 32 SW	2	2	2	2	0	0	2	2	0
	365 X 59 GD	4	1	3	2	1	1	4	2	1
		6	3	5	4	1	1	6	4	1
Intermarine USA	162 X 20 GD	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0

**TABLE 1A**  
**ANNUAL SHIP CONSTRUCTION CAPABILITY**  
**BY**  
**SHIP TYPES HISTORICALLY DELIVERED TO COMMERCIAL SERVICE**

	General Cargo					Dry Bulk			
	Gen. Cargo	Mob. Cargo	Container	RO/NO	LASH	Container	21,300	51,000	100,000
Length (m)	145	221	186	208	272	289	174	183	274
Breadth (m)	21	32	27	31	30	32	23	32	32

**SHIPYARD**                      **BUILDING POSITION**  
**(Qty) / Metric Units (m)**                      **Quantity of Ships**

**EAST COAST**

Newport News Shipbuilding	292 X 37 GD	2	1	2	1	1	1	2	1	1
	334 X 41 GD	2	1	2	1	1	1	2	2	1
	490 X 75 GD	9	4	5	4	2	2	6	4	1
		13	6	9	6	4	4	10	7	3



**TABLE 1A**  
**ANNUAL SHIP CONSTRUCTION CAPABILITY**  
**BY**  
**SHIP TYPES HISTORICALLY DELIVERED TO COMMERCIAL SERVICE**

SHIPYARD	BUILDING POSITION (Qty) / Metric Units (m)	General Cargo						Dry Bulk DWT		
		Gen. Cargo	Mob. Cargo	Container	RO/RO	LASH	Container	21,300	51,000	100,000
	Length (m)	145	221	186	208	272	289	174	183	274
	Beam (m)	21	32	27	31	30	32	23	32	32
<b>GULF COAST</b>										
Alabama Shipyard	290 X 50 LL	4	0	0	0	0	0	0	0	0
Avondale Industries	(2) 311 X 53 LL	8	2	3	3	2	2	6	3	2
	(2) 265 X 38 LL	2	2	2	2	0	0	2	2	0
	10	4	4	5	5	2	2	8	5	2
Halter Marine - Moss Point	146 X 20 LL	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0
Ingalls Shipbuilding	(5) 259 X 53 LL*	25	11	13	11	0	0	16	11	0
	488 X 53 LL*	3	2	2	2	0	0	2	2	0
	28	13	13	15	13	0	0	18	13	0

\* Ship size constrained by maximum launching capability of 259 X 53 meters.

**TABLE 1A**  
**ANNUAL SHIP CONSTRUCTION CAPABILITY**  
**BY**  
**SHIP TYPES HISTORICALLY DELIVERED TO COMMERCIAL SERVICE**

SHIPYARD	BUILDING POSITION (Qty) / Metric Units (m)	General Cargo						Dry Bulk DWT		
		Gen. Cargo	Mob. Cargo	Container	RO/RO	LASH	Container	21,300	51,000	100,000
	Length (m)	145	221	186	208	272	289	174	183	274
	Beam (m)	21	32	27	31	30	32	23	32	32
<b>GULF COAST</b>										
McDermott, Inc.	160 X 30 LL	1	0	0	0	0	0	0	0	0
		1	0	0	0	0	0	0	0	0
Tampa Shipyards	(2) 226 X 32 GD	2	2	2	2	0	0	2	2	0
		2	2	2	2	0	0	2	2	0
Trinity Marine Group Beaumont Division	259 X 32 SW	1	1	1	1	1	0	1	1	0
		1	1	1	1	1	0	1	1	0

**TABLE 1A**  
**ANNUAL SHIP CONSTRUCTION CAPABILITY**  
**BY**  
**SHIP TYPES HISTORICALLY DELIVERED TO COMMERCIAL SERVICE**

SHIPYARD	BUILDING POSITION (Qty) / Metric Units (m)	General Cargo						Dry Bulk DWT		
		Gen. Cargo	Mob. Cargo	Container	RO/RO	LASH	Container	21,300	51,000	100,000
	Length (m)	145	221	186	208	272	289	174	183	274
	Beam (m)	21	32	27	31	30	32	23	32	32
<b>WEST COAST</b>										
Gunderson Marine, Inc.	229 X 32 SW	1	1	1	1	0	0	1	1	0
		1	1	1	1	0	0	1	1	0
National Steel & Shipbuilding	(2) 274 X 34 SW	2	2	2	2	2	0	2	2	2
	303 X 52 GD	4	1	1	1	1	1	2	1	1
		6	3	3	3	3	1	4	3	3
Portland Ship Yard	183 X 30 LL	1	0	0	0	0	0	0	0	0
	305 X 55 LL	1	1	1	1	0	0	1	1	0
		2	1	1	1	0	0	1	1	0
Tacoma Boatbuilding	(2) 130 X 14 SW*	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0

\* Vessel with beam up to 30 meters can be constructed by joining the two shipways.

**TABLE 1A**  
**ANNUAL SHIP CONSTRUCTION CAPABILITY**  
**BY**  
**SHIP TYPES HISTORICALLY DELIVERED TO COMMERCIAL SERVICE**

		General Cargo						Dry Bulk DWT		
SHIPYARD	BUILDING POSITION (Qty) / Metric Units (m)	Gen. Cargo	Mob. Cargo	Container	RO/RO	LASH	Container	21,300	51,000	100,000
		Length (m)		145	221	186	208	272	289	174
Beam (m)		21	32	27	31	30	32	23	32	32
Quantity of Ships										
Todd-Seattle	(2) 168 X 18 SW** 1		0	0	0	0	0	1	0	0
		1	0	0	0	0	0	1	0	0

\*\* Max ship size is 168 X 29 meters using two adjacent 168 X 18 meter SWs.

**TABLE 1A  
ANNUAL SHIP CONSTRUCTION CAPABILITY  
BY  
SHIP TYPES HISTORICALLY DELIVERED TO COMMERCIAL SERVICE**

SHIPYARD	BUILDING POSITION (Qty) / Metric Units (m)	General Cargo						Dry Bulk DWT		
		Gen. Cargo	Mob. Cargo	Container	RO/RO	LASH	Container	21,300	51,000	100,000
	Length (m)	145	221	186	208	272	289	174	183	274
	Beam (m)	21	32	27	31	30	32	23	32	32
<b>GREAT LAKES *</b>										
Erie Marine	375 X 35 GD	1	0	0	0	0	0	1	0	0
Fraser Shipyards	252 X 23 GD	1	0	0	0	0	0	1	0	0
Marinette Marine	122 X 24 LL	0	0	0	0	0	0	0	0	0
Peterson Builders	125 X 21 LL	0	0	0	0	0	0	0	0	0

\* NOTE: Maximum size ship that can exit the St. Lawrence Seaway is 222 meters X 24 meters.

**TABLE 1A**  
**ANNUAL SHIP CONSTRUCTION CAPABILITY**  
**BY**  
**SHIP TYPES HISTORICALLY DELIVERED TO COMMERCIAL SERVICE**

	General Cargo						Dry Bulk		
	Gen. Cargo	Mob. Cargo	Container	RO/RO	LASH	Container	21,300	51,000	100,000
Length (m)	145	221	186	208	272	289	174	183	274
Beam (m)	21	32	27	31	30	32	23	32	32
<hr/>									
REGION	Quantity of Ships								
EAST COAST	22	10	17	12	5	5	18	13	4
GULF COAST	46	20	23	21	3	2	29	21	2
WEST COAST	10	5	5	5	3	1	7	5	3
GREAT LAKES *	2	0	0	0	0	0	2	0	0
TOTAL BUILDING POSITIONS - ALL YARDS	80	35	45	38	11	8	56	39	9

\* NOTE: Maximum size ship that can exit the St. Lawrence Seaway is 222 meters X 24 meters.

**TABLE 1B**  
**ANNUAL SHIP CONSTRUCTION CAPABILITY**  
**BY**  
**SHIP TYPES HISTORICALLY DELIVERED TO COMMERCIAL SERVICE**

		Tanker										OBO
		(LNG)										
		25,000	38,000	89,000	120,000	125,000	225,000	265,000	80,000	160,000		
SHIPYARD	BUILDING POSITION (Qty) / Metric Units (m)											Quantity of Ships
		Length (m)	210	272	280	284	335	335	270	304	270	
	Beam (m)	21	27	32	42	43	43	54	32	32	444	
<b>EAST COAST</b>												
Bath Iron Works	219 X 34 SW	1	1	0	0	0	0	0	0	0	0	0
	219 X 39 SW	1	0	0	0	0	0	0	0	0	0	0
	213 X 26 SW	1	1	0	0	0	0	0	0	0	0	0
		3	2	0	0	0	0	0	0	0	0	0
BethShip Sparrows Point Yard	(2) 244 X 32 SW	2	2	0	0	0	0	0	0	0	0	0
	365 X 59 GD	3	2	1	1	1	1	1	1	1	1	1
		5	4	1	1	1	1	1	1	1	1	1
Intermarine USA	162 X 20 GD	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0

**TABLE 1B  
ANNUAL SHIP CONSTRUCTION CAPABILITY  
BY  
SHIP TYPES HISTORICALLY DELIVERED TO COMMERCIAL SERVICE**

SHIPYARD	BUILDING POSITION (Qty) / Metric Units (m)	Tanker						OBO		
		25,000	38,000	89,000	120,000	125,000	225,000		265,000	80,000
		(LNG)								
	Length (m)	189	210	272	280	284	335	335	270	304
	Beam (m)	21	27	32	42	43	43	54	32	444
<b>EAST COAST</b>										
Newport News Shipbuilding	292 X 37 GD	1	1	1	0	0	0	0	1	0
	334 X 41 GD	1	1	1	0	0	0	0	1	0
	490 X 75 GD	6	4	2	1	1	1	1	2	1
		8	6	4	1	1	1	1	4	1



**TABLE 1B**  
**ANNUAL SHIP CONSTRUCTION CAPABILITY**  
**BY**  
**SHIP TYPES HISTORICALLY DELIVERED TO COMMERCIAL SERVICE**

SHIPYARD	BUILDING POSITION (Qty) / Metric Units (m)	Tanker							Quantity of Ships	
		25,000	38,000	89,000	120,000	125,000	225,000	265,000		80,000
		(LNG)								
	Length (m)	189	210	272	280	284	335	335	270	304
	Beam (m)	21	27	32	42	43	43	54	32	444
<b>GULF COAST</b>										
Alabama Shipyard	(4) 290 X 50 LL	0	0	0	0	0	0	0	0	0
Avondale Industries	(2) 311 X 53 LL	3	3	2	2	2	1	1	2	1
	(2) 265 X 38 LL	4	3	0	0	0	0	0	0	0
		7	6	2	2	2	1	1	2	1
Halter Marine - Moss Point	146 X 20 SW	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0
Ingalls Shipbuilding	(5) 259 X 53 LL *	16	13	0	0	0	0	0	0	0
	488 X 53 LL *	2	2	0	0	0	0	0	0	0
		18	15	0	0	0	0	0	0	0

\* Ship size constrained by maximum launching capability of 259 meters X 53 meters.

**TABLE 1B**  
**ANNUAL SHIP CONSTRUCTION CAPABILITY**  
**BY**  
**SHIP TYPES HISTORICALLY DELIVERED TO COMMERCIAL SERVICE**

Tanker

OBO

	25,000	38,000	89,000	120,000	125,000	225,000	265,000	80,000	160,000	
				(LNG)						
Length (m)	189	210	272	280	284	335	335	270	304	
Bearm (m)	21	27	32	42	43	43	54	32	444	

**SHIPYARD**                      **BUILDING POSITION**                      **Quantity of Ships**  
**(Qty) / Metric Units (m)**

**GULF COAST**

McDermott, Inc.	160 X 30 LL	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0

Tampa Shipyards	(2) 226 X 32 GD	2	2	0	0	0	0	0	0
		2	2	0	0	0	0	0	0

Trinity Marine Group Beaumont Division	259 X 32 SW	1	1	1	0	0	0	0	0
		1	1	1	0	0	0	0	0

**TABLE 1B**  
**ANNUAL SHIP CONSTRUCTION CAPABILITY**  
**BY**  
**SHIP TYPES HISTORICALLY DELIVERED TO COMMERCIAL SERVICE**

	Tanker										OBO
	25,000	38,000	89,000	120,000	125,000	225,000	265,000	80,000	160,000		
	(LNG)										
Length (m)	189	210	272	280	284	335	335	- 270	304		
Beam (m)	21	27	32	42	43	43	54	32	444		

SHIPYARD	BUILDING POSITION (Qty) / Metric Units (m)	Quantity of Ships									
<b>WEST COAST</b>											
Gunderson Marine, Inc.	229 X 32 SW	1	1	0	0	0	0	0	0	0	0
		1	1	0	0	0	0	0	0	0	0
National Steel & Shipbuilding	(2) 274 X 34 SW	2	2	2	0	0	0	0	2	0	0
	303 X 52 GD	2	1	1	1	1	0	0	1	0	0
		4	3	3	1	1	0	0	3	0	0
Portland Ship Yard	183 X 30 LL	0	0	0	0	0	0	0	0	0	0
	305 X 55 LL	1	1	0	0	0	0	0	0	0	0
		1	1	0	0	0	0	0	0	0	0
Tacoma Boatbuilding	(2) 130 X 14 SW*	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0

\* Vessel with beam up to 30 meters can be constructed by joining the two shipways.

**TABLE 1B**  
**ANNUAL SHIP CONSTRUCTION CAPABILITY**  
**BY**  
**SHIP TYPES HISTORICALLY DELIVERED TO COMMERCIAL SERVICE**

		Tanker										OBO
		25,000	38,000	89,000	120,000	125,000	125,000	225,000	265,000	80,000	160,000	
		(LNG)										
SHIPYARD	BUILDING POSITION	Quantity of Ships										
	(Qty) / Metric Units (m)											
Todd-Seattle	(2) 168 X 18 SW**	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0
		189	210	272	280	284	335	335	335	270	304	
	Length (m)	21	27	32	42	43	43	54	54	32	444	
	Beam (m)											

\*\* Max ship size is 169 X 29 meters using two adjacent 168 X 18 meter SWs.

**TABLE 1B**  
**ANNUAL SHIP CONSTRUCTION CAPABILITY**  
**BY**  
**SHIP TYPES HISTORICALLY DELIVERED TO COMMERCIAL SERVICE**

SHIPYARD	BUILDING POSITION (Qty) / Metric Units (m)	Tanker										OBO		
		25,000	38,000	89,000	120,000	125,000	125,000	225,000	265,000	80,000	160,000			
	(LNG)													
	Length (m)	189	210	272	280	284	335	335	335	335	335	335	270	304
	Beam (m)	21	27	32	42	43	43	43	54	54	54	54	32	444
<b>GREAT LAKES *</b>														
Erie Marine	375 X 35 GD	1	0	0	0	0	0	0	0	0	0	0	0	0
Fraser Shipyards	252 X 23 GD	1	0	0	0	0	0	0	0	0	0	0	0	0
Marinette Marine	122 X 24 LL	0	0	0	0	0	0	0	0	0	0	0	0	0
Peterson Builders	125 X 22 LL	0	0	0	0	0	0	0	0	0	0	0	0	0

\* NOTE: Maximum size ship that can exit the St. Lawrence Seaway is 222 meters X 24 meters.

**ANNUAL SHIP CONSTRUCTION CAPABILITY  
BY  
SHIP TYPES HISTORICALLY DELIVERED TO COMMERCIAL SERVICE**

	Tankers					OBO			
	25,000	38,000	89,000	120,000	125,000 Cu.m.	225,000	265,000	80,000	160,000
Length (m)	189	210	272	280	284	335	335	270	304
Bearn (m)	21	27	32	42	43	43	54	32	444

REGION	Quantity of Ships									
EAST COAST	17	13	5	2	2	2	2	2	5	2
GULF COAST	28	24	3	2	2	1	1	2	2	1
WEST COAST	6	5	3	1	1	0	0	0	3	0
GREAT LAKES *	1	0	0	0	0	0	0	0	0	0
TOTAL BUILDING POSITIONS - ALL YARDS	52	42	11	5	5	3	3	10	3	3

\* NOTE: Maximum size ship that can exit the St. Lawrence Seaway is 222 meters X 24 meters.

**TABLE 2**

**NUMBER OF SHIPBUILDING POSITIONS BY LENGTH**

**(MAXIMUM SHIP SIZE)**

**NUMBER OF SHIPBUILDING POSITIONS BY LENGTH (MAXIMUM SHIP SIZE) \***

Length OA (In meters):	122	137	152	168	183	198	213	229	244	259	274	290	305	320	335	351	366	396	427	488
<b>EAST COAST</b>																				
Bath Iron Works	3	3	3	3	3	3	3	3	3	3	1	1	1	1	1	1	1			
BethShip, Sparrows Point Yard	3	3	3	3	3	3	3	3	3	3	3	3	2	2	1	1	1	1	1	1
General Dynamics, E. Boat **	1	1	1																	
Intermarine USA	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7
Newport News Shipbuilding	14	14	14	13	13	9	9	9	6	6	4	4	4	3	3	2	2	1	1	1
<b>TOTAL</b>	18	17	15	15	15	15	15	15	13	13	13	3	3	2						
<b>GULF COAST</b>																				
Alabama Shipyards	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Avondale Industries	6	6	5	5	5	5	5	5	5	5	2	2	2	2	2	2	2	2	2	2
Halter Marine - Moss Point	1	1																		
Ingalls Shipbuilding	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
McDermott Shipbuilding	1																			
Tampa Shipyards	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Trinity Marine Group - Beaumont Div.	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
<b>TOTAL</b>	18	17	15	15	15	15	15	13	13	13	3	3	2							
<b>WEST COAST</b>																				
Gunderson Marine, Inc.	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
National Steel & Shipbuilding	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Portland Ship Repair Yard	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Tacoma Boatbuilding	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Todd-Seattle	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
<b>TOTAL</b>	10	8	8	8	6	5	5	5	4	4	4	4	2	1						
<b>GREAT LAKES ***</b>																				
Erie Marine	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Fraser Shipyards	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Marinette Marine	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Peterson Builders	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
<b>TOTAL</b>	5	3	3	3	3	2	2	2	2	2	1	1	1	1	1	1	1	1	1	1
<b>GRAND TOTAL ALL COASTS AND GREAT LAKES</b>	47	42	40	39	37	31	31	26	25	22	12	10	7	4	3	3	2	1	1	1

\* Including Shipways, Graving Docks and Land Level positions.  
 \*\* Engaged exclusively in U.S. Navy submarine construction.  
 \*\*\* Maximum size ship that can exit St. Lawrence Seaway locks is 222 meters X 24 meters.



APPENDIX A

STANDARD FORM 17

FACILITIES AVAILABLE FOR THE CONSTRUCTION

OR REPAIR OF SHIPS

Standard Form 17 (Rev. 3-68)  
DEPARTMENT OF THE NAVY  
SHIPYARD ADMINISTRATION  
Coordinator for Ship Repair  
and Conversion (903-902)

## FACILITIES AVAILABLE FOR THE CONSTRUCTION OR REPAIR OF SHIPS

Public reporting burden for this collection of information is estimated to average 4 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing the burden, to Washington Headquarters Services, Directorate for Information Operations and Services, Paperwork Reduction Project (903-902), Washington, DC 20543. Please DO NOT send your answers to either of these addresses. Send your completed form to the appropriate Department of Defense Office of Maritime Administration.

Form Approved  
OMB No. 0707-0006  
Expires 7-18-96

DATE

**INSTRUCTIONS**  
Forward original copy to appropriate Department of Defense Office or Maritime Administration, Washington, D.C.

**SHIPYARD AND ADDRESS**

NO. OF WAY			LAUNCHING (X one)	DIMENSIONS	MAXIMUM SHIP SIZE (Ton 2,240 lbs.)	DEPTH OF WATER		CONDITION OF WAY	CRANES SERVING WAY			
						OVER WAY END	AT DROP OFF		NO.	TYPE (Plus hook height for bridge cranes)	LIFT CAPACITY (Std. Tons)	
			End	Length	Length O.A.							
			Side	Width	Beam							
			Basin	Depth	Weight							
			End	Length	Length O.A.							
			Side	Width	Beam							
			Basin	Depth	Weight							
			End	Length	Length O.A.							
			Side	Width	Beam							
			Basin	Depth	Weight							
			End	Length	Length O.A.							
			Side	Width	Beam							
			Basin	Depth	Weight							
			End	Length	Length O.A.							
			Side	Width	Beam							
			Basin	Depth	Weight							
			End	Length	Length O.A.							
			Side	Width	Beam							
			Basin	Depth	Weight							
			End	Length	Length O.A.							
			Side	Width	Beam							
			Basin	Depth	Weight							
			End	Length	Length O.A.							
			Side	Width	Beam							
			Basin	Depth	Weight							
			End	Length	Length O.A.							
			Side	Width	Beam							
			Basin	Depth	Weight							
			End	Length	Length O.A.							
			Side	Width	Beam							
			Basin	Depth	Weight							
			End	Length	Length O.A.							
			Side	Width	Beam							
			Basin	Depth	Weight							

IS FIRE PROTECTION AVAILABLE ON IS SHIPWAY NECESSARY?  
BUILDING WAY?  YES  NO  YES  NO

TOTAL RANGE (Difference in M.M.)

LENGTH OF LAUNCHING RIM  
DEPTH OF RIM AT M.L.W.

SHIP'S BERTHS (PIERS, WHARVES, BULKHEADS, MOORING DOLPHINS (A.L.W.))

NO.	TYPE	LENGTH (Actual and usable)	WATER DEPTH		HEIGHT OF DOCK	USE REPAIR AND/OR OUTFITTING	SERVICE AVAILABLE (Use abbreviations of services and units of measure entered under legend)	NO.	CRANES SERVING BERTHS, ETC.	
			INBOARD	OUTBOARD					TYPE (Hook height above A.L.W.)	LIFT CAPACITY (Std. Tons)
	Act.									Lift
	Use.									Reach
	Act.									Lift
	Use.									Reach
	Act.									Lift
	Use.									Reach
	Act.									Lift
	Use.									Reach
	Act.									Lift
	Use.									Reach
	Act.									Lift
	Use.									Reach
	Act.									Lift
	Use.									Reach

DRYDOCKS (mean high water) (List building docks under building ways)

DOCK NO.	MATERIAL CONSTD. OF TYPE (Plating - ribs girders - etc. maximum capacity - ton)	MAXIMUM SHIP SIZE ACCOMMODATED (LENGTH OR BEAM)	LENGTH		CLEAR WIDTH		DEPTH/DRAFT			LIFTING CAPACITY (Ton 2,240 lbs.)	
			OVERALL	AT COPING EDGE OR PROTRUSION (FOR ORFICES)	AT REEL BLOCKS OR CHABLE BAR	AT TOP CHABLE BAR	AT REEL BLOCKS	OVER HILL (CD)	OVER FLOOR		OVER REEL BLOCKS

LEGEND: (Abbreviations of Services)  
 Fresh water ..... F.W. - G.P.M. - P.S.I.  
 Salt water ..... S.W. - G.P.M. - P.S.I.  
 Steam ..... S - P.H.R. - P.S.I.  
 Air ..... A - C.F.M. - P.S.I.  
 Electric power ..... E - V-AC-AMP  
 Electric power ..... E - V-DC-AMP  
 Fire protection ..... FP - G.P.M. - P.S.I.  
 Sanitary sewer ..... SS - Yrs or Mo

NAME OF SHOP OR BUILDING	DIMENSIONS OF SHOP OR BUILDING	MATERIALS PROCESSED (See note)	LARGEST BRIT		WEIGHT OF MATERIAL OR NUMBER AND SIZE OF UNITS PRODUCED PER 8 HOURS (See note)	ALL OTHER SHOPS (List names and dimensions, include mold loft, if any)					
			WIDTH	HEIGHT							
FABRICATING											
PLATE											
SHEET METAL											
SUBASSEMBLY											
CARPENTER											
WOODWORKING											
BOAT ASSEMBLY OR MOLDING											
MACHINE											
ELECTRICAL											
ELECTRONIC											
PWF											
GALVANIZING											
FOUNDRY											
RIGGER											
NOTE - Indicate materials as steel, aluminum, reinforced plastic, wood, plywood, sheet metal, etc.											
SHOP OR YARD CRANES (5 tons or over)											
BRIDGE TYPE			STATIONARY, RAIL OR MOBILE								
CAP. (500 tons)	MAX. SPAN	HEIGHT OF HOOK	AREA /SHOP SERVICED	TYPE	CAP. (500 tons)	MAX. REACH	CAPACITY AT REACH	BOOM LENGTH	HEIGHT HINGE	AREA SERVICED	HGT OF HOOK ABOVE BASE AT OUT REACH

**MAJOR ITEMS OF MACHINE TOOLS AND EQUIPMENT** (List briefly such of the large items as will indicate the capacities of all important shops in maximum work piece size, e.g., 30' plate bending roll, 10' plate shears, 400 ton hot press, 30' plate furnace, engine (with 30" x 20" b.c., etc.)

**STORAGE SPACE (Sq. ft.) FOR COMPONENTS AND MATERIALS** (less boat storage) (List dimensions for each area, plus type material stored)

--	--

<b>RAW STEEL STORAGE (Sq. ft.)</b>	<b>WELDING AND ASSEMBLY (Sq. ft.)</b>	
<b>ACREAGE LEGALLY CONTROLLED</b>		
<b>IN USE</b>	<b>DEVELOPED (including in use)</b>	<b>TOTAL (including undeveloped)</b>
<b>EXISTING LOCAL ORDINANCES LIMITING PRODUCTIVE USE</b>		
<b>LIMITATIONS IMPOSED BY PROPERTY ZONING CLASSIFICATION</b>		
<b>YARD LAYOUT - PLEASE FURNISH A PLOT PLAN OF YARD OR PLANT, IF AVAILABLE</b>		

**PROJECTS UNDER CONSTRUCTION WHICH WILL ALTER NAVIGATIONAL RESTRICTIONS** (Specify projects and state effect and estimated completions)

**LOCATION OF PRODUCTION FACILITIES FOR PRODUCTS LISTED IN ITEM 8 OF STD. FORM 129**  **ON WATERFRONT**  **YES**  **NO**

EMPLOYMENT	CURRENT	CURRENT NO. SHIFTS	MOBILIZATION - SHIFTS
MANAGEMENT, ADMINISTRATION			
PROFESSIONAL, ENGINEERING			
PROFESSIONAL, TECHNICAL (all others)			
PRODUCTION, SKILLED			
PRODUCTION, SEMISKILLED			
PRODUCTION, UNSKILLED			
NONPRODUCTION			
TOTAL			

**NUMBER OF PRODUCTION PERSONNEL PRESENTLY ENGAGED IN THE AND/OR BOAT CONSTRUCTION ( )** **REPAIR ( )**

**APPROXIMATE TOTAL EMPLOYMENT OF ALL AFFILIATED CONCERNS ONLY LISTED IN ITEM 6, OF STD. FORM 129**  
(NOTE - An affiliate is a concern that directly, or indirectly through one or more intermediaries controls, or is controlled by, or is under common control with, the reporting firm. Common ownership of stock by individuals does not in itself, constitute affiliation.)

**DESCRIPTION OF TYPES OF WORK NORMALLY SUBCONTRACTED**

**DISTANCE TO NEAREST RAILROAD CONNECTION**

**DISTANCE TO NEAREST AIRPORT - IDENTIFY**

**LARGEST CONVEYANCE AVAILABLE AND MAXIMUM DIMENSIONS OF LOAD, FOR OVERLAND TRANSPORTATION OF FINISHED PRODUCTS (Not to exceed limitations imposed by local ordinances)**

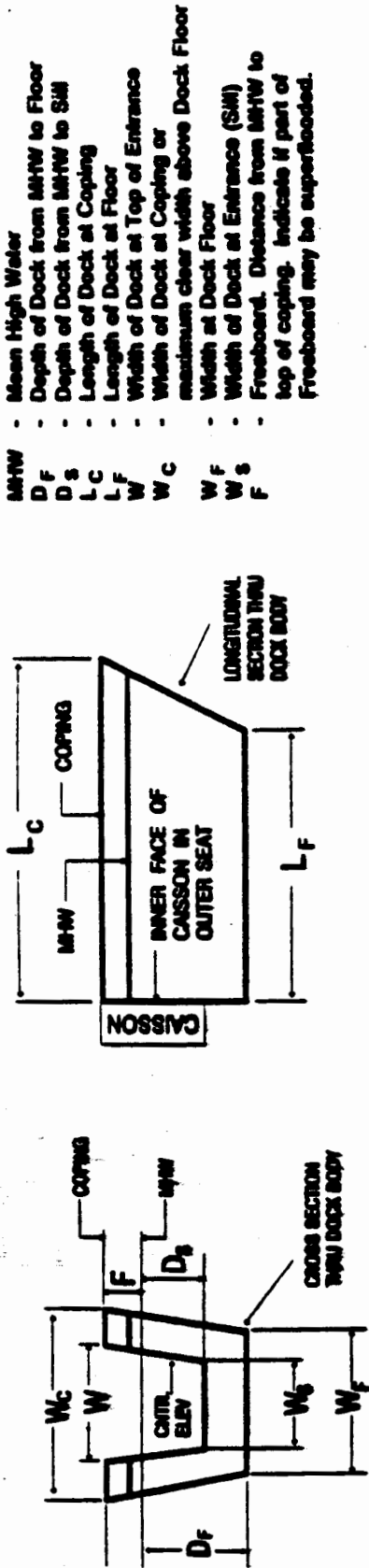
**NAVIGATIONAL RESTRICTIONS (INDICATE ALL AT M.L.W.)**  
**MINIMUM CHANNEL TO TIDEWATER**  
**MINIMUM HORIZONTAL AND VERTICAL BRIDGE CLEARANCES TO TIDEWATER (Identify structures)**

**LIMITING LOCK DIMENSIONS TO TIDEWATER (Identify locks)**

**PRODUCTION EXPERIENCE** (List at least three of the largest and the most complex ships or boats constructed, indicating (1) date completed, (2) hull length, beam, and molded depth, (3) type propulsion unit (fully described), (4) horsepower, (5) electrical and/or electronic installation, (6) special piping features, (7) size and tensile strength of plates, if steel, or type hull material, if other than steel, (8) special annealing, heat treating, or stress relieving problems encountered, if steel, plus, (9) any other important problems resolved.) (NOTE - if no previous construction experience give detailed description of major construction or industrial manufacturing work considered comparable to ship or boat construction.)

# GRAVING DOCK CHARACTERISTICS SUMMARY

## GRAVING DOCK NOMENCLATURE



### KEY

- MFHW - Mean High Water
- DF - Depth of Dock from MFHW to Floor
- DS - Depth of Dock from MFHW to Sill
- LC - Length of Dock at Coping
- LF - Length of Dock at Floor
- WF - Width of Dock at Coping or maximum clear width above Dock Floor
- WC - Width at Deck Floor
- Wf - Width of Dock at Entrance (SM)
- Ws - Freeboard. Distance from MFHW to top of coping. Indicate if part of Freeboard may be superfloated.

LENGTH	ENTRANCE DIMENSIONS			DOCK BODY DIMENSIONS			STANDARD DEFINITION	AVAILABLE ELECTRICAL SERVICE (SCORE POWER TO VESSEL)		REMARKS
	FLOOR	COPING	DEPTH	WIDTH	DEPTH	FRONTBOARD		VOLTS	HERTZ	
$L_f$	$W_s$	$D_s$	$W_c$	$W_f$	$D_f$	$r$	$\frac{L_c \times W_c \times D_s}{D_f}$			(e.g. indicate dimensions of pits in dock floor)
$L_c$	$W$	$D_f$	$W$	$W_c$	$D_f$					
	$W_c$	$D_s$	$W_c$	$W_f$	$D_f$					
	$W$	$D_f$	$W$	$W_c$	$D_f$					
	$W_c$	$D_s$	$W_c$	$W_f$	$D_f$					
	$W$	$D_f$	$W$	$W_c$	$D_f$					



# FLOATING DRYDOCK CHARACTERISTICS SUMMARY

FLOATING DRYDOCK IDENTIFIER	MAXIMUM LENGTH OF PONTOON	MAXIMUM DEPTH OVER BLOCKS	CLEAR WIDTH BETWEEN WINGHALLS	LIFT CAPACITY (TONS)	NORMAL KEEL BLOCK HEIGHT	AVAILABLE ELECTRICAL SERVICE (SHORE POWER TO VESSEL)			REMARKS
						VOLTS	AMPS	HERTZ	
									(Indicate existence of hauling blocks, if end selection can be lowered, and max. length of ship DD can accommodate).

INTENTIONALLY LEFT BLANK

**APPENDIX B**

**MAJOR U.S. SHIPBUILDING,**  
**REPAIR (WITH DRYDOCKING),**  
**AND TOPSIDE REPAIR FACILITIES**

# SHIPYARD CLASSIFICATION DEFINITIONS

## CLASSIFICATION DEFINITIONS

- **Shipbuilding**: Shipyards that are open, having at least one shipbuilding position, either an inclined way, a side-launching platform, or a building basin capable of accommodating 122 meters in length and over. With few exceptions, these shipyards are also major repair yards with drydocking capability.
- **Repair (With Drydocking)**: Drydocking facilities for ships 122 meters in length and over. These repair yards may also be capable of constructing vessels less than 122 meters in length.
- **Topside Repair**: Repair yards with sufficient berth/pier space for topside repair of ships 122 meters in length and over. These shipyards may also be capable of constructing and/or drydocking vessels less than 122 meters in length.

## GENERAL REQUIREMENTS

The shipyard must own or have in place a long-term lease (1 year or more) on the yard in which they intend to accomplish the work.

There must be no dimensional obstructions in the waterway leading to open ocean (i.e., locks, bridges).

Water depth in the channel to the facility must be a minimum of 3.7 meters.

## NOTE

The following criteria were developed to establish the maximum ship size that could be accommodated in each drydock:

For floating drydocks, the maximum ship length is as given by the shipyards. The maximum beam was determined by allowing a 0.6 meter clearance at each side between the ship and wing wall.

For graving docks, the maximum ship length was determined by allowing a 0.6 meter clearance at each end between the ship and the inside of the dock. The maximum beam was determined by allowing a 0.6 meter clearance on each side between the ship and each side of the dock entrance, unless the shipyard indicated more clearance is required.

There are several types of floating drydocks and graving docks, and under certain circumstances additional clearance would be necessary between the ship and the dock body. Permissible ship sizes requiring additional clearance may be determined by simple calculation from the above criteria.

**MAJOR U.S. SHIPBUILDING AND REPAIR FACILITIES**  
**(Vessels 122 m in Length and Over)**

Name and Address	Maximum Ship Size (LOA-Beam)	Berths/Piers Usable Length	Remarks
	SW-Shipway GD-Graving Drydock FD-Floating Drydock MR-Marine Railway LL-Land Level Position SL-Syncrolift	Longest Total linear	

1/ Type of work usually engaged in  
2/ Employment - Mid-1994  
Lengths are in Meters

**EAST COAST**

***Shipbuilding Yards***

Bath Iron Works Corp. 700 Washington Street Bath, ME 04530	213 X 28 SW 219 X 34 SW 219 X 39 SW	<u>259</u> 869	1/ Construction, conversion and repair - all types of vessels.  2/ 8,540
Bethlehem Steel Corp. BethShip, Sparrows Point Yard Sparrows Point, MD 21218	(2) 244 X 32 SW 365 X 59 GD 274 X 40 FD	<u>384</u> 1920	1/ Construction, conversion and repair of vessels.  2/ 828
General Dynamics Electric Boat Division 75 Eastern Point Road Groton, CT 06340-4989		<u>229</u> 1067	1/ Engaged exclusively in construction, conversion and repair of submarines for the U.S. Navy.  2/ 16,618*  * Includes Groton & Quonset Point
Intermarine, USA 301 North Lathrop Avenue P.O. Box 3045 Savannah, GA 31402-3045	182 X 20 GD *	<u>366</u> 597	1/ MHC construction.  2/ 489  * Can accommodate ship up to 366 meters in length.
Newport News Shipbuilding 4101 Washington Avenue Newport News, VA 23607	292 X 37 GD * 334 X 41 GD ** 197 X 27 GD ** 262 X 31 GD ** 139 X 21 GD ** 159 X 21 GD ** 490 X 78 GD * 195 X 41 FD (4) 183 X 12 LL	<u>418</u> 2577	1/ Construction, conversion and repair - all types of vessels.  2/ 20,900  * Used for construction. ** Used for repair and overhaul.

**MAJOR U.S. SHIPBUILDING AND REPAIR FACILITIES**  
**(Vessels 122 m in Length and Over)**

Name and Address	Maximum Ship Size (LOA--Beam)	Berths/Piers Usable Length	Remarks
	SW--Shipway GD--Graving Drydock FD--Floating Drydock MR--Marine Railway LL--Land Level Position SL--Syncrolift	<u>Longest</u> Total linear	

1/ Type of work usually engaged in  
2/ Employment - Mid-1994  
Lengths are in Meters

**EAST COAST**

***Repair Yards with Drydock Facilities***

Atlantic Marine, Inc. 8500 Heckscher Drive Jacksonville, FL 32226-3311	137 X 23 MR	<u>305</u> 694	1/ Construction of small vessels. Repair and overhaul of small and medium size vessels.  2/ 668*  * Includes Atlantic Marine's Fort George Island employees.
Bath Iron Works Corp. 40 Commercial St. Portland, ME 04101	257 X 41 FD	<u>305</u> 457	1/ Ship repair and conversion.  2/ 690
Caddell Dry Dock & Repair Company, Inc. P.O. Box 327 Staten Island, NY 10310	137 X 25 FD	<u>169</u> 712	1/ General ship repair.  2/ 200
Colonna's Shipyard, Inc. 400 E. Indian River Rd. Norfolk, VA 23523	122 X 22 MR 198 X 25 FD	<u>274</u> 1399	1/ General ship repair.  2/ 328
Detyens Shipyard, Inc. Rt. 2, Box 180- Mt. Pleasant, SC 29464	152 X 25 FD 152 X 20 FD	<u>122</u> 539	1/ General ship repair and conversion.  2/ 312
Eastern Technical Enterprises MPN, Inc. Building #62 Brooklyn Navy Yard Brooklyn, NY 11205	219 X 34 GD	<u>183</u> 262	1/ General Ship repair.  2/ 66

**MAJOR U.S. SHIPBUILDING AND REPAIR FACILITIES**  
**(Vessels 122 m in Length and Over)**

Name and Address	Maximum Ship Size (LOA-Beam)	Berths/Piers Usable Length	Remarks
	SW-Shipway GD-Graving Drydock FD-Floating Drydock MR-Marine Railway LL-Land Level Position SL-Syncrolift	Longest Total linear	1/ Type of work usually engaged in 2/ Employment - Mid-1994

Lengths are in Meters

**EAST COAST**

***Repair Yards with Drydock Facilities***

Economic Development & Industrial Corp. of Boston (EDIC) 10 Drydock Avenue Boston, MA 02211	350 X 34 GD	<u>274</u> 597	1/ Leases public drydock in former Boston Naval Annex to local ship repair companies.  2/ 0
GMD Shipyard Corp. P.O. Box 050221 Brooklyn, NY 11205	(2) 330 X 43 GD	<u>233</u> 503	1/ General ship repair.  2/ 73
General Ship Corp. 400 Border Street East Boston, MA 02128-2533	208 X 24 GD *	<u>274</u> 771	1/ Ship repair, overhaul and modernization.  2/ 106  * GD is long-term leased from Boston Marine Industrial Park in the former Boston Naval Annex.
Metro Machine Corp. P.O. Box 1860 Norfolk, VA 23501	201 X 29 FD	<u>239</u> 885	1/ Ship repair and conversion.  2/ 668
Norfolk Shipbuilding & Drydock Corporation P.O. Box 2100 750 Berkley Ave Norfolk, VA 23501-2100	218 X 29 FD 335 X 48 FD	<u>314</u> 2388	1/ Ship conversion and repair - all types of vessels.  2/ 1,574
North Florida Shipyards, Inc. P.O. Box 3255 Jacksonville, FL 32208	122 X 16 FD	<u>290</u> 966	1/ Ship repair and conversion.  2/ 459

**MAJOR U.S. SHIPBUILDING AND REPAIR FACILITIES**  
**(Vessels 122 m in Length and Over)**

Name and Address	Maximum Ship Size (LOA-Beam)	Berths/Piers Usable Length	Remarks
	SW-Shipway GD-Graving Drydock FD-Floating Drydock MR-Marine Railway LL-Land Level Position SL-Syncrolift	Longest Total linear	1/ Type of work usually engaged in  2/ Employment - Mid-1994  Lengths are in Meters

**EAST COAST**

***Topside Repair Yards***

American Shipyard Corp. One Washington Street Newport, RI 02840	<u>731</u> 1615	1/ General ship repair.  2/ 98  * Includes Quonset Point facility.
Associated Naval Architects, Inc. 3400 Shipwright Street Portsmouth, VA 23703	<u>137</u> 439	1/ General ship repair and overhaul.  2/ 63
Boston Graving Dock Corp. 256 Marginal Street East Boston, MA 02128	<u>311</u> 948	1/ General ship repair.  2/ 55
Delta Marine, Inc. P.O. Box 2191, Hwy 421 North Wilmington, NC 28402	<u>274</u> 503	1/ General ship repair.  2/ 71
General Ship Repair Corp. 1449 Key Highway Baltimore, MD 21230	<u>133</u> 258	1/ General ship repair.  2/ 50
JOMAR Corporation of Tidewater P.O. Box 5118 Suffolk, VA 23435	<u>152</u> 152	1/ General ship repair.  2/ 12



**MAJOR U.S. SHIPBUILDING AND REPAIR FACILITIES**  
**(Vessels 122 m in Length and Over)**

Name and Address	Maximum Ship Size (LOA-Beam)	Berths/Piers Usable Length	Remarks
	SW--Shipway GD--Graving Drydock FD--Floating Drydock MR--Marine Railway LL--Land Level Position SL--Syncrolift	Longest Total linear	1/ Type of work usually engaged in  2/ Employment - Mid-1994

Lengths are in Meters

**EAST COAST**

***Topside Repair Yards***

Jonathan Corporation 701 Front Street Norfolk, VA 23510		<u>170</u> 340	1/ Ship repair and overhaul.  2/ 352
Marine Hydraulics International, Inc. 800 East Indian River Rd. Norfolk, VA 23523		<u>183</u> 396	1/ General ship repair.  2/ 234
Melville Marine Industries One Little Harbor Landing Portsmouth, RI 02871		<u>366</u> 731	1/ General ship repair.  2/ 160
Metal Trades, Inc. P.O. Box 129 Hollywood, SC 29448-0129		<u>226</u> 396	1/ General ship repair.  2/ 148
Metro Machine of Pennsylvania, Inc. P.O. Box 200 Chester, PA 19016		<u>198</u> 198	1/ General ship repair.  2/ 20
Moon Engineering Co. 545 Front Street Norfolk, VA 23510		<u>168</u> 354	1/ General ship repair, primarily for Navy.  2/ 10
Moon Engineering Two Harper Avenue Portsmouth, VA 23707		<u>231</u> 899	1/ General ship repair.  2/ 191

**MAJOR U.S. SHIPBUILDING AND REPAIR FACILITIES**  
**(Vessels 122 m in Length and Over)**

Name and Address	Maximum Ship Size (LOA--Beam)	Berths/Piers Usable Length	Remarks
	SW--Shipway GD--Graving Drydock FD--Floating Drydock MR--Marine Railway LL--Land Level Position SL--Syncrolift	<u>Longest</u> Total linear	1/ Type of work usually engaged in 2/ Employment - Mid-1994

**EAST COAST**

***Topside Repair Yards***

Norfolk Shipbuilding & Drydock Corporation Brambleton Division Norfolk, VA 23501	<u>183</u> 1813	1/ Ship conversion and repair - all types of vessels. 2/ 550
Promet Marine Services Corp. 242 Allens Ave. Providence, RI 02905	<u>183</u> 366	1/ General ship repair. 2/ 36
Reynolds Shipyard Corp. 200 Edgewater Street P.O. Box 0500/10 Staten Island, NY 10305	<u>134</u> 134	1/ General ship repair. 2/ 15
Steel Style, Inc. 401 South Water Street Newburgh, NY 12550	<u>183</u> 335	1/ General ship repair. 2/ 10

**MAJOR U.S. SHIPBUILDING AND REPAIR FACILITIES**  
**(Vessels 122 m in Length and Over)**

Name and Address	Maximum Ship Size (LOA-Beam)	Berths/Piers Usable Length	Remarks
	SW-Shipway GD-Graving Drydock FD-Floating Drydock MR-Marine Railway LL-Land Level Position SL-Syncrolift	<u>Longest</u> Total linear	1/ Type of work usually engaged in  2/ Employment - Mid-1994  Lengths are in Meters

**GULF COAST**

***Shipbuilding Yards***

Alabama Shipyard, Inc. P.O. Box 3201 Mobile, AL 36652	290 X 50 LL	<u>328</u> 642	1/ Ship construction, conversion and repair.  2/ 330
Avondale Industries, Inc. P.O. Box 50280 New Orleans, LA 70150-0280	265 X 38 SW * 137 X 27 SW * (2) 311 X 53 LL ** (2) 265 X 38 LL ** 305 X 66 FD ** 229 X 35 FD ***	<u>521</u> 1431	1/ Modular ship construction, conversion, and repair - all types of vessels.  2/ 5,776  3/ Can accommodate ship up to 366 meters in length.  * Upper main yard. ** Lower main yard. *** Westwego Plant.
Halter Marine, Inc. Moss Point Division P.O. Box 767 Moss Point, MS 39563	146 X 20 LL	<u>146</u> 230	1/ Construction, conversion and repair of ships, boats, barges.  2/ 330
Ingalls Shipbuilding, Inc. P.O. Box 149 Pascagoula, MS 39568-0149	259 X 53 FD * (5) 259 X 53 LL * 488 X 53 LL *	<u>792</u> 1920	1/ Construction, conversion, and repair - all types of vessels.  2/ 14,733  * West Bank can only launch ships up to 259 meters X 53 meters. Land Level Positions constrained by launching capability.

**MAJOR U.S. SHIPBUILDING AND REPAIR FACILITIES**  
**(Vessels 122 m in Length and Over)**

Name and Address	Maximum Ship Size (LOA--Beam)	Berths/Piers Usable Length	Remarks
	SW--Shipway GD--Graving Drydock FD--Floating Drydock MR--Marine Railway LL--Land Level Position SL--Syncrolift	<u>Longest</u> Total linear	

1/ Type of work usually engaged in  
2/ Employment - Mid-1994

Lengths are in Meters

**GULF COAST**

***Shipbuilding Yards***

McDermott, Inc. P.O. Box 188 Morgan City, LA 70381	122 X 32 FD 160 X 30 LL	<u>143</u> 363	1/ Construction and repair of tugs, supply boats, barges, and drill rigs.  2/ 700
Tampa Shipyards, Inc. P.O. Box 1277 Tampa, FL 33601	165 X 22 GD * 273 X 44 GD * (2) 226 X 32 GD **	<u>258</u> 1130	1/ Ship construction, conversion and repair.  2/ 250  * Used for ship repair. ** Used for ship construction.
Trinity Marine Industries, Inc. Beaumont Shipyard P.O. Box 3600 Beaumont, TX 77704	259 X 32 SW 183 X 25 FD 198 X 32 FD	<u>328</u> 1041	1/ Ship construction, conversion and repair.  2/ 103

**MAJOR U.S. SHIPBUILDING AND REPAIR FACILITIES**  
**(Vessels 122 m in Length and Over)**

Name and Address	Maximum Ship Size (LOA-Beam)	Berths/Piers Usable Length	Remarks
	SW--Shipway GD--Graving Drydock FD--Floating Drydock MR--Marine Railway LL--Land Level Position SL--Syncrolift	<u>Longest</u> Total linear	

1/ Type of work usually engaged in  
2/ Employment - Mid-1994

Lengths are in Meters

**GULF COAST**

***Repair Yards with Drydock Facilities***

Atlantic Marine, Inc. - Mobile P.O. Box 3202 Mobile, AL 36652	213 X 26 FD 305 X 49 FD	<u>345</u> 990	1/ Ship repair and overhaul. 2/ 446
Bender Shipbuilding & Repair Co., Inc. 265 South Water Street Mobile, AL 36601	152 X 35 FD 165 X 27 FD	<u>258</u> 1029	1/ Construction of vessels up to 91.44 meters in length. Also repair and conversion. 2/ 694
Bethlehem Steel Corp. BethShip, Sabine Yard P.O. Box 1448 Port Arthur, TX 77641	274 X 36 FD	<u>213</u> 213	1/ Repair of ships and offshore oil rigs. 2/ 257
Budworth Bond Shipyard Inc. P.O. Box 5065 8114 Huckley Houston, TX 77262-5065	122 X 24 FD	<u>244</u> 671	1/ General ship repair. 2/ 160  * Two drydocks are combined.
Gulf Coast Fabrication, Inc. P.O. Box 538 Leakeshore, MS 39558	127 X 44 GD	<u>671</u> 671	1/ Small vessel construction and repair. 2/ 280
International Ship Repair & Marine Services, Inc. 1816 Penny Street Tampa, FL 33605	168 X 27 FD 137 X 32 FD	<u>549</u> 1158	1/ General ship repair. 2/ 175

**MAJOR U.S. SHIPBUILDING AND REPAIR FACILITIES**  
**(Vessels 122 m in Length and Over)**

Name and Address	Maximum Ship Size (LOA-Beam)	Berths/Piers Usable Length	Remarks
		SW--Shipway GD--Graving Drydock FD--Floating Drydock MR--Marine Railway LL--Land Level Position SL--Syncrolift	<u>Longest</u> Total lines

**GULF COAST**

***Repair Yards with Drydock Facilities***

Newpark Shipbuilding & Repair, Inc. 8502 Cypress Houston, TX 77012	122 X 22 FD	<u>710</u> 710	1/ Small vessel construction and repair.  2/ 280
Texas Drydock, Inc. P.O. Box 968 Orange, TX 77631-0968	168 X 37 FD	<u>549</u> 823	1/ General ship repair.  2/ 270

**MAJOR U.S. SHIPBUILDING AND REPAIR FACILITIES**  
(Vessels 122 m in Length and Over)

Name and Address	Maximum Ship Size (LOA-Beam)	Berths/Piers Usable Length	Remarks
	SW-Shipway GD-Graving Drydock FD-Floating Drydock MR-Marine Railway LL-Land Level Position SL-Syncrolift	Longest Total lines	1/ Type of work usually engaged in 2/ Employment - Mid-1994

Lengths are in Meters

**GULF COAST**

***Topside Repair Yards***

American Marine Corp. 3900 Jourdan Rd. P.O. Box 8126 New Orleans, LA 70182	<u>549</u> 549	1/ Construction and repair of offshore oil vessels and barges. 2/ 140
AMFELS, Inc. Hwy. 48, P.O. Box 3107 Brownsville, TX 78523	<u>610</u> 610	1/ General ship repair. 2/ 494
Avondale Industries, Inc. Algiers Division 3103 Patterson Drive New Orleans, LA 70114	<u>588</u> 1112	1/ Ship conversion, repair, and overhaul. 2/ 28
Boland Marine Manufacturing Co., Inc. P.O. Box 53287 New Orleans, LA 70153	<u>319</u> 563	1/ General ship repair and conversions. 2/ 157
Bollinger Machine Shop and Shipyard, Inc. P.O. Box 250 Lockport, LA 70374-0250	<u>1648</u> 3712	1/ Coast Guard vessel construction. 2/ 513 * Max ship = 122 meters LOA.
Buck Kreihls Co., Inc. P.O. Box 5330 New Orleans, LA 70153	<u>341</u> 341	1/ Ship repair and conversions. 2/ 152 * Max ship = 122 meters LOA.
CBH Services 200 Pier Road Orange, TX 77630	<u>457</u> 457	1/ General ship repair. 2/ 41

**MAJOR U.S. SHIPBUILDING AND REPAIR FACILITIES**  
(Vessels 122 m in Length and Over)

Name and Address	Maximum Ship Size (LOA--Beam) SW--Shipway GD--Graving Drydock FD--Floating Drydock MR--Marine Railway LL--Land Level Position SL--Syncrolift	Berths/Piers Usable Length  <u>Longest</u> Total linear	Remarks
			1/ Type of work usually engaged in 2/ Employment - Mid-1994  Lengths are in Meters

**GULF COAST**

***Topside Repair Yards***

Coastal Marine Service of Texas, Inc. 1051 Houston Avenue Port Arthur, TX 77640		<u>0</u> 0	1/ General ship repair. 2/ 45 (subcontracted)  * Vessels as long as 274 meters LOA berthed alongside waterfront barges.
Dixie Machine Welding & Metal Works, Inc. 1031 Anunciation St. New Orleans, LA 70130		<u>406</u> 406	1/ General ship repair. 2/ 273
Fredeman Shipyard, Inc. P.O. Box 129 Sulphur, LA 70664-0129		<u>137</u> 518	1/ Construction and repair of offshore vessels. 2/ 115
Gulf Copper & Manufacturing Corp. 320 Houston Avenue Port Arthur, TX 77640		<u>290</u> 1265	1/ General ship repair. 2/ 114
Gulf Marine Repair Corp. 1200 Sertoma Drive Tampa, FL 33609		<u>152</u> 152	1/ Ship repair and overhaul. 2/ 145
Halter Marine, Inc. Equitable Shipyards 4325 France Road New Orleans, LA 70126		<u>122</u> 402	1/ Construction and repair of small vessels and barges. 2/ 132
Hendry Corp. 5107 S. Westshore Blvd. Tampa, FL 33611		<u>305</u> 305	1/ General ship repair. 2/ 60



**MAJOR U.S. SHIPBUILDING AND REPAIR FACILITIES**  
**(Vessels 122 m in Length and Over)**

Name and Address	Maximum Ship Size (LOA--Beam)	Berths/Piers Usable Length	Remarks
	SW--Shipway GD--Graving Drydock FD--Floating Drydock MR--Marine Railway LL--Land Level Position SL--Syncrolift	<u>Longest</u> Total linear	1/ Type of work usually engaged in 2/ Employment - Mid-1994

Lengths are in Meters

**GULF COAST**

***Topside Repair Yards***

Houston Ship Repair, Inc. Bredy Island Ship Repair Facility 8510 Cypress Street Houston, TX 77012	<del>259</del> 259	1/ General ship repair and conversion.  2/ 250
Jay Bludworth, Inc. P.O. Box 2441 Corpus Christi, TX 78403	<del>122</del> 232	1/ General ship repair.  2/ 27
John Bludworth Marine, Inc. 1600 N. Witter Pasadena, TX 77506	<del>259</del> 750	1/ General ship repair.  2/ 108
Vessel Repair, Inc. P.O. Box 2207 Port Arthur, TX 77643	<del>335</del> 640	1/ General ship repair.  2/ 50

**MAJOR U.S. SHIPBUILDING AND REPAIR FACILITIES**  
(Vessels 122 m in Length and Over)

Name and Address	Maximum Ship Size (LOA--Beam)	Berths/Piers Usable Length	Remarks
		SW--Shipway GD--Graving Drydock FD--Floating Drydock MR--Marine Railway LL--Land Level Position SL--Syncrolift	<u>Longest</u> Total linear

**WEST COAST**

*Shipbuilding Yards*

Gunderson Marine Inc. 4350 N.W. Front Avenue Portland, OR 97210	229 X 32 SW	<u>335</u> 335	1/ Construction, conversion, and repair - all types of vessels.  2/ 1,237
National Steel & Shipbuilding Co. Harbor Drive & 28th St. San Diego, CA 92186-5278	(2) 274 X 34 SW 303 X 52 GD * 229 X 42 FD	<u>305</u> 2210	1/ Construction, conversion, and repair - all types of vessels.  2/ 3,271  * Graving dock and piers at U.S. Naval Station also leased, as required.
Portland Ship Yard 5555 N. Channel Avenue Building 50 Portland, OR 97217  Facilities also leased by: 1. Cascade General, Inc. 2. West State, Inc.	183 X 30 LL 305 X 55 LL 198 X 26 FD 247 X 33 FD 351 X 55 FD	<u>335</u> 3353	1/ Ship construction, repair and conversion - all types of vessels.  2/ 1,077*  * Includes employees of lessors.
Tacoma Boatbuilding Co. 1840 Marine View Drive Tacoma, WA 98422	(2) 130 X 14 SW *	<u>207</u> 207	1/ Ship construction, repair, and conversion - all types of vessels.  2/ 89  * Vessel with beam up to 30 meters can be constructed by joining the two shipways.
Todd Pacific Shipyards Corp. 1801 16th Avenue, S.W. Seattle, WA 98134	(2) 168 X 18 SW * 128 X 19 FD 198 X 26 FD 287 X 41 FD	<u>427</u> 1834	1/ Ship construction, repair, and conversion - all types of vessels.  2/ 700  * Max. ship size is 168 X 29 meters using two 168 X 18 meter SWs.

**MAJOR U.S. SHIPBUILDING AND REPAIR FACILITIES**  
**(Vessels 122 m in Length and Over)**

Name and Address	Maximum Ship Size (LOA-Beam)	Berths/Piers Usable Length	Remarks
	SW-Shipway GD-Graving Drydock FD-Floating Drydock MR-Marine Railway LL-Land Level Position SL-Syncrolift	Longest Total linear	1/ Type of work usually engaged in 2/ Employment - Mid-1994  Lengths are in Meters

**WEST COAST**

***Repair Yards with Drydock Facilities***

AK-WA, Inc. 401 Alexander Avenue Building 9588 Tacoma, WA 98421	162 X 24 FD	<del>198</del> 533	1/ Ship repair and conversion. 2/ 155
Dakota Creek Industries, Inc. 820 Fourth Street Anacortes, WA 98221	122 X 26 FD	<del>305</del> 477	1/ General ship repair. 2/ 125
Maritime Contractors, Inc. 201 Harris Avenue Bellingham, WA 98225	122 X 26 FD	<del>368</del> 477	1/ General ship repair. 2/ 142
North Lake Shipyard 1441 N. Northlake Way N. Seattle, WA 98103	122 X 17 FD	<del>122</del> 252	1/ General ship repair. 2/ 15
San Francisco Drydock Co. Foot of 20th Street San Francisco, CA 94120-7644	290 X 44 FD 213 X 29 FD	<del>244</del> 1023	1/ Ship repair and overhaul. 2/ 540
Southern Oregon Marine, Inc. 1746 Coos River Hwy Coos Bay, OR 97420	122 X 30 MR	<del>268</del> 322	1/ General ship repair and barge construction. 2/ 114

**MAJOR U.S. SHIPBUILDING AND REPAIR FACILITIES**  
**(Vessels 122 m in Length and Over)**

Name and Address	Maximum Ship Size (LOA-Beam)	Berths/Piers Usable Length	Remarks
	SW--Shipway GD--Graving Drydock FD--Floating Drydock MR--Marine Railway LL--Land Level Position SL--Syncrolift	<u>Longest</u> Total linear	
			1/ Type of work usually engaged in 2/ Employment - Mid-1994
			Lengths are in Meters

**WEST COAST**

***Repair Yards with Drydock Facilities***

Southwest Marine, Inc. P.O. Box 13308 Foot of Sampson Street San Diego, CA 92170-0308	200 X 31 FD	<u>213</u>	1/ Ship repair, overhaul, and conversion.  2/ 1,556  Graving dock at Naval Station can be leased as required.
	152 X 19 FD	589	
Southwest Marine, Inc. San Pedro Division 985 So. Seaside Avenue Terminal Island, CA 90731-7331	128 X 16 FD	<u>201</u>	1/ Ship repair, overhaul, and conversion.  2/ 326
	213 X 29 FD	568	

**MAJOR U.S. SHIPBUILDING AND REPAIR FACILITIES**  
**(Vessels 122 m in Length and Over)**

Name and Address	Maximum Ship Size (LOA--Beam)	Berths/Piers Usable Length	Remarks
		SW--Shipway GD--Graving Drydock FD--Floating Drydock MR--Marine Railway LL--Land Level Position SL--Syncrolift	<u>Longest</u> Total linear

**WEST COAST**

***Topside Repair Yards***

Al Larson Boat Shop. 1046 S. Seaside Avenue Terminal Island, CA 90731	<u>107</u> 168	1/ Ship and boat repair.  2/ 100
Campbell Industries P.O. Box 1870 501 E. Harbor Drive San Diego, CA 92112	<u>171</u> 138	1/ General ship repair and construction of vessels up to 91 meters in length.  2/ 138
Continental Maritime of San Diego, Inc. 1995 Bay Front Street San Diego, CA 92113-2122	<u>213</u> 1326	1/ General ship repair.  2/ 379
Foss Shipyard 660 West Ewing Street Seattle, WA 98119	<u>146</u> 788	1/ Vessel repair, alteration, and overhaul.  2/ 111
Lake Union Drydock Co. 1515 Fairview Avenue East Seattle, WA 98102	<u>381</u> 750	1/ Ship repair and conversion.  2/ 149
MAR COM, Inc. P.O. Box 1029 Vancouver, WA 98660	<u>305</u> 1137	1/ General ship repair.  2/ 60

**MAJOR U.S. SHIPBUILDING AND REPAIR FACILITIES**  
**(Vessels 122 m in Length and Over)**

Name and Address	Maximum Ship Size (LOA-Beam)	Berths/Piers Usable Length	Remarks
	SW--Shipway GD--Graving Drydock FD--Floating Drydock MR--Marine Railway LL--Land Level Position SL--Syncrolift	<u>Longest</u> Total linear	1/ Type of work usually engaged in  2/ Employment - Mid-1994  Lengths are in Meters

**WEST COAST**

***Topside Repair Yards***

Pacific Fishermen, Inc. 5351 24th Avenue, N.W. Seattle, WA 98107		<u>152</u> 254	1/ Construction and repair of small vessels. Topside repair of large vessels.  2/ 30
Puglia Shipbuilding, Inc. P.O. Box 651 Tacoma, WA 98401		<u>183</u> 366	1/ Construction and general ship repair.  2/ 35
San Pedro Boat Works Berth 44, Outer Harbor San Pedro, CA 90731		<u>189</u> 189	1/ General ship repair.  2/ 92
Service Engineering Co. Pier 50 San Francisco, CA 94120		<u>335</u> 792	1/ General ship repair and conversion.  2/ 317

**MAJOR U.S. SHIPBUILDING AND REPAIR FACILITIES**  
**(Vessels 122 m in Length and Over)**

Name and Address	Maximum Ship Size (LOA-Beam)	Berths/Piers Usable Length	Remarks
		SW-Shipway GD-Graving Drydock FD-Floating Drydock MR-Marine Railway LL-Land Level Position SL-Syncrolift	<u>Longest</u> Total linear

**GREAT LAKES**

***Shipbuilding Yards***

(Maximum ship size that can exit the St. Lawrence Seaway locks is 222 meters X 24 meters)

Erie Marine Enterprises Inc. Div. of Jonathan Corp. Foot of Holland Street P.O. Box 1730 Erie, PA 16507-0730	375 X 35 GD	<u>366</u> 859	1/ Ship construction, repair, and and conversion.  2/ 49
Fraser Shipyards, Inc. P.O. Box 997 Superior, WI 5488	252 X 23 GD 189 X 17 GD	<u>274</u> 527	1/ Ship construction, repair, and conversion.  2/ 90
Marinette Marine Corp. Foot of Ely Street Marinette, WI 54143	122 X 24 LL	<u>651</u> 651	1/ Ship construction, repair, and conversion.  2/ 165
Peterson Builders, Inc. 101 Pennsylvania St. P.O. Box 650 Sturgeon Bay, WI 54235-0650	125 X 21 LL	<u>198</u> 687	1/ Ship construction, repair, and conversion.  2/ 381

**MAJOR U.S. SHIPBUILDING AND REPAIR FACILITIES**  
**(Vessels 122 m in Length and Over)**

Name and Address	Maximum Ship Size (LOA-Beam)	Berths/Piers Usable Length	Remarks
		SW-Shipway GD-Graving Drydock FD-Floating Drydock MR-Marine Railway LL-Land Level Position SL-Syncrolift	<u>Longest</u> Total linear

**GREAT LAKES**

***Repair Yards with Drydock Facilities***

(Maximum ship size that can exit the St. Lawrence Seaway locks is 222 meters X 24 meters)

Bay Shipbuilding Corp. 605 North Third Ave. Sturgeon Bay, WI 54235	195 X 20 FD - 351 X 41 GD 222 X 32 SW	<u>305</u> 2162	1/ Ship repair and conversion.  2/ 127
Toledo Ship Repair Co. 2245 Front Toledo, OH 43605	165 X 21 GD 261 X 22 GD	<u>183</u> 305	1/ Ship repair and conversion.  2/ 60



**MAJOR U.S. SHIPBUILDING AND REPAIR FACILITIES**  
**(Vessels 122 m in Length and Over)**

Name and Address	Maximum Ship Size (LOA-Beam)	Berths/Piers Usable Length	Remarks
		SW--Shipway GD--Graving Drydock FD--Floating Drydock MR--Marine Railway LL--Land Level Position SL--Synrolift	<u>Longest</u> Total linear

Lengths are in Meters

**GREAT LAKES**

***Topside Repair Yards***

(Maximum ship size that can exit the St. Lawrence Seaway locks is 222 meters x 24 meters)

H. Hansen Industries Riverside Marine Industries, Inc. 2824 Summit Street Toledo, OH 43611	<u>226</u> 451	1/ General ship repair. 2/ 48
Nicholson Terminal & Dock Company P.O. Box 18066 River Rouge, MI 48218	<u>701</u> 1097	1/ General ship repair. 2/ 80

**MAJOR U.S. SHIPBUILDING AND REPAIR FACILITIES**  
**(Vessels 122 m in Length and Over)**

Name and Address	Maximum Ship Size (LOA-Beam)	Berths/Piers Usable Length	Remarks
	SW--Shipway GD--Graving Drydock FD--Floating Drydock MR--Marine Railway LL--Land Level Position SL--Synrolift	<u>Longest</u> Total linear	
			1/ Type of work usually engaged in 2/ Employment - Mid-1994
			Lengths are in Meters

**NON-CONUS**

***Shipbuilding Yards***

NONE

***Repair Yards with Drydock Facilities***

Marisco, Ltd. 91-607 Makolea Road Ewa Beach, HI 96707	152 X 24 FD	*	1/ General ship repair. 2/ 100 * Leased from Port Commission.
---	-------------	---	---

Perez & Company of Puerto Rico P.O. Box 2209 San Juan, PR 00903	193 X 30 GD	<del>396</del> 945	1/ General ship repair. 2/ 150
--	-------------	-----------------------	-----------------------------------

***Topside Repair Yards***

Honolulu Shipyard, Inc. P.O. Box 30989 Honolulu, HI 96820		<del>183</del> 183	1/ General ship repair and overhaul. 2/ 266
---	--	-----------------------	---

